SATEC
Powerful Solutions

*expert***meter™**

High Performance Analyzer

PM180

Modbus Communications Protocol

Reference Guide

BG0527 Rev. A5

Every effort has been made to ensure that the material herein is complete and accurate. However, the manufacturer is not responsible for any mistakes in printing or faulty instructions contained in this book. Notification of any errors or misprints will be received with appreciation.

For further information regarding a particular installation, operation or maintenance of equipment, contact the manufacturer or your local representative or distributor.

REVISION HISTORY

A1	Oct 2012	Initial release
A2	Feb 2013	Added Programmable Min/Max registers. Added AI 1/2 cycle, 1 sec, demand and Min/Max log registers. Added incremental/decremental delta and relative delta triggers.
A3	Dec 2014	Added extended DNP options for file operations. Added GOST 54149-2010 setup and evaluation statistics files. Added the Transient Recorder and Digital Fault Recorder modules options. Added the IEC 60870-5 and fault locator setups.
A4	Oct 2015	GOST 54149-2010 is replaced with GOST 32144-2013. Added 3-second power and power factor readings. Added dial-up/GPRS modem setup and status registers. Added transformer correction setup.
A5	May 2016	Revised fault locator setup. Added fault location indication registers. A channel skew is added to the waveform response block.

Table of Contents

1 General

This document specifies a subset of the Modbus communications protocol used to transfer data between a master computer station and the PM180. The document provides the complete information necessary to develop third-party communications software capable of communication with the PM180. Refer to the PM180 Installation Manual and PM180 Operation Manual for more information on communication connections and configuring communication parameters in your device.

Firmware version designations for power quality standards:

V31.04.XX – IEEE 1159
V31.14.XX – IEEE 1159 + IEC 61850
V31.05.XX – EN 50160
V31.15.XX – EN 50160 + IEC 61850
V31.07.XX – GOST 13109-97
V31.17.XX – GOST 13109-97 + IEC 61850
V31.08.XX – GOST 32144-2013
V31.18.XX – GOST 32144-2013 + IEC 61850

2 Modbus Protocol Implementation

For detailed information on the Modbus protocol, message framing and error checking, refer to the Modbus Protocol Reference Guide. It can be downloaded from the Modbus-IDA Website at http://www.modbus.org/. The following paragraphs outline some issues concerning the implementation of the Modbus protocol in the PM180.

2.1 Transmission Modes

The PM180 can be set up to communicate on a serial Modbus network using either RTU, or ASCII serial transmission mode, and via the Internet using Modbus/TCP mode. Refer to the PM180 Operation Manual for information on selecting the transmission mode in your device.

2.2 Address Field

The address field contains a user assigned address of the instrument (1-247) on a Modbus network. Broadcast mode using address 0 is not supported.

When communicating via the Internet, the address field is not checked and is returned in the response message header.

2.3 Function Field

The Modbus functions implemented in the PM180 are shown in Table 2-1. Function 04 can be used in the same context as function 03.

Table 2-1 Modbus Function Codes

Code (decimal)	Meaning in Modbus	Action
03	Read holding registers	Read multiple registers
04	Read input registers	Read multiple registers
06	Preset single register	Write single register
16	Preset multiple registers	Write multiple registers
22	Mask write	Set or clear individual bits
08[1]	Loop-back test	Communications test

[1] The PM180 supports only diagnostic code 0 - return query data.

2.4 Exception Responses

The instrument sends an exception response when an error is detected in the received message. To indicate that the response is notification of an error, the high order bit of the function code is set to 1.

Implemented exception response codes:

- **01** - Illegal function
- **02** - Illegal data address
- **03** - Illegal data value
- **04** - Device failure

When the character framing, parity, or redundancy check detects a communication error, processing of the master's request stops. The instrument will not act on or respond to the message.

2.5 Modbus Register Addresses

The PM180 Modbus registers are numbered in the range of 0 to 65535. From the Modbus applications, the PM180 Modbus registers can be accessed by simulating

holding registers of the Modicon 584, 884 or 984 Programmable Controller, using a 5-digit “4XXXX” or 6-digit “4XXXXX” addressing scheme. To map the PM180 register address to the range of the Modbus holding registers, add a value of 40001 to the PM180 register address. When a register address exceeds 9999, use a 6-digit addressing scheme by adding 400001 to the PM180 register address.

2.6 Data Formats

The PM180 uses three data formats to pass data between a master application and the instrument: 16-bit short integer, 32-bit long integer and 32-bit modulo-10000 formats. Binary values and counters are always transmitted in 32-bit registers, while analog values can be read both in 32-bit and in 16-bit scaled registers.

Analog registers 256 through 308 and 4320 through 10751 contain scaled 16-bit values.

2.6.1 16-bit Scaled Integer Format

16-bit scaled data is transmitted in a single 16-bit Modbus register as unsigned (UINT16) integer (whole) numbers using the linear conversion to accommodate large-scale and fractional numbers to a 16-bit register format. The linear conversion uses two scales to read the raw data from the device and convert it into engineering units: the device original engineering scale and the Modbus conversion scale.

When transmitting measured data, the device scales it into the range of Modbus Low and High conversion scales. To reconstruct data in the original engineering units, perform the reverse conversion according to the following formula:

$$\text{Engineering\_Units} = \frac{\text{Raw\_Data} \times (\text{ENG\_HI} - \text{ENG\_LO})}{\text{RAW\_HI} - \text{RAW\_LO}} + \text{ENG\_LO}$$

where:

ENG_LO and ENG_HI	-	reading low and high scales in engineering units
RAW_LO and RAW_HI	-	raw data low and high scales (by default, 0 and 9999)
Raw_Data	-	raw input data in the range of RAW_LO to RAW_HI
Engineering_Units	-	true value in engineering units

The default Modbus conversion scales are 0 for the low scale and 9999 for the high scale. This means that the scaled analog data is always transmitted in the range of 0 to 9999. The Modbus conversion scales can be changed through communications via registers 240 and 241.

The engineering scales are separately indicated for each scaled 16-bit register. For data scales and measurement units that depend on the device input scales (such as volts, amps and powers), refer to Chapter 4 “Data Scales and Units”.

Conversion Examples

1. Voltage readings

a) Assume device settings (direct wiring): PT ratio = 1.

Voltage engineering scales (see Chapter 4):

HI_ENG = Vmax = 828.0 × PT ratio = 828.0 × 1 = 828.0V
LO_ENG = 0V

If the raw data reading is 1449 then the voltage reading in engineering units will be as follows:

Volts reading = 1449 × (828.0 - 0)/(9999 - 0) + 0 = 120.0V

b) Assume device settings (wiring via PT): PT ratio = 14,400V : 120V = 120.

Voltage engineering scales (see Chapter 4):

HI_ENG = Vmax = 828.0 × PT ratio = 828 × 120 = 99,360V
LO_ENG = 0V

If the raw data reading is 1449 then the voltage reading in engineering units will be as follows:

Volts reading = 1449 × (99360 - 0)/(9999 - 0) + 0 = 14,399V

2. Current readings

Assume device settings: CT primary current = 200A; current input overload = 400% (20A).

Current engineering scales (see Chapter 4):

HI_ENG = Imax = CT primary current × 4 = 200.00 × 4 = 800.00A
LO_ENG = 0A

If the raw data reading is 250 then the current reading in engineering units will be as follows:

Amps reading = 250 × (800.00 - 0)/(9999 - 0) + 0 = 20.00A

3. Power readings

a) Assume device settings (direct wiring): PT = 1; CT primary current = 200A; current input overload = 400% (20A).

Active Power engineering scales (rounded to whole kW, see Chapter 4):

HI_ENG = Pmax = Vmax × Imax × 2 = (828.0 × 1) × (200.00 × 4) × 2 = 1,324,800 W = 1325 kW
LO_ENG = -Pmax = -1325 kW

If the raw data reading is 5500 then the power reading in engineering units will be as follows:

Watts reading = 5500 × (1325 - (-1325))/(9999 - 0) + (-1325) = 132.6 kW

If the raw data reading is 500 then the power reading in engineering units will be as follows:

Watts reading = 500 × (1325 - (-1325))/(9999 - 0) + (-1325) = -1192.5 kW

b) Assume device settings (wiring via PT): PT = 120; CT primary current = 200A; current input overload = 400% (20A).

Active Power engineering scales (rounded to whole kW, see Chapter 4):

HI_ENG = Pmax = Vmax × Imax × 2 = (828 × 120) × (200.00 × 4) × 2/1000 = 158976 kW
LO_ENG = -Pmax = -158976 kW

If the raw data reading is 5500 then the power reading in engineering units will be as follows:

Watts reading = 5500 × (158976 - (-158976))/(9999 - 0) + (-158976) = 15915 kW

If the raw data reading is 500 then the power reading in engineering units will be as follows:

Watts reading = 500 × (158976 - (-158976))/(9999 - 0) + (-158976) = -143077 kW

4. Power Factor readings

Power factor engineering scales (see Chapter 4):

HI_ENG = 1.000.
LO_ENG = -1.000.

If the raw data reading is 8900 then the power factor in engineering units will be as follows:

Power factor reading = 8900 × (1.000 - (-1.000))/(9999 - 0) + (-1.000) = 0.78

2.6.2 32-bit Long Integer Format

32-bit long integer data is transmitted in two adjacent 16-bit Modbus registers as unsigned (UINT32) or signed (INT32) whole numbers. The first register contains the low-order word (lower 16 bits) and the second register contains the high order word (higher 16 bits). The low-order word always starts at an even Modbus address. The value range for unsigned data is 0 to 4,294,967,295; for signed data the range is -2,147,483,648 to 2,147,483,647.

If your Modbus driver does not support a 32-bit long integer format, you can read the two 16-bit registers separately, and then convert them into a 32-bit value as follows (using C notation):

32-bit value = (signed short)high_order_register × 65536L + (unsigned short)low_order_register

Examples

1. Unsigned 32-bit Values

If you read unsigned Voltage V1 of 69,000V from registers 13952-13953, then the register readings will be as follows:

(13952) = 3464
(13953) = 1

The 32-bit value is (1 x 65536 + 3464) = 69000V.

2. Signed 32-bit Values

If you read signed kW of -789kW from registers 14336-14337, then the register readings will be:

(14336) = 64747 (unsigned)
(14337) = 65535 (unsigned) or -1(signed value).

To take the high order register as a signed value, compare it with 32767. If the value is less or equal to 32767, use it as is. If it is greater than 32767, then this is a negative number in a two's complement code (like in our example) - just subtract it from 65536 to get the original negative value.

The 32-bit reading is (-1 x 65536 + 64747) = -789kW.

Fractional 32-bit data is transmitted using decimal scaling to pass fractional numbers in integer format. Fractional numbers are pre-multiplied by 10 to the power N, where N is the number of digits in the fractional part. For example, the frequency reading of 50.01 Hz is transmitted as 5001, having been pre-multiplied by 100.

Whenever a data register contains a fractional number, the register measurement unit is given with a multiplier ×0.1, ×0.01 or ×0.001, showing the weight of the least significant decimal digit. To get an actual fractional number with specified precision, multiply the register value by the given multiplier. To write a fractional number into the register, divide the number by the given multiplier.

2.6.3 32-bit Modulo-10000 Format

Energy counters 287-294 and 301-302 are read in two contiguous 16-bit registers in a modulo-10000 format. The first (low order) register contains the value mod 10000, and the second (high order) register contains the value/10000. To get the true energy reading, the high order register value should be multiplied by 10,000 and added to the low order register.

2.7 User Assignable Registers

The PM180 provides 120 user assignable registers in the address range of 0 to 119. You can re-map any register available in the device to any assignable register so that Modbus registers that reside at different locations may be simply accessed using a single request by re-mapping them to adjacent addresses.

The actual addresses of the assignable registers, which are accessed via addresses 0 through 119, are specified in the register map (registers 120 through 239), where register 120 contains the actual address of the register accessed via register 0, register 121 contains the actual address of the register accessed via register 1, and so on. The assignable registers and the map registers themselves may not be re-mapped.

Initially these registers are reserved and none of them points to an actual register address. To build your own register map, write to map registers 120 to 239 the actual addresses you want to read from or write to via the assignable area (registers 0 to 119). 32-bit long registers should always be aligned at even addresses. For example, to read registers 4672 (1-second V1 voltage, scaled short integer) and 14720-14721 (kWh Import, long integer) via registers 0-2, do the following:

- write 14720 to register 120
- write 14721 to register 121
- write 4672 to register 122

Reading from registers 0-2 will return the kWh reading in registers 0 (low 16 bits) and 1 (high 16 bits), and the voltage reading in register 2.

2.8 Password Protection

The PM180 has a password protection option allowing you to protect your setups, cumulative registers and logs from being changed or cleared through communications. You can disable or enable password protection through communications, the RDM or via the Terminal. For details, refer to your instrument Operation Manual.

A user password must be written into the device authorization register (44378-44379) before another write request is issued. If the correct password is not supplied while password protection is enabled, the device will respond to all write requests with the exception code 01 (illegal operation). It is recommended to clear the password register after you have completed your changes in order to activate password protection.

2.9 Data Recording and File Transfers

2.9.1 Log File Organization

Historical files are stored in flash memory. Memory space is allocated for each file statically when you set up your files and will not change unless you re-organize files.

Data records in a file are arranged in the order of their recording. Each record has a unique 16-bit sequence number that is incremented modulo 65536 with each new record. The sequence number can be used to point to a particular record in the file, or to check the sequence of records when uploading files from the device.

Each file has a write position pointer that indicates the place where the next record will be recorded, and a read position pointer that indicates the place from where the current record will be read. Both pointers show sequence numbers of the records they point to rather than record offsets in the file.

After acknowledging a record you have read, the read pointer automatically advances to the next record in the file. When the read pointer gets to the record to which the file write pointer points, the end-of-file (EOF) flag is set. It is automatically cleared when a new record is added to the file, or when you explicitly move the read pointer to any record within a file.

If a file has a wrap-around attribute (circular file), the most recent records can overwrite the oldest records. When this happens at the current read position, the read pointer automatically advances forward in order to point to the oldest record in the file.

The PM180 keeps a separate read pointer for each communication port so that access to the same file through a different port will not affect current active sessions for other ports.

Multi-section Files

Log files can have one or more (up to 32) sections for multi-channel recording. An ordinal file consists of a single section. Some files, such as TOU profile log files and waveform log files, are arranged as multi-section files.

A multi-section file is subdivided into multiple sections of the same structure, one section per recording channel. The number of sections in each file is defined at the time you set up your files and may not change unless you re-organize the file. Sections within a multi-section file can be addressed by a section number, or by a section channel ID.

A multi-section file has a single write position pointer for all sections and stores data in all sections simultaneously. This means that records with the same sequence number in all sections are associated with the same event. A multi-section file has also a single read position pointer for all sections.

Data Log Files

Conventional data log files can store up to 16 measured parameters per a record. Any data measured by the device can be stored in the log file. The number of parameters that each record will hold and the list of parameters you want to be recorded in the file can be selected through the Data log setup registers for a particular file.

Recording data to data log files can be triggered through the setpoints, either on a time basis, or upon any event detected by the setpoints.

TOU Profile Log Files

Data log files #15 and #16 can be configured for monthly and daily profile logs of the energy usage and maximum demand registers. A profile log file is organized as a multi-section file that has a separate section for each energy and maximum demand register. See Section 3.16 for more information on the file record structure. A file record stores all tariff data for each configured Billing/TOU register.

The number of sections is taken automatically from the Billing/TOU Registers setup. In order to correctly allocate memory space, configure your TOU registers before you set up TOU profile files.

Since each Billing/TOU energy register has a shadow maximum demand register, the number of sections in the file will be twice the number of the allocated Billing/TOU registers.

Power Quality Statistics Log Files

Data log files #9 and #10 are configured to store the power quality statistics data on a daily or weekly basis. They are organized as multi-section files. See Sections 3.10-3.15 for more information on the file record structure. You can review the list of parameters recorded to the files through the file info request/response blocks using info requests with variation 2 (see Section 3.9).

Waveform Log Files

Waveform log files are organized as multi-section files that store data for each recording channel in a separate section. A waveform log file can record up to 11 channels simultaneously: eight AC channels (four voltages and four currents), and 3x16 digital inputs DI1:16, DI17:32, DI33:48 that are recorded as three 16-bit analog channels. In devices with a fast AI option, a file can additionally record 16 analog input channels.

The number of sections, or channels, that a file can store, is defined in the file setup. The waveform log setup allows selecting channels that a file will record. All selected channels are recorded in successive file sections.

A waveform file has a single read pointer for all sections, so that data from all channels of a single record can be read together without repositioning the file pointer. When you point to a particular file record, data from all sections related to the same event are all available for a read. Moreover, the PM180 takes all channel data for the currently accessed record to a separate buffer, so that even when the record is overwritten at the time of reading, you are still prevented from receiving partially updated data. You can also read a file in a common sequential manner section-by-section.

A single waveform record for a channel can contain up to 512 points of the sampled input signal. DI and AI channels are sampled at different rates than AC channels and may contain fewer points than the corresponding AC records. Refer to the sampling rate field in the channel records to correctly set up the time scale for the DI and AI waveforms. If the record contains less than 512 points, the value of unused points is unpredictable.

If a waveform log is configured to record more samples per event than a single record can hold, the waveform recorder will store as many records per event as required to record the entire event. All waveform records related to the event are merged in a series and have the same series number, so that they can all be plotted together. Each record within a series has a unique serial number that allows tracking the sequence of records in the series. A single waveform series can hold up to 347,136 points (10,848 cycles at a rate of 32 samples per cycle) of a sampled AC signal.

2.9.2 File Transfers

File transfer protocol provides both data transfer and information services. File transfer is performed through two blocks of registers: a 32-word master request block and a 1792-word read-only file response block. After a master application has written the request into the file request block, the requested data is available for a read through the file response block registers. File transfer functions allow changing the file or section position in order to point to the desired record.

The information service uses separate 8-word file info request and 200-word file info response blocks. The extended file information is available including current file pointers' positions, file contents, the number of records in the file, allocated file size, time of file creation, time of the last file update and reset, and more.

Common File Transfer

Log files can be read either in a sequence record-by-record, or in a random order. Each Read-File request fills the file response block with the data of the record pointed to by the file (or section) read pointer. If you want to begin reading a file from a particular record, which sequence number is known, you can change the pointer position by issuing the Set-File-Position request with the desired sequence number. If you want to read a file from the beginning, send the Reset-File-Position request that moves the pointer to the oldest file record. If you do not change the file position, then you will continue reading the file from the record following the one you have read the last time you accessed the file.

You need not explicitly move the file position to the following record if you want to continue reading a file in sequence after you have uploaded the current record. Instead, issue an acknowledgment request that automatically advances the file pointer to the next record, and then read the record data through the file response block.

The file response block can contain more than one record. The number of records available in the block and the file record size in words are always reported in the block heading. There are no special rules on how to read records from the file transfer block. You can read a single record or all records together, or begin reading from the last record and end with the first record. However, you should remember: 1) after an acknowledgment, the file position moves to the record following the last one you have accessed in the file transfer block; and 2) data in the file transfer block does not change until you either issue an acknowledgment, or explicitly change the file position by the Set-File-Position or Reset-File-Position requests.

The file transfer is completed after you have read the last record of the file. Before storing a file record to your database, always check bit 9 in the record status word, which contains the end-of-file (EOF) flag. This bit set to 1 indicates that the file read pointer does not point to any record within the file, and you should not store any record that has this bit set. The EOF flag is set only after you have acknowledged the last record of the file, so that testing for end-of-file requires one extra read. If you wish to stop the transfer just after storing the last file record, acknowledge the record and check bit 0 in the record status word. Bit 0 is set to 1 only once when you read the last record of the file.

The following gives a summary of steps you should do to read an ordinal log file:

1. If you want to begin reading a file from a particular record or from the first record, use either the Set-File-Position request with the desired record sequence number, or the Reset-File-Position request. Preset a section number and channel ID to zero.
2. Write the Read-File request with a section number and channel ID set to zero.
3. Read the record data from the file response block.
4. Write an acknowledgment for the file. You need not fill all the request fields: only the file function is required. The file pointer will be moved to the next file record.

Repeat steps 3-4 until all the file records are read.

Reading Multi-section Data Log Files

In a multi-section data log file, all user requests including an acknowledgment, the Read-File, Set-File-Position and Reset-File-Position requests, relate to a particular file

section rather than to the file itself. The only request that affects the entire file is the Erase-File that clears all the file sections together.

A file section can be requested either by a section number, or by a section channel ID. If you use a channel ID, preset the section number field to 0xFFFF. If a section number is specified, the channel ID field will not be checked. The device returns both fields in the response block heading, so you can always identify what channel data is being read from the present file section. If you want to know which channels are recorded to the file sections, check the file channel mask in the file info block. This is a bitmap that contains one in a bit position if a channel with an ID equal to the bit number is recorded to the file, and contains zero if it is not.

The following gives a summary of steps for reading a multi-section data log file:

5. If you wish to begin reading a file section from a particular record or from the first record, use either the Set-File-Position request with the desired record sequence number, or the Reset-File-Position request. Specify either a section number, or the channel ID for the section from where you want to read data. If you use a channel ID, preset the section number field to 0xFFFF.
6. Write the Read-File request with the section number and channel ID as shown in the previous step.
7. Read the record data from the file response block.
8. Write an acknowledgment for the file. The file section pointer will be moved to the next record.

Repeat steps 3-4 until all the section records are read.

Reading Multi-section Waveform Files

Waveform files can be read as conventional multi-section files in the order described above. Another way is to take advantage of the fact that waveform files have a single read pointer for all file sections, so you can read records of all the channels related to the same event at once without repositioning the file pointer. The following gives a summary of steps for reading waveform files:

1. If you want to begin reading a file from a particular record or from the first record, use either the Set-File-Position request with the desired record sequence number, or the Reset-File-Position request. Preset the section field to zero.
2. Write the Read-File request. Address you request to the first file section (its number is always zero), or to the first file channel (if you know channel's ID). If you use a channel ID, preset the section number field to 0xFFFF.
3. Read the channel's data from the file response block. Store the received record's sequence number.
4. Write the Read-File request for the next file section or channel using the stored record sequence number. The file response block will be refilled with the data for the requested channel that is related to the record with the same sequence number.
5. Repeat steps 3, 4 until all the channel records with the current sequence number are read.
6. Write an acknowledgment. The file pointer will be moved to the next record.

Repeat steps 2-6 until all the file records are read.

Reading Real-time Waveforms

Real-time waveforms are accessed through the same transfer blocks just like the waveform log files by addressing file 128. Writing the Read-File request for file 128 provides a simultaneous capture of 6 real-time waveform records – three voltage and three current waveforms – into a communication buffer that can be read through the common file response block. The following gives a summary of steps for reading real-time waveforms:

1. Write the Read-File request for file 128. Address you request to the first file section (its number is always zero), or to the first file channel (if you know channel's ID). If you use a channel ID, preset the section number field to 0xFFFF.
2. Read the channel's data from the file response block.
3. Write the Read-File request for the next file section or channel. The file response block will be refilled with the data for the requested channel.
4. Repeat steps 3, 4 until all the channel records are read.

Write an acknowledgment to release the buffer.

2.10 TCP Notification Client

The TCP notification client can establish connections with a remote Modbus/TCP server and send notification messages either on events, or periodically on a time basis.

Notification messages are sent via a block of 24 Modbus registers using write function 16. The following table shows the message exchange structure.

Modbus Register Offset	Description	Type	Comment
+0-1	Device serial number	UINT32	
+2-4	Device MAC address	CHAR6	
+5	Device address	UINT16	1 for Ethernet, COM5 port address for GPRS
+6-7	Device IP address	UINT32	Network byte order
+8	Event type	UINT16	See F22 in Section 5
+9	Event sequence number	UINT16	
+10-11	Start event timestamp, seconds	UINT32	Local time since Jan 1, 1970
+12-13	Start event timestamp, seconds fraction, in microseconds	UINT32	
+14-15	End event timestamp, seconds	UINT32	Local time since Jan 1, 1970
+16-17	End event timestamp, seconds fraction, in microseconds	UINT32	
+18	Not used	UINT16	Written as 0
+19	Critical trigger ID	UINT16	See Table below
+20-21	Critical trigger value	UINT32	See Table below
+22-23	Reserved	UINT32	Written as 0

The reported trigger type and value depend on the event source and are described in the following table.

Event Source	Trigger Type	Trigger Value
Setpoint events	Critical setpoint trigger caused setpoint operation or release (see F12 in Section 5)	Trigger entering or return value
PQ events	PQ event trigger. For polyphase events, the worst phase is reported (see Generic Data in Section 3.4)	Maximum fault magnitude on the reported phase
Fault events	Current phase with highest recorded fault current (see Generic Data in Section 3.4)	Maximum fault current magnitude on the reported phase

After receiving a write acknowledgement from a server, a TCP connection is still open for 10 seconds (20 seconds via GPRS) to give the server an opportunity to access meter registers through an open socket. It may help you access the meter from outside your local network when the server is located on another network, or when using wireless GPRS communications. The notification client will respond to all server requests as if it were a regular incoming connection.

In case a client connection is not used for following data transfers, it is recommended for the server to close the connection immediately after sending a write acknowledgement; otherwise there will be a 10-second delay before the next notification may be sent.

If there is no activity on the connection socket, it will be closed in 10 seconds. In the event a connection attempt was unsuccessful, the notification client retries two more times before announcing a connection failure.

The server's IP address, port number and starting Modbus register address are programmable in the meter. To configure and enable the notification client in your meter via PAS, select Communication Setup in the Meter Setup menu, and click on the TCP Notification Client Setup tab.

Client connections are triggered via programmable setpoints. To send event notifications to a server, configure a setpoint to respond to desired triggers or to periodic time events and add the "Send notification" action to the end of the setpoint actions list.

Setpoint operation events triggered by regular analog and digital triggers are reported twice - when the event starts and when it ends, except of the pulsed events and time triggers that will be reported once. In the start notification message, the event end timestamp is zeroed, and the critical trigger value indicates its entering value, while the second notification message gives both the event start and end time and shows the trigger return value.

In case of triggering notifications with events generated by the PQ and Fault recorders, like the PQ EVENT, FAULT EVENT, EXTERNAL TRIGGER or FAULT DETECTED triggers, the recorded power quality or/and corresponding fault events are reported instead of setpoint-triggered notifications. Notification messages contain the fault event start and end time, a critical phase and the maximum fault magnitude on the reported phase. If regular triggers are added to the setpoint triggers list, then the setpoint operation events will also be reported.

3 Modbus Register Map

3.1 Modbus Setup Registers

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
Modbus Assignable Registers							
0-119							
+0		Register 0 contents	0-65535		UINT16	R/W	
+1		Register 1 contents	0-65535		UINT16	R/W	
		…					
+119		Register 119 contents	0-65535		UINT16	R/W	
Assignable Registers Map							
120-239							
+0		Register 0 address	0-65535		UINT16	R/W	
+1		Register 1 address	0-65535		UINT16	R/W	
+119		Register 119 address	0-65535		UINT16	R/W	
Modbus Conversion Scales							
240		Low raw scale	0-65535 (default 0)		UINT16	R/W	
241		High raw scale	1023-65535 (default 9999)		UINT16	R/W	
242		Voltage scale, secondary volts	60-828 (default 828V)	1V	UINT16	R/W	
243		Current scale, secondary amps	10-200 (default CT secondary current x Current Overload)	×0.1A	UINT16	R/W	

3.2 16-bit Scaled Analog Values - Basic Register Set

Address	Point ID	Description	Low and High Scales[2]	Units[2]	Type	R/W	Notes
256-308		**1-Second Values**					
+0	0x1100	V1/V12 voltage	0-Vmax	U1	UINT16	R	1
+1	0x1101	V2/V23 voltage	0-Vmax	U1	UINT16	R	1
+2	0x1102	V3/V31 voltage	0-Vmax	U1	UINT16	R	1
+3	0x1103	I1 current	0-Imax	U2	UINT16	R	
+4	0x1104	I2 current	0-Imax	U2	UINT16	R	
+5	0x1105	I3 current	0-Imax	U2	UINT16	R	
+6	0x1106	kW L1	-Pmax-Pmax	U3	INT16	R	
+7	0x1107	kW L2	-Pmax-Pmax	U3	INT16	R	
+8	0x1108	kW L3	-Pmax-Pmax	U3	INT16	R	
+9	0x1109	kvar L1	-Pmax-Pmax	U3	INT16	R	
+10	0x110A	kvar L2	-Pmax-Pmax	U3	INT16	R	
+11	0x110B	kvar L3	-Pmax-Pmax	U3	INT16	R	
+12	0x110C	kVA L1	-Pmax-Pmax	U3	UINT16	R	
+13	0x110D	kVA L2	-Pmax-Pmax	U3	UINT16	R	
+14	0x110E	kVA L3	-Pmax-Pmax	U3	UINT16	R	
+15	0x110F	Power factor L1	-1.000-1.000	0.001	INT16	R	
+16	0x1110	Power factor L2	-1.000-1.000	0.001	INT16	R	
+17	0x1111	Power factor L3	-1.000-1.000	0.001	INT16	R	
+18	0x1403	Total PF	-1.000-1.000	0.001	INT16	R	
+19	0x1400	Total kW	-Pmax-Pmax	U3	INT16	R	
+20	0x1401	Total kvar	-Pmax-Pmax	U3	INT16	R	
+21	0x1402	Total kVA	-Pmax-Pmax	U3	UINT16	R	
+22	0x1501	In current	0-Imax	U2	UINT16	R	
+23	0x1502	Frequency	45.00-65.00	0.01Hz	UINT16	R	
+24	0x3709	Maximum kW import sliding window demand	-Pmax-Pmax	U3	UINT16	R	
+25	0x160F	kW import accumulated demand	-Pmax-Pmax	U3	UINT16	R	
+26	0x370B	Maximum kVA sliding window demand	-Pmax-Pmax	U3	UINT16	R	
+27	0x1611	kVA accumulated demand	-Pmax-Pmax	U3	UINT16	R	
+28	0x3703	I1 Maximum ampere demand	-Pmax-Pmax	U2	UINT16	R	
+29	0x3704	I2 Maximum ampere demand	-Pmax-Pmax	U2	UINT16	R	
+30	0x3705	I3 Maximum ampere demand	-Pmax-Pmax	U2	UINT16	R	
+31		kWh import (low)	0-9999	U5	UINT16	R	6
+32		kWh import (high)	0-9999	U5×10,000	UINT16	R	6
+33		kWh export (low)	0-9999	U5	UINT16	R	6
+34		kWh export (high)	0-9999	U5×10,000	UINT16	R	6
+35		+kvarh net (low)	0-9999	U5	UINT16	R	4, 6
+36		+kvarh net (high)	0-9999	U5×10,000	UINT16	R	4, 6
+37		-kvarh net (low)	0-9999	U5	UINT16	R	5, 6

Address	Point ID	Description	Low and High Scales[2]	Units[2]	Type	R/W	Notes
+38		-kvarh net (high)	0-9999	U5×10,000	UINT16	R	5, 6
+39	0x1112	V1/V12 voltage THD	0-999.9	0.1%	UINT16	R	3
+40	0x1113	V2/V23 voltage THD	0-999.9	0.1%	UINT16	R	3
+41	0x1114	V3/V31 voltage THD	0-999.9	0.1%	UINT16	R	3
+42	0x1115	I1 current THD	0-999.9	0.1%	UINT16	R	3
+43	0x1116	I2 current THD	0-999.9	0.1%	UINT16	R	3
+44	0x1117	I3 current THD	0-999.9	0.1%	UINT16	R	3
+45		kVAh (low)	0-9999	U5	UINT16	R	6
+46		kVAh (high)	0-9999	U5×10,000	UINT16	R	6
+47	0x1609	Present kW import sliding window demand	-Pmax-Pmax	U3	UINT16	R	
+48	0x160B	Present kVA sliding window demand	-Pmax-Pmax	U3	UINT16	R	
+49	0x1615	PF (import) at Max. kVA sliding window demand	0-1.000	0.001	UINT16	R	
+50	0x111B	I1 current TDD	0-100.0	0.1%	UINT16	R	3
+51	0x111C	I2 current TDD	0-100.0	0.1%	UINT16	R	3
+52	0x111D	I3 current TDD	0-100.0	0.1%	UINT16	R	3

NOTES:

1 When the 4LN3, 3LN3 or 3BLN3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

2 For volts, amps and power scales refer to Chapter 4 ”Data Scales and Units”.

3 On a 3-s interval.

4 Positive readings of kvarh net

5 Negative readings of kvarh net

6 If you use these energy registers instead of 32-bit registers, limit the energy roll value to 8 digits (see Advanced Device Setup) to avoid early overflow.

3.3 16-bit Scaled Analog Values

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
4320-4344		**1/2-Cycle Values**					
+0	0x0B80	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x0B81	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x0B82	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x0B83	V4 voltage	0-V4max	U4	UINT16	R	
+4	0x0B84	V12 voltage	0-Vmax	U1	UINT16	R	
+5	0x0B85	V23 voltage	0-Vmax	U1	UINT16	R	
+6	0x0B86	V31 voltage	0-Vmax	U1	UINT16	R	
+7	0x0B87	I1 current	0-Imax	U2	UINT16	R	
+8	0x0B88	I2 current	0-Imax	U2	UINT16	R	
+9	0x0B89	I3 current	0-Imax	U2	UINT16	R	
+10	0x0B8A	I4 current	0-I4max	U2	UINT16	R	
+11	0x0B8B	In current	0-Imax	U2	UINT16	R	
+12	0x0B8C	I1x current	0-Ixmax	U2	UINT16	R	
+13	0x0B8D	I2x current	0-Ixmax	U2	UINT16	R	
+14	0x0B8E	I3x current	0-Ixmax	U2	UINT16	R	
+15	0x0B8F	I4x current	0-I4xmax	U2	UINT16	R	
+16	0x0B90	Inx current	0-Ixmax	U2	UINT16	R	
+17	0x0B91	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x0B92	Zero-sequence current	0-Imax	U2	UINT16	R	
+19	0x0B93	Ix Zero-sequence current	0-Ixmax	U2	UINT16	R	
+20	0x0B94	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+21	0x0B95	Current unbalance	0-300.0	0.1%	UINT16	R	
+22	0x0B96	Ix current unbalance	0-300.0	0.1%	UINT16	R	
+23	0x0B97	Not used	0	0	UINT16	R	
+24	0x0B98	Frequency (1-cycle)	0-100.00	0.01Hz	UINT16	R	
4352-4387		**1-Cycle Phase Values**					
+0	0x0C00	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x0C01	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x0C02	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x0C03	I1 current	0-Imax	U2	UINT16	R	
+4	0x0C04	I2 current	0-Imax	U2	UINT16	R	
+5	0x0C05	I3 current	0-Imax	U2	UINT16	R	
+6	0x0C06	kW L1	-Pmax-Pmax	U3	INT16	R	
+7	0x0C07	kW L2	-Pmax-Pmax	U3	INT16	R	
+8	0x0C08	kW L3	-Pmax-Pmax	U3	INT16	R	
+9	0x0C09	kvar L1	-Pmax-Pmax	U3	INT16	R	
+10	0x0C0A	kvar L2	-Pmax-Pmax	U3	INT16	R	
+11	0x0C0B	kvar L3	-Pmax-Pmax	U3	INT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+12	0x0C0C	kVA L1	0-Pmax	U3	UINT16	R	
+13	0x0C0D	kVA L2	0-Pmax	U3	UINT16	R	
+14	0x0C0E	kVA L3	0-Pmax	U3	UINT16	R	
+15	0x0C0F	Power factor L1	-1.000-1.000	0.001	INT16	R	
+16	0x0C10	Power factor L2	-1.000-1.000	0.001	INT16	R	
+17	0x0C11	Power factor L3	-1.000-1.000	0.001	INT16	R	
+18	0x0C12	V1 voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+19	0x0C13	V2 voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+20	0x0C14	V3 voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+21	0x0C15	I1 current THD	0-999.9	0.1%	UINT16	R	4
+22	0x0C16	I2 current THD	0-999.9	0.1%	UINT16	R	4
+23	0x0C17	I3 current THD	0-999.9	0.1%	UINT16	R	4
+24	0x0C18	I1 K-Factor	1.0-999.9	0.1	UINT16	R	4
+25	0x0C19	I2 K-Factor	1.0-999.9	0.1	UINT16	R	4
+26	0x0C1A	I3 K-Factor	1.0-999.9	0.1	UINT16	R	4
+27	0x0C1B	I1 current TDD	0-100.0	0.1%	UINT16	R	4
+28	0x0C1C	I2 current TDD	0-100.0	0.1%	UINT16	R	4
+29	0x0C1D	I3 current TDD	0-100.0	0.1%	UINT16	R	4
+30	0x0C1E	V12 voltage	0-Vmax	U1	UINT16	R	
+31	0x0C1F	V23 voltage	0-Vmax	U1	UINT16	R	
+32	0x0C20	V31 voltage	0-Vmax	U1	UINT16	R	
+33	0x0C21	I1x current	0-Ixmax	U2	UINT16	R	
+34	0x0C22	I2x current	0-Ixmax	U2	UINT16	R	
+35	0x0C23	I3x current	0-Ixmax	U2	UINT16	R	
4416-4429		**1-Cycle Low Phase Values**					
+0	0x0D00	Low L-N voltage	0-Vmax	U1	UINT16	R	
+1	0x0D01	Low current	0-Imax	U2	UINT16	R	
+2	0x0D02	Low kW	-Pmax-Pmax	U3	INT16	R	
+3	0x0D03	Low kvar	-Pmax-Pmax	U3	INT16	R	
+4	0x0D04	Low kVA	0-Pmax	U3	UINT16	R	
+5	0x0D05	Low PF Lag	0-1.000	0.001	UINT16	R	
+6	0x0D06	Low PF Lead	0-1.000	0.001	UINT16	R	
+7	0x0D07	Low voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+8	0x0D08	Low current THD	0-999.9	0.1%	UINT16	R	4
+9	0x0D09	Low K-Factor	1.0-999.9	0.1	UINT16	R	4
+10	0x0D0A	Low current TDD	0-100.0	0.1%	UINT16	R	4
+11	0x0D0B	Low L-L voltage	0-Vmax	U1	UINT16	R	
+12	0x0D0C	Low voltage interharmonics THD	0-999.9	0.1%	UINT16	R	2, 4
+13	0x0D0D	Low current interharmonics THD	0-999.9	0.1%	UINT16	R	4
4448-4463		**1/2-Cycle Analog Inputs**					
+0	0x0D80	Analog input AI1	AI1min-AI1max		UINT16	R	
+1	0x0D81	Analog input AI2	AI2min-AI2max		UINT16	R	
		...					

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+15	0x0D8F	Analog input AI16	AI16min-AI16max		UINT16	R	
4480-4493		**1-Cycle High Phase Values**					
+0	0x0E00	High L-N voltage	0-Vmax	U1	UINT16	R	
+1	0x0E01	High current	0-Imax	U2	UINT16	R	
+2	0x0E02	High kW	-Pmax-Pmax	U3	INT16	R	
+3	0x0E03	High kvar	-Pmax-Pmax	U3	INT16	R	
+4	0x0E04	High kVA	0-Pmax	U3	UINT16	R	
+5	0x0E05	High PF Lag	0-1.000	0.001	UINT16	R	
+6	0x0E06	High PF Lead	0-1.000	0.001	UINT16	R	
+7	0x0E07	High voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+8	0x0E08	High current THD	0-999.9	0.1%	UINT16	R	4
+9	0x0E09	High K-Factor	1.0-999.9	0.1	UINT16	R	4
+10	0x0E0A	High current TDD	0-100.0	0.1%	UINT16	R	4
+11	0x0E0B	High L-L voltage	0-Vmax	U1	UINT16	R	
+12	0x0E0C	High voltage interharmonics THD	0-999.9	0.1%	UINT16	R	2, 4
+13	0x0E0D	High current interharmonics THD	0-999.9	0.1%	UINT16	R	4
4512-4527		**1-Second Analog Inputs**					
+0	0x0E80	Analog input AI1	AI1min-AI1max		UINT16	R	
+1	0x0E81	Analog input AI2	AI2min-AI2max		UINT16	R	
		...					
+15	0x0E8F	Analog input AI16	AI16min-AI16max		UINT16	R	
4544-4557		**1-Cycle Total Values**					
+0	0x0F00	Total kW	-Pmax-Pmax	U3	INT16	R	
+1	0x0F01	Total kvar	-Pmax-Pmax	U3	INT16	R	
+2	0x0F02	Total kVA	0-Pmax	U3	UINT16	R	
+3	0x0F03	Total PF	-1.000-1.000	0.001	INT16	R	
+4	0x0F04	Total PF lag	0-1.000	0.001	UINT16	R	
+5	0x0F05	Total PF lead	0-1.000	0.001	UINT16		
+6	0x0F06	Total kW import	0-Pmax	U3	UINT16		
+7	0x0F07	Total kW export	0-Pmax	U3	UINT16	R	
+8	0x0F08	Total kvar import	0-Pmax	U3	UINT16	R	
+9	0x0F09	Total kvar export	0-Pmax	U3	UINT16	R	
+10	0x0F0A	3-phase average L-N voltage	0-Vmax	U1	UINT16	R	
+11	0x0F0B	3-phase average L-L voltage	0-Vmax	U1	UINT16	R	
+12	0x0F0C	3-phase average current	0-Imax	U2	UINT16	R	
+13	0x0F0D	3-phase average current, extended inputs I1x-I3x	0-Ixmax	U2	UINT16	R	
4608-4616		**1-Cycle Auxiliary Values**					
+0	0x1000	I4 current	0-I4max	U2	UINT16	R	
+1	0x1001	In current	0-Imax	U2	UINT16	R	
+2	0x1002	Frequency	0-100.00	0.01Hz	UINT16	R	
+3	0x1003	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+4	0x1004	Current unbalance	0-300.0	0.1%	UINT16	R	
+5	0x1005	Not used			UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+6	0x1006	V4 voltage	0-V4max	U4	UINT16	R	
+7	0x1007	I4x current	0-I4xmax	U2	UINT16	R	
+8	0x1008	Frequency	0-100.000	0.001Hz	UINT16	R	
4640-4655		**Fundamental Phasor Values**					
+0	0x1080	V1 voltage magnitude	0-Vmax	U1	UINT16	R	2
+1	0x1081	V2 voltage magnitude	0-Vmax	U1	UINT16	R	2
+2	0x1082	V3 voltage magnitude	0-Vmax	U1	UINT16	R	2
+3	0x1083	V4 voltage magnitude	0-V4max	U1	UINT16	R	
+4	0x1084	I1 current magnitude	0-Imax	U2	UINT16	R	
+5	0x1085	I2 current magnitude	0-Imax	U2	UINT16	R	
+6	0x1086	I3 current magnitude	0-Imax	U2	UINT16	R	
+7	0x1087	I4 current magnitude	0-Imax	U2	UINT16	R	
+8	0x1088	V1 voltage angle	-180.0-180.0	0.1º	INT16	R	2
+9	0x1089	V2 voltage angle	-180.0-180.0	0.1º	INT16	R	2
+10	0x108A	V3 voltage angle	-180.0-180.0	0.1º	INT16	R	2
+11	0x108B	V4 voltage angle	-180.0-180.0	0.1º	INT16	R	
+12	0x108C	I1 current angle	-180.0-180.0	0.1º	INT16	R	
+13	0x108D	I2 current angle	-180.0-180.0	0.1º	INT16	R	
+14	0x108E	I3 current angle	-180.0-180.0	0.1º	INT16	R	
+15	0x108F	I4 current angle	-180.0-180.0	0.1º	INT16	R	
4672-4710		**1-Second Phase Values**					
+0	0x1100	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x1101	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x1102	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x1103	I1 current	0-Imax	U2	UINT16	R	
+4	0x1104	I2 current	0-Imax	U2	UINT16	R	
+5	0x1105	I3 current	0-Imax	U2	UINT16	R	
+6	0x1106	kW L1	-Pmax-Pmax	U3	INT16	R	
+7	0x1107	kW L2	-Pmax-Pmax	U3	INT16	R	
+8	0x1108	kW L3	-Pmax-Pmax	U3	INT16	R	
+9	0x1109	kvar L1	-Pmax-Pmax	U3	INT16	R	
+10	0x110A	kvar L2	-Pmax-Pmax	U3	INT16	R	
+11	0x110B	kvar L3	-Pmax-Pmax	U3	INT16	R	
+12	0x110C	kVA L1	0-Pmax	U3	UINT16	R	
+13	0x110D	kVA L2	0-Pmax	U3	UINT16	R	
+14	0x110E	kVA L3	0-Pmax	U3	UINT16	R	
+15	0x110F	Power factor L1	-1.000-1.000	0.001	INT16	R	
+16	0x1110	Power factor L2	-1.000-1.000	0.001	INT16	R	
+17	0x1111	Power factor L3	-1.000-1.000	0.001	INT16	R	
+18	0x1112	V1 voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+19	0x1113	V2 voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+20	0x1114	V3 voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+21	0x1115	I1 current THD	0-999.9	0.1%	UINT16	R	5

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+22	0x1116	I2 current THD	0-999.9	0.1%	UINT16	R	5
+23	0x1117	I3 current THD	0-999.9	0.1%	UINT16	R	5
+24	0x1118	I1 K-Factor	1.0-999.9	0.1	UINT16	R	5
+25	0x1119	I2 K-Factor	1.0-999.9	0.1	UINT16	R	5
+26	0x111A	I3 K-Factor	1.0-999.9	0.1	UINT16	R	5
+27	0x111B	I1 current TDD	0-100.0	0.1%	UINT16	R	5
+28	0x111C	I2 current TDD	0-100.0	0.1%	UINT16	R	5
+29	0x111D	I3 current TDD	0-100.0	0.1%	UINT16	R	5
+30	0x111E	V12 voltage	0-Vmax	U1	UINT16	R	
+31	0x111F	V23 voltage	0-Vmax	U1	UINT16	R	
+32	0x1120	V31 voltage	0-Vmax	U1	UINT16	R	
+33	0x1121	I1x current	0-Ixmax	U2	UINT16	R	
+34	0x1122	I2x current	0-Ixmax	U2	UINT16	R	
+35	0x1123	I3x current	0-Ixmax	U2	UINT16	R	
+36	0x1124	V1x Voltage	0-Vmax	U1	UINT16	R	Transient recorder V1 channel
+37	0x1125	V2x Voltage	0-Vmax	U1	UINT16	R	Transient recorder V2 channel
+38	0x1126	V3x Voltage	0-Vmax	U1	UINT16	R	Transient recorder V3 channel
4736-4749		**1-Second Low Phase Values**					
+0	0x1200	Low L-N voltage	0-Vmax	U1	UINT16	R	
+1	0x1201	Low current	0-Imax	U2	UINT16	R	
+2	0x1202	Low kW	-Pmax-Pmax	U3	INT16	R	
+3	0x1203	Low kvar	-Pmax-Pmax	U3	INT16	R	
+4	0x1204	Low kVA	0-Pmax	U3	UINT16	R	
+5	0x1205	Low PF Lag	0-1.000	0.001	UINT16	R	
+6	0x1206	Low PF Lead	0-1.000	0.001	UINT16	R	
+7	0x1207	Low voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+8	0x1208	Low current THD	0-999.9	0.1%	UINT16	R	5
+9	0x1209	Low K-Factor	1.0-999.9	0.1	UINT16	R	5
+10	0x120A	Low current TDD	0-100.0	0.1%	UINT16	R	5
+11	0x120B	Low L-L voltage	0-Vmax	U1	UINT16	R	
+12	0x120C	Low voltage interharmonics THD	0-999.9	0.1%	UINT16	R	2, 5
+13	0x120D	Low current interharmonics THD	0-999.9	0.1%	UINT16	R	5
4768-4783		**3-Second Powers**					
+0	0x1280	kW L1	-Pmax-Pmax	U3	INT16	R	
+1	0x1281	kW L2	-Pmax-Pmax	U3	INT16	R	
+2	0x1282	kW L3	-Pmax-Pmax	U3	INT16	R	
+3	0x1283	kvar L1	-Pmax-Pmax	U3	INT16	R	
+4	0x1284	kvar L2	-Pmax-Pmax	U3	INT16	R	
+5	0x1285	kvar L3	-Pmax-Pmax	U3	INT16	R	
+6	0x1286	kVA L1	0-Pmax	U3	UINT16	R	
+7	0x1287	kVA L2	0-Pmax	U3	UINT16	R	
+8	0x1288	kVA L3	0-Pmax	U3	UINT16	R	
+9	0x1289	Power factor L1	-1.000-1.000	0.001	INT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+10	0x128A	Power factor L2	-1.000-1.000	0.001	INT16	R	
+11	0x128B	Power factor L3	-1.000-1.000	0.001	INT16	R	
+12	0x128C	Total kW	-Pmax-Pmax	U3	INT16	R	
+13	0x128D	Total kvar	-Pmax-Pmax	U3	INT16	R	
+14	0x128E	Total kVA	0-Pmax	U3	UINT16	R	
+15	0x128F	Total PF	-1.000-1.000	0.001	INT16	R	
4800-4813		**1-Second High Phase Values**					
+0	0x1300	High L-N voltage	0-Vmax	U1	UINT16	R	
+1	0x1301	High current	0-Imax	U2	UINT16	R	
+2	0x1302	High kW	-Pmax-Pmax	U3	INT16	R	
+3	0x1303	High kvar	-Pmax-Pmax	U3	INT16	R	
+4	0x1304	High kVA	0-Pmax	U3	UINT16	R	
+5	0x1305	High PF Lag	0-1.000	0.001	UINT16	R	
+6	0x1306	High PF Lead	0-1.000	0.001	UINT16	R	
+7	0x1307	High voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+8	0x1308	High current THD	0-999.9	0.1%	UINT16	R	5
+9	0x1309	High K-Factor	1.0-999.9	0.1	UINT16	R	5
+10	0x130A	High current TDD	0-100.0	0.1%	UINT16	R	5
+11	0x130B	High L-L voltage	0-Vmax	U1	UINT16	R	
+12	0x130C	High voltage interharmonics THD	0-999.9	0.1%	UINT16	R	2, 5
+13	0x130D	High current interharmonics THD	0-999.9	0.1%	UINT16	R	5
4864-4877		**1-Second Total Values**					
+0	0x1400	Total kW	-Pmax-Pmax	U3	INT16	R	
+1	0x1401	Total kvar	-Pmax-Pmax	U3	INT16	R	
+2	0x1402	Total kVA	0-Pmax	U3	UINT16	R	
+3	0x1403	Total PF	-1.000-1.000	0.001	INT16	R	
+4	0x1404	Total PF lag	0-1.000	0.001	UINT16	R	
+5	0x1405	Total PF lead	0-1.000	0.001	UINT16		
+6	0x1406	Total kW import	0-Pmax	U3	UINT16		
+7	0x1407	Total kW export	0-Pmax	U3	UINT16	R	
+8	0x1408	Total kvar import	0-Pmax	U3	UINT16	R	
+9	0x1409	Total kvar export	0-Pmax	U3	UINT16	R	
+10	0x140A	3-phase average L-N voltage	0-Vmax	U1	UINT16	R	
+11	0x140B	3-phase average L-L voltage	0-Vmax	U1	UINT16	R	
+12	0x140C	3-phase average current	0-Imax	U2	UINT16	R	
+13	0x140D	3-phase average current, extended inputs I1x-I3x	0-Ixmax	U2	UINT16	R	
4928-4938		**1-Second Auxiliary Values**					
+0	0x1500	I4 current	0-I4max	U2	UINT16	R	
+1	0x1501	In current	0-Imax	U2	UINT16	R	
+2	0x1502	Frequency	0-100.00	0.01Hz	UINT16	R	
+3	0x1503	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+4	0x1504	Current unbalance	0-300.0	0.1%	UINT16	R	
+5	0x1505	Not used			UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+6	0x1506	V4 voltage	0-V4max	U4	UINT16	R	
+7	0x1507	I4x current	0-I4xmax	U2	UINT16	R	
+8	0x1508	V4x (neutral-ground) voltage	0-Vmax	U1	UINT16	R	Transient recorder Vn channel
+9	0x1509	Internal temperature	-200.0 to 200.0	0.1ºC	UINT16	R	
+10	0x150A	Frequency	0-100.000	0.001Hz	UINT16	R	
4960-4971		**Present Harmonic Demands**					
+0	0x1580	V1 THD demand	0-999.9	0.1%	UINT16	R	2
+1	0x1581	V2 THD demand	0-999.9	0.1%	UINT16	R	2
+2	0x1582	V3 THD demand	0-999.9	0.1%	UINT16	R	2
+3	0x1583	V4 THD demand	0-999.9	0.1%	UINT16	R	
+4	0x1584	I1 THD demand	0-999.9	0.1%	UINT16	R	
+5	0x1585	I2 THD demand	0-999.9	0.1%	UINT16	R	
+6	0x1586	I3 THD demand	0-999.9	0.1%	UINT16	R	
+7	0x1587	I4 THD demand	0-999.9	0.1%	UINT16	R	
+8	0x1588	I1 TDD demand	0-100.0	0.1%	UINT16	R	
+9	0x1589	I2 TDD demand	0-100.0	0.1%	UINT16	R	
+10	0x158A	I3 TDD demand	0-100.0	0.1%	UINT16	R	
+11	0x158B	I4 TDD demand	0-100.0	0.1%	UINT16	R	
4992-5026		**Present Demands**					
+0	0x1600	V1 Volt demand	0-Vmax	U1	UINT16	R	2
+1	0x1601	V2 Volt demand	0-Vmax	U1	UINT16	R	2
+2	0x1602	V3 Volt demand	0-Vmax	U1	UINT16	R	2
+3	0x1603	I1 Ampere demand	0-Imax	U2	UINT16	R	
+4	0x1604	I2 Ampere demand	0-Imax	U2	UINT16	R	
+5	0x1605	I3 Ampere demand	0-Imax	U2	UINT16	R	
+6	0x1606	kW import block demand	0-Pmax	U3	UINT16	R	
+7	0x1607	kvar import block demand	0-Pmax	U3	UINT16	R	
+8	0x1608	kVA block demand	0-Pmax	U3	UINT16	R	
+9	0x1609	kW import sliding window demand	0-Pmax	U3	UINT16	R	
+10	0x160A	kvar import sliding window demand	0-Pmax	U3	UINT16	R	
+11	0x160B	kVA sliding window demand	0-Pmax	U3	UINT16	R	
+12	0x160C	Not used	0		UINT16	R	
+13	0x160D	Not used	0		UINT16	R	
+14	0x160E	Not used	0		UINT16	R	
+15	0x160F	kW import accumulated demand	0-Pmax	U3	UINT16	R	
+16	0x1610	kvar import accumulated demand	0-Pmax	U3	UINT16	R	
+17	0x1611	kVA accumulated demand	0-Pmax	U3	UINT16	R	
+18	0x1612	kW import predicted sliding window demand	0-Pmax	U3	UINT16	R	
+19	0x1613	kvar import predicted sliding window demand	0-Pmax	U3	UINT16	R	
+20	0x1614	kVA predicted sliding window demand	0-Pmax	U3	UINT16	R	
+21	0x1615	PF (import) at Max. kVA sliding window demand	0-1.000	0.001	UINT16	R	
+22	0x1616	kW export block demand	0-Pmax	U3	UINT16	R	
+23	0x1617	kvar export block demand	0-Pmax	U3	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+24	0x1618	kW export sliding window demand	0-Pmax	U3	UINT16	R	
+25	0x1619	kvar export sliding window demand	0-Pmax	U3	UINT16	R	
+26	0x161A	kW export accumulated demand	0-Pmax	U3	UINT16	R	
+27	0x161B	kvar export accumulated demand	0-Pmax	U3	UINT16	R	
+28	0x161C	kW export predicted sliding window demand	0-Pmax	U3	UINT16	R	
+29	0x161D	kvar export predicted sliding window demand	0-Pmax	U3	UINT16	R	
+30	0x161E	Not used	0		UINT16	R	
+31	0x161F	Not used	0		UINT16	R	
+32	0x1620	V4 volt demand	0-Vmax	U4	UINT16	R	
+33	0x1621	I4 ampere demand	0-Imax	U2	UINT16	R	
+34	0x1622	In ampere demand	0-Imax	U2	UINT16	R	
5152-5161		**Symmetrical Components**					
+0	0x1880	Positive-sequence voltage	0-Vmax	U1	UINT16	R	
+1	0x1881	Negative-sequence voltage	0-Vmax	U1	UINT16	R	
+2	0x1882	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+3	0x1883	Negative-sequence voltage unbalance	0-300.0	0.1%	UINT16	R	
+4	0x1884	Zero-sequence voltage unbalance	0-300.0	0.1%	UINT16	R	
+5	0x1885	Positive-sequence current	0-Imax	U2	UINT16	R	
+6	0x1886	Negative-sequence current	0-Imax	U2	UINT16	R	
+7	0x1887	Zero-sequence current	0-Imax	U2	UINT16	R	
+8	0x1888	Negative-sequence current unbalance	0-300.0	0.1%	UINT16	R	
+9	0x1889	Zero-sequence current unbalance	0-300.0	0.1%	UINT16	R	
5184-5246		**V1 Harmonics**					2, 7
+0	0x1900	H01 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
+1	0x1901	H02 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
		…					
+62	0x193E	H63 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
5248-5310		**V2 Harmonics**					2, 7
+0	0x1A00	H01 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
+1	0x1A01	H02 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
		…					
+62	0x1A3E	H63 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
5312-5374		**V3 Harmonics**					2, 7
+0	0x1B00	H01 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
+1	0x1B01	H02 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
		…					
+62	0x1B3E	H63 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
6144-6206		**V4 Harmonics**					7
+0	0x2800	H01 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
+1	0x2801	H02 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
		…					
+62	0x283E	H63 Harmonic magnitude	0-100.00	0.01%	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
5376-5438		**I1 Harmonics**					7
+0	0x1C00	H01 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
+1	0x1C01	H02 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
		…					
+62	0x1C3E	H63 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
5440-5502		**I2 Harmonics**					7
+0	0x1D00	H01 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
+1	0x1D01	H02 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
		…					
+62	0x1D3E	H63 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
5504-5566		**I3 Harmonics**					7
+0	0x1E00	H01 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
+1	0x1E01	H02 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
		…					
+62	0x1E3E	H63 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
6336-6398		**I4 Harmonics**					7
+0	0x2B00	H01 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
+1	0x2B01	H02 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
		…					
+62	0x2B3E	H63 Harmonic magnitude	0-100.00	0.01%	UINT16	R	
5568-5599		**V1 Harmonic Voltages (odd harmonics)**					2
+0	0x1F00	H01 Harmonic voltage	0-Vmax	U1	UINT16	R	
+1	0x1F01	H03 Harmonic voltage	0-Vmax	U1	UINT16	R	
		…					
+31	0x1F1E	H63 Harmonic voltage	0-Vmax	U1	UINT16	R	
5632-5663		**V2 Harmonic Voltages (odd harmonics)**					2
+0	0x2000	H01 Harmonic voltage	0-Vmax	U1	UINT16	R	
+1	0x2001	H03 Harmonic voltage	0-Vmax	U1	UINT16	R	
		…					
+31	0x201E	H63 Harmonic voltage	0-Vmax	U1	UINT16	R	
5696-5727		**V3 Harmonic Voltages (odd harmonics)**					2
+0	0x2100	H01 Harmonic voltage	0-Vmax	U1	UINT16	R	
+1	0x2101	H03 Harmonic voltage	0-Vmax	U1	UINT16	R	
		…					
+31	0x211E	H63 Harmonic voltage	0-Vmax	U1	UINT16	R	
6720-6751		**V4 Harmonic Voltages (odd harmonics)**					
+0	0x3100	H01 Harmonic voltage	0-Vmax	U1	UINT16	R	
+1	0x3101	H03 Harmonic voltage	0-Vmax	U1	UINT16	R	
		…					
+62	0x311E	H63 Harmonic voltage	0-Vmax	U1	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
5760-5791		**I1 Harmonic Currents (odd harmonics)**					
+0	0x2200	H01 Harmonic current	0-Imax	U2	UINT16	R	
+1	0x2201	H03 Harmonic current	0-Imax	U2	UINT16	R	
		…					
+31	0x221E	H63 Harmonic current	0-Imax	U2	UINT16	R	
5824-5855		**I2 Harmonic Currents (odd harmonics)**					
+0	0x2300	H01 Harmonic current	0-Imax	U2	UINT16	R	
+1	0x2301	H03 Harmonic current	0-Imax	U2	UINT16	R	
		…					
+31	0x231E	H63 Harmonic current	0-Imax	U2	UINT16	R	
5888-5919		**I3 Harmonic Currents (odd harmonics)**					
+0	0x2400	H01 Harmonic current	0-Imax	U2	UINT16	R	
+1	0x2401	H03 Harmonic current	0-Imax	U2	UINT16	R	
		…					
+31	0x241E	H63 Harmonic current	0-Imax	U2	UINT16	R	
6784-6815		**I4 Harmonic Currents (odd harmonics)**					
+0	0x3200	H01 Harmonic current	0-Imax	U2	UINT16	R	
+1	0x3201	H03 Harmonic current	0-Imax	U2	UINT16	R	
		…					
+31	0x321E	H63 Harmonic current	0-Imax	U2	UINT16	R	
5952-5983		**Total Harmonic kW (odd harmonics)**					
+0	0x2500	H01 Harmonic kW	-Pmax -Pmax	U3	INT16	R	
+1	0x2501	H03 Harmonic kW	-Pmax -Pmax	U3	INT16	R	
		…					
+31	0x251E	H63 Harmonic kW	-Pmax -Pmax	U3	INT16	R	
6016-6047		**Total Harmonic kvar (odd harmonics)**					
+0	0x2600	H01 Harmonic kvar	-Pmax -Pmax	U3	INT16	R	
+1	0x2601	H03 Harmonic kvar	-Pmax -Pmax	U3	INT16	R	
		…					
+31	0x261E	H63 Harmonic kvar	-Pmax -Pmax	U3	INT16	R	
6080-6111		**Total Harmonic Power Factor (odd harmonics)**					
+0	0x2700	H01 Harmonic PF	-1.000-1.000	0.001	INT16	R	
+1	0x2701	H03 Harmonic PF	-1.000-1.000	0.001	INT16	R	
		…					
+31	0x271E	H63 Harmonic PF	-1.000-1.000	0.001	INT16	R	
6240-6245		**Flicker**					
+0	0x2980	V1 Pst	0-100.00	0.01	UINT16	R	2
+1	0x2981	V2 Pst	0-100.00	0.01	UINT16	R	2
+2	0x2982	V3 Pst	0-100.00	0.01	UINT16	R	2
+3	0x2983	V1 Plt	0-100.00	0.01	UINT16	R	2
+4	0x2984	V2 Plt	0-100.00	0.01	UINT16	R	2

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+5	0x2985	V3 Plt	0-100.00	0.01	UINT16	R	2
6400-6435		**Minimum 1-Cycle Phase Values**					
+0	0x2C00	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x2C01	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x2C02	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x2C03	I1 current	0-Imax	U2	UINT16	R	
+4	0x2C04	I2 current	0-Imax	U2	UINT16	R	
+5	0x2C05	I3 current	0-Imax	U2	UINT16	R	
+6	0x2C06	kW L1	-Pmax-Pmax	U3	INT16	R	
+7	0x2C07	kW L2	-Pmax-Pmax	U3	INT16	R	
+8	0x2C08	kW L3	-Pmax-Pmax	U3	INT16	R	
+9	0x2C09	kvar L1	-Pmax-Pmax	U3	INT16	R	
+10	0x2C0A	kvar L2	-Pmax-Pmax	U3	INT16	R	
+11	0x2C0B	kvar L3	-Pmax-Pmax	U3	INT16	R	
+12	0x2C0C	kVA L1	0-Pmax	U3	UINT16	R	
+13	0x2C0D	kVA L2	0-Pmax	U3	UINT16	R	
+14	0x2C0E	kVA L3	0-Pmax	U3	UINT16	R	
+15	0x2C0F	Power factor L1	0-1.000	0.001	UINT16	R	Absolute value
+16	0x2C10	Power factor L2	0-1.000	0.001	UINT16	R	Absolute value
+17	0x2C11	Power factor L3	0-1.000	0.001	UINT16	R	Absolute value
+18	0x2C12	V1 voltage THD	0-9999	0.1%	UINT16	R	2, 4
+19	0x2C13	V2 voltage THD	0-9999	0.1%	UINT16	R	2, 4
+20	0x2C14	V3 voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+21	0x2C15	I1 current THD	0-999.9	0.1%	UINT16	R	4
+22	0x2C16	I2 current THD	0-999.9	0.1%	UINT16	R	4
+23	0x2C17	I3 current THD	0-999.9	0.1%	UINT16	R	4
+24	0x2C18	I1 K-Factor	1.0-999.9	0.1	UINT16	R	4
+25	0x2C19	I2 K-Factor	1.0-999.9	0.1	UINT16	R	4
+26	0x2C1A	I3 K-Factor	1.0-999.9	0.1	UINT16	R	4
+27	0x2C1B	I1 current TDD	0-100.0	0.1%	UINT16	R	4
+28	0x2C1C	I2 current TDD	0-100.0	0.1%	UINT16	R	4
+29	0x2C1D	I3 current TDD	0-100.0	0.1%	UINT16	R	4
+30	0x2C1E	V12 voltage	0-Vmax	U1	UINT16	R	
+31	0x2C1F	V23 voltage	0-Vmax	U1	UINT16	R	
+32	0x2C20	V31 voltage	0-Vmax	U1	UINT16	R	
+33	0x2C21	I1x current	0-Ixmax	U2	UINT16	R	
+34	0x2C22	I2x current	0-Ixmax	U2	UINT16	R	
+35	0x2C23	I3x current	0-Ixmax	U2	UINT16	R	
6464-6469		**Minimum 1-Cycle Total Values**					
+0	0x2D00	Total kW	-Pmax-Pmax	U3	INT16	R	
+1	0x2D01	Total kvar	-Pmax-Pmax	U3	INT16	R	
+2	0x2D02	Total kVA	0-Pmax	U3	UINT16	R	
+3	0x2D03	Total PF	0-1.000	0.001	UINT16	R	Absolute value

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+4	0x2D04	Total PF lag	0-1.000	0.001	UINT16	R	
+5	0x2D05	Total PF lead	0-1.000	0.001	UINT16	R	
6528-6538		**Minimum 1-Cycle Auxiliary Values**					
+0	0x2E00	I4 current	0-I4max	U2	UINT16	R	
+1	0x2E01	In current	0-Imax	U2	UINT16	R	
+2	0x2E02	Frequency	0-100.00	0.01Hz	UINT16	R	
+3	0x2E03	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+4	0x2E04	Current unbalance	0-300.0	0.1%	UINT16	R	
+5	0x2E05	Not used			UINT16	R	
+6	0x2E06	V4 voltage	0-V4max	U4	UINT16	R	
+7	0x2E07	I4x current	0-I4xmax	U2	UINT16	R	
+8	0x2E08	V4 THD	0-999.9	0.1%	UINT16	R	4
+9	0x2E09	I4x THD	0-999.9	0.1%	UINT16	R	4
+10	0x2E0A	I4x TDD	0-100.0	0.1%	UINT16	R	4
6560-6575		**Minimum Analog Inputs**					
+0	0x2E80	Analog input AI1	AI1min-AI1max		UINT16	R	
+1	0x2E81	Analog input AI2	AI2min-AI2max		UINT16	R	
		...					
+15	0x2E8F	Analog input AI16	AI16min-AI16max		UINT16	R	
6656-6671		**Programmable Min/Max Minimum Values**					
+0	0x3000	Min/Max Register #1			UINT16	R	
+1	0x3001	Min/Max Register #2			UINT16	R	
		...					
+15	0x300F	Min/Max Register #16			UINT16	R	
6912-6947		**Maximum 1-Cycle Phase Values**					
+0	0x3400	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x3401	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x3402	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x3403	I1 current	0-Imax	U2	UINT16	R	
+4	0x3404	I2 current	0-Imax	U2	UINT16	R	
+5	0x3405	I3 current	0-Imax	U2	UINT16	R	
+6	0x3406	kW L1	-Pmax-Pmax	U3	INT16	R	
+7	0x3407	kW L2	-Pmax-Pmax	U3	INT16	R	
+8	0x3408	kW L3	-Pmax-Pmax	U3	INT16	R	
+9	0x3409	kvar L1	-Pmax-Pmax	U3	INT16	R	
+10	0x340A	kvar L2	-Pmax-Pmax	U3	INT16	R	
+11	0x340B	kvar L3	-Pmax-Pmax	U3	INT16	R	
+12	0x340C	kVA L1	0-Pmax	U3	UINT16	R	
+13	0x340D	kVA L2	0-Pmax	U3	UINT16	R	
+14	0x340E	kVA L3	0-Pmax	U3	UINT16	R	
+15	0x340F	Power factor L1	0-1.000	0.001	UINT16	R	Absolute value
+16	0x3410	Power factor L2	0-1.000	0.001	UINT16	R	Absolute value
+17	0x3411	Power factor L3	0-1.000	0.001	UINT16	R	Absolute value

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+18	0x3412	V1 voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+19	0x3413	V2 voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+20	0x3414	V3 voltage THD	0-999.9	0.1%	UINT16	R	2, 4
+21	0x3415	I1 current THD	0-999.9	0.1%	UINT16	R	4
+22	0x3416	I2 current THD	0-999.9	0.1%	UINT16	R	4
+23	0x3417	I3 current THD	0-999.9	0.1%	UINT16	R	4
+24	0x3418	I1 K-Factor	1.0-999.9	0.1	UINT16	R	4
+25	0x3419	I2 K-Factor	1.0-999.9	0.1	UINT16	R	4
+26	0x341A	I3 K-Factor	1.0-999.9	0.1	UINT16	R	4
+27	0x341B	I1 current TDD	0-100.0	0.1%	UINT16	R	4
+28	0x341C	I2 current TDD	0-100.0	0.1%	UINT16	R	4
+29	0x341D	I3 current TDD	0-100.0	0.1%	UINT16	R	4
+30	0x341E	V12 voltage	0-Vmax	U1	UINT16	R	
+31	0x341F	V23 voltage	0-Vmax	U1	UINT16	R	
+32	0x3420	V31 voltage	0-Vmax	U1	UINT16	R	
+33	0x3421	I1x current	0-Ixmax	U2	UINT16	R	
+34	0x3422	I2x current	0-Ixmax	U2	UINT16	R	
+35	0x3423	I3x current	0-Ixmax	U2	UINT16	R	
6976-6981		**Maximum 1-Cycle Total Values**					
+0	0x3500	Total kW	-Pmax-Pmax	U3	INT16	R	
+1	0x3501	Total kvar	-Pmax-Pmax	U3	INT16	R	
+2	0x3502	Total kVA	0-Pmax	U3	UINT16	R	
+3	0x3503	Total PF	0-1.000	0.001	UINT16	R	Absolute value
+4	0x3504	Total PF lag	0-1.000	0.001	UINT16	R	
+5	0x3505	Total PF lead	0-1.000	0.001	UINT16	R	
7040-7050		**Maximum 1-Cycle Auxiliary Values**					
+0	0x3600	I4 current	0-I4max	U2	UINT16	R	
+1	0x3601	In current	0-Imax	U2	UINT16	R	
+2	0x3602	Frequency	0-100.00	0.01Hz	UINT16	R	
+3	0x3603	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+4	0x3604	Current unbalance	0-300.0	0.1%	UINT16	R	
+5	0x3605	Not used			UINT16	R	
+6	0x3606	V4 voltage	0-V4max	U4	UINT16	R	
+7	0x3607	I4x current	0-I4xmax	U2	UINT16	R	
+8	0x3608	V4 THD	0-999.9	0.1%	UINT16	R	4
+9	0x3609	I4x THD	0-999.9	0.1%	UINT16	R	4
+10	0x360A	I4x TDD	0-100.0	0.1%	UINT16	R	4
7072-7087		**Maximum Analog Inputs**					
+0	0x3680	Analog input AI1	AI1min-AI1max		UINT16	R	
+1	0x3681	Analog input AI2	AI2min-AI2max		UINT16	R	
		...					
+15	0x368F	Analog input AI16	AI16min-AI16max		UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
7104-71025		**Maximum Demands**					
+0	0x3700	V1 Maximum volt demand	0-Vmax	U1	UINT16	R	[2]
+1	0x3701	V2 Maximum volt demand	0-Vmax	U1	UINT16	R	[2]
+2	0x3702	V3 Maximum volt demand	0-Vmax	U1	UINT16	R	[2]
+3	0x3703	I1 Maximum ampere demand	0-Imax	U2	UINT16	R	
+4	0x3704	I2 Maximum ampere demand	0-Imax	U2	UINT16	R	
+5	0x3705	I3 Maximum ampere demand	0-Imax	U2	UINT16	R	
+6	0x3706	Not used	0		UINT16	R	
+7	0x3707	Not used	0		UINT16	R	
+8	0x3708	Not used	0		UINT16	R	
+9	0x3709	Maximum kW import sliding window demand	0-Pmax	U3	UINT16	R	
+10	0x370A	Maximum kvar import sliding window demand	0-Pmax	U3	UINT16	R	
+11	0x370B	Maximum kVA sliding window demand	0-Pmax	U3	UINT16	R	
+12	0x370C	Not used	0		UINT16	R	
+13	0x370D	Not used	0		UINT16	R	
+14	0x370E	Not used	0		UINT16	R	
+15	0x370F	Maximum kW export sliding window demand	0-Pmax	U3	UINT16	R	
+16	0x3710	Maximum kvar export sliding window demand	0-Pmax	U3	UINT16	R	
+17	0x3711	Not used	0		UINT16	R	
+18	0x3712	Not used	0		UINT16	R	
+19	0x3713	V4 Maximum volt demand	0-Vmax	U4	UINT16	R	
+20	0x3714	I4 Maximum ampere demand	0-I4max	U2	UINT16	R	
+21	0x3715	In Maximum ampere demand	0-Imax	U2	UINT16	R	
7168-7183		**Programmable Min/Max Maximum Values**					
+0	0x3800	Min/Max Register #1			UINT16	R	
+1	0x3801	Min/Max Register #2			UINT16	R	
		...					
+15	0x380F	Min/Max Register #16			UINT16	R	
7200-7211		**Maximum Harmonic Demands**					
+0	0x3880	V1 THD demand	0-999.9	0.1%	UINT16	R	[2]
+1	0x3881	V2 THD demand	0-999.9	0.1%	UINT16	R	[2]
+2	0x3882	V3 THD demand	0-999.9	0.1%	UINT16	R	[2]
+3	0x3883	V4 THD demand	0-999.9	0.1%	UINT16	R	
+4	0x3884	I1 THD demand	0-999.9	0.1%	UINT16	R	
+5	0x3885	I2 THD demand	0-999.9	0.1%	UINT16	R	
+6	0x3886	I3 THD demand	0-999.9	0.1%	UINT16	R	
+7	0x3887	I4 THD demand	0-999.9	0.1%	UINT16	R	
+8	0x3888	I1 TDD demand	0-100.0	0.1%	UINT16	R	
+9	0x3889	I2 TDD demand	0-100.0	0.1%	UINT16	R	
+10	0x388A	I3 TDD demand	0-100.0	0.1%	UINT16	R	
+11	0x388B	I4 TDD demand	0-100.0	0.1%	UINT16	R	
7232-7263		**Maximum Analog Input Demands**					
+0	0x3900	Analog input AI1+	AI1min-AI1max		UINT16	R	Positive AI readings demand

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+1	0x3901	Analog input AI2+	AI2min-AI2max		UINT16	R	
		...					
+15	0x390F	Analog input AI16+	AI16min-AI16max		UINT16	R	
+16	0x3910	Analog input AI1-	AI1min-AI1max		UINT16	R	Negative AI readings demand
+17	0x3911	Analog input AI2-	AI2min-AI2max		UINT16	R	
		...					
+31	0x391F	Analog input AI16-	AI16min-AI16max		UINT16	R	
7296-7327		**Present Analog Input Demands**					
+0	0x3A00	Analog input AI1+	AI1min-AI1max		UINT16	R	Positive AI readings demand
+1	0x3A01	Analog input AI2+	AI2min-AI2max		UINT16	R	
		...					
+15	0x3A0F	Analog input AI16+	AI16min-AI16max		UINT16	R	
+16	0x3A10	Analog input AI1-	AI1min-AI1max		UINT16	R	Negative AI readings demand
+17	0x3A11	Analog input AI2-	AI2min-AI2max		UINT16	R	
		...					
+31	0x3A1F	Analog input AI16-	AI16min-AI16max		UINT16	R	
7360-7375		**1-Cycle Analog Inputs**					
+0	0x3B00	Analog input AI1	AI1min-AI1max		UINT16	R	
+1	0x3B01	Analog input AI2	AI2min-AI2max		UINT16	R	
		...					
+15	0x3B0F	Analog input AI16	AI16min-AI16max		UINT16	R	
7392-7407		**Raw Analog Inputs**					
+0	0x3B80	Analog input AI1	0-4095		UINT16	R	
+1	0x3B81	Analog input AI2	0-4095		UINT16	R	
		...					
+15	0x3B8F	Analog input AI16	0-4095		UINT16	R	
7456-7471		**Scaled Analog Outputs**					
+0	0x3C80	Analog input AO1	0-4095		UINT16	R/W	
+1	0x3C81	Analog input AO2	0-4095		UINT16	R/W	
		...					
+15	0x3C8F	Analog input AO16	0-4095		UINT16	R/W	
8000-8015		**Billing Summary Accumulated Demands**					
+0	0x4500	Summary register #1	0-Pmax	U3	UINT16	R	
+1	0x4501	Summary register #2	0-Pmax	U3	UINT16	R	
		...					
+15	0x4503	Summary register #16	0-Pmax	U3	UINT16	R	
8032-8047		**Billing Summary Block Demands**					
+0	0x4580	Summary register #1	0-Pmax	U3	UINT16	R	
+1	0x4581	Summary register #2	0-Pmax	U3	UINT16	R	
		...					
+15	0x4583	Summary register #16	0-Pmax	U3	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
8064-8079		**Billing Summary Sliding Window Demands**					
+0	0x4600	Summary register #1	0-Pmax	U3	UINT16	R	
+1	0x4601	Summary register #2	0-Pmax	U3	UINT16	R	
		...					
+15	0x4603	Summary register #16	0-Pmax	U3	UINT16	R	
8160-8175		**Billing Summary Maximum Demands**					
+0	0x4780	Summary register #1	0-Pmax	U3	UINT16	R	
+1	0x4781	Summary register #2	0-Pmax	U3	UINT16	R	
		...					
+15	0x4783	Summary register #16	0-Pmax	U3	UINT16	R	
8192-8207		**Billing TOU Maximum Demand Register #1**					
+0	0x4800	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x4801	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x480F	Tariff #16 register	0-Pmax	U3	UINT16	R	
8256-8271		**Billing TOU Maximum Demand Register #2**					
+0	0x4900	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x4901	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x490F	Tariff #16 register	0-Pmax	U3	UINT16	R	
8320-8335		**Billing TOU Maximum Demand Register #3**					
+0	0x4A00	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x4A01	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x4A0F	Tariff #16 register	0-Pmax	U3	UINT16	R	
8224-8239		**Billing TOU Maximum Demand Register #4**					
+0	0x4880	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x4881	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x488F	Tariff #16 register	0-Pmax	U3	UINT16	R	
8288-8303		**Billing TOU Maximum Demand Register #5**					
+0	0x4980	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x4981	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x498F	Tariff #16 register	0-Pmax	U3	UINT16	R	
8352-8367		**Billing TOU Maximum Demand Register #6**					
+0	0x4A80	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x4A81	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x4A8F	Tariff #16 register	0-Pmax	U3	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
8896-8911		**Billing TOU Maximum Demand Register #7**					
+0	0x5300	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5301	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x530F	Tariff #16 register	0-Pmax	U3	UINT16	R	
8928-8943		**Billing TOU Maximum Demand Register #8**					
+0	0x5380	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5381	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x538F	Tariff #16 register	0-Pmax	U3	UINT16	R	
8960-8975		**Billing TOU Maximum Demand Register #9**					
+0	0x5400	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5401	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x540F	Tariff #16 register	0-Pmax	U3	UINT16	R	
8992-9007		**Billing TOU Maximum Demand Register #10**					
+0	0x5480	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5481	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x548F	Tariff #16 register	0-Pmax	U3	UINT16	R	
9024-9039		**Billing TOU Maximum Demand Register #11**					
+0	0x5500	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5501	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x550F	Tariff #16 register	0-Pmax	U3	UINT16	R	
9056-9071		**Billing TOU Maximum Demand Register #12**					
+0	0x5580	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5581	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x558F	Tariff #16 register	0-Pmax	U3	UINT16	R	
9088-9103		**Billing TOU Maximum Demand Register #13**					
+0	0x5600	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5601	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x560F	Tariff #16 register	0-Pmax	U3	UINT16	R	
9120-9135		**Billing TOU Maximum Demand Register #14**					
+0	0x5680	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5681	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x568F	Tariff #16 register	0-Pmax	U3	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
9152-9167		**Billing TOU Maximum Demand Register #15**					
+0	0x5700	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5701	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x570F	Tariff #16 register	0-Pmax	U3	UINT16	R	
9184-9199		**Billing TOU Maximum Demand Register #16**					
+0	0x5780	Tariff #1 register	0-Pmax	U3	UINT16	R	
+1	0x5781	Tariff #2 register	0-Pmax	U3	UINT16	R	
		...				R	
+15	0x578F	Tariff #16 register	0-Pmax	U3	UINT16	R	
9984-10046		**V1/V12 Harmonic Angles**					2, 4, 6
+0	0x6400	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
+1	0x6401	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		…					
+62	0x643E	H63 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10048-10110		**V2/V23 Harmonic Angles**					2, 4, 6
+0	0x6500	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
+1	0x6501	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		…					
+62	0x653E	H63 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10112-10174		**V3/V31 Harmonic Angles**					2, 4, 6
+0	0x6600	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
+1	0x6601	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		…					
+62	0x663E	H63 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10176-10238		**V4 Harmonic Angles**					4, 6
+0	0x6700	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
+1	0x6701	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		…					
+62	0x673E	H63 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10240-10302		**I1 Harmonic Angles**					4, 6
+0	0x6800	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
+1	0x6801	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		…					
+62	0x683E	H63 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10304-10366		**I2 Harmonic Angles**					4, 6
+0	0x6900	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
+1	0x6901	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		…					
+62	0x693E	H63 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10368-10430		**I3 Harmonic Angles**					4, 6
+0	0x6A00	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+1	0x6A01	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		...					
+62	0x6A3E	H63 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10432-10494		**I4 Harmonic Angles**					4, 6
+0	0x6B00	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
+1	0x6B01	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		...					
+62	0x6B3E	H63 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10496-10522		**0.2-Second RMS and Auxiliary Values**					
+0	0x6C00	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x6C01	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x6C02	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x6C03	V4 voltage	0-V4max	U4	UINT16	R	
+4	0x6C04	V12 voltage	0-Vmax	U1	UINT16	R	
+5	0x6C05	V23 voltage	0-Vmax	U1	UINT16	R	
+6	0x6C06	V31 voltage	0-Vmax	U1	UINT16	R	
+7	0x6C07	I1 current	0-Imax	U2	UINT16	R	
+8	0x6C08	I2 current	0-Imax	U2	UINT16	R	
+9	0x6C09	I3 current	0-Imax	U2	UINT16	R	
+10	0x6C0A	I4 current	0-I4max	U2	UINT16	R	
+11	0x6C0B	In current	0-Imax	U2	UINT16	R	
+12	0x6C0C	I1x current	0-Ixmax	U2	UINT16	R	
+13	0x6C0D	I2x current	0-Ixmax	U2	UINT16	R	
+14	0x6C0E	I3x current	0-Ixmax	U2	UINT16	R	
+15	0x6C0F	I4x current	0-I4xmax	U2	UINT16	R	
+16	0x6C10	Inx current	0-Ixmax	U2	UINT16	R	
+17	0x6C11	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x6C12	Zero-sequence current	0-Imax	U2	UINT16	R	
+19	0x6C13	Ix Zero-sequence current	0-Ixmax	U2	UINT16	R	
+20	0x6C14	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+21	0x6C15	Current unbalance	0-300.0	0.1%	UINT16	R	
+22	0x6C16	Ix current unbalance	0-300.0	0.1%	UINT16	R	
+23	0x6C17	Not used			UINT16	R	
+24	0x6C18	Frequency	0-100.00	0.01Hz	UINT16	R	
+25	0x6C19	Positive-sequence voltage	0-Vmax	U1	UINT16	R	
+26	0x6C1A	Zero-sequence voltage unbalance	0-300.0	0.1%	UINT16	R	
10528-10554		**3-Second RMS and Auxiliary Values**					
+0	0x6C80	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x6C81	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x6C82	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x6C83	V4 voltage	0-V4max	U4	UINT16	R	
+4	0x6C84	V12 voltage	0-Vmax	U1	UINT16	R	
+5	0x6C85	V23 voltage	0-Vmax	U1	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+6	0x6C86	V31 voltage	0-Vmax	U1	UINT16	R	
+7	0x6C87	I1 current	0-Imax	U2	UINT16	R	
+8	0x6C88	I2 current	0-Imax	U2	UINT16	R	
+9	0x6C89	I3 current	0-Imax	U2	UINT16	R	
+10	0x6C8A	I4 current	0-I4max	U2	UINT16	R	
+11	0x6C8B	In current	0-Imax	U2	UINT16	R	
+12	0x6C8C	I1x current	0-Ixmax	U2	UINT16	R	
+13	0x6C8D	I2x current	0-Ixmax	U2	UINT16	R	
+14	0x6C8E	I3x current	0-Ixmax	U2	UINT16	R	
+15	0x6C8F	I4x current	0-I4xmax	U2	UINT16	R	
+16	0x6C90	Inx current	0-Ixmax	U2	UINT16	R	
+17	0x6C91	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x6C92	Zero-sequence current	0-Imax	U2	UINT16	R	
+19	0x6C93	Ix Zero-sequence current	0-Ixmax	U2	UINT16	R	
+20	0x6C94	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+21	0x6C95	Current unbalance	0-300.0	0.1%	UINT16	R	
+22	0x6C96	Ix current unbalance	0-300.0	0.1%	UINT16	R	
+23	0x6C97	Not used			UINT16	R	
+24	0x6C98	Frequency	0-100.00	0.01Hz	UINT16	R	
+25	0x6C99	Positive-sequence voltage	0-Vmax	U1	UINT16	R	
+26	0x6C9A	Zero-sequence voltage unbalance	0-300.0	0.1%	UINT16	R	
11136-11162		**1-Minute RMS and Auxiliary Values (GOST)**					
+0	0x7600	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x7601	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x7602	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x7603	V4 voltage	0-V4max	U4	UINT16	R	
+4	0x7604	V12 voltage	0-Vmax	U1	UINT16	R	
+5	0x7605	V23 voltage	0-Vmax	U1	UINT16	R	
+6	0x7606	V31 voltage	0-Vmax	U1	UINT16	R	
+7	0x7607	I1 current	0-Imax	U2	UINT16	R	
+8	0x7608	I2 current	0-Imax	U2	UINT16	R	
+9	0x7609	I3 current	0-Imax	U2	UINT16	R	
+10	0x760A	I4 current	0-I4max	U2	UINT16	R	
+11	0x760B	In current	0-Imax	U2	UINT16	R	
+12	0x760C	I1x current	0-Ixmax	U2	UINT16	R	
+13	0x760D	I2x current	0-Ixmax	U2	UINT16	R	
+14	0x760E	I3x current	0-Ixmax	U2	UINT16	R	
+15	0x760F	I4x current	0-I4xmax	U2	UINT16	R	
+16	0x7610	Inx current	0-Ixmax	U2	UINT16	R	
+17	0x7611	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x7612	Zero-sequence current	0-Imax	U2	UINT16	R	
+19	0x7613	Ix Zero-sequence current	0-Ixmax	U2	UINT16	R	
+20	0x7614	Voltage unbalance	0-300.0	0.1%	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+21	0x7615	Current unbalance	0-300.0	0.1%	UINT16	R	
+22	0x7616	Ix current unbalance	0-300.0	0.1%	UINT16	R	
+23	0x7617	Reserved	0		UINT16	R	
+24	0x7618	Frequency	0-100.00	0.01Hz	UINT16	R	
+25	0x7619	Positive-sequence voltage	0-Vmax	U1	UINT16	R	
+26	0x761A	Zero-sequence voltage unbalance	0-300.0	0.1%	UINT16	R	
10560-10586		**10-Minute RMS and Auxiliary Values**					
+0	0x6D00	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x6D01	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x6D02	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x6D03	V4 voltage	0-V4max	U4	UINT16	R	
+4	0x6D04	V12 voltage	0-Vmax	U1	UINT16	R	
+5	0x6D05	V23 voltage	0-Vmax	U1	UINT16	R	
+6	0x6D06	V31 voltage	0-Vmax	U1	UINT16	R	
+7	0x6D07	I1 current	0-Imax	U2	UINT16	R	
+8	0x6D08	I2 current	0-Imax	U2	UINT16	R	
+9	0x6D09	I3 current	0-Imax	U2	UINT16	R	
+10	0x6D0A	I4 current	0-I4max	U2	UINT16	R	
+11	0x6D0B	In current	0-Imax	U2	UINT16	R	
+12	0x6D0C	I1x current	0-Ixmax	U2	UINT16	R	
+13	0x6D0D	I2x current	0-Ixmax	U2	UINT16	R	
+14	0x6D0E	I3x current	0-Ixmax	U2	UINT16	R	
+15	0x6D0F	I4x current	0-I4xmax	U2	UINT16	R	
+16	0x6D10	Inx current	0-Ixmax	U2	UINT16	R	
+17	0x6D11	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x6D12	Zero-sequence current	0-Imax	U2	UINT16	R	
+19	0x6D13	Ix Zero-sequence current	0-Ixmax	U2	UINT16	R	
+20	0x6D14	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+21	0x6D15	Current unbalance	0-300.0	0.1%	UINT16	R	
+22	0x6D16	Ix current unbalance	0-300.0	0.1%	UINT16	R	
+23	0x6D17	Not used			UINT16	R	
+24	0x6D18	Frequency	0-100.00	0.01Hz	UINT16	R	
+25	0x6D19	Positive-sequence voltage	0-Vmax	U1	UINT16	R	
+26	0x6D1A	Zero-sequence voltage unbalance	0-300.0	0.1%	UINT16	R	
10592-10618		**2-Hour RMS and Auxiliary Values**					
+0	0x6D80	V1 voltage	0-Vmax	U1	UINT16	R	1
+1	0x6D81	V2 voltage	0-Vmax	U1	UINT16	R	1
+2	0x6D82	V3 voltage	0-Vmax	U1	UINT16	R	1
+3	0x6D83	V4 voltage	0-V4max	U4	UINT16	R	
+4	0x6D84	V12 voltage	0-Vmax	U1	UINT16	R	
+5	0x6D85	V23 voltage	0-Vmax	U1	UINT16	R	
+6	0x6D86	V31 voltage	0-Vmax	U1	UINT16	R	
+7	0x6D87	I1 current	0-Imax	U2	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+8	0x6D88	I2 current	0-Imax	U2	UINT16	R	
+9	0x6D89	I3 current	0-Imax	U2	UINT16	R	
+10	0x6D8A	I4 current	0-I4max	U2	UINT16	R	
+11	0x6D8B	In current	0-Imax	U2	UINT16	R	
+12	0x6D8C	I1x current	0-Ixmax	U2	UINT16	R	
+13	0x6D8D	I2x current	0-Ixmax	U2	UINT16	R	
+14	0x6D8E	I3x current	0-Ixmax	U2	UINT16	R	
+15	0x6D8F	I4x current	0-I4xmax	U2	UINT16	R	
+16	0x6D90	Inx current	0-Ixmax	U2	UINT16	R	
+17	0x6D91	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x6D92	Zero-sequence current	0-Imax	U2	UINT16	R	
+19	0x6D93	Ix Zero-sequence current	0-Ixmax	U2	UINT16	R	
+20	0x6D94	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+21	0x6D95	Current unbalance	0-300.0	0.1%	UINT16	R	
+22	0x6D96	Ix current unbalance	0-300.0	0.1%	UINT16	R	
+23	0x6D97	Not used			UINT16	R	
+24	0x6D98	Frequency	0-100.00	0.01Hz	UINT16	R	
+25	0x6D99	Positive-sequence voltage	0-Vmax	U1	UINT16	R	
+26	0x6D9A	Zero-sequence voltage unbalance	0-300.0	0.1%	UINT16	R	
10624-10655		**0.2-Second Harmonics**					
+0	0x6E00	V1 THD	0-999.9	0.1%	UINT16	R	2
+1	0x6E01	V2 THD	0-999.9	0.1%	UINT16	R	2
+2	0x6E02	V3 THD	0-999.9	0.1%	UINT16	R	2
+3	0x6E03	V4 THD	0-999.9	0.1%	UINT16	R	
+4	0x6E04	I1 THD	0-999.9	0.1%	UINT16	R	
+5	0x6E05	I2 THD	0-999.9	0.1%	UINT16	R	
+6	0x6E06	I3 THD	0-999.9	0.1%	UINT16	R	
+7	0x6E07	I4 THD	0-999.9	0.1%	UINT16	R	
+8	0x6E08	V1 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+9	0x6E09	V2 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+10	0x6E0A	V3 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+11	0x6E0B	V4 interharmonics THD	0-999.9	0.1%	UINT16	R	
+12	0x6E0C	I1 interharmonics THD	0-999.9	0.1%	UINT16	R	
+13	0x6E0D	I2 interharmonics THD	0-999.9	0.1%	UINT16	R	
+14	0x6E0E	I3 interharmonics THD	0-999.9	0.1%	UINT16	R	
+15	0x6E0F	I4 interharmonics THD	0-999.9	0.1%	UINT16	R	
+16	0x6E10	I1 TDD	0-100.0	0.1%	UINT16	R	
+17	0x6E11	I2 TDD	0-100.0	0.1%	UINT16	R	
+18	0x6E12	I3 TDD	0-100.0	0.1%	UINT16	R	
+19	0x6E13	I4 TDD	0-100.0	0.1%	UINT16	R	
+20	0x6E14	I1 K-Factor	1.0-999.9	0.1	UINT16	R	
+21	0x6E15	I2 K-Factor	1.0-999.9	0.1	UINT16	R	
+22	0x6E16	I3 K-Factor	1.0-999.9	0.1	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+23	0x6E17	I4 K-Factor	1.0-999.9	0.1	UINT16	R	
+24	0x6E18	V1 Crest Factor	0-100.00	0.01	UINT16	R	2
+25	0x6E19	V2 Crest Factor	0-100.00	0.01	UINT16	R	2
+26	0x6E1A	V3 Crest Factor	0-100.00	0.01	UINT16	R	2
+27	0x6E1B	V4 Crest Factor	0-100.00	0.01	UINT16	R	
+28	0x6E1C	I1 Crest Factor	0-100.00	0.01	UINT16	R	
+29	0x6E1D	I2 Crest Factor	0-100.00	0.01	UINT16	R	
+30	0x6E1E	I3 Crest Factor	0-100.00	0.01	UINT16	R	
+31	0x6E1F	I4 Crest Factor	0-100.00	0.01	UINT16	R	
10656-10687		**3-Second Harmonics**					
+0	0x6E80	V1 THD	0-999.9	0.1%	UINT16	R	2
+1	0x6E81	V2 THD	0-999.9	0.1%	UINT16	R	2
+2	0x6E82	V3 THD	0-999.9	0.1%	UINT16	R	2
+3	0x6E83	V4 THD	0-999.9	0.1%	UINT16	R	
+4	0x6E84	I1 THD	0-999.9	0.1%	UINT16	R	
+5	0x6E85	I2 THD	0-999.9	0.1%	UINT16	R	
+6	0x6E86	I3 THD	0-999.9	0.1%	UINT16	R	
+7	0x6E87	I4 THD	0-999.9	0.1%	UINT16	R	
+8	0x6E88	V1 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+9	0x6E89	V2 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+10	0x6E8A	V3 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+11	0x6E8B	V4 interharmonics THD	0-999.9	0.1%	UINT16	R	
+12	0x6E6E	I1 interharmonics THD	0-999.9	0.1%	UINT16	R	
+13	0x6E8D	I2 interharmonics THD	0-999.9	0.1%	UINT16	R	
+14	0x6E8E	I3 interharmonics THD	0-999.9	0.1%	UINT16	R	
+15	0x6E8F	I4 interharmonics THD	0-999.9	0.1%	UINT16	R	
+16	0x6E90	I1 TDD	0-100.0	0.1%	UINT16	R	
+17	0x6E91	I2 TDD	0-100.0	0.1%	UINT16	R	
+18	0x6E92	I3 TDD	0-100.0	0.1%	UINT16	R	
+19	0x6E93	I4 TDD	0-100.0	0.1%	UINT16	R	
+20	0x6E94	I1 K-Factor	1.0-999.9	0.1	UINT16	R	
+21	0x6E95	I2 K-Factor	1.0-999.9	0.1	UINT16	R	
+22	0x6E96	I3 K-Factor	1.0-999.9	0.1	UINT16	R	
+23	0x6E97	I4 K-Factor	1.0-999.9	0.1	UINT16	R	
+24	0x6E98	V1 Crest Factor	0-100.00	0.01	UINT16	R	2
+25	0x6E99	V2 Crest Factor	0-100.00	0.01	UINT16	R	2
+26	0x6E9A	V3 Crest Factor	0-100.00	0.01	UINT16	R	2
+27	0x6E9B	V4 Crest Factor	0-100.00	0.01	UINT16	R	
+28	0x6E9C	I1 Crest Factor	0-100.00	0.01	UINT16	R	
+29	0x6E9D	I2 Crest Factor	0-100.00	0.01	UINT16	R	
+30	0x6E9E	I3 Crest Factor	0-100.00	0.01	UINT16	R	
+31	0x6E9F	I4 Crest Factor	0-100.00	0.01	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
10688-10719		**10-Minute Harmonics**					
+0	0x6F00	V1 THD	0-999.9	0.1%	UINT16	R	2
+1	0x6F01	V2 THD	0-999.9	0.1%	UINT16	R	2
+2	0x6F02	V3 THD	0-999.9	0.1%	UINT16	R	2
+3	0x6F03	V4 THD	0-999.9	0.1%	UINT16	R	
+4	0x6F04	I1 THD	0-999.9	0.1%	UINT16	R	
+5	0x6F05	I2 THD	0-999.9	0.1%	UINT16	R	
+6	0x6F06	I3 THD	0-999.9	0.1%	UINT16	R	
+7	0x6F07	I4 THD	0-999.9	0.1%	UINT16	R	
+8	0x6F08	V1 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+9	0x6F09	V2 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+10	0x6F0A	V3 interharmonics THD	0-999.9	0.1%	UINT16	R	2
+11	0x6F0B	V4 interharmonics THD	0-999.9	0.1%	UINT16	R	
+12	0x6F0C	I1 interharmonics THD	0-999.9	0.1%	UINT16	R	
+13	0x6F0D	I2 interharmonics THD	0-999.9	0.1%	UINT16	R	
+14	0x6F0E	I3 interharmonics THD	0-999.9	0.1%	UINT16	R	
+15	0x6F0F	I4 interharmonics THD	0-999.9	0.1%	UINT16	R	
+16	0x6F10	I1 TDD	0-100.0	0.1%	UINT16	R	
+17	0x6F11	I2 TDD	0-100.0	0.1%	UINT16	R	
+18	0x6F12	I3 TDD	0-100.0	0.1%	UINT16	R	
+19	0x6F13	I4 TDD	0-100.0	0.1%	UINT16	R	
+20	0x6F14	I1 K-Factor	1.0-999.9	0.1	UINT16	R	
+21	0x6F15	I2 K-Factor	1.0-999.9	0.1	UINT16	R	
+22	0x6F16	I3 K-Factor	1.0-999.9	0.1	UINT16	R	
+23	0x6F17	I4 K-Factor	1.0-999.9	0.1	UINT16	R	
+24	0x6F18	V1 Crest Factor	0-100.00	0.01	UINT16	R	2
+25	0x6F19	V2 Crest Factor	0-100.00	0.01	UINT16	R	2
+26	0x6F1A	V3 Crest Factor	0-100.00	0.01	UINT16	R	2
+27	0x6F1B	V4 Crest Factor	0-100.00	0.01	UINT16	R	
+28	0x6F1C	I1 Crest Factor	0-100.00	0.01	UINT16	R	
+29	0x6F1D	I2 Crest Factor	0-100.00	0.01	UINT16	R	
+30	0x6F1E	I3 Crest Factor	0-100.00	0.01	UINT16	R	
+31	0x6F1F	I4 Crest Factor	0-100.00	0.01	UINT16	R	
10720-10751		**2-Hour Harmonics**					
+0	0x6F80	V1 THD	0-999.9	0.1%	UINT16	R	2
+1	0x6F81	V2 THD	0-999.9	0.1%	UINT16	R	2
+2	0x6F82	V3 THD	0-999.9	0.1%	UINT16	R	2
+3	0x6F83	V4 THD	0-999.9	0.1%	UINT16	R	
+4	0x6F84	I1 THD	0-999.9	0.1%	UINT16	R	
+5	0x6F85	I2 THD	0-999.9	0.1%	UINT16	R	
+6	0x6F86	I3 THD	0-999.9	0.1%	UINT16	R	
+7	0x6F87	I4 THD	0-999.9	0.1%	UINT16	R	
+8	0x6F88	V1 interharmonics THD	0-999.9	0.1%	UINT16	R	2

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+9	0x6F89	V2 interharmonics THD	0-999.9	0.1%	UINT16	R	[2]
+10	0x6F8A	V3 interharmonics THD	0-999.9	0.1%	UINT16	R	[2]
+11	0x6F8B	V4 interharmonics THD	0-999.9	0.1%	UINT16	R	
+12	0x6F8C	I1 interharmonics THD	0-999.9	0.1%	UINT16	R	
+13	0x6F8D	I2 interharmonics THD	0-999.9	0.1%	UINT16	R	
+14	0x6F8E	I3 interharmonics THD	0-999.9	0.1%	UINT16	R	
+15	0x6F8F	I4 interharmonics THD	0-999.9	0.1%	UINT16	R	
+16	0x6F90	I1 TDD	0-100.0	0.1%	UINT16	R	
+17	0x6F91	I2 TDD	0-100.0	0.1%	UINT16	R	
+18	0x6F92	I3 TDD	0-100.0	0.1%	UINT16	R	
+19	0x6F93	I4 TDD	0-100.0	0.1%	UINT16	R	
+20	0x6F94	I1 K-Factor	1.0-999.9	0.1	UINT16	R	
+21	0x6F95	I2 K-Factor	1.0-999.9	0.1	UINT16	R	
+22	0x6F96	I3 K-Factor	1.0-999.9	0.1	UINT16	R	
+23	0x6F97	I4 K-Factor	1.0-999.9	0.1	UINT16	R	
+24	0x6F98	V1 Crest Factor	0-100.00	0.01	UINT16	R	[2]
+25	0x6F99	V2 Crest Factor	0-100.00	0.01	UINT16	R	[2]
+26	0x6F9A	V3 Crest Factor	0-100.00	0.01	UINT16	R	[2]
+27	0x6F9B	V4 Crest Factor	0-100.00	0.01	UINT16	R	
+28	0x6F9C	I1 Crest Factor	0-100.00	0.01	UINT16	R	
+29	0x6F9D	I2 Crest Factor	0-100.00	0.01	UINT16	R	
+30	0x6F9E	I3 Crest Factor	0-100.00	0.01	UINT16	R	
+31	0x6F9F	I4 Crest Factor	0-100.00	0.01	UINT16	R	

NOTES:

[1] When the 4LN3, 4LL3, 3LN3, 3LL3, 3BLN3 or 3BLL3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line.

[2] When the 4LN3, 3LN3 or 3BLN3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

[3] For volts, amps, power and frequency scales and units, refer to Section 4 ”Data Scales and Units”.

[4] 0.2-s interval (16-cycles for GOST 13109).

[5] 3-s interval.

[6] Harmonic angles are referenced to the fundamental voltage harmonic H01 on phase L1.

[7] 0.2-s interval for EN 50160, 16-cycle interval for GOST 13109, programmable 0.2-s, 3-s, 10-min interval for GOST 32144.

3.4 32-bit Binary and Analog Values

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
11776-11777	0x0000	**None**	0		UINT32	R	
		Setpoint Status	0x00000000 - 0xFFFFFFF				
11840-11841		Setpoints 1-32 (alias)	0x00000000 - 0xFFFFFFF		UINT32	R	
27648-27649		Setpoints 1-32	0x00000000 - 0xFFFFFFF		UINT32	R	
27712-27713		Setpoints 33-64	0x00000000 - 0xFFFFFFF		UINT32	R	
	0x0080	Setpoint #1	0/1			TRG	
	0x0081	Setpoint #2	0/1			TRG	
		...					
	0x00BF	Setpoint #64	0/1			TRG	
11904-11907		**Special Inputs**					
+0,1	0x0100	Voltage disturbance	0-100	%	UINT32	R	
+2,3	0x0101	Phase rotation order	0 = error, 1 = positive (ABC), 2 = negative (CBA)		UINT32	R	
		Event Flags					
12160-12161		Event flags 1-32	0x00000000 - 0xFFFFFFF		UINT32	R	
12224-12225		Event flags 33-64	0x00000000 - 0xFFFFFFF		UINT32	R	
	0x0300	Event flag #1	0/1			TRG	
	0x0301	Event flag #2	0/1			TRG	
		...					
	0x033F	Event flag #64	0/1			TRG	
		Internal Pulsed Events					
	0x0400	kWh Import pulse	0/1			TRG	
	0x0401	kWh Export pulse	0/1			TRG	
	0x0402	kWh Total pulse	0/1			TRG	
	0x0403	kvarh Import pulse	0/1			TRG	
	0x0404	kvarh Export pulse	0/1			TRG	
	0x0405	kvarh Total pulse	0/1			TRG	
	0x0406	kVAh pulse	0/1			TRG	
	0x0407	Start of power demand interval pulse	0/1			TRG	
	0x0408	Start of tariff interval pulse	0/1			TRG	
		External Triggers (UDP)					
	0x0480	External trigger #1	0/1			TRG	
	0x0481	External trigger #2	0/1			TRG	
		...					
	0x048F	External trigger #16	0/1			TRG	
		Periodic Timers					
	0x0500	Timer #1	0/1			TRG	
	0x0501	Timer #2	0/1			TRG	
		...					

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
	0x050F	Timer #16	0/1			TRG	
		Digital Inputs					8
12544-12545		Digital inputs DI1–DI32	0x00000000 - 0xFFFFFFFF		UINT32	R	
12608-12609		Digital inputs DI33–DI64	0x00000000 - 0xFFFFFFFF		UINT32	R	
12672-12673		Digital inputs DI65–DI96	0x00000000 - 0xFFFFFFFF		UINT32	R	
12736-12737		Digital inputs DI97–DI128	0x00000000 - 0xFFFFFFFF		UINT32	R	
	0x0600	Digital input DI1	0/1			TRG	
	0x0601	Digital input DI2	0/1			TRG	
		...					
	0x067F	Digital input DI128	0/1			TRG	
		Pulse Inputs					9
	0x0700	Digital input DI1	0/1			TRG	
	0x0701	Digital input DI2	0/1			TRG	
		...					
	0x077F	Digital input DI128	0/1			TRG	
		Relay Outputs					
12800-12801		Relay outputs RO1–RO32	0x00000000 - 0xFFFFFFFF		UINT32	R	
12864-12865		Relay outputs RO33–RO64	0x00000000 - 0xFFFFFFFF		UINT32	R	
	0x0800	Relay output RO1	0/1			TRG	
	0x0801	Relay output RO2	0/1			TRG	
		...					
	0x083F	Relay output RO64	0/1			TRG	
		Static Event Flags					
12928-12929		Static event flags: Bit 0: Phase order error Bit 1: Positive phase order Bit 2: Negative phase order Bit 3: PQ event Bit 4: General fault event Bit 5: Fault detected Bit 6: External fault trigger Bit 7: Device fault (non-critical error) Bit 8: No voltage Bit 9: Remote control	0x00000000 - 0xFFFFFFFF		UINT32	R	
	0x0900	Phase order error	0/1			TRG	
	0x0901	Positive phase order	0/1			TRG	
	0x0902	Negative phase order	0/1			TRG	
	0x0903	PQ event	0/1			TRG	
	0x0904	General fault event	0/1			TRG	
	0x0905	Fault detected	0/1			TRG	
	0x0906	External fault trigger	0/1			TRG	
	0x0907	Device fault (non-critical error)	0/1			TRG	
	0x0908	No voltage	0/1			TRG	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
	0x0909	Remote control	0/1			TRG	
13056-13119		**Counters**					
+0,1	0x0A00	Counter #1	0 - 999,999,999		UINT32	R/W	
+2,3	0x0A01	Counter #2	0 - 999,999,999		UINT32	R/W	
		…					
+62,63	0x0A1F	Counter #32	0 - 999,999,999		UINT32	R/W	
		Time/Date					
	0x0B00	Packed date	YYMMDD		UINT32	TRG	
	0x0B01	Packed time	hhmmss		UINT32	TRG	
	0x0B02	Day of week	1-7, 1 = Sun, 7 = Sat		UINT32	TRG	
	0x0B03	Year	0-99		UINT32	TRG	
	0x0B04	Month	1-12		UINT32	TRG	
	0x0B05	Day of month	1-31		UINT32	TRG	
	0x0B06	Hours	0-23		UINT32	TRG	
	0x0B07	Minutes	0-59		UINT32	TRG	
	0x0B08	Seconds	0-59		UINT32	TRG	
13248-13297		**1/2-Cycle Values**					
+0,1	0x0B80	V1 voltage	0-Vmax	U1	UINT32	R	[1]
+2,3	0x0B81	V2 voltage	0-Vmax	U1	UINT32	R	[1]
+4,5	0x0B82	V3 voltage	0-Vmax	U1	UINT32	R	[1]
+6,7	0x0B83	V4 voltage	0-V4max	U4	UINT32	R	
+8,9	0x0B84	V12 voltage	0-Vmax	U1	UINT32	R	
+10,11	0x0B85	V23 voltage	0-Vmax	U1	UINT32	R	
+12,13	0x0B86	V31 voltage	0-Vmax	U1	UINT32	R	
+14,15	0x0B87	I1 current	0-Imax	U2	UINT32	R	
+16,17	0x0B88	I2 current	0-Imax	U2	UINT32	R	
+18,19	0x0B89	I3 current	0-Imax	U2	UINT32	R	
+20,21	0x0B8A	I4 current	0-I4max	U2	UINT32	R	
+22,23	0x0B8B	In current	0-Imax	U2	UINT32	R	
+24,25	0x0B8C	I1x current	0-Ixmax	U2	UINT32	R	
+26,27	0x0B8D	I2x current	0-Ixmax	U2	UINT32	R	
+28,29	0x0B8E	I3x current	0-Ixmax	U2	UINT32	R	
+30,31	0x0B8F	I4x current	0-I4xmax	U2	UINT32	R	
+32,33	0x0B90	Inx current	0-Ixmax	U2	UINT32	R	
+34,35	0x0B91	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36,37	0x0B92	Zero-sequence current	0-Imax	U2	UINT32	R	
+38,39	0x0B93	Ix Zero-sequence current	0-Ixmax	U2	UINT32	R	
+40,41	0x0B94	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+42,43	0x0B95	Current unbalance	0-3000	×0.1%	UINT32	R	
+44,45	0x0B96	Ix current unbalance	0-3000	×0.1%	UINT32	R	
+46,47	0x0B97	Not used			UINT32	R	
+48,49	0x0B98	Frequency (1-cycle)	0-10000	×0.01Hz	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
13312-13383		**1-Cycle Phase Values**					
+0,1	0x0C00	V1 voltage	0-Vmax	U1	UINT32	R	1
+2,3	0x0C01	V2 voltage	0-Vmax	U1	UINT32	R	1
+4,5	0x0C02	V3 voltage	0-Vmax	U1	UINT32	R	1
+6,7	0x0C03	I1 current	0-Imax	U2	UINT32	R	
+8,9	0x0C04	I2 current	0-Imax	U2	UINT32	R	
+10,11	0x0C05	I3 current	0-Imax	U2	UINT32	R	
+12,13	0x0C06	kW L1	-Pmax-Pmax	U3	INT32	R	
+14,15	0x0C07	kW L2	-Pmax-Pmax	U3	INT32	R	
+16,17	0x0C08	kW L3	-Pmax-Pmax	U3	INT32	R	
+18,19	0x0C09	kvar L1	-Pmax-Pmax	U3	INT32	R	
+20,21	0x0C0A	kvar L2	-Pmax-Pmax	U3	INT32	R	
+22,23	0x0C0B	kvar L3	-Pmax-Pmax	U3	INT32	R	
+24,25	0x0C0C	kVA L1	0-Pmax	U3	UINT32	R	
+26,27	0x0C0D	kVA L2	0-Pmax	U3	UINT32	R	
+28,29	0x0C0E	kVA L3	0-Pmax	U3	UINT32	R	
+30,31	0x0C0F	Power factor L1	-1000-1000	×0.001	INT32	R	
+32,33	0x0C10	Power factor L2	-1000-1000	×0.001	INT32	R	
+34,35	0x0C11	Power factor L3	-1000-1000	×0.001	INT32	R	
+36,37	0x0C12	V1 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+38,39	0x0C13	V2 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+40,41	0x0C14	V3 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+42,43	0x0C15	I1 current THD	0-9999	×0.1%	UINT32	R	4
+44,45	0x0C16	I2 current THD	0-9999	×0.1%	UINT32	R	4
+46,47	0x0C17	I3 current THD	0-9999	×0.1%	UINT32	R	4
+48,49	0x0C18	I1 K-Factor	10-9999	×0.1	UINT32	R	4
+50,51	0x0C19	I2 K-Factor	10-9999	×0.1	UINT32	R	4
+52,53	0x0C1A	I3 K-Factor	10-9999	×0.1	UINT32	R	4
+54,55	0x0C1B	I1 current TDD	0-1000	×0.1%	UINT32	R	4
+56,57	0x0C1C	I2 current TDD	0-1000	×0.1%	UINT32	R	4
+58,59	0x0C1D	I3 current TDD	0-1000	×0.1%	UINT32	R	4
+60,61	0x0C1E	V12 voltage	0-Vmax	U1	UINT32	R	
+62,63	0x0C1F	V23 voltage	0-Vmax	U1	UINT32	R	
+64,65	0x0C20	V31 voltage	0-Vmax	U1	UINT32	R	
+66,67	0x0C21	I1x current	0-Ixmax	U2	UINT32	R	
+68,69	0x0C22	I2x current	0-Ixmax	U2	UINT32	R	
+70,71	0x0C23	I3x current	0-Ixmax	U2	UINT32	R	
13440-13467		**1-Cycle Low Phase Values**					
+0,1	0x0D00	Low L-N voltage	0-Vmax	U1	UINT32	R	
+2,3	0x0D01	Low current	0-Imax	U2	UINT32	R	
+4,5	0x0D02	Low kW	-Pmax-Pmax	U3	INT32	R	
+6,7	0x0D03	Low kvar	-Pmax-Pmax	U3	INT32	R	
+8,9	0x0D04	Low kVA	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+10,11	0x0D05	Low PF Lag	0-1000	×0.001	UINT32	R	
+12,13	0x0D06	Low PF Lead	0-1000	×0.001	UINT32	R	
+14,15	0x0D07	Low voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+16,17	0x0D08	Low current THD	0-9999	×0.1%	UINT32	R	4
+18,19	0x0D09	Low K-Factor	10-9999	×0.1	UINT32	R	4
+20,21	0x0D0A	Low current TDD	0-1000	×0.1%	UINT32	R	4
+22,23	0x0D0B	Low L-L voltage	0-Vmax	U1	UINT32	R	
+24,25	0x0D0C	Low voltage interharmonics THD	0-9999	×0.1%	UINT32	R	2, 4
+26,27	0x0D0D	Low current interharmonics THD	0-9999	×0.1%	UINT32	R	4
13504-13535		**1/2-Cycle Analog Inputs**					
+0,1	0x0D80	Analog input AI1	AI1min-AI1max		INT32	R	
+2,3	0x0D81	Analog input AI2	AI2min-AI2max		INT32	R	
		...					
+30,31	0x0D8F	Analog input AI16	AI16min-AI16max		INT32	R	
13568-13595		**1-Cycle High Phase Values**					
+0,1	0x0E00	High L-N voltage	0-Vmax	U1	UINT32	R	
+2,3	0x0E01	High current	0-Imax	U2	UINT32	R	
+4,5	0x0E02	High kW	-Pmax-Pmax	U3	INT32	R	
+6,7	0x0E03	High kvar	-Pmax-Pmax	U3	INT32	R	
+8,9	0x0E04	High kVA	0-Pmax	U3	UINT32	R	
+10,11	0x0E05	High PF Lag	0-1000	×0.001	UINT32	R	
+12,13	0x0E06	High PF Lead	0-1000	×0.001	UINT32	R	
+14,15	0x0E07	High voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+16,17	0x0E08	High current THD	0-9999	×0.1%	UINT32	R	4
+18,19	0x0E09	High K-Factor	10-9999	×0.1	UINT32	R	4
+20,21	0x0E0A	High current TDD	0-1000	×0.1%	UINT32	R	4
+22,23	0x0E0B	High L-L voltage	0-Vmax	U1	UINT32	R	
+24,25	0x0E0C	High voltage interharmonics THD	0-9999	×0.1%	UINT32	R	2, 4
+26,27	0x0E0D	High current interharmonics THD	0-9999	×0.1%	UINT32	R	4
13632-13663		**1-Second Analog Inputs**					
+0,1	0x0E80	Analog input AI1	AI1min-AI1max		INT32	R	
+2,3	0x0E81	Analog input AI2	AI2min-AI2max		INT32	R	
		...					
+30,31	0x0E8F	Analog input AI16	AI16min-AI16max		INT32	R	
13696-13723		**1-Cycle Total Values**					
+0,1	0x0F00	Total kW	-Pmax-Pmax	U3	INT32	R	
+2,3	0x0F01	Total kvar	-Pmax-Pmax	U3	INT32	R	
+4,5	0x0F02	Total kVA	0-Pmax	U3	UINT32	R	
+6,7	0x0F03	Total PF	-1000-1000	×0.001	INT32	R	
+8,9	0x0F04	Total PF lag	0-1000	×0.001	UINT32	R	
+10,11	0x0F05	Total PF lead	0-1000	×0.001	UINT32		
+12,13	0x0F06	Total kW import	0-Pmax	U3	UINT32		
+14,15	0x0F07	Total kW export	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+16,17	0x0F08	Total kvar import	0-Pmax	U3	UINT32	R	
+18,19	0x0F09	Total kvar export	0-Pmax	U3	UINT32	R	
+20,21	0x0F0A	3-phase average L-N voltage	0-Vmax	U1	UINT32	R	
+22,23	0x0F0B	3-phase average L-L voltage	0-Vmax	U1	UINT32	R	
+24,25	0x0F0C	3-phase average current	0-Imax	U2	UINT32	R	
+26,27	0x0F0D	3-phase average current, extended inputs I1x-I3x	0-Ixmax	U2	UINT32	R	
13824-13841		**1-Cycle Auxiliary Values**					
+0,1	0x1000	I4 current	0-Imax	U2	UINT32	R	
+2,3	0x1001	In current	0-Imax	U2	UINT32	R	
+4,5	0x1002	Frequency	0-10000	×0.01Hz	UINT32	R	
+6,7	0x1003	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+8,9	0x1004	Current unbalance	0-3000	×0.1%	UINT32	R	
+10,11	0x1005	Not used			UINT32	R	
+12,13	0x1006	V4 voltage	0-V4max	U4	UINT32	R	
+14,15	0x1007	I4x current	0-Ixmax	U2	UINT32	R	
+16,17	0x1008	Frequency	0-100000	×0.001Hz	UINT32	R	
13888-13919		**Fundamental Phasor Values**					
+0,1	0x1080	V1 voltage magnitude	0-Vmax	U1	UINT32	R	2
+2,3	0x1081	V2 voltage magnitude	0-Vmax	U1	UINT32	R	2
+4,5	0x1082	V3 voltage magnitude	0-Vmax	U1	UINT32	R	2
+6,7	0x1083	V4 voltage magnitude	0-V4max	U1	UINT32	R	
+8,9	0x1084	I1 current magnitude	0-Imax	U2	UINT32	R	
+10,11	0x1085	I2 current magnitude	0-Imax	U2	UINT32	R	
+12,13	0x1086	I3 current magnitude	0-Imax	U2	UINT32	R	
+14,15	0x1087	I4 current magnitude	0-Imax	U2	UINT32	R	
+16,17	0x1088	V1 voltage angle	-1800-1800	×0.1°	INT32	R	2
+18,19	0x1089	V2 voltage angle	-1800-1800	×0.1°	INT32	R	2
+20,21	0x108A	V3 voltage angle	-1800-1800	×0.1°	INT32	R	2
+22,23	0x108B	V4 voltage angle	-1800-1800	×0.1°	INT32	R	
+24,25	0x108C	I1 current angle	-1800-1800	×0.1°	INT32	R	
+26,27	0x108D	I2 current angle	-1800-1800	×0.1°	INT32	R	
+28,29	0x108E	I3 current angle	-1800-1800	×0.1°	INT32	R	
+30,31	0x108F	I4 current angle	-1800-1800	×0.1°	INT32	R	
13952-14029		**1-Second Phase Values**					
+0,1	0x1100	V1 voltage	0-Vmax	U1	UINT32	R	1
+2,3	0x1101	V2 voltage	0-Vmax	U1	UINT32	R	1
+4,5	0x1102	V3 voltage	0-Vmax	U1	UINT32	R	1
+6,7	0x1103	I1 current	0-Imax	U2	UINT32	R	
+8,9	0x1104	I2 current	0-Imax	U2	UINT32	R	
+10,11	0x1105	I3 current	0-Imax	U2	UINT32	R	
+12,13	0x1106	kW L1	-Pmax-Pmax	U3	INT32	R	
+14,15	0x1107	kW L2	-Pmax-Pmax	U3	INT32	R	
+16,17	0x1108	kW L3	-Pmax-Pmax	U3	INT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+18,19	0x1109	kvar L1	-Pmax-Pmax	U3	INT32	R	
+20,21	0x110A	kvar L2	-Pmax-Pmax	U3	INT32	R	
+22,23	0x110B	kvar L3	-Pmax-Pmax	U3	INT32	R	
+24,25	0x110C	kVA L1	0-Pmax	U3	UINT32	R	
+26,27	0x110D	kVA L2	0-Pmax	U3	UINT32	R	
+28,29	0x110E	kVA L3	0-Pmax	U3	UINT32	R	
+30,31	0x110F	Power factor L1	-1000-1000	×0.001	INT32	R	
+32,33	0x1110	Power factor L2	-1000-1000	×0.001	INT32	R	
+34,35	0x1111	Power factor L3	-1000-1000	×0.001	INT32	R	
+36,37	0x1112	V1 voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+38,39	0x1113	V2 voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+40,41	0x1114	V3 voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+42,43	0x1115	I1 current THD	0-9999	×0.1%	UINT32	R	5
+44,45	0x1116	I2 current THD	0-9999	×0.1%	UINT32	R	5
+46,47	0x1117	I3 current THD	0-9999	×0.1%	UINT32	R	5
+48,49	0x1118	I1 K-Factor	10-9999	×0.1	UINT32	R	5
+50,51	0x1119	I2 K-Factor	10-9999	×0.1	UINT32	R	5
+52,53	0x111A	I3 K-Factor	10-9999	×0.1	UINT32	R	5
+54,55	0x111B	I1 current TDD	0-1000	×0.1%	UINT32	R	5
+56,57	0x111C	I2 current TDD	0-1000	×0.1%	UINT32	R	5
+58,59	0x111D	I3 current TDD	0-1000	×0.1%	UINT32	R	5
+60,61	0x111E	V12 voltage	0-Vmax	U1	UINT32	R	
+62,63	0x111F	V23 voltage	0-Vmax	U1	UINT32	R	
+64,65	0x1120	V31 voltage	0-Vmax	U1	UINT32	R	
+66,67	0x1121	I1x current	0-Ixmax	U2	UINT32	R	
+68,69	0x1122	I2x current	0-Ixmax	U2	UINT32	R	
+70,71	0x1123	I3x current	0-Ixmax	U2	UINT32	R	
+72,73	0x1124	V1x Voltage	0-Vmax	U1	UINT32	R	Transient recorder V1 channel
+74,75	0x1125	V2x Voltage	0-Vmax	U1	UINT32	R	Transient recorder V2 channel
+76,77	0x1126	V3x Voltage	0-Vmax	U1	UINT32	R	Transient recorder V3 channel
14080-14107		**1-Second Low Phase Values**					
+0,1	0x1200	Low L-N voltage	0-Vmax	U1	UINT32	R	
+2,3	0x1201	Low current	0-Imax	U2	UINT32	R	
+4,5	0x1202	Low kW	-Pmax-Pmax	U3	INT32	R	
+6,7	0x1203	Low kvar	-Pmax-Pmax	U3	INT32	R	
+8,9	0x1204	Low kVA	0-Pmax	U3	UINT32	R	
+10,11	0x1205	Low PF Lag	0-1000	×0.001	UINT32	R	
+12,13	0x1206	Low PF Lead	0-1000	×0.001	UINT32	R	
+14,15	0x1207	Low voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+16,17	0x1208	Low current THD	0-9999	×0.1%	UINT32	R	5
+18,19	0x1209	Low K-Factor	10-9999	×0.1	UINT32	R	5
+20,21	0x120A	Low current TDD	0-1000	×0.1%	UINT32	R	5
+22,23	0x120B	Low L-L voltage	0-Vmax	U1	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+24,25	0x120C	Low voltage interharmonics THD	0-9999	×0.1%	UINT32	R	2, 5
+26,27	0x120D	Low current interharmonics THD	0-9999	×0.1%	UINT32	R	5
14144-14175		**3-Second Powers**					
+0,1	0x1280	kW L1	-Pmax-Pmax	U3	INT32	R	
+2,3	0x1281	kW L2	-Pmax-Pmax	U3	INT32	R	
+4,5	0x1282	kW L3	-Pmax-Pmax	U3	INT32	R	
+6,7	0x1283	kvar L1	-Pmax-Pmax	U3	INT32	R	
+8,9	0x1284	kvar L2	-Pmax-Pmax	U3	INT32	R	
+10,11	0x1285	kvar L3	-Pmax-Pmax	U3	INT32	R	
+12,13	0x1286	kVA L1	0-Pmax	U3	UINT32	R	
+14,15	0x1287	kVA L2	0-Pmax	U3	UINT32	R	
+16,17	0x1288	kVA L3	0-Pmax	U3	UINT32	R	
+18,19	0x1289	Power factor L1	-1000-1000	×0.001	INT32	R	
+20,21	0x128A	Power factor L2	-1000-1000	×0.001	INT32	R	
+22,23	0x128B	Power factor L3	-1000-1000	×0.001	INT32	R	
+24,25	0x128C	Total kW	-Pmax-Pmax	U3	INT32	R	
+26,27	0x128D	Total kvar	-Pmax-Pmax	U3	INT32	R	
+28,29	0x128E	Total kVA	0-Pmax	U3	UINT32	R	
+30,31	0x128F	Total PF	-1000-1000	×0.001	INT32	R	
14208-14235		**1-Second High Phase Values**					
+0,1	0x1300	High L-N voltage	0-Vmax	U1	UINT32	R	
+2,3	0x1301	High current	0-Imax	U2	UINT32	R	
+4,5	0x1302	High kW	-Pmax-Pmax	U3	INT32	R	
+6,7	0x1303	High kvar	-Pmax-Pmax	U3	INT32	R	
+8,9	0x1304	High kVA	0-Pmax	U3	UINT32	R	
+10,11	0x1305	High PF Lag	0-1000	×0.001	UINT32	R	
+12,13	0x1306	High PF Lead	0-1000	×0.001	UINT32	R	
+14,15	0x1307	High voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+16,17	0x1308	High current THD	0-9999	×0.1%	UINT32	R	5
+18,19	0x1309	High K-Factor	10-9999	×0.1	UINT32	R	5
+20,21	0x130A	High current TDD	0-1000	×0.1%	UINT32	R	5
+22,23	0x130B	High L-L voltage	0-Vmax	U1	UINT32	R	
+24,25	0x130C	High voltage interharmonics THD	0-9999	×0.1%	UINT32	R	2, 5
+26,27	0x130D	High current interharmonics THD	0-9999	×0.1%	UINT32	R	5
14336-14363		**1-Second Total Values**					
+0,1	0x1400	Total kW	-Pmax-Pmax	U3	INT32	R	
+2,3	0x1401	Total kvar	-Pmax-Pmax	U3	INT32	R	
+4,5	0x1402	Total kVA	0-Pmax	U3	UINT32	R	
+6,7	0x1403	Total PF	-1000-1000	×0.001	INT32	R	
+8,9	0x1404	Total PF lag	0-1000	×0.001	UINT32	R	
+10,11	0x1405	Total PF lead	0-1000	×0.001	UINT32		
+12,13	0x1406	Total kW import	0-Pmax	U3	UINT32		
+14,15	0x1407	Total kW export	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+16,17	0x1408	Total kvar import	0-Pmax	U3	UINT32	R	
+18,19	0x1409	Total kvar export	0-Pmax	U3	UINT32	R	
+20,21	0x140A	3-phase average L-N voltage	0-Vmax	U1	UINT32	R	
+22,23	0x140B	3-phase average L-L voltage	0-Vmax	U1	UINT32	R	
+24,25	0x140C	3-phase average current	0-Imax	U2	UINT32	R	
+26,27	0x140D	3-phase average current, extended inputs I1x-I3x	0-Ixmax	U2	UINT32	R	
14464-14485		**1-Second Auxiliary Values**					
+0,1	0x1500	I4 current	0-Imax	U2	UINT32	R	
+2,3	0x1501	In current	0-Imax	U2	UINT32	R	
+4,5	0x1502	Frequency	0-10000	×0.01Hz	UINT32	R	
+6,7	0x1503	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+8,9	0x1504	Current unbalance	0-3000	×0.1%	UINT32	R	
+10,11	0x1505	Not used			UINT32	R	
+12,13	0x1506	V4 voltage	0-V4max	U4	UINT32	R	
+14,15	0x1507	I4x current	0-Ixmax	U2	UINT32	R	
+16,17	0x1508	V4x (neutral-ground) voltage	0-Vmax	U1	UINT32	R	Transient recorder Vn channel
+18,19	0x1509	Internal temperature	-2000 to 2000	×0.1ºC	INT32	R	
+20,21	0x150A	Frequency	0-100000	×0.001Hz	UINT32	R	
14528-14551		**Present Harmonic Demands**					
+0,1	0x1580	V1 THD demand	0-9999	×0.1%	UINT32	R	[2]
+2,3	0x1581	V2 THD demand	0-9999	×0.1%	UINT32	R	[2]
+4,5	0x1582	V3 THD demand	0-9999	×0.1%	UINT32	R	[2]
+6,7	0x1583	V4 THD demand	0-9999	×0.1%	UINT32	R	
+8,9	0x1584	I1 THD demand	0-9999	×0.1%	UINT32	R	
+10,11	0x1585	I2 THD demand	0-9999	×0.1%	UINT32	R	
+12,13	0x1586	I3 THD demand	0-9999	×0.1%	UINT32	R	
+14,15	0x1587	I4 THD demand	0-9999	×0.1%	UINT32	R	
+16,17	0x1588	I1 TDD demand	0-1000	×0.1%	UINT32	R	
+18,19	0x1589	I2 TDD demand	0-1000	×0.1%	UINT32	R	
+20,21	0x158A	I3 TDD demand	0-1000	×0.1%	UINT32	R	
+22,23	0x158B	I4 TDD demand	0-1000	×0.1%	UINT32	R	
14592-14661		**Present Demands**					
+0,1	0x1600	V1 volt demand	0-Vmax	U1	UINT32	R	[2]
+2,3	0x1601	V2 volt demand	0-Vmax	U1	UINT32	R	[2]
+4,5	0x1602	V3 volt demand	0-Vmax	U1	UINT32	R	[2]
+6,7	0x1603	I1 ampere demand	0-Imax	U2	UINT32	R	
+8,9	0x1604	I2 ampere demand	0-Imax	U2	UINT32	R	
+10,11	0x1605	I3 ampere demand	0-Imax	U2	UINT32	R	
+12,13	0x1606	kW import block demand	0-Pmax	U3	UINT32	R	
+14,15	0x1607	kvar import block demand	0-Pmax	U3	UINT32	R	
+16,17	0x1608	kVA block demand	0-Pmax	U3	UINT32	R	
+18,19	0x1609	kW import sliding window demand	0-Pmax	U3	UINT32	R	
+20,21	0x160A	kvar import sliding window demand	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+22,23	0x160B	kVA sliding window demand	0-Pmax	U3	UINT32	R	
+24,25	0x160C	Not used	0		UINT32	R	
+26,27	0x160D	Not used	0		UINT32	R	
+28,29	0x160E	Not used	0		UINT32	R	
+30,31	0x160F	kW import accumulated demand	0-Pmax	U3	UINT32	R	
+32,33	0x1610	kvar import accumulated demand	0-Pmax	U3	UINT32	R	
+34,35	0x1611	kVA accumulated demand	0-Pmax	U3	UINT32	R	
+36,37	0x1612	kW import predicted sliding window demand	0-Pmax	U3	UINT32	R	
+38,39	0x1613	kvar import predicted sliding window demand	0-Pmax	U3	UINT32	R	
+40,41	0x1614	kVA predicted sliding window demand	0-Pmax	U3	UINT32	R	
+42,43	0x1615	PF (import) at Max. kVA sliding window demand	0-1000	×0.001	UINT32	R	
+44,45	0x1616	kW export block demand	0-Pmax	U3	UINT32	R	
+46,47	0x1617	kvar export block demand	0-Pmax	U3	UINT32	R	
+48,49	0x1618	kW export sliding window demand	0-Pmax	U3	UINT32	R	
+50,51	0x1619	kvar export sliding window demand	0-Pmax	U3	UINT32	R	
+52,53	0x161A	kW export accumulated demand	0-Pmax	U3	UINT32	R	
+54,55	0x161B	kvar export accumulated demand	0-Pmax	U3	UINT32	R	
+56,57	0x161C	kW export predicted sliding window demand	0-Pmax	U3	UINT32	R	
+58,59	0x161D	kvar export predicted sliding window demand	0-Pmax	U3	UINT32	R	
+60,61	0x161E	Not used	0		UINT32	R	
+62,63	0x161F	Not used	0		UINT32	R	
+64,65	0x1620	V4 volt demand	0-Vmax	U4	UINT32	R	
+66,67	0x1621	I4 ampere demand	0-Imax	U2	UINT32	R	
+68,69	0x1622	In ampere demand	0-Imax	U2	UINT32	R	
14720-14741		**Total Energies**					
+0,1	0x1700	kWh import	0-999,999,999	U5	UINT32	R	
+2,3	0x1701	kWh export	0-999,999,999	U5	UINT32	R	
+4,5	0x1702	kWh net	-999,999,999-999,999,999	U5	INT32	R	
+6,7	0x1703	kWh total	0-999,999,999	U5	UINT32	R	
+8,9	0x1704	kvarh import	0-999,999,999	U5	UINT32	R	
+10,11	0x1705	kvarh export	0-999,999,999	U5	UINT32	R	
+12,13	0x1706	kvarh net	-999,999,999-999,999,999	U5	INT32	R	
+14,15	0x1707	kvarh total	0-999,999,999	U5	UINT32	R	
+16,17	0x1708	kVAh total	0-999,999,999	U5	UINT32	R	
+18,19	0x1709	Vh total	0-999,999,999	1 Vh	UINT32	R	
+20,21	0x170A	Ah total	0-999,999,999	1 Ah	UINT32	R	
+22,23	0x170B	kVAh import	0-999,999,999	U5	UINT32	R	
+24,25	0x170C	kVAh export	0-999,999,999	U5	UINT32	R	
+26,27	0x170D	Not used			UINT32	R	
+28,29	0x170E	Not used			UINT32	R	
+30,31	0x170F	Not used			UINT32	R	
+32,33	0x1710	Not used			UINT32	R	
+34,35	0x1711	Not used			UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+36,37	0x1712	kvarh Q1	0-999,999,999	U5	UINT32	R	
+38,39	0x1713	kvarh Q2	0-999,999,999	U5	UINT32	R	
+40,41	0x1714	kvarh Q3	0-999,999,999	U5	UINT32	R	
+42,43	0x1715	kvarh Q4	0-999,999,999	U5	UINT32	R	
14784-14815		**Billing Summary Registers**					
+0,1	0x1780	Summary energy register #1	0-999,999,999	U5	UINT32	R	
+2,3	0x1781	Summary energy register #2	0-999,999,999	U5	UINT32	R	
		…					
+30,31	0x178F	Summary energy register #16	0-999,999,999	U5	UINT32	R	
14912-14931		**Symmetrical Components**					
+0, 1	0x1880	Positive-sequence voltage	0-Vmax	U1	UINT32	R	
+2, 3	0x1881	Negative-sequence voltage	0-Vmax	U1	UINT32	R	
+4, 5	0x1882	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+6, 7	0x1883	Negative-sequence voltage unbalance	0-3000	×0.1%	UINT32	R	
+8, 9	0x1884	Zero-sequence voltage unbalance	0-3000	×0.1%	UINT32	R	
+10, 11	0x1885	Positive-sequence current	0-Imax	U2	UINT32	R	
+12, 13	0x1886	Negative-sequence current	0-Imax	U2	UINT32	R	
+14, 15	0x1887	Zero-sequence current	0-Imax	U2	UINT32	R	
+16, 17	0x1888	Negative-sequence current unbalance	0-3000	×0.1%	UINT32	R	
+18, 19	0x1889	Zero-sequence current unbalance	0-3000	×0.1%	UINT32	R	
14976-15101		**V1 Harmonics**					2, 7
+0, 1	0x1900	H01 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
+2, 3	0x1901	H02 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
		…					
+124, 125	0x193E	H63 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
15104-15229		**V2 Harmonics**					2, 7
+0, 1	0x1A00	H01 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
+2, 3	0x1A01	H02 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
		…					
+124, 125	0x1A3E	H63 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
15232-15357		**V3 Harmonics**					2, 7
+0, 1	0x1B00	H01 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
+2, 3	0x1B01	H02 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
		…					
+124, 125	0x1B3E	H63 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
16896-17021		**V4 Harmonics**					7
+0, 1	0x2800	H01 Harmonic magnitude	0-10000	0.01%	UINT32	R	
+2, 3	0x2801	H02 Harmonic magnitude	0-10000	0.01%	UINT32	R	
		…					
+124, 125	0x283E	H63 Harmonic magnitude	0-10000	0.01%	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
15360-15485		**I1 Harmonics**					7
+0, 1	0x1C00	H01 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
+2, 3	0x1C01	H02 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
		…					
+124, 125	0x1C3E	H63 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
15488-15613		**I2 Harmonics**					7
+0, 1	0x1D00	H01 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
+2, 3	0x1D01	H02 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
		…					
+124, 125	0x1D3E	H63 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
15616-15741		**I3 Harmonics**					7
+0, 1	0x1E00	H01 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
+2, 3	0x1E01	H02 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
		…					
+124, 125	0x1E3E	H63 Harmonic magnitude	0-10000	×0.01%	UINT32	R	
17280-17405		**I4 Harmonics**					7
+0, 1	0x2B00	H01 Harmonic magnitude	0-10000	0.01%	UINT32	R	
+2, 3	0x2B01	H02 Harmonic magnitude	0-10000	0.01%	UINT32	R	
		…					
+124, 125	0x2B3E	H63 Harmonic magnitude	0-10000	0.01%	UINT32	R	
15744-15807		**V1 Harmonic Voltages (odd numbers)**					2, 4
+0, 1	0x1F00	H01 Harmonic voltage	0-Vmax	U1	UINT32	R	
+2, 3	0x1F01	H03 Harmonic voltage	0-Vmax	U1	UINT32	R	
		…					
+62, 63	0x1F3E	H63 Harmonic voltage	0-Vmax	U1	UINT32	R	
15872-15935		**V2 Harmonic Voltages (odd numbers)**					2, 4
+0, 1	0x2000	H01 Harmonic voltage	0-Vmax	U1	UINT32	R	
+2, 3	0x2001	H03 Harmonic voltage	0-Vmax	U1	UINT32	R	
		…					
+62, 63	0x203E	H63 Harmonic voltage	0-Vmax	U1	UINT32	R	
16000-16063		**V3 Harmonic Voltages (odd numbers)**					2, 4
+0, 1	0x2100	H01 Harmonic voltage	0-Vmax	U1	UINT32	R	
+2, 3	0x2101	H03 Harmonic voltage	0-Vmax	U1	UINT32	R	
		…					
+62, 63	0x213E	H63 Harmonic voltage	0-Vmax	U1	UINT32	R	
18048-18111		**V4 Harmonic Voltages (odd numbers)**					4
+0, 1	0x3100	H01 Harmonic voltage	0-Vmax	U1	UINT32	R	
+2, 3	0x3101	H03 Harmonic voltage	0-Vmax	U1	UINT32	R	
		…					
+62, 63	0x313E	H63 Harmonic voltage	0-Vmax	U1	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
16128-16191		**I1 Harmonic Currents (odd numbers)**					4
+0, 1	0x2200	H01 Harmonic current	0-Imax	U2	UINT32	R	
+2, 3	0x2201	H03 Harmonic current	0-Imax	U2	UINT32	R	
		…					
+62, 63	0x223E	H63 Harmonic current	0-Imax	U2	UINT32	R	
16256-16319		**I2 Harmonic Currents (odd numbers)**					4
+0, 1	0x2300	H01 Harmonic current	0-Imax	U2	UINT32	R	
+2, 3	0x2301	H03 Harmonic current	0-Imax	U2	UINT32	R	
		…					
+62, 63	0x233E	H63 Harmonic current	0-Imax	U2	UINT32	R	
16384-16447		**I3 Harmonic Currents (odd numbers)**					4
+0, 1	0x2400	H01 Harmonic current	0-Imax	U2	UINT32	R	
+2, 3	0x2401	H03 Harmonic current	0-Imax	U2	UINT32	R	
		…					
+62, 63	0x243E	H63 Harmonic current	0-Imax	U2	UINT32	R	
18176-18239		**I4 Harmonic Currents (odd numbers)**					4
+0, 1	0x3200	H01 Harmonic current	0-Imax	U2	UINT32	R	
+2, 3	0x3201	H03 Harmonic current	0-Imax	U2	UINT32	R	
		…					
+62, 63	0x323E	H63 Harmonic current	0-Imax	U2	UINT32	R	
16512-16575		**Total Harmonic kW (odd numbers)**					4
+0, 1	0x2500	H01 Harmonic kW	-Pmax -Pmax	U3	INT32	R	
+2, 3	0x2501	H03 Harmonic kW	-Pmax -Pmax	U3	INT32	R	
		…					
+62, 63	0x253E	H63 Harmonic kW	-Pmax -Pmax	U3	INT32	R	
16640-16703		**Total Harmonic kvar (odd numbers)**					
+0, 1	0x2600	H01 Harmonic kvar	-Pmax -Pmax	U3	INT32	R	4
+2, 3	0x2601	H03 Harmonic kvar	-Pmax -Pmax	U3	INT32	R	
		…					
+62, 63	0x263E	H63 Harmonic kvar	-Pmax -Pmax	U3	INT32	R	
16768-16831		**Total Harmonic Power Factor (odd numbers)**					4
+0, 1	0x2700	H01 Harmonic PF	-1000-1000	×0.001	INT32	R	
+2, 3	0x2701	H03 Harmonic PF	-1000-1000	×0.001	INT32	R	
		…					
+62, 63	0x273E	H63 Harmonic PF	-1000-1000	×0.001	INT32	R	
17088-17099		**Flicker**					
+0,1	0x2980	V1 Pst	0-10000	×0.01	UINT32	R	
+2,3	0x2981	V2 Pst	0-10000	×0.01	UINT32	R	
+4,5	0x2982	V3 Pst	0-10000	×0.01	UINT32	R	
+6,7	0x2983	V1 Plt	0-10000	×0.01	UINT32	R	
+8,9	0x2984	V2 Plt	0-10000	×0.01	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+10,11	0x2985	V3 Plt	0-10000	×0.01	UINT32	R	
17408-17479		**Minimum 1-Cycle Phase Values**					
+0, 1	0x2C00	V1 voltage	0-Vmax	U1	UINT32	R	1
+2, 3	0x2C01	V2 voltage	0-Vmax	U1	UINT32	R	1
+4, 5	0x2C02	V3 voltage	0-Vmax	U1	UINT32	R	1
+6, 7	0x2C03	I1 current	0-Imax	U2	UINT32	R	
+8, 9	0x2C04	I2 current	0-Imax	U2	UINT32	R	
+10, 11	0x2C05	I3 current	0-Imax	U2	UINT32	R	
+12, 13	0x2C06	kW L1	-Pmax-Pmax	U3	INT32	R	
+14, 15	0x2C07	kW L2	-Pmax-Pmax	U3	INT32	R	
+16, 17	0x2C08	kW L3	-Pmax-Pmax	U3	INT32	R	
+18, 19	0x2C09	kvar L1	-Pmax-Pmax	U3	INT32	R	
+20, 21	0x2C0A	kvar L2	-Pmax-Pmax	U3	INT32	R	
+22, 23	0x2C0B	kvar L3	-Pmax-Pmax	U3	INT32	R	
+24, 25	0x2C0C	kVA L1	0-Pmax	U3	UINT32	R	
+26, 27	0x2C0D	kVA L2	0-Pmax	U3	UINT32	R	
+28, 29	0x2C0E	kVA L3	0-Pmax	U3	UINT32	R	
+30, 31	0x2C0F	Power factor L1	0-1000	×0.001	UINT32	R	Absolute value
+32, 33	0x2C10	Power factor L2	0-1000	×0.001	UINT32	R	Absolute value
+34, 35	0x2C11	Power factor L3	0-1000	×0.001	UINT32	R	Absolute value
+36, 37	0x2C12	V1 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+38, 39	0x2C13	V2 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+40, 41	0x2C14	V3 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+42, 43	0x2C15	I1 current THD	0-9999	×0.1%	UINT32	R	4
+44, 45	0x2C16	I2 current THD	0-9999	×0.1%	UINT32	R	4
+46, 47	0x2C17	I3 current THD	0-9999	×0.1%	UINT32	R	4
+48, 49	0x2C18	I1 K-Factor	10-9999	×0.1	UINT32	R	4
+50, 51	0x2C19	I2 K-Factor	10-9999	×0.1	UINT32	R	4
+52, 53	0x2C1A	I3 K-Factor	10-9999	×0.1	UINT32	R	4
+54, 55	0x2C1B	I1 current TDD	0-1000	×0.1%	UINT32	R	4
+56, 57	0x2C1C	I2 current TDD	0-1000	×0.1%	UINT32	R	4
+58, 59	0x2C1D	I3 current TDD	0-1000	×0.1%	UINT32	R	4
+60, 61	0x2C1E	V12 voltage	0-Vmax	U1	UINT32	R	
+62, 63	0x2C1F	V23 voltage	0-Vmax	U1	UINT32	R	
+64, 65	0x2C20	V31 voltage	0-Vmax	U1	UINT32	R	
+66, 67	0x2C21	I1x current	0-Ixmax	U2	UINT32	R	
+68, 69	0x2C22	I2x current	0-Ixmax	U2	UINT32	R	
+70, 71	0x2C23	I3x current	0-Ixmax	U2	UINT32	R	
17536-17547		**Minimum 1-Cycle Total Values**					
+0, 1	0x2D00	Total kW	-Pmax-Pmax	U3	INT32	R	
+2, 3	0x2D01	Total kvar	-Pmax-Pmax	U3	INT32	R	
+4, 5	0x2D02	Total kVA	0-Pmax	U3	UINT32	R	
+6, 7	0x2D03	Total PF	0-1000	×0.001	UINT32	R	Absolute value

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+8, 9	0x2D04	Total PF lag	0-1000	×0.001	UINT32	R	
+10, 11	0x2D05	Total PF lead	0-1000	×0.001	UINT32	R	
17664-17685		**Minimum 1-Cycle Auxiliary Values**					
+0, 1	0x2E00	I4 current	0-Imax	U2	UINT32	R	
+2, 3	0x2E01	In current	0-Imax	U2	UINT32	R	
+4, 5	0x2E02	Frequency	0-10000	×0.01Hz	UINT32	R	
+6, 7	0x2E03	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+8, 9	0x2E04	Current unbalance	0-3000	×0.1%	UINT32	R	
+10, 11	0x2E05	Not used			UINT32	R	
+12, 13	0x2E06	V4 voltage	0-V4max	U4	UINT32	R	
+14, 15	0x2E07	I4x current	0-Ixmax	U2	UINT32	R	
+16, 17	0x2E08	V4 THD	0-9999	×0.1%	UINT32	R	4
+18, 19	0x2E09	I4x THD	0-9999	×0.1%	UINT32	R	4
+20, 21	0x2E0A	I4x TDD	0-1000	×0.1%	UINT32	R	4
17728-17759		**Minimum Analog Inputs**					
+0,1	0x2E80	Analog input AI1	AI1min-AI1max		INT32	R	
+2,3	0x2E81	Analog input AI2	AI2min-AI2max		INT32	R	
		...					
+30,31	0x2E8F	Analog input AI16	AI16min-AI16max		INT32	R	
17920-17951		**Programmable Min/Max Minimum Values**					
+0, 1	0x3000	Min/Max Register #1			UINT32	R	
+2, 3	0x3001	Min/Max Register #2			UINT32	R	
		...					
+30, 31	0x300F	Min/Max Register #16			UINT32	R	
18432-18503		**Maximum 1-Cycle Phase Values**					
+0, 1	0x3400	V1 voltage	0-Vmax	U1	UINT32	R	1
+2, 3	0x3401	V2 voltage	0-Vmax	U1	UINT32	R	1
+4, 5	0x3402	V3 voltage	0-Vmax	U1	UINT32	R	1
+6, 7	0x3403	I1 current	0-Imax	U2	UINT32	R	
+8, 9	0x3404	I2 current	0-Imax	U2	UINT32	R	
+10, 11	0x3405	I3 current	0-Imax	U2	UINT32	R	
+12, 13	0x3406	kW L1	-Pmax-Pmax	U3	INT32	R	
+14, 15	0x3407	kW L2	-Pmax-Pmax	U3	INT32	R	
+16, 17	0x3408	kW L3	-Pmax-Pmax	U3	INT32	R	
+18, 19	0x3409	kvar L1	-Pmax-Pmax	U3	INT32	R	
+20, 21	0x340A	kvar L2	-Pmax-Pmax	U3	INT32	R	
+22, 23	0x340B	kvar L3	-Pmax-Pmax	U3	INT32	R	
+24, 25	0x340C	kVA L1	0-Pmax	U3	UINT32	R	
+26, 27	0x340D	kVA L2	0-Pmax	U3	UINT32	R	
+28, 29	0x340E	kVA L3	0-Pmax	U3	UINT32	R	
+30, 31	0x340F	Power factor L1	0-1000	×0.001	UINT32	R	Absolute value
+32, 33	0x3410	Power factor L2	0-1000	×0.001	UINT32	R	Absolute value
+34, 35	0x3411	Power factor L3	0-1000	×0.001	UINT32	R	Absolute value

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+36, 37	0x3412	V1 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+38, 39	0x3413	V2 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+40, 41	0x3414	V3 voltage THD	0-9999	×0.1%	UINT32	R	2, 4
+42, 43	0x3415	I1 current THD	0-9999	×0.1%	UINT32	R	4
+44, 45	0x3416	I2 current THD	0-9999	×0.1%	UINT32	R	4
+46, 47	0x3417	I3 current THD	0-9999	×0.1%	UINT32	R	4
+48, 49	0x3418	I1 K-Factor	10-9999	×0.1	UINT32	R	4
+50, 51	0x3419	I2 K-Factor	10-9999	×0.1	UINT32	R	4
+52, 53	0x341A	I3 K-Factor	10-9999	×0.1	UINT32	R	4
+54, 55	0x341B	I1 current TDD	0-1000	×0.1%	UINT32	R	4
+56, 57	0x341C	I2 current TDD	0-1000	×0.1%	UINT32	R	4
+58, 59	0x341D	I3 current TDD	0-1000	×0.1%	UINT32	R	4
+60, 61	0x341E	V12 voltage	0-Vmax	U1	UINT32	R	
+62, 63	0x341F	V23 voltage	0-Vmax	U1	UINT32	R	
+64, 65	0x3420	V31 voltage	0-Vmax	U1	UINT32	R	
+66, 67	0x3421	I1x current	0-Ixmax	U2	UINT32	R	
+68, 69	0x3422	I2x current	0-Ixmax	U2	UINT32	R	
+70, 71	0x3423	I3x current	0-Ixmax	U2	UINT32	R	
18560-18571		**Maximum 1-Cycle Total Values**					
+0, 1	0x3500	Total kW	-Pmax-Pmax	U3	INT32	R	
+2, 3	0x3501	Total kvar	-Pmax-Pmax	U3	INT32	R	
+4, 5	0x3502	Total kVA	0-Pmax	U3	UINT32	R	
+6, 7	0x3503	Total PF	0-1000	×0.001	UINT32	R	Absolute value
+8, 9	0x3504	Total PF lag	0-1000	×0.001	UINT32	R	
+10, 11	0x3505	Total PF lead	0-1000	×0.001	UINT32	R	
18668-18689		**Maximum 1-Cycle Auxiliary Values**					
+0, 1	0x3600	I4 current	0-Imax	U2	UINT32	R	
+2, 3	0x3601	In current	0-Imax	U2	UINT32	R	
+4, 5	0x3602	Frequency	0-10000	×0.01Hz	UINT32	R	
+6, 7	0x3603	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+8, 9	0x3604	Current unbalance	0-3000	×0.1%	UINT32	R	
+10, 11	0x3605	Not used			UINT32	R	
+12, 13	0x3606	V4 voltage	0-V4max	U4	UINT32	R	
+14, 15	0x3607	I4x current	0-Ixmax	U2	UINT32	R	
+16, 17	0x3608	V4 THD	0-9999	×0.1%	UINT32	R	4
+18, 19	0x3609	I4x THD	0-9999	×0.1%	UINT32	R	4
+20, 21	0x360A	I4x TDD	0-1000	×0.1%	UINT32	R	4
18732-18795		**Maximum Analog Inputs**					
+0,1	0x3680	Analog input AI1	AI1min-AI1max		INT32	R	
+2,3	0x3681	Analog input AI2	AI2min-AI2max		INT32	R	
		...					
+30,31	0x368F	Analog input AI16	AI16min-AI16max		INT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
18816-18859		**Maximum Demands**					
+0, 1	0x3700	V1 Maximum volt demand	0-Vmax	U1	UINT32	R	[2]
+2, 3	0x3701	V2 Maximum volt demand	0-Vmax	U1	UINT32	R	[2]
+4, 5	0x3702	V3 Maximum volt demand	0-Vmax	U1	UINT32	R	[2]
+6, 7	0x3703	I1 Maximum ampere demand	0-Imax	U2	UINT32	R	
+8, 9	0x3704	I2 Maximum ampere demand	0-Imax	U2	UINT32	R	
+10, 11	0x3705	I3 Maximum ampere demand	0-Imax	U2	UINT32	R	
+12, 13	0x3706	Not used	0		UINT32	R	
+14, 15	0x3707	Not used	0		UINT32	R	
+16, 17	0x3708	Not used	0		UINT32	R	
+18, 19	0x3709	Maximum kW import sliding window demand	0-Pmax	U3	UINT32	R	
+20, 21	0x370A	Maximum kvar import sliding window demand	0-Pmax	U3	UINT32	R	
+22, 23	0x370B	Maximum kVA sliding window demand	0-Pmax	U3	UINT32	R	
+24, 25	0x3737	Not used	0		UINT32	R	
+26, 27	0x370D	Not used	0		UINT32	R	
+28, 29	0x370E	Not used	0		UINT32	R	
+30, 31	0x370F	Maximum kW export sliding window demand	0-Pmax	U3	UINT32	R	
+32, 33	0x3710	Maximum kvar export sliding window demand	0-Pmax	U3	UINT32	R	
+34, 35	0x3737	Not used	0		UINT32	R	
+36, 37	0x3712	Not used	0		UINT32	R	
+38, 39	0x3713	V4 Maximum volt demand	0-Vmax	U4	UINT32	R	
+40, 41	0x3714	I4 Maximum ampere demand	0-I4max	U2	UINT32	R	
+42, 43	0x3715	In Maximum ampere demand	0-Imax	U2	UINT32	R	
18944-18975		**Programmable Min/Max Maximum Values**					
+0, 1	0x3800	Min/Max Register #1			UINT32	R	
+2, 3	0x3801	Min/Max Register #2			UINT32	R	
		...					
+30, 31	0x380F	Min/Max Register #16			UINT32	R	
19008-19031		**Maximum Harmonic Demands**					
+0, 1	0x3880	V1 THD demand	0-9999	×0.1%	UINT32	R	[2]
+2, 3	0x3881	V2 THD demand	0-9999	×0.1%	UINT32	R	[2]
+4, 5	0x3882	V3 THD demand	0-9999	×0.1%	UINT32	R	[2]
+6, 7	0x3883	V4 THD demand	0-9999	×0.1%	UINT32	R	
+8, 9	0x3884	I1 THD demand	0-9999	×0.1%	UINT32	R	
+10, 11	0x3885	I2 THD demand	0-9999	×0.1%	UINT32	R	
+12, 13	0x3886	I3 THD demand	0-9999	×0.1%	UINT32	R	
+14, 15	0x3887	I4 THD demand	0-9999	×0.1%	UINT32	R	
+16, 17	0x3888	I1 TDD demand	0-1000	×0.1%	UINT32	R	
+18, 19	0x3889	I2 TDD demand	0-1000	×0.1%	UINT32	R	
+20, 21	0x388A	I3 TDD demand	0-1000	×0.1%	UINT32	R	
+22, 23	0x388B	I4 TDD demand	0-1000	×0.1%	UINT32	R	
19072-19135		**Maximum Analog Input Demands**					
+0,1	0x3900	Analog input AI1+	AI1min-AI1max		UINT32	R	Positive AI readings demand

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+2,3	0x3901	Analog input AI2+	AI2min-AI2max		UINT32	R	
		...					
+30,31	0x390F	Analog input AI16+	AI16min-AI16max		UINT32	R	
+32,33	0x3910	Analog input AI1-	AI1min-AI1max		UINT32	R	Negative AI readings demand
+34,35	0x3911	Analog input AI2-	AI2min-AI2max		UINT32	R	
		...					
+62,63	0x391F	Analog input AI16-	AI16min-AI16max		UINT32	R	
19200-19263		**Present Analog Input Demands**					
+0,1	0x3A00	Analog input AI1+	AI1min-AI1max		UINT32	R	Positive AI readings demand
+2,3	0x3A01	Analog input AI2+	AI2min-AI2max		UINT32	R	
		...					
+30,31	0x3A0F	Analog input AI16+	AI16min-AI16max		UINT32	R	
+32,33	0x3A10	Analog input AI1-	AI1min-AI1max		UINT32	R	Negative AI readings demand
+34,35	0x3A11	Analog input AI2-	AI2min-AI2max		UINT32	R	
		...					
+62,63	0x3A1F	Analog input AI16-	AI16min-AI16max		UINT32	R	
19328-19359		**1-Cycle Analog Inputs**					
+0,1	0x3B00	Analog input AI1	AI1min-AI1max		INT32	R	
+2,3	0x3B01	Analog input AI2	AI2min-AI2max		INT32	R	
		...					
+30,31	0x3B0F	Analog input AI16	AI16min-AI16max		INT32	R	
19392-19423		**Raw Analog Inputs**					
+0, 1	0x3B80	Analog input AI1	0-4095		UINT32	R	
+2, 3	0x3B81	Analog input AI2	0-4095		UINT32	R	
		...					
+30, 31	0x3B8F	Analog input AI16	0-4095		UINT32	R	
19456-19459		**TOU Parameters**					
+0, 1	0x3C00	Active tariff	0-15 = Tariff 1-16		UINT32	R/W	
+2, 3	0x3C01	Active profile	0-15 = Profile 1-16		UINT32	R	
19520-19551		**Scaled Analog Outputs**					
+0, 1	0x3C80	Analog input AO1	0-4095		UINT32	R/W	
+2, 3	0x3C81	Analog input AO2	0-4095		UINT32	R/W	
		...					
+30, 31	0x3C8F	Analog input AO16	0-4095		UINT32	R/W	
19584-19615		**Billing TOU Register #1**					
+0, 1	0x3D00	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x3D01	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x3D0F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
19712-19743		**Billing TOU Register #2**					
+0, 1	0x3E00	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x3E01	Tariff #2 register	0-999,999,999	U5	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
		...				R	
+30, 31	0x3E0F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
19840-19871		**Billing TOU Register #3**					
+0, 1	0x3F00	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x3F01	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x3F0F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
19968-19999		**Billing TOU Register #4**					
+0, 1	0x4000	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4001	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x400F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
20096-20127		**Billing TOU Register #5**					
+0, 1	0x4100	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4101	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x410F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
20224-20255		**Billing TOU Register #6**					
+0, 1	0x4200	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4201	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x420F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
20352-20383		**Billing TOU Register #7**					
+0, 1	0x4300	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4301	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x430F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
20480-20511		**Billing TOU Register #8**					
+0, 1	0x4400	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4401	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x440F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
21376-21407		**Billing TOU Register #9**					
+0, 1	0x4B00	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4B01	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x4B0F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
21504-21535		**Billing TOU Register #10**					
+0, 1	0x4C00	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4C01	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+30, 31	0x4C0F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
21632-21663		**Billing TOU Register #11**					
+0, 1	0x4D00	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4D01	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x4D0F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
21760-21791		**Billing TOU Register #12**					
+0, 1	0x4E00	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4E01	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x4E0F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
21888-21919		**Billing TOU Register #13**					
+0, 1	0x4F00	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x4F01	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x4F0F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
22016-22047		**Billing TOU Register #14**					
+0, 1	0x5000	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x5001	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x500F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
22144-22175		**Billing TOU Register #15**					
+0, 1	0x5100	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x5101	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x510F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
22272-22303		**Billing TOU Register #16**					
+0, 1	0x5200	Tariff #1 register	0-999,999,999	U5	UINT32	R	
+2, 3	0x5201	Tariff #2 register	0-999,999,999	U5	UINT32	R	
		...				R	
+30, 31	0x520F	Tariff #16 register	0-999,999,999	U5	UINT32	R	
20608-20639		**Billing Summary Accumulated Demands**					
+0, 1	0x4500	Summary register #1	0-Pmax	U3	UINT32	R	
+2, 3	0x4501	Summary register #2	0-Pmax	U3	UINT32	R	
		...					
+30, 31	0x4503	Summary register #16	0-Pmax	U3	UINT32	R	
20672-20703		**Billing Summary Block Demands**					
+0, 1	0x4580	Summary register #1	0-Pmax	U3	UINT32	R	
+2, 3	0x4581	Summary register #2	0-Pmax	U3	UINT32	R	
		...					

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+30, 31	0x4583	Summary register #16	0-Pmax	U3	UINT32	R	
20736-20767		**Billing Summary Sliding Window Demands**					
+0, 1	0x4600	Summary register #1	0-Pmax	U3	UINT32	R	
+2, 3	0x4601	Summary register #2	0-Pmax	U3	UINT32	R	
		...					
+30, 31	0x4603	Summary register #16	0-Pmax	U3	UINT32	R	
20928-20959		**Billing Summary Maximum Demands**					
+0, 1	0x4780	Summary register #1	0-Pmax	U3	UINT32	R	
+2, 3	0x4781	Summary register #2	0-Pmax	U3	UINT32	R	
		...					
+30, 31	0x4783	Summary register #16	0-Pmax	U3	UINT32	R	
20992-21023		**Billing TOU Maximum Demand Register #1**					
+0, 1	0x4800	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x4801	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x480F	Tariff #16 register	0-Pmax	U3	UINT32	R	
21120-21151		**Billing TOU Maximum Demand Register #2**					
+0, 1	0x4900	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x4901	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x490F	Tariff #16 register	0-Pmax	U3	UINT32	R	
21248-21279		**Billing TOU Maximum Demand Register #3**					
+0, 1	0x4A00	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x4A01	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x4A0F	Tariff #16 register	0-Pmax	U3	UINT32	R	
21056-21087		**Billing TOU Maximum Demand Register #4**					
+0, 1	0x4880	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x4881	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x488F	Tariff #16 register	0-Pmax	U3	UINT32	R	
21184-21215		**Billing TOU Maximum Demand Register #5**					
+0, 1	0x4980	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x4981	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x498F	Tariff #16 register	0-Pmax	U3	UINT32	R	
21312-21343		**Billing TOU Maximum Demand Register #6**					
+0, 1	0x4A80	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x4A81	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+30, 31	0x4A8F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22400-22431		**Billing TOU Maximum Demand Register #7**					
+0, 1	0x5300	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5301	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x530F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22464-22495		**Billing TOU Maximum Demand Register #8**					
+0, 1	0x5380	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5381	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x538F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22528-22559		**Billing TOU Maximum Demand Register #9**					
+0, 1	0x5400	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5401	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x540F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22592-22623		**Billing TOU Maximum Demand Register #10**					
+0, 1	0x5480	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5481	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x548F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22656-22687		**Billing TOU Maximum Demand Register #11**					
+0, 1	0x5500	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5501	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x550F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22720-22751		**Billing TOU Maximum Demand Register #12**					
+0, 1	0x5580	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5581	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x558F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22784-22815		**Billing TOU Maximum Demand Register #13**					
+0, 1	0x5600	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5601	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x560F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22848-22879		**Billing TOU Maximum Demand Register #14**					
+0, 1	0x5680	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5681	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+30, 31	0x568F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22912-22943		**Billing TOU Maximum Demand Register #15**					
+0, 1	0x5700	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5701	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x570F	Tariff #16 register	0-Pmax	U3	UINT32	R	
22976-23007		**Billing TOU Maximum Demand Register #16**					
+0, 1	0x5780	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2, 3	0x5781	Tariff #2 register	0-Pmax	U3	UINT32	R	
		...				R	
+30, 31	0x578F	Tariff #16 register	0-Pmax	U3	UINT32	R	
24576-24701		**V1/V12 Harmonic Angles**					2, 4, 6
+0,1	0x6400	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6401	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+124,125	0x643E	H63 Harmonic angle	-1800-1800	×0.1º	INT32	R	
24704-24829		**V2/V23 Harmonic Angles**					2, 4, 6
+0,1	0x6500	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6501	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+124,125	0x653E	H63 Harmonic angle	-1800-1800	×0.1º	INT32	R	
24832-24957		**V3/V31 Harmonic Angles**					2, 4, 6
+0,1	0x6600	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6601	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+124,125	0x663E	H63 Harmonic angle	-1800-1800	×0.1º	INT32	R	
24960-25085		**V4 Harmonic Angles**					4, 6
+0,1	0x6700	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6701	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+124,125	0x673E	H63 Harmonic angle	-1800-1800	×0.1º	INT32	R	
25088-25213		**I1 Harmonic Angles**					4, 6
+0,1	0x6800	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6801	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+124,125	0x683E	H63 Harmonic angle	-1800-1800	×0.1º	INT32	R	
25216-25341		**I2 Harmonic Angles**					4, 6
+0,1	0x6900	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6901	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+124,125	0x693E	H63 Harmonic angle	-1800-1800	×0.1º	INT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
25344-25469		**I3 Harmonic Angles**					4, 6
+0,1	0x6A00	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6A01	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		…					
+124,125	0x6A3E	H63 Harmonic angle	-1800-1800	×0.1º	INT32	R	
25472-25597		**I4 Harmonic Angles**					4, 6
+0,1	0x6B00	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6B01	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		…					
+124,125	0x6B3E	H63 Harmonic angle	-1800-1800	×0.1º	INT32	R	
25600-25653		**0.2-Second RMS and Auxiliary Values**					
+0, 1	0x6C00	V1 voltage	0-Vmax	U1	UINT32	R	1
+2, 3	0x6C01	V2 voltage	0-Vmax	U1	UINT32	R	1
+4, 5	0x6C02	V3 voltage	0-Vmax	U1	UINT32	R	1
+6, 7	0x6C03	V4 voltage	0-V4max	U4	UINT32	R	
+8, 9	0x6C04	V12 voltage	0-Vmax	U1	UINT32	R	
+10, 11	0x6C05	V23 voltage	0-Vmax	U1	UINT32	R	
+12, 13	0x6C06	V31 voltage	0-Vmax	U1	UINT32	R	
+14, 15	0x6C07	I1 current	0-Imax	U2	UINT32	R	
+16, 17	0x6C08	I2 current	0-Imax	U2	UINT32	R	
+18, 19	0x6C09	I3 current	0-Imax	U2	UINT32	R	
+20, 21	0x6C0A	I4 current	0-I4max	U2	UINT32	R	
+22, 23	0x6C0B	In current	0-Imax	U2	UINT32	R	
+24, 25	0x6C0C	I1x current	0-Ixmax	U2	UINT32	R	
+26, 27	0x6C0D	I2x current	0-Ixmax	U2	UINT32	R	
+28, 29	0x6C0E	I3x current	0-Ixmax	U2	UINT32	R	
+30, 31	0x6C0F	I4x current	0-I4xmax	U2	UINT32	R	
+32, 33	0x6C10	Inx current	0-Ixmax	U2	UINT32	R	
+34, 35	0x6C11	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x6C12	Zero-sequence current	0-Imax	U2	UINT32	R	
+38, 39	0x6C13	Ix Zero-sequence current	0-Ixmax	U2	UINT32	R	
+40, 41	0x6C14	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+42, 43	0x6C15	Current unbalance	0-3000	×0.1%	UINT32	R	
+44, 45	0x6C16	Ix current unbalance	0-3000	×0.1%	UINT32	R	
+46, 47	0x6C17	Not used			UINT32	R	
+48, 49	0x6C18	Frequency	0-10000	×0.01Hz	UINT32	R	
+50, 51	0x6C19	Positive-sequence voltage	0-Vmax	U1	UINT32	R	
+52, 53	0x6C1A	Zero-sequence voltage unbalance	0-300.0	×0.1%	UINT32	R	
25664-25717		**3-Second RMS and Auxiliary Values**					
+0, 1	0x6C80	V1 voltage	0-Vmax	U1	UINT32	R	1
+2, 3	0x6C81	V2 voltage	0-Vmax	U1	UINT32	R	1
+4, 5	0x6C82	V3 voltage	0-Vmax	U1	UINT32	R	1
+6, 7	0x6C83	V4 voltage	0-V4max	U4	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+8, 9	0x6C84	V12 voltage	0-Vmax	U1	UINT32	R	
+10, 11	0x6C85	V23 voltage	0-Vmax	U1	UINT32	R	
+12, 13	0x6C86	V31 voltage	0-Vmax	U1	UINT32	R	
+14, 15	0x6C87	I1 current	0-Imax	U2	UINT32	R	
+16, 17	0x6C88	I2 current	0-Imax	U2	UINT32	R	
+18, 19	0x6C89	I3 current	0-Imax	U2	UINT32	R	
+20, 21	0x6C8A	I4 current	0-I4max	U2	UINT32	R	
+22, 23	0x6C8B	In current	0-Imax	U2	UINT32	R	
+24, 25	0x6C8C	I1x current	0-Ixmax	U2	UINT32	R	
+26, 27	0x6C8D	I2x current	0-Ixmax	U2	UINT32	R	
+28, 29	0x6C8E	I3x current	0-Ixmax	U2	UINT32	R	
+30, 31	0x6C8F	I4x current	0-I4xmax	U2	UINT32	R	
+32, 33	0x6C90	Inx current	0-Ixmax	U2	UINT32	R	
+34, 35	0x6C91	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x6C92	Zero-sequence current	0-Imax	U2	UINT32	R	
+38, 39	0x6C93	Ix Zero-sequence current	0-Ixmax	U2	UINT32	R	
+40, 41	0x6C94	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+42, 43	0x6C95	Current unbalance	0-3000	×0.1%	UINT32	R	
+44, 45	0x6C96	Ix current unbalance	0-3000	×0.1%	UINT32	R	
+46, 47	0x6C97	Not used			UINT32	R	
+48, 49	0x6C98	Frequency	0-10000	×0.01Hz	UINT32	R	
+50, 51	0x6C99	Positive-sequence voltage	0-Vmax	U1	UINT32	R	
+52, 53	0x6C9A	Zero-sequence voltage unbalance	0-300.0	×0.1%	UINT32	R	
26880-26993		**1-Minute RMS and Auxiliary Values (GOST)**					
+0, 1	0x7600	V1 voltage	0-Vmax	U1	UINT32	R	1
+2, 3	0x7601	V2 voltage	0-Vmax	U1	UINT32	R	1
+4, 5	0x7602	V3 voltage	0-Vmax	U1	UINT32	R	1
+6, 7	0x7603	V4 voltage	0-V4max	U4	UINT32	R	
+8, 9	0x7604	V12 voltage	0-Vmax	U1	UINT32	R	
+10, 11	0x7605	V23 voltage	0-Vmax	U1	UINT32	R	
+12, 13	0x7606	V31 voltage	0-Vmax	U1	UINT32	R	
+14, 15	0x7607	I1 current	0-Imax	U2	UINT32	R	
+16, 17	0x7608	I2 current	0-Imax	U2	UINT32	R	
+18, 19	0x7609	I3 current	0-Imax	U2	UINT32	R	
+20, 21	0x760A	I4 current	0-I4max	U2	UINT32	R	
+22, 23	0x760B	In current	0-Imax	U2	UINT32	R	
+24, 25	0x760C	I1x current	0-Ixmax	U2	UINT32	R	
+26, 27	0x760D	I2x current	0-Ixmax	U2	UINT32	R	
+28, 29	0x760E	I3x current	0-Ixmax	U2	UINT32	R	
+30, 31	0x760F	I4x current	0-I4xmax	U2	UINT32	R	
+32, 33	0x7610	Inx current	0-Ixmax	U2	UINT32	R	
+34, 35	0x7611	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x7612	Zero-sequence current	0-Imax	U2	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+38, 39	0x7613	Ix Zero-sequence current	0-Ixmax	U2	UINT32	R	
+40, 41	0x7614	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+42, 43	0x7615	Current unbalance	0-3000	×0.1%	UINT32	R	
+44, 45	0x7616	Ix current unbalance	0-3000	×0.1%	UINT32	R	
+46, 47	0x7617	DC voltage	0-999900	×0.01V	UINT32	R	
+48, 49	0x7618	Frequency	0-10000	×0.01Hz	UINT32	R	
+50, 51	0x7619	Positive-sequence voltage	0-Vmax	U1	UINT32	R	
+52, 53	0x761A	Zero-sequence voltage unbalance	0-300.0	×0.1%	UINT32	R	
25728-25781		**10-Minute RMS and Auxiliary Values**					
+0, 1	0x6D00	V1 voltage	0-Vmax	U1	UINT32	R	1
+2, 3	0x6D01	V2 voltage	0-Vmax	U1	UINT32	R	1
+4, 5	0x6D02	V3 voltage	0-Vmax	U1	UINT32	R	1
+6, 7	0x6D03	V4 voltage	0-V4max	U4	UINT32	R	
+8, 9	0x6D04	V12 voltage	0-Vmax	U1	UINT32	R	
+10, 11	0x6D05	V23 voltage	0-Vmax	U1	UINT32	R	
+12, 13	0x6D06	V31 voltage	0-Vmax	U1	UINT32	R	
+14, 15	0x6D07	I1 current	0-Imax	U2	UINT32	R	
+16, 17	0x6D08	I2 current	0-Imax	U2	UINT32	R	
+18, 19	0x6D09	I3 current	0-Imax	U2	UINT32	R	
+20, 21	0x6D0A	I4 current	0-I4max	U2	UINT32	R	
+22, 23	0x6D0B	In current	0-Imax	U2	UINT32	R	
+24, 25	0x6D0C	I1x current	0-Ixmax	U2	UINT32	R	
+26, 27	0x6D0D	I2x current	0-Ixmax	U2	UINT32	R	
+28, 29	0x6D0E	I3x current	0-Ixmax	U2	UINT32	R	
+30, 31	0x6D0F	I4x current	0-I4xmax	U2	UINT32	R	
+32, 33	0x6D10	Inx current	0-Ixmax	U2	UINT32	R	
+34, 35	0x6D11	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x6D12	Zero-sequence current	0-Imax	U2	UINT32	R	
+38, 39	0x6D13	Ix Zero-sequence current	0-Ixmax	U2	UINT32	R	
+40, 41	0x6D14	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+42, 43	0x6D15	Current unbalance	0-3000	×0.1%	UINT32	R	
+44, 45	0x6D16	Ix current unbalance	0-3000	×0.1%	UINT32	R	
+46, 47	0x6D17	Not used			UINT32	R	
+48, 49	0x6D18	Frequency	0-10000	×0.01Hz	UINT32	R	
+50, 51	0x6D19	Positive-sequence voltage	0-Vmax	U1	UINT32	R	
+52, 53	0x6D1A	Zero-sequence voltage unbalance	0-300.0	×0.1%	UINT32	R	
25792-25845		**2-Hour RMS and Auxiliary Values**					
+0, 1	0x6D80	V1 voltage	0-Vmax	U1	UINT32	R	1
+2, 3	0x6D81	V2 voltage	0-Vmax	U1	UINT32	R	1
+4, 5	0x6D82	V3 voltage	0-Vmax	U1	UINT32	R	1
+6, 7	0x6D83	V4 voltage	0-V4max	U4	UINT32	R	
+8, 9	0x6D84	V12 voltage	0-Vmax	U1	UINT32	R	
+10, 11	0x6D85	V23 voltage	0-Vmax	U1	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+12, 13	0x6D86	V31 voltage	0-Vmax	U1	UINT32	R	
+14, 15	0x6D87	I1 current	0-Imax	U2	UINT32	R	
+16, 17	0x6D88	I2 current	0-Imax	U2	UINT32	R	
+18, 19	0x6D89	I3 current	0-Imax	U2	UINT32	R	
+20, 21	0x6D8A	I4 current	0-I4max	U2	UINT32	R	
+22, 23	0x6D8B	In current	0-Imax	U2	UINT32	R	
+24, 25	0x6D8C	I1x current	0-Ixmax	U2	UINT32	R	
+26, 27	0x6D8D	I2x current	0-Ixmax	U2	UINT32	R	
+28, 29	0x6D8E	I3x current	0-Ixmax	U2	UINT32	R	
+30, 31	0x6D8F	I4x current	0-I4xmax	U2	UINT32	R	
+32, 33	0x6D90	Inx current	0-Ixmax	U2	UINT32	R	
+34, 35	0x6D91	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x6D92	Zero-sequence current	0-Imax	U2	UINT32	R	
+38, 39	0x6D93	Ix Zero-sequence current	0-Ixmax	U2	UINT32	R	
+40, 41	0x6D94	Voltage unbalance	0-3000	×0.1%	UINT32	R	
+42, 43	0x6D95	Current unbalance	0-3000	×0.1%	UINT32	R	
+44, 45	0x6D96	Ix current unbalance	0-3000	×0.1%	UINT32	R	
+46, 47	0x6D97	Not used			UINT32	R	
+48, 49	0x6D98	Frequency	0-10000	×0.01Hz	UINT32	R	
+50, 51	0x6D99	Positive-sequence voltage	0-Vmax	U1	UINT32	R	
+52, 53	0x6D9A	Zero-sequence voltage unbalance	0-300.0	×0.1%	UINT32	R	
25856-25905		**0.2-Second Harmonics**					
+0, 1	0x6E00	V1 THD	0-9999	×0.1%	UINT32	R	2
+2, 3	0x6E01	V2 THD	0-9999	×0.1%	UINT32	R	2
+4, 5	0x6E02	V3 THD	0-9999	×0.1%	UINT32	R	2
+6, 7	0x6E03	V4 THD	0-9999	×0.1%	UINT32	R	
+8, 9	0x6E04	I1 THD	0-9999	×0.1%	UINT32	R	
+10, 11	0x6E05	I2 THD	0-9999	×0.1%	UINT32	R	
+12, 13	0x6E06	I3 THD	0-9999	×0.1%	UINT32	R	
+14, 15	0x6E07	I4 THD	0-9999	×0.1%	UINT32	R	
+16, 17	0x6E08	V1 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+18, 19	0x6E09	V2 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+20, 21	0x6E0A	V3 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+22, 23	0x6E0B	V4 interharmonics THD	0-9999	×0.1%	UINT32	R	
+24, 25	0x6E0C	I1 interharmonics THD	0-9999	×0.1%	UINT32	R	
+26, 27	0x6E0D	I2 interharmonics THD	0-9999	×0.1%	UINT32	R	
+28, 29	0x6E0E	I3 interharmonics THD	0-9999	×0.1%	UINT32	R	
+30, 31	0x6E0F	I4 interharmonics THD	0-9999	×0.1%	UINT32	R	
+32, 33	0x6E10	I1 TDD	0-1000	×0.1%	UINT32	R	
+34, 35	0x6E11	I2 TDD	0-1000	×0.1%	UINT32	R	
+36, 37	0x6E12	I3 TDD	0-1000	×0.1%	UINT32	R	
+38, 39	0x6E13	I4 TDD	0-1000	×0.1%	UINT32	R	
+40, 41	0x6E14	I1 K-Factor	10-9999	×0.1	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+42, 43	0x6E15	I2 K-Factor	10-9999	×0.1	UINT32	R	
+44, 45	0x6E16	I3 K-Factor	10-9999	×0.1	UINT32	R	
+46, 47	0x6E17	I4 K-Factor	10-9999	×0.1	UINT32	R	
+48, 49	0x6E18	V1 Crest Factor	0-10000	×0.01	UINT32	R	2
+50, 51	0x6E19	V2 Crest Factor	0-10000	×0.01	UINT32	R	2
+52, 53	0x6E1A	V3 Crest Factor	0-10000	×0.01	UINT32	R	2
+54, 55	0x6E1B	V4 Crest Factor	0-10000	×0.01	UINT32	R	
+56, 57	0x6E1C	I1 Crest Factor	0-10000	×0.01	UINT32	R	
+58, 59	0x6E1D	I2 Crest Factor	0-10000	×0.01	UINT32	R	
+60, 61	0x6E1E	I3 Crest Factor	0-10000	×0.01	UINT32	R	
+62, 63	0x6E1F	I4 Crest Factor	0-10000	×0.01	UINT32	R	
25920-25969		**3-Second Harmonics**					
+0, 1	0x6E80	V1 THD	0-9999	×0.1%	UINT32	R	2
+2, 3	0x6E81	V2 THD	0-9999	×0.1%	UINT32	R	2
+4, 5	0x6E82	V3 THD	0-9999	×0.1%	UINT32	R	2
+6, 7	0x6E83	V4 THD	0-9999	×0.1%	UINT32	R	
+8, 9	0x6E84	I1 THD	0-9999	×0.1%	UINT32	R	
+10, 11	0x6E85	I2 THD	0-9999	×0.1%	UINT32	R	
+12, 13	0x6E86	I3 THD	0-9999	×0.1%	UINT32	R	
+14, 15	0x6E87	I4 THD	0-9999	×0.1%	UINT32	R	
+16, 17	0x6E88	V1 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+18, 19	0x6E89	V2 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+20, 21	0x6E8A	V3 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+22, 23	0x6E8B	V4 interharmonics THD	0-9999	×0.1%	UINT32	R	
+24, 25	0x6E6E	I1 interharmonics THD	0-9999	×0.1%	UINT32	R	
+26, 27	0x6E8D	I2 interharmonics THD	0-9999	×0.1%	UINT32	R	
+28, 29	0x6E8E	I3 interharmonics THD	0-9999	×0.1%	UINT32	R	
+30, 31	0x6E8F	I4 interharmonics THD	0-9999	×0.1%	UINT32	R	
+32, 33	0x6E90	I1 TDD	0-1000	×0.1%	UINT32	R	
+34, 35	0x6E91	I2 TDD	0-1000	×0.1%	UINT32	R	
+36, 37	0x6E92	I3 TDD	0-1000	×0.1%	UINT32	R	
+38, 39	0x6E93	I4 TDD	0-1000	×0.1%	UINT32	R	
+40, 41	0x6E94	I1 K-Factor	10-9999	×0.1	UINT32	R	
+42, 43	0x6E95	I2 K-Factor	10-9999	×0.1	UINT32	R	
+44, 45	0x6E96	I3 K-Factor	10-9999	×0.1	UINT32	R	
+46, 47	0x6E97	I4 K-Factor	10-9999	×0.1	UINT32	R	
+48, 49	0x6E98	V1 Crest Factor	0-10000	×0.01	UINT32	R	2
+50, 51	0x6E99	V2 Crest Factor	0-10000	×0.01	UINT32	R	2
+52, 53	0x6E9A	V3 Crest Factor	0-10000	×0.01	UINT32	R	2
+54, 55	0x6E9B	V4 Crest Factor	0-10000	×0.01	UINT32	R	
+56, 57	0x6E9C	I1 Crest Factor	0-10000	×0.01	UINT32	R	
+58, 59	0x6E9D	I2 Crest Factor	0-10000	×0.01	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+60, 61	0x6E9E	I3 Crest Factor	0-10000	×0.01	UINT32	R	
+62, 63	0x6E9F	I4 Crest Factor	0-10000	×0.01	UINT32	R	
25984-26033		**10-Minute Harmonics**					
+0, 1	0x6F00	V1 THD	0-9999	×0.1%	UINT32	R	2
+2, 3	0x6F01	V2 THD	0-9999	×0.1%	UINT32	R	2
+4, 5	0x6F02	V3 THD	0-9999	×0.1%	UINT32	R	2
+6, 7	0x6F03	V4 THD	0-9999	×0.1%	UINT32	R	
+8, 9	0x6F04	I1 THD	0-9999	×0.1%	UINT32	R	
+10, 11	0x6F05	I2 THD	0-9999	×0.1%	UINT32	R	
+12, 13	0x6F06	I3 THD	0-9999	×0.1%	UINT32	R	
+14, 15	0x6F07	I4 THD	0-9999	×0.1%	UINT32	R	
+16, 17	0x6F08	V1 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+18, 19	0x6F09	V2 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+20, 21	0x6F0A	V3 interharmonics THD	0-9999	×0.1%	UINT32	R	2
+22, 23	0x6F0B	V4 interharmonics THD	0-9999	×0.1%	UINT32	R	
+24, 25	0x6F0C	I1 interharmonics THD	0-9999	×0.1%	UINT32	R	
+26, 27	0x6F0D	I2 interharmonics THD	0-9999	×0.1%	UINT32	R	
+28, 29	0x6F0E	I3 interharmonics THD	0-9999	×0.1%	UINT32	R	
+30, 31	0x6F0F	I4 interharmonics THD	0-9999	×0.1%	UINT32	R	
+32, 33	0x6F10	I1 TDD	0-1000	×0.1%	UINT32	R	
+34, 35	0x6F11	I2 TDD	0-1000	×0.1%	UINT32	R	
+36, 37	0x6F12	I3 TDD	0-1000	×0.1%	UINT32	R	
+38, 39	0x6F13	I4 TDD	0-1000	×0.1%	UINT32	R	
+40, 41	0x6F14	I1 K-Factor	10-9999	×0.1	UINT32	R	
+42, 43	0x6F15	I2 K-Factor	10-9999	×0.1	UINT32	R	
+44, 45	0x6F16	I3 K-Factor	10-9999	×0.1	UINT32	R	
+46, 47	0x6F17	I4 K-Factor	10-9999	×0.1	UINT32	R	
+48, 49	0x6F18	V1 Crest Factor	0-10000	×0.01	UINT32	R	2
+50, 51	0x6F19	V2 Crest Factor	0-10000	×0.01	UINT32	R	2
+52, 53	0x6F1A	V3 Crest Factor	0-10000	×0.01	UINT32	R	2
+54, 55	0x6F1B	V4 Crest Factor	0-10000	×0.01	UINT32	R	
+56, 57	0x6F1C	I1 Crest Factor	0-10000	×0.01	UINT32	R	
+58, 59	0x6F1D	I2 Crest Factor	0-10000	×0.01	UINT32	R	
+60, 61	0x6F1E	I3 Crest Factor	0-10000	×0.01	UINT32	R	
+62, 63	0x6F1F	I4 Crest Factor	0-10000	×0.01	UINT32	R	
26046-26097		**2-Hour Harmonics**					
+0, 1	0x6F80	V1 THD	0-9999	×0.1%	UINT32	R	2
+2, 3	0x6F81	V2 THD	0-9999	×0.1%	UINT32	R	2
+4, 5	0x6F82	V3 THD	0-9999	×0.1%	UINT32	R	2
+6, 7	0x6F83	V4 THD	0-9999	×0.1%	UINT32	R	
+8, 9	0x6F84	I1 THD	0-9999	×0.1%	UINT32	R	
+10, 11	0x6F85	I2 THD	0-9999	×0.1%	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+12, 13	0x6F86	I3 THD	0-9999	×0.1%	UINT32	R	
+14, 15	0x6F87	I4 THD	0-9999	×0.1%	UINT32	R	
+16, 17	0x6F88	V1 interharmonics THD	0-9999	×0.1%	UINT32	R	[2]
+18, 19	0x6F89	V2 interharmonics THD	0-9999	×0.1%	UINT32	R	[2]
+20, 21	0x6F8A	V3 interharmonics THD	0-9999	×0.1%	UINT32	R	[2]
+22, 23	0x6F8B	V4 interharmonics THD	0-9999	×0.1%	UINT32	R	
+24, 25	0x6F8C	I1 interharmonics THD	0-9999	×0.1%	UINT32	R	
+26, 27	0x6F8D	I2 interharmonics THD	0-9999	×0.1%	UINT32	R	
+28, 29	0x6F8E	I3 interharmonics THD	0-9999	×0.1%	UINT32	R	
+30, 31	0x6F8F	I4 interharmonics THD	0-9999	×0.1%	UINT32	R	
+32, 33	0x6F90	I1 TDD	0-1000	×0.1%	UINT32	R	
+34, 35	0x6F91	I2 TDD	0-1000	×0.1%	UINT32	R	
+36, 37	0x6F92	I3 TDD	0-1000	×0.1%	UINT32	R	
+38, 39	0x6F93	I4 TDD	0-1000	×0.1%	UINT32	R	
+40, 41	0x6F94	I1 K-Factor	10-9999	×0.1	UINT32	R	
+42, 43	0x6F95	I2 K-Factor	10-9999	×0.1	UINT32	R	
+44, 45	0x6F96	I3 K-Factor	10-9999	×0.1	UINT32	R	
+46, 47	0x6F97	I4 K-Factor	10-9999	×0.1	UINT32	R	
+48, 49	0x6F98	V1 Crest Factor	0-10000	×0.01	UINT32	R	[2]
+50, 51	0x6F99	V2 Crest Factor	0-10000	×0.01	UINT32	R	[2]
+52, 53	0x6F9A	V3 Crest Factor	0-10000	×0.01	UINT32	R	[2]
+54, 55	0x6F9B	V4 Crest Factor	0-10000	×0.01	UINT32	R	
+56, 57	0x6F9C	I1 Crest Factor	0-10000	×0.01	UINT32	R	
+58, 59	0x6F9D	I2 Crest Factor	0-10000	×0.01	UINT32	R	
+60, 61	0x6F9E	I3 Crest Factor	0-10000	×0.01	UINT32	R	
+62, 63	0x6F9F	I4 Crest Factor	0-10000	×0.01	UINT32	R	
27136-27215		**Present PQ Measurements (EN50160)**					
+0,1	0x7800	V1 Voltage variation, +/-%Un		0.01%	INT32	R	Last 10 min measurement
+2,3	0x7801	V2 Voltage variation, +/-%Un		0.01%	INT32	R	”
+4,5	0x7802	V3 Voltage variation, +/-%Un		0.01%	INT32	R	”
+6,7	0x7803	Not used			INT32	R	”
+8,9	0x7804	V1 Voltage change, %Un		0.01%	UINT32	R	Last 1 hour measurement
+10,11	0x7805	Repetition rate of V1 voltage changes, 1/min		1/min × 0.01	UINT32	R	”
+12,13	0x7806	V2 Voltage change, %Un		0.01%	UINT32	R	”
+14,15	0x7807	Repetition rate of V2 voltage changes, 1/min		1/min × 0.01	UINT32	R	”
+16,17	0x7808	V3 Voltage change, %Un		0.01%	UINT32	R	”
+18,19	0x7809	Repetition rate of V3 voltage changes, 1/min		1/min × 0.01	UINT32	R	”
+20,21	0x780A	V1 Voltage Pst		0.01	UINT32	R	Last 10 min measurement
+22,23	0x780B	V2 Voltage Pst		0.01	UINT32	R	”
+24,25	0x780C	V3 Voltage Pst		0.01	UINT32	R	”
+26,27	0x780D	V1 Voltage Plt		0.01	UINT32	R	Last 2 hour measurement
+28,29	0x780E	V2 Voltage Plt		0.01	UINT32	R	”

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+30,31	0x780F	V3 Voltage Plt		0.01	UINT32	R	”
+32,33	0x7810	V1 Voltage THD, %		0.1%	UINT32	R	Last 10 min measurement
+34,35	0x7811	V2 Voltage THD, %		0.1%	UINT32	R	”
+36,37	0x7812	V3 Voltage THD, %		0.1%	UINT32	R	”
+38,39	0x7813	Negative-sequence voltage unbalance, %		0.1%	UINT32	R	”
+40,41	0x7814	Not used			UINT32	R	”
+42,43	0x7815	Frequency variation, +/-Hz		0.01 Hz	INT32	R	Last 10 s measurement
+44,45	0x7816	Voltage interruption, residual voltage A/AB, %Un		0.01%	UINT32	R	
+46,47	0x7817	Voltage interruption, residual voltage B/BC, %Un		0.01%	UINT32	R	
+48,49	0x7818	Voltage interruption, residual voltage C/CA, %Un		0.01%	UINT32	R	
+50,51	0x7819	Duration of a polyphase interruption		ms	UINT32	R	
+52,53	0x781A	Voltage dip, residual voltage oh phase A/AB, %Un		0.01%	UINT32	R	
+54,55	0x781B	Voltage dip, residual voltage on phase B/BC, %Un		0.01%	UINT32	R	
+56,57	0x781C	Voltage dip, residual voltage on phase C/CA, %Un		0.01%	UINT32	R	
+58,59	0x781D	Voltage dip, duration of a polyphase dip		ms	UINT32	R	
+60,61	0x781E	Voltage swell, voltage magnitude on phase A/AB, %Un		0.01%	UINT32	R	
+62,63	0x781F	Voltage swell, voltage magnitude on phase B/BC, %Un		0.01%	UINT32	R	
+64,65	0x7820	Voltage swell, voltage magnitude on phase C/CA, %Un		0.01%	UINT32	R	
+66,67	0x7821	Voltage swell, duration of a polyphase swell		ms	UINT32	R	
+68,69	0x7822	Impulsive voltage on phase A/AB, %Un peak		0.01%	UINT32	R	
+70,71	0x7823	Impulsive voltage, impulse duration on phase A/AB		us	UINT32	R	
+72,73	0x7824	Impulsive voltage on phase B/BC, %Un peak		0.01%	UINT32	R	
+74,75	0x7825	Impulsive voltage, impulse duration on phase B/BC		us	UINT32	R	
+76,77	0x7826	Impulsive voltage on phase C/CA, %Un peak		0.01%	UINT32	R	
+78,79	0x7827	Impulsive voltage, impulse duration on phase C/CA		us	UINT32	R	
27136-27215		**Present PQ Measurements (GOST 13109)**					
+0,1	0x7800	Voltage variation (δUy) on phase A/AB, +/-%Un		0.01%	INT32	R	Last 1 min measurement
+2,3	0x7801	Voltage variation (δUy) on phase B/BC, +/-%Un		0.01%	INT32	R	”
+4,5	0x7802	Voltage variation (δUy) on phase C/CA, +/-%Un		0.01%	INT32	R	”
+6,7	0x7803	Positive sequence voltage variation (δUy), +/-%Un		0.01%	INT32	R	”
+8,9	0x7804	Voltage change (δUt) on phase A/AB, %Un		0.01%	UINT32	R	Last 10 min measurement
+10,11	0x7805	Repetition rate of voltage changes (FδUt) A/AB, 1/min		1/min × 0.01	UINT32	R	”
+12,13	0x7806	Voltage change (δUt) on phase B/BC, %Un		0.01%	UINT32	R	”
+14,15	0x7807	Repetition rate of voltage changes (FδUt) B/BC, 1/min		1/min × 0.01	UINT32	R	”
+16,17	0x7808	Voltage change (δUt) on phase C/CA, %Un		0.01%	UINT32	R	”
+18,19	0x7809	Repetition rate of voltage changes (FδUt) C/CA, 1/min		1/min × 0.01	UINT32	R	”
+20,21	0x780A	Voltage Pst on phase A/AB		0.01	UINT32	R	Last 10 min measurement
+22,23	0x780B	Voltage Pst on phase B/BC		0.01	UINT32	R	”
+24,25	0x780C	Voltage Pst on phase C/CA		0.01	UINT32	R	”
+26,27	0x780D	Voltage Plt on phase A/AB		0.01	UINT32	R	Last 2 hour measurement
+28,29	0x780E	Voltage Plt on phase B/BC		0.01	UINT32	R	”
+30,31	0x780F	Voltage Plt on phase C/CA		0.01	UINT32	R	”
+32,33	0x7810	Voltage THD (KU) on phase A/AB, %		0.1%	UINT32	R	Last 3 s measurement

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+34,35	0x7811	Voltage THD (KU) on phase B/BC, %		0.1%	UINT32	R	”
+36,37	0x7812	Voltage THD (KU) on phase C/CA, %		0.1%	UINT32	R	”
+38,39	0x7813	Negative-sequence voltage unbalance (K2u), %		0.1%	UINT32	R	”
+40,41	0x7814	Zero-sequence voltage unbalance (K0u), %		0.1%	UINT32	R	”
+42,43	0x7815	Frequency variation (Δf), +/-Hz		0.01 Hz	INT32	R	Last 20 s measurement
+44,45	0x7816	Not used			UINT32	R	
+46,47	0x7817	Not used			UINT32	R	
+48,49	0x7818	Not used			UINT32	R	
+50,51	0x7819	Not used			UINT32	R	
+52,53	0x781A	Voltage dip, dip depth on phase A/AB, %Un		0.01%	UINT32	R	
+54,55	0x781B	Voltage dip, dip depth on phase B/BC, %Un		0.01%	UINT32	R	
+56,57	0x781C	Voltage dip, dip depth on phase C/CA, %Un		0.01%	UINT32	R	
+58,59	0x781D	Voltage dip, duration of a polyphase dip		ms	UINT32	R	
+60,61	0x781E	Overvoltage, voltage magnitude on phase A/AB, %Un		0.01%	UINT32	R	
+62,63	0x781F	Overvoltage, voltage magnitude on phase B/BC, %Un		0.01%	UINT32	R	
+64,65	0x7820	Overvoltage, voltage magnitude on phase C/CA, %Un		0.01%	UINT32	R	
+66,67	0x7821	Overvoltage, duration of a polyphase overvoltage		ms	UINT32	R	
+68,69	0x7822	Impulsive voltage on phase A/AB, %Un peak		0.01%	UINT32	R	
+70,71	0x7823	Impulsive voltage, impulse duration on phase A/AB		us	UINT32	R	
+72,73	0x7824	Impulsive voltage on phase B/BC, %Un peak		0.01%	UINT32	R	
+74,75	0x7825	Impulsive voltage, impulse duration on phase B/BC		us	UINT32	R	
+76,77	0x7826	Impulsive voltage on phase C/CA, %Un peak		0.01%	UINT32	R	
+78,79	0x7827	Impulsive voltage, impulse duration on phase C/CA		us	UINT32	R	
27136-27215		**Present PQ Measurements (GOST 32144)**					
+0,1	0x7800	Voltage variation (δUy) on phase A/AB, +/-%Un		0.01%	INT32	R	Last 10 min measurement
+2,3	0x7801	Voltage variation (δUy) on phase B/BC, +/-%Un		0.01%	INT32	R	”
+4,5	0x7802	Voltage variation (δUy) on phase C/CA, +/-%Un		0.01%	INT32	R	”
+6,7	0x7803	Not used			INT32	R	”
+8,9	0x7804	Voltage change (δUt) on phase A/AB, %Un		0.01%	UINT32	R	Last 1-60 min measurement
+10,11	0x7805	Not used			UINT32	R	”
+12,13	0x7806	Voltage change (δUt) on phase B/BC, %Un		0.01%	UINT32	R	”
+14,15	0x7807	Not used			UINT32	R	”
+16,17	0x7808	Voltage change (δUt) on phase C/CA, %Un		0.01%	UINT32	R	”
+18,19	0x7809	Not used			UINT32	R	”
+20,21	0x780A	Voltage Pst on phase A/AB		0.01	UINT32	R	Last 10 min measurement
+22,23	0x780B	Voltage Pst on phase B/BC		0.01	UINT32	R	”
+24,25	0x780C	Voltage Pst on phase C/CA		0.01	UINT32	R	”
+26,27	0x780D	Voltage Plt on phase A/AB		0.01	UINT32	R	Last 2 hour measurement
+28,29	0x780E	Voltage Plt on phase B/BC		0.01	UINT32	R	”
+30,31	0x780F	Voltage Plt on phase C/CA		0.01	UINT32	R	”
+32,33	0x7810	Voltage THD (KU) on phase A/AB, %		0.1%	UINT32	R	Last 10 min measurement
+34,35	0x7811	Voltage THD (KU) on phase B/BC, %		0.1%	UINT32	R	”
+36,37	0x7812	Voltage THD (KU) on phase C/CA, %		0.1%	UINT32	R	”

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+38,39	0x7813	Negative-sequence voltage unbalance (K2u), %		0.1%	UINT32	R	”
+40,41	0x7814	Zero-sequence voltage unbalance (K0u), %		0.1%	UINT32	R	”
+42,43	0x7815	Frequency variation (∆f), +/-Hz		0.01 Hz	INT32	R	Last 10 s measurement
+44,45	0x7816	Voltage interruption, residual voltage A/AB, %Un		0.01%	UINT32	R	
+46,47	0x7817	Voltage interruption, residual voltage B/BC, %Un		0.01%	UINT32	R	
+48,49	0x7818	Voltage interruption, residual voltage C/CA, %Un		0.01%	UINT32	R	
+50,51	0x7819	Duration of a polyphase interruption		ms	UINT32	R	
+52,53	0x781A	Voltage dip, residual voltage oh phase A/AB, %Un		0.01%	UINT32	R	
+54,55	0x781B	Voltage dip, residual voltage on phase B/BC, %Un		0.01%	UINT32	R	
+56,57	0x781C	Voltage dip, residual voltage on phase C/CA, %Un		0.01%	UINT32	R	
+58,59	0x781D	Voltage dip, duration of a polyphase dip		ms	UINT32	R	
+60,61	0x781E	Voltage swell, voltage magnitude on phase A/AB, %Un		0.01%	UINT32	R	
+62,63	0x781F	Voltage swell, voltage magnitude on phase B/BC, %Un		0.01%	UINT32	R	
+64,65	0x7820	Voltage swell, voltage magnitude on phase C/CA, %Un		0.01%	UINT32	R	
+66,67	0x7821	Voltage swell, duration of a polyphase swell		ms	UINT32	R	
+68,69	0x7822	Impulsive voltage on phase A/AB, %Un peak		0.01%	UINT32	R	
+70,71	0x7823	Impulsive voltage, impulse duration on phase A/AB		us	UINT32	R	
+72,73	0x7824	Impulsive voltage on phase B/BC, %Un peak		0.01%	UINT32	R	
+74,75	0x7825	Impulsive voltage, impulse duration on phase B/BC		us	UINT32	R	
+76,77	0x7826	Impulsive voltage on phase C/CA, %Un peak		0.01%	UINT32	R	
+78,79	0x7827	Impulsive voltage, impulse duration on phase C/CA		us	UINT32	R	
28160-28223		**External Integer Measured Values**					
+0,1	0x8000	ExtiVal1			INT32	R	
+2,3	0x8001	ExtiVal2			INT32	R	
	...	...			INT32	R	
+62,63	0x801F	ExtiVal32			INT32	R	
28288-28321		**External Float Measured Values**					
+0,1	0x8100	ExtfVal1			FLOAT32	R	
+2,3	0x8101	ExtfVal2			FLOAT32	R	
	...	...			FLOAT32	R	
+62,63	0x801F	ExtfVal32			FLOAT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
		External Indication					
28416-28417		ExtInd1:32 Bit 0: ExtInd1 ... Bit 32: ExtInd32	0x00000000-0xFFFFFFFF Bit Value: 0=OFF, 1=ON		UINT32	R	Bitmap
28480-28481		ExtInd33:64 Bit 0: ExtInd33 ... Bit 32: ExtInd64	0x00000000-0xFFFFFFFF Bit Value: 0=OFF, 1=ON		UINT32	R	Bitmap
28544-28545		ExtInd65:96 Bit 0: ExtInd65 ... Bit 32: ExtInd96	0x00000000-0xFFFFFFFF Bit Value: 0=OFF, 1=ON		UINT32	R	Bitmap
28608-28609		ExtInd97:128 Bit 0: ExtInd97 ... Bit 32: ExtInd128	0x00000000-0xFFFFFFFF Bit Value: 0=OFF, 1=ON		UINT32	R	Bitmap
	0x8200	ExtInd1	0/1		UINT32	TRG	
	0x8201	ExtInd2	0/1		UINT32	TRG	
	...	...					
	0x827F	ExtInd128	0/1		UINT32	TRG	
		Switch Position Indication					
29440-29471	0x8A00	Switch position (Pos)	00=intermediate-state, 01=OFF, 10=ON, 11=bad-state		UINT32	R	
+0,1	0x8A00	XCBR1_Pos	00/01/10/11			TRG	
+2,3	0x8A01	XCBR2_Pos	00/01/10/11			TRG	
+4,5	0x8A02	XSWI1_Pos	00/01/10/11			TRG	
	...	...					
+30,31	0x8A0F	XSWI14_Pos	00/01/10/11			TRG	
		Switch Operation-Open Indication					
29568-29569	0x8B00	Operation Open activation status (OpOpn): Bit 0: XCBR1_OpOpn Bit 1: XCBR2_OpOpn Bit 2: XSWI1_OpOpn ... Bit 15: XSWI14_OpOpn	0x00000000 - 0x0000FFFF Bit value: 0=not active, 1=activated		UINT32	R	Bitmap
	0x8B00	XCBR1_OpOpn	0/1			TRG	
	0x8B01	XCBR2_OpOpn	0/1			TRG	
	0x8B02	XSWI1_OpOpn	0/1			TRG	
		...					
	0x8B0F	XSWI14_OpOpn	0/1			TRG	
		Switch Operation-Close Indication					
29632-29633	0x8B80	Operation Close activation status (OpCls):	0x00000000 - 0x0000FFFF		UINT32	R	Bitmap

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
		Bit 0: XCBR1_OpCls Bit 1: XCBR2_OpCls Bit 2: XSWI1_OpCls ... Bit 15: XSWI14_OpCls	Bit value: 0=not active, 1=activated				
	0x8B80	XCBR1_OpCls	0/1			TRG	
	0x8B81	XCBR2_OpCls	0/1			TRG	
	0x8B82	XSWI1_OpCls	0/1			TRG	
		...				TRG	
	0x8B8F	XSWI14_OpCls	0/1				
29696-29727		**Switch Operation Counters (resettable)**					
+0,1	0x8C00	XCBR1_OpCnt	0-9999		UINT32	R/W	
+2,3	0x8C01	XCBR2_OpCnt	0-9999		UINT32	R/W	
+4,5	0x8C02	XSWI1_OpCnt	0-9999		UINT32	R/W	
...		...					
+30,31	0x8C0F	XSWI14_OpCnt	0-9999		UINT32	R/W	
30080-30093		**Distance to fault**					
+0,1	0x8F00	Fault timestamp, seconds, FltTm	F1	sec	UINT32	R	
+2,3	0x8F01	Fault timestamp, fractional seconds, FltTmmcs		µsec	UINT32	R	
+4,5	0x8F02	Fault loop type, FltLoop	0=unqualified, 1=AG, 2=BG, 3=CG, 4=AB, 5=BC, 6=CA, 7=ABG, 8=BCG, 9=CAG, 10=ABC		UINT32	R	
+6,7	0x8F03	Fault distance, FltDis	0-45000	km/ml x0.01	UINT32	R	
+8,9	0x8F04	Fault resistance, FltR	0-20000	Ohm x0.01	UINT32	R	
+10,11	0x8F05	Fault reactance, FltX	0-20000	Ohm x0.01	UINT32	R	
+12,13	0x8F06	Fault location mode/status, FltMod	0=single-ended fault location, 1=two-ended fault location, 2=forced single-ended location (remote unit didn't respond), 3=forced single-ended location (no remote match found), 4=forced single-ended location (unsuccessful two-ended location)		UINT32	R	
30208-30307		**V1/V12 Voltage Interharmonics**					2, 7
+0,1	0x9000	H01 Interharmonic	0-10000	×0.01%	UINT32	R	
+2,3	0x9001	H02 Interharmonic	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x9031	H50 Interharmonic	0-10000	×0.01%	UINT32	R	
30336-39435		**V2/V23 Voltage Interharmonics**					2, 7
+0,1	0x9100	H01 Interharmonic	0-10000	×0.01%	UINT32	R	
+2,3	0x9101	H02 Interharmonic	0-10000	×0.01%	UINT32	R	
		...					

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+98,99	0x9131	H50 Interharmonic	0-10000	×0.01%	UINT32	R	
30464-30563		**V3/V31 Voltage Interharmonics**					2, 7
+0,1	0x9200	H01 Interharmonic	0-10000	×0.01%	UINT32	R	
+2,3	0x9201	H02 Interharmonic	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x9231	H50 Interharmonic	0-10000	×0.01%	UINT32	R	
		Generic TOU Registers					Point references
	0x7000	Tariff #1 register	0-999,999,999	U5	UINT32		
	0x7001	Tariff #2 register	0-999,999,999	U5	UINT32		
		...					
	0x700F	Tariff #16 register	0-999,999,999	U5	UINT32		
		Generic TOU Maximum Demand Registers					Point references
	0x7100	Tariff #1 register	0-Pmax	U3	UINT32		
	0x7101	Tariff #2 register	0-Pmax	U3	UINT32		
		...					
	0x710F	Tariff #16 register	0-Pmax	U3	UINT32		
		Generic Data					Point references
	0x7400	V1 voltage	0-Vmax	U1	UINT32		1
	0x7401	V2 voltage	0-Vmax	U1	UINT32		1
	0x7402	V3 voltage	0-Vmax	U1	UINT32		1
	0x7403	V4 voltage	0-V4max	U4	UINT32		
	0x7404	V12 voltage	0-Vmax	U1	UINT32		
	0x7405	V23 voltage	0-Vmax	U1	UINT32		
	0x7406	V31 voltage	0-Vmax	U1	UINT32		
	0x7407	I1 current	0-Imax	U2	UINT32		
	0x7408	I2 current	0-Imax	U2	UINT32		
	0x7409	I3 current	0-Imax	U2	UINT32		
	0x740A	I4 current	0-I4max	U2	UINT32		
	0x740B	In current	0-Imax	U2	UINT32		
	0x740C	I1x current	0-Ixmax	U2	UINT32		
	0x740D	I2x current	0-Ixmax	U2	UINT32		
	0x740E	I3x current	0-Ixmax	U2	UINT32		
	0x740F	I4x current	0-I4xmax	U2	UINT32		
	0x7410	Inx current	0-Ixmax	U2	UINT32		
	0x7411	Zero-sequence voltage	0-Vmax	U1	UINT32		
	0x7412	Zero-sequence current	0-Imax	U2	UINT32		
	0x7413	Ix Zero-sequence current	0-Ixmax	U2	UINT32		
	0x7414	Voltage unbalance	0-3000	×0.1%	UINT32		
	0x7415	Current unbalance	0-3000	×0.1%	UINT32		
	0x7416	Ix current unbalance	0-3000	×0.1%	UINT32		
	0x7417	Not used			UINT32		
	0x7418	Frequency	0-10000	×0.01Hz	UINT32		

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
	0x7419	V1 THD	0-9999	×0.1%	UINT32		2
	0x741A	V2 THD	0-9999	×0.1%	UINT32		2
	0x741B	V3 THD	0-9999	×0.1%	UINT32		2
	0x741C	V4 THD	0-9999	×0.1%	UINT32		
	0x741D	I1 THD	0-9999	×0.1%	UINT32		
	0x741E	I2 THD	0-9999	×0.1%	UINT32		
	0x741F	I3 THD	0-9999	×0.1%	UINT32		
	0x7420	I4 THD	0-9999	×0.1%	UINT32		
	0x7421	V1 interharmonics THD	0-9999	×0.1%	UINT32		2
	0x7422	V2 interharmonics THD	0-9999	×0.1%	UINT32		2
	0x7423	V3 interharmonics THD	0-9999	×0.1%	UINT32		2
	0x7424	V4 interharmonics THD	0-9999	×0.1%	UINT32		
	0x7425	I1 interharmonics THD	0-9999	×0.1%	UINT32		
	0x7426	I2 interharmonics THD	0-9999	×0.1%	UINT32		
	0x7427	I3 interharmonics THD	0-9999	×0.1%	UINT32		
	0x7428	I4 interharmonics THD	0-9999	×0.1%	UINT32		
	0x7429	I1 TDD	0-1000	×0.1%	UINT32		
	0x742A	I2 TDD	0-1000	×0.1%	UINT32		
	0x742B	I3 TDD	0-1000	×0.1%	UINT32		
	0x742C	I4 TDD	0-1000	×0.1%	UINT32		
	0x742D	I1 K-Factor	10-9999	×0.1	UINT32		
	0x742E	I2 K-Factor	10-9999	×0.1	UINT32		
	0x742F	I3 K-Factor	10-9999	×0.1	UINT32		
	0x7430	I4 K-Factor	10-9999	×0.1	UINT32		
	0x7431	V1 Crest Factor	0-10000	×0.01	UINT32		2
	0x7432	V2 Crest Factor	0-10000	×0.01	UINT32		2
	0x7433	V3 Crest Factor	0-10000	×0.01	UINT32		2
	0x7434	V4 Crest Factor	0-10000	×0.01	UINT32		
	0x7435	I1 Crest Factor	0-10000	×0.01	UINT32		
	0x7436	I2 Crest Factor	0-10000	×0.01	UINT32		
	0x7437	I3 Crest Factor	0-10000	×0.01	UINT32		
	0x7438	I4 Crest Factor	0-10000	×0.01	UINT32		
	0x750A	Positive-sequence voltage	0-Vmax	U1	UINT32		2
	0x750B	Negative-sequence voltage	0-Vmax	U1	UINT32		2
	0x750C	Zero-sequence voltage	0-Vmax	U1	UINT32		2
	0x750D	Negative-sequence voltage unbalance	0-3000	×0.1%	UINT32		2
	0x750E	Zero-sequence voltage unbalance	0-3000	×0.1%	UINT32		2
	0x750F	V1 impulsive voltage	0-Vmax	U1	UINT32		
	0x7510	V2 impulsive voltage	0-Vmax	U1	UINT32		
	0x7511	V3 impulsive voltage	0-Vmax	U1	UINT32		
	0x7512	Vn (neutral-ground) impulsive voltage	0-Vmax	U1	UINT32		
	0x7513	V12 impulsive voltage	0-Vmax	U1	UINT32		

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
	0x7514	V23 impulsive voltage	0-Vmax	U1	UINT32		
	0x7515	V31 impulsive voltage	0-Vmax	U1	UINT32		
	0x7516	Vn (neutral-ground) voltage	0-Vmax	U1	UINT32		
	0x1900	V1 H01 Harmonic voltage	0-10000	×0.01%	UINT32		2
	0x1901	V1 H02 Harmonic voltage	0-10000	×0.01%	UINT32		2
		...					
	0x1931	V1 H50 Harmonic voltage	0-10000	×0.01%	UINT32		2
	0x1A00	V2 H01 Harmonic voltage	0-10000	×0.01%	UINT32		2
	0x1A01	V2 H02 Harmonic voltage	0-10000	×0.01%	UINT32		2
		...					
	0x1A31	V2 H50 Harmonic voltage	0-10000	×0.01%	UINT32		2
	0x1B00	V3 H01 Harmonic voltage	0-10000	×0.01%	UINT32		2
	0x1B01	V3 H02 Harmonic voltage	0-10000	×0.01%	UINT32		2
		...					
	0x1B31	V3 H50 Harmonic voltage	0-10000	×0.01%	UINT32		2
	0x2980	V1 Pst	0-10000	×0.01	UINT32		2
	0x2981	V2 Pst	0-10000	×0.01	UINT32		2
	0x2982	V3 Pst	0-10000	×0.01	UINT32		2
	0x2983	V1 Plt	0-10000	×0.01	UINT32		2
	0x2984	V2 Plt	0-10000	×0.01	UINT32		2
	0x2985	V3 Plt	0-10000	×0.01	UINT32		2
	0x6005	Maximum 1st signaling voltage V1 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x6006	Maximum 2nd signaling voltage V1 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x6007	Maximum 3rd signaling voltage V1 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x6008	Maximum 4th signaling voltage V1 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x600A	Maximum 1st signaling voltage V2 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x600B	Maximum 2nd signaling voltage V2 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x600C	Maximum 3rd signaling voltage V2 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x600D	Maximum 4th signaling voltage V2 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x600F	Maximum 1st signaling voltage V3 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x6010	Maximum 2nd signaling voltage V3 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x6011	Maximum 3rd signaling voltage V3 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0x6012	Maximum 4th signaling voltage V3 magnitude, %Un	0-10000	×0.01%	UINT32		2
	0xC481	Voltage change on phase A/AB, %Un	0-10000	×0.01%	UINT32		
	0xC486	Voltage change on phase B/BC, %Un	0-10000	×0.01%	UINT32		
	0xC48B	Voltage change on phase C/CA, %Un	0-10000	×0.01%	UINT32		
	0xCF02	Rapid voltage change on phase A/AB, %Un	0-10000	×0.01%	UINT32		2
	0xCF04	Rapid voltage change on phase B/BC, %Un	0-10000	×0.01%	UINT32		2
	0xCF06	Rapid voltage change on phase C/CA, %Un	0-10000	×0.01%	UINT32		2
	0xD083	Maximum 1st signaling voltage A/AB magnitude, %Un	0-10000	×0.01%	UINT32		2
	0xD084	Maximum 2nd signaling voltage A/AB magnitude, %Un	0-10000	×0.01%	UINT32		2
	0xD085	Maximum 3rd signaling voltage A/AB magnitude, %Un	0-10000	×0.01%	UINT32		2

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
	0xD086	Maximum 4th signaling voltage A/AB magnitude, %Un	0-10000	×0.01%	UINT32		[2]
	0xD087	Maximum 1st signaling voltage B/BC magnitude, %Un	0-10000	×0.01%	UINT32		[2]
	0xD088	Maximum 2nd signaling voltage B/BC magnitude, %Un	0-10000	×0.01%	UINT32		[2]
	0xD089	Maximum 3rd signaling voltage B/BC magnitude, %Un	0-10000	×0.01%	UINT32		[2]
	0xD08A	Maximum 4th signaling voltage B/BC magnitude, %Un	0-10000	×0.01%	UINT32		[2]
	0xD08B	Maximum 1st signaling voltage C/CA magnitude, %Un	0-10000	×0.01%	UINT32		[2]
	0xD08C	Maximum 2nd signaling voltage C/CA magnitude, %Un	0-10000	×0.01%	UINT32		[2]
	0xD08D	Maximum 3rd signaling voltage C/CA magnitude, %Un	0-10000	×0.01%	UINT32		[2]
	0xD08E	Maximum 4th signaling voltage C/CA magnitude, %Un	0-10000	×0.01%	UINT32		[2]

NOTES:

[1] When the 4LN3, 4LL3, 3LN3, 3LL3, 3BLN3 or 3BLL3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line.

[2] When the 4LN3, 3LN3 or 3BLN3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

[3] For volts, amps, power and frequency scales and units, refer to Section 4 ”Data Scales and Units”.

[4] 0.2-s interval (16-cycle interval for GOST 13109).

[5] 3-s interval.

[6] Harmonic angles are referenced to the fundamental voltage harmonic H01 on phase L1.

[7] 0.2-s interval for EN 50160, 16-cycle interval for GOST 13109, programmable 0.2-s, 3-s, 10-min interval for GOST 32144.

[8] Digital input registers return the state of the level-sensitive digital inputs in a 32-bit packed format beginning from the nearest lower point number divisible by 32. For example, registers 12544-12545 and 12548-12549 report the same 32-bit value that contains the state of digital inputs DI1:DI32. Bits that reference non-existent points will contain zeros.

[9] Pulse input registers contain the transition status of the edge sensitive digital inputs. A bit value is set to '1' if a pulse edge (either rising, falling, or any of them depending on the input polarity setting) has been detected on the input. Pulse inputs cannot be directly read but can be tested through the setpoints and/or linked to the pulse counters and Summary energy/TOU registers.

3.5 Minimum/Maximum Log Registers

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
35840-35983		**Minimum Phase Values**					
+0, 1 +2, 3	0x2C00	Min. V1 voltage Timestamp	0-Vmax F1	U1 sec	UINT32 UINT32	R R	[1]
+4, 5 +6, 7	0x2C01	Min. V2 voltage Timestamp	0-Vmax F1	U1 sec	UINT32 UINT32	R R	[1]
+8, 9 +10, 11	0x2C02	Min. V3 voltage Timestamp	0-Vmax F1	U1 sec	UINT32 UINT32	R R	[1]
+12, 13 +14, 15	0x2C03	Min. I1 current Timestamp	0-Imax F1	U2 sec	UINT32 UINT32	R R	
+16, 17 +18, 19	0x2C04	Min. I2 current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+20, 21 +22, 23	0x2C05	Min. I3 current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+24, 25 +26, 27	0x2C06	Min. kW L1 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+28, 29 +30, 31	0x2C07	Min. kW L2 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+32, 33 +34, 35	0x2C08	Min. kW L3 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+36, 37 +38, 39	0x2C09	Min. kvar L1 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+40, 41 +42, 43	0x2C0A	Min. kvar L2 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+44, 45 +46, 47	0x2C0B	Min. kvar L3 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+48, 49 +50, 51	0x2C0C	Min. kVA L1 Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+52, 53 +54, 55	0x2C0D	Min. kVA L2 Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+56, 57 +58, 59	0x2C0E	Min. kVA L3 Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+60, 61 +62, 63	0x2C0F	Min. Power factor L1 Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	Absolute value
+64, 65 +66, 67	0x2C10	Min. Power factor L2 Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	Absolute value
+68, 69 +70, 71	0x2C11	Min. Power factor L3 Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	Absolute value
+72, 73 +74, 75	0x2C12	Min. V1 voltage THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	[2, 4]
+76, 77	0x2C13	Min. V2 voltage THD	0-9999	×0.1%	UINT32	R	[2, 4]

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+78, 79		Timestamp		sec	UINT32	R	
+80, 81 +82, 83	0x2C14	Min. V3 voltage THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	2, 4
+84, 85 +86, 87	0x2C15	Min. I1 current THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	4
+88, 89 +90, 91	0x2C16	Min. I2 current THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	4
+92, 93 +94, 95	0x2C17	Min. I3 current THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	4
+96, 97 +98, 99	0x2C18	Min. I1 K-Factor Timestamp	10-9999	×0.1 sec	UINT32 UINT32	R R	4
+100, 101 +102, 103	0x2C19	Min. I2 K-Factor Timestamp	10-9999	×0.1 sec	UINT32 UINT32	R R	4
+104, 105 +106, 107	0x2C1A	Min. I3 K-Factor Timestamp	10-9999	×0.1 sec	UINT32 UINT32	R R	4
+108, 109 +110, 111	0x2C1B	Min. I1 current TDD Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	4
+112, 113 +114, 115	0x2C1C	Min. I2 current TDD Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	4
+116, 117 +118, 119	0x2C1D	Min. I3 current TDD Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	4
+120, 121 +122, 123	0x2C1E	Min. V12 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	
+124, 125 +126, 127	0x2C1F	Min. V23 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	
+128, 129 +130, 131	0x2C20	Min. V31 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	
+132, 133 +134, 135	0x2C21	Min. I1x current Timestamp	0-Ixmax	U2 sec	UINT32 UINT32	R R	
+136, 137 +138, 139	0x2C22	Min. I2x current Timestamp	0-Ixmax	U2 sec	UINT32 UINT32	R R	
+140, 141 +142, 143	0x2C23	Min. I3x current Timestamp	0-Ixmax	U2 sec	UINT32 UINT32	R R	
36096-36119		**Minimum Total Values**					
+0, 1 +2, 3	0x2D00	Min. Total kW Timestamp	-Pmax-Pmax	U3 sec	INT32 UINT32	R R	
+4, 5 +6, 7	0x2D01	Min. Total kvar Timestamp	-Pmax-Pmax	U3 sec	INT32 UINT32	R R	
+8, 9 +10, 11	0x2D02	Min. Total kVA Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+12, 13 +14, 15	0x2D03	Min. Total PF Timestamp	-1000-1000	×0.001 sec	INT32 UINT32	R R	
+16, 17 +18, 19	0x2D04	Min. Total PF lag Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+20, 21 +22, 23	0x2D05	Min. Total PF lead Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	
36224-36287		**Minimum Analog Inputs**					
+0, 1 +2, 3	0x2E80	Min. analog input AI1 Timestamp	AI1min-AI1max		INT32 UINT32	R R	
+4, 5 +6, 7	0x2E81	Min. analog input AI2 Timestamp	AI2min-AI2max		INT32 UINT32	R R	
		...					
+60, 61 +62, 63	0x2E8F	Min. analog input AI16 Timestamp	AI16min-AI16max		INT32 UINT32	R R	
36352-36395		**Minimum Auxiliary Values**					
+0, 1 +2, 3	0x2E00	Min. I4 current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x2E01	Min. In current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+8, 9 +10, 11	0x2E02	Min. Frequency Timestamp	0-10000	×0.01Hz sec	UINT32 UINT32	R R	
+12, 13 +14, 15	0x2E03	Min. Voltage unbalance Timestamp	0-3000	×0.1% sec	UINT32 UINT32	R R	
+16, 17 +18, 19	0x2E04	Min. Current unbalance Timestamp	0-3000	×0.1% sec	UINT32 UINT32	R R	
+20, 21 +22, 23	0x2E05	Not used			UINT32 UINT32	R R	
+24, 25 +26, 27	0x2E06	Min. V4 voltage Timestamp	0-V4max	U4 sec	UINT32 UINT32	R R	
+28, 29 +30, 31	0x2E07	Min. I4x current Timestamp	0-Ixmax	U2 sec	UINT32 UINT32	R R	
+32, 33 +34, 35	0x2E08	Min. V4 THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	[4]
+36, 37 +38, 39	0x2E09	Min. I4x THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	[4]
+40, 41 +42, 43	0x2E0A	Min. I4x TDD Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	[4]
36608-36671		**Programmable Min/Max Minimum Values**					
+0, 1 +2, 3	0x3000	Min. Min/Max Register #1 Timestamp			UINT32 UINT32	R R	
+4, 5 +6, 7	0x3001	Min. Min/Max Register #2 Timestamp			UINT32 UINT32	R R	
		...					
+60, 61 +62, 63	0x300F	Min. Min/Max Register #16 Timestamp			UINT32 UINT32	R R	
36736-36799		**Maximum Analog Inputs**					
+0, 1 +2, 3	0x3680	Max. analog input AI1 Timestamp	AI1min-AI1max		INT32 UINT32	R R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+4, 5 +6, 7	0x3681	Max. analog input AI2 Timestamp	AI2min-AI2max		INT32 UINT32	R R	
		...					
+60, 61 +62, 63	0x368F	Max. analog input AI16 Timestamp	AI16min-AI16max		INT32 UINT32	R R	
36864-37007		**Maximum Phase Values**					
+0, 1 +2, 3	0x3400	Max. V1 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+4, 5 +6, 7	0x3401	Max. V2 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+8, 9 +10, 11	0x3402	Max. V3 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+12, 13 +14, 15	0x3403	Max. I1 current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+16, 17 +18, 19	0x3404	Max. I2 current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+20, 21 +22, 23	0x3405	Max. I3 current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+24, 25 +26, 27	0x3406	Max. kW L1 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+28, 29 +30, 31	0x3407	Max. kW L2 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+32, 33 +34, 35	0x3408	Max. kW L3 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+36, 37 +38, 39	0x3409	Max. kvar L1 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+40, 41 +42, 43	0x340A	Max. kvar L2 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+44, 45 +46, 47	0x340B	Max. kvar L3 Timestamp	-Pmax-Pmax	U3 sec	INT32 INT32	R R	
+48, 49 +50, 51	0x340C	Max. kVA L1 Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+52, 53 +54, 55	0x340D	Max. kVA L2 Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+56, 57 +58, 59	0x340E	Max. kVA L3 Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+60, 61 +62, 63	0x340F	Max. Power factor L1 Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	Absolute value
+64, 65 +66, 67	0x3410	Max. Power factor L2 Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	Absolute value
+68, 69 +70, 71	0x3411	Max. Power factor L3 Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	Absolute value
+72, 73 +74, 75	0x3412	Max. V1 voltage THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	[2, 4]

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+76, 77 +78, 79	0x3413	Max. V2 voltage THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	2, 4
+80, 81 +82, 83	0x3414	Max. V3 voltage THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	2, 4
+84, 85 +86, 87	0x3415	Max. I1 current THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	4
+88, 89 +90, 91	0x3416	Max. I2 current THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	4
+92, 93 +94, 95	0x3417	Max. I3 current THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	4
+96, 97 +98, 99	0x3418	Max. I1 K-Factor Timestamp	10-9999	×0.1 sec	UINT32 UINT32	R R	4
+100, 101 +102, 103	0x3419	Max. I2 K-Factor Timestamp	10-9999	×0.1 sec	UINT32 UINT32	R R	4
+104, 105 +106, 107	0x341A	Max. I3 K-Factor Timestamp	10-9999	×0.1 sec	UINT32 UINT32	R R	4
+108, 109 +110, 111	0x341B	Max. I1 current TDD Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	4
+112, 113 +114, 115	0x341C	Max. I2 current TDD Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	4
+116, 117 +118, 119	0x341D	Max. I3 current TDD Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	4
+120, 121 +122, 123	0x341E	Max. V12 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	
+124, 125 +126, 127	0x341F	Max. V23 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	
+128, 129 +130, 131	0x3420	Max. V31 voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	
+132, 133 +134, 135	0x3421	Max. I1x current Timestamp	0-Ixmax	U2 sec	UINT32 UINT32	R R	
+136, 137 +138, 139	0x3422	Max. I2x current Timestamp	0-Ixmax	U2 sec	UINT32 UINT32	R R	
+140, 141 +142, 143	0x3423	Max. I3x current Timestamp	0-Ixmax	U2 sec	UINT32 UINT32	R R	
37120-37143		**Maximum Total Values**					
+0, 1 +2, 3	0x3500	Max. Total kW Timestamp	-Pmax-Pmax	U3 sec	INT32 UINT32	R R	
+4, 5 +6, 7	0x3501	Max. Total kvar Timestamp	-Pmax-Pmax	U3 sec	INT32 UINT32	R R	
+8, 9 +10, 11	0x3502	Max. Total kVA Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+12, 13 +14, 15	0x3503	Max. Total PF Timestamp	-1000-1000	×0.001 sec	INT32 UINT32	R R	
+16, 17	0x3504	Max. Total PF lag	0-1000	×0.001	UINT32	R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+18, 19		Timestamp		sec	UINT32	R	
+20, 21 +22, 23	0x3505	Max. Total PF lead Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	
37248-37375		**Maximum Analog Input Demands**					
+0, 1 +2, 3	0x3900	Max. analog input demand AI1+ Timestamp	AI1min-AI1max		UINT32 UINT32	R R	Positive AI readings demand
+4, 5 +6, 7	0x3901	Max. analog input demand AI2+ Timestamp	AI2min-AI2max		UINT32 UINT32	R R	
		...					
+60, 61 +62, 63	0x390F	Max. analog input demand AI16+ Timestamp	AI16min-AI16max		UINT32 UINT32	R R	
+64, 65 +66, 67	0x3910	Max. analog input demand AI1- Timestamp	AI1min-AI1max		UINT32 UINT32	R R	Negative AI readings demand
+68, 69 +70, 71	0x3911	Max. analog input demand AI2- Timestamp	AI2min-AI2max		UINT32 UINT32	R R	
		...					
+124, 125 +126, 127	0x391F	Max. analog input demand AI16- Timestamp	AI16min-AI16max		UINT32 UINT32	R R	
37376-37419		**Maximum Auxiliary Values**					
+0, 1 +2, 3	0x3600	Max. I4 current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x3601	Max. In current Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+8, 9 +10, 11	0x3602	Max. Frequency Timestamp	0-10000	×0.01Hz sec	UINT32 UINT32	R R	
+12, 13 +14, 15	0x3603	Max. Voltage unbalance Timestamp	0-3000	×0.1% sec	UINT32 UINT32	R R	
+16, 17 +18, 19	0x3604	Max. Current unbalance Timestamp	0-3000	×0.1% sec	UINT32 UINT32	R R	
+20, 21 +22, 23	0x3605	Not used			UINT32 UINT32	R R	
+24, 25 +26, 27	0x3606	Max. V4 voltage Timestamp	0-V4max	U4 sec	UINT32 UINT32	R R	
+28, 29 +30, 31	0x3607	Max. I4x current Timestamp	0-Ixmax	U2 sec	UINT32 UINT32	R R	
+32, 33 +34, 35	0x3608	Max. V4 THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	[4]
+36, 37 +38, 39	0x3609	Max. I4x THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	[4]
+40, 41 +42, 43	0x360A	Max. I4x TDD Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	[4]
37504-37567		**Billing Summary Maximum Demands**					
+0, 1 +2, 3	0x4780	Summary register #1 Maximum Demand Timestamp	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+4, 5 +6, 7	0x4781	Summary register #2 Maximum Demand Timestamp	0-Pmax	U3	UINT32	R	
		...					
+60, 61 +62, 63	0x4783	Summary register #16 Maximum Demand Timestamp	0-Pmax	U3	UINT32	R	
37632-37719		**Maximum Demands**					
+0, 1 +2, 3	0x3700	V1 Maximum volt demand Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[2]
+4, 5 +6, 7	0x3701	V2 Maximum volt demand Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[2]
+8, 9 +10, 11	0x3702	V3 Maximum volt demand Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[2]
+12, 13 +14, 15	0x3703	I1 Maximum ampere demand Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+16, 17 +18, 19	0x3704	I2 Maximum ampere demand Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+20, 21 +22, 23	0x3705	I3 Maximum ampere demand Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
+24, 25 +26, 27	0x3706	Not used Timestamp	0		UINT32 UINT32	R R	
+28, 29 +30, 31	0x3707	Not used Timestamp	0		UINT32 UINT32	R R	
+32, 33 +34, 35	0x3708	Not used Timestamp	0		UINT32 UINT32	R R	
+36, 37 +38, 39	0x3709	Maximum kW import sliding window demand Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+40, 41 +42, 43	0x370A	Maximum kvar import sliding window demand Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+44, 45 +46, 47	0x370B	Maximum kVA sliding window demand Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+48, 49 +50, 51	0x3737	Not used Timestamp	0		UINT32 UINT32	R R	
+52, 53 +54, 55	0x370D	Not used Timestamp	0		UINT32 UINT32	R R	
+56, 57 +58, 59	0x370E	Not used Timestamp	0		UINT32 UINT32	R R	
+60, 61 +62, 63	0x370F	Maximum kW export sliding window demand Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+64, 65 +66, 67	0x3710	Maximum kvar export sliding window demand Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+68, 69 +70, 71	0x3737	Not used Timestamp	0		UINT32 UINT32	R R	
+72, 73 +74, 75	0x3712	Not used Timestamp	0		UINT32 UINT32	R R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+76, 77 +78, 79	0x3713	V4 Maximum volt demand Timestamp	0-Vmax	U4 sec	UINT32 UINT32	R R	
+80, 81 +82, 83	0x3714	I4 Maximum ampere demand Timestamp	0-I4max	U2 sec	UINT32 UINT32	R R	
+84, 85 +86, 87	0x3715	In Maximum ampere demand Timestamp	0-Imax	U2 sec	UINT32 UINT32	R R	
37888-37951		**Programmable Min/Max Maximum Values**					
+0, 1 +2, 3	0x3800	Max. Min/Max Register #1 Timestamp			UINT32 UINT32	R R	
+4, 5 +6, 7	0x3801	Max. Min/Max Register #2 Timestamp			UINT32 UINT32	R R	
		...					
+60, 61 +62, 63	0x380F	Max. Min/Max Register #16 Timestamp			UINT32 UINT32	R R	
38016-38063		**Maximum Harmonic Demands**					
+0, 1 +2, 3	0x3880	V1 THD demand Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	2
+4, 5 +6, 7	0x3881	V2 THD demand Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	2
+8, 9 +10, 11	0x3882	V3 THD demand Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	2
+12, 13 +14, 15	0x3883	V4 THD demand Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	
+16, 17 +18, 19	0x3884	I1 THD demand Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	
+20, 21 +22, 23	0x3885	I2 THD demand Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	
+24, 25 +26, 27	0x3886	I3 THD demand Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	
+28, 29 +30, 31	0x3887	I4 THD demand Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	
+32, 33 +34, 35	0x3888	I1 TDD demand Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	
+36, 37 +38, 39	0x3889	I2 TDD demand Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	
+40, 41 +42, 43	0x388A	I3 TDD demand Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	
+44, 45 +46, 47	0x388B	I4 TDD demand Timestamp	0-1000	×0.1% sec	UINT32 UINT32	R R	
38144-38207		**Billing TOU Maximum Demand Register #1**					
+0, 1 +2, 3	0x4800	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x4801	Tariff #2 register	0-Pmax	U3 sec	UINT32 UINT32	R R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
		Timestamp					
		...				R	
+60, 61 +62, 63	0x480F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
38400-38463		**Billing TOU Maximum Demand Register #2**					
+0, 1 +2, 3	0x4900	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x4901	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x490F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
38656-38719		**Billing TOU Maximum Demand Register #3**					
+0, 1 +2, 3	0x4A00	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x4A01	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x4A0F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
38272-38335		**Billing TOU Maximum Demand Register #4**					
+0, 1 +2, 3	0x4880	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x4881	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x488F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
38528-38591		**Billing TOU Maximum Demand Register #5**					
+0, 1 +2, 3	0x4980	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x4981	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x498F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
38784-38847		**Billing TOU Maximum Demand Register #6**					
+0, 1 +2, 3	0x4A80	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x4A81	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+60, 61 +62, 63	0x4A8F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
38912-38975		**Billing TOU Maximum Demand Register #7**					
+0, 1 +2, 3	0x5300	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5301	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x530F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
39040-39103		**Billing TOU Maximum Demand Register #8**					
+0, 1 +2, 3	0x5380	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5381	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x538F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
39168-39231		**Billing TOU Maximum Demand Register #9**					
+0, 1 +2, 3	0x5400	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5401	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x540F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
39296-39359		**Billing TOU Maximum Demand Register #10**					
+0, 1 +2, 3	0x5480	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5481	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x548F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
39424-39487		**Billing TOU Maximum Demand Register #11**					
+0, 1 +2, 3	0x5500	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5501	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x550F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
39552-39615		**Billing TOU Maximum Demand Register #12**					
+0, 1 +2, 3	0x5580	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5581	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x558F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
39680-39743		**Billing TOU Maximum Demand Register #13**					
+0, 1 +2, 3	0x5600	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5601	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x560F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
39808-39871		**Billing TOU Maximum Demand Register #14**					
+0, 1 +2, 3	0x5680	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5681	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x568F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
39936-39999		**Billing TOU Maximum Demand Register #15**					
+0, 1 +2, 3	0x5700	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5701	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x570F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
40064-40127		**Billing TOU Maximum Demand Register #16**					
+0, 1 +2, 3	0x5780	Tariff #1 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
+4, 5 +6, 7	0x5781	Tariff #2 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	
		...				R	
+60, 61 +62, 63	0x578F	Tariff #16 register Timestamp	0-Pmax	U3 sec	UINT32 UINT32	R R	

NOTES:

1 When the 4LN3, 4LL3, 3LN3, 3LL3, 3BLN3 or 3BLL3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line.

2 When the 4LN3, 3LN3 or 3BLN3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

3 For volts, amps, power and frequency scales and units, refer to Section 4 ”Data Scales and Units”.

4 On a 0.2-s (16-cycle GOST 13109) interval.

3.6 Device Control and Status Registers

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
Event Flags Registers (bitmap)							
44032-44033		Event flags 1-32 set register (0 = no effect, 1 = set)	0x00000000 - 0xFFFFFFF		UINT32	W	Read as 0
44034-44035		Event flags 1-32 clear register (0=clear,1 = no effect)	0x00000000 - 0xFFFFFFF		UINT32	W	Read as 0
44036-44037		Event flags 1-32 status (0 = cleared, 1 = set)	0x00000000 - 0xFFFFFFF		UINT32	R	
44238-44241		Event flags 1-64 set register (0 = no effect, 1 = set)	0x00000000 - 0xFFFFFFF 0x00000000 - 0xFFFFFFF		UINT64	W	Read as 0
44242-44245		Reserved			UINT32		Read as 0
44246-44249		Event flags 1-64 clear register (0=clear, 1 = no effect)	0x00000000 - 0xFFFFFFF 0x00000000 - 0xFFFFFFF		UINT64	W	Read as 0
44250-44253		Reserved			UINT32		Read as 0
44254-44257		Event flags 1-64 status (0 = cleared, 1 = set)	0x00000000 - 0xFFFFFFF 0x00000000 - 0xFFFFFFF		UINT64	R	
44258-44261		Reserved			UINT32		Read as 0
Remote Relay Control Registers (bitmap)							
44038-44045		Reserved			UINT32		
44046-44049		Force relay operate register: 0 = no effect, 1 = operate	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	W	Read as 0
44050-44053		Force relay release register: 0 = no effect, 1 = release	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	W	Read as 0
44054-44057		Locally latched relays status: 0 = unlatched, 1 = locally latched	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	
44058-44061		Remote latched relays status: 0 = unlatched, 1 = remote latched	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	
44062-44065		Direct relay control disable status: 0 = direct control enabled, 1 = direct control disabled	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	Direct relay control is disabled if a relay is under local automation control
44066-44069		Relay status: 0 = open, 1 = closed	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	
44070-44073		Latch relays mode: 0 = unlatched mode, 1 = latched mode	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	
44074-44077		Pulse relays mode: 0 = not pulse mode, 1 = pulse mode	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT32	R	
44078-44081		KYZ relays mode: 0 = not KYZ mode, 1 = KYZ mode	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	
44082-44085		Relay polarity mode: 0 = normal mode, 1 = inverting mode	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	
44086-44089		Relay blocking mode: 0 = normal mode, 1 = blocked mode	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	
44090-44093		Blocked relay status: 0 = relay unblocked, 1 = relay blocked	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	Relay control commands are ignored if a relay is blocked

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
44094-44101		Reserved			UINT32		
Reset/Clear Registers							
44102		Clear energies	0		UINT16	W	
44103		Clear maximum demands	0 = clear all maximum demands 1 = clear power demands 2 = clear volt and ampere demands 3 = clear volt demands 4 = clear ampere demands 5 = clear harmonic demands		UINT16	W	
44104		Clear Billing/TOU energy registers	0		UINT16	W	
44105		Clear Billing/TOU maximum demands	0		UINT16	W	
44106		Clear counters	0 = clear all counters, 1-32 = clear counter #1-32		UINT16	W	
44107		Clear Min/Max log	0		UINT16	W	
44108		Clear operation/event counters	0 = clear EN50160/GOST 13109/GOST 32144 statistics 6 = clear communication counters 7 = clear switch operation counters		UINT16	W	
44109-44133		Reserved			UINT16		
Device Mode Control Registers							
44135		Controller/setpoints operation	0 = disabled, 1 = enabled		UINT16		
44136		PQ recorder	0 = disabled, 1 = enabled		UINT16		
44137		Fault recorder	0 = disabled, 1 = enabled		UINT16		
44138-44165		Reserved			UINT16		
UDP Cross-trigger Register							
44166		External trigger index	0-15		UINT16	W	
44167		Reserved			UINT16		
44168-44237		**Reserved**			UINT16		
Memory Status Registers							
44262-44263		Memory size, bytes			UINT32	R	
44264-44265		Free memory, bytes			UINT32	R	
44266-44277		Reserved			UINT32	R	
Log Notification Registers (bitmap)							
44278-44279		Files 0-31 (0 = no new logs, 1 = new record logged)	0x00000000 - 0xFFFFFFFF		UINT32	R	
44280-44293		Reserved			UINT32	R	
Setpoint Status Registers (bitmap)							
44294-44297		Setpoints 1-64 status (0 = released, 1 = operated)	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R	
44298-44309		Reserved			UINT32	R	
Setpoint Alarm Latch Registers (bitmap)							
44310-44313		Setpoints 1-64 alarm status. When read: 0 = no setpoint operations logged, 1 = setpoint has been operated at least once since the last alarm bit reset. When written: 0 = clear setpoint	0x00000000 - 0xFFFFFFFF 0x00000000 - 0xFFFFFFFF		UINT64	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
		alarm bit, 1 = no effect.					
44314-44325		Reserved					
Device Diagnostics Register (bitmap)							
44326-44327		Device self-diagnostics flags. When read: 0 = no faults logged, 1 = a fault bit has been set at least once since the last reset. When written: 0 = clear a fault bit, 1 = no effect.	F23		UINT32	R/W	
44328-44339		Reserved					
GOOSE Subscriber Status Register (bitmap)							
44340-44341		Bits 0-19 = subscriber #1-#20 status: 0 = subscriber does not receive updates or the data set differs from the subscriber setup; 1 = subscriber receives updates.	0x00000000 - 0x000FFFFF		UINT32	R	Bitmap
Port Identification							
44342		Active port number	0-2 = serial port COM1-COM3, 3 = IR Port, 4 = Modem port, 5 = USB/Modbus port, 6-10 = Ethernet/TCP port		UINT16	R	
44343-44345		Reserved					
Network Identification							
44346-44367							
+0,1		Ethernet network IP Address			UINT32	R	Network byte order
+2,3		Ethernet network subnet mask			UINT32	R	Network byte order
+4,5		Ethernet network default gateway			UINT32	R	Network byte order
+6,7		Not used			UINT32	R	
+8,9		Not used			UINT32	R	
+10,11		GPRS network IP Address			UINT32	R	Network byte order
+12,13		GPRS network subnet mask	N/A		UINT32	R	Network byte order
+14,15		GPRS network default gateway	N/A		UINT32	R	Network byte order
+16		Not used			UINT32	R	
+17		Cellular network type	0 = 3GPP network (GSM, UMTS, LTE) 1= 3GPP2 network (CDMA2000)		UINT32	R	
+18-21		Cellular module's mobile equipment identifier: IMEI for 3GPP networks MEID for 3GPP2 networks	IMEI (15 decimal digits): +18,19 – 8 lower digits in binary, +20,21 – 7 higher digits in binary; MEID (14 hex digits): +18,19 – 8 lower digits, +20,21 – 6 higher digits		UINT32	R	
44368-44377		Reserved					
Device Authorization Register							
44378-44379		When write: 8-digit password. When read: 0 = access permitted, -1 = authorization required.	0 - 99999999 (write) 0/-1 (read)		INT32	R/W	
44380-44385		Reserved					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
Communication Status							
44394		RSSI (received signal strength)	0 = not known or not detectable, 51-113 = -51 to -113 dBm		UINT16	R	
44395		GPRS status	0 = not connected, 1 = not registered, 2 = registered		UINT16	R	
44396-44409		Reserved			UINT16	R	65535 = N/A
Communication Counters							
44410		Successful eXpertPower client connections	0-65534		UINT16	R	
44411		Failed eXpertPower client connections	0-65534		UINT16	R	
44412		Successful TCP notification client connections	0-65534		UINT16	R	
44413		Failed TCP notification client connections	0-65534		UINT16	R	
44414-44441		Reserved			UINT16	R	65535 = N/A
Switch Remote Control Registers							
44458-44459		ON/Close command register: Bit 0: XCBR1 Bit 1: XCBR2 Bit 2: XSWI1 ... Bit 15: XSWI14	0x00000000 - 0x0000FFFF Bit value: 0=no effect, 1=ON		UINT32	W	Read as 0
44460-44461		OFF/Open command register: Bit 0: XCBR1 Bit 1: XCBR2 Bit 2: XSWI1 ... Bit 15: XSWI14	0x00000000 - 0x0000FFFF: Bit value: 0=no effect, 1=OFF		UINT32	W	Read as 0
44462-44463		Position substitution enable command register (subEna): Bit 0: XCBR1 Bit 1: XCBR2 Bit 2: XSWI1 ... Bit 15: XSWI14	0x00000000 - 0x0000FFFF Bit value: 0=no effect, 1=enable		UINT32	W	Read as 0
44464-44465		Position substitution disable command register (~subEna): Bit 0: XCBR1 Bit 1: XCBR2 Bit 2: XSWI1 ... Bit 15: XSWI14	0x00000000 - 0x0000FFFF Bit value: 0=no effect, 1=disable		UINT32	W	Read as 0
44466-44481		Position substitution value registers (subVal)	00=intermediate-state, 01=OFF, 10=ON, 11=bad-state				
+0		XCBR1 position substitution value			UINT16	R/W	
+1		XCBR2 position substitution value			UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+2		XSWI1 position substitution value			UINT16	R/W	
...		...					
+15		XSWI14 position substitution value			UINT16	R/W	
+16-47		Reserved					
Switch Status Registers							
44514-44515		Operation Open activation indication (alias): Bit 0: XCBR1_OpOpn Bit 1: XCBR2_OpOpn Bit 2: XSWI1_OpOpn ... Bit 15: XSWI14_OpOpn	0x00000000 - 0x0000FFFF Bit value: 0=not active, 1=activated		UINT32	R	
44516-44517		Operation Close activation indication (alias): Bit 0: XCBR1_OpCls Bit 1: XCBR2_OpCls Bit 2: XSWI1_OpCls ... Bit 15: XSWI14_OpCls	0x00000000 - 0x0000FFFF Bit value: 0=not active, 1=activated		UINT32	R	
44518-44519		Enable Opening status (EnaOpn): Bit 0: XCBR1 Bit 1: XCBR2 Bit 2: XSWI1 ... Bit 15: XSWI14	0x00000000 - 0x0000FFFF Bit value: 0=disabled/blocked, 1=enabled/unblocked		UINT32	R	
44520-44521		Enable Closing status (EnaCls): Bit 0: XCBR1 Bit 1: XCBR2 Bit 2: XSWI1 ... Bit 15: XSWI14	0x00000000 - 0x0000FFFF Bit value: 0=disabled/blocked, 1=enabled/unblocked		UINT32	R	
44522-44523		Position substitution enable status (subEna): Bit 0: XCBR1 Bit 1: XCBR2 Bit 2: XSWI1 ... Bit 15: XSWI14	0x00000000 - 0x0000FFFF Bit value: 0=actual position, 1=substituted position		UINT32	R	
44524-44525		Fault disconnect alarm status (AlmFlt): Bit 0: XCBR1 Bit 1: XCBR2 Bit 2: XSWI1 ... Bit 15: XSWI14	0x00000000 - 0x0000FFFF Bit value: 0=no alarm, 1=alarm		UINT32	R	
44526-44541		Command termination status	0=Success, 1=Not-supported, 2=Blocked-by-switching-hierarchy, 4=Invalid-position,		UINT16	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			5=Position-reached, 8=Blocked-by-Mode, 9=Blocked-by-process, 10=Blocked-by-interlocking, 12=Command-already-in-execution, 13=Blocked-by-health, 16=Time-limit-over				
+0		XCBR1 command termination status			UINT16	R	
+1		XCBR2 command termination status			UINT16	R	
+2		XSWI1 command termination status			UINT16	R	
...		...					
+15		XSWI14 command termination status			UINT16	R	
Factory Diagnostic Registers							
45952-46079		Factory diagnostic registers			UINT32	R	

3.7 Device Setup Registers

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
Device Identification							
46080-46111							
+0,1		Device serial number	1-999999		UINT32	R	
+2,3		Device model ID	18000		UINT32	R	
+4-11		Device model name	“PM180”		CHAR16	R	Null-terminated string
+12-13		Device options (bitmap)			UINT32	R	
+14-19		Reserved			UINT16	R	
+20		Device firmware version number	3101-3199		UINT16	R	
+21		Device firmware build number	1-99		UINT16	R	
+22		Transient recorder firmware version number	3201-3299		UINT16	R	
+23		Transient recorder firmware build number	1-99		UINT16	R	
+24		Boot loader version number			UINT16	R	
+25		Boot loader build number			UINT16	R	
+26-31		Reserved			UINT16	R	
Factory Device Settings							
46112-46207							
+0		V1-V3 input range	690	V	UINT16	R	
+1		V1-V3 input overload	120	%	UINT16	R	
+2		V4 input range	690	V	UINT16	R	
+3		V4 input overload	120	%	UINT16	R	
+4		I1-I3 input range	1, 5	A	UINT16	R	
+5		I1-I3 input overload	400 (ANSI), 200 (IEC)	%	UINT16	R	
+6		I4 input range	1, 5	A	UINT16	R	
+7		I4 input overload	400 (ANSI), 200 (IEC)	%	UINT16	R	
+8		I1x-I3x input range	1, 5	A	UINT16	R	
+9		I1x-I3x input overload	2000	%	UINT16	R	
+10		I4x input range	1, 5	A	UINT16	R	
+11		I4x input overload	2000	%	UINT16	R	
+12-63		Reserved			UINT16	R	
+64		Ethernet MAC address 0-1	0x0500		UINT16	R	
+65		Ethernet MAC address 2-3	0x00F0		UINT16	R	
+66		Ethernet MAC address 4-5	0x0000-0xFFFF		UINT16	R	
+67-95		Reserved			UINT16	R	
Basic Setup							
46208-46271							
+0		Wiring mode	F26		UINT16	R/W	
+1		PT ratio (primary to secondary ratio)	10-65000	×0.1	UINT16	R/W	
+2		PT secondary (Line-to-Line)	500-7000	×0.1	UINT16	R/W	
+3		V4 PT ratio (primary to secondary ratio)	10-65000	×0.1	UINT16	R/W	
+4		V4 PT secondary voltage	500-7000	×0.1	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+5		CT primary current	1-30000	A	UINT16	R/W	
+6		Reserved			UINT16	R/W	
+7		I4 CT primary current	1-30000	A	UINT16	R/W	
+8-16		Reserved			UINT16	R/W	
+17		Nominal line frequency	50, 60	Hz	UINT16	R/W	
+18		Phase order	0 = ABC, 1 = CBA		UINT16	R/W	
+19-23		Reserved			UINT16	R/W	
+24		I maximum demand load current	0-30000	A	UINT16	R/W	
+25		I4 maximum demand load current	0-30000	A	UINT16	R/W	
+26-31		Reserved			UINT16	R/W	
Demands Setup							
46240-46255							
+0		Power demand period (block interval)	1, 2, 3, 5, 10, 15, 30, 60	min	UINT16	R/W	
+1		Number of demand periods in a sliding window	1-15		UINT16	R/W	
+2		Demand synchronization source input	0 = device clock, 1-96 = DI1-DI96		UINT16	R/W	A DI input is considered a pulse or KYZ input. The pulse edge restarts the power demand accumulation interval.
+3-7		Reserved			UINT16	R/W	
+8		Volt demand period	0-9000	sec	UINT16	R/W	
+9		Ampere demand period	0-9000	sec	UINT16	R/W	
+10		Harmonic demand period	0-9000	sec	UINT16	R/W	
+11-15		Reserved			UINT16	R/W	
Device Options Setup							
46256-46399							
+0		Power calculation mode	0 = using reactive power: S = f(P,Q), 1 = using non-active power: Q = f(S,P)		UINT16	R/W	
+1		Energy roll value	0 = 1×10^4, 1 = 1×10^5, 2 = 1×10^6, 3 = 1×10^7, 4 = 1×10^8, 5 = 1×10^9		UINT16	R/W	
+2		Number of energy decimal places	0-3		UINT16	R/W	Default 0
+3		Reserved			UINT16	R/W	
+4		Tariff control	0 = via a calendar scheduler, 0x4000 = via communications, 0x0100-0x010F = via tariff inputs DI1-DI16 (bits 0:3 denote the first digital input index used)		UINT16	R/W	
+5		Number of tariffs	1-16 (does not have effect with a calendar tariff control option)		UINT16	R/W	When read with a calendar tariff control option, indicates the actual number of tariffs selected in TOU profiles
+6		Reserved			UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+7		Energy LED test mode	0=disabled, 1=Wh test, 2=varh test		UINT16	R/W	
+8		Test energy LED pulse rate, Wh/varh per pulse (in secondary units)	1-40	×0.01	UINT16	R/W	
+9-143		Reserved			UINT16	R/W	
Time/Date Setup							
46400-46415							
+0		Local time offset, min	0-+/-720		INT16	R/W	Offset in minutes from UTC (Universal Coordinated or Greenwich Mean time)
+1		Daylight savings time (DST) option	0=DST disabled (standard time only), 1=DST enabled (fixed switching dates), 2= scheduled DST period (calendar defined switching dates)		UINT16	R/W	
+2		DST start month	1-12		UINT16	R/W	
+3		DST start week of the month	1-4 = 1st, 2nd, 3rd and 4th week, 5=the last week of the month		UINT16	R/W	
+4		DST start weekday	1-7 (1=Sun, 7=Sat)		UINT16	R/W	
+5		DST end month	1–12		UINT16	R/W	
+6		DST end week of the month	1-4 = 1st, 2nd, 3rd and 4th week, 5=last week of the month		UINT16	R/W	
+7		DST end weekday	1-7 (1=Sun, 7=Sat)		UINT16	R/W	
+8		Clock synchronization source	0 = GPS IRIG-B master clock, 0x0001-0x0080 = DI1-DI128 1PPM, 0x1001-0x1080 = DI1-DI128 1PPS, 0xfffe = SNTP, 0xffff = none		UINT16	R/W	A DI input is considered a pulse or KYZ input. The pulse edge aligns the clock at the nearest whole minute.
+9		Country code	ITU country calling code		UINT16	R/W	
+10		DST start hour	1-6		UINT16	R/W	
+11		DST end hour	1-6		UINT16	R/W	
+12-15		Reserved			UINT16	R/W	
Clock Setup and Status							
46416-46447							
+0,1		Local time, in seconds, since Jan 1, 1970	F1	sec	UINT32	R/W	
+2,3		Fractional seconds, µsec		µsec	UINT32	R/W	
+4		Fractional seconds, milliseconds	0-999		UINT16	R/W	
+5		Seconds	0-59		UINT16	R/W	
+6		Minutes	0-59		UINT16	R/W	
+7		Hour	0-23		UINT16	R/W	
+8		Day of month	1-31		UINT16	R/W	
+9		Month	1-12		UINT16	R/W	
+10		Year (calendar year minus 2000)	0-99		UINT16	R/W	
+11		Weekday	1-7 (1=Sun, 7=Sat)		UINT16	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+12		Daylight savings time status	0 = standard time, 1 = daylight savings time is active		UINT16	R	
+13		IRIG-B status	0, 1 = no signal, 2 = time unlocked, 3 = time locked		UINT16	R	
+14-31		Reserved			UINT16		
Communication Ports Setup							
46448-46575							
+0		Communication protocol	0 = Modbus RTU, 1 = Modbus ASCII, 2 = DNP3.0, 7=IEC 60870-5		UINT16	R/W	
+1		Interface	0 = RS-232, 1 = RS-422, 2 = RS-485, 3 = infrared, 4 = dialup modem, 8 = GSM/GPRS/CDMA2000		UINT16	R/W	
+2		Device address	Modbus: 1-247 DNP3.0: 0–65532 IEC 60870-5: 1-254 (1 octet), 1-65532 (2 octets)		UINT16	R/W	
+3		Baud rate	1 = 300 bps, 2 = 600 bps, 3 = 1200 bps, 4 = 2400 bps, 5 = 4800 bps, 6 = 9600 bps, 7 = 19200 bps, 8 = 38400 bps, 9 = 57600 bps, 10 = 115200 bps		UINT16	R/W	
+4		Data format	0 = 7 bits/even parity, 1 = 8 bits/no parity, 2 = 8 bits/even parity		UINT16	R/W	
+5		CTS mode	0 = not used, 1 = wait for CTS before sending data		UINT16	R/W	N/A for COM2-COM5 (read as 65535)
+6		RTS mode	0 = not used, 1 = RTS is asserted during the transmission		UINT16	R/W	N/A for COM2-COM5 (read as 65535)
+7		Minimum delay before sending data	0-1000 (default = 5)	ms	UINT16	R/W	
+8		Inter-character timeout	1-1000 (default = 4)	ms	UINT16	R/W	Added to standard 4-character time
+9-15		Reserved					
46448-46463		**COM1 Setup**					
46464-46479		**COM2 Setup**					Only 8 bits/no parity data format
46480-46495		**COM3 Setup**					
46496-46511		**COM4 Setup**					
46512-46527		**COM5 Setup**					
46528-46575		Reserved					
Network Setup							
46576-46703							
+0,1		Device IP Address	0x01000000-0xFFFFFFFF		UINT32	R/W	Network byte order
+2,3		Network subnet mask	0x00000001-0xFFFFFFFF		UINT32	R/W	Network byte order
+4,5		Network default gateway	0x00000000-0xFFFFFFFF		UINT32	R/W	Network byte order
+6,7		Not used	0		UINT32	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+8-31		Reserved				R/W	
Dial-up/GPRS Modem Setup							
46640-46671							
+0,1		Device IP Address	0x01000000-0xFFFFFFFF		UINT32	R/W	
+2,3		Network subnet mask	0x00000001-0xFFFFFFFF		UINT32	R/W	
+4,5		Network default gateway	0x00000000-0xFFFFFFFF		UINT32	R/W	
+6,7		Number of dial attempts	0–1000, 0-dial forever		UINT32	R/W	
+8,9		Connection timeout, sec	0-9999		UINT32	R/W	
+10,11		Delay between redials, sec	0-9999		UINT32	R/W	
+12,13		Idle connection timeout, sec	0-9999, 0 = never		UINT32	R/W	
+14,15		Number of rings before answer	0-20, 0 = never answer		UINT32	R/W	
+16-23		Modem init string	“AT&F&D1&C1”		CHAR16	R/W	Null-terminated string
+24,25		Auto-reset period, hours	1-24, 0 = never		UINT32	R/W	
+26-31		Reserved					
Password Setup							
46704-46707							
+0,1		Communications password (8 digits)	0-99999999		UINT32	R/W	Read as 0
+2		Password protection enabled	0 = disabled, 1 = enabled		UINT16	R/W	
+3		Reserved			UINT16	R/W	
46708-46761		Reserved					
IEC 61850 License Setup							
46762-46767							
+0,1		License code, first word			UINT32	R/W	
+2,3		License code, second word			UINT32	R/W	
+4,5		Current license type	0=no valid license 1-31=temporary license, remaining time in days -1=permanent license -3=temporary license has expired		UINT32	R	
Expert Power Service Setup							
46768-46783							
+0,1		Expert Power server IP Address	0x01000000-0xFFFFFFFF		UINT32	R/W	Default = 207.232.60.18
+2,3		Expert Power server TCP service port	0-65535		UINT32	R/W	Default = 5001
+4,5		Expert Power client enabled	0=client disabled, 1=client enabled		UINT32	R/W	
+6,7		Time to next session	1-99999	min	UINT32	R/W	
+8,9		Time to next session	1-99999	min	UINT32	R	Same as previous
+10,11		Connection network	0 = Ethernet, 1=GPRS		UINT32	R/W	
+12-15		Reserved					
Internet Service Provider (ISP) account							
46784-46879							
+0-15		Dial string (telephone number)	“*99***1#”		CHAR32	R/W	GPRS network call by default
+16-31		Login name			CHAR32	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+32-47		Login password			CHAR32	R/W	
+48-63		Access Point Name (APN)			CHAR32	R/W	
+64-95		Reserved					
SNTP Client Setup							
46880-46895							
+0,1		SNTP client enabled	0=disabled, 1=enabled		UINT32	R/W	
+2,3		Polling interval	60-86400	s	UINT32	R/W	Default = 600 s
+4-7		Reserved	0		UINT32	R/W	
+8,9		Primary SNTP server IP address	0x01000000-0xFFFFFFFF		UINT32	R/W	Default = 192.36.143.151
+10,11		Secondary SNTP server IP address	0x01000000-0xFFFFFFFF		UINT32	R/W	Default = 130.149.17.21
+12-15		Reserved					
TCP Notification Client Setup							
46896-46991							
+0,1		Client enabled	0=disabled, 1=enabled		UINT32	R/W	
+2,3		Server address	0x01000000-0xFFFFFFFF		UINT32	R/W	
+4,5		Server port	0-65535		UINT32	R/W	
+6,7		Message exchange address	0-65535		UINT32	R/W	
+8,9		Connection network	0 = Ethernet, 1=GPRS		UINT32	R/W	
+10-15		Reserved					
Transformer Correction Setup							
47072-47119							
+0		Ratio correction factor	900-1100	×0.001	UINT16	R/W	
+1		Phase angle error	-6000 to 6000	min	INT16	R/W	
+2,3		Reserved			INT16	R/W	
47072-47075		**V1 transformer correction**					
47076-47079		**V2 transformer correction**					
47080-47083		**V3 transformer correction**					
47084-47087		**V4 transformer correction**					
47088-47091		**I1 transformer correction**					
47092-47095		**I2 transformer correction**					
47096-47099		**I3 transformer correction**					
47100-47103		**I4 transformer correction**					
47104-47107		**I1x/DFR transformer correction**					
47108-47111		**I2x/DFR transformer correction**					
47112-47115		**I3x/DFR transformer correction**					
47116-47119		**I4x/DFR transformer correction**					
GOOSE Subscriber Setup							
48726-48833							
+0		Subscription number	0-19		UINT16	R/W	Write subscription number first before reading following registers
+1		Activate	Write: 1=activate		UINT16	R/W	Write 1 to store and activate setup
+2		Subscription enabled	0=disabled, 1=enabled		UINT16	R/W	Default = 0
+3-35		Data set reference			CHAR66	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+36,37		Configuration revision	1-0xFFFFFFFF		UINT32	R/W	Default = 1
+38-40		Destination MAC address (multicast)	01:0C:CD:01:00:00 to 01:0C:CD:01:01:FF		CHAR6	R/W	Default = 01:0C:CD:01:01:01-13
+41		Application ID	0-0xFFFF		UINT16	R/W	Default = 3001
+42-43		Not used	0		UINT16	R/W	
		Data Set Entry #1					
+44		Bits 0:7=member type, bits 8:15=GOOSE element number			UINT16	R/W	
+45		Basic member type			UINT16	R/W	
+46		Input variable ID			UINT16	R/W	
+47		Not used			UINT16	R/W	
+48-51		**Data Set Entry #2**					
...		...					
+104-107		**Data Set Entry #16**					
+108-171		Reserved			UINT16	R/W	
48898-49045		Reserved					
GOOSE Publisher Setup							
49046-49145							
+0		Publisher number	0		UINT16	R/W	Write number first before reading following registers
+1		Activate	Write: 1=activate		UINT16	R/W	Write 1 to store and activate setup
+2-34		Goose control block reference	“CTRL/LLN0GOGoCBPub1"		CHAR66	R	
+35		Publisher enabled	0 = disabled, 1 = enabled		UINT16	R/W	
+36-51		GOOSE application identifier	"Pub1"		CHAR34	R	
+53-85		Data set reference	“CTRL/LLN0$DSetGOOSE1"		CHAR66	R	
+86-87		Configuration revision	1		UINT32	R/W	Default = 1
+88		Needs commissioning	0 = no, 1= yes		UINT16	R	Default = 0
+89-91		Destination MAC address (multicast)	01:0C:CD:01:00:00 to 01:0C:CD:01:01:FF		CHAR6	R/W	Default = 01:0C:CD:01:01:FF
+92		Destination VLAN priority	4		UINT16	R	Default = 4
+93		Destination VLAN ID	0		UINT16	R	Default = 0
+94		Destination application ID	0-0xFFFF		UINT16	R/W	Default = 3001
+95		Maximum retransmission interval	500-60000	ms	UINT16	R/W	Default = 5000
+96-99		Not used					
IEC 61850 IED Setup							
49146-49209							
+0-11		IED name			CHAR24	R/W	
+12-19		Subnet name			CHAR16	R/W	
+20		Connection idle timeout	1-10 min		UINT16	R/W	
+21		Voltage units	0=V, 1=kV		UINT16	R/W	
+22		Current units	0=A, 1=kA		UINT16	R/W	
+23		Power units	0=kW, 1=MW		UINT16	R/W	
+24		Maximum instances/clients per RCB	0=non-indexed, 1, 2, 4		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+25-30		Location			CHAR32	R/W	
+31-63		Not used	0		UINT16	R/W	
IEC 61850 Dataset Setup							
49210-49278							
+0		Read: current dataset number Write: number of dataset members	1-16/1-64		UINT16	R/W	Write a dataset number before reading dataset registers
+1		Activate	Write: 1=activate		UINT16	R/W	Write 1 to store and activate setup
+2-34		Dataset reference			CHAR66	R/W	
+35		Dataset member number	0-63		UINT16	R/W	Write a dataset member number before reading following registers
+36-68		Dataset member reference			CHAR66	R/W	
IEC 61850 RCB Setup							
49280-49351							
		Command registers					Write 1-2 registers for a command
+0		Read command (moves the list pointer to the first item in a list)	0xF0F0=read RCBs list, 0xE0E0=read dataset references list		UINT16	W	Write a command before reading setup registers
+1		Activate	1=activate		UINT16	W	Write to store and activate setup
		RCB registers (read/write)			UINT16	R/W	Write more than 2 registers to change setup
+0		RCB type: 1=BRCB, 2=URCB			UINT16	R/W	
+1		Not used			UINT16	R/W	
+2-18		RptID			CHAR34	R/W	
+19		RptEna			UINT16	R/W	
+20-52		Dataset reference			CHAR66	R/W	
+53		Not used			UINT16	R/W	
+54,55		ConfRev			UINT32	R/W	
+56,57		OptFlds			UINT32	R/W	
+58,59		BufTm			UINT32	R/W	
+60		SqNum			UINT16	R/W	
+61		TrgOps			UINT16	R/W	
+62,63		IntgPd			UINT32	R/W	
+64		Resv			UINT16	R/W	
+65-71		RCB name (logical_device/rcb_name)	CTRL/rcb_name MET1/rcb_name		CHAR14	R/W	Reading register 71 advances to the next RCB in the list
		Dataset references list (read)					
+19		Dataset number			UINT16	R	
+20-52		Dataset reference			CHAR66	R	Reading register 52 advances to the next dataset in the list
IEC 61850 Report Deadbands							
49396-49444							See F27 for measured value indices
+0		Measured value 1 deadband	1-50000	×0.001%	UINT16	R/W	
...		...	1-50000	×0.001%	UINT16	R/W	
+48		Measured value 49 deadband	1-50000	×0.001%	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
49445-49459		Reserved					Read as 65535
IEC 60870-5 Options Setup							
49460-49494							
+0		Maximum length of variable frame, octets	32-255		UINT16	R/W	
+1		Link address length, octets	1-2		UINT16	R/W	
+2		Cause of transmission length, octets	1-2		UINT16	R/W	
+3		Length of common address of ASDU, octets	1-2		UINT16	R/W	
+4		Length of information object address, octets	1-3		UINT16	R/W	
+5		Select-before-operate timeout, s	0-30		UINT16	R/W	
+6		Short pulse duration, ms	100-3000	ms	UINT16	R/W	
+7		Long pulse duration, ms	100-3000	ms	UINT16	R/W	
+8,9		Time synchronization period, s	1-86400, 0=not active	s	UINT32	R/W	
+10		Local counter freeze period, min	1-60, 0=not active	min	UINT16	R/W	
+11		Cyclic data transmission period, ms	100-30000, 0=not active	ms	UINT16	R/W	
+12,13		Redundant connection IP address #1	0-0xFFFFFE, 0=not active		UINT32	R/W	
+14,15		Redundant connection IP address #2	0-0xFFFFFE, 0=not active		UINT32	R/W	
+16,17		Not used	0		UINT32	R/W	
+18		Not used	0		UINT16	R/W	
+19		Respond with class 1 data to class 2 requests	0=disabled, 1=enabled		UINT16	R/W	
+20		Single point start mapped address	1-4095		UINT16	R/W	
+21		Single point default static object type	F30		UINT16	R/W	
+22		Single point default event object type	F31		UINT16	R/W	
+23		Double point start mapped address	1-4095		UINT16	R/W	
+24		Double point default static object type	F32		UINT16	R/W	
+25		Double point default event object type	F33		UINT16	R/W	
+26		Measured value start mapped address	1-4095		UINT16	R/W	
+27		Measured value default static object type	F34		UINT16	R/W	
+28		Measured value default event object type	F35		UINT16	R/W	
+29		Integrated totals start mapped address	1-4095		UINT16	R/W	
+30		Integrated totals default static object type	F36		UINT16	R/W	
+31		Integrated totals default event object type	F37		UINT16	R/W	
+32		Voltage units	0=V, 1=kV		UINT16	R/W	
+33		Current units	0=A, 1=kA		UINT16	R/W	
+34		Power units	0=kW, 1=MW		UINT16	R/W	
IEC 60870-5 Class 2 Data and Counters Setup							
49524-49619							
+0		Information object type and flags	Bits 0:7 – static object type identification (F30, F32, F34, F36), Bit 8=1 – freeze with reset, Bit 9=1 – local freeze, Bit 10=1 – cyclic data transmission, Bit 11=1 – general interrogation, Bits 12:15 – interrogation group =				

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			0-15 (0=no group assigned)				
+1		Start information object address	1-65535		UINT16	R/W	
+2		Number of elements in the range	1-128		UINT16	R/W	
49524-49526		**Object address range #1**					
49527-49529		**Object address range #2**					
...		**...**					
49617-46619		**Object address range #32**					
IEC 60870-5 Assignable Point Map and Events Setup							
49716-49971					UINT16	R/W	
+0		Point ID	See Section 3.4		UINT16	R/W	
+1		Information object type and flags	Bits 0:7 – static object type identification (F3, F5, F7), Bits 8:9 – relation (0=delta, 1= more than, 2 = less than) Bit 10=1 – class 1 assignment		UINT16	R/W	
+2,3		Deadband/threshold	See Section 3.4 for the point range and resolution		INT32	R/W	
49716-49719		**Mapped static/event point #1**					
49720-49723		**Mapped static/event point #2**					
...		**...**					
49968-49971		**Mapped static/event point #64**					
EN50160 PQ Recorder Triggers Setup							
50134-50453							
+0		Threshold, %	0–2000	×0.1%	UINT16	R/W	
+1		Hysteresis, % of threshold	0–500	×0.1%	UINT16	R/W	
+2		Log options, bitmap	Bit 0 – waveform log on event start: 0 = disabled, 1 = enabled; Bit 1 – waveform log on event end: 0 = disabled, 1 = enabled; Bit 2 – PQ log: 0 = enabled, 1 = disabled.		UINT16	R/W	
+3		Waveform log number	0-7 = log #1-8		UINT16	R/W	
+4		Data/RMS plot option	0 = disabled, 1 = enabled		UINT16	R/W	
+5		Data log number (factory preset)	13 = log #14		UINT16	R/W	
+6		1/2-cycle RMS plot, cycles before event	0-20	cycle	UINT16	R/W	
+7		1/2-cycle RMS plot, cycles after event	0-20	cycle	UINT16	R/W	
+8		1/2-cycle RMS plot duration, cycles	0-10000	cycle	UINT16	R/W	
+9		0.2-sec envelope RMS plot duration, seconds	0-10000	sec	UINT16	R/W	
+10		3-sec envelope RMS plot duration, minutes	0-10000	min	UINT16	R/W	
+11		10-min envelope RMS plot duration, hours	0-10000	hours	UINT16	R/W	
+12-15		Reserved	0		UINT16	R/W	
50134-50149		**Power frequency, dF/Fn**					
50150-50165		**Voltage variations, dV/Un**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
50166-50181		**Rapid voltage changes, dV/Un**					
50182-50197		**Flicker severity, Plt**					
50198-50213		**Voltage dips, %Un**					
50214-50229		**Voltage interruptions, %Un**					
50230-50245		**Temporary overvoltages, %Un**					
50246-50261		**Transient overvoltages, %Un**					
50262-50277		**Voltage unbalance, %**					
50278-50293		**Harmonic THD, %**					
50294-50309		**Harmonic voltage, %Un**					
50310-50325		**Interharmonic THD, %**					
50326-50341		**Interharmonic voltage, %Un**					
50342-50357		**Mains signaling voltage, %Un**					
50358-50453		Reserved					
Advanced EN50160 Setup							
50838-50865							
		EN50160 Compliance Statistics					
+0		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+1		Evaluation period	0=daily, 1=weekly		UINT16	R/W	
+2		First day of the week	1=Sunday, 7=Saturday		UINT16	R/W	
+3		Reserved	0		UINT16	R/W	
		EN50160 Harmonics Survey					
+4		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+5		Evaluation period	0=daily, 1=weekly		UINT16	R/W	
+6-7		Reserved	0		UINT16	R/W	
		Rapid Voltage Changes					
+8		Repetition rate, per hour, maximum	1-10		UINT16	R/W	
+9		Reserved	0		UINT16	R/W	
		Flicker					
+10		Pst period	1-10	min	UINT16	R/W	
+11		Reserved	0		UINT16	R/W	
		Harmonic Voltage					
+12		THD, up to order	25-50		UINT16	R/W	
+13		Harmonics, up to order	25-50		UINT16	R/W	
+14-15		Reserved	0		UINT16	R/W	
		Interharmonic Voltage					
+16		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+17		THD, up to order	25-50		UINT16	R/W	
+18		Interharmonics, up to order	25-50		UINT16	R/W	
+19		Reserved	0		UINT16	R/W	
		Mains Signaling Voltage					
+20		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+21		1st signaling frequency	1100-30000	×0.1Hz	UINT16	R/W	
+22		2nd signaling frequency	1100-30000	×0.1Hz	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+23		3rd signaling frequency	1100-30000	×0.1Hz	UINT16	R/W	
+24		4th signaling frequency	1100-30000	×0.1Hz	UINT16	R/W	
		Transient Overvoltage					
+25		Transient detection and classification method	0=peak voltage, 1=impulsive voltage		UINT16	R/W	
+26-27		Reserved	0		UINT16	R/W	
50866-50901		Reserved	0		UINT16	R/W	
EN50160 Harmonic Voltage Limits							
50902-50965							
+0		H02 limit	1-10000	×0.01%	UINT16	R/W	
+1		H03 limit	1-10000	×0.01%	UINT16	R/W	
+2		H04 limit	1-10000	×0.01%	UINT16	R/W	
		...					
+48		H50 limit	1-10000	×0.01%	UINT16	R/W	
+49-63		Reserved					
EN50160 Interharmonic Voltage Limits							
50966-51029							
+0		H02 limit	1-10000	×0.01%	UINT16	R/W	
+1		H03 limit	1-10000	×0.01%	UINT16	R/W	
+2		H04 limit	1-10000	×0.01%	UINT16	R/W	
		...					
+48		H50 limit	1-10000	×0.01%	UINT16	R/W	
+49-63		Reserved					
GOST 13109 PQ Recorder Triggers Setup							
50134-50453							
+0		High normally permissible limit, %	0-2000	×0.01%	UINT16	R/W	
+1		Hysteresis, % of threshold	0-500	×0.1%	UINT16	R/W	
+2		Log options, bitmap	Bit 0 – waveform log on event start: 0 = disabled, 1 = enabled; Bit 1 – waveform log on event end: 0 = disabled, 1 = enabled; Bit 2 – PQ log on normally permissible limit: 0 = enabled, 1 = disabled. Bit 3 – PQ log on maximum permissible limit: 0 = enabled, 1 = disabled.		UINT16	R/W	
+3		Waveform log number	0-7 = log #1-#8		UINT16	R/W	
+4		Data/RMS plot option	0 = disabled, 1 = enabled		UINT16	R/W	
+5		Data log number (factory preset)	13 = log #14		UINT16	R/W	
+6		1/2-cycle RMS plot, cycles before event	0-20	cycle	UINT16	R/W	
+7		1/2-cycle RMS plot, cycles after event	0-20	cycle	UINT16	R/W	
+8		1/2-cycle RMS plot duration, cycles	0-10000	cycle	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+9		0.2-sec envelope RMS plot duration, seconds	0-10000	sec	UINT16	R/W	
+10		3-sec envelope RMS plot duration, minutes	0-10000	min	UINT16	R/W	
+11		1-min envelope RMS plot duration, hours	0-10000	hours	UINT16	R/W	
+12		High maximum permissible limit, %	0-2000	×0.01%	UINT16	R/W	
+13		Low normally permissible limit, %	0-2000	×0.01%	UINT16	R/W	
+14		Low maximum permissible limit, %	0-2000	×0.01%	UINT16	R/W	
+15		Not used	0		UINT16	R/W	
50134-50149		**Voltage variation, peak load, +/-dU, %Un**					
50150-50165		**Voltage variation, light load, +/-dU, %Un**					
50166-50181		**Voltage change, +/-dU, %Un**					
50182-50197		**Short-term flicker, Pst**					
50198-50213		**Long-term flicker, Plt**					
50214-50229		**Voltage THD, %**					
50230-50245		**Voltage harmonic components, %**					
50246-50261		**Negative-sequence voltage unbalance, %**					
50262-50277		**Zero-sequence voltage unbalance, %**					
50278-50293		**Frequency variation, +/-dF, %Fn**					
50294-50309		**Voltage dip, %Un**					
50310-50325		**Impulsive voltage, %Un peak**					
50326-50341		**Temporary overvoltage, %Un**					
50342-50453		Reserved					
GOST 13109 Advanced Setup							
50838-50879							
		GOST 13109 Compliance Statistics					
+0		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+1		Evaluation period	0=daily		UINT16	R/W	
+2-3		Not used	0		UINT16	R/W	
		GOST 13109 Harmonic Statistics					
+4		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+5		Evaluation period	0=daily		UINT16	R/W	
+6-8		Not used	0		UINT16	R/W	
		Voltage Change					
+9		GOST 13109 limit curve	0=curve 1, 1= curve 2		UINT16	R/W	
		Flicker					
+10		Pst period	1-10	min	UINT16	R/W	
+11-13		Not used	0		UINT16	R/W	
		Harmonic Voltage					
+14		IEC 61000-4-7 harmonics grouping	0=disabled, 1=enabled		UINT16	R/W	
+15-35		Not used	0		UINT16	R/W	
		Peak Load Time Intervals					
+36		Start weekday	0=disabled, 1-7 – Sunday-Saturday		UINT16	R/W	
+37		End weekday	0=disabled, 1-7 – Sunday-Saturday		UINT16	R/W	
+38		Interval 1 start time	0-1439	min	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+39		Interval 1 end time	0-1439	min	UINT16	R/W	
+40		Interval 2 start time	0-1439	min	UINT16	R/W	
+41		Interval 2 end time	0-1439	min	UINT16	R/W	
50880-50901		Reserved	0		UINT16	R/W	
GOST 32144 PQ Recorder Triggers Setup							
50134-50373							
+0		High 95% permissible limit, %	-2000-20000	×0.01%	INT16	R/W	
+1		Hysteresis, % of threshold	0-500	×0.1%	UINT16	R/W	
+2		Log options, bitmap	Bit 0 – waveform log on event start: 0 = disabled, 1 = enabled; Bit 1 – waveform log on event end: 0 = disabled, 1 = enabled; Bit 2 – PQ log on 95% permissible limit: 0 = enabled, 1 = disabled. Bit 3 – PQ log on 100% permissible limit: 0 = enabled, 1 = disabled.		UINT16	R/W	
+3		Waveform log number	0-7 = log #1-#8		UINT16	R/W	
+4		Data/RMS plot option	0 = disabled, 1 = enabled		UINT16	R/W	
+5		Data log number (factory preset)	13 = log #14		UINT16	R/W	
+6		1/2-cycle RMS plot, cycles before event	0-20	cycle	UINT16	R/W	
+7		1/2-cycle RMS plot, cycles after event	0-20	cycle	UINT16	R/W	
+8		1/2-cycle RMS plot duration, cycles	0-10000	cycle	UINT16	R/W	
+9		0.2-sec envelope RMS plot duration, seconds	0-10000	sec	UINT16	R/W	
+10		3-sec envelope RMS plot duration, minutes	0-10000	min	UINT16	R/W	
+11		10-min envelope RMS plot duration, hours	0-10000	hours	UINT16	R/W	
+12		High 100% permissible limit, %	-2000-20000	×0.01%	INT16	R/W	
+13		Low 95% permissible limit, %	-2000-20000	×0.01%	INT16	R/W	
+14		Low 100% permissible limit, %	-2000-20000	×0.01%	INT16	R/W	
+15		Not used	0		UINT16	R/W	
50134-50149		**Frequency variation, +/-dF, %Fn**					
50150-50165		**Voltage variation, peak load +/-dU, %Un**					
50166-50181		**Rapid voltage changes, +/-dU, %Un**					
50182-50197		**Short-term flicker, Pst**					
50198-50213		**Long-term flicker, Plt**					
50214-50229		**Voltage THD, %**					
50230-50245		**Voltage harmonic components, %**					
50246-50261		**Voltage interharmonic components, %**					
50262-50277		**Signaling voltage, %Un**					
50278-50293		**Voltage unbalance, %**					
50294-50309		**Voltage interruptions**					
50310-50325		**Voltage dips, %Un**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
50326-50341		**Voltage swells, %Un**					
50342-50357		**Impulsive voltage, %Un peak**					
50358-50373		**Voltage variation, light load +/-dU, %Un**					
50374-50453		Reserved					
GOST 32144 Advanced Setup							
50838-50879							
		GOST 32144 Compliance Statistics					
+0		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+1		Evaluation period	0=daily, 1=weekly		UINT16	R/W	
+2		First day of the week	1=Sunday, 7=Saturday		UINT16	R/W	
+3		Start time	0-1439	min	UINT16	R/W	
+4-7		Not used			UINT16	R/W	
		Rapid Voltage Changes					
+8		Repetition rate, per hour, maximum	1-10		UINT16	R/W	
+9		Not used			UINT16	R/W	
		Flicker					
+10		Pst period	1-10	min	UINT16	R/W	
+11		Not used			UINT16	R/W	
		Harmonic Voltage					
+12		THD, up to order	25-50		UINT16	R/W	
+13		Harmonics, up to order	25-50		UINT16	R/W	
+14-15		Not used			UINT16	R/W	
		Interharmonic Voltage					
+16		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+17		THD, up to order	25-50		UINT16	R/W	
+18		Interharmonics, up to order	25-50		UINT16	R/W	
+19		Not used			UINT16	R/W	
		Mains Signaling Voltage					
+20		Evaluation	0=disabled, 1=enabled		UINT16	R/W	
+21		1st signaling frequency	1100-30000	×0.1Hz	UINT16	R/W	
+22		2nd signaling frequency	1100-30000	×0.1Hz	UINT16	R/W	
+23		3rd signaling frequency	1100-30000	×0.1Hz	UINT16	R/W	
+24		4th signaling frequency	1100-30000	×0.1Hz	UINT16	R/W	
+25-34		Not used	0		UINT16	R/W	
		Data Monitoring Options					
+35		Harmonics aggregation interval	0=0.2 s, 1=3 s, 2=10 min		UINT16	R/W	
		Peak Load Time Intervals					
+36		Start weekday	0=disabled, 1-7 – Sunday-Saturday		UINT16	R/W	
+37		End weekday	0=disabled, 1-7 – Sunday-Saturday		UINT16	R/W	
+38		Interval 1 start time	0-1439	min	UINT16	R/W	
+39		Interval 1 end time	0-1439	min	UINT16	R/W	
+40		Interval 2 start time	0-1439	min	UINT16	R/W	
+41		Interval 2 end time	0-1439	min	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
50880-50901		Reserved	0		UINT16	R/W	
GOST 32144 Harmonic Voltage Limits							
50902-50965							
+0		H02 limit	1-10000	×0.01%	UINT16	R/W	
+1		H03 limit	1-10000	×0.01%	UINT16	R/W	
+2		H04 limit	1-10000	×0.01%	UINT16	R/W	
		...					
+48		H50 limit	1-10000	×0.01%	UINT16	R/W	
+49-63		Reserved					
GOST 32144 Interharmonic Voltage Limits							
50966-51029							
+0		H02 limit	1-10000	×0.01%	UINT16	R/W	
+1		H03 limit	1-10000	×0.01%	UINT16	R/W	
+2		H04 limit	1-10000	×0.01%	UINT16	R/W	
		...					
+48		H50 limit	1-10000	×0.01%	UINT16	R/W	
+49-63		Reserved					
DNP Options Setup							
51158-51183							
+0		Default Binary Input Static object variation	F24 (default 0)		UINT16	R/W	
+1		Binary Input Change object variation	F24 (default 1)		UINT16	R/W	
+2		Default Binary Counter object variation	F24 (default 3)		UINT16	R/W	
+3		Frozen Binary Counter object variation	F24 (default 4)		UINT16	R/W	
+4		Reserved			UINT16	R/W	
+5		Binary Counter Change Event object variation	F24 (default 2)		UINT16	R/W	
+6		Default Analog Input object variation	F24 (default 3)		UINT16	R/W	
+7		Reserved			UINT16	R/W	
+8		Reserved			UINT16	R/W	
+9		Analog Input Change Event object variation	F24 (default 2)		UINT16	R/W	
+10		Re-mapping static point indices for event objects	0=disabled (default), 1=enabled		UINT16	R/W	
+11		16-bit BC scaling	0=×1 (default), 1=×10, 2=×100, 3=×1000		UINT16	R/W	
+12		16-bit AI scaling	0=disabled, 1=enabled		UINT16	R/W	
+13		Number of Analog Input change event points	0 to 43 (default 43)		UINT16	R/W	
+14		Number of Binary Input change event points	0 to 32 (default 21)		UINT16	R/W	
+15		Number of Binary Counter change event points	0 to 16 (default 0)		UINT16	R/W	
+16		Select/Operate Timeout	2 to 30 seconds (default 10 sec)		UINT16	R/W	
+17		Multi Fragment Interval	50 to 500 ms (default 50 ms)		UINT16	R/W	
+18-21		Reserved	Read as 65535		UINT16	R/W	
+22,23		Time Sync Period	1 to 86400 seconds (default 86400 sec), 0=disable time requests		UINT32	R/W	
+24		Voltage scale, secondary volts	60 to 828V (default 828V)		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+25		Current scale, secondary amps	10 to 200 (default CT secondary × CT overload)	×0.1A	UINT16	R/W	
51184-51189		Reserved					
DNP Events Setup							
51190-51445							
+0,1		Threshold/Deadband	See Section 3.5 for point value limits.		UINT32	R/W	A hysteresis for the point return threshold is 0.05Hz for frequency and 2% of the operating threshold for other points
+2		DNP point number	DNP point number available for the selected object		UINT16	R/W	
+3		Event scan control field (bitmap)	Bits 0-1 - DNP Object: 0=none, 1=AI, 2=BI, 3=BC Bit 2 – Object change event scan: 0= disabled, 1=enabled Bits 5-6 - DNP event poll class: 0=Class 1, 1=Class 2, 2=Class 3 Bit 7 – unused Bits 8-9 – Threshold/Deadband relation: 0=Delta, 1=more than (over threshold), 2=less than (under threshold)		UINT16	R/W	If Event log is enabled, the source of a DNP event will be recorded to the device Event log file as a general Setpoint #17.
51190-51193		**DNP Event #1**					
51194-51197		**DNP Event #2**					
		...					
51442-51445		**DNP Event #64**					
51446-51573		Reserved					
DNP Extended Options Setup							
51574-51590							
+0-15		Device location	1-31 ASCII characters		CHAR32	R/W	Null-terminated ASCII string
+16		Maximum file directory entries	10-200		UINT16	R/W	
51591-51701		Reserved					
DNP Class 0 Point Assignment							
51702-51797							
+0		DNP object and variation	F25		UINT16	R/W	
+1		Start point number	Start point number for the selected object		UINT16	R/W	
+2		Number of the points in a range	0-128		UINT16	R/W	
51702-51704		**DNP Class 0 Points Range 1**					
51705-51707		**DNP Class 0 Points Range 2**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
		...					
51795-51797		**DNP Class 0 Points Range 32**					
51798-51893		Reserved					
SOE Log Labels							
51894-52043							
+0		Event type	0=Setpoints, 2=Faults, 3=DI, 4=RO		UINT16	R/W	Write the event type and point number before reading following registers
+1		Point number	0-47		UINT16	R/W	
+2-17		Point ID			CHAR32	R/W	
+18-33		Status ON label			CHAR32	R/W	
+34-81		Status ON description			CHAR96	R/W	
+82		Status ON color	0-15		UINT16	R/W	
+83		Reserved	0		UINT16	R/W	
+84-99		Status OFF label			CHAR32	R/W	
+100-147		Status OFF description			CHAR96	R/W	
+148		Status OFF color	0-15		UINT16	R/W	
+149		Reserved	0		UINT16	R/W	
52044-52149		Reserved					
Fault Log Triggers Setup							
52150-52277							
+0		Trigger 1: Threshold, %	0-2000	x 0.1%	UINT16	R/W	
+1		Trigger 1: Hysteresis, % of threshold	0-500	x 0.1%	UINT16	R/W	
+2		Trigger 1: Trigger enabled	0 = disabled, 1 = enabled		UINT16	R/W	
+3		Trigger 2: Threshold, %	0-2000	x 0.1%	UINT16	R/W	
+4		Trigger 2: Hysteresis, % of threshold	0-500	x 0.1%	UINT16	R/W	
+5		Trigger 2: Trigger enabled	0 = disabled, 1 = enabled		UINT16	R/W	
+6-7		Reserved			UINT16	R/W	
52150-52157		**External trigger**					Enabled by default
52158-52165		**Zero-sequence current**					
52166-52173		**Zero-sequence voltage**					
52174-52181		**Current unbalance**					
52182-52189		**Voltage unbalance**					
52190-52197		**Overcurrent and Undervoltage**					
52198-52205		**Undervoltage**					
52206-52213		**I4 (neutral) current**					
52214-52277		Reserved			UINT16	R/W	
Fault Log Recording Setup							
52278-52341							
+0		Log options, bitmap	Bit 0 – waveform log on event start: 0 = disabled, 1 = enabled; Bit 1 – waveform log on event end: 0 = disabled, 1 = enabled;		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			Bit 2 – recording to PQ log: 0 = enabled, 1 = disabled.				
+1		Waveform log number	0-7 = log #1-8		UINT16	R/W	
+2		Data/RMS plot option	0 = disabled, 1 = enabled		UINT16	R/W	
+3		Data log number (factory preset)	12 = log #13		UINT16	R/W	
+4		1/2-cycle RMS plot, cycles before event	0–20	cycle	UINT16	R/W	
+5		1/2-cycle RMS plot, cycles after event	0–20	cycle	UINT16	R/W	
+6		1/2-cycle RMS plot duration, cycles	0–10000	cycle	UINT16	R/W	
+7-63		Reserved	0		UINT16	R/W	
IEEE 1159 PQ Log Triggers Setup (IEEE 1159 disturbance categories)							
52342-52597							
+0		Threshold, %	0 – 2000	x 0.1%	UINT16	R/W	
+1		Hysteresis, % of threshold	0 – 500	x 0.1%	UINT16	R/W	
+2		Log options, bitmap	Bit 0 – waveform log on event start: 0 = disabled, 1 = enabled; Bit 1 – waveform log on event end: 0 = disabled, 1 = enabled.		UINT16	R/W	
+3		Waveform log number	0-7 = log #1-8		UINT16	R/W	
+4		Data/RMS plot option	0 = disabled, 1 = enabled		UINT16	R/W	
+5		Data log number (factory preset)	13 = log #14		UINT16	R/W	
+6		1/2-cycle RMS plot, cycles before event	0-20	cycle	UINT16	R/W	
+7		1/2-cycle RMS plot, cycles after event	0-20	cycle	UINT16	R/W	
+8		1/2-cycle RMS plot duration, cycles	0-10000	cycle	UINT16	R/W	
+9		0.2-sec envelope RMS plot duration, seconds	0-10000	sec	UINT16	R/W	
+10		3-sec envelope RMS plot duration, minutes	0-10000	min	UINT16	R/W	
+11		10-min envelope RMS plot duration, hours	0-10000	hours	UINT16	R/W	
+12-15		Reserved	0		UINT16	R/W	
52342-52357		**Impulsive**					
52358-52373		**Sag**					
52374-52389		**Swell**					
52390-52405		**Interruption**					
52406-52421		**Volt Unbalance**					
52422-52437		**Frequency variation**					
52438-52453		**Harmonics**					
52454-52469		**Interharmonics**					
52470-52597		Reserved					
File Setup							
52598-53877							
+0		File type	0		UINT16	R/W	
+1		File attributes (bitmap)	F3		UINT16	R/W	
+2		Number of records in the file	0-65535, 0 = delete file		UINT16	R/W	
+3		Number of sections/channels in the file	0-32, 0 = non-partitioned file		UINT16	R/W	
+4		Number of parameters per section record	1-16 for conventional data files,		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			34 for EN 50160 Statistics log, 52 for EN 50160 Harmonics log, 40 for GOST 13109 Statistics log, 80 for GOST 13109 Harmonics log, 42 for GOST 32144 Statistics log, 80 for GOST 32144 Harmonics log				
+5		Not used	0		UINT16	R/W	
+6		Section record size, bytes (for info only)			UINT16	R	
+7		File record size, bytes (for info only)			UINT16	R	
+8,9		Allocated file size, bytes (for info only)			UINT32	R	
52598-52607		**Event Log Setup**					
52608-52617		**Data Log #1 Setup**					
52618-52627		**Data Log #2 Setup**					
52628-52637		**Data Log #3 Setup**					
52638-52647		**Data Log #4 Setup**					
52648-52657		**Data Log #5 Setup**					
52658-52667		**Data Log #6 Setup**					
52668-52677		**Data Log #7 Setup**					
52678-52687		**Data Log #8 Setup**					
52688-52697		**Data Log #9 Setup**					EN50160/GOST 13109/GOST 32144 compliance statistics
52698-52707		**Data Log #10 Setup**					EN50160/GOST 13109/GOST 32144 harmonic statistics
52708-52717		**Data Log #11 Setup**					
52718-52727		**Data Log #12 Setup**					
52728-52737		**Data Log #13 Setup**					
52738-52747		**Data Log #14 Setup**					
52748-52757		**Data Log #15 Setup**					
52758-52767		**Data Log #16 Setup**					
52768-52777		**Waveform Log #1 Setup**					
52778-52787		**Waveform Log #2 Setup**					
52788-52797		**Waveform Log #3 Setup**					
52798-52807		**Waveform Log #4 Setup**					
52808-52817		**Waveform Log #5 Setup**					
52818-52827		**Waveform Log #6 Setup**					Allocated for the transient recorder if the module is present
52828-52837		**Waveform Log #7 Setup**					
52838-52847		**Waveform Log #8 Setup**					
52848-52857		**SOE Log Setup**					
52858-52867		**PQ Log File Setup**					
52868-52877		**Fault Log Setup**					
52878-53877		Reserved					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
Waveform Recorder Setup							
53878-53949							
+0		Sampling rate, samples per cycle	Regular waveform: 32, 64, 128, 256 Transient recorder: 512, 1024		UINT16	R/W	
+1		Number of cycles per series	16-10848 (32 samples/cycle), 8-5424 (64 samples/cycle), 4-2712 (128 samples/cycle), 2-1356 (256 samples/cycle) 2-4 (512 samples/cycle) 2 (1024 samples/cycle)		UINT16	R/W	
+3		Recording time mode and number of post-event cycles in event-controlled mode	Bit 15 – mode: 0=fixed time, 1= event-controlled time Bits 0-9 – post-event cycles: 0-2048		UINT16	R/W	
+4		Number of cycles before trigger	1-20		UINT16	R/W	
+4,5		File channel mask (channels 1-32), bitmap	F9		UINT32	R/W	
+6,7		File channel mask (channels 33-64), bitmap	F9		UINT32	R/W	
53878-53885		**Waveform Log #1 Setup**					
53886-53893		**Waveform Log #2 Setup**					
53894-53901		**Waveform Log #3 Setup**					
53902-53909		**Waveform Log #4 Setup**					
53910-53917		**Waveform Log #5 Setup**					
53918-53925		**Waveform Log #6 Setup**					Allocated for the transient recorder if the module is present
53926-53933		**Waveform Log #7 Setup**					
53934-53941		**Waveform Log #8 Setup**					
53942-53949		Reserved					
Data Log Setup							
54006-55541							
+0		Data log parameter #1 ID	0x0000-0xFFFF		UINT16	R/W	
+1		Data log parameter #2 ID	0x0000-0xFFFF		UINT16	R/W	
+2		Data log parameter #3 ID	0x0000-0xFFFF		UINT16	R/W	
+3		Data log parameter #4 ID	0x0000-0xFFFF		UINT16	R/W	
+4		Data log parameter #5 ID	0x0000-0xFFFF		UINT16	R/W	
+5		Data log parameter #6 ID	0x0000-0xFFFF		UINT16	R/W	
+6		Data log parameter #7 ID	0x0000-0xFFFF		UINT16	R/W	
+7		Data log parameter #8 ID	0x0000-0xFFFF		UINT16	R/W	
+8		Data log parameter #9 ID	0x0000-0xFFFF		UINT16	R/W	
+9		Data log parameter #10 ID	0x0000-0xFFFF		UINT16	R/W	
+10		Data log parameter #11 ID	0x0000-0xFFFF		UINT16	R/W	
+11		Data log parameter #12 ID	0x0000-0xFFFF		UINT16	R/W	
+12		Data log parameter #13 ID	0x0000-0xFFFF		UINT16	R/W	
+13		Data log parameter #14 ID	0x0000-0xFFFF		UINT16	R/W	
+14		Data log parameter #15 ID	0x0000-0xFFFF		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+15		Data log parameter #16 ID	0x0000-0xFFFF		UINT16	R/W	
+16-31		Reserved			UINT16	R/W	
54006-54037		**Data log #1 Setup**					
54038-54069		**Data log #2 Setup**					
54070-54101		**Data log #3 Setup**					
54102-54133		**Data log #4 Setup**					
54134-54165		**Data log #5 Setup**					
54166-54197		**Data log #6 Setup**					
54198-54229		**Data log #7 Setup**					
54230-54261		**Data log #8 Setup**					
54262-54293		**Data log #9 Setup**					Read as NONE for EN50160/GOST 13109/GOST 32144 Statistics log
54294-54325		**Data log #10 Setup**					Read as NONE for EN50160/GOST 13109/GOST 32144 Harmonics Survey log
54326-54357		**Data log #11 Setup**					
54358-54389		**Data log #12 Setup**					
54390-54421		**Data log #13 Setup**					
54422-54453		**Data log #14 Setup**					
54454-54485		**Data log #15 Setup**					
54486-54517		**Data log #16 Setup**					
54518-55541		Reserved			UINT16	R/W	
TOU Daily Profile Setup							
55574-55701							
+0		1st tariff change	F10		UINT16	R/W	
+1		2nd tariff change	F10		UINT16	R/W	
+2		3rd tariff change	F10		UINT16	R/W	
+3		4th tariff change	F10		UINT16	R/W	
+4		5th tariff change	F10		UINT16	R/W	
+5		6th tariff change	F10		UINT16	R/W	
+6		7th tariff change	F10		UINT16	R/W	
+7		8th tariff change	F10		UINT16	R/W	
55574-55581		**Daily profile #1: Season 1, Day type 1**					
55582-55589		**Daily profile #2: Season 1, Day type 2**					
55590-55597		**Daily profile #3: Season 1, Day type 3**					
55598-55605		**Daily profile #4: Season 1, Day type 4**					
55606-55613		**Daily profile #5: Season 2, Day type 1**					
55614-55621		**Daily profile #6: Season 2, Day type 2**					
55622-55629		**Daily profile #7: Season 2, Day type 3**					
55630-55637		**Daily profile #8: Season 2, Day type 4**					
55638-55645		**Daily profile #9: Season 3, Day type 1**					
55646-55653		**Daily profile #10: Season 3, Day type 2**					
55654-55661		**Daily profile #11: Season 3, Day type 3**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
55662-55669		**Daily profile #12: Season 3, Day type 4**					
55670-55677		**Daily profile #13: Season 4, Day type 1**					
55678-55685		**Daily profile #14: Season 4, Day type 2**					
55686-55693		**Daily profile #15: Season 4, Day type 3**					
55694-55701		**Daily profile #16: Season 4, Day type 4**					
55702-55711		Reserved					
TOU Calendar Setup							
55712-56031							
+0-9		**Calendar entry record**				R/W	
+0		Daily profile/Period	0-3 = Season 1, Day types 0-3 4-7 = Season 2, Day types 0-3 8-11 = Season 3, Day types 0-3 12-15 = Season 4, Day types 0-3 128 = DST period schedule		UINT16	R/W	
+1		Week of month	0=all, 1=1st, 2=2nd, 3=3rd, 4=4th, 5=last week of the month		UINT16	R/W	
+2		Weekday	0=all, 1-7 (Sun=1, Sat=7)		UINT16	R/W	
+3		Till Weekday	0=all, 1-7 (Sun=1, Sat=7)		UINT16	R/W	
+4		Month	0=all, 1-12=January - December		UINT16	R/W	
+5		Day of month	0=all, 1-31=day 1-31		UINT16	R/W	
+6		Till Month	0=all, 1-12=January - December		UINT16	R/W	
+7		Till Day of month	0=all, 1-31=day 1-31		UINT16	R/W	
+8		Year	0=all, 1-99		UINT16	R/W	
+9		Not used			UINT16	R/W	
55712-55721		**Calendar entry #1**					
55722-55731		**Calendar entry #2**					
55732-55741		**Calendar entry #3**					
...							
56182-56191		**Calendar entry #48**					
Billing/TOU Registers Setup							
56672-56799							
+0		Not used	0		UINT16	R/W	
+1		Units of measurement	0=none, 1=kWh, 2=kvarh, 3=kVAh, 4=m^3, 5=CF (cubic feet), 6=CCF (hundred cubic feet)		UINT16	R/W	
+2		Flags (bitmap)	Bit 0=1 - TOU enabled Bit 1=1 – Energy usage profile enabled Bit 2=1 - Max. Demand profile enabled Bit 3=1 - Summary (total) profile enabled		UINT16	R/W	
+3		Not used	0		UINT16	R/W	
56672-56675		**Register #1 Setup**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
56676-56679		**Register #2 Setup**					
56680-56683		**Register #3 Setup**					
		...					
56796-56799		**Register #32 Setup**					
Billing/TOU Registers Source Setup							
56928-57183							
+0		Energy source ID	F11		UINT16	R/W	
+1		Target billing/TOU register number	0-31		UINT16	R/W	
+2,3		Multiplier	0-1000000	×0.001	INT32	R/W	
56928-56931		**Energy Source #1**					
56932-56935		**Energy Source #2**					
56936-56939		**Energy Source #3**					
		...					
57180-57183		**Energy Source #64**					
Control Setpoints Setup (SP1-SP32)							
57184-59103		**Setpoints 1-32**					
+0		Condition #1: Trigger parameter ID	F12		UINT16	R/W	
+1		Condition #2: Trigger parameter ID	F12		UINT16	R/W	
+2		Condition #3: Trigger parameter ID	F12		UINT16	R/W	
+3		Condition #4: Trigger parameter ID	F12		UINT16	R/W	
+4		Condition #1: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+5		Condition #2: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+6		Condition #3: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+7		Condition #4: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+8		Condition #1: Relational operator	F13		UINT16	R/W	
+9		Condition #2: Relational operator	F13		UINT16	R/W	
+10		Condition #3: Relational operator	F13		UINT16	R/W	
+11		Condition #4: Relational operator	F13		UINT16	R/W	
+12,13		Condition #1: Operate limit			INT32	R/W	
+14,15		Condition #2: Operate limit			INT32	R/W	
+16,17		Condition #3: Operate limit			INT32	R/W	
+18,19		Condition #4: Operate limit			INT32	R/W	
+20,21		Condition #1: Release limit			INT32	R/W	
+22,23		Condition #2: Release limit			INT32	R/W	
+24,25		Condition #3: Release limit			INT32	R/W	
+26,27		Condition #4: Release limit			INT32	R/W	
+28		Action #1: Action ID	F14		UINT16	R/W	
+29		Action #2: Action ID	F14		UINT16	R/W	
+30		Action #3: Action ID	F14		UINT16	R/W	
+31		Action #4: Action ID	F14		UINT16	R/W	
+32,33		Action #1: Parameter value			INT32	R/W	
+34,35		Action #2: Parameter value			INT32	R/W	
+36,37		Action #3: Parameter value			INT32	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+38,39		Action #4: Parameter value			INT32	R/W	
+40,41		Operate delay	0-10000000	0.001 s	UINT32	R/W	
+42,43		Release delay	0-10000000	0.001 s	UINT32	R/W	
+44-59		Not used			UINT16	R/W	
57184-57243		**Setpoint #1**					
57244-57303		**Setpoint #2**					
		...					
59044-59103		**Setpoint #32**					
Control Setpoints Setup (SP1-SP64)							
59104-59177		**Setpoints 1-64**					
+0		Setpoint number	0-63		UINT16	R/W	Write a setpoint number first before reading following registers
+1		Variation	8		UINT16	R/W	
+2		Condition #1: Trigger parameter ID	F12		UINT16	R/W	
+3		Condition #2: Trigger parameter ID	F12		UINT16	R/W	
+4		Condition #3: Trigger parameter ID	F12		UINT16	R/W	
+5		Condition #4: Trigger parameter ID	F12		UINT16	R/W	
+6		Condition #5: Trigger parameter ID	F12		UINT16	R/W	
+7		Condition #6: Trigger parameter ID	F12		UINT16	R/W	
+8		Condition #7: Trigger parameter ID	F12		UINT16	R/W	
+9		Condition #8: Trigger parameter ID	F12		UINT16	R/W	
+10		Condition #1: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+11		Condition #2: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+12		Condition #3: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+13		Condition #4: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+14		Condition #5: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+15		Condition #6: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+16		Condition #7: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+17		Condition #8: Logical operator	0 = OR, 1 = AND		UINT16	R/W	
+18		Condition #1: Relational operator	F13		UINT16	R/W	
+19		Condition #2: Relational operator	F13		UINT16	R/W	
+20		Condition #3: Relational operator	F13		UINT16	R/W	
+21		Condition #4: Relational operator	F13		UINT16	R/W	
+22		Condition #5: Relational operator	F13		UINT16	R/W	
+23		Condition #6: Relational operator	F13		UINT16	R/W	
+24		Condition #7: Relational operator	F13		UINT16	R/W	
+25		Condition #8: Relational operator	F13		UINT16	R/W	
+26,27		Condition #1: Operate limit			INT32	R/W	
+28,29		Condition #2: Operate limit			INT32	R/W	
+30,31		Condition #3: Operate limit			INT32	R/W	
+32,33		Condition #4: Operate limit			INT32	R/W	
+34,35		Condition #5: Operate limit			INT32	R/W	
+36,37		Condition #6: Operate limit			INT32	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+38,39		Condition #7: Operate limit			INT32	R/W	
+40,41		Condition #8: Operate limit			INT32	R/W	
+42,43		Condition #1: Release limit			INT32	R/W	
+44,45		Condition #2: Release limit			INT32	R/W	
+46,47		Condition #3: Release limit			INT32	R/W	
+48,49		Condition #4: Release limit			INT32	R/W	
+50,51		Condition #5: Release limit			INT32	R/W	
+52,53		Condition #6: Release limit			INT32	R/W	
+54,55		Condition #7: Release limit			INT32	R/W	
+56,57		Condition #8: Release limit			INT32	R/W	
+58		Action #1: Action ID	F14		UINT16	R/W	
+59		Action #2: Action ID	F14		UINT16	R/W	
+60		Action #3: Action ID	F14		UINT16	R/W	
+61		Action #4: Action ID	F14		UINT16	R/W	
+62,63		Action #1: Parameter value			INT32	R/W	
+64,65		Action #2: Parameter value			INT32	R/W	
+66,67		Action #3: Parameter value			INT32	R/W	
+68,69		Action #4: Parameter value			INT32	R/W	
+70,71		Operate delay	0-10000000	0.001 s	UINT32	R/W	
+72,73		Release delay	0-10000000	0.001 s	UINT32	R/W	
59178-59253		Reserved	0		INT16	R/W	
Switching Device Setup							
59255		Switch number	0-15		UINT16	R/W	Write a switch number before accessing following registers
59256-59315		Switch setup data					
		General			UINT16	R/W	
+0		Switch designation	0-1=XCBR1-XCBR2, 2-15=XSWI1-XSWI14		UINT16	R/W	Same as switch number
+1-3		IEC 61850 name prefix	1-5 ASCII characters		CHAR6	R/W	Null-terminated ASCII string
+4		Switch type	1=load break switch, 2=disconnector, 3=earthing switch, 4=high speed earthing switch, 5=breaker (fixed for XCBR1-XCBR2)		UINT16	R/W	
+5		Switch enabled	0=disabled, 1=enabled		UINT16	R/W	
		Position Indication					
+6		Phase A N.O. contact input	0=none, 0x0080-0x00BF=SP1-SP64, 0x0300-0x033F=FLAG1-FLAG64, 0x0600-0x067F=DI1-DI128, 0x8200-0x827F=ExtInd1-ExtInd128		UINT16	R/W	
+7		Phase A N.C. contact input	0=none, 0x0080-0x00BF=SP1-SP64, 0x0300-0x033F=FLAG1-FLAG64,		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			0x0600-0x067F=DI1-DI128, 0x8200-0x827F=ExtInd1-ExtInd128				
+8		Phase B N.O. contact input	0=none, 0x0080-0x00BF=SP1-SP64, 0x0300-0x033F=FLAG1-FLAG64, 0x0600-0x067F=DI1-DI128, 0x8200-0x827F=ExtInd1-ExtInd128		UINT16	R/W	
+9		Phase B N.C. contact input	0=none, 0x0080-0x00BF=SP1-SP64, 0x0300-0x033F=FLAG1-FLAG64, 0x0600-0x067F=DI1-DI128, 0x8200-0x827F=ExtInd1-ExtInd128		UINT16	R/W	
+10		Phase C N.O. contact input	0=none, 0x0080-0x00BF=SP1-SP64, 0x0300-0x033F=FLAG1-FLAG64, 0x0600-0x067F=DI1-DI128, 0x8200-0x827F=ExtInd1-ExtInd128		UINT16	R/W	
+11		Phase C N.C. contact input	0=none, 0x0080-0x00BF=SP1-SP64, 0x0300-0x033F=FLAG1-FLAG64, 0x0600-0x067F=DI1-DI128, 0x8200-0x827F=ExtInd1-ExtInd128		UINT16	R/W	
		Control					
+12		Close control output	0=none, 0x0800-0x083F=RO1-RO64		UINT16	R/W	
+13		Open control output	0=none, 0x0800-0x083F=RO1-RO64		UINT16	R/W	
+14		Open-2 control output	0=none, 0x0800-0x083F=RO1-RO64		UINT16	R/W	
+15		Select-Close control output	0=none, 0x0800-0x083F=RO1-RO64		UINT16	R/W	
+16		Select-Open control output	0=none, 0x0800-0x083F=RO1-RO64		UINT16	R/W	
+17		Select-Open-2 control output	0=none, 0x0800-0x083F=RO1-RO64		UINT16	R/W	
+18		Close duration control logic equation	0=none, 0x0080-0x00BF=SP1-SP64		UINT16	R/W	
+19		Open duration control logic equation	0=none, 0x0080-0x00BF=SP1-SP64		UINT16	R/W	
+20,21		Close command duration	100-60000 ms		UINT32	R/W	
+22,23		Open command duration	100-60000 ms		UINT32	R/W	
+24,25		Close start moving timeout	0-60000 ms, 0=not controlled		UINT32	R/W	
+26,27		Open start moving timeout	0-60000 ms, 0=not controlled		UINT32	R/W	
+28,29		Close command termination timeout	1-120000 ms		UINT32	R/W	
+30,31		Open command termination timeout	1-120000 ms		UINT32	R/W	
		Interlocking					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+32		Enable close logic equation	0=none, 0x0080-0x00BF=SP1-SP64, 0xFFFF=TRUE		UINT16	R/W	
+33		Enable open logic equation	0=none, 0x0080-0x00BF=SP1-SP64, 0xFFFF=TRUE		UINT16	R/W	
+34		Interlocking bypass logic equation	0=none, 0x0080-0x00BF=SP1-SP64		UINT16	R/W	
+35		Interlocking bypass timeout	0-600 s		UINT16	R/W	
+36-59		Reserved			UINT16	R/W	
Periodic Timers Setup							
61024-61087							
+0,1		Time interval (positive in seconds, negative in cycles)	-100000000 -100000000	0.001 s/c	UINT32	R/W	
61024-61025		**Timer #1 Setup**		0.001 s/c	UINT32	R/W	
61026-61027		**Timer #2 Setup**		0.001 s/c	UINT32	R/W	
		...					
61040-61041		**Timer #9 Setup**		0.001s/c	UINT32	R/W	
61042-61043		**Timer #10 Setup** (factory preset)	-500 (half-cycle)	0.001cyc	UINT32	R	
61044-61045		**Timer #11 Setup** (factory preset)	-1000 (one cycle)	0.001cyc	UINT32	R	
61046-61047		**Timer #12 Setup** (factory preset)	200 (200 ms = 10/12 cycles)	0.001 s	UINT32	R	
61048-61049		**Timer #13 Setup** (factory preset)	3000 (3 sec = 150/180 cycles)	0.001 s	UINT32	R	
61050-61051		**Timer #14 Setup** (factory preset)	10000 (10 sec)	0.001 s	UINT32	R	
61052-61053		**Timer #15 Setup** (factory preset)	600000 (10 min)	0.001 s	UINT32	R	
61054-61055		**Timer #16 Setup** (factory preset)	7200000 (2 hours)	0.001 s	UINT32	R	
61056-61087		Reserved					
Counter Source Setup							
61472-61727							
+0		Pulse source ID	F16		UINT16	R/W	
+1		Target counter number	0-31		UINT16	R/W	
+2,3		Multiplier	+/-1-10000		INT32	R/W	
61472-61475		**Counter Source #1**					
61476-61479		**Counter Source #2**					
		...					
61724-61727		**Counter Source #64**					
Digital Inputs Setup DI1-DI64							
61728-61983							
+0		Pulse mode	0 = pulse, 1 = KYZ		UINT16	R/W	
+1		Polarity	Bit 0 – pulse polarity: 0=normal, 1=inverting Bit 1 – input polarity: 0=normal, 1=inverting		UINT16	R/W	
+2		De-bounce time, ms	1-1000		UINT16	R/W	Note 3
+3		Flags	Bit 0 – SOE Log: 0=disabled, 1=enabled; Bit 1 – Fault Log: 0=disabled, 1=enabled;		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
61728-61731		**DI1 Setup**					
61732-61735		**DI2 Setup**					
		...					
61980-61983		**DI64 Setup**					
Digital Inputs Setup DI65-DI128							
62752-63007							
62752-62575		**DI65 Setup**					
62756-62759		**DI66 Setup**					
		...					
63003-63007		**DI128 Setup**					
Relay Outputs Setup							
61984-62367							
+0		Operation Mode	0=unlatched, 1=latched, 2=pulse, 3=KYZ		UINT16	R/W	
+1		Flags	Bit 0 – polarity: 0=normal, 1=inverting Bit 1 - retentive mode: 0=disabled, 1=enabled Bit 2 – blocking: 0=unblocked relay, 1=blocked relay Bit 3 – SOE log on output change: 0=disabled, 1=enabled		UINT16	R/W	A blocked relay can only be unblocked by the “unblock relay” setpoint command
+2		Pulse width, ms	1-3000		UINT16	R/W	
+3		Pulse source ID	F17		UINT16	R/W	
+4,5		kWh units per pulse	1-5000000	×0.1	UINT32	R/W	
61984-61989		**RO1 Setup**					
61990-61995		**RO2 Setup**					
		...					
62362-62367		**RO64 Setup**					
Analog Inputs Setup							
62368-62559							
+0		Input parameter ID	0 = input not assigned		UINT16	R/W	
+1		Not used	0		UINT16	R/W	
+2,3		Zero scale value (0/4 mA, 0V)			INT32	R/W	
+4,5		Full scale value (1/20/50 mA, 10V)			INT32	R/W	
62368-62373		**AI1 Setup**					
62374-62379		**AI2 Setup**					
		...					
62458-62463		**AI16 Setup**					
62464-62559		Reserved					
Analog Outputs Setup							
62560-62751							
+0		Output parameter ID	F18		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+1		Not used	0		UINT16	R/W	
+2,3		Zero scale value (0/4 mA)			INT32	R/W	
+4,5		Full scale value (20/1 mA)			INT32	R/W	
62560-62565		**AO1 Setup**					
62566-62571		**AO2 Setup**					
		...					
62650-62655		**AO16 Setup**					
62656-62751		Reserved					
Common Data Exchange							
47480-47603							
+0		Setup array type	14=Fault locator setup		UINT16	R/W	Write the array type and offset before reading following registers
+1		Setup array offset, words	0-578		UINT16	R/W	
+2		Block length, words	0-120		UINT16	R/W	Read as 0
+3		Last block	0=no, 1=yes		UINT16	R/W	Read as 0
+4-123		Setup data [0...119]			UINT16	R/W	
Fault Locator Setup							Access via common data exchange
[+0-7]		Station name			CHAR16	R/W	Up to 15 ASCII characters
[+8-15]		Line name			CHAR16	R/W	Up to 15 ASCII characters
[+16]		Line type	0=single line 1=parallel lines 2= branch with transformer		UINT16	R/W	
[+17]		I4 current input	0=not used 1=own neutral current 2=parallel line neutral current		UINT16	R/W	
[+18]		Power line length	0-45000	km (mile) ×0.01	UINT16	R/W	
[+19]		Parallel line length	0-45000	km (mile) ×0.01	UINT16	R/W	
[+20]		Protection trip input	0=not used, 1-128=DI1-DI128		UINT16	R/W	
[+21]		Not used	0		UINT16	R/W	
[+22]		Power line impedances: number of segments	0-3=1-4		UINT16	R/W	
[+23]		Not used	0		UINT16	R/W	
[+24]		Parallel line mutual reactance	0-65000	×0.0001 Ohm/km	UINT16	R/W	
[+25]		Transformer correction: number of current ranges	0-5=1-6		UINT16	R/W	
[+26]		Transformer correction: number of voltage ranges	0-3=1-4		UINT16	R/W	
[+27]		Line impedance seg. 1: segment length	0-45000	km (mile) ×0.01	UINT16	R/W	
[+28]		Line impedance seg. 1: positive sequence resistance	0-65000	Ohm/km ×0.0001	UINT16	R/W	
[+29]		Line impedance seg. 1: positive sequence reactance	0-65000	Ohm/km ×0.0001	UINT16	R/W	
[+30]		Line impedance seg. 1: zero sequence resistance	0-65000	Ohm/km	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
				×0.0001			
[+31]		Line impedance seg. 1: zero sequence reactance	0-65000	Ohm/km ×0.0001	UINT16	R/W	
		...			UINT16	R/W	
[+42]		Line impedance seg. 4: segment length	0-45000	km/mile ×0.01	UINT16	R/W	
[+43]		Line impedance seg. 4: positive sequence resistance	0-65000	Ohm/km ×0.0001	UINT16	R/W	
[+44]		Line impedance seg. 4: positive sequence reactance	0-65000	Ohm/km ×0.0001	UINT16	R/W	
[+45]		Line impedance seg. 4: zero sequence resistance	0-65000	Ohm/km ×0.0001	UINT16	R/W	
[+46]		Line impedance seg. 4: zero sequence reactance	0-65000	Ohm/km ×0.0001	UINT16	R/W	
[+47]		Transformer on branch: rated transformer power	0-65000	MVA×0.01	UINT16	R/W	
[+48]		Transformer on branch: percent impedance, %Z	0-50000	%×0.01	UINT16	R/W	
[+49]		Not used	0		UINT16	R/W	
[+50]		Not used	0		UINT16	R/W	
[+51]		Not used	0		UINT16	R/W	
[+52]		Not used	0		UINT16	R/W	
[+53]		Current correction, range 1: test point	0-2000	%	UINT16	R/W	
[+54]		Current correction, range 1: ratio correction factor	-150-150	×0.001	INT16	R/W	
[+55]		Current correction, range 1: angle error	-600-600	min	INT16	R/W	
		...			UINT16	R/W	
[+68]		Current correction, range 6: test point	0-2000	%	UINT16	R/W	
[+69]		Current correction, range 6: ratio correction factor	-150-150	×0.001	INT16	R/W	
[+70]		Current correction, range 6: angle error	-600-600	min	INT16	R/W	
[+71]		Voltage correction, range 1: test point	0-200	%	UINT16	R/W	
[+72]		Voltage correction, range 1: ratio correction factor	-100-100	×0.001	INT16	R/W	
[+73]		Voltage correction, range 1: angle error	-120-120	min	INT16	R/W	
		...			UINT16	R/W	
[+80]		Voltage correction, range 6: test point	0-200	%	UINT16	R/W	
[+81]		Voltage correction, range 6: ratio correction factor	-100-100	×0.001	INT16	R/W	
[+82]		Voltage correction, range 6: angle error	-120-120	min	INT16	R/W	
[+83]		Number of transformer branches (fixed)	0=1		UINT16	R/W	
[+84]		Flags (bitmap)	Bit 0 = 1 – transformer correction enabled, Bit 1 = 1 – fault locator enabled		UINT16	R/W	
[+85]		Remote connection network	0=Ethernet, 1=cellular/GPRS		UINT16	R/W	
[+86,87]		Remote recorder's IP address			UINT32	R/W	
[+88]		Remote port	1-65535		UINT16	R/W	
[+89]		Synchronize time with remote recorder	0=no, 1=yes		UINT16	R/W	

3.8 Expansion I/O Slots Configuration

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
Expansion I/O Slots Configuration Info							
63008-63071		**Expansion I/O Slots Configuration Info**					
+0		I/O module type	Bitmap		UINT16	R	Note 2
+1		Number of I/Os on the slot	0-32		UINT16	R	
+2		First I/O number on the slot	0-127		UINT16	R	Note 1
+3		Last I/O number on the slot	0-127		UINT16	R	Note 1
63008-63011		**I/O Slot #1 Configuration**					
63012-63015		**I/O Slot #2 Configuration**					
63016-63019		**I/O Slot #3 Configuration**					
63020-63023		**I/O Slot #4 Configuration**					
63024-63027		**I/O Slot #5 Configuration**					
63028-63031		**I/O Slot #6 Configuration**					
63032-63035		**I/O Slot #7 Configuration**					
63036-63039		**I/O Slot #8 Configuration**					
63040-63043		**I/O Slot #9 Configuration**					
63044-63047		**I/O Slot #10 Configuration**					
63048-63051		**I/O Slot #11 Configuration**					
63052-63055		**I/O Slot #12 Configuration**					
63056-63059		**I/O Slot #13 Configuration**					
63060-63063		**I/O Slot #14 Configuration**					
63064-63071		Reserved					
Expansion I/O Modules Type Info							
63072-63119		**Expansion I/O Modules Type Info**					
+0		Number of I/O modules of this type	0-14		UINT16	R	
+1		Total number of I/O's of this type	0-128		UINT16	R	
+2		Not used			UINT16	R	
+3		Not used	0		UINT16	R	
63072-63075		**DI Module Type Info**					
63076-63079		**RO Module Type Info**					
63080-63083		**AI Module Type Info**					
63084-63087		**AO Module Type Info**					
63088-63119		Reserved					

NOTES:

1. I/O numbers of expansion I/O modules are automatically assigned in the order of connection. The connection order is counted for each I/O module type separately.
If the I/O module position is changed but its order in the chain of the modules of the same type is preserved, then all I/Os on the module will retain their I/O numbers. On the dual AI/AO module, both AI and AO will have same logical I/O range.

2. The type of a module in the corresponding slot position, number of I/Os on the module and their I/O numbers can be read through the I/O Slots Configuration Info registers. I/O module type register contains bit-mapped information on the module type and its options in bits D7:D0 as shown in the Table below.

I/O Module Type

Module	Option	D7	D6	D5	D4	D3	D2	D1	D0
16DI		0	0	0	0	1	0	0	0
4DI/2DO		0	0	0	1	0	0	0	0
8DO		0	0	0	1	1	0	0	0
4AI/4AO	±1 mA	0	0	1	0	0	0	0	0
4AI/4AO	0-20 mA	0	0	1	0	0	0	0	1
4AI/4AO	4-20 mA	0	0	1	0	0	0	1	0
4AI/4AO	0-1 mA	0	0	1	0	0	0	1	1
4AI/4AO	0-50 mA	0	0	1	0	0	1	0	0
4AI/4AO	±10 V	0	0	1	0	0	1	0	1
8AI	±1 mA	0	0	1	0	1	0	0	0
8AI	0-20 mA	0	0	1	0	1	0	0	1
8AI	4-20 mA	0	0	1	0	1	0	1	0
8AI	0-1 mA	0	0	1	0	1	0	1	1
8AI	0-50 mA	0	0	1	0	1	1	0	0
8AI	±10 V	0	0	1	0	1	1	0	1
8AO	±1 mA	0	0	1	1	0	0	0	0
8AO	0-20 mA	0	0	1	1	0	0	0	1
8AO	4-20 mA	0	0	1	1	0	0	1	0
8AO	0-1 mA	0	0	1	1	0	0	1	1
Dial-Up Modem + RS-232/485 (COM2)	RS-232 D4=1	1	0	0	0/1	0	0	0	0
Ethernet TX/FX + RS-422/485 (COM2)		1	0	0	0	0	0	0	1
Profibus + RS-232/485 (COM2)	RS-232 D4=1	1	0	0	0/1	0	0	1	0
Wireless WiFi + RS-232/485 (COM2)	RS-232 D4=1	1	0	0	0/1	0	0	1	1
Wireless Cellular UMTS/GPRS		1	0	0	0	0	1	0	0
Wireless Cellular CDMA		1	0	0	0	0	1	1	0
IRIG-B + RS-422/485 (COM2)		1	0	0	0	0	1	1	1
Digital fault recorder module (DFRM)		1	0	1	0	0	0	0	0
Fast transient recorder module		1	0	1	0	0	0	0	1
Empty slot		1	1	1	1	1	1	1	1

3. The same de-bounce time is used for each group of eight adjacent digital inputs. To assign de-bounce time for a group, write the desired value into the setup register for the first DI in the group, e.g., DI1, DI9, DI17 and so on. The device will assign this value to the following seven inputs automatically. Any attempt to change de-bounce time for an input that is not the first in the group will be ignored. No error will occur.

3.9 File Transfer Blocks

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
File Transfer Control Blocks							
63120-63151		**File Request Block**					
+0		File function	1 = ACK - acknowledgement 3 = set file position 5 = reset file position 7 = find 11 = read file 127 = erase file		UINT16	R/W	1 - clears the file transfer block 3 - changes the file position 5 - sets the file position at the first (oldest) record 7 - finds a record matching an event or/and time (see Note 3) 11 - opens the file for reading from the present file position
+1		File ID	F2		UINT16	R/W	
+2		Section number (functions 3, 5, 11)	0-31, 0xFFFF = use channel ID		UINT16	R/W	
+3		Section channel ID (functions 3, 5, 11)	F6, F7		UINT16	R/W	
+4		Record sequence number (functions 3, 11)	0-65535		UINT16	R/W	The record sequence number with function 11 does not change the file position (see Note 2).
+5		Request variation (function 11)	0, 4		UINT16	R/W	See file response headings
+6		Find key: Event type	F22		UINT16	R/W	Note 3
+7		Find key: Event number	1 - 65535		UINT16	R/W	Note 3
+8, 9		Find key: Start time, seconds since 1/1/1970	F1	sec	UINT32	R/W	Note 3
+10, 11		Find key: Start time, fractional seconds in µsec		µsec	UINT32	R/W	Note 3
+12, 13		Find key: End time, seconds since 1/1/1970	F1	sec	UINT32	R/W	Note 3
+14, 15		Find key: End time, fractional seconds in µsec		µsec	UINT32	R/W	Note 3
+16-31		Reserved			UINT16	R/W	
63152-64943		**File Response Block**					
		Data transfer area [0 – 1791]			UINT16	R	
64944-64951		**File Info Request Block**					
+0		File function	9 = read file info		UINT16	R/W	
+1		File ID	F2		UINT16	R/W	
+2		Section number	0-31, 0xFFFF = use channel ID		UINT16	R/W	
+3		Section channel ID	F6, F7		UINT16	R/W	
+4		Not used	0		UINT16	R/W	
+5		Request variation	0, 1, 2		UINT16	R/W	
+6-7		Reserved			UINT16	R/W	
64952-65151		**File Info Response Block**					
		Data transfer area [0 - 199]			UINT16	R	

NOTES:

1. File sections for partitioned (multi-section) files, such as TOU profile log files and waveform log files, can be requested either by a section number, or by a section channel ID. If a section number is set to 0xFFFF, the section channel ID will be used to identify the section. The section number will be returned in the response block. If a section number is written, then the corresponding channel ID will be returned in the file response block.
2. The record sequence number with function 11 (Read-File) does not change the file position and is used only as a reference to track the order of records. The file transfer block will continue to hold the same data until it is acknowledged, or until the file position is explicitly moved to another record. For multi-section Waveform files that use a single read pointer for all file sections, the Read-File request, which addresses a different file section, will refill the transfer block with data of the record from the requested file section with the identical sequence number. After acknowledgment, the file position will be moved to the next record.
3. Function 7 (Find) puts into the file request block the sequence number of the first record in the file that matches the event or/and the time. If the file ID is set to 0xFFFF, the device will search for the desired record in the waveform file that is preset by default for the fault and power quality recorders or a setpoint, depending on the event type. The file ID where a record is found is returned in the file response block header. Any one of the find keys can be omitted by setting it to 0. If one or a number of find keys are omitted, the device will use the remaining keys to locate the matching record. If the record could not be found, the device responds to the write request with the exception code 3 (illegal data). The status of the operation can be read through the file status word in the file info block.

File Response Blocks

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
File Info Response Block (Variation 0 – File info)							
64952-64959		**Block Heading**					
+0		File function	9		UINT16	R	
+1		File ID	F2		UINT16	R	
+2		Section number	0-31		UINT16	R	
+3		Section channel ID	F6, F7		UINT16	R	
+4		Number of records in the block	1		UINT16	R	
+5		Record size, words	36		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Reserved	0		UINT16	R	
64960-64997		**File Info**					
+0		File type	0		UINT16	R	
+1		File attributes	F3		UINT16	R	
+2		File (section) status	F4		UNT16	R	
+3		Number of sections in the file	0-32		UINT16	R	0 = non-partitioned file
+4, 5		File channel mask (channels 1-32), bitmap	F8, F9		UINT32	R	
+6, 7		File channel mask (channels 33-64), bitmap	F8, F9		UINT32	R	
+8		Number of records in the file	0-65535		UINT16	R	
+9		Number of records until the end of the file	0-65535		UINT16	R	
+10		Current record (read position) sequence number	0-65535		UINT16	R	
+11		Current write position sequence number	0-65535		UINT16	R	
+12		First (oldest) record sequence number	0-65535		UINT16	R	
+13		Last (newest) record sequence number	0-65535		UINT16	R	
+14, 15		Last record time, seconds since 1/1/1970	F1	sec	UINT32	R	
+16, 17		Last record time, fractional seconds		µsec	UINT32	R	
+18, 19		First record time, seconds since 1/1/1970	F1	sec	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+20, 21		First record time, fractional seconds		µsec	UINT32	R	
+22, 23		Creation time, seconds since 1/1/1970	F1	sec	UINT32	R	
+24, 25		Creation time, fractional seconds		µsec	UINT32	R	
+26, 27		Reset time, seconds since 1/1/1970	F1	sec	UINT32	R	
+28, 29		Reset time, fractional seconds		µsec	UINT32	R	
+30		Maximum number of records	0-65535		UINT16	R	
+31		Number of parameters per data section record	0-52		UINT16	R	
+32		Section record size, bytes		Byte	UINT16	R	
+33		File record size, bytes		Byte	UINT16	R	
+34, 35		Allocated file size, bytes		Byte	UINT32	R	
File Info Response Block (Variation 1 – Current record info)							
64952-64959		**Block Heading**					
+0		File function	9		UINT16	R	
+1		File ID	F2		UINT16	R	
+2		Section number	0-31		UINT16	R	
+3		Section channel ID	F6, F7		UINT16	R	
+4		Number of records in the block	1		UINT16	R	
+5		Record size, words	8		UINT16	R	
+6		Request variation	1		UINT16	R	
+7		Reserved	0		UINT16	R	
64960-64997		**File Info**					
+0		File (section) status	F4		UNT16	R	
+1		Number of records in the file	0-65535		UINT16	R	
+2		Number of records until the end of the file	0-65535		UINT16	R	
+3		Current record (read position) sequence number	0-65535		UINT16	R	
+4, 5		Current record time, seconds since 1/1/1970	F1	sec	UINT32	R	
+6, 7		Current record time, fractional seconds		µsec	UINT32	R	
File Info Response Block (Variation 2 – Data log record structure)							
64952-64959		**Block Heading**					
+0		File function	9		UINT16	R	
+1		File ID	1-16		UINT16	R	
+2		Section number	0-15		UINT16	R	
+3		Section channel ID	F6, F7		UINT16	R	
+4		Number of records in the block	1		UINT16	R	
+5		Record size, words	2 + Number of parameters		UINT16	R	
+6		Request variation	2		UINT16	R	
+7		Reserved	0		UINT16	R	
64960-64997		**File Info**					
+0		Not used	0		UINT16	R	
+1		Number of fields in a data record	1-16 for conventional files, 34 for EN50160 Statistics log, 52 for EN50160 Harmonics Log, 40 for GOST 13109 Compliance log,		UINT16	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			80 for GOST 13109 Harmonics log, 42 for GOST 32144 Compliance log, 80 for GOST 32144 Harmonics log				
+2		Field 1 parameter ID	0-0xFFFF		UINT16	R	
+3		Field 2 parameter ID	0-0xFFFF		UINT16	R	
...		...					
Event Log Response Block							
63152-63159		**Block Heading**					
+0		Last file function	1, 3, 5, 11		UINT16	R	
+1		File ID	0		UINT16	R	
+2		Section number	0		UINT16	R	
+3		Section channel ID	0		UINT16	R	
+4		Number of records in the block	1-32		UINT16	R	
+5		Record size, words	12		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Reserved	0		UINT16	R	
63160-63543		**Event Log Records**					
+0		Record status	F5		INT16	R	
+1		Record sequence number	0-65535		UINT16	R	
+2, 3		Trigger time, seconds since 1/1/1970	F1	sec	UINT32	R	
+4, 5		Trigger time, fractional seconds in µsec		µsec	UINT32	R	
+6		Event number	1-65535		UINT16	R	
+7		Event point/source ID	F19		UINT16	R	
+8		Event effect	F20		UINT16	R	
+9		Reserved	0		UINT16	R	
+10, 11		Value triggered			INT32	R	
63160-63171		**Record #1**					
		...					
63532-63543		**Record #32**					
Data Log Response Block							
63152-63159		**Block Heading**					
+0		Last file function	1, 3, 5, 11		UINT16	R	
+1		File ID	1-16 (F2)		UINT16	R	
+2		Section number	0-31		UINT16	R	
+3		Section channel ID	F6		UINT16	R	
+4		Number of records in the block	1-32		UINT16	R	
+5		Record size, words	8 + 2×Number of parameters		UINT16	R	
+6		Request variation	0 = regular log, 4 = EN50160/GOST 13109/GOST 32144 online statistics (with file ID = 9, 10)		UINT16	R	
+7		Reserved	0		UINT16	R	
63160-64439		**Data Log Records**					
+0		Record status	F5		INT16	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+1		Record sequence number	0-65535		UINT16	R	
+2, 3		Record time, seconds since 1/1/1970	F1	sec	UINT32	R	
+4, 5		Record time, fractional seconds in µsec		µsec	UINT32	R	
+6		Trigger event type	F22		INT16	R	
+7		Trigger event number	1-65535		UINT16	R	
+8, 9		Log value #1			INT32	R	
+10, 11		Log value #2			INT32	R	
...		...				R	
63160-...		**Record #1** (variable length)					
		...					
		Record #32 (variable length)					
Waveform Log Response Block							
63152-63159		**Block Heading**					
+0		Last file function	1, 3, 5, 11		UINT16	R	
+1		File ID	17-24, 128 (F2)		UINT16	R	
+2		Section number	0-27		UINT16	R	
+3		Section channel ID	F7		UINT16	R	
+4		Number of records in the block	1		UINT16	R	
+5		Record size, words	640		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Reserved	0		UINT16	R	
63160-63799		**Waveform Log Record**					
+0		Record status	F5		INT16	R	
+1		Record sequence number	0 - 65535		UINT16	R	
+2, 3		Start time, seconds since 1/1/1970	F1	sec	UINT32	R	
+4, 5		Start time, fractional seconds		µsec	UINT32	R	
+6, 7		Trigger time, seconds since 1/1/1970	F1	sec	UINT32	R	
+8, 9		Trigger time, fractional seconds		µsec	UINT32	R	
+10		Record series number	1-65535		UINT16	R	
+11		Record serial number in a series	0-65535		UINT16	R	
+12		Trigger event type	F22		UINT16	R	
+13		Trigger event number	1-65535		UINT16	R	
+14		Source point ID (generic)	See Generic Data in Section 3.4		UINT16	R	
+15		Trigger reference sample index	0-511		UINT16	R	
+16		Sampling rate, µsec/sample	600-27000	×0.1µsec	UINT16	R	
+17		Sampling rate, samples/cycle	16, 32, 64, 128, 256		UINT16	R	
+18		Sampling frequency	4500-6500	×0.01Hz	UINT16	R	
+19		Channel offset, sampling units	+/-32767		INT16	R	
+20, 21		Channel multiplier, primary units	See Generic Data in Section 3.4		UINT32	R	
+22		Channel divisor, sampling units	2147-16383		UINT16	R	
+23		Length of a sample series, data points	64-512		UINT16	R	
+24		Channel skew	0-1000	µsec	INT16	R	
+25-127		Not used	0		UINT16	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+128		**Sample Series**					
+128-639		Sample data series points [0...511]	+/-16383		INT16	R	[1]
Sequence of Events (SOE) Log Response Block							
63152-63159		**Block Heading**					
+0		Last file function	1, 3, 5, 11		UINT16	R	
+1		File ID	25		UINT16	R	
+2		Section number	0		UINT16	R	
+3		Section channel ID	0		UINT16	R	
+4		Number of records in the block	1-32		UINT16	R	
+5		Record size, words	10		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Reserved	0		UINT16	R	
63160-63479		**SOE Log Records**					
+0		Record status	F5		INT16	R	
+1		Record sequence number	0-65535		UINT16	R	
+2, 3		Trigger time, seconds since 1/1/1970	F1	sec	UINT32	R	
+4, 5		Trigger time, fractional seconds in µsec		µsec	UINT32	R	
+6		Fault event type	F22		UINT16	R	
+7		Fault event number	1-65535		UINT16	R	
+8		Fault source point status	0 = Open/Off, 1 = Closed/On		UINT16	R	
+9		GPS clock sync status	0 = time unlocked, 1 = time locked		UINT16	R	
63160-63169		**Record #1**					
		...					
63470-63479		**Record #32**					
Power Quality (PQ) Log Response Block							
63152-63159		**Block Heading**					
+0		Last file function	1, 3, 5, 11		UINT16	R	
+1		File ID	26		UINT16	R	
+2		Section number	0		UINT16	R	
+3		Section channel ID	0		UINT16	R	
+4		Number of records in the block	1 -32		UINT16	R	
+5		Record size, words	18		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Reserved	0		UINT16	R	
63160-63799		**PQ Log Records**					
+0		Record status	F5		INT16	R	
+1		Record sequence number	0-65535		UINT16	R	
+2, 3		Start time, seconds since 1/1/1970	F1	sec	UINT32	R	
+4, 5		Start time, fractional seconds in µsec		µsec	UINT32	R	
+6, 7		End time, seconds since 1/1/1970	F1	sec	UINT32	R	
+8, 9		End time, fractional seconds in µsec		µsec	UINT32	R	
+10		PQ event type	F22		UINT16	R	
+11		PQ event number	1-65535		UINT16	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+12		Point ID (generic)	See Generic Data in Section 3.4		UINT16	R	
+13		Reserved	0		UINT16	R	
+14, 15		Value reference (base), primary units	See Generic Data in Section 3.4		INT32	R	
+16, 17		Value magnitude, primary units	See Generic Data in Section 3.4		INT32	R	
63160-63179		**Record #1**					
		...					
63780-63799		**Record #32**					
Fault Log Response Block							
63152-63159		**Block Heading**					
+0		Last file function	1, 3, 5, 11		UINT16	R	
+1		File ID	27		UINT16	R	
+2		Section number	0		UINT16	R	
+3		Section channel ID	0		UINT16	R	
+4		Number of records in the block	1-32		UINT16	R	
+5		Record size, words	22		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Reserved	0		UINT16	R	
63160-64183		**Fault Log Records**					
+0		Record status	F5		INT16	R	
+1		Record sequence number	0-65535		UINT16	R	
+2, 3		Start time, seconds since 1/1/1970	F1	sec	UINT32	R	
+4, 5		Start time, fractional seconds in µsec		µsec	UINT32	R	
+6, 7		End time, seconds since 1/1/1970	F1	sec	UINT32	R	
+8, 9		End time, fractional seconds in µsec		µsec	UINT32	R	
+10		Fault event type	F22		UINT16	R	
+11		Fault event number	1-65535		UINT16	R	
+12		Current phase point ID (generic)	0-65535		UINT16	R	
+13		Volts phase point ID (generic)	0-65535		UINT16	R	
+14, 15		Current reference (base), primary units	See Generic Data in Section 3.4	U2	INT32	R	
+16, 17		Current magnitude, primary units	See Generic Data in Section 3.4	U2	INT32	R	
+18, 19		Volts reference (base), primary units	See Generic Data in Section 3.4	U1	INT32	R	
+20, 21		Volts magnitude, primary units	See Generic Data in Section 3.4	U1	INT32	R	
63160-63191		**Record #1**					
		...					
64152-64183		**Record #32**					

[1] To restore the original sampled data in the channel units (e.g., Volts, Amps), the following conversion should be applied:

$$\text{Sampled Data [primary units]} = \frac{(\text{Data Sample} - \text{Channel Offset}) \times \text{Channel Multiplier}}{\text{Channel Divisor}}$$

File Response Block Alias

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
File Response Block Alias							
3072-3079		**Block Heading**					
+0		File function	11		UINT16	R	
+1		File ID	0, 25, 26, 27		UINT16	R/W	
+2		Section number	0		UINT16	R	
+3		Section channel ID	0		UINT16	R	
+4		Number of records in the block	1 - 10		UINT16	R/W	Write: sets the block size
+5		Record size, words	18		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Reserved	0		UINT16	R	
3080-3583		**Last 1-10 file records**					
Power Quality (PQ) Log Response Block Alias							
3072-3079		**Block Heading**					
+0		File function	11		UINT16	R	
+1		File ID	26		UINT16	R/W	
+2		Section number	0		UINT16	R	
+3		Section channel ID	0		UINT16	R	
+4		Number of records in the block	1 - 10		UINT16	R/W	Write: sets the block size
+5		Record size, words	18		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Reserved	0		UINT16	R	
3080-3259		**PQ Log Records**					
+0		Record status	F5		INT16	R	
+1		Record sequence number	0 - 65535		UINT16	R	
+2, 3		Start time, seconds since 1/1/1970	F1	sec	UINT32	R	
+4, 5		Start time, fractional seconds in µsec		µsec	UINT32	R	
+6, 7		End time, seconds since 1/1/1970	F1	sec	UINT32	R	
+8, 9		End time, fractional seconds in µsec		µsec	UINT32	R	
+10		PQ event type	F22		UINT16	R	
+11		PQ event number	1 - 65535		UINT16	R	
+12		Point ID (generic)	See Generic Data in Section 3.4		UINT16	R	
+13		Reserved	0		UINT16	R	
+14, 15		Value reference (base), primary units	See Generic Data in Section 3.4		INT32	R	
+16, 17		Value magnitude, primary units	See Generic Data in Section 3.4		INT32	R	
3080-3097		**Record #1**					
		...					
3242-3259		**Record #10**					

The block of registers 3072-3583 is the alias for the common file response block. It is intended for continuous polling of the last 1 to 10 records of the event files (Event Log, SOE Log, PQ Log or Fault Log) from SCADA systems. The alias block is preset at factory to provide access to the last ten PQ Log records. You can change factory assignments to point to another log file or change the number of the records in the transfer block by re-writing of the corresponding registers in the block heading. To update records in the alias block, at least one of the block heading registers 3072-3079 must be read first.

NOTES:

1. Registers 3080-3259 share the same data transfer buffer as the common file transfer block registers 63152-64943. Reading data from the common transfer block within the same connection session can destroy data in the alias transfer block. To guarantee that the alias block contains correct data, always read block heading registers 3072-3079 before accessing data records in the alias block.

2. If you read the block through a TCP connection and change a file ID or the number of records in the block, your assignments for the transfer block will be effective only within the current connection socket. Since the device cannot guarantee that your next connection will be made through the same socket, you should not make any assumptions regarding the present block settings. When you open a new connection, always check the block heading before accessing data records.

3.10 EN 50160 Compliance Statistics Data Log

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
0				**Power Frequency**				
	1	Nnv	0x5A00	Number of non-valid 10-sec intervals			UINT32	
	2	N	0x5A01	Number of valid 10-sec intervals			UINT32	
	3	N1	0x5A02	Number of incidents ±1%, N1			UINT32	
	4	N2	0x5A03	Number of incidents +4%/-6%, N2			UINT32	
	5	N1/N, %	0x5A04	EN50160 compliance ratio, N1/N		0.01%	UINT32	
	6	N2/N, %	0x5A05	EN50160 compliance ratio, N2/N		0.01%	UINT32	
	7	Freq Min	0x5A06	Minimum frequency		0.01Hz	UINT32	
	8	Freq Max	0x5A07	Maximum frequency		0.01Hz	UINT32	
1				**Supply Voltage Variations**				
	1	Nnv	0x5A80	Number of non-valid 10-min intervals			UINT32	
	2	N	0x5A81	Number of valid 10-min intervals			UINT32	
	3	N1	0x5A82	Number of polyphase incidents ±10%, N1			UINT32	
	4	N2	0x5A83	Number of polyphase incidents +10/-15%, N2			UINT32	
	5	N1/N, %	0x5A84	EN50160 compliance ratio, N1/N		0.01%	UINT32	
	6	N2/N, %	0x5A85	EN50160 compliance ratio, N2/N		0.01%	UINT32	
	7	V1 N1	0x5A86	Number of incidents ±10% on phase V1			UINT32	
	8	V1 Min	0x5A87	Minimum voltage on phase V1		U1	UINT32	
	9	V1 Max	0x5A88	Maximum voltage on phase V1		U1	UINT32	
	10	V2 N1	0x5A89	Number of incidents ±10% on phase V2			UINT32	
	11	V2 Min	0x5A8A	Minimum voltage on phase V2		U1	UINT32	
	12	V2 Max	0x5A8B	Maximum voltage on phase V2		U1	UINT32	
	13	V3 N1	0x5A8C	Number of incidents ±10% on phase V3			UINT32	
	14	V3 Min	0x5A8D	Minimum voltage on phase V3		U1	UINT32	
	15	V3 Max	0x5A8E	Maximum voltage on phase V3		U1	UINT32	
2				**Rapid Voltage Changes**				
	1	N1	0x5B00	Number of polyphase incidents			UINT32	
	2	V1 N1	0x5B01	Number of incidents on phase V1			UINT32	
	3	V1 dV%	0x5B02	Maximum voltage variation on phase V1, dV/Un%		0.01%	UINT32	
	4	V2 N1	0x5B03	Number of incidents on phase V2			UINT32	
	5	V2 dV%	0x5B04	Maximum voltage variation on phase V2, dV/Un%		0.01%	UINT32	
	6	V3 N1	0x5B05	Number of incidents on phase V3			UINT32	
	7	V3 dV%	0x5B06	Maximum voltage variation on phase V3, dV/Un%		0.01%	UINT32	
3				**Flicker**				
	1	Nnv	0x5B80	Number of non-valid 2-hour intervals			UINT32	
	2	N	0x5B81	Number of valid 2-hour intervals			UINT32	
	3	N1	0x5B82	Number of polyphase incidents Plt >1%, N1			UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
	4	N1/N, %	0x5B83	EN50160 compliance ratio, N1/N		0.01%	UINT32	
	5	V1 N1	0x5B84	Number of incidents Plt > 1% on phase V1			UINT32	
	6	V1 Plt Max	0x5B85	Maximum Plt on phase V2		0.01	UINT32	
	7	V2 N1	0x5B86	Number of incidents Plt > 1% on phase V2			UINT32	
	8	V2 Plt Max	0x5B87	Maximum Plt on phase V2		0.01	UINT32	
	9	V3 N1	0x5B88	Number of incidents Plt > 1% on phase V3			UINT32	
	10	V3 Plt Max	0x5B89	Maximum Plt on phase V3		0.01	UINT32	
4				**Voltage Dips** (indicative statistics)				
	1	N11 90%/100ms	0x5C00	Number of polyphase incidents u<90%/t<100ms			UINT32	
	2	N12 85%/100ms	0x5C01	Number of polyphase incidents u<85%/t<100ms			UINT32	
	3	N13 70%/100ms	0x5C02	Number of polyphase incidents u<70%/t<100ms			UINT32	
	4	N14 40%/100ms	0x5C03	Number of polyphase incidents u<40%/t<100ms			UINT32	
	5	N11 90%/500ms	0x5C04	Number of polyphase incidents u<90%/t<500ms			UINT32	
	6	N12 85%/500ms	0x5C05	Number of polyphase incidents u<85%/t<500ms			UINT32	
	7	N13 70%/500ms	0x5C06	Number of polyphase incidents u<70%/t<500ms			UINT32	
	8	N14 40%/500ms	0x5C07	Number of polyphase incidents u<40%/t<500ms			UINT32	
	9	N11 90%/1s	0x5C08	Number of polyphase incidents u<90%/t<1s			UINT32	
	10	N12 85%/1s	0x5C09	Number of polyphase incidents u<85%/t<1s			UINT32	
	11	N13 70%/1s	0x5C0A	Number of polyphase incidents u<70%/t<1s			UINT32	
	12	N14 40%/1s	0x5C0B	Number of polyphase incidents u<40%/t<1s			UINT32	
	13	N11 90%/3s	0x5C0C	Number of polyphase incidents u<90%/t<3s			UINT32	
	14	N12 85%/3s	0x5C0D	Number of polyphase incidents u<85%/t<3s			UINT32	
	15	N13 70%/3s	0x5C0E	Number of polyphase incidents u<70%/t<3s			UINT32	
	16	N14 40%/3s	0x5C0F	Number of polyphase incidents u<40%/t<3s			UINT32	
	17	N11 90%/20s	0x5C10	Number of polyphase incidents u<90%/t<20s			UINT32	
	18	N12 85%/20s	0x5C11	Number of polyphase incidents u<85%/t<20s			UINT32	
	19	N13 70%/20s	0x5C12	Number of polyphase incidents u<70%/t<20s			UINT32	
	20	N14 40%/20s	0x5C13	Number of polyphase incidents u<40%/t<20s			UINT32	
	21	N11 90%/60s	0x5C14	Number of polyphase incidents u<90%/t<60s			UINT32	
	22	N12 85%/60s	0x5C15	Number of polyphase incidents u<85%/t<60s			UINT32	
	23	N13 70%/60s	0x5C16	Number of polyphase incidents u<70%/t<60s			UINT32	
	24	N14 40%/60s	0x5C17	Number of polyphase incidents u<40%/t<60s			UINT32	
	25	N11 90%/180s	0x5C18	Number of polyphase incidents u<90%/t<180s			UINT32	
	26	N12 85%/180s	0x5C19	Number of polyphase incidents u<85%/t<180s			UINT32	
	27	N13 70%/180s	0x5C1A	Number of polyphase incidents u<70%/t<180s			UINT32	
	28	N14 40%/180s	0x5C1B	Number of polyphase incidents u<40%/t<180s			UINT32	
	29	V1 N1	0x5C1C	Total number of incidents on phase V1			UINT32	
	30	V1 Min	0x5C1D	Minimum residual voltage on phase V1		U1	UINT32	
	31	V2 N1	0x5C1E	Total number of incidents on phase V2			UINT32	
	32	V2 Min	0x5C1F	Minimum residual voltage on phase V2		U1	UINT32	
	33	V3 N1	0x5C20	Total number of incidents on phase V3			UINT32	
	34	V3 Min	0x5C21	Minimum residual voltage on phase V3		U1	UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
5				**Voltage Interruptions** (indicative statistics)				
	1	N1 1s	0x5D00	Number of polyphase incidents <1s			UINT32	
	2	N2 180s	0x5D01	Number of polyphase incidents <180s			UINT32	
	3	N3 >180s	0x5D02	Number of polyphase incidents >180s			UINT32	
	4	V1 Min	0x5D03	Minimum residual voltage on phase V1		U1	UINT32	
	5	V2 Min	0x5D04	Minimum residual voltage on phase V2		U1	UINT32	
	6	V3 Min	0x5D05	Minimum residual voltage on phase V3		U1	UINT32	
6				**Temporary Overvoltages** (indicative statistics)				
	1	N11 110%/1s	0x5D80	Number of polyphase incidents u>110%/t<1s			UINT32	
	2	N12 120%/1s	0x5D81	Number of polyphase incidents u>120%/t<1s			UINT32	
	3	N13 140%/1s	0x5D82	Number of polyphase incidents u>140%/t<1s			UINT32	
	4	N14 160%/1s	0x5D83	Number of polyphase incidents u>160%/t<1s			UINT32	
	5	N15 200%/1s	0x5D84	Number of polyphase incidents u>200%/t<1s			UINT32	
	6	N21 110%/60s	0x5D85	Number of polyphase incidents u>110%/t<60s			UINT32	
	7	N22 120%/60s	0x5D86	Number of polyphase incidents u>120%/t<60s			UINT32	
	8	N23 140%/60s	0x5D87	Number of polyphase incidents u>140%/t<60s			UINT32	
	9	N24 160%/60s	0x5D88	Number of polyphase incidents u>160%/t<60s			UINT32	
	10	N25 200%/60s	0x5D89	Number of polyphase incidents u>200%/t<60s			UINT32	
	11	N31 110%/>60s	0x5D8A	Number of polyphase incidents u>110%/t>60s			UINT32	
	12	N32 120%/>60s	0x5D8B	Number of polyphase incidents u>120%/t>60s			UINT32	
	13	N33 140%/>60s	0x5D8C	Number of polyphase incidents u>140%/t>60s			UINT32	
	14	N34 160%/>60s	0x5D8D	Number of polyphase incidents u>160%/t>60s			UINT32	
	15	N35 200%/>60s	0x5D8E	Number of polyphase incidents u>200%/t>60s			UINT32	
	16	V1 N1	0x5D8F	Total number of incidents on phase V1			UINT32	
	17	V1 Max	0x5D90	Maximum voltage magnitude on phase V1		U1	UINT32	
	18	V2 N1	0x5D91	Total number of incidents on phase V2			UINT32	
	19	V2 Max	0x5D92	Maximum voltage magnitude on phase V2		U1	UINT32	
	20	V3 N1	0x5D93	Total number of incidents on phase V3			UINT32	
	21	V3 Max	0x5D94	Maximum voltage magnitude on phase V3		U1	UINT32	
7				**Transient Overvoltages** (peak voltage, indicative statistics)				
	1	N1 110%	0x5E00	Number of polyphase incidents u>120%			UINT32	
	2	N2 150%	0x5E01	Number of polyphase incidents u>150%			UINT32	
	3	N3 200%	0x5E02	Number of polyphase incidents u>200%			UINT32	
	4	N4 250%	0x5E03	Number of polyphase incidents u>250%			UINT32	
	5	N5 300%	0x5E04	Number of polyphase incidents u>300%			UINT32	
	6	V1 N1 110%	0x5E05	Number of incidents u>120% on phase V1			UINT32	
	7	V1 N2 150%	0x5E06	Number of incidents u>150% on phase V1			UINT32	
	8	V1 N3 200%	0x5E07	Number of incidents u>200% on phase V1			UINT32	
	9	V1 N4 250%	0x5E08	Number of incidents u>250% on phase V1			UINT32	
	10	V1 N5 300%	0x5E09	Number of incidents u>300% on phase V1			UINT32	
	11	V2 N1 110%	0x5E0A	Number of incidents u>120% on phase V2			UINT32	
	12	V2 N2 150%	0x5E0B	Number of incidents u>150% on phase V2			UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
	13	V2 N3 200%	0x5E0C	Number of incidents u>200% on phase V2			UINT32	
	14	V2 N4 250%	0x5E0D	Number of incidents u>250% on phase V2			UINT32	
	15	V2 N5 300%	0x5E0E	Number of incidents u>300% on phase V2			UINT32	
	16	V3 N1 110%	0x5E0F	Number of incidents u>120% on phase V3			UINT32	
	17	V3 N2 150%	0x5E10	Number of incidents u>150% on phase V3			UINT32	
	18	V3 N3 200%	0x5E11	Number of incidents u>200% on phase V3			UINT32	
	19	V3 N4 250%	0x5E12	Number of incidents u>250% on phase V3			UINT32	
	20	V3 N5 300%	0x5E13	Number of incidents u>300% on phase V3			UINT32	
	21	V1 Peak Max	0x5E14	Maximum peak voltage on phase V1		U1	UINT32	
	22	V2 Peak Max	0x5E15	Maximum peak voltage on phase V2		U1	UINT32	
	23	V3 Peak Max	0x5E16	Maximum peak voltage on phase V3		U1	UINT32	
7				**Transient Overvoltages** (impulsive voltage, indicative statistics)				
	1	N1 110%	0x5E00	Number of polyphase incidents u>120%			UINT32	
	2	N2 150%	0x5E01	Number of polyphase incidents u>150%			UINT32	
	3	N3 200%	0x5E02	Number of polyphase incidents u>200%			UINT32	
	4	N4 250%	0x5E03	Number of polyphase incidents u>250%			UINT32	
	5	N5 300%	0x5E04	Number of polyphase incidents u>300%			UINT32	
	6	V1 N1 110%	0x5E05	Number of incidents u>120% on phase V1			UINT32	
	7	V1 N2 150%	0x5E06	Number of incidents u>150% on phase V1			UINT32	
	8	V1 N3 200%	0x5E07	Number of incidents u>200% on phase V1			UINT32	
	9	V1 N4 250%	0x5E08	Number of incidents u>250% on phase V1			UINT32	
	10	V1 N5 300%	0x5E09	Number of incidents u>300% on phase V1			UINT32	
	11	V2 N1 110%	0x5E0A	Number of incidents u>120% on phase V2			UINT32	
	12	V2 N2 150%	0x5E0B	Number of incidents u>150% on phase V2			UINT32	
	13	V2 N3 200%	0x5E0C	Number of incidents u>200% on phase V2			UINT32	
	14	V2 N4 250%	0x5E0D	Number of incidents u>250% on phase V2			UINT32	
	15	V2 N5 300%	0x5E0E	Number of incidents u>300% on phase V2			UINT32	
	16	V3 N1 110%	0x5E0F	Number of incidents u>120% on phase V3			UINT32	
	17	V3 N2 150%	0x5E10	Number of incidents u>150% on phase V3			UINT32	
	18	V3 N3 200%	0x5E11	Number of incidents u>200% on phase V3			UINT32	
	19	V3 N4 250%	0x5E12	Number of incidents u>250% on phase V3			UINT32	
	20	V3 N5 300%	0x5E13	Number of incidents u>300% on phase V3			UINT32	
	21	V1 imp max	0x5E14	Maximum impulsive voltage on phase V1		U1	UINT32	
	22	V2 imp max	0x5E15	Maximum impulsive voltage on phase V2		U1	UINT32	
	23	V3 imp max	0x5E16	Maximum impulsive voltage on phase V3		U1	UINT32	
8				**Supply Voltage Unbalance**				
	1	Nnv	0x5E80	Number of non-valid 10-min intervals			UINT32	
	2	N	0x5E81	Number of valid 10-min intervals			UINT32	
	3	N1	0x5E82	Number of incidents V Unb > 2%, N1			UINT32	
	4	N1/N, %	0x5E83	EN50160 compliance ratio, N1/N		0.01%	UINT32	
	5	V Unb% Max	0x5E84	Maximum voltage unbalance		0.1%	UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
9				**Harmonic Voltage**				
	1	Nnv	0x5F00	Number of non-valid 10-min intervals			UINT32	
	2	N	0x5F01	Number of valid 10-min intervals			UINT32	
	3	N1	0x5F02	Number of polyphase harmonic voltage incidents, N1			UINT32	
	4	N2	0x5F03	Number of polyphase voltage THD incidents, N2			UINT32	
	5	N1/N, %	0x5F04	EN50160 harmonic voltage compliance ratio, N1/N		0.01%	UINT32	
	6	N2/N, %	0x5F05	EN50160 voltage THD compliance ratio, N2/N		0.01%	UINT32	
	7	V1 N1	0x5F06	Number of harmonic voltage incidents on phase V1			UINT32	
	8	V1 HD% Max	0x5F07	Worst-case harmonic magnitude on phase V1, %		0.01%	UINT32	
	9	V1 H#	0x5F08	Worst-case harmonic component number on phase V1	2-50		UINT32	
	10	V1 N2	0x5F09	Number of voltage THD incidents on phase V1			UINT32	
	11	V1 THD Max	0x5F0A	Worst-case voltage THD on phase V1		0.1%	UINT32	
	12	V2 N1	0x5F0B	Number of harmonic voltage incidents on phase V2			UINT32	
	13	V2 HD% Max	0x5F0C	Worst-case harmonic magnitude on phase V2, %		0.01%	UINT32	
	14	V2 H#	0x5F0D	Worst-case harmonic component number on phase V2	2-50		UINT32	
	15	V2 N2	0x5F0E	Number of voltage THD incidents on phase V2			UINT32	
	16	V2 THD Max	0x5F0F	Worst-case voltage THD on phase V2		0.1%	UINT32	
	17	V3 N1	0x5F10	Number of harmonic voltage incidents on phase V3			UINT32	
	18	V3 HD% Max	0x5F11	Worst-case harmonic magnitude on phase V3, %		0.01%	UINT32	
	19	V3 H#	0x5F12	Worst-case harmonic component number on phase V3	2-50		UINT32	
	20	V3 N2	0x5F13	Number of voltage THD incidents on phase V3			UINT32	
	21	V3 THD Max	0x5F14	Worst-case voltage THD on phase V3		0.1%	UINT32	
10				**Interharmonic Voltage**				
	1	Nnv	0x5F80	Number of non-valid 10-min intervals			UINT32	
	2	N	0x5F81	Number of valid 10-min intervals			UINT32	
	3	N1	0x5F82	Number of polyphase interharmonic voltage incidents, N1			UINT32	
	4	N2	0x5F83	Number of polyphase interharmonic THD incidents, N2			UINT32	
	5	N1/N, %	0x5F84	EN50160 interharmonic voltage compliance ratio, N1/N		0.01%	UINT32	
	6	N2/N, %	0x5F85	EN50160 interharmonic voltage THD compliance ratio, N2/N		0.01%	UINT32	
	7	V1 N1	0x5F86	Number of interharmonic voltage incidents on phase V1			UINT32	
	8	V1 HD% Max	0x5F87	Worst-case interharmonic magnitude on phase V1, %		0.01%	UINT32	
	9	V1 H#	0x5F88	Worst-case interharmonic component number on phase V1	2-50		UINT32	
	10	V1 N2	0x5F89	Number of interharmonic voltage THD incidents on phase V1			UINT32	
	11	V1 THD Max	0x5F8A	Worst-case interharmonic voltage THD on phase V1		0.1%	UINT32	
	12	V2 N1	0x5F8B	Number of interharmonic voltage incidents on phase V2			UINT32	
	13	V2 HD% Max	0x5F8C	Worst-case interharmonic magnitude on phase V2, %		0.01%	UINT32	
	14	V2 H#	0x5F8D	Worst-case interharmonic component number on phase V2	2-50		UINT32	
	15	V2 N2	0x5F8E	Number of interharmonic voltage THD incidents on phase V2			UINT32	
	16	V2 THD Max	0x5F8F	Worst-case interharmonic voltage THD on phase V2		0.1%	UINT32	
	17	V3 N1	0x5F90	Number of interharmonic voltage incidents on phase V3			UINT32	
	18	V3 HD% Max	0x5F91	Worst-case interharmonic magnitude on phase V3, %		0.01%	UINT32	
	19	V3 H#	0x5F92	Worst-case interharmonic component number on phase V3	2-50		UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
	20	V3 N2	0x5F93	Number of interharmonic voltage THD incidents on phase V3			UINT32	
	21	V3 THD Max	0x5F94	Worst-case interharmonic THD on phase V3		0.1%	UINT32	
11				**Mains Signaling Voltage**				
	1	Nnv	0x6000	Number of non-valid 3-sec intervals			UINT32	
	2	N	0x6001	Number of valid 3-sec intervals			UINT32	
	3	N1	0x6002	Number of polyphase incidents, N1			UINT32	
	4	N1/N, %	0x6003	EN50160 compliance ratio, N1/N		0.01%	UINT32	
	5	V1 N1	0x6004	Number of incidents on phase V1			UINT32	
	6	V1 Frq1 %Un	0x6005	Maximum 1st signaling voltage magnitude on phase V1, %Un		0.01%	UINT32	
	7	V1 Frq2 %Un	0x6006	Maximum 2nd signaling voltage magnitude on phase V1, %Un		0.01%	UINT32	
	8	V1 Frq3 %Un	0x6007	Maximum 3rd signaling voltage magnitude on phase V1, %Un		0.01%	UINT32	
	9	V1 Frq4 %Un	0x6008	Maximum 4th signaling voltage magnitude on phase V1, %Un		0.01%	UINT32	
	10	V2 N1	0x6009	Number of incidents on phase V2			UINT32	
	11	V2 Frq1 %Un	0x600A	Maximum 1st signaling voltage magnitude on phase V2, %Un		0.01%	UINT32	
	12	V2 Frq2 %Un	0x600B	Maximum 2nd signaling voltage magnitude on phase V2, %Un		0.01%	UINT32	
	13	V2 Frq3 %Un	0x600C	Maximum 3rd signaling voltage magnitude on phase V2, %Un		0.01%	UINT32	
	14	V2 Frq4 %Un	0x600D	Maximum 4th signaling voltage magnitude on phase V2, %Un		0.01%	UINT32	
	15	V3 N1	0x600E	Number of incidents on phase V3			UINT32	
	16	V3 Frq1 %Un	0x600F	Maximum 1st signaling voltage magnitude on phase V3, %Un		0.01%	UINT32	
	17	V3 Frq2 %Un	0x6010	Maximum 2nd signaling voltage magnitude on phase V3, %Un		0.01%	UINT32	
	18	V3 Frq3 %Un	0x6011	Maximum 3rd signaling voltage magnitude on phase V3, %Un		0.01%	UINT32	
	19	V3 Frq4 %Un	0x6012	Maximum 4th signaling voltage magnitude on phase V3, %Un		0.01%	UINT32	
	20	Frq1	0x6013	1st signaling voltage frequency		0.01Hz	UINT32	
	21	Frq2	0x6014	2nd signaling voltage frequency		0.01Hz	UINT32	
	22	Frq3	0x6015	3rd signaling voltage frequency		0.01Hz	UINT32	
	23	Frq4	0x6016	4th signaling voltage frequency		0.01Hz	UINT32	

[1] When the 4LN3 or 3LN3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

[2] For volts, amps, power and frequency scales and units, refer to Section 4 "Data Scales and Units".

3.11 EN 50160 Harmonics Survey Statistics Data Log

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
0				**V1 Harmonic Voltage**			UINT32	
	1	THD MAX	0x8000	Maximum THD on phase		0.1%	UINT32	
	2	THDO MAX	0x8001	Maximum odd harmonics THD		0.1%	UINT32	
	3	THDE MAX	0x8002	Maximum even harmonics THD		0.1%	UINT32	
	4	%HD02 MAX	0x8003	Maximum HD02 harmonic voltage magnitude, %Un		0.01%	UINT32	
	5	%HD03 MAX	0x8004	Maximum HD03 harmonic voltage magnitude, %Un		0.01%	UINT32	
		...					UINT32	
	52	%HD50 MAX	0x8032	Maximum HD50 harmonic voltage magnitude, %Un		0.01%	UINT32	
1				**V2 Harmonic Voltage**			UINT32	
	1	THD MAX	0x8000	Maximum THD on phase		0.1%	UINT32	
	2	THDO MAX	0x8001	Maximum odd harmonics THD		0.1%	UINT32	
	3	THDE MAX	0x8002	Maximum even harmonics THD		0.1%	UINT32	
	4	%HD02 MAX	0x8003	Maximum HD02 harmonic voltage magnitude, %Un		0.01%	UINT32	
	5	%HD03 MAX	0x8004	Maximum HD03 harmonic voltage magnitude, %Un		0.01%	UINT32	
		...					UINT32	
	52	%HD50 MAX	0x8032	Maximum HD50 harmonic voltage magnitude, %Un		0.01%	UINT32	
2				**V3 Harmonic Voltage**			UINT32	
	1	THD MAX	0x8000	Maximum THD on phase		0.1%	UINT32	
	2	THDO MAX	0x8001	Maximum odd harmonics THD		0.1%	UINT32	
	3	THDE MAX	0x8002	Maximum even harmonics THD		0.1%	UINT32	
	4	%HD02 MAX	0x8003	Maximum HD02 harmonic voltage magnitude, %Un		0.01%	UINT32	
	5	%HD03 MAX	0x8004	Maximum HD03 harmonic voltage magnitude, %Un		0.01%	UINT32	
		...					UINT32	
	52	%HD50 MAX	0x8032	Maximum HD50 harmonic voltage magnitude, %Un		0.01%	UINT32	

[1] When the 4LN3 or 3LN3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

3.12 GOST 13109 Compliance Statistics Data Log

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
0				**Voltage Variation, peak load**				
	1	Nnv	0xC400	Number of non-valid 1-min intervals			UINT32	
	2	N	0xC401	Number of valid 1-min intervals			UINT32	
	3	V1 N1	0xC402	Number of values exceeded normally permissible limit on phase A/AB			UINT32	
	4	V1 N2	0xC403	Number of values exceeded maximum permissible limit on phase A/AB			UINT32	
	5	V1 dU min1	0xC404	Minimum 95% probability daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	6	V1 dU max1	0xC405	Maximum 95% probability daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	7	V1 dU min2	0xC406	Minimum daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	8	V1 dU max2	0xC407	Maximum daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	9	V2 N1	0xC408	Number of values exceeded normally permissible limit on phase B/BC			UINT32	
	10	V2 N2	0xC409	Number of values exceeded maximum permissible limit on phase B/BC			UINT32	
	11	V2 dU min1	0xC40A	Minimum 95% probability daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	12	V2 dU max1	0xC40B	Maximum 95% probability daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	13	V2 dU min2	0xC40C	Minimum daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	14	V2 dU max2	0xC40D	Maximum daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	15	V3 N1	0xC40E	Number of values exceeded normally permissible limit on phase C/CA			UINT32	
	16	V3 N2	0xC40F	Number of values exceeded maximum permissible limit on phase C/CA			UINT32	
	17	V3 dU min1	0xC410	Minimum 95% probability daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	18	V3 dU max1	0xC411	Maximum 95% probability daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	19	V3 dU min2	0xC412	Minimum daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	20	V3 dU max2	0xC413	Maximum daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	21	Vp N1	0xC414	Number of positive sequence values exceeded normally permissible limit			UINT32	
	22	Vp N2	0xC415	Number of positive sequence values exceeded maximum permissible limit			UINT32	
	23	Vp dU min1	0xC416	Minimum positive sequence 95% probability daily variation, +/-%Un		0.01%	INT32	
	24	Vp dU max1	0xC417	Maximum positive sequence 95% probability daily variation, +/-%Un		0.01%	INT32	
	25	Vp dU min2	0xC418	Minimum positive sequence daily variation, +/-%Un		0.01%	INT32	
	26	Vp dU max2	0xC419	Maximum positive sequence daily variation, +/-%Un		0.01%	INT32	
	27	dU lim1 high	0xC41A	High normally permissible limit of voltage variation, %Un		0.01%	UINT32	
	28	dU lim2 high	0xC41B	High maximum permissible limit of voltage variation, %Un		0.01%	UINT32	
	29	dU lim1 low	0xC41C	Low normally permissible limit of voltage variation, %Un		0.01%	UINT32	
	30	dU lim2 low	0xC41D	Low maximum permissible limit of voltage variation, %Un		0.01%	UINT32	
1				**Voltage Variation, light load**				
	1	Nnv	0xC400	Number of non-valid 1-min intervals			UINT32	
	2	N	0xC401	Number of valid 1-min intervals			UINT32	
	3	V1 N1	0xC402	Number of values exceeded normally permissible limit on phase A/AB			UINT32	
	4	V1 N2	0xC403	Number of values exceeded maximum permissible limit on phase A/AB			UINT32	
	5	V1 dU min1	0xC404	Minimum 95% probability daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	6	V1 dU max1	0xC405	Maximum 95% probability daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	7	V1 dU min2	0xC406	Minimum daily variation on phase A/AB, +/-%Un		0.01%	INT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	8	V1 dU max2	0xC407	Maximum daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	9	V2 N1	0xC408	Number of values exceeded normally permissible limit on phase B/BC			UINT32	
	10	V2 N2	0xC409	Number of values exceeded maximum permissible limit on phase B/BC			UINT32	
	11	V2 dU min1	0xC40A	Minimum 95% probability daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	12	V2 dU max1	0xC40B	Maximum 95% probability daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	13	V2 dU min2	0xC40C	Minimum daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	14	V2 dU max2	0xC40D	Maximum daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	15	V3 N1	0xC40E	Number of values exceeded normally permissible limit on phase C/CA			UINT32	
	16	V3 N2	0xC40F	Number of values exceeded maximum permissible limit on phase C/CA			UINT32	
	17	V3 dU min1	0xC410	Minimum 95% probability daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	18	V3 dU max1	0xC411	Maximum 95% probability daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	19	V3 dU min2	0xC412	Minimum daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	20	V3 dU max2	0xC413	Maximum daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	21	Vp N1	0xC414	Number of positive sequence values exceeded normally permissible limit			UINT32	
	22	Vp N2	0xC415	Number of positive sequence values exceeded maximum permissible limit			UINT32	
	23	Vp dU min1	0xC416	Minimum positive sequence 95% probability daily variation, +/-%Un		0.01%	INT32	
	24	Vp dU max1	0xC417	Maximum positive sequence 95% probability daily variation, +/-%Un		0.01%	INT32	
	25	Vp dU min2	0xC418	Minimum positive sequence daily variation, +/-%Un		0.01%	INT32	
	26	Vp dU max2	0xC419	Maximum positive sequence daily variation, +/-%Un		0.01%	INT32	
	27	dU lim1 high	0xC41A	High normally permissible limit of voltage variation, %Un		0.01%	UINT32	
	28	dU lim2 high	0xC41B	High maximum permissible limit of voltage variation, %Un		0.01%	UINT32	
	29	dU lim1 low	0xC41C	Low normally permissible limit of voltage variation, %Un		0.01%	UINT32	
	30	dU lim2 low	0xC41D	Low maximum permissible limit of voltage variation, %Un		0.01%	UINT32	
2				**Voltage Variation, daily load**				
	1	Nnv	0xC400	Number of non-valid 1-min intervals			UINT32	
	2	N	0xC401	Number of valid 1-min intervals			UINT32	
	3	V1 N1	0xC402	Number of values exceeded normally permissible limit on phase A/AB			UINT32	
	4	V1 N2	0xC403	Number of values exceeded maximum permissible limit on phase A/AB			UINT32	
	5	V1 dU min1	0xC404	Minimum 95% probability daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	6	V1 dU max1	0xC405	Maximum 95% probability daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	7	V1 dU min2	0xC406	Minimum daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	8	V1 dU max2	0xC407	Maximum daily variation on phase A/AB, +/-%Un		0.01%	INT32	
	9	V2 N1	0xC408	Number of values exceeded normally permissible limit on phase B/BC			UINT32	
	10	V2 N2	0xC409	Number of values exceeded maximum permissible limit on phase B/BC			UINT32	
	11	V2 dU min1	0xC40A	Minimum 95% probability daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	12	V2 dU max1	0xC40B	Maximum 95% probability daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	13	V2 dU min2	0xC40C	Minimum daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	14	V2 dU max2	0xC40D	Maximum daily variation on phase B/BC, +/-%Un		0.01%	INT32	
	15	V3 N1	0xC40E	Number of values exceeded normally permissible limit on phase C/CA			UINT32	
	16	V3 N2	0xC40F	Number of values exceeded maximum permissible limit on phase C/CA			UINT32	
	17	V3 dU min1	0xC410	Minimum 95% probability daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	18	V3 dU max1	0xC411	Maximum 95% probability daily variation on phase C/CA, +/-%Un		0.01%	INT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	19	V3 dU min2	0xC412	Minimum daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	20	V3 dU max2	0xC413	Maximum daily variation on phase C/CA, +/-%Un		0.01%	INT32	
	21	Vp N1	0xC414	Number of positive sequence values exceeded normally permissible limit			UINT32	
	22	Vp N2	0xC415	Number of positive sequence values exceeded maximum permissible limit			UINT32	
	23	Vp dU min1	0xC416	Minimum positive sequence 95% probability daily variation, +/-%Un		0.01%	INT32	
	24	Vp dU max1	0xC417	Maximum positive sequence 95% probability daily variation, +/-%Un		0.01%	INT32	
	25	Vp dU min2	0xC418	Minimum positive sequence daily variation, +/-%Un		0.01%	INT32	
	26	Vp dU max2	0xC419	Maximum positive sequence daily variation, +/-%Un		0.01%	INT32	
	27	dU lim1 high	0xC41A	High normally permissible limit of voltage variation, %Un		0.01%	UINT32	
	28	dU lim2 high	0xC41B	High maximum permissible limit of voltage variation, %Un		0.01%	UINT32	
	29	dU lim1 low	0xC41C	Low normally permissible limit of voltage variation, %Un		0.01%	UINT32	
	30	dU lim2 low	0xC41D	Low maximum permissible limit of voltage variation, %Un		0.01%	UINT32	
3				**Voltage Change**				
	1	V1 N1	0xC480	Number of incidents on phase A/AB			UINT32	
	2	V1 dUt	0xC481	Maximum voltage change on phase A/AB, %Un		0.01%	UINT32	
	3	V1 FdUt	0xC482	Repetition rate of voltage changes on phase A/AB, 1/min		1/min × 0.01	UINT32	
	4	V1 dUt lim	0xC483	Exceeded voltage change limit on phase A/AB, Un%		0.01%	UINT32	
	5	V1 FdUt lim	0xC484	Exceeded repetition rate of voltage changes on phase A/AB, 1/min			UINT32	
	6	V2 N1	0xC485	Number of incidents on phase B/BC			UINT32	
	7	V2 dUt	0xC486	Maximum voltage change on phase B/BC, %Un		0.01%	UINT32	
	8	V2 FdUt	0xC487	Repetition rate of voltage changes on phase B/BC, 1/min		1/min × 0.01	UINT32	
	9	V2 dUt lim	0xC488	Exceeded voltage change limit on phase B/BC, Un%		0.01%	UINT32	
	10	V2 FdUt lim	0xC489	Exceeded repetition rate of voltage changes on phase B/BC, 1/min			UINT32	
	11	V3 N1	0xC48A	Number of incidents on phase C/CA			UINT32	
	12	V3 dUt	0xC48B	Maximum voltage change on phase C/CA, %Un		0.01%	UINT32	
	13	V3 FdUt	0xC48C	Repetition rate of voltage changes on phase C/CA, 1/min		1/min × 0.01	UINT32	
	14	V3 dUt lim	0xC48D	Exceeded voltage change limit on phase C/CA, Un%		0.01%	UINT32	
	15	V3 FdUt lim	0xC48E	Exceeded repetition rate of voltage changes on phase C/CA, 1/min			UINT32	
4				**Flicker**				
	1	Pst Nnv	0xC500	Number of non-valid 10-min intervals			UINT32	
	2	Pst N	0xC501	Number of valid 10-min intervals			UINT32	
	3	V1 Pst N1	0xC502	Number of Pst values exceeded maximum permissible limit on phase A/AB			UINT32	
	4	V1 Pst Max	0xC503	Maximum Pst on phase A/AB		0.01	UINT32	
	5	V2 Pst N1	0xC504	Number of Pst values exceeded maximum permissible limit on phase B/BC			UINT32	
	6	V2 Pst Max	0xC505	Maximum Pst on phase B/BC		0.01	UINT32	
	7	V3 Pst N1	0xC506	Number of Pst values exceeded maximum permissible limit on phase C/CA			UINT32	
	8	V3 Pst Max	0xC507	Maximum Pst on phase C/CA		0.01	UINT32	
	9	Pst lim	0xC508	Maximum permissible limit for Pst		0.01	UINT32	
	10	Plt Nnv	0xC509	Number of non-valid 2-hour intervals			UINT32	
	11	Plt N	0xC50A	Number of valid 2-hour intervals			UINT32	
	12	V1 Plt N1	0xC50B	Number of Plt values exceeded maximum permissible limit on phase A/AB			UINT32	
	13	V1 Plt Max	0xC50C	Maximum Plt on phase A/AB		0.01	UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	14	V2 Plt N1	0xC50D	Number of Plt values exceeded maximum permissible limit on phase B/BC			UINT32	
	15	V2 Plt Max	0xC50E	Maximum Plt on phase B/BC		0.01	UINT32	
	16	V3 Plt N1	0xC50F	Number of Plt values exceeded maximum permissible limit on phase C/CA			UINT32	
	17	V3 Plt Max	0xC510	Maximum Plt on phase C/CA		0.01	UINT32	
	18	Plt lim	0xC511	Maximum permissible limit for Plt		0.01	UINT32	
5				**Voltage THD**				
	1	Nnv	0xC580	Number of non-valid 3-sec intervals			UINT32	
	2	N	0xC581	Number of valid 3-sec intervals			UINT32	
	3	V1 N1	0xC582	Number of THD values exceeded normally permissible limit on phase A/AB			UINT32	
	4	V1 N2	0xC583	Number of THD values exceeded maximum permissible limit on phase A/AB			UINT32	
	5	V1 THD max1	0xC584	Maximum 95% probability daily THD on phase A/AB, %		0.1%	UINT32	
	6	V1 THD max2	0xC585	Maximum daily THD on phase A/AB, %		0.1%	UINT32	
	7	V2 N1	0xC586	Number of THD values exceeded normally permissible limit on phase B/BC			UINT32	
	8	V2 N2	0xC587	Number of THD values exceeded maximum permissible limit on phase B/BC			UINT32	
	9	V2 THD max1	0xC588	Maximum 95% probability daily THD on phase B/BC, %		0.1%	UINT32	
	10	V2 THD max2	0xC589	Maximum daily THD on phase B/BC, %		0.1%	UINT32	
	11	V3 N1	0xC58A	Number of THD values exceeded normally permissible limit on phase C/CA			UINT32	
	12	V3 N2	0xC58B	Number of THD values exceeded maximum permissible limit on phase C/CA			UINT32	
	13	V3 THD max1	0xC58C	Maximum 95% probability daily THD on phase C/CA, %		0.1%	UINT32	
	14	V3 THD max2	0xC58D	Maximum daily THD on phase C/CA, %		0.1%	UINT32	
	15	THD lim1	0xC58E	Normally permissible limit of THD, %		0.1%	UINT32	
	16	THD lim2	0xC58F	Maximum permissible limit of THD, %		0.1%	UINT32	
6				**Voltage Unbalance**				
	1	Nnv	0xC600	Number of non-valid 3-sec intervals			UINT32	
	2	N	0xC601	Number of valid 3-sec intervals			UINT32	
	3	K2u N1	0xC602	Number of negative-sequence values exceeded normally permissible limit			UINT32	
	4	K2u N2	0xC603	Number of negative-sequence values exceeded maximum permissible limit			UINT32	
	5	K2u max1	0xC604	Maximum 95% probability daily negative-sequence unbalance, %		0.1%	UINT32	
	6	K2u max2	0xC605	Maximum daily negative-sequence unbalance, %		0.1%	UINT32	
	7	K2u lim1	0xC606	Normally permissible limit of negative-sequence unbalance, %		0.1%	UINT32	
	8	K2u lim2	0xC607	Maximum permissible limit of negative-sequence unbalance, %		0.1%	UINT32	
	9	K0u N1	0xC608	Number of zero-sequence values exceeded normally permissible limit			UINT32	
	10	K0u N2	0xC609	Number of zero-sequence values exceeded maximum permissible limit			UINT32	
	11	K0u max1	0xC60A	Maximum 95% probability daily zero-sequence unbalance, %		0.1%	UINT32	
	12	K0u max2	0xC60B	Maximum daily zero-sequence unbalance, %		0.1%	UINT32	
	13	K0u lim1	0xC60C	Normally permissible limit of zero-sequence unbalance, %		0.1%	UINT32	
	14	K0u lim2	0xC60D	Maximum permissible limit of zero-sequence unbalance, %		0.1%	UINT32	
7				**Frequency Variation**				
	1	Nnv	0xC680	Number of non-valid 20-sec intervals			UINT32	
	2	N	0xC681	Number of valid 20-sec intervals			UINT32	
	3	N1	0xC682	Number of values exceeded normally permissible limit			UINT32	
	4	N2	0xC683	Number of values exceeded maximum permissible limit			UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	5	df min1	0xC684	Minimum 95% probability daily frequency variation, +/-Hz		0.01 Hz	INT32	
	6	df max1	0xC685	Maximum 95% probability daily frequency variation, +/-Hz		0.01 Hz	INT32	
	7	df min2	0xC686	Minimum daily frequency variation, +/-Hz		0.01 Hz	INT32	
	8	df max2	0xC687	Maximum daily frequency variation, +/-Hz		0.01 Hz	INT32	
	9	df lim1 high	0xC688	High normally permissible limit of frequency variation, Hz		0.01 Hz	UINT32	
	10	df lim2 high	0xC689	High maximum permissible limit of frequency variation, Hz		0.01 Hz	UINT32	
	11	df lim1 low	0xC68A	Low normally permissible limit of frequency variation, Hz		0.01 Hz	UINT32	
	12	df lim2 low	0xC68B	Low maximum permissible limit of frequency variation, Hz		0.01 Hz	UINT32	
8				**Voltage Dips** (indicative statistics)				
	1	N11 10%/0.2s	0xC700	Number of polyphase dips with depth >10% and duration <=0.2 s			UINT32	
	2	N12 35%/0,2s	0xC701	Number of polyphase dips with depth >35% and duration <=0.2 s			UINT32	
	3	N13 99%/0,2s	0xC702	Number of polyphase dips with depth >99% and duration <=0.2 s			UINT32	
	4	N21 10%/0.5s	0xC703	Number of polyphase dips with depth >10% and duration <=0.5 s			UINT32	
	5	N22 35%/0,5s	0xC704	Number of polyphase dips with depth >35% and duration <=0.5 s			UINT32	
	6	N23 99%/0,5s	0xC705	Number of polyphase dips with depth >99% and duration <=0.5 s			UINT32	
	7	N31 10%/0.7s	0xC706	Number of polyphase dips with depth >10% and duration <=0.7 s			UINT32	
	8	N32 35%/0,7s	0xC707	Number of polyphase dips with depth >35% and duration <=0.7 s			UINT32	
	9	N33 99%/0,7s	0xC708	Number of polyphase dips with depth >99% and duration <=0.7 s			UINT32	
	10	N41 10%/1.5s	0xC709	Number of polyphase dips with depth >10% and duration <=1.5 s			UINT32	
	11	N42 35%/1,5s	0xC70A	Number of polyphase dips with depth >35% and duration <=1.5 s			UINT32	
	12	N43 99%/1,5s	0xC70B	Number of polyphase dips with depth >99% and duration <=1.5 s			UINT32	
	13	N51 10%/3.0s	0xC70C	Number of polyphase dips with depth >10% and duration <=3.0 s			UINT32	
	14	N52 35%/3,0s	0xC70D	Number of polyphase dips with depth >35% and duration <=3.0 s			UINT32	
	15	N53 99%/3,0s	0xC70E	Number of polyphase dips with depth >99% and duration <=3.0 s			UINT32	
	16	N61 10%/30s	0xC70F	Number of polyphase dips with depth >10% and duration <=30 s			UINT32	
	17	N62 35%/30s	0xC710	Number of polyphase dips with depth >35% and duration <=30 s			UINT32	
	18	N63 99%/30s	0xC711	Number of polyphase dips with depth >99% and duration <=30 s			UINT32	
	19	N71 10%/>30s	0xC712	Number of polyphase dips with depth >10% and duration >30 s			UINT32	
	20	N72 35%/>30s	0xC713	Number of polyphase dips with depth >35% and duration >30 s			UINT32	
	21	N73 99%/>30s	0xC714	Number of polyphase dips with depth >99% and duration >30 s			UINT32	
	22	dt max 10%	0xC715	Maximum duration of polyphase dips with depth >10%		ms	UINT32	
	23	dt max 35%	0xC716	Maximum duration of polyphase dips with depth >35%		ms	UINT32	
	24	dt max 99%	0xC717	Maximum duration of polyphase dips with depth >99%		ms	UINT32	
	25	dU 0.2s	0xC718	Maximum depth of polyphase dips with duration <=0.2 s, %Un		0.01%	UINT32	
	26	dU 0.5s	0xC719	Maximum depth of polyphase dips with duration <=0.5 s, %Un		0.01%	UINT32	
	27	dU 0.7s	0xC71A	Maximum depth of polyphase dips with duration <=0.7 s, %Un		0.01%	UINT32	
	28	dU 1.5s	0xC71B	Maximum depth of polyphase dips with duration <=1.5 s, %Un		0.01%	UINT32	
	29	dU 3.0s	0xC71C	Maximum depth of polyphase dips with duration <=3.0 s, %Un		0.01%	UINT32	
	30	dU 30s	0xC71D	Maximum depth of polyphase dips with duration <=30 s, %Un		0.01%	UINT32	
	31	dU >30s	0xC71E	Maximum depth of polyphase dips with duration >30 s, %Un		0.01%	UINT32	
	32	dt tot	0xC71F	Total duration of polyphase dips		ms	UINT32	
	33	V1 N1	0xC720	Number of dips on phase A/AB			UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	34	V1 dU max	0xC721	Maximum depth of dips on phase A/AB, %Un		0.01%	UINT32	
	35	V2 N1	0xC722	Number of dips on phase B/BC			UINT32	
	36	V2 dU max	0xC723	Maximum depth of dips on phase B/BC, %Un		0.01%	UINT32	
	37	V3 N1	0xC724	Number of dips on phase C/CA			UINT32	
	38	V3 dU max	0xC725	Maximum depth of dips on phase C/CA, %Un		0.01%	UINT32	
9				**Impulsive Voltage** (indicative statistics)				
	1	N1 20%	0xC780	Number of polyphase impulses with amplitude >20%			UINT32	
	2	N2 100%	0xC781	Number of polyphase impulses with amplitude >100%			UINT32	
	3	N3 200%	0xC782	Number of polyphase impulses with amplitude >200%			UINT32	
	4	N4 300%	0xC783	Number of polyphase impulses with amplitude >300%			UINT32	
	5	N5 400%	0xC784	Number of polyphase impulses with amplitude >400%			UINT32	
	6	V1 N1 20%	0xC785	Number of impulses on phase A/AB with amplitude >20%			UINT32	
	7	V1 N2 100%	0xC786	Number of impulses on phase A/AB with amplitude >100%			UINT32	
	8	V1 N3 200%	0xC787	Number of impulses on phase A/AB with amplitude >200%			UINT32	
	9	V1 N4 300%	0xC788	Number of impulses on phase A/AB with amplitude >300%			UINT32	
	10	V1 N5 400%	0xC789	Number of impulses on phase A/AB with amplitude >400%			UINT32	
	11	V2 N1 20%	0xC78A	Number of impulses on phase B/BC with amplitude >20%			UINT32	
	12	V2 N2 100%	0xC78B	Number of impulses on phase B/BC with amplitude >100%			UINT32	
	13	V2 N3 200%	0xC78C	Number of impulses on phase B/BC with amplitude >200%			UINT32	
	14	V2 N4 300%	0xC78D	Number of impulses on phase B/BC with amplitude >300%			UINT32	
	15	V2 N5 400%	0xC78E	Number of impulses on phase B/BC with amplitude >400%			UINT32	
	16	V3 N1 20%	0xC78F	Number of impulses on phase C/CA with amplitude >20%			UINT32	
	17	V3 N2 100%	0xC790	Number of impulses on phase C/CA with amplitude >100%			UINT32	
	18	V3 N3 200%	0xC791	Number of impulses on phase C/CA with amplitude >200%			UINT32	
	19	V3 N4 300%	0xC792	Number of impulses on phase C/CA with amplitude >300%			UINT32	
	20	V3 N5 400%	0xC793	Number of impulses on phase C/CA with amplitude >400%			UINT32	
	21	V1 max	0xC794	Maximum impulsive voltage on phase A/AB		U1	UINT32	
	22	V1 dt	0xC795	Duration of the maximum voltage impulse on phase A/AB		us	UINT32	
	23	V2 max	0xC796	Maximum impulsive voltage on phase B/BC		U1	UINT32	
	24	V2 dt	0xC797	Duration of the maximum voltage impulse on phase B/BC		us	UINT32	
	25	V3 max	0xC798	Maximum impulsive voltage on phase C/CA		U1	UINT32	
	26	V4 dt	0xC799	Duration of the maximum voltage impulse on phase C/CA		us	UINT32	
10				**Temporary Overvoltages** (indicative statistics)				
	1	N11 110%/1s	0xC800	Number of polyphase overvoltages with Ua >110% and duration <=1 s			UINT32	
	2	N12 120%/1s	0xC801	Number of polyphase overvoltages with Ua >120% and duration <=1 s			UINT32	
	3	N13 140%/1s	0xC802	Number of polyphase overvoltages with Ua >140% and duration <=1 s			UINT32	
	4	N14 160%/1s	0xC803	Number of polyphase overvoltages with Ua >160% and duration <=1 s			UINT32	
	5	N15 200%/1s	0xC804	Number of polyphase overvoltages with Ua >200% and duration <=1 s			UINT32	
	6	N21 110%/20s	0xC805	Number of polyphase overvoltages with Ua >110% and duration <=20s			UINT32	
	7	N22 120%/20s	0xC806	Number of polyphase overvoltages with Ua >120% and duration <=20 s			UINT32	
	8	N23 140%/20s	0xC807	Number of polyphase overvoltages with Ua >140% and duration <=20 s			UINT32	
	9	N24 160%/20s	0xC808	Number of polyphase overvoltages with Ua >160% and duration <=20 s			UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	10	N25 200%/20s	0xC809	Number of polyphase overvoltages with Ua >200% and duration <=20 s			UINT32	
	11	N31 110%/60s	0xC80A	Number of polyphase overvoltages with Ua >110% and duration <=60 s			UINT32	
	12	N31 120%/60s	0xC80B	Number of polyphase overvoltages with Ua >120% and duration <=60 s			UINT32	
	13	N33 140%/60s	0xC80C	Number of polyphase overvoltages with Ua >140% and duration <=60 s			UINT32	
	14	N34 160%/60s	0xC80D	Number of polyphase overvoltages with Ua >160% and duration <=60 s			UINT32	
	15	N35 200%/60s	0xC80E	Number of polyphase overvoltages with Ua >200% and duration <=60 s			UINT32	
	16	N41 110%/>60s	0xC80F	Number of polyphase overvoltages with Ua >110% and duration >60 s			UINT32	
	17	N42 120%/>60s	0xC810	Number of polyphase overvoltages with Ua >120% and duration >60 s			UINT32	
	18	N43 140%/>60s	0xC811	Number of polyphase overvoltages with Ua >140% and duration >60 s			UINT32	
	19	N44 160%/>60s	0xC812	Number of polyphase overvoltages with Ua >160% and duration >60 s			UINT32	
	20	N45 200%/>60s	0xC813	Number of polyphase overvoltages with Ua >200% and duration >60 s			UINT32	
	21	dt max 110%	0xC814	Maximum duration of polyphase overvoltages with Ua >110%		ms	UINT32	
	22	dt max 120%	0xC815	Maximum duration of polyphase overvoltages with Ua >120%		ms	UINT32	
	23	dt max 140%	0xC816	Maximum duration of polyphase overvoltages with Ua >140%		ms	UINT32	
	24	dt max 160%	0xC817	Maximum duration of polyphase overvoltages with Ua >160%		ms	UINT32	
	25	dt max 200%	0xC818	Maximum duration of polyphase overvoltages with Ua >200%		ms	UINT32	
	26	Vpu max 1s	0xC819	Maximum polyphase overvoltage factor with duration <=1 s		0.01	UINT32	
	27	Vpu max 20s	0xC81A	Maximum polyphase overvoltage factor with duration <=20 s		0.01	UINT32	
	28	Vpu max 60s	0xC81B	Maximum polyphase overvoltage factor with duration <=60 s		0.01	UINT32	
	29	Vpu max >60s	0xC81C	Maximum polyphase overvoltage factor with duration >60 s		0.01	UINT32	
	30	dt tot	0xC81D	Total duration of polyphase overvoltages		ms	UINT32	
	31	V1 N1	0xC81E	Number of overvoltages on phase A/AB			UINT32	
	32	V1pu max	0xC81F	Maximum overvoltage factor on phase A/AB		0.01	UINT32	
	33	V2 N1	0xC820	Number of overvoltages on phase B/BC			UINT32	
	34	V2pu max	0xC821	Maximum overvoltage factor on phase B/BC		0.01	UINT32	
	35	V3 N1	0xC822	Number of overvoltages on phase C/CA			UINT32	
	36	V3pu max	0xC823	Maximum overvoltage factor on phase C/CA		0.01	UINT32	

[1] When the 4LN3, 3LN3 or 3BLN wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

3.13 GOST 13109 Harmonic Statistics Data Log

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
0				**V1 Harmonic Compliance**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 3-sec intervals			UINT32	
	2	N	0xCC01	Number of valid 3-sec intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase A/AB			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase A/AB			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase A/AB			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase A/AB			UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase A/AB			UINT32	
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase A/AB			UINT32	
1				**V2 Harmonic Compliance**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 3-sec intervals			UINT32	
	2	N	0xCC01	Number of valid 3-sec intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase B/BC			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase B/BC			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase B/BC			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase B/BC			UINT32	
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase B/BC			UINT32	
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase B/BC			UINT32	
2				**V3 Harmonic Compliance**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 3-sec intervals			UINT32	
	2	N	0xCC01	Number of valid 3-sec intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase C/CA			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase C/CA			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase C/CA			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase C/CA			UINT32	
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase C/CA			UINT32	
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase C/CA			UINT32	
3				**V1 Harmonic Distortion**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability daily value of H02 on phase A/AB, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability daily value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability daily value of H40 on phase A/AB, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum daily value of H02 on phase A/AB, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum daily value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum daily value of H40 on phase A/AB, %		0.01%	UINT32	
4				**V2 Harmonic Distortion**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability daily value of H02 on phase B/BC, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability daily value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability daily value of H40 on phase B/BC, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum daily value of H02 on phase B/BC, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum daily value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	78	%H40 max2	0xCCCD	Maximum daily value of H40 on phase B/BC, %		0.01%	UINT32	
5				**V3 Harmonic Distortion**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability daily value of H02 on phase C/CA, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability daily value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability daily value of H40 on phase C/CA, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum daily value of H02 on phase C/CA, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum daily value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum daily value of H40 on phase C/CA, %		0.01%	UINT32	

[1] When the 4LN3, 3LN3 or 3BLN wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

3.14 GOST 32144 Compliance Statistics Data Log

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
0/0				**Frequency Variation**				
	1	Nnv	0xCE00	Number of non-valid 10-sec intervals			UINT32	
	2	N	0xCE01	Number of valid 10-sec intervals			UINT32	
	3	N1	0xCE02	Number of values exceeded 95% permissible limit			UINT32	
	4	N2	0xCE03	Number of values exceeded maximum permissible limit			UINT32	
	5	df min1	0xCE04	Minimum 95% probability weekly frequency variation, +/-Hz		0.01 Hz	INT32	
	6	df max1	0xCE05	Maximum 95% probability weekly frequency variation, +/-Hz		0.01 Hz	INT32	
	7	df min2	0xCE06	Minimum weekly frequency variation, +/-Hz		0.01 Hz	INT32	
	8	df max2	0xCE07	Maximum weekly frequency variation, +/-Hz		0.01 Hz	INT32	
	9	df lim1 high	0xCE08	High 95% permissible limit of frequency variation, Hz		0.01 Hz	INT32	
	10	df lim2 high	0xCE09	High maximum permissible limit of frequency variation, Hz		0.01 Hz	INT32	
	11	df lim1 low	0xCE0A	Low 95% permissible limit of frequency variation, Hz		0.01 Hz	INT32	
	12	df lim2 low	0xCE0B	Low maximum permissible limit of frequency variation, Hz		0.01 Hz	INT32	
1/1				**Voltage Variation, peak load**				
	1	Nnv	0xCE80	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCE81	Number of valid 10-min intervals			UINT32	
	3	V1 N1	0xCE82	Number of values exceeded maximum permissible limit on phase A/AB			UINT32	
	4	V1 dU min	0xCE83	Minimum weekly variation on phase A/AB, +/-%Un		0.01%	INT32	
	5	V1 dU max	0xCE84	Maximum weekly variation on phase A/AB, +/-%Un		0.01%	INT32	
	6	V2 N1	0xCE85	Number of values exceeded maximum permissible limit on phase B/BC			UINT32	
	7	V2 dU min	0xCE86	Minimum weekly variation on phase B/BC, +/-%Un		0.01%	INT32	
	8	V2 dU max	0xCE87	Maximum weekly variation on phase B/BC, +/-%Un		0.01%	INT32	
	9	V3 N1	0xCE88	Number of values exceeded maximum permissible limit on phase C/CA			UINT32	
	10	V3 dU min	0xCE89	Minimum weekly variation on phase C/CA, +/-%Un		0.01%	INT32	
	11	V3 dU max	0xCE8A	Maximum weekly variation on phase C/CA, +/-%Un		0.01%	INT32	
	12	dU lim high	0xCE8B	High maximum permissible limit of voltage variation, %Un		0.01%	INT32	
	13	dU lim low	0xCE8C	Low maximum permissible limit of voltage variation, %Un		0.01%	INT32	
2/2				**Rapid Voltage Changes**				
	1	N1	0xCF00	Number of polyphase incidents			UINT32	
	2	V1 N1	0xCF01	Number of incidents on phase A/AB			UINT32	
	3	V1 dU	0xCF02	Maximum voltage change on phase A/AB, %Un		0.01%	UINT32	
	4	V2 N1	0xCF03	Number of incidents on phase B/BC			UINT32	
	5	V2 dU	0xCF04	Maximum voltage change on phase B/BC, %Un		0.01%	UINT32	
	6	V3 N1	0xCF05	Number of incidents on phase C/CA			UINT32	
	7	V3 dU	0xCF06	Maximum voltage change on phase C/CA, %Un		0.01%	UINT32	
	8	dU lim	0xCF07	Maximum permissible limit of voltage changes, Un%		0.01%	UINT32	
3/3				**Flicker**				
	1	Pst Nnv	0xCF80	Number of non-valid 10-min intervals			UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	2	Pst N	0xCF81	Number of valid 10-min intervals			UINT32	
	3	V1 Pst N1	0xCF82	Number of Pst values exceeded maximum permissible limit on phase A/AB			UINT32	
	4	V1 Pst max	0xCF83	Maximum Pst on phase A/AB		0.01	UINT32	
	5	V2 Pst N1	0xCF84	Number of Pst values exceeded maximum permissible limit on phase B/BC			UINT32	
	6	V2 Pst max	0xCF85	Maximum Pst on phase B/BC		0.01	UINT32	
	7	V3 Pst N1	0xCF86	Number of Pst values exceeded maximum permissible limit on phase C/CA			UINT32	
	8	V3 Pst max	0xCF87	Maximum Pst on phase C/CA		0.01	UINT32	
	9	Pst lim	0xCF88	Maximum permissible limit for Pst		0.01	UINT32	
	10	Plt Nnv	0xCF89	Number of non-valid 2-hour intervals			UINT32	
	11	Plt N	0xCF8A	Number of valid 2-hour intervals			UINT32	
	12	V1 Plt N1	0xCF8B	Number of Plt values exceeded maximum permissible limit on phase A/AB			UINT32	
	13	V1 Plt max	0xCF8C	Maximum Plt on phase A/AB		0.01	UINT32	
	14	V2 Plt N1	0xCF8D	Number of Plt values exceeded maximum permissible limit on phase B/BC			UINT32	
	15	V2 Plt max	0xCF8E	Maximum Plt on phase B/BC		0.01	UINT32	
	16	V3 Plt N1	0xCF8F	Number of Plt values exceeded maximum permissible limit on phase C/CA			UINT32	
	17	V3 Plt max	0xCF90	Maximum Plt on phase C/CA		0.01	UINT32	
	18	Plt lim	0xCF91	Maximum permissible limit for Plt		0.01	UINT32	
4/4				**Voltage THD**				
	1	Nnv	0xD000	Number of non-valid 10-min intervals			UINT32	
	2	N	0xD001	Number of valid 10-min intervals			UINT32	
	3	V1 N1	0xD002	Number of THD values exceeded 95% permissible limit on phase A/AB			UINT32	
	4	V1 N2	0xD003	Number of THD values exceeded maximum permissible limit on phase A/AB			UINT32	
	5	V1 THD max1	0xD004	Maximum 95% probability weekly THD on phase A/AB, %		0.1%	UINT32	
	6	V1 THD max2	0xD005	Maximum weekly THD on phase A/AB, %		0.1%	UINT32	
	7	V2 N1	0xD006	Number of THD values exceeded 95% permissible limit on phase B/BC			UINT32	
	8	V2 N2	0xD007	Number of THD values exceeded maximum permissible limit on phase B/BC			UINT32	
	9	V2 THD max1	0xD008	Maximum 95% probability weekly THD on phase B/BC, %		0.1%	UINT32	
	10	V2 THD max2	0xD009	Maximum weekly THD on phase B/BC, %		0.1%	UINT32	
	11	V3 N1	0xD00A	Number of THD values exceeded 95% permissible limit on phase C/CA			UINT32	
	12	V3 N2	0xD00B	Number of THD values exceeded maximum permissible limit on phase C/CA			UINT32	
	13	V3 THD max1	0xD00C	Maximum 95% probability weekly THD on phase C/CA, %		0.1%	UINT32	
	14	V3 THD max2	0xD00D	Maximum weekly THD on phase C/CA, %		0.1%	UINT32	
	15	THD lim1	0xD00E	95% permissible limit of THD, %		0.1%	UINT32	
	16	THD lim2	0xD00F	Maximum permissible limit of THD, %		0.1%	UINT32	
5/5				**Voltage Unbalance**				
	1	Nnv	0xD100	Number of non-valid 10-min intervals			UINT32	
	2	N	0xD101	Number of valid 10-min intervals			UINT32	
	3	K2u N1	0xD102	Number of negative-sequence values exceeded 95% permissible limit			UINT32	
	4	K2u N2	0xD103	Number of negative-sequence values exceeded maximum permissible limit			UINT32	
	5	K2u max1	0xD104	Maximum 95% probability weekly negative-sequence unbalance, %		0.1%	UINT32	
	6	K2u max2	0xD105	Maximum weekly negative-sequence unbalance, %		0.1%	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	7	K2u lim1	0xD106	95% permissible limit of negative-sequence unbalance, %		0.1%	UINT32	
	8	K2u lim2	0xD107	Maximum permissible limit of negative-sequence unbalance, %		0.1%	UINT32	
	9	K0u N1	0xD108	Number of zero-sequence values exceeded 95% permissible limit			UINT32	
	10	K0u N2	0xD109	Number of zero-sequence values exceeded maximum permissible limit			UINT32	
	11	K0u max1	0xD10A	Maximum 95% probability weekly zero-sequence unbalance, %		0.1%	UINT32	
	12	K0u max2	0xD10B	Maximum weekly zero-sequence unbalance, %		0.1%	UINT32	
	13	K0u lim1	0xD10C	95% permissible limit of zero-sequence unbalance, %		0.1%	UINT32	
	14	K0u lim2	0xD10D	Maximum permissible limit of zero-sequence unbalance, %		0.1%	UINT32	
6/6				**Signaling Voltage**				
	1	Nnv	0xD080	Number of non-valid 3-sec intervals			UINT32	
	2	N	0xD081	Number of valid 3-sec intervals			UINT32	
	3	N1	0xD082	Number of polyphase incidents, N1			UINT32	
	4	V1 Sig1	0xD083	Maximum 1st signaling voltage magnitude on phase V1, %Un		0.01%	UINT32	
	5	V1 Sig2	0xD084	Maximum 2nd signaling voltage magnitude on phase V1, %Un		0.01%	UINT32	
	6	V1 Sig3	0xD085	Maximum 3rd signaling voltage magnitude on phase V1, %Un		0.01%	UINT32	
	7	V1 Sig4	0xD086	Maximum 4th signaling voltage magnitude on phase V1, %Un		0.01%	UINT32	
	8	V2 Sig1	0xD087	Maximum 1st signaling voltage magnitude on phase V2, %Un		0.01%	UINT32	
	9	V2 Sig2	0xD088	Maximum 2nd signaling voltage magnitude on phase V2, %Un		0.01%	UINT32	
	10	V2 Sig3	0xD089	Maximum 3rd signaling voltage magnitude on phase V2, %Un		0.01%	UINT32	
	11	V2 Sig4	0xD08A	Maximum 4th signaling voltage magnitude on phase V2, %Un		0.01%	UINT32	
	12	V3 Sig1	0xD08B	Maximum 1st signaling voltage magnitude on phase V3, %Un		0.01%	UINT32	
	13	V3 Sig2	0xD08C	Maximum 2nd signaling voltage magnitude on phase V3, %Un		0.01%	UINT32	
	14	V3 Sig3	0xD08D	Maximum 3rd signaling voltage magnitude on phase V3, %Un		0.01%	UINT32	
	15	V3 Sig4	0xD08E	Maximum 4th signaling voltage magnitude on phase V3, %Un		0.01%	UINT32	
	16	Sig1 frq	0xD08F	1st signaling frequency		0.01Hz	UINT32	
	17	Sig2 frq	0xD090	2nd signaling frequency		0.01Hz	UINT32	
	18	Sig3 frq	0xD091	3rd signaling frequency		0.01Hz	UINT32	
	19	Sig4 frq	0xD092	4th signaling frequency		0.01Hz	UINT32	
	20	V Sig1 lim	0xD093	Maximum permissible 1st signaling voltage magnitude, %Un		0.01%	UINT32	
	21	V Sig2 lim	0xD094	Maximum permissible 2nd signaling voltage magnitude, %Un		0.01%	UINT32	
	22	V Sig3 lim	0xD095	Maximum permissible 3rd signaling voltage magnitude, %Un		0.01%	UINT32	
	23	V Sig4 lim	0xD096	Maximum permissible 4th signaling voltage magnitude, %Un		0.01%	UINT32	
7/7				**Voltage Interruptions** (indicative statistics)				
	1	N1 0,5s	0xD180	Number of polyphase interruptions <=500ms			UINT32	
	2	N2 1s	0xD181	Number of polyphase interruptions <=1s			UINT32	
	3	N3 5s	0xD182	Number of polyphase interruptions <=5s			UINT32	
	4	N4 20s	0xD183	Number of polyphase interruptions <=20s			UINT32	
	5	N5 60s	0xD184	Number of polyphase interruptions <=60s			UINT32	
	6	N6 180s	0xD185	Number of polyphase interruptions <=180s			UINT32	
	7	N7 >180s	0xD186	Number of polyphase interruptions >180s			UINT32	
	8	V min	0xD187	Minimum residual voltage, %Un		0.01%	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	9	dt max	0xD188	Maximum duration of a polyphase interruption		ms	UINT32	
	10	dt tot	0xD189	Total duration of polyphase interruptions		ms	UINT32	
8/8				**Voltage Dips** (indicative statistics)				
	1	N11 90%/0,2s	0xD200	Number of polyphase dips <90% and duration <=0.2 s			UINT32	
	2	N12 90%/0,5s	0xD201	Number of polyphase dips <90% and duration <=0.5 s			UINT32	
	3	N13 90%/1s	0xD202	Number of polyphase dips <90% and duration <=1 s			UINT32	
	4	N14 90%/5s	0xD203	Number of polyphase dips <90% and duration <=5 s			UINT32	
	5	N15 90%/20s	0xD204	Number of polyphase dips <90% and duration <=20 s			UINT32	
	6	N16 90%/60s	0xD205	Number of polyphase dips <90% and duration <=60 s			UINT32	
	7	N21 85%/0,2s	0xD206	Number of polyphase dips <85% and duration <=0.2 s			UINT32	
	8	N22 85%/0,5s	0xD207	Number of polyphase dips <85% and duration <=0.5 s			UINT32	
	9	N23 85%/1s	0xD208	Number of polyphase dips <85% and duration <=1 s			UINT32	
	10	N24 85%/5s	0xD209	Number of polyphase dips <85% and duration <=5 s			UINT32	
	11	N25 85%/20s	0xD20A	Number of polyphase dips <85% and duration <=20 s			UINT32	
	12	N26 85%/60s	0xD20B	Number of polyphase dips <85% and duration <=60 s			UINT32	
	13	N31 70%/0,2s	0xD20C	Number of polyphase dips <70% and duration <=0.2 s			UINT32	
	14	N32 70%/0,5s	0xD20D	Number of polyphase dips <70% and duration <=0.5 s			UINT32	
	15	N33 70%/1s	0xD20E	Number of polyphase dips <70% and duration <=1 s			UINT32	
	16	N34 70%/5s	0xD20F	Number of polyphase dips <70% and duration <=5 s			UINT32	
	17	N35 70%/20s	0xD210	Number of polyphase dips <70% and duration <=20 s			UINT32	
	18	N36 70%/60s	0xD211	Number of polyphase dips <70% and duration <=60 s			UINT32	
	19	N41 40%/0,2s	0xD212	Number of polyphase dips <40% and duration <=0.2 s			UINT32	
	20	N42 40%/0,5s	0xD213	Number of polyphase dips <40% and duration <=0.5 s			UINT32	
	21	N43 40%/1s	0xD214	Number of polyphase dips <40% and duration <=1 s			UINT32	
	22	N44 40%/5s	0xD215	Number of polyphase dips <40% and duration <=5 s			UINT32	
	23	N45 40%/20s	0xD216	Number of polyphase dips <40% and duration <=20 s			UINT32	
	24	N46 40%/60s	0xD217	Number of polyphase dips <40% and duration <=60 s			UINT32	
	25	N51 10%/0,2s	0xD218	Number of polyphase dips <10% and duration <=0.2 s			UINT32	
	26	N52 10%/0,5s	0xD219	Number of polyphase dips <10% and duration <=0.5 s			UINT32	
	27	N53 10%/1s	0xD21A	Number of polyphase dips <10% and duration <=1 s			UINT32	
	28	N54 10%/5s	0xD21B	Number of polyphase dips <10% and duration <=5 s			UINT32	
	29	N55 10%/20s	0xD21C	Number of polyphase dips <10% and duration <=20 s			UINT32	
	30	N56 10%/60s	0xD21D	Number of polyphase dips <10% and duration <=60 s			UINT32	
	31	dt max 90%	0xD21E	Maximum duration of a polyphase dip < 90%		ms	UINT32	
	32	dt max 85%	0xD21F	Maximum duration of a polyphase dip < 85%		ms	UINT32	
	33	dt max 70%	0xD220	Maximum duration of a polyphase dip < 70%		ms	UINT32	
	34	dt max 40%	0xD221	Maximum duration of a polyphase dip < 40%		ms	UINT32	
	35	dt max 10%	0xD222	Maximum duration of a polyphase dip < 10%		ms	UINT32	
	36	V min 0.2s	0xD223	Minimum residual voltage of polyphase dips with duration <=0.2 s, %Un		0.01%	UINT32	
	37	V min 0.5s	0xD224	Minimum residual voltage of polyphase dips with duration <=0.5 s, %Un		0.01%	UINT32	
	38	V min 1s	0xD225	Minimum residual voltage of polyphase dips with duration <=1 s, %Un		0.01%	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	39	V min 5s	0xD226	Minimum residual voltage of polyphase dips with duration <=5 s, %Un		0.01%	UINT32	
	40	V min 20s	0xD227	Minimum residual voltage of polyphase dips with duration <=20 s, %Un		0.01%	UINT32	
	41	V min 60s	0xD228	Minimum residual voltage of polyphase dips with duration <=60 s, %Un		0.01%	UINT32	
	42	dt tot	0xD229	Total duration of polyphase dips		ms	UINT32	
9/9				**Voltage Swells** (indicative statistics)				
	1	N11 110%/0,2s	0xD280	Number of polyphase swells >110% and duration <=0.2 s			UINT32	
	2	N12 110%/0,5s	0xD281	Number of polyphase swells >110% and duration <=0.5 s			UINT32	
	3	N13 110%/1s	0xD282	Number of polyphase swells >110% and duration <=1 s			UINT32	
	4	N14 110%/5s	0xD283	Number of polyphase swells >110% and duration <=5 s			UINT32	
	5	N15 110%/20s	0xD284	Number of polyphase swells >110% and duration <=20 s			UINT32	
	6	N16 110%/60s	0xD285	Number of polyphase swells >110% and duration <=60 s			UINT32	
	7	N21 120%/0,2s	0xD286	Number of polyphase swells >120% and duration <=0.2 s			UINT32	
	8	N22 120%/0,5s	0xD287	Number of polyphase swells >120% and duration <=0.5 s			UINT32	
	9	N23 120%/1s	0xD288	Number of polyphase swells >120% and duration <=1 s			UINT32	
	10	N24 120%/5s	0xD289	Number of polyphase swells >120% and duration <=5 s			UINT32	
	11	N25 120%/20s	0xD28A	Number of polyphase swells >120% and duration <=20 s			UINT32	
	12	N26 120%/60s	0xD28B	Number of polyphase swells >120% and duration <=60 s			UINT32	
	13	N31 140%/0,2s	0xD28C	Number of polyphase swells >140% and duration <=0.2 s			UINT32	
	14	N32 140%/0,5s	0xD28D	Number of polyphase swells >140% and duration <=0.5 s			UINT32	
	15	N33 140%/1s	0xD28E	Number of polyphase swells >140% and duration <=1 s			UINT32	
	16	N34 140%/5s	0xD28F	Number of polyphase swells >140% and duration <=5 s			UINT32	
	17	N35 140%/20s	0xD290	Number of polyphase swells >140% and duration <=20 s			UINT32	
	18	N36 140%/60s	0xD291	Number of polyphase swells >140% and duration <=60 s			UINT32	
	19	N41 160%/0,2s	0xD292	Number of polyphase swells >160% and duration <=0.2 s			UINT32	
	20	N42 160%/0,5s	0xD293	Number of polyphase swells >160% and duration <=0.5 s			UINT32	
	21	N43 160%/1s	0xD294	Number of polyphase swells >160% and duration <=1 s			UINT32	
	22	N44 160%/5s	0xD295	Number of polyphase swells >160% and duration <=5 s			UINT32	
	23	N45 160%/20s	0xD296	Number of polyphase swells >160% and duration <=20 s			UINT32	
	24	N46 160%/60s	0xD297	Number of polyphase swells >160% and duration <=60 s			UINT32	
	25	dt max 110%	0xD298	Maximum duration of polyphase swells with >110%		ms	UINT32	
	26	dt max 120%	0xD299	Maximum duration of polyphase swells with >120%		ms	UINT32	
	27	dt max 140%	0xD29A	Maximum duration of polyphase swells with >140%		ms	UINT32	
	28	dt max 160%	0xD29B	Maximum duration of polyphase swells with >160%		ms	UINT32	
	29	V max 0,2s	0xD29C	Maximum polyphase swell voltage with duration <=0.2 s, %Un		0.01%	UINT32	
	30	V max 0,5s	0xD29D	Maximum polyphase swell voltage with duration <=0.5 s, %Un		0.01%	UINT32	
	31	V max 1s	0xD29E	Maximum polyphase swell voltage with duration <=1 s, %Un		0.01%	UINT32	
	32	V max 5s	0xD29F	Maximum polyphase swell voltage with duration <=5 s, %Un		0.01%	UINT32	
	33	V max 20s	0xD2A0	Maximum polyphase swell voltage with duration <=20 s, %Un		0.01%	UINT32	
	34	V max 60s	0xD2A1	Maximum polyphase swell voltage with duration <=60 s, %Un		0.01%	UINT32	
	35	dt tot	0xD2A2	Total duration of polyphase swells		ms	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
10/10				**Impulsive Voltages** (indicative statistics)				
	1	N11 20%/0,1ms	0xD300	Number of polyphase impulses >20% and duration <=0.1 ms			UINT32	
	2	N12 20%/0,2ms	0xD301	Number of polyphase impulses >20% and duration <=0.2 ms			UINT32	
	3	N13 20%/0,5ms	0xD302	Number of polyphase impulses >20% and duration <=0.5 ms			UINT32	
	4	N14 20%/1ms	0xD303	Number of polyphase impulses >20% and duration <=1 ms			UINT32	
	5	N15 20%/5ms	0xD304	Number of polyphase impulses >20% and duration <=5 ms			UINT32	
	6	N16 20%/10ms	0xD305	Number of polyphase impulses >20% and duration <=10 ms			UINT32	
	7	N21 100%/0,1ms	0xD306	Number of polyphase impulses >100% and duration <=0.1 ms			UINT32	
	8	N22 100%/0,2ms	0xD307	Number of polyphase impulses >100% and duration <=0.2 ms			UINT32	
	9	N23 100%/0,5ms	0xD308	Number of polyphase impulses >100% and duration <=0.5 ms			UINT32	
	10	N24 100%/1ms	0xD309	Number of polyphase impulses >100% and duration <=1 ms			UINT32	
	11	N25 100%/5ms	0xD30A	Number of polyphase impulses >100% and duration <=5 ms			UINT32	
	12	N26 100%/10ms	0xD30B	Number of polyphase impulses >100% and duration <=10 ms			UINT32	
	13	N31 200%/0,1ms	0xD30C	Number of polyphase impulses >200% and duration <=0.1 ms			UINT32	
	14	N32 200%/0,2ms	0xD30D	Number of polyphase impulses >200% and duration <=0.2 ms			UINT32	
	15	N33 200%/0,5ms	0xD30E	Number of polyphase impulses >200% and duration <=0.5 ms			UINT32	
	16	N34 200%/1ms	0xD30F	Number of polyphase impulses >200% and duration <=1 ms			UINT32	
	17	N35 200%/5ms	0xD310	Number of polyphase impulses >200% and duration <=5 ms			UINT32	
	18	N36 200%/10ms	0xD311	Number of polyphase impulses >200% and duration <=10 ms			UINT32	
	19	N41 300%/0,1ms	0xD312	Number of polyphase impulses >300% and duration <=0.1 ms			UINT32	
	20	N42 300%/0,2ms	0xD313	Number of polyphase impulses >300% and duration <=0.2 ms			UINT32	
	21	N43 300%/0.5ms	0xD314	Number of polyphase impulses >300% and duration <=0.5 ms			UINT32	
	22	N44 300%/1ms	0xD315	Number of polyphase impulses >300% and duration <=1 ms			UINT32	
	23	N45 300%/5ms	0xD316	Number of polyphase impulses >300% and duration <=5 ms			UINT32	
	24	N46 300%/10ms	0xD317	Number of polyphase impulses >300% and duration <=10 ms			UINT32	
	25	N51 400%/0,1ms	0xD318	Number of polyphase impulses >400% and duration <=0.1 ms			UINT32	
	26	N52 400%/0,2ms	0xD319	Number of polyphase impulses >400% and duration <=0.2 ms			UINT32	
	27	N53 400%/0.5ms	0xD31A	Number of polyphase impulses >400% and duration <=0.5 ms			UINT32	
	28	N54 400%/1ms	0xD31B	Number of polyphase impulses >400% and duration <=1 ms			UINT32	
	29	N55 400%/5ms	0xD31C	Number of polyphase impulses >400% and duration <=5 ms			UINT32	
	30	N56 400%/10ms	0xD31D	Number of polyphase impulses >400% and duration <=10 ms			UINT32	
	31	V max 0,1ms	0xD31E	Maximum impulsive voltage with duration <=0.1 ms, %Un peak		0.01%	UINT32	
	32	V max 0,2ms	0xD31F	Maximum impulsive voltage with duration <=0.2 ms, %Un peak		0.01%	UINT32	
	33	V max 0,5ms	0xD320	Maximum impulsive voltage with duration <=0.5 ms, %Un peak		0.01%	UINT32	
	34	V max 1ms	0xD321	Maximum impulsive voltage with duration <=1 ms, %Un peak		0.01%	UINT32	
	35	V max 5ms	0xD322	Maximum impulsive voltage with duration <=5 ms, %Un peak		0.01%	UINT32	
	36	V max 10ms	0xD323	Maximum impulsive voltage with duration <=10 ms, %Un peak		0.01%	UINT32	
11/11				**Voltage Variation, light load**				
	1	Nnv	0xD380	Number of non-valid 10-min intervals			UINT32	
	2	N	0xD381	Number of valid 10-min intervals			UINT32	
	3	V1 N1	0xD382	Number of values exceeded maximum permissible limit on phase A/AB			UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	4	V1 dU min	0xD383	Minimum weekly variation on phase A/AB, +/-%Un		0.01%	INT32	
	5	V1 dU max	0xD384	Maximum weekly variation on phase A/AB, +/-%Un		0.01%	INT32	
	6	V2 N1	0xD385	Number of values exceeded maximum permissible limit on phase B/BC			UINT32	
	7	V2 dU min	0xD386	Minimum weekly variation on phase B/BC, +/-%Un		0.01%	INT32	
	8	V2 dU max	0xD387	Maximum weekly variation on phase B/BC, +/-%Un		0.01%	INT32	
	9	V3 N1	0xD388	Number of values exceeded maximum permissible limit on phase C/CA			UINT32	
	10	V3 dU min	0xD389	Minimum weekly variation on phase C/CA, +/-%Un		0.01%	INT32	
	11	V3 dU max	0xD38A	Maximum weekly variation on phase C/CA, +/-%Un		0.01%	INT32	
	12	dU lim high	0xD38B	High maximum permissible limit of voltage variation, %Un		0.01%	INT32	
	13	dU lim low	0xD38C	Low maximum permissible limit of voltage variation, %Un		0.01%	INT32	
12/12				**Flagged Data (daily)**				
	1	BegTm1	0xD400	1st weekday: beginning time	F1		UINT32	
	2	EndTm1	0xD401	1st weekday: end time	F1		UINT32	
	3	N1	0xD402	1st weekday: total number of 10-min measurement intervals			UINT32	
	4	Nnv1	0xD403	1st weekday: number of non-valid (flagged) 10-min intervals			UINT32	
	5	BegTm2	0xD404	2nd weekday: beginning time	F1		UINT32	
	6	EndTm2	0xD405	2nd weekday: end time	F1		UINT32	
	7	N2	0xD406	2nd weekday: total number of 10-min measurement intervals			UINT32	
	8	Nnv2	0xD407	2nd weekday: number of non-valid (flagged) 10-min intervals			UINT32	
	9	BegTm3	0xD408	3rd weekday: beginning time	F1		UINT32	
	10	EndTm3	0xD409	3rd weekday: end time	F1		UINT32	
	11	N3	0xD40A	3rd weekday: total number of 10-min measurement intervals			UINT32	
	12	Nnv3	0xD40B	3rd weekday: number of non-valid (flagged) 10-min intervals			UINT32	
	13	BegTm4	0xD40C	4th weekday: beginning time	F1		UINT32	
	14	EndTm4	0xD40D	4th weekday: end time	F1		UINT32	
	15	N4	0xD40E	4th weekday: total number of 10-min measurement intervals			UINT32	
	16	Nnv4	0xD40F	4th weekday: number of non-valid (flagged) 10-min intervals			UINT32	
	17	BegTm5	0xD410	5th weekday: beginning time	F1		UINT32	
	18	EndTm5	0xD411	5th weekday: end time	F1		UINT32	
	19	N5	0xD412	5th weekday: total number of 10-min measurement intervals			UINT32	
	20	Nnv5	0xD413	5th weekday: number of non-valid (flagged) 10-min intervals			UINT32	
	21	BegTm6	0xD414	6th weekday: beginning time	F1		UINT32	
	22	EndTm6	0xD415	6th weekday: end time	F1		UINT32	
	23	N6	0xD416	6th weekday: total number of 10-min measurement intervals			UINT32	
	24	Nnv6	0xD417	6th weekday: number of non-valid (flagged) 10-min intervals			UINT32	
	25	BegTm7	0xD418	7th weekday: beginning time	F1		UINT32	
	26	EndTm7	0xD419	7th weekday: end time	F1		UINT32	
	27	N7	0xD41A	7th weekday: total number of 10-min measurement intervals			UINT32	
	28	Nnv7	0xD41B	7th weekday: number of non-valid (flagged) 10-min intervals			UINT32	

[1] When the 4LN3, 3LN3 or 3BLN wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

3.15 GOST 32144 Harmonic Statistics Data Log

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
0/0				**V1 Harmonic Compliance**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCC01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase A/AB			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase A/AB			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase A/AB			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase A/AB			UINT32	
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase A/AB			UINT32	
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase A/AB			UINT32	
1/1				**V2 Harmonic Compliance**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCC01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase B/BC			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase B/BC			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase B/BC			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase B/BC			UINT32	
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase B/BC			UINT32	
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase B/BC			UINT32	
2/2				**V3 Harmonic Compliance**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCC01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase C/CA			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase C/CA			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase C/CA			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase C/CA			UINT32	
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase C/CA			UINT32	
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase C/CA			UINT32	
3/3				**V1 Harmonic Components**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability weekly value of H02 on phase A/AB, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability weekly value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability weekly value of H40 on phase A/AB, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum weekly value of H02 on phase A/AB, %		0.01%	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	41	%H03 max2	0xCCA8	Maximum weekly value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum weekly value of H40 on phase A/AB, %		0.01%	UINT32	
4/4				**V2 Harmonic Components**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability weekly value of H02 on phase B/BC, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability weekly value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability weekly value of H40 on phase B/BC, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum weekly value of H02 on phase B/BC, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum weekly value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum weekly value of H40 on phase B/BC, %		0.01%	UINT32	
5/5				**V3 Harmonic Components**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability weekly value of H02 on phase C/CA, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability weekly value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability weekly value of H40 on phase C/CA, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum weekly value of H02 on phase C/CA, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum weekly value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum weekly value of H40 on phase C/CA, %		0.01%	UINT32	
6/-				**V1 Interharmonic Compliance (reserved)**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCC01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase A/AB			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase A/AB			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase A/AB			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase A/AB			UINT32	
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase A/AB			UINT32	
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase A/AB			UINT32	
7/-				**V2 Interharmonic Compliance (reserved)**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCC01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase B/BC			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase B/BC			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase B/BC			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase B/BC			UINT32	
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase B/BC			UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase B/BC			UINT32	
8/-				**V3 Interharmonic Compliance (reserved)**			UINT32	
	1	Nnv	0xCC00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCC01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCC02	Number of H02 values exceeded normally permissible limit on phase C/CA			UINT32	
	4	H03 N1	0xCC03	Number of H03 values exceeded normally permissible limit on phase C/CA			UINT32	
		...					UINT32	
	41	H40 N1	0xCC28	Number of H40 values exceeded normally permissible limit on phase C/CA			UINT32	
	42	H02 N2	0xCC29	Number of H02 values exceeded maximum permissible limit on phase C/CA			UINT32	
	43	H03 N2	0xCC2A	Number of H03 values exceeded maximum permissible limit on phase C/CA			UINT32	
		...					UINT32	
	80	H40 N2	0xCC4F	Number of H40 values exceeded maximum permissible limit on phase C/CA			UINT32	
9/6				**V1 Interharmonic Components**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability weekly value of H02 on phase A/AB, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability weekly value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability weekly value of H40 on phase A/AB, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum weekly value of H02 on phase A/AB, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum weekly value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum weekly value of H40 on phase A/AB, %		0.01%	UINT32	
10/7				**V2 Interharmonic Components**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability weekly value of H02 on phase B/BC, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability weekly value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability weekly value of H40 on phase B/BC, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum weekly value of H02 on phase B/BC, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum weekly value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum weekly value of H40 on phase B/BC, %		0.01%	UINT32	
11/8				**V3 Interharmonic Components**			UINT32	
	1	%H02 max1	0xCC80	Maximum 95% probability weekly value of H02 on phase C/CA, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	Maximum 95% probability weekly value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	Maximum 95% probability weekly value of H40 on phase C/CA, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum weekly value of H02 on phase C/CA, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum weekly value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum weekly value of H40 on phase C/CA, %		0.01%	UINT32	

[1] When the 4LN3, 3LN3 or 3BLN wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

3.16 Billing/TOU Daily and Monthly Profile Data Logs

File Channel / Section [1]	Record Field No. [2]	Point Label	Point ID	Description	Range	Units [3]	Type	Notes
0/0				**Energy Register #1**				
	1	REG1	0x1780	Summary (total) energy reading	0-999,999,999	U5	UINT32	
	2	TRF1	0x7000	Tariff #1 energy reading	0-999,999,999	U5	UINT32	
	3	TRF2	0x7001	Tariff #2 energy reading	0-999,999,999	U5	UINT32	
	4	TRF3	0x7002	Tariff #3 energy reading	0-999,999,999	U5	UINT32	
	5	TRF4	0x7003	Tariff #4 energy reading	0-999,999,999	U5	UINT32	
	6	TRF5	0x7004	Tariff #5 energy reading	0-999,999,999	U5	UINT32	
	7	TRF6	0x7005	Tariff #6 energy reading	0-999,999,999	U5	UINT32	
	8	TRF7	0x7006	Tariff #7 energy reading	0-999,999,999	U5	UINT32	
	9	TRF8	0x7007	Tariff #8 energy reading	0-999,999,999	U5	UINT32	
	10	TRF9	0x7008	Tariff #9 energy reading	0-999,999,999	U5	UINT32	
	11	TRF10	0x7009	Tariff #10 energy reading	0-999,999,999	U5	UINT32	
	12	TRF11	0x700A	Tariff #11 energy reading	0-999,999,999	U5	UINT32	
	13	TRF12	0x700B	Tariff #12 energy reading	0-999,999,999	U5	UINT32	
	14	TRF13	0x700C	Tariff #13 energy reading	0-999,999,999	U5	UINT32	
	15	TRF14	0x700D	Tariff #14 energy reading	0-999,999,999	U5	UINT32	
	16	TRF15	0x700E	Tariff #15 energy reading	0-999,999,999	U5	UINT32	
	17	TRF16	0x700F	Tariff #16 energy reading	0-999,999,999	U5	UINT32	
...				...				
15/15				**Energy Register #16**				
	1	REG16	0x178F	Summary (total) energy reading	0-999,999,999	U5	UINT32	
	2	TRF1	0x7000	Tariff #1 energy reading	0-999,999,999	U5	UINT32	
	3	TRF2	0x7001	Tariff #2 energy reading	0-999,999,999	U5	UINT32	
	4	TRF3	0x7002	Tariff #3 energy reading	0-999,999,999	U5	UINT32	
	5	TRF4	0x7003	Tariff #4 energy reading	0-999,999,999	U5	UINT32	
	6	TRF5	0x7004	Tariff #5 energy reading	0-999,999,999	U5	UINT32	
	7	TRF6	0x7005	Tariff #6 energy reading	0-999,999,999	U5	UINT32	
	8	TRF7	0x7006	Tariff #7 energy reading	0-999,999,999	U5	UINT32	
	9	TRF8	0x7007	Tariff #8 energy reading	0-999,999,999	U5	UINT32	
	10	TRF9	0x7008	Tariff #9 energy reading	0-999,999,999	U5	UINT32	
	11	TRF10	0x7009	Tariff #10 energy reading	0-999,999,999	U5	UINT32	
	12	TRF11	0x700A	Tariff #11 energy reading	0-999,999,999	U5	UINT32	
	13	TRF12	0x700B	Tariff #12 energy reading	0-999,999,999	U5	UINT32	
	14	TRF13	0x700C	Tariff #13 energy reading	0-999,999,999	U5	UINT32	
	15	TRF14	0x700D	Tariff #14 energy reading	0-999,999,999	U5	UINT32	
	16	TRF15	0x700E	Tariff #15 energy reading	0-999,999,999	U5	UINT32	
	17	TRF16	0x700F	Tariff #16 energy reading	0-999,999,999	U5	UINT32	

File Channel / Section [1]	Record Field No. [2]	Point Label	Point ID	Description	Range	Units [3]	Type	Notes
16/16				**Maximum Demand Register #1**				
	1	REG1 MD	0x4780	Summary (total) max. demand reading	0-Pmax	U3	UINT32	
	2	TRF1 MD	0x7100	Tariff #1 max. demand reading	0-Pmax	U3	UINT32	
	3	TRF2 MD	0x7101	Tariff #2 max. demand reading	0-Pmax	U3	UINT32	
	4	TRF3 MD	0x7102	Tariff #3 max. demand reading	0-Pmax	U3	UINT32	
	5	TRF4 MD	0x7103	Tariff #4 max. demand reading	0-Pmax	U3	UINT32	
	6	TRF5 MD	0x7104	Tariff #5 max. demand reading	0-Pmax	U3	UINT32	
	7	TRF6 MD	0x7105	Tariff #6 max. demand reading	0-Pmax	U3	UINT32	
	8	TRF7 MD	0x7106	Tariff #7 max. demand reading	0-Pmax	U3	UINT32	
	9	TRF8 MD	0x7107	Tariff #8 max. demand reading	0-Pmax	U3	UINT32	
	10	TRF9 MD	0x7108	Tariff #9 max. demand reading	0-Pmax	U3	UINT32	
	11	TRF10 MD	0x7109	Tariff #10 max. demand reading	0-Pmax	U3	UINT32	
	12	TRF11 MD	0x710A	Tariff #11 max. demand reading	0-Pmax	U3	UINT32	
	13	TRF12 MD	0x710B	Tariff #12 max. demand reading	0-Pmax	U3	UINT32	
	14	TRF13 MD	0x710C	Tariff #13 max. demand reading	0-Pmax	U3	UINT32	
	15	TRF14 MD	0x710D	Tariff #14 max. demand reading	0-Pmax	U3	UINT32	
	16	TRF15 MD	0x710E	Tariff #15 max. demand reading	0-Pmax	U3	UINT32	
	17	TRF16 MD	0x710F	Tariff #16 max. demand reading	0-Pmax	U3	UINT32	
...				...				
32/32				**Maximum Demand Register #16**				
	1	REG16 MD	0x478F	Summary (total) max. demand reading	0-Pmax	U3	UINT32	
	2	TRF1 MD	0x7100	Tariff #1 max. demand reading	0-Pmax	U3	UINT32	
	3	TRF2 MD	0x7101	Tariff #2 max. demand reading	0-Pmax	U3	UINT32	
	4	TRF3 MD	0x7102	Tariff #3 max. demand reading	0-Pmax	U3	UINT32	
	5	TRF4 MD	0x7103	Tariff #4 max. demand reading	0-Pmax	U3	UINT32	
	6	TRF5 MD	0x7104	Tariff #5 max. demand reading	0-Pmax	U3	UINT32	
	7	TRF6 MD	0x7105	Tariff #6 max. demand reading	0-Pmax	U3	UINT32	
	8	TRF7 MD	0x7106	Tariff #7 max. demand reading	0-Pmax	U3	UINT32	
	9	TRF8 MD	0x7107	Tariff #8 max. demand reading	0-Pmax	U3	UINT32	
	10	TRF9 MD	0x7108	Tariff #9 max. demand reading	0-Pmax	U3	UINT32	
	11	TRF10 MD	0x7109	Tariff #10 max. demand reading	0-Pmax	U3	UINT32	
	12	TRF11 MD	0x710A	Tariff #11 max. demand reading	0-Pmax	U3	UINT32	
	13	TRF12 MD	0x710B	Tariff #12 max. demand reading	0-Pmax	U3	UINT32	
	14	TRF13 MD	0x710C	Tariff #13 max. demand reading	0-Pmax	U3	UINT32	
	15	TRF14 MD	0x710D	Tariff #14 max. demand reading	0-Pmax	U3	UINT32	
	16	TRF15 MD	0x710E	Tariff #15 max. demand reading	0-Pmax	U3	UINT32	
	17	TRF16 MD	0x710F	Tariff #16 max. demand reading	0-Pmax	U3	UINT32	

[1] An energy use profile section and a maximum demand profile section are allocated for registers for which a source input is selected in the Billing/TOU Register setup and for which energy use profile is enabled. A maximum demand profile section is allocated for registers for which maximum demand profile is enabled in the Billing/TOU Register setup. Not configured sections/channels are not available for download. Refer to the file channel mask in the file info for configured channels.

[2] The number of parameters in a section is automatically configured depending on the number of actually used tariffs selected in the TOU Daily Profiles.

[3] For power scale and units, refer to Section 4 ”Data Scales and Units”.

4 Data Scales and Units

Code	Condition	Value/Range	Notes
Data Scales			
Vmax		Voltage Scale × PT Ratio, V	2
V4max		Voltage Scale × V4 PT Ratio, V	2
Imax		Current Scale × CT Ratio[1], A,	3
I4max		Current Scale × I4 CT Ratio[1], A,	3
Ixmax	1A secondary	20 × CT Ratio[1], A (CT card) 40 × CT Ratio[1], A (DFRM)	
	5A secondary	100 × CT Ratio[1], A (CT card) 200 × CT Ratio[1], A (DFRM)	
I4xmax	1A secondary	20 × I4x CT Ratio[1], A (CT card) 40 × I4x CT Ratio[1], A (DFRM)	
	5A secondary	100 × I4x CT Ratio[1], A (CT card) 200 × I4x CT Ratio[1], A (DFRM)	
Pmax	PT Ratio = 1	Vmax × Imax × 2, W	4
	PT Ratio > 1	(Vmax × Imax × 2)/1000, kW	
AImin AImax	+/-1mA	AImin = -AI full scale × 2 AImax = AI full scale × 2	
	0-20mA	AImin = AI zero scale AImax = AI full scale	
	4-20mA	AImin = AI zero scale AImax = AI full scale	
	0-1mA	AImin = AI zero scale AImax = AI full scale	
	0-50mA	AImin = AI zero scale AImax = AI full scale × 2	
	+/-10V	AImin = -AI full scale AImax = AI full scale	
Data Units			
U1	PT Ratio = 1	0.1V	
	PT Ratio > 1	1V	
U2		0.01A	
U3	PT Ratio = 1	1W/Var/VA	
	PT Ratio > 1	1kW/kvar/kVA	
U4	V4 PT Ratio = 1	0.1V	
	V4 PT Ratio > 1	1V	
U5		0.001, 0.01, 0.1, 1 kWh/kVAh/kvarh (programmable)	5

[1] CT Ratio = CT primary current/CT secondary current

[2] The default Voltage Scale is 828V. You can change it via the Modbus Setup registers (see Section 3.1) or via the Device Options setup in PAS.

[3] The default Current Scale is 4 × CT secondary current for devices with a 400% overload (ANSI) or 2 × CT secondary current for devices with a 200% overload (IEC). You can change it via the Modbus Setup registers (see Section 3.1) or via the Device Options setup in PAS.

[4] Pmax is rounded to whole kilowatts. If Pmax is greater than 9,999,000 W, it is truncated to 9,999,000 W.

[5] See Energy Decimal Places in the Device Options setup.

5 Data Formats

Format Code	Value	Description	Notes
Timestamp			
F1		Local time in a UNIX-style format. Represents the number of seconds since midnight (00:00:00), January 1, 1970. The time is valid after January 1, 2000.	
File ID			
F2	0	Event log	
	1-8, 11-16	Data log #1-#8, #11-#16	
	9	Data log #9 – EN50160/GOST 13109/GOST 32144 Compliance Statistics	
	10	Data log #10 – EN50160/GOST 13109/GOST 32144 Harmonic Statistics	
	17-24	Waveform log #1-#8	
	25	Sequence-of-events (SOE) log	
	26	Power quality (PQ) log	
	27	Fault log	
	128	Real time waveform capture	
File Attributes			
F3	Bit 0 = 0	Non-wrap file (stop when full)	
	Bit 0 = 1	Wrap-around (circular) file	
	Bit 1 = 1	Fixed (non-changeable) file attributes	
	Bits 4:6 =	Multi-section data log file attributes:	
	0	Regular file	
	1	TOU monthly profile log	Multi-section file
	2	TOU daily profile log	Multi-section file
	3	EN50160 Compliance Statistics	Multi-section file
	4	EN50160 Harmonic Statistics	Multi-section file
	5	GOST 13109 Compliance Statistics	Multi-section file
	6	GOST 13109 Harmonic Statistics	Multi-section file
	7	GOST 32144 Compliance Statistics	Multi-section file
	8	GOST 32144 Harmonic Statistics	Multi-section file
File Status Word (bitmap)			
F4	Bit 0 = 1	The last record of the file is being read	
	Bit 8 = 1	File is empty	
	Bit 9 = 1	Reading after EOF	
	Bit 10 = 1	Corrupted record (CRC error)	
	Bit 11 = 1	No file section found for the requested channel	
	Bit 12 = 1	Reading after the end of a data block	
	Bit 13 = 1	File is not accessible	
	Bit 14 = 1	Record not found	
	Bit 15 = 1	Generic read error (with one of the bits 8-14)	
File Record Status Word (bitmap)			
F5	Bit 0 = 1	The last record of the file is being read	
	Bit 8 = 1	File is empty	
	Bit 9 = 1	Reading after EOF	
	Bit 10 = 1	Corrupted record (CRC error)	
	Bit 11 = 1	No file section found for the requested channel	
	Bit 12 = 1	Reading after the end of a data block	
	Bit 13 = 1	File is not accessible	
	Bit 14 = 1	Record not found	
	Bit 15 = 1	Generic read error (with one of the bits 8-14)	
Billing/TOU Profile Log Channel ID			
F6	0-15	Billing/TOU registers #1-#16	
	16-31	Billing/TOU maximum demand registers #1-#16	
Waveform Log Channel ID			
F7	0	V1	1
	1	V2	1
	2	V3	1
	3	V4	
	4	I1	
	5	I2	
	6	I3	
	7	I4	
	8	I1x	
	9	I2x	

Format Code	Value	Description	Notes
	10	I3x	
	11	I4x	
	12	Not used	
	13	DI1-16	
	14	DI17-32	
	15	DI33-48	
	16	AI1	
	17	AI2	
	18	AI3	
	19	AI4	
	20	AI5	
	21	AI6	
	22	AI7	
	23	AI8	
	24	AI9	
	25	AI10	
	26	AI11	
	27	AI12	
	28	AI13	
	29	AI14	
	30	AI15	
	31	AI16	
Billing/TOU Profile Log Channel Mask (bitmap)			
F8	Bit 0:15 = 1	Billing/TOU energy registers #1-#16	
	Bit 16:31 = 1	Billing/TOU maximum demand registers #1-#16	
Waveform Log Channel Mask (bitmap)			
F9	Bit 0	Channel V1	1
	Bit 1	Channel V2	1
	Bit 2	Channel V3	1
	Bit 3	Channel V4	
	Bit 4	Channel I1	
	Bit 5	Channel I2	
	Bit 6	Channel I3	
	Bit 7	Channel I4	
	Bit 8	Channel I1x	
	Bit 9	Channel I2x	
	Bit 10	Channel I3x	
	Bit 11	Channel I4x	
	Bit 12	Not used	
	Bit 13	Channels DI1-16	
	Bit 14	Channels DI17-32	
	Bit 15	Channels DI33-48	
	Bit 16	Channel AI1	
	Bit 17	Channel AI2	
	Bit 18	Channel AI3	
	Bit 19	Channel AI4	
	Bit 20	Channel AI5	
	Bit 21	Channel AI6	
	Bit 22	Channel AI7	
	Bit 23	Channel AI8	
	Bit 24	Channel AI9	
	Bit 25	Channel AI10	
	Bit 26	Channel AI11	
	Bit 27	Channel AI12	
	Bit 28	Channel AI13	
	Bit 29	Channel AI14	
	Bit 30	Channel AI15	
	Bit 31	Channel AI16	
TOU Tariff Change Time			
F10	Bits 8:15 = 0-15	Tariff number #1-#16	
	Bits 2:7 = 0-23	Tariff start hour	
	Bits 0:1 = 0-3	Tariff start quarter of an hour	
Billing Register Source ID			
F11	0x0000	None	
	0x0700-0x077F	Pulse input DI1-DI128	
	0x1700	kWh import	
	0x1701	kWh export	

Format Code	Value	Description	Notes
	0x1702	kWh net	
	0x1703	kWh total	
	0x1704	kvarh import	
	0x1705	kvarh export	
	0x1706	kvarh net	
	0x1707	kvarh total	
	0x1708	kVAh total	
	0x1709	kVAh import	
	0x170A	kVAh export	
	0x170B	kvarh Q1	
	0x170C	kvarh Q2	
	0x170D	kvarh Q3	
	0x170E	kvarh Q4	
	0x1780-0x178F	Billing energy register #1-16	
Setpoint Trigger Parameters ID			
F12	0x0000-0xFFFF	Any data point ID excluding energy counters	See Section 3.4
	0x0480-0x048F	External trigger #1-#16 (UDP broadcast trigger message)	
Setpoint Relational Operator			
F13	0 = NONE	No relation (used with pulsed events)	
	1 = GREATER OR EQUAL	Analog value or counter is over the operate limit	
	2 = LESS OR EQUAL	Analog value or counter is under the operate limit	
	3 = EQUAL	Analog value or counter is equal to the operate limit	
	4 = NOT EQUAL	Analog value or counter is not equal to the operate limit	
	5 = ON	Binary status is 1/ON	
	6 = OFF	Binary status is 0/OFF	
	7 = NEW	New Min/Max value logged for the point	
	8 = Delta	The absolute value of the difference between the last reported value and the current value exceeds the specified threshold	
	12 = Delta+	Incremental delta - the positive difference between the current value and the last reported value exceeds the specified threshold	
	13 = Delta-	Decremental delta - the positive difference between the last reported value and the current value exceeds the specified threshold	
	14 = rDelta	Relative delta - the absolute value of the difference between the last tested value and the current value exceeds the specified threshold	
	15 = rDelta+	Incremental relative delta - the positive difference between the current value and the last tested value exceeds the specified threshold	
	16 = rDelta-	Decremental relative delta - the positive difference between the last tested value and the current value exceeds the specified threshold	
Setpoint Action ID			
F14	0x0000	No action	
	0x2000-0x203F	Set user event flag #1-#64	
	0x2100-0x213F	Clear user event flag #1-#64	
	0x3000-0x303F	Operate relay RO1-RO64	
	0x3100-0x313F	Release latched relay RO1-RO64	
	0x3700-0x373F	Unblock relay RO1-RO64	
	0x3800-0x3807	Unblock direct control port. Lower byte 0-7: 0=all ports, 1=COM1, 2=COM2, 3=COM3, 4=COM4, 5=COM5, 6=USB, 7=Ethernet	
	0x3900-0x3901	Close breaker XCBR1-XCBR2	
	0x3902-0x390F	Close switch XSWI1-XSWI14	
	0x3A00-0x3A01	Open breaker XCBR1-XCBR2	
	0x3A02-0x3A0F	Open switch XSWI1-XSWI14	
	0x4000-0x401F	Increment counter #1-#32	
	0x4100-0x411F	Decrement counter #1-#32	
	0x4200-0x421F	Clear counter #1-#32	
	0x5100	Send event notification	
	0x5300	Remote control	
	0x6000	Reset total energy registers	
	0x6100	Reset total maximum demand registers	
	0x6200	Reset billing summary and TOU energy	
	0x6300	Reset billing summary and TOU maximum demands	

Format Code	Value	Description	Notes
	0x6400	Clear all counters	
	0x6500	Clear Min/Max log registers	
	0x7000	Event log on setpoint operated	
	0x7001	Event log on setpoint released	
	0x7002	Event log on any setpoint transition	
	0x7100-0x710F	Data log 1-16	
	0x7200-0x7207	Waveform Log 1-8	
	0x7400	SOE (Sequence of Events) Log	
	0x8000-0x800F	External trigger #1-#16 (UDP broadcast trigger message)	
Energy Pulse Source ID			
F15	0x0000	None	
	0x0400	kWh Import pulse	
	0x0401	kWh Export pulse	
	0x0402	kWh Total pulse	
	0x0403	kvarh Import pulse	
	0x0404	kvarh Export pulse	
	0x0405	kvarh Total pulse	
	0x0406	kVAh pulse	
Counter Source ID			
F16	0x0000	None	
	0x0700-0x077F	Pulse input DI1-DI128	
Relay Output Pulse Source ID			
F17	0x0000	None	
	0x0400	kWh Import pulse	
	0x0401	kWh Export pulse	
	0x0402	kWh Total pulse	
	0x0403	kvarh Import pulse	
	0x0404	kvarh Export pulse	
	0x0405	kvarh Total pulse	
	0x0406	kVAh pulse	
	0x0407	Start of power demand interval pulse	
	0x0408	Start of tariff interval pulse	
AO Parameters ID (see Section 3.4 for data scales)			
F18	0x0000	None (output disabled)	2
		1-Cycle Phase Values	
	0x0C00	V1 Voltage	
	0x0C01	V2 Voltage	
	0x0C02	V3 Voltage	
	0x0C03	I1 Current	
	0x0C04	I2 Current	
	0x0C05	I3 Current	
	0x0C12	V1 Voltage THD	
	0x0C13	V2 Voltage THD	
	0x0C14	V3 Voltage THD	
	0x0C15	I1 Current THD	
	0x0C16	I2 Current THD	
	0x0C17	I3 Current THD	
	0x0C18	I1 K-Factor	
	0x0C19	I2 K-Factor	
	0x0C1A	I3 K-Factor	
	0x0C1B	I1 Current TDD	
	0x0C1C	I2 Current TDD	
	0x0C1D	I3 Current TDD	
	0x0C1E	V12 Voltage	
	0x0C1F	V23 Voltage	
	0x0C20	V31 Voltage	
		1-Cycle Total Value	
	0x0F00	Total kW	
	0x0F01	Total kvar	
	0x0F02	Total kVA	
	0x0F03	Total PF	
	0x0F04	Total PF Lag	
	0x0F05	Total PF Lead	
		1-Cycle Auxiliary Values	
	0x1000	I4 Current	
	0x1001	In Current	
	0x1002	Frequency	

Format Code	Value	Description	Notes
		1-Sec Phase Values	
	0x1100	V1 Voltage	
	0x1101	V2 Voltage	
	0x1102	V3 Voltage	
	0x1103	I1 Current	
	0x1104	I2 Current	
	0x1105	I3 Current	
	0x111E	V12 Voltage	
	0x111F	V23 Voltage	
	0x1120	V31 Voltage	
		1-Sec Total Values	
	0x1400	Total kW	
	0x1401	Total kvar	
	0x1402	Total kVA	
	0x1403	Total PF	
	0x1404	Total PF Lag	
	0x1405	Total PF Lead	
	0x140A	3-phase average L-N voltage	
	0x140B	3-phase average L-L voltage	
	0x140C	3-phase average current	
		1-Sec Auxiliary Values	
	0x1500	I4 Current	
	0x1501	In Current	
	0x1502	Frequency	
		Present Demands	
	0x160F	Accumulated kW import demand	
	0x1610	Accumulated kvar import demand	
	0x1611	Accumulated kVA demand	
	0x161A	Accumulated kW export demand	
	0x161B	Accumulated kvar export demand	
Event Source/Point ID			
F19		**Setpoint Operation Events**	
	0x0000-0x59FF	Trigger parameter ID	
	0x6400-0xFFFF	Trigger parameter ID	
		Setpoint Action Events	
	0x5A00-0x5A3F	Setpoint #1-#64	
		Communications Events	
	0x5B00-0x5BFF	Data/Function point ID (low byte, see F21)	
		Self-Check Diagnostics Events	
	0x5D00-0x5DFF	Data/Function point ID (low byte, see F21)	
		Self-Update Events	
	0x5E08	RTC DST/Standard time update	3
		Run-time Error	
	0x6014	Library error	
	0x6015	RTOS Kernel error	
	0x6016	Task error	
		Control Events	
	0x6100	XSWIn_OpOpn = operation “Open” (n=see F20 Control Events)	
	0x6101	XSWIn_OpCls = operation “Close” (n=see F20 Control Events)	
	0x6102	XSWIn_Pos = switch position change (n=see F20 Control Events, Value = position)	
	0x6103	Remote control (Value: 0=OFF, 1=ON)	
		Hardware Diagnostics Events	
	0x6201	Permanent fault	
	0x6202	RAM/Data error	
	0x6203	CPU watchdog reset	
	0x6204	DSP/Sampling fault	
	0x6205	CPU exception	
	0x6206	Reserved	
	0x6207	Software watchdog reset	
	0x620E	Expanded memory fault (Event effect = File ID + 1)	
	0x620F	CPU EEPROM fault	
	0x6210	AC board EEPROM fault	
	0x6211	I/O board EEPROM fault	
		External Events	
	0x6300	Power down	

Format Code	Value	Description	Notes
	0x6308	Power up	
	0x6309	External reset	
	0x6318	IRIG-B signal lost	
	0x6319	IRIG-B time unlocked	
	0x631A	IRIG-B time locked	
	0x6320	SNTP server failed	4
	0x6321	SNTP server reconnected	4
Event Effect ID			
F20		**Communications/Self-check/Self-update Events**	
	0x0000	None	
	0x6000	Total energy registers cleared	
	0x6100	All total maximum demands cleared	
	0x6101	Power maximum demands cleared	
	0x6102	Volt/Ampere maximum demands cleared	
	0x6103	Volt maximum demands cleared	
	0x6104	Ampere maximum demands cleared	
	0x6105	Harmonic maximum demands cleared	
	0x6200	Billing/TOU registers cleared	
	0x6300	Billing/TOU maximum demand registers cleared	
	0x6400	All counters cleared	
	0x6401-0x641F	Counter cleared (low byte = counter ID)	
	0x6500	Min/Max log cleared	
	0x6A00-0x6A1B	Log file cleared (low byte = File ID)	
	0x6B00	EN50160/GOST 13109/GOST 32144 statistics cleared	
	0x6B06	Communication counters cleared	
	0x6B07	Switch operation counters cleared	
	0xF100-0xF11F	Setpoint cleared (low byte = setpoint ID)	
	0xF200	Setup/Data cleared	
	0xF300	Setup reset (set by default)	
	0xF400	Setup changed	
	0xF500	RTC set	3
	0xF600	Device function/option enabled	
	0xF700	Device function/option disabled	
	0xF800	Device function restarted	
	0xF900	Device function stopped	
		Control Events	
	0xA0XX	Position change (bits 0:7=switch number)	
	0xA1XX	Operation activated (bits 0:7=switch number)	
	0xA2XX	Operation terminated (bits 0:7=switch number)	
	0xA3XX	Operation terminated by timeout (bits 0:7=switch number)	
		Setpoint Operation Events	
	0xE100-0xE13F	Setpoint operated (low byte = setpoint ID)	
	0xE200-0xE23F	Setpoint released (low byte = setpoint ID)	
		Setpoint Action Events	
	See F14	Setpoint action ID	
Data/Function Point ID			
F21		**Data Location**	
	0x03	Data memory	
	0x04	Factory setup	
	0x05	Access/Password setup	
	0x06	Basic setup	
	0x07	Communications setup	
	0x08	Real-time clock	
	0x09	Digital inputs setup	
	0x0A	Pulse counters setup	
	0x0B	AO setup	
	0x0E	Timers setup	
	0x10	Event/alarm setpoints	
	0x11	Pulsing setup	
	0x12	User assignable register map	
	0x13	Reserved	
	0x14	Data log setup	
	0x15	File/Memory setup	
	0x16	Billing/TOU registers setup	
	0x18	TOU daily profiles	
	0x19	TOU calendar	

Format Code	Value	Description	Notes
	0x1D	RO Setup	
	0x1C	User selectable options	
	0x1F	DNP 3.0 class 0 map	
	0x20	DNP 3.0 options setup	
	0x21	DNP 3.0 events setup	
	0x22	DNP 3.0 event setpoints	
	0x23	Calibration registers	
	0x24	Date/Time Setup	
	0x25	Net setup	
	0x26	AI setup	
	0x27	Waveform log setup	
	0x28	PQ log setup	
	0x29	Fault log setup	
	0x2A	Device mode control	
	0x2B-0x2C	Reserved	
	0x2D	Transformer correction setup	
	0x2E	IEC 61850 setup	
	0x2F	Reserved	
	0x30	IEC 60870 setup	
	0x31	Bay controller setup	
	0x32	Fault locator setup	
		Device Mode/Option	
	0x40	General device operations	
	0x41	Energy test mode	
	0x42	Setpoints mode	
	0x43	PQ recorder	
	0x44	Fault recorder	
		Device Diagnostics	
	0x80	Device diagnostics	
	0x81	Critical error	
Event Type ID			
F22		**Setpoint Events**	
	0x0000	SP: Generic setpoint event	
	0x0001-0x0040	SP1-SP64: Setpoint #1-#64 event	
		IEEE 1159 PQ Events (IEEE 1159 categories)	
	0x0100	PQE: Generic IEEE1159 PQ event	
	0x0102	PQE11: Impulsive transient	
	0x010C	PQE211: Sag, instantaneous	
	0x010D	PQE212: Swell, instantaneous	
	0x010F	PQE221: Interruption, momentary	
	0x0110	PQE222: Sag, momentary	
	0x0111	PQE223: Swell, momentary	
	0x0113	PQE231: Interruption, temporary	
	0x0114	PQE232: Sag, temporary	
	0x0115	PQE233: Swell, temporary	
	0x0117	PQE31: Interruption, sustained	
	0x0118	PQE32: Undervoltage	
	0x0119	PQE33: Overvoltage	
	0x011A	PQE4: Voltage imbalance	
	0x011D	PQE52: Harmonics	
	0x011E	PQE53: Interharmonics	
	0x0121	PQE6: Voltage fluctuations (flicker)	
	0x0122	PQE7: Frequency variation	
		Fault Events	
	0x0200	FE: Generic fault event	
	0x0201	FE1: Zero-sequence current	
	0x0202	FE2: Zero-sequence voltage	
	0x0203	FE3: Current unbalance	
	0x0204	FE4: Voltage unbalance	
	0x0205	FE5: Overcurrent and undervoltage	
	0x0206	FE6: Undervoltage	
	0x0207	FE7: Neutral current (I4)	
		DI Events	
	0x0300	DI: Generic DI event	
	0x0301-0x0380	DI1-DI128: DI1-DI128 event	
		RO Events	
	0x0400	RO: Generic RO event	

Format Code	Value	Description	Notes
	0x0401-0x0440	RO1-RO64: RO1-RO64 event	
		EN 50160 PQ Events (EN 50160 categories)	
	0x0500	PQE: Generic EN50160 PQ event	
	0x0501	PQE1: Frequency variations	
	0x0502	PQE2: Voltage variations	
	0x0503	PQE3: Rapid voltage changes	
	0x0504	PQE4: Flicker	
	0x0505	PQE5: Voltage dips	
	0x0506	PQE6: Voltage interruptions	
	0x0507	PQE7: Temporary overvoltages	
	0x0508	PQE8: Transient overvoltages	
	0x0509	PQE9: Voltage unbalance	
	0x050A	PQE10: Harmonic voltage	
	0x050B	PQE11: Interharmonic voltage	
	0x050C	PQE12: Mains signaling voltage	
		PQ Events (GOST 13109 categories)	
	0x0600	PQE: Generic PQ event	
	0x0601	PQE1: Voltage variation	
	0x0602	PQE2: Voltage change	
	0x0603	PQE3: Flicker	
	0x0604	PQE4: Voltage THD	
	0x0605	PQE5: Voltage harmonic components	
	0x0606	PQE6: Voltage unbalance	
	0x0607	PQE7: Frequency variation	
	0x0608	PQE8: Voltage dips	
	0x0609	PQE9: Impulsive voltage	
	0x060A	PQE10: Temporary overvoltages	
		PQ Events (GOST 32144 categories)	
	0x0700	PQE: Generic PQ event	
	0x0701	PQE1: Frequency variation	
	0x0702	PQE2: Voltage variation	
	0x0703	PQE3: Rapid voltage change	
	0x0704	PQE4: Flicker	
	0x0705	PQE5: Voltage THD	
	0x0706	PQE6: Voltage harmonic components	
	0x0707	PQE7: Voltage interharmonic components	
	0x0708	PQE8: Signaling voltage	
	0x0709	PQE9: Voltage unbalance	
	0x070A	PQE10: Voltage interruptions	
	0x070B	PQE11: Voltage dips	
	0x070C	PQE12: Voltage swells	
	0x070D	PQE13: Impulsive voltage	
		Data Log Events	
	0x0900	Online PQ statistics	
Device Diagnostics (bitmap)			
F23	Bit 0 = 1	Critical error	
	Bit 1 = 1	Permanent fault (critical error)	
	Bit 2 = 1	RAM/Data error	
	Bit 3 = 1	CPU watchdog reset	
	Bit 4 = 1	DSP/Sampling fault	
	Bit 5 = 1	CPU exception	
	Bit 6	Reserved	
	Bit 7 = 1	Software watchdog reset	
	Bit 8 = 1	Power down	
	Bit 9 = 1	Device reset	
	Bit 10 = 1	Configuration reset	
	Bit 11 = 1	RTC fault (critical error)	
	Bit 12 = 1	Configuration fault (critical error)	
	Bit 13	Reserved	
	Bit 14 = 1	Expanded memory fault	
	Bit 15 = 1	CPU EEPROM fault	
	Bit 16 = 1	AC board EEPROM fault	
	Bit 17 = 1	I/O board EEPROM fault	
	Bit 18	Reserved	
	Bit 19	Reserved	
	Bit 20 = 1	C Library error	
	Bit 21 = 1	RTOS Kernel error	

Format Code	Value	Description	Notes
	Bit 22 = 1	Task error	
	Bit 23	Reserved	
	Bit 24 = 1	IRIG-B signal lost	
	Bit 25 = 1	IRIG-B time unlocked	
DNP Object Types			
F24		**Binary Input Static Object**	
	0	Single-Bit Binary Input	
	1	Binary Input With Status	
		Binary Input Change Event Object	
	0	Binary Input Change Without Time	
	1	Binary Input Change With Time	
		Binary Counter	
	0	32-bit Binary Counter	
	1	32-bit Binary Counter Without Flag	
	2	16-bit Binary Counter	
	3	16-bit Binary Counter Without Flag	
		Binary Counter Change Event	
	0	32-bit Counter Change Event Without Time	
	1	32-bit Counter Change Event With Time	
	2	16-bit Counter Change Event Without Time	
	3	16-bit Counter Change Event With Time	
		Frozen Binary Counter	
	0	32-bit Frozen Counter	
	1	32-bit Frozen Counter Without Flag	
	2	32-bit Frozen Counter With Time of Freeze	
	3	16-bit Frozen Counter	
	4	16-bit Frozen Counter Without Flag	
	5	16-bit Frozen Counter With Time of Freeze	
		Analog Input	
	0	32-bit Analog Input	
	1	32-bit Analog Input Without Flag	
	2	16-bit Analog Input	
	3	16-bit Analog Input Without Flag	
		Analog Input Change Event	
	0	32-bit Analog Change Event Without Time	
	1	32-bit Analog Change Event With Time	
	2	16-bit Analog Change Event Without Time	
	3	16-bit Analog Change Event With Time	
DNP Class 0 Objects			
F25	0x1E01	Analog Input 30:01	
	0x1E02	Analog Input 30:02	
	0x1E03	Analog Input 30:03	
	0x1E04	Analog Input 30:04	
	0x2801	Analog Output 40:01	
	0x2802	Analog Output 40:02	
	0x0101	Binary Input 01:01	
	0x0102	Binary Input 01:02	
	0x1401	Binary Counter 20:01	
	0x1402	Binary Counter 20:02	
	0x1405	Binary Counter 20:05	
	0x1406	Binary Counter 20:06	
	0x1501	Frozen Counter 21:01	
	0x1502	Frozen Counter 21:02	
	0x1505	Frozen Counter 21:05	
	0x1506	Frozen Counter 21:06	
	0x1509	Frozen Counter 21:09	
	0x150A	Frozen Counter 21:10	
Wiring Mode			
F26	0	3OP2 - 3-wire open delta using 2 CTs (2 element)	
	1	4LN3 - 4-wire WYE using 3 PTs (3 element), line-to-neutral voltage readings	
	2	3DIR2 - 3-wire direct connection using 2 CTs (2 element)	
	3	4LL3 - 4-wire WYE using 3 PTs (3 element), line-to-line voltage readings	
	4	3OP3 - 3-wire open delta using 3 CTs (2 1/2 element)	
	5	3LN3 - 4-wire WYE using 2 PTs (2 1/2 element), line-to-neutral voltage readings	

Format Code	Value	Description	Notes
	6	3LL3 - 4-wire WYE using 2 PTs (2 1/2 element), line-to-line voltage readings	
	8	3BLN3 - 3-wire broken delta using 2 PTs (2 1/2 element), line-to-neutral voltage readings	
	9	3BLL3 - 3-wire broken delta using 2 PTs (2 1/2 element), line-to-line voltage readings	
IEC 61850 Measured Value Indices			
F27	0	Phase voltage	
	1	Auxiliary voltage V4	
	2	Not used	
	3	Phase currents	
	4	Neutral current	
	5	Auxiliary current I4	
	6	Phase currents (extended inputs)	
	7	Neutral current (extended inputs)	
	8	Auxiliary current I4 (extended inputs)	
	9	Voltage sequence	
	10	Current sequence	
	11	Current sequence (extended inputs)	
	12	Voltage unbalance	
	13	Current unbalance	
	14	Active power	
	15	Reactive power	
	16	Active power import/export	
	17	Reactive power import/export	
	18	Apparent power	
	19	Active power demand	
	20	Reactive power demand	
	21	Apparent power demand	
	22	Power factor	
	23	Power factor lag/lead	
	24	Frequency	
	25	Voltage THD	
	26	Current THD	
	27	Voltage interharmonic THD	
	28	Current interharmonic THD	
	29	Current TDD	
	30	Current K-factor	
	31	Not used	
	32	Not used	
	33	Analog input #1	
	34	Analog input #2	
	35	Analog input #3	
	36	Analog input #4	
	37	Analog input #5	
	38	Analog input #6	
	39	Analog input #7	
	40	Analog input #8	
	41	Analog input #9	
	42	Analog input #10	
	43	Analog input #11	
	44	Analog input #12	
	45	Analog input #13	
	46	Analog input #14	
	47	Analog input #15	
	48	Analog input #16	
Single Point Info Static Type			
F30	1	M_SP_NA_1	
	2	M_SP_TA_1 (CP24Time2a)	
	30	M_SP_TB_1 (CP56Time2a)	
Single Point Info Event Type			
F31	2	M_SP_TA_1 (CP24Time2a)	
	30	M_SP_TB_1 (CP56Time2a)	
Double Point Info Static Type			
F32	3	M_DP_NA_1	
	4	M_DP_TA_1 (CP24Time2a)	
	31	M_DP_TB_1 (CP56Time2a)	
Double Point Info Event Type			

Format Code	Value	Description	Notes
F33	4	M_DP_TA_1 (CP24Time2a)	
	31	M_DP_TB_1 (CP56Time2a)	
Measured Value Static Type			
F34	9	M_ME_NA_1	
	10	M_ME_NB_1	
	11	M_ME_NC_1	
	12	M_ME_TA_1 (CP24Time2a)	
	13	M_ME_TB_1 (CP24Time2a)	
	14	M_ME_TC_1 (CP24Time2a)	
	34	M_ME_TD_1 (CP56Time2a)	
	35	M_ME_TE_1 (CP56Time2a)	
	36	M_ME_TF_1 (CP56Time2a)	
Measured Value Event Type			
F35	12	M_ME_TA_1 (CP24Time2a)	
	13	M_ME_TB_1 (CP24Time2a)	
	14	M_ME_TC_1 (CP24Time2a)	
	34	M_ME_TD_1 (CP56Time2a)	
	35	M_ME_TE_1 (CP56Time2a)	
	36	M_ME_TF_1 (CP56Time2a)	
Integrated Totals Static Type			
F36	15	M_IT_NA_1	
	16	M_IT_TA_1 (CP24Time2a)	
	37	M_IT_TB_1 (CP56Time2a)	
Integrated Totals Event Type			
F37	16	M_IT_TA_1 (CP24Time2a)	
	37	M_IT_TB_1 (CP56Time2a)	

NOTES:

[1] When the 4LN3 or 3LN3 wiring mode is selected, the voltages will be line-to-neutral; for any other wiring mode, they will be line-to-line voltages.

[2] 1) For bi-directional analog output (±1 mA), the zero scale setup corresponds to the center (0 mA) of the scale range, and the direction of the current matches the sign of the output parameter. Unsigned parameters are output within the current range 0 to +1 mA and can be scaled as in the case of single-ended analog output (0-1 mA).

For signed values, such as powers and signed power factor, the scale is always symmetrical with regard to 0 mA, and the full scale corresponds to +1 mA output for positive readings and to -1 mA output for negative readings. The zero scale (0 mA output) is permanently set in the instrument to zero for all parameters except the signed power factor for which it is set to 1.000 (see Note 2). In write requests, the zero scale is ignored.

2) Except for the signed power factor, the setup scale is continuous within the entire value range. For signed power factor, the setup scale is broken at +1.000 in order to provide continuous output current when the power factor changes close to ±1.000. The setup scale is symmetrical in the range of -0 to +0 with a center at 1.000 (-1.000 is assumed to be equal to +1.000). Negative power factor is output as -1.000 minus measured value, and non-negative power factor is output as +1.000 minus measured value. To set the entire range for power factor from-0 to +0, the scales would be specified as -0 to 0. Because of the fact that negative zero may not be transmitted through communications, the value of -0.001 is used to specify the scale of -0, and both +0.001 and 0.000 are used to specify the scale of +0.

[3] The event value field shows the present device time in the F1 format.

[4] The event value field shows the server IP address in a network byte order.