Power Quality and Revenue Meter
EM720/EM720T

Modbus Communications Protocol

Reference Guide

BG0457 Rev. A6

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	Feb 2009	Initial release
A2	July 2009	Added a selectable EN 50160 transient overvoltage detection method option
A3	Nov 2009	Added external tariff control options via communications and tariff inputs
A4	Jan 2011	Added TCP event notification client. Added communication status and communication counters registers. Added Transformer Correction and Transformer/Line Loss Compensation setups. Added IEC 61850 Report Deadbands setup.
A5	Feb 2013	Added IEC 61850 GOOSE publisher, dataset setup and RCB setup registers.
A6	Oct 2014	Added EN 50160:2010 setup and compliance statistics files.

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 EM720. The document provides the complete information necessary to develop third-party communications software capable of communication with the EM720. Refer to the EM720 Installation Manual and EM720 Operation Manual for more information on communication connections and configuring communication parameters in your device.

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 EM720.

2.1 Transmission Modes

The EM720 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 EM720 Operation Manual for information on selecting the transmission mode in your meter.

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 EM720 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
08[1]	Loop-back test	Communications test

[1] The EM720 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 EM720 Modbus registers are numbered in the range of 0 to 65535. From the Modbus applications, the EM720 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 EM720 register address to the range of the Modbus holding registers, add a value of 40001 to the EM720 register address. When a register address exceeds 9999, use a 6-digit addressing scheme by adding 400001 to the EM720 register address.

2.6 Data Formats

The EM720 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 6656 through 10935 contain scaled 16-bit values.

2.6.1 16-bit Scaled Integer Format

16-bit scaled analog data is transmitted in a single 16-bit Modbus register being scaled to the range of 0 to 9999. To get a true reading, a reverse conversion should be done using the following formula:

$$Y = \frac{X \times (HI - LO)}{9999} + LO$$

where:

Y	-	True reading in engineering units
X	-	Raw input data in the range of 0 to 9999
LO and HI	-	Data low and high scales in engineering units

Refer to Section 4 “Data Scales and Units” for applicable data scales and measurement units. The engineering scales are indicated for every scaled 16-bit register.

The default voltage scale in the device is 144V (120V+20%). It can be changed through register 242 (see Section 3.1, Device Data Scales), or via the supplemental PAS software. The recommended voltage scale is 120V+20% = 144V for using with external PT’s, and 480V+25% = 600V for a direct connection to power line.

CONVERSION EXAMPLES

1. Voltage readings

a) Assume device settings (direct wiring): PT ratio = 1; Voltage scale = 600V (480V + 25%).

Voltage engineering scales (see Section 4):

HI_ENG = Vmax = 600.0 × PT ratio = 600.0 × 1 = 600.0V

LO_ENG = 0V

If the raw data reading is 2000 then the voltage reading in engineering units will be as follows:

Volts reading = 2000 × (600.0 - 0)/(9999 - 0) + 0 = 120.0V

b) Assume device settings (wiring via PT): PT ratio = 14,400V : 120V = 120; Voltage scale = 144V.

Voltage engineering scales (see Section 4):

HI_ENG = Vmax = 144.0 × PT ratio = 144 × 120 = 17,280V

LO_ENG = 0V

If the raw data reading is 8314 then the voltage reading in engineering units will be as follows:

Volts reading = 8314 × (17,280 - 0)/9999 + 0 = 14,368V

2. Current readings

Assume device settings: CT primary current = 200A.

Current engineering scales (see Section 4):

HI_ENG = Imax = CT primary current × 2 = 200.00 × 2 = 400.00A

LO_ENG = 0A

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

Amps reading = 250 × (400.00 - 0)/(9999 - 0) + 0 = 10.00A

3. Power readings

a) Assume device settings (direct wiring): Wiring 4LL3; PT = 1; CT primary current = 200A; Voltage scale = 600V.

Active power engineering scales (rounded to whole kW, see Section 4):

HI_ENG = Pmax = Vmax × Imax × 2 = (600.0 × 1) × (200.00 × 2) × 2 = 480,000 W = 480 kW

LO_ENG = -Pmax = -480 kW

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

Watts reading = 5500 × (480 - (-480))/(9999 - 0) + (-480) = 48.1 kW

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

Watts reading = 500 × (480 - (-480))/(9999 - 0) + (-480) = -432.0 kW

b) Assume device settings (wiring via PT): Wiring 4LN3; PT = 120; CT primary current = 200A.

Active power engineering scales (rounded to whole kW, see Section 4):

HI_ENG = Pmax = Vmax × Imax × 3 = (600 × 120) × (200.00 × 2) × 3/1000 = 86,400 kW

LO_ENG = -Pmax = -86,400 kW

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

Watts reading = 5500 × (86,400 - (-86,400))/(9999 - 0) + (-86,400) = 8,650 kW

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

Watts reading = 500 × (86,400 - (-86,400))/(9999 - 0) + (-86,400) = -77,759 kW

4. Power Factor readings

Power factor engineering scales (see Section 3.3):

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 a decimal pre-multiplier to pass fractional numbers in an 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 EM720 has 120 user assignable registers in the address range of 0 to 119, any of which you can map to any register address accessible in the instrument. Registers that reside in different locations may be accessed by a single request by re-mapping them to adjacent addresses in the user assignable registers area.

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.

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, if you want to read registers 7136 (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 7136 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 EM720 has a password protection for setups, cumulative registers and log files from being changed or cleared via communications. Refer to the EM720 Operation Manual for details.

A user password must be written into the 32-bit device authorization register (44378-44379) before another write request is issued. If the correct password is not supplied, the meter will respond to all write requests directed to the meter setup and reset registers with the exception code 01 (illegal operation). It is recommended to clear the authorization 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 to the non-volatile flash memory. Memory is allocated for each file statically when you set up your files and will not change unless you re-organize the files. The EM720 automatically performs de-fragmentation of the memory each time you re-organize your files. This prevents possible leakage of memory caused by fragmentation.

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 EM720 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 20) sections for multi-channel recording. An ordinal file consists of a single section. Some files, such as daily 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. Each section 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.

Billing/TOU Profile Data Log Files

Data log files #15 and #16 are factory 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 Sections 3.15-3.16 for more information on the file record structure. A file record stores the summary data (total of all tariffs) and all tariff data for each configured Billing/TOU register.

The number of sections is taken automatically from your Billing/TOU Registers setup. Since each Billing/TOU energy register has a shadow maximum demand register, the number of sections in the file can 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 3.11-3.14 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 3.10).

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 six AC channels simultaneously: three voltage and three current waveforms. The number of sections in a file, or channels that a file can store, is defined when you set up the file. The channels that a file will record are selected in the waveform log setup. 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 EM720 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.

A single waveform record for a channel can contain up to 512 points of the sampled input signal. Refer to the line frequency field in the channel header record to correctly set up the time scale for the waveforms.

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 be plotted together. Each record within a series has a unique serial number that allows tracking the sequence of records in a series. A single waveform series can hold up to 81,920 points (2,560 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 288-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 services use 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 the last file update, 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.
5. 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:

1. 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.
2. Write the Read-File request with the section number and channel ID as shown in the previous step.
3. Read the record data from the file response block.
4. Write an acknowledgment for the file. The file section pointer will be moved to the next record.
5. 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.
5. 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, COM2 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. See "Setting-up TCP Notification Client" in the meter manual for more information on the client setup.

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		Mapped register 0 address	0-65535		UINT16	R/W	
+1		Mapped register 1 address	0-65535		UINT16	R/W	
+119		Mapped register 119 address	0-65535		UINT16	R/W	
Modbus Conversion Scales							
240		Low raw scale	0		UINT16	R	
241		High raw scale	9999		UINT16	R	
Device Data Scales							
242		Voltage scale, in secondary volts	60-600 (default 144V)	1V	UINT16	R/W	
243		Current scale, in secondary amps	10-500 (default is CT secondary current × Current Overload)	×0.1A	UINT16	R/W	

3.2 16-bit Scaled Analog Registers and Energy Counters - Basic Register Set

Address	Point ID	Description	Low and High Scales[2]	Units[2]	Type	R/W	Notes
256-308							
+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 (neutral) Current	0-Imax	U4	UINT16	R	
+23	0x1502	Frequency	45.00-65.00	0.01 Hz	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	0-Imax	U2	UINT16	R	
+29	0x3704	I2 Maximum ampere demand	0-Imax	U2	UINT16	R	
+30	0x3705	I3 Maximum ampere demand	0-Imax	U2	UINT16	R	
+31		kWh import (low)	0-9999	×0.1 kWh	UINT16	R	6
+32		kWh import (high)	0-9999	×1 MWh	UINT16	R	6
+33		kWh export (low)	0-9999	×0.1 kWh	UINT16	R	6
+34		kWh export (high)	0-9999	×1 MWh	UINT16	R	6
+35		+kvarh net (low)	0-9999	×0.1 kvarh	UINT16	R	4, 6
+36		+kvarh net (high)	0-9999	×1 Mvarh	UINT16	R	4, 6
+37		-kvarh net (low)	0-9999	×0.1 kvarh	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	×1 Mvarh	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	×0.1 kVAh	UINT16	R	6
+46		kVAh (high)	0-9999	×1 MVAh	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 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 All analog registers except of harmonics are 1-second average values. For volts, amps and power scales and units, refer to Section 4 ”Data Scales and Units”. For analog data scaling formulas and examples, see Section 2.6.1, “16-bit Scaled Integer Format”.

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 Device Options Setup) to avoid early overflow.

3.3 16-bit Scaled Analog Registers, Binary Registers and Counters

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
3584	0x0000	**None**	0		UINT16	R	
3616	0x0080	**Setpoint Status**	0x0000-0xFFFF		UINT16	R	Bitmap: 0=released, 1=operated
3648-3649		**Special Inputs**					
+0	0x0100	Not used	0		UINT16	R	
+1	0x0101	Phase rotation order	0=error, 1=positive (ABC), 2=negative (CBA)		UINT16	R	
3776	0x0300	**Event Flags**	0x0000-0x00FF		UINT16	R	Bitmap: 0=OFF, 1=ON
3968	0x0600	**Digital Inputs**	0x0000-0x00FF		UINT16	R	Bitmap: 0=open, 1=closed
4096	0x0800	**Relay Outputs**	0x0000-0x000F		UINT16	R	Bitmap: 0=open, 1=closed
4224-4239		**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	
+4,5	0x0A02	Counter #3	0-999,999,999		UINT32	R/W	
+6,7	0x0A03	Counter #4	0-999,999,999		UINT32	R/W	
+8,9	0x0A04	Counter #5	0-999,999,999		UINT32	R/W	
+10,11	0x0A05	Counter #6	0-999,999,999		UINT32	R/W	
+12,13	0x0A06	Counter #7	0-999,999,999		UINT32	R/W	
+14,15	0x0A07	Counter #8	0-999,999,999		UINT32	R/W	
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	Not used	0	U1	UINT16	R	
+4	0x0B84	V12 Voltage	0-Vmax	U1	UINT16	R	
+5	0x0B85	V23 Voltage	0-Vmax	U1	UINT16	R	
+5	0x0B86	V31 Voltage	0-Vmax	U1	UINT16	R	
+7	0x0B87	I1 Current	0-Imax	U4	UINT16	R	
+8	0x0B88	I2 Current	0-Imax	U4	UINT16	R	
+9	0x0B89	I3 Current	0-Imax	U4	UINT16	R	
+10	0x0B8A	I4 Current	0-I4max	U4	UINT16	R	
+11	0x0B8B	In Current	0-Imax	U4	UINT16	R	
+12	0x0B8C	Not used	0		UINT16	R	
+13	0x0B8D	Not used	0		UINT16	R	
+14	0x0B8E	Not used	0		UINT16	R	
+15	0x0B8F	Not used	0		UINT16	R	
+16	0x0B90	Not used	0		UINT16	R	
+17	0x0B91	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x0B92	Zero-sequence current	0-Imax	U4	UINT16	R	
+19	0x0B93	Not used	0		UINT16	R	
+20	0x0B94	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	0x0B95	Current unbalance	0-300.0	0.1%	UINT16	R	
+22	0x0B96	Not used	0		UINT16	R	
+23	0x0B97	Not used	0		UINT16	R	
+24	0x0B98	Frequency (1-cycle)	0-100.00	0.01Hz	UINT16	R	
4352-4390		**1-Cycle Phase Values**					
+0	0x0C00	V1/V12 Voltage	0-Vmax	U1	UINT16	R	1
+1	0x0C01	V2/V23 Voltage	0-Vmax	U1	UINT16	R	1
+2	0x0C02	V3/V31 Voltage	0-Vmax	U1	UINT16	R	1
+3	0x0C03	I1 Current	0-Imax	U4	UINT16	R	
+4	0x0C04	I2 Current	0-Imax	U4	UINT16	R	
+5	0x0C05	I3 Current	0-Imax	U4	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	
+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/V12 Voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+19	0x0C13	V2/V23 Voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+20	0x0C14	V3/V31 Voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+21	0x0C15	I1 Current THD	0-999.9	0.1%	UINT16	R	5
+22	0x0C16	I2 Current THD	0-999.9	0.1%	UINT16	R	5
+23	0x0C17	I3 Current THD	0-999.9	0.1%	UINT16	R	5
+24	0x0C18	I1 K-Factor	1.0-999.9	0.1	UINT16	R	5
+25	0x0C19	I2 K-Factor	1.0-999.9	0.1	UINT16	R	5
+26	0x0C1A	I3 K-Factor	1.0-999.9	0.1	UINT16	R	5
+27	0x0C1B	I1 Current TDD	0-100.0	0.1%	UINT16	R	5
+28	0x0C1C	I2 Current TDD	0-100.0	0.1%	UINT16	R	5
+29	0x0C1D	I3 Current TDD	0-100.0	0.1%	UINT16	R	5
+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	
4416-4427		**1-Cycle Low Phase Values**					
+0	0x0D00	Low voltage	0-Vmax	U1	UINT16	R	1
+1	0x0D01	Low current	0-Imax	U4	UINT16	R	
+2	0x0D02	Low kW	-Pmax-Pmax	U3	INT16	R	
+3	0x0D03	Low kvar	-Pmax-Pmax	U3	INT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+4	0x0D04	Low kVA	0-Pmax	U3	UINT16	R	
+5	0x0D05	Low PF Lag	0-1.000	0.001	UINT16	R	
+5	0x0D06	Low PF Lead	0-1.000	0.001	UINT16	R	
+7	0x0D07	Low voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+8	0x0D08	Low current THD	0-999.9	0.1%	UINT16	R	5
+9	0x0D09	Low K-Factor	1.0-999.9	0.1	UINT16	R	5
+10	0x0D0A	Low current TDD	0-100.0	0.1%	UINT16	R	5
+11	0x0D0B	Low L-L voltage	0-Vmax	U1	UINT16	R	5
4480-4491		**1-Cycle High Phase Values**					
+0	0x0E00	High voltage	0-Vmax	U1	UINT16	R	1
+1	0x0E01	High current	0-Imax	U4	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	
+5	0x0E06	High PF Lead	0-1.000	0.001	UINT16	R	
+7	0x0E07	High voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+8	0x0E08	High current THD	0-999.9	0.1%	UINT16	R	5
+9	0x0E09	High K-Factor	1.0-999.9	0.1	UINT16	R	5
+10	0x0E0A	High current TDD	0-100.0	0.1%	UINT16	R	5
+11	0x0E0B	High L-L voltage	0-Vmax	U1	UINT16	R	5
4544-4556		**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	R	
+5	0x0F06	Total kW import	0-Pmax	U3	UINT16	R	
+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	UINT32	R	
+10	0x0F0A	3-phase average L-N/L-L voltage	0-Vmax	U1	UINT16	R	1
+11	0x0F0B	3-phase average L-L voltage	0-Vmax	U1	UINT16	R	
+12	0x0F0C	3-phase average current	0-Imax	U2	UINT16	R	
4608-4612		**1-Cycle Auxiliary Values**					
+0	0x1000	I4 Current	0-I4max	U4	UINT16	R	
+1	0x1001	In (neutral) Current	0-Imax	U4	UINT16	R	
+2	0x1002	Frequency	0-Fmax	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	0		UINT16	R	
+6	0x1006	Not used	0		UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
4640-4655		**Phasor**					
+0	0x1080	V1/V12 Voltage magnitude	0-Vmax	U1	UINT16	R	2
+1	0x1081	V2/V23 Voltage magnitude	0-Vmax	U1	UINT16	R	2
+2	0x1082	V3/V31 Voltage magnitude	0-Vmax	U1	UINT16	R	2
+3	0x1083	Not used			UINT16	R	
+4	0x1084	I1 Current magnitude	0-Imax	U4	UINT16	R	
+5	0x1085	I2 Current magnitude	0-Imax	U4	UINT16	R	
+6	0x1086	I3 Current magnitude	0-Imax	U4	UINT16	R	
+7	0x1087	I4 Current magnitude	0-I4max	U4	UINT16	R	
+8	0x1088	V1/V12 Voltage angle	-180.0-180.0	0.1º	INT16	R	2
+9	0x1089	V2/V23 Voltage angle	-180.0-180.0	0.1º	INT16	R	2
+10	0x108A	V3/V31 Voltage angle	-180.0-180.0	0.1º	INT16	R	2
+11	0x108B	Not used			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/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	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/V12 Voltage THD	0-999.9	0.1%	UINT16	R	2, 6
+19	0x1113	V2/V23 Voltage THD	0-999.9	0.1%	UINT16	R	2, 6
+20	0x1114	V3/V31 Voltage THD	0-999.9	0.1%	UINT16	R	2, 6
+21	0x1115	I1 Current THD	0-999.9	0.1%	UINT16	R	6
+22	0x1116	I2 Current THD	0-999.9	0.1%	UINT16	R	6
+23	0x1117	I3 Current THD	0-999.9	0.1%	UINT16	R	6
+24	0x1118	I1 K-Factor	1.0-999.9	0.1	UINT16	R	6

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+25	0x1119	I2 K-Factor	1.0-999.9	0.1	UINT16	R	6
+26	0x111A	I3 K-Factor	1.0-999.9	0.1	UINT16	R	6
+27	0x111B	I1 Current TDD	0-100.0	0.1%	UINT16	R	6
+28	0x111C	I2 Current TDD	0-100.0	0.1%	UINT16	R	6
+29	0x111D	I3 Current TDD	0-100.0	0.1%	UINT16	R	6
+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	Not used	0		UINT16	R	
+34	0x1122	Not used	0		UINT16	R	
+35	0x1123	Not used	0		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 voltage	0-Vmax	U1	UINT16	R	1
+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	
+5	0x1206	Low PF Lead	0-1.000	0.001	UINT16	R	
+7	0x1207	Low voltage THD	0-999.9	0.1%	UINT16	R	2, 6
+8	0x1208	Low current THD	0-999.9	0.1%	UINT16	R	6
+9	0x1209	Low K-Factor	1.0-999.9	0.1	UINT16	R	6
+10	0x120A	Low current TDD	0-100.0	0.1%	UINT16	R	6
+11	0x120B	Low L-L voltage	0-Vmax	U1	UINT16	R	
4800-4813		**1-Second High Phase Values**					
+0	0x1300	High voltage	0-Vmax	U1	UINT16	R	1
+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	
+5	0x1306	High PF Lead	0-1.000	0.001	UINT16	R	
+7	0x1307	High voltage THD	0-999.9	0.1%	UINT16	R	2, 6
+8	0x1308	High current THD	0-999.9	0.1%	UINT16	R	6
+9	0x1309	High K-Factor	1.0-999.9	0.1	UINT16	R	6
+10	0x130A	High current TDD	0-100.0	0.1%	UINT16	R	6
+11	0x130B	High L-L voltage	0-Vmax	U1	UINT16	R	
4864-4881		**1-Second Total Values**					
+0	0x1400	Total kW	-Pmax-Pmax	U3	INT16	R	
+1	0x1401	Total kvar	-Pmax-Pmax	U3	INT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+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	R	
+5	0x1406	Total kW import	0-Pmax	U3	UINT16	R	
+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/L-L voltage	0-Vmax	U1	UINT16	R	1
+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	Not used	0		UINT16	R	
+14	0x140E	Total kW Fe losses	-Pmax-Pmax	U3	UINT16	R	
+15	0x140F	Total kW Cu losses	-Pmax-Pmax	U3	UINT16	R	
+16	0x1410	Total kvar Fe losses	-Pmax-Pmax	U3	UINT16	R	
+17	0x1411	Total kvar Cu losses	-Pmax-Pmax	U3	UINT16	R	
4928-4937		**1-Second Auxiliary Values**					
+0	0x1500	I4 Current	0-I4max	U4	UINT16	R	
+1	0x1501	In (neutral) Current	0-Imax	U4	UINT16	R	
+2	0x1502	Frequency	0-Fmax	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	Battery DC voltage	0-9999.00	0.01V	UINT16	R	
+6	0x1506	Not used	0		UINT16	R	
+7	0x1507	Not used	0		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	INT16	R	
4960-4971		**Present Harmonic Demands**					
+0	0x1580	V1/V12 THD demand	0-999.9	0.1%	UINT16	R	2
+1	0x1581	V2/V23 THD demand	0-999.9	0.1%	UINT16	R	2
+2	0x1582	V3/V31 THD demand	0-999.9	0.1%	UINT16	R	2
+3	0x1583	Not used			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	
4992-5021		**Present Demands**					
+0	0x1600	V1/V12 Volt demand	0-Vmax	U1	UINT16	R	2
+1	0x1601	V2/V23 Volt demand	0-Vmax	U1	UINT16	R	2

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+2	0x1602	V3/V31 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			UINT16	R	
+13	0x160D	Not used			UINT16	R	
+14	0x160E	Not used			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	
+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	Not used	0		UINT16	R	
+33	0x1621	I4 ampere demand	0-Imax	U4	UINT16	R	
5056-5073		**Instrumentation Total Energies**					
+0,1	0x1700	kWh import	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x1701	kWh export	0-999,999,999	0.1 kWh	UINT32	R	
+4,5	0x1702	kWh net	-999,999,999-999,999,999	0.1 kWh	INT32	R	
+6,7	0x1703	Not used				R	
+8,9	0x1704	kvarh import	0-999,999,999	0.1 kvarh	UINT32	R	
+10,11	0x1705	kvarh export	0-999,999,999	0.1 kvarh	UINT32	R	
+12,13	0x1706	kvarh net	-999,999,999-999,999,999	0.1 kvarh	INT32	R	
+14,15	0x1707	Not used				R	
+16,17	0x1708	kVAh total	0-999,999,999	0.1 kVAh	UINT32	R	
+18,19	0x1709	Not used			UINT32	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+20,21	0x170A	Not used			UINT32	R	
+22,23	0x170B	kVAh import	0-999,999,999	0.1 kVAh	UINT32	R	
+24,25	0x170C	kVAh export	0-999,999,999	0.1 kVAh	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	
+36,37	0x1712	kvarh Q1	0-999,999,999	0.1 kvarh	UINT32	R	
+38,39	0x1713	kvarh Q2	0-999,999,999	0.1 kvarh	UINT32	R	
+40,41	0x1714	kvarh Q3	0-999,999,999	0.1 kvarh	UINT32	R	
+42,43	0x1715	kvarh Q4	0-999,999,999	0.1 kvarh	UINT32	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	U4	UINT16	R	
+6	0x1886	Negative-sequence current	0-Imax	U4	UINT16	R	
+7	0x1887	Zero-sequence current	0-Imax	U4	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	
5184-5233		**V1/V12 Harmonic Distortion**					2
+0	0x1900	H01 Harmonic distortion	0-100.00	0.01%	UINT16	R	
+1	0x1901	H02 Harmonic distortion	0-100.00	0.01%	UINT16	R	
		…					
+49	0x1931	H50 Harmonic distortion	0-100.00	0.01%	UINT16	R	
5248-5297		**V2/V23 Harmonic Distortion**					2
+0	0x1A00	H01 Harmonic distortion	0-100.00	0.01%	UINT16	R	
+1	0x1A01	H02 Harmonic distortion	0-100.00	0.01%	UINT16	R	
		…					
+49	0x1A31	H50 Harmonic distortion	0-100.00	0.01%	UINT16	R	
5312-5361		**V3/V31 Harmonic Distortion**					2
+0	0x1B00	H01 Harmonic distortion	0-100.00	0.01%	UINT16	R	
+1	0x1B01	H02 Harmonic distortion	0-100.00	0.01%	UINT16	R	
		…					
+49	0x1B31	H50 Harmonic distortion	0-100.00	0.01%	UINT16	R	
5376-5425		**I1 Harmonic Distortion**					
+0	0x1C00	H01 Harmonic distortion	0-100.00	0.01%	UINT16	R	
+1	0x1C01	H02 Harmonic distortion	0-100.00	0.01%	UINT16	R	
		…					
+49	0x1C31	H50 Harmonic distortion	0-100.00	0.01%	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
5440-5489		**I2 Harmonic Distortion**					
+0	0x1D00	H01 Harmonic distortion	0-100.00	0.01%	UINT16	R	
+1	0x1D01	H02 Harmonic distortion	0-100.00	0.01%	UINT16	R	
		…					
+49	0x1D31	H50 Harmonic distortion	0-100.00	0.01%	UINT16	R	
5504-5553		**I3 Harmonic Distortions**					
+0	0x1E00	H01 Harmonic distortion	0-100.00	0.01%	UINT16	R	
+1	0x1E01	H02 Harmonic distortion	0-100.00	0.01%	UINT16	R	
		…					
+49	0x1E31	H50 Harmonic distortion	0-100.00	0.01%	UINT16	R	
6336-6398		**I4 Harmonic Distortion**					
+0	0x2B00	H01 Harmonic distortion	0-100.00	0.01%	UINT16	R	
+1	0x2B01	H02 Harmonic distortion	0-100.00	0.01%	UINT16	R	
		…					
+49	0x2B31	H50 Harmonic distortion	0-100.00	0.01%	UINT16	R	
6208-6225		**Fundamental Phase Values**					5
+0	0x2900	V1/V12 Voltage	0-Vmax	U1	UINT16	R	2
+1	0x2901	V2/V23 Voltage	0-Vmax	U1	UINT16	R	2
+2	0x2902	V3/V31 Voltage	0-Vmax	U1	UINT16	R	2
+3	0x2903	I1 Current	0-Imax	U4	UINT16	R	
+4	0x2904	I2 Current	0-Imax	U4	UINT16	R	
+5	0x2905	I3 Current	0-Imax	U4	UINT16	R	
+6	0x2906	kW L1	-Pmax-Pmax	U3	INT16	R	
+7	0x2907	kW L2	-Pmax-Pmax	U3	INT16	R	
+8	0x2908	kW L3	-Pmax-Pmax	U3	INT16	R	
+9	0x2909	kvar L1	-Pmax-Pmax	U3	INT16	R	
+10	0x290A	kvar L2	-Pmax-Pmax	U3	INT16	R	
+11	0x290B	kvar L3	-Pmax-Pmax	U3	INT16	R	
+12	0x290C	kVA L1	0-Pmax	U3	UINT16	R	
+13	0x290D	kVA L2	0-Pmax	U3	UINT16	R	
+14	0x290E	kVA L3	0-Pmax	U3	UINT16	R	
+15	0x290F	Power factor L1	-1.000-1.000	0.001	INT16	R	
+16	0x2910	Power factor L2	-1.000-1.000	0.001	INT16	R	
+17	0x2911	Power factor L3	-1.000-1.000	0.001	INT16	R	
6240-6245		**Flicker**					2
+0	0x2980	V1 Pst	0-100.00	0.01	UINT16	R	
+1	0x2981	V2 Pst	0-100.00	0.01	UINT16	R	
+2	0x2982	V3 Pst	0-100.00	0.01	UINT16	R	
+3	0x2983	V1 Plt	0-100.00	0.01	UINT16	R	
+4	0x2984	V2 Plt	0-100.00	0.01	UINT16	R	
+5	0x2985	V3 Plt	0-100.00	0.01	UINT16	R	
6272-6275		**Fundamental Total Values**					5
+0	0x2A00	Total fundamental kW	-Pmax-Pmax	U3	INT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+1	0x2A01	Total fundamental kvar	-Pmax-Pmax	U3	INT16	R	
+2	0x2A02	Total fundamental kVA	0-Pmax	U3	UINT16	R	
+3	0x2A03	Total fundamental PF	-1.000-1.000	0.001	INT16	R	
6400-6429		**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	U4	UINT16	R	
+4	0x2C04	I2 Current	0-Imax	U4	UINT16	R	
+5	0x2C05	I3 Current	0-Imax	U4	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/V12 Voltage THD	0-9999	0.1%	UINT16	R	2, 5
+19	0x2C13	V2/V23 Voltage THD	0-9999	0.1%	UINT16	R	2, 5
+20	0x2C14	V3/V31 Voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+21	0x2C15	I1 Current THD	0-999.9	0.1%	UINT16	R	5
+22	0x2C16	I2 Current THD	0-999.9	0.1%	UINT16	R	5
+23	0x2C17	I3 Current THD	0-999.9	0.1%	UINT16	R	5
+24	0x2C18	I1 K-Factor	1.0-999.9	0.1	UINT16	R	5
+25	0x2C19	I2 K-Factor	1.0-999.9	0.1	UINT16	R	5
+26	0x2C1A	I3 K-Factor	1.0-999.9	0.1	UINT16	R	5
+27	0x2C1B	I1 Current TDD	0-100.0	0.1%	UINT16	R	5
+28	0x2C1C	I2 Current TDD	0-100.0	0.1%	UINT16	R	5
+29	0x2C1D	I3 Current TDD	0-100.0	0.1%	UINT16	R	5
+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	
6464-6467		**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
+4	0x2D04	Total PF lag	0-1.000	0.001	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+5	0x2D05	Total PF lead	0-1.000	0.001	UINT16	R	
6528-6530		**Minimum 1-Cycle Auxiliary Values**					
+0	0x2E00	I4 Current	0-I4max	U4	UINT16	R	
+1	0x2E01	In Current	0-Imax	U4	UINT16	R	
+2	0x2E02	Frequency	0-Fmax	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	
6912-6941		**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
+18	0x3412	V1 Voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+19	0x3413	V2 Voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+20	0x3414	V3 Voltage THD	0-999.9	0.1%	UINT16	R	2, 5
+21	0x3415	I1 Current THD	0-999.9	0.1%	UINT16	R	5
+22	0x3416	I2 Current THD	0-999.9	0.1%	UINT16	R	5
+23	0x3417	I3 Current THD	0-999.9	0.1%	UINT16	R	5
+24	0x3418	I1 K-Factor	1.0-999.9	0.1	UINT16	R	5
+25	0x3419	I2 K-Factor	1.0-999.9	0.1	UINT16	R	5
+26	0x341A	I3 K-Factor	1.0-999.9	0.1	UINT16	R	5
+27	0x341B	I1 Current TDD	0-100.0	0.1%	UINT16	R	5
+28	0x341C	I2 Current TDD	0-100.0	0.1%	UINT16	R	5
+29	0x341D	I3 Current TDD	0-100.0	0.1%	UINT16	R	5
+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	
6976-6979		**Maximum 1-Cycle Total Values**					
+0	0x3500	Total kW	-Pmax-Pmax	U3	INT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+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	
7040-7042		**Maximum 1-Cycle Auxiliary Values**					
+0	0x3600	I4 Current	0-I4max	U4	UINT16	R	
+1	0x3601	In Current	0-Imax	U4	UINT16	R	
+2	0x3602	Frequency	0-Fmax	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	
7104-7124		**Instrumentation Maximum Demands**					
+0	0x3700	V1/V12 Maximum volt demand	0-Vmax	U1	UINT16	R	2
+1	0x3701	V2/V23 Maximum volt demand	0-Vmax	U1	UINT16	R	2
+2	0x3702	V3/V31 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			UINT16	R	
+7	0x3707	Not used			UINT16	R	
+8	0x3708	Not used			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			UINT16	R	
+13	0x370D	Not used			UINT16	R	
+14	0x370E	Not used			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	Not used	0		UINT16	R	
+20	0x3714	I4 Maximum ampere demand	0-I4max	U4	UINT16	R	
7200-7211		**Maximum Harmonic Demands**					
+0	0x3880	V1/V12 THD demand	0-999.9	0.1%	UINT16	R	2
+1	0x3881	V2/V23 THD demand	0-999.9	0.1%	UINT16	R	2
+2	0x3882	V3/V31 THD demand	0-999.9	0.1%	UINT16	R	2
+3	0x3883	Not used			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	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+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	
7424-7425		**TOU Parameters**					
+0	0x3C00	Active tariff	0-7		UINT16	R/W	
+1	0x3C01	Active profile	0-15: 0-3 = Season 1 Profile #1-4, 4-7 = Season 2 Profile #1-4, 8-11 = Season 3 Profile #1-4, 12-15 = Season 4 Profile #1-4		UINT16	R	
7488-7503		**Billing TOU Energy Register #1**					
+0,1	0x3D00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x3D01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x3D07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
7552-7567		**Billing TOU Energy Register #2**					
+0,1	0x3E00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x3E01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x3E07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
7616-7631		**Billing TOU Energy Register #3**					
+0,1	0x3F00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x3F01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x3F07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
7680-7695		**Billing TOU Energy Register #4**					
+0,1	0x4000	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4001	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4007	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
7744-7759		**Billing TOU Energy Register #5**					
+0,1	0x4100	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4101	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4107	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
7808-7823		**Billing TOU Energy Register #6**					
+0,1	0x4200	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4201	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4207	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
7872-7887		**Billing TOU Energy Register #7**					
+0,1	0x4300	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4301	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
		...				R	
+14,15	0x4307	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
7936-7951		**Billing TOU Energy Register #8**					
+0,1	0x4400	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4401	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4407	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
8384-8399		**Billing TOU Energy Register #9**					
+0,1	0x4B00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4B01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4B07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
8448-8463		**Billing TOU Energy Register #10**					
+0,1	0x4C00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4C01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4C07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
8000-8007		**Billing Summary Accumulated Demands**					
+0	0x4500	Summary register #1 demand	0-Pmax	U3	UINT16	R	
+1	0x4501	Summary register #2 demand	0-Pmax	U3	UINT16	R	
		...				R	
+9	0x4509	Summary register #10 demand	0-Pmax	U3	UINT16	R	
8032-8039		**Billing Summary Block Demands**					
+0	0x4580	Summary register #1 demand	0-Pmax	U3	UINT16	R	
+1	0x4581	Summary register #2 demand	0-Pmax	U3	UINT16	R	
		...				R	
+9	0x4589	Summary register #10 demand	0-Pmax	U3	UINT16	R	
8064-8071		**Billing Summary Sliding Window Demands**					
+0	0x4600	Summary register #1 demand	0-Pmax	U3	UINT16	R	
+1	0x4601	Summary register #2 demand	0-Pmax	U3	UINT16	R	
		...				R	
+9	0x4609	Summary register #10 demand	0-Pmax	U3	UINT16	R	
8160-8167		**Billing Summary Maximum Demands**					
+0	0x4780	Summary register #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x4781	Summary register #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+9	0x4789	Summary register #10 maximum demand	0-Pmax	U3	UINT16	R	
8192-8199		**Billing TOU Maximum Demand Register #1**					
+0	0x4800	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x4801	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x4807	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
8256-8263		**Billing TOU Maximum Demand Register #2**					
+0	0x4900	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x4901	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x4907	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
8320-8327		**Billing TOU Maximum Demand Register #3**					
+0	0x4A00	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x4A01	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x4A07	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
8224-8231		**Billing TOU Maximum Demand Register #4**					
+0	0x4880	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x4881	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x4887	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
8288-8295		**Billing TOU Maximum Demand Register #5**					
+0	0x4980	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x4981	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x4987	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
8352-8359		**Billing TOU Maximum Demand Register #6**					
+0	0x4A80	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x4A81	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x4A87	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
8896-8903		**Billing TOU Maximum Demand Register #7**					
+0	0x5300	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x5301	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x5307	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
8928-8935		**Billing TOU Maximum Demand Register #8**					
+0	0x5380	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x5381	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x5387	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
8960-8975		**Billing TOU Maximum Demand Register #9**					
+0	0x5400	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x5401	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	
		...				R	
+7	0x5407	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
8992-9007		**Billing TOU Maximum Demand Register #10**					
+0	0x5480	Tariff #1 maximum demand	0-Pmax	U3	UINT16	R	
+1	0x5481	Tariff #2 maximum demand	0-Pmax	U3	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
		...				R	
+7	0x5487	Tariff #8 maximum demand	0-Pmax	U3	UINT16	R	
9984-10033		**V1/V12 Harmonic Angles**					2, 4
+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	
		...					
+49	0x6431	H50 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10048-10097		**V2/V23 Harmonic Angles**					2, 4
+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	
		...					
+49	0x6531	H50 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10112-10161		**V3/V31 Harmonic Angles**					2, 4
+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	
		...					
+49	0x6631	H50 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10240-10289		**I1 Harmonic Angles**					4
+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	
		...					
+49	0x6831	H50 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10304-10353		**I2 Harmonic Angles**					4
+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	
		...					
+49	0x6931	H50 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10368-10417		**I3 Harmonic Angles**					4
+0	0x6A00	H01 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
+1	0x6A01	H02 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
		...					
+49	0x6A31	H50 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10432-10481		**I4 Harmonic Angles**					4
+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	
		...					
+49	0x6B31	H50 Harmonic angle	-180.0-180.0	0.1º	INT16	R	
10496-10520		**0.2-Second RMS 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	Not used	0		UINT16	R	
+4	0x6C04	V12 voltage	0-Vmax	U1	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+5	0x6C05	V23 voltage	0-Vmax	U1	UINT16	R	
+6	0x6C06	V31 voltage	0-Vmax	U1	UINT16	R	
+7	0x6C07	I1 current	0-Imax	U4	UINT16	R	
+8	0x6C08	I2 current	0-Imax	U4	UINT16	R	
+9	0x6C09	I3 current	0-Imax	U4	UINT16	R	
+10	0x6C0A	I4 current	0-I4max	U4	UINT16	R	
+11	0x6C0B	In current	0-Imax	U4	UINT16	R	
+12	0x6C0C	Not used	0		UINT16	R	
+13	0x6C0D	Not used	0		UINT16	R	
+14	0x6C0E	Not used	0		UINT16	R	
+15	0x6C0F	Not used	0		UINT16	R	
+16	0x6C10	Not used	0		UINT16	R	
+17	0x6C11	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x6C12	Zero-sequence current	0-Imax	U4	UINT16	R	
+19	0x6C13	Not used	0		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	Not used	0		UINT16	R	
+23	0x6C17	Not used	0		UINT16	R	
+24	0x6C18	Frequency	0-100.00	0.01Hz	UINT16	R	
10528-10552		**3-Second RMS 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	Not used	0		UINT16	R	
+4	0x6C84	V12 voltage	0-Vmax	U1	UINT16	R	
+5	0x6C85	V23 voltage	0-Vmax	U1	UINT16	R	
+6	0x6C86	V31 voltage	0-Vmax	U1	UINT16	R	
+7	0x6C87	I1 current	0-Imax	U4	UINT16	R	
+8	0x6C88	I2 current	0-Imax	U4	UINT16	R	
+9	0x6C89	I3 current	0-Imax	U4	UINT16	R	
+10	0x6C8A	I4 current	0-I4max	U4	UINT16	R	
+11	0x6C8B	In current	0-Imax	U4	UINT16	R	
+12	0x6C8C	Not used	0		UINT16	R	
+13	0x6C8D	Not used	0		UINT16	R	
+14	0x6C8E	Not used	0		UINT16	R	
+15	0x6C8F	Not used	0		UINT16	R	
+16	0x6C90	Not used	0		UINT16	R	
+17	0x6C91	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x6C92	Zero-sequence current	0-Imax	U4	UINT16	R	
+19	0x6C93	Not used	0		UINT16	R	
+20	0x6C94	Voltage unbalance	0-300.0	0.1%	UINT16	R	
+21	0x6C95	Current unbalance	0-300.0	0.1%	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+22	0x6C96	Not used	0		UINT16	R	
+23	0x6C97	Not used	0		UINT16	R	
+24	0x6C98	Frequency	0-100.00	0.01Hz	UINT16	R	
10560-10584		**10-Minute RMS 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	Not used	0		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	U4	UINT16	R	
+8	0x6D08	I2 current	0-Imax	U4	UINT16	R	
+9	0x6D09	I3 current	0-Imax	U4	UINT16	R	
+10	0x6D0A	I4 current	0-I4max	U4	UINT16	R	
+11	0x6D0B	In current	0-Imax	U4	UINT16	R	
+12	0x6D0C	Not used	0		UINT16	R	
+13	0x6D0D	Not used	0		UINT16	R	
+14	0x6D0E	Not used	0		UINT16	R	
+15	0x6D0F	Not used	0		UINT16	R	
+16	0x6D10	Not used	0		UINT16	R	
+17	0x6D11	Zero-sequence voltage	0-Vmax	U1	UINT16	R	
+18	0x6D12	Zero-sequence current	0-Imax	U4	UINT16	R	
+19	0x6D13	Not used	0		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	Not used	0		UINT16	R	
+23	0x6D17	Not used	0		UINT16	R	
+24	0x6D18	Frequency	0-100.00	0.01Hz	UINT16	R	
10624-10655		**0.2-Second Total 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	Not used	0		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	Not used	0		UINT16	R	
+12	0x6E0C	I1 interharmonics THD	0-999.9	0.1%	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+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	
+23	0x6E17	I4 K-Factor	1.0-999.9	0.1	UINT16	R	
10656-10687		**3-Second Total 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	Not used	0		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	Not used	0		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	
10688-10719		**10-Minute Total 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	Not used	0	0	UINT16	R	
+4	0x6F04	I1 THD	0-999.9	0.1%	UINT16	R	
+5	0x6F05	I2 THD	0-999.9	0.1%	UINT16	R	

Address	Point ID	Description	Low and High Scales[3]	Units[3]	Type	R/W	Notes
+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	Not used	0		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	

NOTES:

[1] When the 4LN3, 4LL3, 3LN3 or 3LL3 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 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] For volts, amps, power and frequency scales and units refer to Section 4 ”Data Scales and Units”. For analog data scaling formulas and examples, see Section 2.6.1, “16-bit Scaled Integer Format”.

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

[5] On a 0.2-s interval.

[6] On a 3-s interval.

3.4 32-bit Analog Registers, Binary Registers and Counters

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
11776-11777	0x0000	**None**	0		UINT32	R	
11840	0x0080	**Setpoint Status**	0x00000000-0x0000FFFF		UINT32	R	Bitmap: 0=released, 1=operated
11904-11907		**Special Inputs**					
+0,1	0x0100	Not used	0		UINT32	R	
+2,3	0x0101	Phase rotation order	0=error, 1=positive (ABC), 2=negative (CBA)		UINT32	R	
12160-12161	0x0300	**Event Flags**	0x00000000-0x000000FF		UINT32	R	Bitmap: 0=OFF, 1=ON
		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	
12544-12545	0x0600	**Digital Inputs**	0x00000000-0x000000FF		UINT32	R	Bitmap: 0=open, 1=closed
12800-12801	0x0800	**Relay Outputs**	0x00000000-0x0000000F		UINT32	R	Bitmap: 0=open, 1=closed
		Internal Static Events					
	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	0/1			TRG	
	0x0908	No voltage	0/1			TRG	
13056-13071		**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	
+4,5	0x0A02	Counter #3	0-999,999,999		UINT32	R/W	
+6,7	0x0A03	Counter #4	0-999,999,999		UINT32	R/W	
+8,9	0x0A04	Counter #5	0-999,999,999		UINT32	R/W	
+10,11	0x0A05	Counter #6	0-999,999,999		UINT32	R/W	
+12,13	0x0A06	Counter #7	0-999,999,999		UINT32	R/W	
+14,15	0x0A07	Counter #8	0-999,999,999		UINT32	R/W	
		Time/Date					
	0x0B00	Not used	0		UINT32	TRG	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
	0x0B01	Not used	0		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	
	0x0B09	Minute interval	1,2,3,4,5,10,15,20,30,60		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	Not used	0		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	U4	UINT32	R	
+16, 17	0x0B88	I2 Current	0-Imax	U4	UINT32	R	
+18, 19	0x0B89	I3 Current	0-Imax	U4	UINT32	R	
+20, 21	0x0B8A	I4 Current	0-I4max	U4	UINT32	R	
+22, 23	0x0B8B	In Current	0-Imax	U4	UINT32	R	
+24, 25	0x0B8C	Not used	0		UINT32	R	
+26, 27	0x0B8D	Not used	0		UINT32	R	
+28, 29	0x0B8E	Not used	0		UINT32	R	
+30, 31	0x0B8F	Not used	0		UINT32	R	
+32, 33	0x0B90	Not used	0		UINT32	R	
+34, 35	0x0B91	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x0B92	Zero-sequence current	0-Imax	U4	UINT32	R	
+38, 39	0x0B93	Not used	0		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	Not used	0		UINT32	R	
+46, 47	0x0B97	Not used	0		UINT32	R	
+48, 49	0x0B98	Frequency (1-cycle)	0-10000	×0.01Hz	UINT32	R	
13312-13377		**1-Cycle Phase Values**					
+0,1	0x0C00	V1/V12 Voltage	0-Vmax	U1	UINT32	R	1
+2,3	0x0C01	V2/V23 Voltage	0-Vmax	U1	UINT32	R	1
+4,5	0x0C02	V3/V31 Voltage	0-Vmax	U1	UINT32	R	1
+6,7	0x0C03	I1 Current	0-Imax	U4	UINT32	R	
+8,9	0x0C04	I2 Current	0-Imax	U4	UINT32	R	
+10,11	0x0C05	I3 Current	0-Imax	U4	UINT32	R	
+12,13	0x0C06	kW L1	-Pmax-Pmax	U3	INT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+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/V12 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+38,39	0x0C13	V2/V23 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+40,41	0x0C14	V3/V31 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+42,43	0x0C15	I1 Current THD	0-9999	×0.1%	UINT32	R	5
+44,45	0x0C16	I2 Current THD	0-9999	×0.1%	UINT32	R	5
+46,47	0x0C17	I3 Current THD	0-9999	×0.1%	UINT32	R	5
+48,49	0x0C18	I1 K-Factor	10-9999	×0.1	UINT32	R	5
+50,51	0x0C19	I2 K-Factor	10-9999	×0.1	UINT32	R	5
+52,53	0x0C1A	I3 K-Factor	10-9999	×0.1	UINT32	R	5
+54,55	0x0C1B	I1 Current TDD	0-1000	×0.1%	UINT32	R	5
+56,57	0x0C1C	I2 Current TDD	0-1000	×0.1%	UINT32	R	5
+58,59	0x0C1D	I3 Current TDD	0-1000	×0.1%	UINT32	R	5
+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	
13440-13463		**1-Cycle Low Phase Values**					
+0,1	0x0D00	Low voltage	0-Vmax	U1	UINT32	R	1
+2,3	0x0D01	Low current	0-Imax	U4	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	
+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, 5
+16,17	0x0D08	Low current THD	0-9999	×0.1%	UINT32	R	5
+18,19	0x0D09	Low K-Factor	10-9999	×0.1	UINT32	R	5
+20,21	0x0D0A	Low current TDD	0-1000	×0.1%	UINT32	R	5
+22,23	0x0D0B	Low L-L voltage	0-Vmax	U1	UINT32	R	5
13568-13591		**1-Cycle High Phase Values**					
+0,1	0x0E00	High voltage	0-Vmax	U1	UINT32	R	1
+2,3	0x0E01	High current	0-Imax	U4	UINT32	R	
+4,5	0x0E02	High kW	-Pmax-Pmax	U3	INT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+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, 5
+16,17	0x0E08	High current THD	0-9999	×0.1%	UINT32	R	5
+18,19	0x0E09	High K-Factor	10-9999	×0.1	UINT32	R	5
+20,21	0x0E0A	High current TDD	0-1000	×0.1%	UINT32	R	5
+22,23	0x0E0B	High L-L voltage	0-Vmax	U1	UINT32	R	5
13696-13721		**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	0-1.000	×0.001	UINT16	R	
+10,11	0x0F05	Total PF lead	0-1.000	×0.001	UINT16	R	
+12,13	0x0F06	Total kW import	0-Pmax	U3	UINT32	R	
+14,15	0x0F07	Total kW export	0-Pmax	U3	UINT32	R	
+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/L-L voltage	0-Vmax	U1	UINT32	R	1
+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	
13824-13837		**1-Cycle Auxiliary Values**					
+0,1	0x1000	I4 current	0-I4max	U4	UINT32	R	
+2,3	0x1001	In (neutral) Current	0-Imax	U4	UINT32	R	
+4,5	0x1002	Frequency	0-Fmax	×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	0		UINT32	R	
+12,13	0x1006	Not used	0		UINT32	R	
13888-13919		**Phasor**					
+0,1	0x1080	V1/V12 Voltage magnitude	0-Vmax	U1	UINT32	R	2
+2,3	0x1081	V2/V23 Voltage magnitude	0-Vmax	U1	UINT32	R	2
+4,5	0x1082	V3/V31 Voltage magnitude	0-Vmax	U1	UINT32	R	2
+6,7	0x1083	Not used			UINT32	R	
+8,9	0x1084	I1 Current magnitude	0-Imax	U4	UINT32	R	
+10,11	0x1085	I2 Current magnitude	0-Imax	U4	UINT32	R	
+12,13	0x1086	I3 Current magnitude	0-Imax	U4	UINT32	R	
+14,15	0x1087	I4 Current magnitude	0-I4max	U4	UINT32	R	
+16,17	0x1088	V1/V12 Voltage angle	-1800-1800	×0.1°	INT32	R	2
+18,19	0x1089	V2/V23 Voltage angle	-1800-1800	×0.1°	INT32	R	2
+20,21	0x108A	V3/V31 Voltage angle	-1800-1800	×0.1°	INT32	R	2

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+22,23	0x108B	Not used			INT32	R	
+24,25	0x108C	I1 Current angle	-1800-1800	×0.1º	INT32	R	
+26,27	0x108D	I2 Current angle	-1800-1800	×0.1º	INT32	R	
+28,29	0x108E	I3 Current angle	-1800-1800	×0.1º	INT32	R	
+30,31	0x108F	I4 Current angle	-1800-1800	×0.1º	INT32	R	
13952-14029		**1-Second Phase Values**					
+0,1	0x1100	V1/V12 Voltage	0-Vmax	U1	UINT32	R	1
+2,3	0x1101	V2/V23 Voltage	0-Vmax	U1	UINT32	R	1
+4,5	0x1102	V3/V31 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	
+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/V12 Voltage THD	0-9999	×0.1%	UINT32	R	2, 6
+38,39	0x1113	V2/V23 Voltage THD	0-9999	×0.1%	UINT32	R	2, 6
+40,41	0x1114	V3/V31 Voltage THD	0-9999	×0.1%	UINT32	R	2, 6
+42,43	0x1115	I1 Current THD	0-9999	×0.1%	UINT32	R	6
+44,45	0x1116	I2 Current THD	0-9999	×0.1%	UINT32	R	6
+46,47	0x1117	I3 Current THD	0-9999	×0.1%	UINT32	R	6
+48,49	0x1118	I1 K-Factor	10-9999	×0.1	UINT32	R	6
+50,51	0x1119	I2 K-Factor	10-9999	×0.1	UINT32	R	6
+52,53	0x111A	I3 K-Factor	10-9999	×0.1	UINT32	R	6
+54,55	0x111B	I1 Current TDD	0-1000	×0.1%	UINT32	R	6
+56,57	0x111C	I2 Current TDD	0-1000	×0.1%	UINT32	R	6
+58,59	0x111D	I3 Current TDD	0-1000	×0.1%	UINT32	R	6
+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	Not used	0		UINT32	R	
+68,69	0x1122	Not used	0		UINT32	R	
+70,71	0x1123	Not used	0		UINT32	R	
+72,73	0x1124	V1x Voltage	0-Vmax	U1	UINT32	R	Transient recorder V1 channel

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+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
14080-14103		**1-Second Low Phase Values**					
+0,1	0x1200	Low voltage	0-Vmax	U1	UINT32	R	1
+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, 6
+16,17	0x1208	Low current THD	0-9999	×0.1%	UINT32	R	6
+18,19	0x1209	Low K-Factor	10-9999	×0.1	UINT32	R	6
+20,21	0x120A	Low current TDD	0-1000	×0.1%	UINT32	R	6
+22,23	0x120B	Low L-L voltage	0-Vmax	U1	UINT32	R	
14208-14231		**1-Second High Phase Values**					
+0,1	0x1300	High voltage	0-Vmax	U1	UINT32	R	1
+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, 6
+16,17	0x1308	High current THD	0-9999	×0.1%	UINT32	R	6
+18,19	0x1309	High K-Factor	10-9999	×0.1	UINT32	R	6
+20,21	0x130A	High current TDD	0-1000	×0.1%	UINT32	R	6
+22,23	0x130B	High L-L voltage	0-Vmax	U1	UINT32	R	
14336-14371		**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	0-1.000	×0.001	UINT16	R	
+10,11	0x1405	Total PF lead	0-1.000	×0.001	UINT16	R	
+12,13	0x1406	Total kW import	0-Pmax	U3	UINT32	R	
+14,15	0x1407	Total kW export	0-Pmax	U3	UINT32	R	
+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/L-L voltage	0-Vmax	U1	UINT32	R	1
+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	Not used	0		UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+28,29	0x140E	Total kW Fe losses	-Pmax-Pmax	U3	INT32	R	
+30,31	0x140F	Total kW Cu losses	-Pmax-Pmax	U3	INT32	R	
+32,33	0x1410	Total kvar Fe losses	-Pmax-Pmax	U3	INT32	R	
+34,35	0x1411	Total kvar Cu losses	-Pmax-Pmax	U3	INT32	R	
14464-14483		**1-Second Auxiliary Values**					
+0,1	0x1500	I4 current	0-I4max	U4	UINT32	R	
+2,3	0x1501	In (neutral) Current	0-Imax	U4	UINT32	R	
+4,5	0x1502	Frequency	0-Fmax	×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	Battery DC voltage	0-999900	×0.01V	UINT32	R	
+12,13	0x1506	Not used	0		UINT32	R	
+14,15	0x1507	Not used	0		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	
14528-14551		**Present Harmonic Demands**					
+0,1	0x1580	V1/V12 THD demand	0-9999	×0.1%	UINT32	R	[2]
+2,3	0x1581	V2/V23 THD demand	0-9999	×0.1%	UINT32	R	[2]
+4,5	0x1582	V3/V31 THD demand	0-9999	×0.1%	UINT32	R	[2]
+6,7	0x1583	Not used	0		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	
14592-14659		**Present Demands**					
+0,1	0x1600	V1/V12 Volt demand	0-Vmax	U1	UINT32	R	[2]
+2,3	0x1601	V2/V23 Volt demand	0-Vmax	U1	UINT32	R	[2]
+4,5	0x1602	V3/V31 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	
+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	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+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	Not used	0		UINT32	R	
+66,67	0x1621	I4 ampere demand	0-I4max	U4	UINT32	R	
14720-14737		**Instrumentation Total Energies**					
+0,1	0x1700	kWh import	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x1701	kWh export	0-999,999,999	0.1 kWh	UINT32	R	
+4,5	0x1702	kWh net	-999,999,999-999,999,999	0.1 kWh	INT32	R	
+6,7	0x1703	Not used	0		UINT32	R	
+8,9	0x1704	kvarh import	0-999,999,999	0.1 kvarh	UINT32	R	
+10,11	0x1705	kvarh export	0-999,999,999	0.1 kvarh	UINT32	R	
+12,13	0x1706	kvarh net	-999,999,999-999,999,999	0.1 kvarh	INT32	R	
+14,15	0x1707	Not used	0		UINT32	R	
+16,17	0x1708	kVAh total	0-999,999,999	0.1 kVAh	UINT32	R	
+18,19	0x1709	Not used			UINT32	R	
+20,21	0x170A	Not used			UINT32	R	
+22,23	0x170B	kVAh import	0-999,999,999	0.1 kVAh	UINT32	R	
+24,25	0x170C	kVAh export	0-999,999,999	0.1 kVAh	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	
+36,37	0x1712	kvarh Q1	0-999,999,999	0.1 kvarh	UINT32	R	
+38,39	0x1713	kvarh Q2	0-999,999,999	0.1 kvarh	UINT32	R	
+40,41	0x1714	kvarh Q3	0-999,999,999	0.1 kvarh	UINT32	R	
+42,43	0x1715	kvarh Q4	0-999,999,999	0.1 kvarh	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
14784-14803		**Billing Summary (Total) Energy Registers**					
+0,1	0x1780	Summary energy register #1	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x1781	Summary energy register #2	0-999,999,999	0.1 kWh	UINT32	R	
		...					
+18,19	0x1789	Summary energy register #10	0-999,999,999	0.1 kWh	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	U4	UINT32	R	
+12,13	0x1886	Negative-sequence current	0-Imax	U4	UINT32	R	
+14,15	0x1887	Zero-sequence current	0-Imax	U4	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	
14976-15075		**V1/V12 Harmonic Distortion**					2
+0,1	0x1900	H01 Harmonic distortion	0-10000	×0.01%	UINT32	R	
+2,3	0x1901	H02 Harmonic distortion	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x1931	H50 Harmonic distortion	0-10000	×0.01%	UINT32	R	
15104-15203		**V2/V23 Harmonic Distortion**					2
+0,1	0x1A00	H01 Harmonic distortion	0-10000	×0.01%	UINT32	R	
+2,3	0x1A01	H02 Harmonic distortion	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x1A31	H50 Harmonic distortion	0-10000	×0.01%	UINT32	R	
15232-15331		**V3/V31 Harmonic Distortion**					2
+0,1	0x1B00	H01 Harmonic distortion	0-10000	×0.01%	UINT32	R	
+2,3	0x1B01	H02 Harmonic distortion	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x1B31	H50 Harmonic distortion	0-10000	×0.01%	UINT32	R	
15360-15459		**I1 Harmonic Distortion**					
+0,1	0x1C00	H01 Harmonic distortion	0-10000	×0.01%	UINT32	R	
+2,3	0x1C01	H02 Harmonic distortion	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x1C31	H50 Harmonic distortion	0-10000	×0.01%	UINT32	R	
15488-15587		**I2 Harmonic Distortion**					
+0,1	0x1D00	H01 Harmonic distortion	0-10000	×0.01%	UINT32	R	
+2,3	0x1D01	H02 Harmonic distortion	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x1D31	H50 Harmonic distortion	0-10000	×0.01%	UINT32	R	
15616-15715		**I3 Harmonic Distortion**					
+0,1	0x1E00	H01 Harmonic distortion	0-10000	×0.01%	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+2,3	0x1E01	H02 Harmonic distortion	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x1E31	H50 Harmonic distortion	0-10000	×0.01%	UINT32	R	
17280-17379		**I4 Harmonic Distortion**					
+0,1	0x2B00	H01 Harmonic distortion	0-10000	×0.01%	UINT32	R	
+2,3	0x2B01	H02 Harmonic distortion	0-10000	×0.01%	UINT32	R	
		...					
+98,99	0x2B31	H50 Harmonic distortion	0-10000	×0.01%	UINT32	R	
17024-17059		**Fundamental Phase Values**					5
+0,1	0x2900	V1/V12 Voltage	0-Vmax	U1	UINT32	R	2
+2,3	0x2901	V2/V23 Voltage	0-Vmax	U1	UINT32	R	2
+4,5	0x2902	V3/V31 Voltage	0-Vmax	U1	UINT32	R	2
+6,7	0x2903	I1 Current	0-Imax	U4	UINT32	R	
+8,9	0x2904	I2 Current	0-Imax	U4	UINT32	R	
+10,11	0x2905	I3 Current	0-Imax	U4	UINT32	R	
+12,13	0x2906	kW L1	-Pmax-Pmax	U3	INT32	R	
+14,15	0x2907	kW L2	-Pmax-Pmax	U3	INT32	R	
+16,17	0x2908	kW L3	-Pmax-Pmax	U3	INT32	R	
+18,19	0x2909	kvar L1	-Pmax-Pmax	U3	INT32	R	
+20,21	0x290A	kvar L2	-Pmax-Pmax	U3	INT32	R	
+22,23	0x290B	kvar L3	-Pmax-Pmax	U3	INT32	R	
+24,25	0x290C	kVA L1	0-Pmax	U3	UINT32	R	
+26,27	0x290D	kVA L2	0-Pmax	U3	UINT32	R	
+28,29	0x290E	kVA L3	0-Pmax	U3	UINT32	R	
+30,31	0x290F	Power factor L1	-1000-1000	×0.001	INT32	R	
+32,33	0x2910	Power factor L2	-1000-1000	×0.001	INT32	R	
+34,35	0x2911	Power factor L3	-1000-1000	×0.001	INT32	R	
17088-17099		**Flicker**					2
+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	
+10,11	0x2985	V3 Plt	0-10000	×0.01	UINT32	R	
17152-17159		**Fundamental Total Values**					5
+0,1	0x2A00	Total fundamental kW	-Pmax-Pmax	U3	INT32	R	
+2,3	0x2A01	Total fundamental kvar	-Pmax-Pmax	U3	INT32	R	
+4,5	0x2A02	Total fundamental kVA	0-Pmax	U3	UINT32	R	
+6,7	0x2A03	Total fundamental PF	-1000-1000	×0.001	INT32	R	
17408-17473		**Minimum 1-Cycle Phase Values**					
+0,1	0x2C00	V1/V12 Voltage	0-Vmax	U1	UINT32	R	1
+2,3	0x2C01	V2/V23 Voltage	0-Vmax	U1	UINT32	R	1
+4,5	0x2C02	V3/V31 Voltage	0-Vmax	U1	UINT32	R	1

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+6,7	0x2C03	I1 Current	0-Imax	U4	UINT32	R	
+8,9	0x2C04	I2 Current	0-Imax	U4	UINT32	R	
+10,11	0x2C05	I3 Current	0-Imax	U4	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/V12 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+38,39	0x2C13	V2/V23 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+40,41	0x2C14	V3/V31 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+42,43	0x2C15	I1 Current THD	0-9999	×0.1%	UINT32	R	5
+44,45	0x2C16	I2 Current THD	0-9999	×0.1%	UINT32	R	5
+46,47	0x2C17	I3 Current THD	0-9999	×0.1%	UINT32	R	5
+48,49	0x2C18	I1 K-Factor	10-9999	×0.1	UINT32	R	5
+50,51	0x2C19	I2 K-Factor	10-9999	×0.1	UINT32	R	5
+52,53	0x2C1A	I3 K-Factor	10-9999	×0.1	UINT32	R	5
+54,55	0x2C1B	I1 Current TDD	0-1000	×0.1%	UINT32	R	5
+56,57	0x2C1C	I2 Current TDD	0-1000	×0.1%	UINT32	R	5
+58,59	0x2C1D	I3 Current TDD	0-1000	×0.1%	UINT32	R	5
+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	
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
+8,9	0x2D04	Total PF lag	0-1000	×0.001	UINT32	R	
+10,11	0x2D05	Total PF lead	0-1000	×0.001	UINT32	R	
17664-17673		**Minimum 1-Cycle Auxiliary Values**					
+0,1	0x2E00	I4 current	0-I4max	U4	UINT32	R	
+2,3	0x2E01	In Current	0-Imax	U4	UINT32	R	
+4,5	0x2E02	Frequency	0-Fmax	×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	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
18432-18497		**Maximum 1-Cycle Phase Values**					
+0,1	0x3400	V1/V12 Voltage	0-Vmax	U1	UINT32	R	1
+2,3	0x3401	V2/V23 Voltage	0-Vmax	U1	UINT32	R	1
+4,5	0x3402	V3/V31 Voltage	0-Vmax	U1	UINT32	R	1
+6,7	0x3403	I1 Current	0-Imax	U4	UINT32	R	
+8,9	0x3404	I2 Current	0-Imax	U4	UINT32	R	
+10,11	0x3405	I3 Current	0-Imax	U4	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
+36,37	0x3412	V1/V12 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+38,39	0x3413	V2/V23 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+40,41	0x3414	V3/V31 Voltage THD	0-9999	×0.1%	UINT32	R	2, 5
+42,43	0x3415	I1 Current THD	0-9999	×0.1%	UINT32	R	5
+44,45	0x3416	I2 Current THD	0-9999	×0.1%	UINT32	R	5
+46,47	0x3417	I3 Current THD	0-9999	×0.1%	UINT32	R	5
+48,49	0x3418	I1 K-Factor	10-9999	×0.1	UINT32	R	5
+50,51	0x3419	I2 K-Factor	10-9999	×0.1	UINT32	R	5
+52,53	0x341A	I3 K-Factor	10-9999	×0.1	UINT32	R	5
+54,55	0x341B	I1 Current TDD	0-1000	×0.1%	UINT32	R	5
+56,57	0x341C	I2 Current TDD	0-1000	×0.1%	UINT32	R	5
+58,59	0x341D	I3 Current TDD	0-1000	×0.1%	UINT32	R	5
+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	
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	
18688-18697		**Maximum 1-Cycle Auxiliary Values**					
+0,1	0x3600	I4 current	0-I4max	U4	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+2,3	0x3601	In Current	0-Imax	U4	UINT32	R	
+4,5	0x3602	Frequency	0-Fmax	×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	
18816-18857		**Instrumentation Maximum Demands**					
+0,1	0x3700	V1/V12 Maximum volt demand	0-Vmax	U1	UINT32	R	2
+2,3	0x3701	V2/V23 Maximum volt demand	0-Vmax	U1	UINT32	R	2
+4,5	0x3702	V3/V31 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			UINT32	R	
+14,15	0x3707	Not used			UINT32	R	
+16,17	0x3708	Not used			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			UINT32	R	
+26,27	0x370D	Not used			UINT32	R	
+28,29	0x370E	Not used			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	Not used	0		UINT32	R	
+40,41	0x3714	I4 Maximum ampere demand	0-I4max	U4	UINT32	R	
19008-19031		**Maximum Harmonic Demands**					
+0,1	0x3880	V1/V12 THD demand	0-9999	×0.1%	UINT32	R	2
+2,3	0x3881	V2/V23 THD demand	0-9999	×0.1%	UINT32	R	2
+4,5	0x3882	V3/V31 THD demand	0-9999	×0.1%	UINT32	R	2
+6,7	0x3883	Not used			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	
19456-19459		**TOU Parameters**					
+0,1	0x3C00	Active tariff	0-7		UINT32	R/W	
+2,3	0x3C01	Active profile	0-15: 1-3 = Season 1 Profile #1-4,		UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
			4-7 = Season 2 Profile #1-4, 8-11 = Season 3 Profile #1-4, 12-15 = Season 4 Profile #1-4				
19584-19599		**Billing TOU Energy Register #1**					
+0,1	0x3D00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x3D01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x3D07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
19712-19727		**Billing TOU Energy Register #2**					
+0,1	0x3E00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x3E01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x3E07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
19840-19855		**Billing TOU Energy Register #3**					
+0,1	0x3F00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x3F01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x3F07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
19968-19983		**Billing TOU Energy Register #4**					
+0,1	0x4000	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4001	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4007	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
20096-20111		**Billing TOU Energy Register #5**					
+0,1	0x4100	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4101	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4107	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
20224-20239		**Billing TOU Energy Register #6**					
+0,1	0x4200	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4201	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4207	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
20352-20367		**Billing TOU Energy Register #7**					
+0,1	0x4300	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4301	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4307	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
20480-20495		**Billing TOU Energy Register #8**					
+0,1	0x4400	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4401	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4407	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
21376-21391		**Billing TOU Energy Register #9**					
+0,1	0x4B00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4B01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4B07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
21504-21519		**Billing TOU Energy Register #10**					
+0,1	0x4C00	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32	R	
+2,3	0x4C01	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32	R	
		...				R	
+14,15	0x4C07	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32	R	
20608-20627		**Billing Summary Accumulated Demands**					
+0,1	0x4500	Summary register #1 demand	0-Pmax	U3	UINT32	R	
+2,3	0x4501	Summary register #2 demand	0-Pmax	U3	UINT32	R	
		...	0-Pmax	U3	UINT32	R	
+18,19	0x4509	Summary register #10 demand	0-Pmax	U3	UINT32	R	
20672-20691		**Billing Summary Block Demands**					
+0,1	0x4580	Summary register #1 demand	0-Pmax	U3	UINT32	R	
+2,3	0x4581	Summary register #2 demand	0-Pmax	U3	UINT32	R	
		...	0-Pmax	U3	UINT32	R	
+18,19	0x4589	Summary register #10 demand	0-Pmax	U3	UINT32	R	
20736-20755		**Billing Summary Sliding Window Demands**					
+0,1	0x4600	Summary register #1 demand	0-Pmax	U3	UINT32	R	
+2,3	0x4601	Summary register #2 demand	0-Pmax	U3	UINT32	R	
		...	0-Pmax	U3	UINT32	R	
+18,19	0x4609	Summary register #10 demand	0-Pmax	U3	UINT32	R	
20928-20979		**Billing Summary (Total) Maximum Demands**					
+0,1	0x4780	Summary register #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x4781	Summary register #2 maximum demand	0-Pmax	U3	UINT32	R	
		...	0-Pmax	U3	UINT32	R	
+18,19	0x4789	Summary register #10 maximum demand	0-Pmax	U3	UINT32	R	
+20-31	0x478A-0x478F	Reserved					
+32,33	0x4790	Summary register #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x4791	Summary register #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...					
+50,51	0x4789	Summary register #10 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
20992-21043		**Billing TOU Maximum Demand Register #1**					
+0,1	0x4800	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x4801	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
		...				R	
+14,15	0x4807	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+16-31	0x4808-0x480F	Reserved					

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+32,33	0x4810	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x4811	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x4817	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
21120-21171		**Billing TOU Maximum Demand Register #2**					
+0,1	0x4900	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x4901	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
		...				R	
+14,15	0x4907	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+16-31	0x4908-0x490F	Reserved					
+32,33	0x4910	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x4911	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x4917	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
21248-21299		**Billing TOU Maximum Demand Register #3**					
+0,1	0x4A00	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x4A01	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
		...				R	
+14,15	0x4A07	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+16-31	0x4A08-0x4A0F	Reserved					
+32,33	0x4A10	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x4A11	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x4A17	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
21056-21107		**Billing TOU Maximum Demand Register #4**					
+0,1	0x4880	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x4881	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
		...				R	
+14,15	0x4887	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+16-31	0x4888-0x488F	Reserved					
+32,33	0x4890	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x4891	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x4897	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
21184-21235		**Billing TOU Maximum Demand Register #5**					
+0,1	0x4980	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x4981	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
		...				R	
+14,15	0x4987	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+16-31	0x4988-	Reserved					

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
	0x498F						
+32,33	0x4990	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x4991	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x4997	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
21312-21363		**Billing TOU Maximum Demand Register #6**					
+0,1	0x4A80	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x4A81	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
		...				R	
+14,15	0x4A87	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+16-31	0x4A88-0x4A8F	Reserved					
+32,33	0x4A90	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x4A91	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x4A97	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
22400-22451		**Billing TOU Maximum Demand Register #7**					
+0,1	0x5300	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x5301	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
		...				R	
+14,15	0x5307	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+16-31	0x5308-0x530F	Reserved					
+32,33	0x5310	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x5311	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x5317	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
22464-22515		**Billing TOU Maximum Demand Register #8**					
+0,1	0x5380	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3	0x5381	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
		...				R	
+14,15	0x5387	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+16-31	0x5388-0x538F	Reserved					
+32,33	0x5390	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x5391	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x5397	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
22528-22579		**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	
+14,15	0x5407	Tariff #8 register	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+16-31	0x5408-0x540F	Reserved					
+32,33	0x5410	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x5411	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x5417	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
22592-22643		**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	
+14,15	0x5487	Tariff #8 register	0-Pmax	U3	UINT32	R	
+16-31	0x5488-0x548F	Reserved					
+32,33	0x5490	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+34,35	0x5491	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
		...				R	
+50,51	0x5497	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
24576-24675		**V1/V12 Harmonic Angles**					2, 4
+0,1	0x6400	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6401	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+98,99	0x6431	H50 Harmonic angle	-1800-1800	×0.1º	INT32	R	
24704-24803		**V2/V23 Harmonic Angles**					2, 4
+0,1	0x6500	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6501	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+98,99	0x6531	H50 Harmonic angle	-1800-1800	×0.1º	INT32	R	
24832-24931		**V3/V31 Harmonic Angles**					2, 4
+0,1	0x6600	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6601	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+98,99	0x6631	H50 Harmonic angle	-1800-1800	×0.1º	INT32	R	
25088-25187		**I1 Harmonic Angles**					4
+0,1	0x6800	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6801	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+98,99	0x6831	H50 Harmonic angle	-1800-1800	×0.1º	INT32	R	
25216-25315		**I2 Harmonic Angles**					4
+0,1	0x6900	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6901	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+98,99	0x6931	H50 Harmonic angle	-1800-1800	×0.1º	INT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
25344-25443		**I3 Harmonic Angles**					4
+0,1	0x6A00	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6A01	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+98,99	0x6A31	H50 Harmonic angle	-1800-1800	×0.1º	INT32	R	
25472-25571		**I4 Harmonic Angles**					4
+0,1	0x6B00	H01 Harmonic angle	-1800-1800	×0.1º	INT32	R	
+2,3	0x6B01	H02 Harmonic angle	-1800-1800	×0.1º	INT32	R	
		...					
+98,99	0x6B31	H50 Harmonic angle	-1800-1800	×0.1º	INT32	R	
25600-25649		**0.2-Second RMS 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	Not used	0		UINT32	R	1
+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	U4	UINT32	R	
+16, 17	0x6C08	I2 current	0-Imax	U4	UINT32	R	
+18, 19	0x6C09	I3 current	0-Imax	U4	UINT32	R	
+20, 21	0x6C0A	I4 current	0-I4max	U4	UINT32	R	
+22, 23	0x6C0B	In current	0-Imax	U4	UINT32	R	
+24, 25	0x6C0C	Not used	0		UINT32	R	
+26, 27	0x6C0D	Not used	0		UINT32	R	
+28, 29	0x6C0E	Not used	0		UINT32	R	
+30, 31	0x6C0F	Not used	0		UINT32	R	
+32, 33	0x6C10	Not used	0		UINT32	R	
+34, 35	0x6C11	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x6C12	Zero-sequence current	0-Imax	U4	UINT32	R	
+38, 39	0x6C13	Not used	0		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	Not used	0		UINT32	R	
+46, 47	0x6C17	Not used	0		UINT32	R	
+48, 49	0x6C18	Frequency	0-10000	×0.01Hz	UINT32	R	
25664-25713		**3-Second RMS 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	Not used	0		UINT32	R	
+8, 9	0x6C84	V12 voltage	0-Vmax	U1	UINT32	R	
+10, 11	0x6C85	V23 voltage	0-Vmax	U1	UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+12, 13	0x6C86	V31 voltage	0-Vmax	U1	UINT32	R	
+14, 15	0x6C87	I1 current	0-Imax	U4	UINT32	R	
+16, 17	0x6C88	I2 current	0-Imax	U4	UINT32	R	
+18, 19	0x6C89	I3 current	0-Imax	U4	UINT32	R	
+20, 21	0x6C8A	I4 current	0-I4max	U4	UINT32	R	
+22, 23	0x6C8B	In current	0-Imax	U4	UINT32	R	
+24, 25	0x6C8C	Not used	0		UINT32	R	
+26, 27	0x6C8D	Not used	0		UINT32	R	
+28, 29	0x6C8E	Not used	0		UINT32	R	
+30, 31	0x6C8F	Not used	0		UINT32	R	
+32, 33	0x6C90	Not used	0		UINT32	R	
+34, 35	0x6C91	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x6C92	Zero-sequence current	0-Imax	U4	UINT32	R	
+38, 39	0x6C93	Not used	0		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	Not used	0		UINT32	R	
+46, 47	0x6C97	Not used	0		UINT32	R	
+48, 49	0x6C98	Frequency	0-10000	×0.01Hz	UINT32	R	
25728-25777		**10-Minute RMS 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	Not used	0		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	U4	UINT32	R	
+16, 17	0x6D08	I2 current	0-Imax	U4	UINT32	R	
+18, 19	0x6D09	I3 current	0-Imax	U4	UINT32	R	
+20, 21	0x6D0A	I4 current	0-I4max	U4	UINT32	R	
+22, 23	0x6D0B	In current	0-Imax	U4	UINT32	R	
+24, 25	0x6D0C	Not used	0		UINT32	R	
+26, 27	0x6D0D	Not used	0		UINT32	R	
+28, 29	0x6D0E	Not used	0		UINT32	R	
+30, 31	0x6D0F	Not used	0		UINT32	R	
+32, 33	0x6D10	Not used	0		UINT32	R	
+34, 35	0x6D11	Zero-sequence voltage	0-Vmax	U1	UINT32	R	
+36, 37	0x6D12	Zero-sequence current	0-Imax	U4	UINT32	R	
+38, 39	0x6D13	Not used	0		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	Not used	0		UINT32	R	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+46, 47	0x6D17	Not used	0		UINT32	R	
+48, 49	0x6D18	Frequency	0-10000	×0.01Hz	UINT32	R	
25856-25903		**0.2-Second Total 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	Not used	0		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	Not used	0		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	
+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	
25920-25967		**3-Second Total 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	Not used	0		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	Not used	0		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	

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+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	
25984-26031		**10-Minute Total 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	Not used	0		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	Not used	0		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	
27136-27215		**Present EN 50160:2007 PQ Values**					
+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		0.01%	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	”

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+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	”
+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		0.1%	UINT32	R	”
+42,43	0x7815	Frequency variation, +/-Hz		0.01 Hz	INT32	R	Last 10-s measurement
+44,45	0x7816	Short voltage interruption, V1 residual voltage, %Un		0.01%	UINT32	R	
+46,47	0x7817	Short voltage interruption, V2 residual voltage, %Un		0.01%	UINT32	R	
+48,49	0x7818	Short voltage interruption, V3 residual voltage, %Un		0.01%	UINT32	R	
+50,51	0x7819	Short voltage interruption, duration		ms	UINT32	R	
+52,53	0x781A	Voltage dip, V1 residual voltage, %Un		0.01%	UINT32	R	
+54,55	0x781B	Voltage dip, V2 residual voltage, %Un		0.01%	UINT32	R	
+56,57	0x781C	Voltage dip, V3 residual voltage, %Un		0.01%	UINT32	R	
+58,59	0x781D	Voltage dip, duration		ms	UINT32	R	
+60,61	0x781E	Voltage swell, V1 voltage, %Un		0.01%	UINT32	R	
+62,63	0x781F	Voltage swell, V2 voltage, %Un		0.01%	UINT32	R	
+64,65	0x7820	Voltage swell, V2 voltage, %Un		0.01%	UINT32	R	
+66,67	0x7821	Voltage swell, duration		ms	UINT32	R	
+68,69	0x7822	V1 Transient overvoltage, %Un peak		0.01%	UINT32	R	
+70,71	0x7823	V1 Transient duration		µs	UINT32	R	
+72,73	0x7824	V2 Transient overvoltage, %Un peak		0.01%	UINT32	R	
+74,75	0x7825	V2 Transient duration		µs	UINT32	R	
+76,77	0x7826	V3 Transient overvoltage, %Un peak		0.01%	UINT32	R	
+78,79	0x7827	V3 Transient duration		µs	UINT32	R	
27136-27215		**Present EN 50160:2010 PQ Values**					
+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		0.01%	INT32	R	”
+8,9	0x7804	V1 Voltage change, %Un		0.01%	UINT32	R	Last 1-hour measurement
+10,11	0x7805	Not used		1/min × 0.01	UINT32	R	”
+12,13	0x7806	V2 Voltage change, %Un		0.01%	UINT32	R	”
+14,15	0x7807	Not used		1/min × 0.01	UINT32	R	”
+16,17	0x7808	V3 Voltage change, %Un		0.01%	UINT32	R	”

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
+18,19	0x7809	Not used		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	”
+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		0.1%	UINT32	R	”
+42,43	0x7815	Frequency variation, +/-%Fn		0.01%	INT32	R	Last 10-s measurement
+44,45	0x7816	Short voltage interruption, V1 residual voltage, %Un		0.01%	UINT32	R	
+46,47	0x7817	Short voltage interruption, V2 residual voltage, %Un		0.01%	UINT32	R	
+48,49	0x7818	Short voltage interruption, V3 residual voltage, %Un		0.01%	UINT32	R	
+50,51	0x7819	Short voltage interruption, duration		ms	UINT32	R	
+52,53	0x781A	Voltage dip, V1 residual voltage, %Un		0.01%	UINT32	R	
+54,55	0x781B	Voltage dip, V2 residual voltage, %Un		0.01%	UINT32	R	
+56,57	0x781C	Voltage dip, V3 residual voltage, %Un		0.01%	UINT32	R	
+58,59	0x781D	Voltage dip, duration		ms	UINT32	R	
+60,61	0x781E	Voltage swell, V1 voltage, %Un		0.01%	UINT32	R	
+62,63	0x781F	Voltage swell, V2 voltage, %Un		0.01%	UINT32	R	
+64,65	0x7820	Voltage swell, V2 voltage, %Un		0.01%	UINT32	R	
+66,67	0x7821	Voltage swell, duration		ms	UINT32	R	
+68,69	0x7822	V1 Transient overvoltage, %Un peak		0.01%	UINT32	R	
+70,71	0x7823	V1 Transient duration		µs	UINT32	R	
+72,73	0x7824	V2 Transient overvoltage, %Un peak		0.01%	UINT32	R	
+74,75	0x7825	V2 Transient duration		µs	UINT32	R	
+76,77	0x7826	V3 Transient overvoltage, %Un peak		0.01%	UINT32	R	
+78,79	0x7827	V3 Transient duration		µs	UINT32	R	
		Generic TOU Energy Registers					Point references
	0x7000	Tariff #1 register	0-999,999,999	0.1 kWh	UINT32		
	0x7001	Tariff #2 register	0-999,999,999	0.1 kWh	UINT32		
		...					
	0x7007	Tariff #8 register	0-999,999,999	0.1 kWh	UINT32		
		Generic TOU Maximum Demand Registers					Point references
	0x7100	Tariff #1 register	0-Pmax	U3	UINT32		
	0x7101	Tariff #2 register	0-Pmax	U3	UINT32		
		...					
	0x7107	Tariff #8 register	0-Pmax	U3	UINT32		
		Generic Data					Point references
	0x7400	V1 voltage	0-Vmax	U1	UINT32		[7]

Address	Point ID	Description	Options/Range[3]	Units[3]	Type	R/W	Notes
	0x7401	V2 voltage	0-Vmax	U1	UINT32		7
	0x7402	V3 voltage	0-Vmax	U1	UINT32		7
	0x7403	V4 (neutral-ground) voltage	0-Vmax	U1	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	U4	UINT32		
	0x7408	I2 current	0-Imax	U4	UINT32		
	0x7409	I3 current	0-Imax	U4	UINT32		
	0x740A	I4 current	0-I4max	U4	UINT32		
	0x740B	In current	0-Imax	U4	UINT32		
	0x7411	Zero-sequence voltage	0-Vmax	U1	UINT32		
	0x7412	Zero-sequence current	0-Imax	U4	UINT32		
	0x7414	Voltage unbalance	0-3000	×0.1%	UINT32		
	0x7415	Current unbalance	0-3000	×0.1%	UINT32		
	0x7418	Frequency	0-10000	×0.01Hz	UINT32		
	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
	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
	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		
	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, %Un	0-10000	×0.01%	UINT32		2
	0x1901	V1 H02 Harmonic voltage, %Un	0-10000	×0.01%	UINT32		2
		...					
	0x1931	V1 H50 Harmonic voltage, %Un	0-10000	×0.01%	UINT32		2
	0x1A00	V2 H01 Harmonic voltage, %Un	0-10000	×0.01%	UINT32		2
	0x1A01	V2 H02 Harmonic voltage, %Un	0-10000	×0.01%	UINT32		2
		...					
	0x1A31	V2 H50 Harmonic voltage, %Un	0-10000	×0.01%	UINT32		2
	0x1B00	V3 H01 Harmonic voltage, %Un	0-10000	×0.01%	UINT32		2
	0x1B01	V3 H02 Harmonic voltage, %Un	0-10000	×0.01%	UINT32		2
		...					
	0x1B31	V3 H50 Harmonic voltage, %Un	0-10000	×0.01%	UINT32		2
	0x2980	V1 Pst	0-2000	×0.01	UINT32		2
	0x2981	V2 Pst	0-2000	×0.01	UINT32		2
	0x2982	V3 Pst	0-2000	×0.01	UINT32		2
	0x2983	V1 Plt	0-2000	×0.01	UINT32		2
	0x2984	V2 Plt	0-2000	×0.01	UINT32		2
	0x2985	V3 Plt	0-2000	×0.01	UINT32		2
	0x5B02	V1 dV%, voltage change on phase V1, dV/Un%	0-10000	×0.01%	UINT32		2
	0x5B04	V2 dV%, voltage change on phase V2, dV/Un%	0-10000	×0.01%	UINT32		2
	0x5B06	V3 dV%, voltage change on phase V3, dV/Un%	0-10000	×0.01%	UINT32		2
	0x6005	V1 Frq1 %Un, 1st signaling voltage magnitude V1	0-10000	×0.01%	UINT32		2
	0x6006	V1 Frq2 %Un, 2nd signaling voltage magnitude V1	0-10000	×0.01%	UINT32		2
	0x6007	V1 Frq3 %Un, 3rd signaling voltage magnitude V1	0-10000	×0.01%	UINT32		2
	0x6008	V1 Frq4 %Un, 4th signaling voltage magnitude V1	0-10000	×0.01%	UINT32		2
	0x600A	V2 Frq1 %Un, 1st signaling voltage magnitude V2	0-10000	×0.01%	UINT32		2
	0x600B	V2 Frq2 %Un, 2nd signaling voltage magnitude V2	0-10000	×0.01%	UINT32		2
	0x600C	V2 Frq3 %Un, 3rd signaling voltage magnitude V2	0-10000	×0.01%	UINT32		2
	0x600D	V2 Frq4 %Un, 4th signaling voltage magnitude V2	0-10000	×0.01%	UINT32		2
	0x600F	V3 Frq1 %Un, 1st signaling voltage magnitude V3	0-10000	×0.01%	UINT32		2
	0x6010	V3 Frq2 %Un, 2nd signaling voltage magnitude V3	0-10000	×0.01%	UINT32		2
	0x6011	V3 Frq3 %Un, 3rd signaling voltage magnitude V3	0-10000	×0.01%	UINT32		2
	0x6012	V3 Frq4 %Un, 4th signaling voltage magnitude V3	0-10000	×0.01%	UINT32		2

NOTES:

1 When the 4LN3, 4LL3, 3LN3 or 3LL3 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 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] For volts, amps, power and frequency scales and units, refer to Section 4 ”Data Scales and Units”.

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

[5] On a 0.2-s interval.

[6] On a 3-s interval.

[7] a) In event log files represent line-to-neutral voltages;

b) In data log files represent line-to-neutral voltages in 4LN3, 4LL3, 3LN3 and 3LL3 wiring modes, and line-to-line voltages in other wiring modes.

3.5 Minimum/Maximum Log Registers

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
35840-35971		**Minimum Phase Values**					
+0,1 +2,3	0x2C00	Min. V1/V12 Voltage Timestamp	0-Vmax F1	U1 sec	UINT32 UINT32	R R	[1]
+4,5 +6,7	0x2C01	Min. V2/V23 Voltage Timestamp	0-Vmax F1	U1 sec	UINT32 UINT32	R R	[1]
+8,9 +10,11	0x2C02	Min. V3/V31 Voltage Timestamp	0-Vmax F1	U1 sec	UINT32 UINT32	R R	[1]
+12,13 +14,15	0x2C03	Min. I1 Current Timestamp	0-Imax F1	U4 sec	UINT32 UINT32	R R	
+16,17 +18,19	0x2C04	Min. I2 Current Timestamp	0-Imax	U4 sec	UINT32 UINT32	R R	
+20,21 +22,23	0x2C05	Min. I3 Current Timestamp	0-Imax	U4 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/V12 Voltage THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	[2, 4]
+76,77	0x2C13	Min. V2/V23 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/V31 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	x0.1% 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	
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	
+20,21 +22,23	0x2D05	Min. Total PF lead Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	
36352-36371		**Minimum Auxiliary Values**					
+0,1 +2,3	0x2E00	Min. I4 current Timestamp	0-I4max	U4 sec	UINT32 UINT32	R R	
+4,5	0x2E01	Min. In Current	0-Imax	U4	UINT32	R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+6,7		Timestamp		sec	UINT32	R	
+8,9 +10,11	0x2E02	Min. Frequency Timestamp	0-Fmax	×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	
36864-36995		**Maximum Phase Values**					
+0,1 +2,3	0x3400	Max. V1/V12 Voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+4,5 +6,7	0x3401	Max. V2/V23 Voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+8,9 +10,11	0x3402	Max. V3/V31 Voltage Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+12,13 +14,15	0x3403	Max. I1 Current Timestamp	0-Imax	U4 sec	UINT32 UINT32	R R	
+16,17 +18,19	0x3404	Max. I2 Current Timestamp	0-Imax	U4 sec	UINT32 UINT32	R R	
+20,21 +22,23	0x3405	Max. I3 Current Timestamp	0-Imax	U4 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

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+72,73 +74,75	0x3412	Max. V1/V12 Voltage THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	2, 4
+76,77 +78,79	0x3413	Max. V2/V23 Voltage THD Timestamp	0-9999	×0.1% sec	UINT32 UINT32	R R	2, 4
+80,81 +82,83	0x3414	Max. V3/V31 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	
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 +18,19	0x3504	Max. Total PF lag Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	
+20,21 +22,23	0x3505	Max. Total PF lead Timestamp	0-1000	×0.001 sec	UINT32 UINT32	R R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
37376-37395		**Maximum Auxiliary Values**					
+0,1 +2,3	0x3600	Max. I4 current Timestamp	0-I4max	U4 sec	UINT32 UINT32	R R	
+4,5 +6,7	0x3601	Max. In Current Timestamp	0-Imax	U4 sec	UINT32 UINT32	R R	
+8,9 +10,11	0x3602	Max. Frequency Timestamp	0-Fmax	×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	
37504-37543		**Billing Summary Maximum Demands**					
+0,1 +2,3	0x4780	Summary register #1 Maximum Demand Timestamp	0-Pmax	U3	UINT32	R	
+4,5 +6,7	0x4781	Summary register #2 Maximum Demand Timestamp	0-Pmax	U3	UINT32	R	
		...					
+36,37 +38,39	0x4789	Summary register #10 Maximum Demand Timestamp	0-Pmax	U3	UINT32	R	
37632-37715		**Engineering Maximum Demands**					
+0,1 +2,3	0x3700	V1/V12 Maximum volt demand Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+4,5 +6,7	0x3701	V2/V23 Maximum volt demand Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+8,9 +10,11	0x3702	V3/V31 Maximum volt demand Timestamp	0-Vmax	U1 sec	UINT32 UINT32	R R	[1]
+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			UINT32 UINT32	R R	
+28,29 +30,31	0x3707	Not used Timestamp			UINT32 UINT32	R R	
+32,33 +34,35	0x3708	Not used Timestamp			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	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+48,49	0x3737	Not used			UINT32	R	
+50,51		Timestamp			UINT32	R	
+52,53	0x370D	Not used			UINT32	R	
+54,55		Timestamp			UINT32	R	
+56,57	0x370E	Not used			UINT32	R	
+58,59		Timestamp			UINT32	R	
+60,61	0x370F	Maximum kW export sliding window demand	0-Pmax	U3	UINT32	R	
+62,63		Timestamp		sec	UINT32	R	
+64,65	0x3710	Maximum kvar export sliding window demand	0-Pmax	U3	UINT32	R	
+66,67		Timestamp		sec	UINT32	R	
+68,69	0x3737	Not used	0		UINT32	R	
+70,71		Timestamp			UINT32	R	
+72,73	0x3712	Not used	0		UINT32	R	
+74,75		Timestamp			UINT32	R	
+76,77	0x3713	Not used	0		UINT32	R	
+78,79		Timestamp			UINT32	R	
+80,81	0x3714	I4 Maximum ampere demand	0-I4max	U4	UINT32	R	
+82,83		Timestamp		sec	UINT32	R	
38016-38063		**Maximum Harmonic Demands**					
+0,1	0x3880	V1/V12 THD demand	0-9999	×0.1%	UINT32	R	[2]
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x3881	V2/V23 THD demand	0-9999	×0.1%	UINT32	R	[2]
+6,7		Timestamp		sec	UINT32	R	
+8,9	0x3882	V3/V31 THD demand	0-9999	×0.1%	UINT32	R	[2]
+10,11		Timestamp		sec	UINT32	R	
+12,13	0x3883	Not used			UINT32	R	
+14,15					UINT32	R	
+16,17	0x3884	I1 THD demand	0-9999	×0.1%	UINT32	R	
+18,19		Timestamp		sec	UINT32	R	
+20,21	0x3885	I2 THD demand	0-9999	×0.1%	UINT32	R	
+22,23		Timestamp		sec	UINT32	R	
+24,25	0x3886	I3 THD demand	0-9999	×0.1%	UINT32	R	
+26,27		Timestamp		sec	UINT32	R	
+28,29	0x3887	I4 THD demand	0-9999	×0.1%	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
+32,33	0x3888	I1 TDD demand	0-1000	×0.1%	UINT32	R	
+34,35		Timestamp		sec	UINT32	R	
+36,37	0x3889	I2 TDD demand	0-1000	×0.1%	UINT32	R	
+38,39		Timestamp		sec	UINT32	R	
+40,41	0x388A	I3 TDD demand	0-1000	×0.1%	UINT32	R	
+42,43		Timestamp		sec	UINT32	R	
+44,45	0x388B	I4 TDD demand	0-1000	×0.1%	UINT32	R	
+46,47		Timestamp		sec	UINT32	R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
38144-38175		**Billing TOU Maximum Demand Register #1**					
+0,1	0x4800	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x4801	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x4807	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
38400-38431		**Billing TOU Maximum Demand Register #2**					
+0,1	0x4900	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x4901	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x4907	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
38656-38687		**Billing TOU Maximum Demand Register #3**					
+0,1	0x4A00	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x4A01	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x4A07	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
38272-38313		**Billing TOU Maximum Demand Register #4**					
+0,1	0x4880	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x4881	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x4887	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
38528-38559		**Billing TOU Maximum Demand Register #5**					
+0,1	0x4980	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x4981	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x4987	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
38784-38815		**Billing TOU Maximum Demand Register #6**					
+0,1	0x4A80	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x4A81	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range/Format[3]	Units[3]	Type	R/W	Notes
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x4A87	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
38912-38943		**Billing TOU Maximum Demand Register #7**					
+0,1	0x5300	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x5301	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x5307	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
39040-39071		**Billing TOU Maximum Demand Register #8**					
+0,1	0x5380	Tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x5381	Tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x5387	Tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
39168-39299		**Billing TOU Maximum Demand Register #9**					
+0,1	0x5400	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x5401	Tariff #2 register	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x5407	Tariff #8 register	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	
39296-39327		**Billing TOU Maximum Demand Register #10**					
+0,1	0x5480	Tariff #1 register	0-Pmax	U3	UINT32	R	
+2,3		Timestamp		sec	UINT32	R	
+4,5	0x5481	Tariff #2 register	0-Pmax	U3	UINT32	R	
+6,7		Timestamp		sec	UINT32	R	
		...				R	
+28,29	0x5487	Tariff #8 register	0-Pmax	U3	UINT32	R	
+30,31		Timestamp		sec	UINT32	R	

NOTES:

[1] When the 4LN3, 4LL3, 3LN3 or 3LL3 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 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] For volts, amps, power and frequency scales and units, refer to Section 4 ”Data Scales and Units”.

[4] On a 0.2-s interval.

3.6 Billing Period Data

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
40410		Billing period counter	0-99		UINT16	R	
40411		Number of available billing periods	0-4		UINT16	R	
40412-41135		**Present billing period data**					
41136-41859		**Previous (most recent) billing period data**					
41860-42583		**Second previous billing period data**					
42584-43307		**Third previous billing period data**					
43308-44031		**Fourth previous billing period data**					
+0-723		**Billing period data structure**					
+0,1		Billing period timestamp		F1	UINT32	R	
+2,3		Billing period duration		seconds	UINT32	R	
+4,5	0x1780	Register 1 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+6,7	0x1781	Register 2 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+8,9	0x1782	Register 3 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+10,11	0x1783	Register 4 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+12,13	0x1784	Register 5 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+14,15	0x1785	Register 6 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+16,17	0x1786	Register 7 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+18,19	0x1787	Register 8 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+20,21	0x1788	Register 9 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+22,23	0x1789	Register 10 total energy	0-999,999,999	0.1 kWh	UINT32	R	
+24,25	0x4780	Register 1 total maximum demand	0-Pmax	U3	UINT32	R	
+26,27	0x7700	Register 1 total maximum demand timestamp		F1	UINT32	R	
+28,29	0x4781	Register 2 total maximum demand	0-Pmax	U3	UINT32	R	
+30,31	0x7700	Register 2 total maximum demand timestamp		F1	UINT32	R	
+32,33	0x4782	Register 3 total maximum demand	0-Pmax	U3	UINT32	R	
+34,35	0x7700	Register 3 total maximum demand timestamp		F1	UINT32	R	
+36,37	0x4783	Register 4 total maximum demand	0-Pmax	U3	UINT32	R	
+38,39	0x7700	Register 4 total maximum demand timestamp		F1	UINT32	R	
+40,41	0x4784	Register 5 total maximum demand	0-Pmax	U3	UINT32	R	
+42,43	0x7700	Register 5 total maximum demand timestamp		F1	UINT32	R	
+44,45	0x4785	Register 6 total maximum demand	0-Pmax	U3	UINT32	R	
+46,47	0x7700	Register 6 total maximum demand timestamp		F1	UINT32	R	
+48,49	0x4786	Register 7 total maximum demand	0-Pmax	U3	UINT32	R	
+50,51	0x7700	Register 7 total maximum demand timestamp		F1	UINT32	R	
+52,53	0x4787	Register 8 total maximum demand	0-Pmax	U3	UINT32	R	
+54,55	0x7700	Register 8 total maximum demand timestamp		F1	UINT32	R	
+56,57	0x4788	Register 9 total maximum demand	0-Pmax	U3	UINT32	R	
+58,59	0x7700	Register 9 total maximum demand timestamp		F1	UINT32	R	
+60,61	0x4789	Register 10 total maximum demand	0-Pmax	U3	UINT32	R	
+62,63	0x7700	Register 10 total maximum demand timestamp		F1	UINT32	R	
+64,65	0x4790	Register 1 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+66,67	0x4791	Register 2 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+68,69	0x4792	Register 3 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+70,71	0x4793	Register 4 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+72,73	0x4794	Register 5 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+74,75	0x4795	Register 6 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+76,77	0x4796	Register 7 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+78,79	0x4797	Register 8 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+80,81	0x4798	Register 9 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+82,83	0x4799	Register 10 total cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+84,85	0x3D00	Register 1 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+86,87	0x3D01	Register 1 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+88,89	0x3D02	Register 1 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+90,91	0x3D03	Register 1 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+92,93	0x3D04	Register 1 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+94,95	0x3D05	Register 1 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+96,97	0x3D06	Register 1 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+98,99	0x3D07	Register 1 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+100,101	0x3E00	Register 2 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+102,103	0x3E01	Register 2 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+104,105	0x3E02	Register 2 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+106,107	0x3E03	Register 2 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+108,109	0x3E04	Register 2 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+110,111	0x3E05	Register 2 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+112,113	0x3E06	Register 2 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+114,115	0x3E07	Register 2 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+116,117	0x3F00	Register 3 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+118,119	0x3F01	Register 3 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+120,121	0x3F02	Register 3 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+122,123	0x3F03	Register 3 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+124,125	0x3F04	Register 3 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+126,127	0x3F05	Register 3 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+128,129	0x3F06	Register 3 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+130,131	0x3F07	Register 3 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+132,133	0x4000	Register 4 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+134,135	0x4001	Register 4 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+136,137	0x4002	Register 4 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+138,139	0x4003	Register 4 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+140,141	0x4004	Register 4 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+142,143	0x4005	Register 4 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+144,145	0x4006	Register 4 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+146,147	0x4007	Register 4 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+148,149	0x4100	Register 5 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+150,151	0x4101	Register 5 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+152,153	0x4102	Register 5 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+154,155	0x4103	Register 5 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+156,157	0x4104	Register 5 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+158,159	0x4105	Register 5 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+160,161	0x4106	Register 5 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+162,163	0x4107	Register 5 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+164,165	0x4200	Register 6 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+166,167	0x4201	Register 6 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+168,169	0x4202	Register 6 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+170,171	0x4203	Register 6 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+172,173	0x4204	Register 6 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+174,175	0x4205	Register 6 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+176,177	0x4206	Register 6 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+178,179	0x4207	Register 6 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+180,181	0x4300	Register 7 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+182,183	0x4301	Register 7 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+184,185	0x4302	Register 7 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+186,187	0x4303	Register 7 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+188,189	0x4304	Register 7 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+190,191	0x4305	Register 7 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+192,193	0x4306	Register 7 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+194,195	0x4307	Register 7 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+196,197	0x4400	Register 8 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+198,199	0x4401	Register 8 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+200,201	0x4402	Register 8 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+202,203	0x4403	Register 8 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+204,205	0x4404	Register 8 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+206,207	0x4405	Register 8 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+208,209	0x4406	Register 8 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+210,211	0x4407	Register 8 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+212,213	0x4B00	Register 9 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+214,215	0x4B01	Register 9 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+216,217	0x4B02	Register 9 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+218,219	0x4B03	Register 9 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	
+220,221	0x4B04	Register 9 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+222,223	0x4B05	Register 9 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+224,225	0x4B06	Register 9 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+226,227	0x4B07	Register 9 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+228,229	0x4C00	Register 10 tariff #1 energy	0-999,999,999	0.1 kWh	UINT32	R	
+230,231	0x4C01	Register 10 tariff #2 energy	0-999,999,999	0.1 kWh	UINT32	R	
+232,233	0x4C02	Register 10 tariff #3 energy	0-999,999,999	0.1 kWh	UINT32	R	
+234,235	0x4C03	Register 10 tariff #4 energy	0-999,999,999	0.1 kWh	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+236,237	0x4C04	Register 10 tariff #5 energy	0-999,999,999	0.1 kWh	UINT32	R	
+238,239	0x4C05	Register 10 tariff #6 energy	0-999,999,999	0.1 kWh	UINT32	R	
+240,241	0x4C06	Register 10 tariff #7 energy	0-999,999,999	0.1 kWh	UINT32	R	
+242,243	0x4C07	Register 10 tariff #8 energy	0-999,999,999	0.1 kWh	UINT32	R	
+244,245	0x4800	Register 1 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+246,247	0x7701	Register 1 tariff #1 maximum demand timestamp		F1	UINT32	R	
+248,249	0x4801	Register 1 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+250,251	0x7702	Register 1 tariff #2 maximum demand timestamp		F1	UINT32	R	
+252,253	0x4802	Register 1 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+254,255	0x7703	Register 1 tariff #3 maximum demand timestamp		F1	UINT32	R	
+256,257	0x4803	Register 1 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+258,259	0x7704	Register 1 tariff #4 maximum demand timestamp		F1	UINT32	R	
+260,261	0x4804	Register 1 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+262,263	0x7705	Register 1 tariff #5 maximum demand timestamp		F1	UINT32	R	
+264,265	0x4805	Register 1 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+266,267	0x7786	Register 1 tariff #6 maximum demand timestamp		F1	UINT32	R	
+268,269	0x4806	Register 1 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+270,271	0x7707	Register 1 tariff #7 maximum demand timestamp		F1	UINT32	R	
+272,273	0x4807	Register 1 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+274,275	0x7708	Register 1 tariff #8 maximum demand timestamp		F1	UINT32	R	
+276,277	0x4900	Register 2 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+278,279	0x7701	Register 2 tariff #1 maximum demand timestamp		F1	UINT32	R	
+280,281	0x4901	Register 2 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+282,283	0x7702	Register 2 tariff #2 maximum demand timestamp		F1	UINT32	R	
+284,285	0x4902	Register 2 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+286,287	0x7703	Register 2 tariff #3 maximum demand timestamp		F1	UINT32	R	
+288,289	0x4903	Register 2 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+290,291	0x7704	Register 2 tariff #4 maximum demand timestamp		F1	UINT32	R	
+292,293	0x4904	Register 2 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+294,295	0x7705	Register 2 tariff #5 maximum demand timestamp		F1	UINT32	R	
+296,297	0x4905	Register 2 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+298,299	0x7786	Register 2 tariff #6 maximum demand timestamp		F1	UINT32	R	
+300,301	0x4906	Register 2 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+302,303	0x7707	Register 2 tariff #7 maximum demand timestamp		F1	UINT32	R	
+304,305	0x4907	Register 2 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+306,307	0x7708	Register 2 tariff #8 maximum demand timestamp		F1	UINT32	R	
+308,309	0x4A00	Register 3 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+310,311	0x7701	Register 3 tariff #1 maximum demand timestamp		F1	UINT32	R	
+312,313	0x4A01	Register 3 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+314,315	0x7702	Register 3 tariff #2 maximum demand timestamp		F1	UINT32	R	
+316,317	0x4A02	Register 3 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+318,319	0x7703	Register 3 tariff #3 maximum demand timestamp		F1	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+320,221	0x4A03	Register 3 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+322,323	0x7704	Register 3 tariff #4 maximum demand timestamp		F1	UINT32	R	
+324,325	0x4A04	Register 3 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+326,327	0x7705	Register 3 tariff #5 maximum demand timestamp		F1	UINT32	R	
+328,329	0x4A05	Register 3 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+330,331	0x7786	Register 3 tariff #6 maximum demand timestamp		F1	UINT32	R	
+332,333	0x4A06	Register 3 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+334,335	0x7707	Register 3 tariff #7 maximum demand timestamp		F1	UINT32	R	
+336,337	0x4A07	Register 3 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+338,339	0x7708	Register 3 tariff #8 maximum demand timestamp		F1	UINT32	R	
+340,341	0x4880	Register 4 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+342,343	0x7701	Register 4 tariff #1 maximum demand timestamp		F1	UINT32	R	
+344,345	0x4881	Register 4 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+346,347	0x7702	Register 4 tariff #2 maximum demand timestamp		F1	UINT32	R	
+348,349	0x4882	Register 4 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+350,351	0x7703	Register 4 tariff #3 maximum demand timestamp		F1	UINT32	R	
+352,353	0x4883	Register 4 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+354,355	0x7704	Register 4 tariff #4 maximum demand timestamp		F1	UINT32	R	
+356,357	0x4884	Register 4 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+358,359	0x7705	Register 4 tariff #5 maximum demand timestamp		F1	UINT32	R	
+360,361	0x4885	Register 4 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+362,363	0x7786	Register 4 tariff #6 maximum demand timestamp		F1	UINT32	R	
+364,365	0x4886	Register 4 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+366,367	0x7707	Register 4 tariff #7 maximum demand timestamp		F1	UINT32	R	
+368,369	0x4887	Register 4 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+370,371	0x7708	Register 4 tariff #8 maximum demand timestamp		F1	UINT32	R	
+372,373	0x4980	Register 5 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+374,375	0x7701	Register 5 tariff #1 maximum demand timestamp		F1	UINT32	R	
+376,377	0x4981	Register 5 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+378,379	0x7702	Register 5 tariff #2 maximum demand timestamp		F1	UINT32	R	
+380,381	0x4982	Register 5 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+382,383	0x7703	Register 5 tariff #3 maximum demand timestamp		F1	UINT32	R	
+384,385	0x4983	Register 5 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+386,387	0x7704	Register 5 tariff #4 maximum demand timestamp		F1	UINT32	R	
+388,389	0x4984	Register 5 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+390,391	0x7705	Register 5 tariff #5 maximum demand timestamp		F1	UINT32	R	
+392,393	0x4985	Register 5 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+394,395	0x7786	Register 5 tariff #6 maximum demand timestamp		F1	UINT32	R	
+396,397	0x4986	Register 5 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+398,399	0x7707	Register 5 tariff #7 maximum demand timestamp		F1	UINT32	R	
+400,401	0x4987	Register 5 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+402,403	0x7708	Register 5 tariff #8 maximum demand timestamp		F1	UINT32	R	
+404,405	0x4A80	Register 6 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+406,407	0x7701	Register 6 tariff #1 maximum demand timestamp		F1	UINT32	R	
+408,409	0x4A81	Register 6 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+410,411	0x7702	Register 6 tariff #2 maximum demand timestamp		F1	UINT32	R	
+412,413	0x4A82	Register 6 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+414,415	0x7703	Register 6 tariff #3 maximum demand timestamp		F1	UINT32	R	
+416,417	0x4A83	Register 6 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+418,419	0x7704	Register 6 tariff #4 maximum demand timestamp		F1	UINT32	R	
+420,421	0x4A84	Register 6 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+422,423	0x7705	Register 6 tariff #5 maximum demand timestamp		F1	UINT32	R	
+424,425	0x4A85	Register 6 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+426,427	0x7786	Register 6 tariff #6 maximum demand timestamp		F1	UINT32	R	
+428,429	0x4A86	Register 6 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+430,431	0x7707	Register 6 tariff #7 maximum demand timestamp		F1	UINT32	R	
+432,433	0x4A87	Register 6 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+434,435	0x7708	Register 6 tariff #8 maximum demand timestamp		F1	UINT32	R	
+436,437	0x5300	Register 7 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+438,439	0x7701	Register 7 tariff #1 maximum demand timestamp		F1	UINT32	R	
+440,441	0x5301	Register 7 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+442,443	0x7702	Register 7 tariff #2 maximum demand timestamp		F1	UINT32	R	
+444,445	0x5302	Register 7 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+446,447	0x7703	Register 7 tariff #3 maximum demand timestamp		F1	UINT32	R	
+448,449	0x5303	Register 7 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+450,451	0x7704	Register 7 tariff #4 maximum demand timestamp		F1	UINT32	R	
+452,453	0x5304	Register 7 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+454,455	0x7705	Register 7 tariff #5 maximum demand timestamp		F1	UINT32	R	
+456,457	0x5305	Register 7 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+458,459	0x7786	Register 7 tariff #6 maximum demand timestamp		F1	UINT32	R	
+460,461	0x5306	Register 7 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+462,463	0x7707	Register 7 tariff #7 maximum demand timestamp		F1	UINT32	R	
+464,465	0x5307	Register 7 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+466,467	0x7708	Register 7 tariff #8 maximum demand timestamp		F1	UINT32	R	
+468,469	0x5380	Register 8 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+470,471	0x7701	Register 8 tariff #1 maximum demand timestamp		F1	UINT32	R	
+472,473	0x5381	Register 8 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+474,475	0x7702	Register 8 tariff #2 maximum demand timestamp		F1	UINT32	R	
+476,477	0x5382	Register 8 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+478,479	0x7703	Register 8 tariff #3 maximum demand timestamp		F1	UINT32	R	
+480,481	0x5383	Register 8 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+482,483	0x7704	Register 8 tariff #4 maximum demand timestamp		F1	UINT32	R	
+484,485	0x5384	Register 8 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+486,487	0x7705	Register 8 tariff #5 maximum demand timestamp		F1	UINT32	R	
+488,489	0x5385	Register 8 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+490,491	0x7786	Register 8 tariff #6 maximum demand timestamp		F1	UINT32	R	
+492,493	0x5386	Register 8 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+494,495	0x7707	Register 8 tariff #7 maximum demand timestamp		F1	UINT32	R	
+496,497	0x5387	Register 8 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+498,499	0x7708	Register 8 tariff #8 maximum demand timestamp		F1	UINT32	R	
+500,501	0x5400	Register 9 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+502,503	0x7701	Register 9 tariff #1 maximum demand timestamp		F1	UINT32	R	
+504,505	0x5401	Register 9 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+506,507	0x7702	Register 9 tariff #2 maximum demand timestamp		F1	UINT32	R	
+508,509	0x5402	Register 9 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+510,511	0x7703	Register 9 tariff #3 maximum demand timestamp		F1	UINT32	R	
+512,513	0x5403	Register 9 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+514,215	0x7704	Register 9 tariff #4 maximum demand timestamp		F1	UINT32	R	
+516,517	0x5404	Register 9 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+518,519	0x7705	Register 9 tariff #5 maximum demand timestamp		F1	UINT32	R	
+520,521	0x5405	Register 9 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+522,523	0x7786	Register 9 tariff #6 maximum demand timestamp		F1	UINT32	R	
+524,525	0x5406	Register 9 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+526,527	0x7707	Register 9 tariff #7 maximum demand timestamp		F1	UINT32	R	
+528,529	0x5407	Register 9 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+530,531	0x7708	Register 9 tariff #8 maximum demand timestamp		F1	UINT32	R	
+532,533	0x5480	Register 10 tariff #1 maximum demand	0-Pmax	U3	UINT32	R	
+534,535	0x7701	Register 10 tariff #1 maximum demand timestamp		F1	UINT32	R	
+536,537	0x5481	Register 10 tariff #2 maximum demand	0-Pmax	U3	UINT32	R	
+538,539	0x7702	Register 10 tariff #2 maximum demand timestamp		F1	UINT32	R	
+540,541	0x5482	Register 10 tariff #3 maximum demand	0-Pmax	U3	UINT32	R	
+542,543	0x7703	Register 10 tariff #3 maximum demand timestamp		F1	UINT32	R	
+544,545	0x5483	Register 10 tariff #4 maximum demand	0-Pmax	U3	UINT32	R	
+546,547	0x7704	Register 10 tariff #4 maximum demand timestamp		F1	UINT32	R	
+548,549	0x5484	Register 10 tariff #5 maximum demand	0-Pmax	U3	UINT32	R	
+550,551	0x7705	Register 10 tariff #5 maximum demand timestamp		F1	UINT32	R	
+552,553	0x5485	Register 10 tariff #6 maximum demand	0-Pmax	U3	UINT32	R	
+554,555	0x7786	Register 10 tariff #6 maximum demand timestamp		F1	UINT32	R	
+556,557	0x5486	Register 10 tariff #7 maximum demand	0-Pmax	U3	UINT32	R	
+558,559	0x7707	Register 10 tariff #7 maximum demand timestamp		F1	UINT32	R	
+560,561	0x5487	Register 10 tariff #8 maximum demand	0-Pmax	U3	UINT32	R	
+562,563	0x7708	Register 10 tariff #8 maximum demand timestamp		F1	UINT32	R	
+564,565	0x4810	Register 1 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+566,567	0x4811	Register 1 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+568,569	0x4812	Register 1 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+570,571	0x4813	Register 1 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+572,573	0x4814	Register 1 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+574,575	0x4815	Register 1 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+576,577	0x4816	Register 1 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+578,579	0x4817	Register 1 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+580,581	0x4910	Register 2 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+582,583	0x4911	Register 2 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+584,585	0x4912	Register 2 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+586,587	0x4913	Register 2 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+588,589	0x4914	Register 2 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+590,591	0x4915	Register 2 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+592,593	0x4916	Register 2 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+594,595	0x4917	Register 2 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+596,597	0x4A10	Register 3 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+598,599	0x4A11	Register 3 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+600,601	0x4A12	Register 3 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+602,603	0x4A13	Register 3 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+604,605	0x4A14	Register 3 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+606,607	0x4A15	Register 3 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+608,609	0x4A16	Register 3 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+610,611	0x4A17	Register 3 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+612,613	0x4890	Register 4 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+614,615	0x4891	Register 4 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+616,617	0x4892	Register 4 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+618,619	0x4893	Register 4 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+620,621	0x4894	Register 4 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+622,623	0x4895	Register 4 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+624,625	0x4896	Register 4 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+626,627	0x4897	Register 4 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+628,629	0x4990	Register 5 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+630,631	0x4991	Register 5 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+632,633	0x4992	Register 5 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+634,635	0x4993	Register 5 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+636,637	0x4994	Register 5 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+638,639	0x4995	Register 5 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+640,641	0x4996	Register 5 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+642,643	0x4997	Register 5 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+644,645	0x4A90	Register 6 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+646,647	0x4A91	Register 6 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+648,649	0x4A92	Register 6 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+650,651	0x4A93	Register 6 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+652,653	0x4A94	Register 6 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+654,655	0x4A95	Register 6 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+656,657	0x4A96	Register 6 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+658,659	0x4A97	Register 6 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+660,661	0x5310	Register 7 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+662,663	0x5311	Register 7 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+664,665	0x5312	Register 7 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+666,667	0x5313	Register 7 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+668,669	0x5314	Register 7 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+670,671	0x5315	Register 7 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+672,673	0x5316	Register 7 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+674,675	0x5317	Register 7 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+676,677	0x5390	Register 8 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+678,679	0x5391	Register 8 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+680,681	0x5392	Register 8 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+682,683	0x5393	Register 8 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+684,685	0x5394	Register 8 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+686,687	0x5395	Register 8 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+688,689	0x5396	Register 8 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+690,691	0x5397	Register 8 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+692,693	0x5410	Register 9 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+694,695	0x5411	Register 9 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+696,697	0x5412	Register 9 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+698,699	0x5413	Register 9 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+700,701	0x5414	Register 9 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+702,703	0x5415	Register 9 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+704,705	0x5416	Register 9 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+706,707	0x5417	Register 9 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+708,709	0x5490	Register 10 tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+710,711	0x5491	Register 10 tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+712,713	0x5492	Register 10 tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+714,715	0x5493	Register 10 tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+716,717	0x5494	Register 10 tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+718,719	0x5495	Register 10 tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+720,721	0x5496	Register 10 tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	R	
+722,723	0x5497	Register 10 tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	R	

3.7 Device Control and Status Registers

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
User Event Flags Registers (bitmap)							
44032-44033		Event flags set register (0 = no effect, 1 = set)	0x00000000 - 0x000000FF		UINT32	W	
44034-44035		Event flags clear register (0=clear, 1 = no effect)	0x00000000 - 0x000000FF		UINT32	W	
44036-44037		Event flags status (0 = cleared, 1 = set)	0x00000000 - 0x000000FF		UINT32	R	
Remote Relay Control Registers (bitmap)							
44038-44045		Not used			UINT16		
44046-44047		Force relay operate register (0 = no effect, 1 = operate)	0x00000000 - 0x00000FFF		UINT32	W	
44050-44051		Force relay release register (0 = no effect, 1 = release)	0x00000000 - 0x00000FFF		UINT32	W	
44054-44055		Locally latched relays status (0 = unlatched, 1 = locally latched)	0x00000000 - 0x00000FFF		UINT32	R	
44058-44059		Remote latched relays status (0 = unlatched, 1 = remote latched)	0x00000000 - 0x00000FFF		UINT32	R	
44062-44063		Remote relay control disabled status (0 = remote control enabled, 1 = remote control disabled)	0x00000000 - 0x00000FFF		UINT32	R	Remote relay control is disabled if the internal pulse source is linked to the relay
44066-44067		Relay status (0 = open, 1 = closed)	0x00000000 - 0x00000FFF		UINT32	R	
44070-44071		Latch relays (0 = not latched mode, 1 = latched mode)	0x00000000 - 0x00000FFF		UINT32	R	
44074-44075		Pulse relays (0 = not pulse mode, 1 = pulse mode)	0x00000000 - 0x00000FFF		UINT32	R	
44078-44079		KYZ relays (0 = not KYZ mode, 1 = KYZ mode)	0x00000000 - 0x00000FFF		UINT32	R	
44082-44083		Relay polarity (0 = normal mode, 1 = inverting mode)	0x00000000 - 0x00000FFF		UINT32	R	
44086-44101		Reserved			UINT32		
Reset/Clear Registers							
44102		Reserved			UINT16		
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		Reserved			UINT16		
44105		Clear Billing/TOU maximum demands	0		UINT16	W	
44106		Clear counters	0 = clear all counters, 1-8 = clear counter #1-#8		UINT16	W	
44107		Clear Min/Max log	0		UINT16	W	
44108		Clear accumulators/event counters	0 = clear EN50160 counters		UINT16	W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			1 = clear device diagnostics 2 = clear device operation time 3 = clear lithium battery operation time 4 = clear auxiliary NiMH battery pack operation time 5 = clear power fault counters 6 = clear communication counters				
44109-44133		Reserved			UINT16		
Device Mode Control Registers							
44134-44135		Reserved			UINT16		
44136		PQ recorder	0 = disabled, 1 = enabled		UINT16	R/W	
44137		Fault recorder	0 = disabled, 1 = enabled		UINT16	R/W	
44138		Transformer correction	0 = disabled, 1 = enabled		UINT16	R/W	
44139		Transformer/line loss compensation	0 = disabled, 1 = enabled		UINT16	R/W	
44140-44165		Reserved			UINT16		
Operation/Event Counters							
44198-44199		Device's start of operation date	F1		UINT32	R	
44200-44201		Device operation time		sec	UINT32	R	
44202-44203		Lithium battery's start of operation date	F1		UINT32	R	
44204-44205		Lithium battery operation time		sec	UINT32	R	
44206-44207		Auxiliary NiMH battery's start of operation date	F1		UINT32	R	
44208-44209		Auxiliary NiMH battery pack operation time		sec	UINT32	R	
44210-44211		Device out-of-service time		sec	UINT32	R	
44212-44213		Device power failure counter	0-65535		UINT32	R	
44214-44215		Power interruption counter	0-65535		UINT32	R	
44216-44261		Reserved			UINT32	R	
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							
44278-44279		Files 0-29 status	0x00000000 - 0x3FFFFFFF		UINT32	R	Bitmap: 0=no new logs, 1=new record logged
44280-44293		Reserved	0		UINT32	R	
Setpoint Status Registers							
44294-44295		Setpoints status	0x00000000 - 0x0000FFFF		UINT32	R	Bitmap: 0=released, 1=operated
44296-44309		Reserved			UINT32	R	
Setpoint Alarm Latch Registers							
44310-44311		Latched setpoints alarm status. Nonvolatile register.	0x00000000 - 0x0000FFFF		UINT32	R/W	Bitmap Read: 0=no setpoint operations logged, 1=setpoint has been operated at least once since last alarm reset;

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
							Write: 0=clear alarm, 1=no effect
44312-44325		Reserved					
Device Diagnostics Register							
44326-44327		Device diagnostics. Nonvolatile register.	F23		UINT32	R/W	Bitmap Read: 0=no faults logged, 1= diagnostic failed at least once since last reset; Write: 0=clear diagnostic flag, 1=no effect.
44328-44341		Reserved					
Current Port Number							
44342		Active port number	0-2 = serial port COM1-COM3		UINT16	R	
44343-44345		Reserved					
Current Network Settings							
44346-44377							
+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			UINT32	R	Network byte order
+14,15		GPRS network default gateway			UINT32	R	Network byte order
44362-44377		Reserved					
Device Authorization Registers							
44378-44379		Write: 8-digit password. Read: 0 = access permitted, -1 = authorization required.	0 - 99999999 (write) 0/-1 (read)		INT32	R/W	
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
Factory Diagnostic Registers							
45952-46079		Factory diagnostic registers			UINT32	R	

3.8 Device Setup Registers

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
Device Identification							
46080-46111							
+0,1		Device serial number	0-999999		UINT32	R	
+2,3		Device model ID	72000		UINT32	R	
+4-11		Device model name	“EM720”		CHAR16	R	Null-terminated string
+12-13		Device options (bitmap)	F27		UINT32	R	
+14-15		Device production date and time	F1		UINT32	R	
+16-19		Not used			UINT16	R	
+20		Device firmware version number	2600-2699		UINT16	R	Two higher decimal digits = major version number, two lower decimal digits = minor version number
+21		Device firmware build number	1-99		UINT16	R	
+22		Transient coprocessor firmware version number	2700-2799		UINT16	R	
+23		Transient coprocessor firmware build number	1-99		UINT16	R	
+24		Boot loader version number			UINT16	R	
+25		Boot loader build number	1-99		UINT16	R	
+26-31		Not used			UINT16	R	
Factory Device Settings							
46112-46178							
+0		V1-V4 input range	480, 120 (option U)	V	UINT16	R	
+1		V1-V4 input overload	125	%	UINT16	R	
+2,3		Not used			UINT16	R	
+4		I1-I4 input range	1, 5	A	UINT16	R	
+5		I1-I4 input overload	200	%	UINT16	R	
+6-13		Not used			UINT16		
+14-63		Reserved			UINT16		
+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	
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) voltage	50-480	V	UINT16	R/W	
+3-4		Reserved			UINT16	R	Read as 65535
+5		CT primary current	1-20000	A	UINT16	R/W	
+6		Reserved			UINT16	R	Read as 65535
+7		I4 CT primary current	1-20000	A	UINT16	R/W	
+8-16		Reserved			UINT16	R	Read as 65535
+17		Nominal line frequency	50, 60	Hz	UINT16	R/W	
+18-23		Reserved			UINT16	R	Read as 65535

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+24		I maximum demand load current	0-20000	A	UINT16	R/W	
+25		I4 maximum demand load current	0-20000	A	UINT16	R/W	
+26-31		Reserved			UINT16	R	Read as 65535
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, 1-8 = DI1-DI8		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	Read as 65535
+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	Read as 65535
Device Options Setup							
46256-46271							
+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	2 = 100,000.0 kWh 3 = 1,000,000.0 kWh 4 = 10,000,000.0 kWh 5 = 100,000,000.0 kWh (default)		UINT16	R/W	
+2		Reserved			UINT16	R/W	Read as 65535
+3		End of billing (TOU/Billing maximum demand reset) mode, bitmap	Bit 0 = 1 – automatic/monthly mode allowed Bit 1 = 1 - COM mode allowed Bit 2 = 1 - manual mode allowed		UINT16	R/W	
+4		Tariff control	0 = via a calendar scheduler, 0x4000 = via communications, 0x0100-0x0107 = via tariff inputs DI1-DI8 (bits 0:2 denote the first digital input index used)		UINT16	R/W	
+5		Number of tariffs	1-8 (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		PQ option	2 = EN 50160:2007 5 = EN 50160:2010		UINT16	R/W	V26.XX.20 and later
+7		Energy LED test mode	0 = disabled, 1 = enabled		UINT16	R/W	
+8		Energy LED pulse rate, Wh/impulse, varh/impulse (in	1-40	×0.01Wh	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
		secondary units)					
+9-15		Reserved			UINT16	R/W	Read as 65535
Local Settings							
46400-46415							
+0		Local time offset, min	0-+/-720	min	INT16	R/W	
+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=1st, 2=2nd, 3=3rd, 4=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=1st, 2=2nd, 3=3rd, 4=4th week, 5=the 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=IRIG-B, 1-8 = DI1-DI8, 0xfffe = SNTP, 0xffff = none		UINT16	R/W	A DI input is considered a pulse or KYZ input. The pulse edge adjusts 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 Indication and Setup							
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	ms	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	
+12		Daylight savings time status	0=standard time is active, 1=daylight saving time is active		UINT16	R	
+13-31		Reserved			UINT16		
Communication Ports Setup							
46448-46495							

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+0		Communication protocol	0 = Modbus RTU, 1 = Modbus ASCII, 2 = DNP3.0, 6 = IEC 62056-21, 7 = IEC 61850		UINT16	R/W	
+1		Interface	0 = RS-232, 1 = RS-422, 2 = RS-485, 3 = Infrared, 8 = GSM/GPRS		UINT16	R/W	
+2		Device address	Modbus: 1-247 DNP3.0: 0–65532		UINT16	R/W	
+3		Baud rate	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 COM1-COM3 (read as 65535)
+6		RTS mode	0 = not used, 1 = RTS is asserted during the transmission		UINT16	R/W	N/A for COM1-COM3 (read as 65535)
+7		Minimum delay before sending data	0-1000 (default = 5)	ms	UINT16	R/W	
+8		Inter-character time-out	0-1000 (default = four-character time)	ms	UINT16	R/W	
+9		Port direction	0 = slave (default), 1 = master		UINT16	R/W	
+10		Receive timeout (for a master port only)	500-30000	ms	UINT16	R/W	
+11-15		Reserved					Read as 65535
46448-46463		**COM1 Setup**					
46464-46479		**COM2 Setup**					
46480-46495		**COM3 Setup**					
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
+6-31		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	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+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
+24-31		Reserved					
Password Setup							
46704-46711							
+0,1		Password 1 (Low level)	0-99999999		UINT32	R/W	Read as 0
+2,3		Password protection (always ON)	1 = enabled		UINT16	R/W	
+4,5		Password 2 (Medium level)	0-99999999		UINT32	R/W	Read as 0
+6,7		Password 3 (High level)	0-99999999		UINT32	R/W	Read as 0
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#”		CHAR32	R/W	GPRS network by default
+16-31		Login name			CHAR32	R/W	
+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					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
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							
47072-47223							
+0		Channel	0=not used, 1-3=V1-V3, 5-8=I1-I4		UINT16	R/W	
+1		Test point, percent of nominal	5-200	%	UINT16	R/W	
+2		Ratio correction factor	900-1100	×0.001	UINT16	R/W	
+3		Phase angle error	-600 to 600	min	INT16	R/W	
47072-47075		**Transformer correction point 1**					
47076-47079		**Transformer correction point 2**					
...		**...**					
47220-47223		**Transformer correction point 56**					
Transformer/Line Loss Compensation Setup							
47328-47375							
+0,1		Metering point location	0=supply side, far end; 1=supply side, transformer end; 2=load side, transformer end; 3=load side, far end.		UINT32	R/W	
+2,3		Billing point location	0=supply side, far end; 1=supply side, transformer end; 2=load side, transformer end; 3=load side, far end.		UINT32	R/W	
+4,5		Number of the metering elements	2-3		UINT32	R/W	
+6,7		Rated transformer primary voltage	0-1500000		UINT32	R/W	
+8,9		Rated transformer secondary voltage	0-1500000		UINT32	R/W	
+10,11		Rated transformer kVA	0-1000000	kVA	UINT32	R/W	
+12,13		No-load iron watt loss	0-1000000	watt	UINT32	R/W	
+14,15		Full-load copper watt loss	0-1000000	watt	UINT32	R/W	
+16,17		Percent excitation current	0-100000	0.001%	UINT32	R/W	
+18,19		Full-load percent impedance	0-100000	0.001%	UINT32	R/W	
+20,21		Supply-side power line length	0-10000000	0.0001 km/miles	UINT32	R/W	
+22,23		Supply-side power line resistance	0-100000	0.001 Ohm/km, Ohm/mile	UINT32	R/W	
+24,25		Supply-side power line reactance	0-100000	0.001 Ohm/km, Ohm/mile	UINT32	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+26,27		Load-side power line length	0-10000000	0.001 km/miles	UINT32	R/W	
+28,29		Load-side power line resistance	0-100000	0.001 Ohm/km, Ohm/mile	UINT32	R/W	
+30,31		Load-side power line reactance	0-100000	0.001 Ohm/km, Ohm/mile	UINT32	R/W	
+32,33		Iron watt percent loss constant (%LWFe)	0-1000000	0.0001%	UINT32	R/W	
+34,35		Copper watt percent loss constant (%LWCu)	0-1000000	0.0001%	UINT32	R/W	
+36,37		Iron var percent loss constant (%LVFe)	0-1000000	0.0001%	UINT32	R/W	
+38,39		Copper var percent loss constant (%LVCu)	0-1000000	0.0001%	UINT32	R/W	
+40-47		Reserved	0		UINT32	R/W	
Display Setup							
48664-48695							
+0		Reserved			UINT16	R	
+1		Auto-scroll interval	0 = disabled, 1-10, 15, 20, 25, 30	sec	UINT16	R/W	
+2		Auto-return interval	0 = disabled, 1-5, 10, 15, 20, 25, 30	min	UINT16	R/W	
+3		Backlight time	0 = disabled, 1-10	min	UINT16	R/W	
+4		Reserved			UINT16	R/W	
+5		Auto-scroll sequence, bitmap	0-0x01FF Bits 0-8: bit=1– display is included in a scroll sequence		UINT16	R/W	
+6		Diagnostics message icon	0 = disabled 1 = enabled		UINT16	R/W	
+7		Default page	Bits 0-7 = page number (0-9) Bits 8-15 = display number (0-8)		UINT16	R/W	
+8-31		Reserved			UINT16	R/W	
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	“MET1/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	“MET1/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

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+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	
+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	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+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	
IEC 61850 Report Deadbands							
49396-49426							See F28 for measured value indices
+0		Measured value 1 deadband	1-50000	×0.001%	UINT16	R/W	
...		...	1-50000	×0.001%	UINT16	R/W	
+30		Measured value 49 deadband	1-50000	×0.001%	UINT16	R/W	
49427-49459		Reserved					Read as 65535
DNP Options Setup							
51158-51183							
+0		Default Binary Input Static object variation	F24 (default 0)		UINT16	R/W	
+1		Default Binary Input Change object variation	F24 (default 1)		UINT16	R/W	
+2		Default Binary Counter object variation	F24 (default 3)		UINT16	R/W	
+3		Default Frozen Binary Counter object variation	F24 (default 4)		UINT16	R/W	
+4		Reserved			UINT16	R/W	
+5		Default 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		Default 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 (default)		UINT16	R/W	
+13		Number of points allocated for Analog Input change events	0 to 64 (default 32)		UINT16	R/W	
+14		Number of points allocated for Binary Input change events	0 to 32 (default 0)		UINT16	R/W	
+15		Number of points allocated for Binary Counter change events	0 to 64 (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)		UINT32	R/W	
+24		Voltage scale, volts secondary	60 to 480V (default 144V)	V	UINT16	R/W	
+25		Current scale, amps secondary	100-500	×0.1A	UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
51184-51189		Reserved					
DNP Events Setup							
51190-51445							
+0,1		Threshold/Deadband	0 to 4.3×10^9		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= event disabled, 1=enabled Bits 5-6 - DNP event poll class: 0=Class 1, 1=Class 2, 2=Class 3 Bit 7 - Event log on an event: 0= disabled, 1=enabled 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**					
51446-51701		Reserved					
DNP Class 0 Point Assignments							
51702-51797							
+0		DNP object and variation	F25		UINT16	R/W	
+1		Start point number	Point number for the selected object		UINT16	R/W	
+2		Number of 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**					
		...					
51795-51797		**DNP Class 0 Points Range 32**					
51798-51893		Reserved					
EN50160:2007 PQ Recorder 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:		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			0 = disabled, 1 = enabled; Bit 2 – PQ log: 0 = enabled, 1 = disabled.				
+3		Waveform log number	0-1 = log #1 - #2		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		Not used	0		UINT16	R/W	
50134-50149		**Power frequency, dF/Fn**					
50150-50165		**Voltage variations, dV/Un**					
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 EN50160:2007 Setup							
50838-50863							
		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		Not used	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		Not used	0		UINT16	R/W	
		Rapid Voltage Changes					
+8		Repetition rate, per hour, maximum	1-10		UINT16	R/W	
+9		Not used	0		UINT16	R/W	
		Flicker					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+10		Pst period	1-10	min	UINT16	R/W	
+11		Not used	0		UINT16	R/W	
		Harmonic Voltage					
+12		THD, up to order	25-50		UINT16	R/W	
+13		Harmonics, up to order	25-40		UINT16	R/W	
+14-15		Not used	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	25-40		UINT16	R/W	
+19		Not used	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	
+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	
50864-50901		Reserved	0		UINT16	R/W	
EN50160:2010 PQ Recorder Setup							
50134-50453							
+0		High normally (percentile-ranked) 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 percentile-based limit: 0 = enabled, 1 = disabled. Bit 3 – PQ log on maximum 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 maximum (100%) permissible limit, %	-2000-20000	×0.01%	INT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+13		Low normally (percentile-ranked) permissible limit, %	-2000-20000	×0.01%	INT16	R/W	
+14		Low maximum (100%) permissible limit, %	-2000-20000	×0.01%	INT16	R/W	
+15		Compliance percentile rank, %	0-1000	x0.1%	UINT16	R/W	
50134-50149		**Frequency variation, +/-dF, %Fn**					
50150-50165		**Voltage variation, +/-dU, %Un**					
50166-50181		**Rapid voltage changes, +/-dU, %Un**					
50182-50197		**Flicker, Plt**					
50198-50213		**Voltage unbalance, %**					
50214-50229		**Voltage THD, %**					
50230-50245		**Harmonic voltages, %**					
50246-50261		**Interharmonic voltages, %**					
50262-50277		**Signaling voltage, %Un**					
50278-50293		**Voltage interruptions, %Un**					
50294-50309		**Voltage dips, %Un**					
50310-50325		**Voltage swells, %Un**					
50326-50341		**Transient overvoltages, %Un peak**					
50342-50453		Reserved					
Advanced EN50160:2010 Setup							
50838-50879							
		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	25-40		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	25-40		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	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+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		Not used			UINT16	R/W	
		Time Aggregation					
+26		Voltage events aggregation interval	0-180	sec	UINT16	R/W	
+27-41		Not used			UINT16	R/W	
50880-50901		Reserved			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					
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		Not used			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	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
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; Bit 2 – recording to PQ log: 1 = disabled.		UINT16	R/W	
+1		Waveform log number	0-7 = log #1-#2		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	
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		UINT16	R/W	0 = non-partitioned file
+4		Number of parameters per section record	1-16 (34 for EN50160 Statistics log, 52 for EN50160 Harmonics Survey)		UINT16	R/W	
+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 File Setup**					
52608-52617		**Data Log #1 File Setup**					
52618-52627		**Data Log #2 File Setup**					
52628-52637		**Data Log #3 File Setup**					
52638-52647		**Data Log #4 File Setup**					
52648-52657		**Data Log #5 File Setup**					
52658-52667		**Data Log #6 File Setup**					
52668-52677		**Data Log #7 File Setup**					
52678-52687		**Data Log #8 File Setup**					
52688-52697		**Data Log #9 File Setup (EN50160 Statistics)**					
52698-52707		**Data Log #10 File Setup (EN50160 Harmonics)**					
52708-52717		**Data Log #11 File Setup**					
52718-52727		**Data Log #12 File Setup**					
52728-52737		**Data Log #13 File Setup (Fault RMS data profile)**					
52738-52747		**Data Log #14 File Setup (Power Quality RMS data profile)**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
52748-52757		**Data Log #15 File Setup (Energy load profile)**					
52758-52767		**Data Log #16 File Setup (Energy/TOU daily profile)**					
52768-52777		**Waveform Log #1 File Setup**					
52778-52787		**Waveform Log #2 File Setup**					
52788-52797		**Waveform Log #3 File Setup (Transient recorder waveforms)**					
52798-52857		**Reserved**					
52858-52867		**EN50160 PQ Log File Setup**					
52868-52877		**Fault Log Setup**					
52878-53877		Reserved					
Waveform Recorder Setup							
53878-53949							
+0		Sampling rate, samples per cycle	32, 64, 128, 256, 1024 (transient waveform)		UINT16	R/W	
+1		Number of cycles per event series	16-10848 (32 samples/cycle), 8-5424 (64 samples/cycle), 4-2712 (128 samples/cycle) 2-1356 (256 samples/cycle) 1 (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	Event-controlled mode - V26.XX.7 and higher
+4		Number of cycles before a trigger	1-20		UINT16	R/W	
+4,5		File channel mask, bitmap	F9, 0x000000FF		UINT32	R/W	
+6,7		Not used	0		UINT32	R/W	
53878-53885		**Waveform Log #1 Setup**					
53886-53893		**Waveform Log #2 Setup**					
53894-53901		**Waveform Log #3 Setup**					Auto-configured. Transient recorder waveforms
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	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+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	
+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 (EN50160 Statistics)**					Auto-configured. Read as NONE.
54294-54325		**Data log #10 Setup (EN50160 Harmonics)**					Auto-configured. Read as NONE.
54326-54357		**Data log #11 Setup**					
54358-54389		**Data log #12 Setup**					
54390-54421		**Data log #13 Setup (Fault RMS profile)**					
54422-54453		**Data log #14 Setup (PQ RMS profile)**					
54454-54485		**Data log #15 Setup (Energy load profile)**					Auto-configured
54486-54517		**Data log #16 Setup (Energy/TOU daily profile)**					Auto-configured
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**					
55662-55669		**Daily profile #12: Season 3, Day type 4**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
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 Energy/TOU Registers Setup							
56672-56711							
+0		Metering channel	0, 1 = self-metering channel, 2-6 = external metering channels		UINT16	R/W	
+1		Units of measurement	0=none, 1=kWh import, 2=kvarh import, 3=kVAh, 4=kWh export, 5=kvarh export, 6=kVAh import, 7=kVAh export, 8=kvarh Q1, 9=kvarh Q2, 10=kvarh Q3, 11=kvarh Q4		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		UINT16	R/W	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
			enabled				
+3		Not used	0		UINT16	R/W	
56672-56675		**Register #1 Setup**					
56676-56679		**Register #2 Setup**					
56680-56683		**Register #3 Setup**					
56684-56687		**Register #4 Setup**					
56688-56691		**Register #5 Setup**					
56692-56695		**Register #6 Setup**					
56696-56699		**Register #7 Setup**					
56700-56703		**Register #8 Setup**					
56704-56707		**Register #9 Setup**					
56708-56711		**Register #10 Setup**					
Billing Energy/TOU Registers Source Setup							
56928-56967							
+0		Energy source ID	F11		UINT16	R/W	
+1		Target summary register number	0-9 = register #1-#10		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**					
56940-56943		**Energy Source #4**					
56944-56947		**Energy Source #5**					
56948-56951		**Energy Source #6**					
56952-56955		**Energy Source #7**					
56956-56959		**Energy Source #8**					
56960-56963		**Energy Source #9**					
56964-56967		**Energy Source #10**					
Control Setpoints Setup							
57184-58143							
+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	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+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	
+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**					
		...					
58084-58143		**Setpoint #16**					Factory set for 15-min energy load profile
Periodic Timers Setup							
61024-61031							
+0,1		Time interval, in seconds × 0.001	0=timer disabled, 16/20-9999,000 ms	×0.001 s	UINT32	R/W	Rounded to a nearest multiple of the frequency period.
61024-61025		**Timer #1 Setup**			UINT32	R/W	
61026-61027		**Timer #2 Setup**			UINT32	R/W	
61028-61029		**Timer #3 Setup**			UINT32	R/W	
61030-61031		**Timer #4 Setup**			UINT32	R/W	
Digital Inputs Setup							
61728-61759							
+0		Pulse mode	0 = pulse, 1 = KYZ		UINT16	R/W	
+1		Pulse polarity	0 = normal, 1 = inverting		UINT16	R/W	
+2		De-bounce time, ms	1-1000		UINT16	R/W	Debounce time will be the same for all inputs
+3		Flags	Bit 1: 0 = Fault Recorder input disabled, 1 = Fault Recorder input enabled		UINT16	R/W	
61728-61731		**DI1 Setup**					
61732-61735		**DI2 Setup**					
61736-61739		**DI3 Setup**					
...		**...**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
61756-61759		**DI8 Setup**					
Relay Outputs Setup							
61984-62007							
+0		Operation Mode	0=latched, 1=unlatched, 2=pulse, 3=KYZ		UINT16	R/W	
+1		Flags	Bit 0 – Polarity: 0=normal, 1=inverting, Bit 1 - Retentive mode: 0=disabled, 1=enabled		UINT16	R/W	
+2		Pulse width, ms	1-1000		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**					
61996-62001		**RO3 Setup**					
62002-62007		**RO4 Setup**					

3.9 Expansion I/O Configuration

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
I/O Slots Configuration Info							
63008-63055							
+0		Module type	See table below		UINT16	R	
+1-3		Not used	0		UINT16	R	
63008-63011		**Slot 1 Configuration**					
63012-63015		**Slot 2 Configuration**					
63016-63019		**Slot 3 Configuration**					
63020-63055		Reserved					
I/O Type Info							
63056-63119							
+0		Number of I/O slots of this type	0-2		UINT16	R	
+1		Total number of I/O's of this type	0-8		UINT16	R	
+2-3		Not used	0		UINT16	R	
63056-63059		**DI Type Info**					DI1-DI4 are assigned to on-board digital inputs
63060-63063		**RO Type Info**					
63064-63067		**AI Type Info**					
63068-63071		**AO Type Info**					
63076-63119		Reserved					

I/O numbers of expansion I/O modules are automatically assigned in the order of connection. The first four digital inputs DI1-DI4 are assigned to the on-board digital inputs. The first digital input on the expansion slot is assigned DI5.

Expansion Module Types

Module	Option	D7	D6	D5	D4	D3	D2	D1	D0
2DI/2RO		1	1	0	0	0	0	0	0
Ethernet + USB + RS-232/485	RS-485	1	0	0	0	0	0	0	1
Ethernet + USB + RS-232/485	RS-232	1	0	0	1	0	0	0	1
RS-232 + RS-232/485	RS-485	1	0	0	0	0	0	1	1
RS-232 + RS-232/485	RS-232	1	0	0	1	0	0	1	1
Wireless Cellular/GPRS		1	0	0	0	0	1	0	1
IRIG-B + RS-232/485	RS-485	1	0	0	0	0	1	1	1
IRIG-B + RS-232/485	RS-232	1	0	0	1	0	1	1	1
I/O Test module		0	1	1	1	1	1	1	1
Empty slot		1	1	1	1	1	1	1	1

3.10 File Transfer Registers

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: N/A			UINT16	R/W	
+7		Find key: N/A			UINT16	R/W	
+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		Not used			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		Not used			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, like Billing/TOU profile 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, 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 time. 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	16		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		Not used	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	
+20, 21		First record time, fractional seconds		µsec	UINT32	R	
+22, 23		Not used	0		UINT32	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+24, 25		Not used	0	µsec	UINT32	R	
+26, 27		Not used	0	sec	UINT32	R	
+28, 29		Not used	0	µsec	UINT32	R	
+30		Maximum number of records	0-65535		UINT16	R	
+31		Number of parameters per data section record	0-16		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		Not used	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		Not used	0		UINT16	R	
64960-64997		**File Info**					
+0		Not used	0		UINT16	R	
+1		Number of fields in a data record	Regular files: 1-16 Special files: EN50160:2007 Compliance = 34 EN50160:2007 Harmonics = 52 EN50160:2010 Compliance = 36 EN50160:2010 Harmonics = 78		UINT16	R	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+2		Field 1 parameter ID	0-0×FFFF		UINT16	R	
+3		Field 2 parameter ID	0-0×FFFF		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		Not used	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		Not used	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		UINT16	R	
+2		Section number	0-7		UINT16	R	
+3		Section channel ID	F6		UINT16	R	
+4		Number of records in the block	1-16		UINT16	R	
+5		Record size, words	8 + 2×Number of parameters		UINT16	R	
+6		Request variation	0 = regular log, 4 = EN50160 online statistics (with file ID = 9, 10)		UINT16	R	
+7		Not used	0		UINT16	R	
63160-64439		**Data Log Records**					
+0		Record status	F5		INT16	R	
+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	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+7		Trigger event number	0-65535		UINT16	R	
+8, 9		Log value #1			INT32	R	
+10, 11		Log value #2			INT32	R	
...		...				R	
63160-...		**Record #1** (variable length)					
		...					
		Record #16 (variable length)					
Waveform Log Response Block							
63152-63159		**Block Heading**					
+0		Last file function	1, 3, 5, 11		UINT16	R	
+1		File ID	17-18, 128 (F2)		UINT16	R	
+2		Section number	0-9		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		Not used	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	150-6950	×0.1 µsec	UINT16	R	
+17		Sampling rate, samples/cycle	32, 64, 128, 256, 1024 (transient waveform)		UINT16	R	
+18		Sampling frequency	4500-6500	×0.01 Hz	UINT16	R	
+19		Channel offset, sampling units	0		INT16	R	
+20, 21		Channel multiplier, primary units	See Generic Data in Section 3.4		UINT32	R	
+22		Channel divisor, sampling units	2047 (transient waveform), 8191		UINT16	R	
+23		Length of a sample series, data points	512		UINT16	R	
+24-127		Not used	0		UINT16	R	
+128		**Sample Series**					
+128-639		Sample data series points [0...511]	-32768 - 32767		INT16	R	[1]
Power Quality (PQ) Log Response Block							
63152-63159		**Block Heading**					

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+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	1–16		UINT16	R	
+5		Record size, words	18		UINT16	R	
+6		Request variation	0		UINT16	R	
+7		Not used	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	
+12		Point ID (generic)	See Generic Data in Section 3.4		UINT16	R	
+13		Not used	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**					
		…					
63430-63447		**Record #16**					
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		Not used	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	

Address	Point ID	Description	Options/Range	Units	Type	R/W	Notes
+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	U4	INT32	R	
+16, 17		Current magnitude, primary units	See Generic Data in Section 3.4	U4	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:

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

NOTES:

1. If a file is read through a TCP connection, your assignments for the transfer 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 file status and pointers before reading file records.
2. 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.

3.11 EN 50160:2007 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	
	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	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
	6	V1 Plt Max	0x5B85	Maximum Plt on phase V1		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	
5				**Voltage Interruptions** (indicative statistics)				
	1	N1 1s	0x5D00	Number of polyphase incidents <1s			UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
	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 120%	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 120%	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 120%	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	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
	15	V2 N5 300%	0x5E0E	Number of incidents u>300% on phase V2			UINT32	
	16	V3 N1 120%	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 20%	0x6080	Number of polyphase incidents u>20%			UINT32	
	2	N2 50%	0x6081	Number of polyphase incidents u>50%			UINT32	
	3	N3 100%	0x6082	Number of polyphase incidents u>100%			UINT32	
	4	N4 150%	0x6083	Number of polyphase incidents u>150%			UINT32	
	5	N5 200%	0x6084	Number of polyphase incidents u>200%			UINT32	
	6	V1 N1 20%	0x6085	Number of incidents u>20% on phase V1			UINT32	
	7	V1 N2 50%	0x6086	Number of incidents u>50% on phase V1			UINT32	
	8	V1 N3 100%	0x6087	Number of incidents u>100% on phase V1			UINT32	
	9	V1 N4 150%	0x6088	Number of incidents u>150% on phase V1			UINT32	
	10	V1 N5 200%	0x6089	Number of incidents u>200% on phase V1			UINT32	
	11	V2 N1 20%	0x608A	Number of incidents u>20% on phase V2			UINT32	
	12	V2 N2 50%	0x608B	Number of incidents u>50% on phase V2			UINT32	
	13	V2 N3 100%	0x608C	Number of incidents u>100% on phase V2			UINT32	
	14	V2 N4 150%	0x608D	Number of incidents u>150% on phase V2			UINT32	
	15	V2 N5 200%	0x608E	Number of incidents u>200% on phase V2			UINT32	
	16	V3 N1 20%	0x608F	Number of incidents u>20% on phase V3			UINT32	
	17	V3 N2 50%	0x6090	Number of incidents u>50% on phase V3			UINT32	
	18	V3 N3 100%	0x6091	Number of incidents u>100% on phase V3			UINT32	
	19	V3 N4 150%	0x6092	Number of incidents u>150% on phase V3			UINT32	
	20	V3 N5 200%	0x6093	Number of incidents u>200% on phase V3			UINT32	
	21	V1 imp max	0x6094	Maximum impulsive voltage on phase V1		U1	UINT32	
	22	V2 imp max	0x6095	Maximum impulsive voltage on phase V2		U1	UINT32	
	23	V3 imp max	0x6096	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	
9				**Harmonic Voltage**				
	1	Nnv	0x5F00	Number of non-valid 10-min intervals			UINT32	
	2	N	0x5F01	Number of valid 10-min intervals			UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
	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, %Un		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, %Un		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, %Un		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, %Un		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, %Un		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, %Un		0.01%	UINT32	
	19	V3 H#	0x5F92	Worst-case interharmonic component number on phase V3	2-50		UINT32	
	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	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range[2]	Units[2]	Type	Notes
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”.

3.12 EN 50160:2007 Harmonic Statistics Data Log

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
0				**V1 Harmonic Voltage**				
	1	THD MAX	0xC000	Maximum THD on phase		0.1%	UINT32	
	2	THDO MAX	0xC001	Maximum odd harmonics THD		0.1%	UINT32	
	3	THDE MAX	0xC002	Maximum even harmonics THD		0.1%	UINT32	
	4	%HD02 MAX	0xC003	Maximum HD02 harmonic voltage magnitude, %Un		0.01%	UINT32	
	5	%HD03 MAX	0xC004	Maximum HD03 harmonic voltage magnitude, %Un		0.01%	UINT32	
		...					UINT32	
	51	%HD50 MAX	0xC032	Maximum HD50 harmonic voltage magnitude, %Un		0.01%	UINT32	

File Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
1				**V2 Harmonic Voltage**				
	1	THD MAX	0xC000	Maximum THD on phase		0.1%	UINT32	
	2	THDO MAX	0xC001	Maximum odd harmonics THD		0.1%	UINT32	
	3	THDE MAX	0xC002	Maximum even harmonics THD		0.1%	UINT32	
	4	%HD02 MAX	0xC003	Maximum HD02 harmonic voltage magnitude, %Un		0.01%	UINT32	
	5	%HD03 MAX	0xC004	Maximum HD03 harmonic voltage magnitude, %Un		0.01%	UINT32	
		...					UINT32	
	51	%HD50 MAX	0xC032	Maximum HD50 harmonic voltage magnitude, %Un		0.01%	UINT32	
2				**V3 Harmonic Voltage**				
	1	THD MAX	0xC000	Maximum THD on phase		0.1%	UINT32	
	2	THDO MAX	0xC001	Maximum odd harmonics THD		0.1%	UINT32	
	3	THDE MAX	0xC002	Maximum even harmonics THD		0.1%	UINT32	
	4	%HD02 MAX	0xC003	Maximum HD02 harmonic voltage magnitude, %Un		0.01%	UINT32	
	5	%HD03 MAX	0xC004	Maximum HD03 harmonic voltage magnitude, %Un		0.01%	UINT32	
		...					UINT32	
	51	%HD50 MAX	0xC032	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.

3.13 EN 50160:2010 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	0xC080	Number of non-valid 10-sec intervals			UINT32	
	2	N	0xC081	Number of valid 10-sec intervals			UINT32	
	3	N1	0xC082	Number of values exceeded percentile limit			UINT32	
	4	N2	0xC083	Number of values exceeded maximum permissible limit			UINT32	
	5	df min1	0xC084	Low percentile of frequency variation, +/-%Fn		0.01%	INT32	
	6	df max1	0xC085	High percentile of frequency variation, +/-%Fn		0.01%	INT32	
	7	df min2	0xC086	Minimum frequency variation, +/-%Fn		0.01%	INT32	
	8	df max2	0xC087	Maximum frequency variation, +/-%Fn		0.01%	INT32	
	9	df lim1 low	0xC088	Low percentile limit of frequency variation, %Fn		0.01%	INT32	
	10	df lim1 high	0xC089	High percentile limit of frequency variation, %Fn		0.01%	INT32	
	11	df lim2 low	0xC08A	Low maximum limit of frequency variation, %Fn		0.01%	INT32	
	12	df lim2 high	0xC08B	High maximum limit of frequency variation, %Fn		0.01%	INT32	
	13	PercRank	0xC08C	Compliance percentile rank, %		0.1%	UINT32	
1/1				**Voltage Variation**				
	1	Nnv	0xC100	Number of non-valid 10-min intervals			UINT32	
	2	N	0xC101	Number of valid 10-min intervals			UINT32	
	3	V1 N1	0xC102	Number of values exceeded percentile limit on phase A/AB			UINT32	
	4	V1 N2	0xC103	Number of values exceeded maximum limit on phase A/AB			UINT32	
	5	V1 dU min1	0xC104	Low percentile of voltage variation on phase A/AB, +/-%Un		0.01%	INT32	
	6	V1 dU max1	0xC105	High percentile of voltage variation on phase A/AB, +/-%Un		0.01%	INT32	
	7	V1 dU min2	0xC106	Minimum voltage variation on phase A/AB, +/-%Un		0.01%	INT32	
	8	V1 dU max2	0xC107	Maximum voltage variation on phase A/AB, +/-%Un		0.01%	INT32	
	9	V2 N1	0xC108	Number of values exceeded percentile limit on phase B/BC			UINT32	
	10	V2 N2	0xC109	Number of values exceeded maximum limit on phase B/BC			UINT32	
	11	V2 dU min1	0xC10A	Low percentile of voltage variation on phase B/BC, +/-%Un		0.01%	INT32	
	12	V2 dU max1	0xC10B	High percentile of voltage variation on phase B/BC, +/-%Un		0.01%	INT32	
	13	V2 dU min2	0xC10C	Minimum voltage variation on phase B/BC, +/-%Un		0.01%	INT32	
	14	V2 dU max2	0xC10D	Maximum voltage variation on phase B/BC, +/-%Un		0.01%	INT32	
	15	V3 N1	0xC10E	Number of values exceeded percentile limit on phase C/CA			UINT32	
	16	V3 N2	0xC10F	Number of values exceeded maximum limit on phase C/CA			UINT32	
	17	V3 dU min1	0xC110	Low percentile of voltage variation on phase C/CA, +/-%Un		0.01%	INT32	
	18	V3 dU max1	0xC111	High percentile of voltage variation on phase C/CA, +/-%Un		0.01%	INT32	
	19	V3 dU min2	0xC112	Minimum voltage variation on phase C/CA, +/-%Un		0.01%	INT32	
	20	V3 dU max2	0xC113	Maximum voltage variation on phase C/CA, +/-%Un		0.01%	INT32	
	21	dU lim1 low	0xC114	Low percentile limit of voltage variation, %Un		0.01%	INT32	
	22	dU lim1 high	0xC115	High percentile limit of voltage variation, %Un		0.01%	INT32	
	23	dU lim2 low	0xC116	Low maximum limit of voltage variation, %Un		0.01%	INT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	24	dU lim2 high	0xC117	High maximum limit of voltage variation, %Un		0.01%	INT32	
	25	PercRank	0xC118	Compliance percentile rank, %		0.1%	UINT32	
2/2				**Rapid Voltage Changes**				
	1	N1	0xC180	Number of polyphase incidents			UINT32	
	2	V1 N1	0xC181	Number of incidents on phase A/AB			UINT32	
	3	V1 dU	0xC182	Maximum voltage change on phase A/AB, %Un		0.01%	UINT32	
	4	V2 N1	0xC183	Number of incidents on phase B/BC			UINT32	
	5	V2 dU	0xC184	Maximum voltage change on phase B/BC, %Un		0.01%	UINT32	
	6	V3 N1	0xC185	Number of incidents on phase C/CA			UINT32	
	7	V3 dU	0xC186	Maximum voltage change on phase C/CA, %Un		0.01%	UINT32	
	8	dU lim	0xC187	Maximum permissible limit of voltage changes, Un%		0.01%	UINT32	
3/3				**Flicker**				
	1	Nnv	0xC200	Number of non-valid 2-hour intervals			UINT32	
	2	N	0xC201	Number of valid 2-hour intervals			UINT32	
	3	V1 Plt N1	0xC202	Number of Plt values exceeded percentile limit on phase A/AB			UINT32	
	4	V1 Plt max1	0xC203	High percentile of Plt on phase A/AB		0.01	UINT32	
	5	V1 Plt max2	0xC204	Maximum Plt on phase A/AB		0.01	UINT32	
	6	V2 Plt N1	0xC205	Number of Plt values exceeded percentile limit on phase B/BC			UINT32	
	7	V2 Plt max1	0xC206	High percentile of Plt on phase B/BC		0.01	UINT32	
	8	V2 Plt max2	0xC207	Maximum Plt on phase B/BC		0.01	UINT32	
	9	V3 Plt N1	0xC208	Number of Plt values exceeded percentile limit on phase C/CA			UINT32	
	10	V3 Plt max1	0xC209	High percentile of Plt on phase C/CA		0.01	UINT32	
	11	V3 Plt max2	0xC20A	Maximum Plt on phase C/CA		0.01	UINT32	
	12	Plt lim	0xC20B	High percentile limit of Plt		0.01	UINT32	
	13	PercRank	0xC20C	Compliance percentile rank, %		0.1%	UINT32	
4/4				**Voltage Unbalance**				
	1	Nnv	0xC280	Number of non-valid 10-min intervals			UINT32	
	2	N	0xC281	Number of valid 10-min intervals			UINT32	
	3	Vunb N1	0xC282	Number of voltage unbalance values exceeded percentile limit			UINT32	
	4	Vunb max1	0xC283	High percentile of voltage unbalance, %		0.1%	UINT32	
	5	Vunb max2	0xC284	Maximum voltage unbalance, %		0.1%	UINT32	
	6	Vunb lim	0xC285	High percentile limit of voltage unbalance, %		0.1%	UINT32	
	7	PercRank	0xC286	Compliance percentile rank, %		0.1%	UINT32	
5/5				**Voltage THD**				
	1	Nnv	0xC300	Number of non-valid 10-min intervals			UINT32	
	2	N	0xC301	Number of valid 10-min intervals			UINT32	
	3	V1 N1	0xC302	Number of THD values exceeded percentile limit on phase A/AB			UINT32	
	4	V1 THD max1	0xC303	High percentile of THD on phase A/AB, %		0.1%	UINT32	
	5	V1 THD max2	0xC304	Maximum THD on phase A/AB, %		0.1%	UINT32	
	6	V2 N1	0xC305	Number of THD values exceeded percentile limit on phase B/BC			UINT32	
	7	V2 THD max1	0xC306	High percentile of THD on phase B/BC, %		0.1%	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	8	V2 THD max2	0xC307	Maximum THD on phase B/BC, %		0.1%	UINT32	
	9	V3 N1	0xC308	Number of THD values exceeded percentile limit on phase C/CA			UINT32	
	10	V3 THD max1	0xC309	High percentile of THD on phase C/CA, %		0.1%	UINT32	
	11	V3 THD max2	0xC30A	Maximum THD on phase C/CA, %		0.1%	UINT32	
	12	THD lim	0xC30B	High percentile limit of THD, %		0.1%	UINT32	
	13	PercRank	0xC30C	Compliance percentile rank, %		0.1%	UINT32	
6/6				**Signaling Voltage**				
	1	Nnv	0xC380	Number of non-valid 3-sec intervals			UINT32	
	2	N	0xC381	Number of valid 3-sec intervals			UINT32	
	3	V1 Sig1 N1	0xC382	Number of 1st signaling voltage incidents on phase A/AB			UINT32	
	4	V1 Sig1	0xC383	Maximum 1st signaling voltage magnitude on phase A/AB, %Un		0.01%	UINT32	
	5	V1 Sig2 N1	0xC384	Number of 2nd signaling voltage incidents on phase A/AB			UINT32	
	6	V1 Sig2	0xC385	Maximum 2nd signaling voltage magnitude on phase A/AB, %Un		0.01%	UINT32	
	7	V1 Sig3 N1	0xC386	Number of 3rd signaling voltage incidents on phase A/AB			UINT32	
	8	V1 Sig3	0xC387	Maximum 3rd signaling voltage magnitude on phase A/AB, %Un		0.01%	UINT32	
	9	V1 Sig4 N1	0xC388	Number of 4th signaling voltage incidents on phase A/AB			UINT32	
	10	V1 Sig4	0xC389	Maximum 4th signaling voltage magnitude on phase A/AB, %Un		0.01%	UINT32	
	11	V2 Sig1 N1	0xC38A	Number of 1st signaling voltage incidents on phase B/BC			UINT32	
	12	V2 Sig1	0xC38B	Maximum 1st signaling voltage magnitude on phase B/BC, %Un		0.01%	UINT32	
	13	V2 Sig2 N1	0xC38C	Number of 2nd signaling voltage incidents on phase B/BC			UINT32	
	14	V2 Sig2	0xC38D	Maximum 2nd signaling voltage magnitude on phase B/BC, %Un		0.01%	UINT32	
	15	V2 Sig3 N1	0xC38E	Number of 3rd signaling voltage incidents on phase B/BC			UINT32	
	16	V2 Sig3	0xC38F	Maximum 3rd signaling voltage magnitude on phase B/BC, %Un		0.01%	UINT32	
	17	V2 Sig4 N1	0xC390	Number of 4th signaling voltage incidents on phase B/BC			UINT32	
	18	V2 Sig4	0xC391	Maximum 4th signaling voltage magnitude on phase B/BC, %Un		0.01%	UINT32	
	19	V3 Sig1 N1	0xC392	Number of 1st signaling voltage incidents on phase C/CA			UINT32	
	20	V3 Sig1	0xC393	Maximum 1st signaling voltage magnitude on phase C/CA, %Un		0.01%	UINT32	
	21	V3 Sig2 N1	0xC394	Number of 2nd signaling voltage incidents on phase C/CA			UINT32	
	22	V3 Sig2	0xC395	Maximum 2nd signaling voltage magnitude on phase C/CA, %Un		0.01%	UINT32	
	23	V3 Sig3 N1	0xC396	Number of 3rd signaling voltage incidents on phase C/CA			UINT32	
	24	V3 Sig3	0xC397	Maximum 3rd signaling voltage magnitude on phase C/CA, %Un		0.01%	UINT32	
	25	V3 Sig4 N1	0xC398	Number of 4th signaling voltage incidents on phase C/CA			UINT32	
	26	V3 Sig4	0xC399	Maximum 4th signaling voltage magnitude on phase C/CA, %Un		0.01%	UINT32	
	27	Sig1 frq	0xC39A	1st signaling frequency		0.01Hz	UINT32	
	28	Sig2 frq	0xC39B	2nd signaling frequency		0.01Hz	UINT32	
	29	Sig3 frq	0xC39C	3rd signaling frequency		0.01Hz	UINT32	
	30	Sig4 frq	0xC39D	4th signaling frequency		0.01Hz	UINT32	
	31	V Sig1 lim	0xC39E	Maximum permissible 1st signaling voltage magnitude, %Un		0.01%	UINT32	
	32	V Sig2 lim	0xC39F	Maximum permissible 2nd signaling voltage magnitude, %Un		0.01%	UINT32	
	33	V Sig3 lim	0xC3A0	Maximum permissible 3rd signaling voltage magnitude, %Un		0.01%	UINT32	
	34	V Sig4 lim	0xC3A1	Maximum permissible 4th signaling voltage magnitude, %Un		0.01%	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	35	PercRank	0xC3A2	Compliance percentile rank, %		0.1%	UINT32	
7/7				**Voltage Interruptions** (indicative statistics)				
	1	N1 0,5s	0xC880	Number of short polyphase interruptions <=500ms			UINT32	
	2	N2 1s	0xC881	Number of short polyphase interruptions <=1s			UINT32	
	3	N3 5s	0xC882	Number of short polyphase interruptions <=5s			UINT32	
	4	N4 20s	0xC883	Number of short polyphase interruptions <=20s			UINT32	
	5	N5 60s	0xC884	Number of short polyphase interruptions <=60s			UINT32	
	6	N6 180s	0xC885	Number of short polyphase interruptions <=180s			UINT32	
	7	N7 >180s	0xC886	Number of long polyphase interruptions >180s			UINT32	
	8	V min	0xC887	Minimum residual voltage, %Un		0.01%	UINT32	
	9	dt max	0xC888	Maximum duration of a short polyphase interruption		ms	UINT32	
	10	dt tot	0xC889	Total duration of short polyphase interruptions		ms	UINT32	
8/8				**Voltage Dips** (indicative statistics)				
	1	N11 90%/0,2s	0xC900	Number of polyphase dips <90% and duration <=0.2 s			UINT32	
	2	N12 90%/0,5s	0xC901	Number of polyphase dips <90% and duration <=0.5 s			UINT32	
	3	N13 90%/1s	0xC902	Number of polyphase dips <90% and duration <=1 s			UINT32	
	4	N14 90%/5s	0xC903	Number of polyphase dips <90% and duration <=5 s			UINT32	
	5	N15 90%/60s	0xC904	Number of polyphase dips <90% and duration <=60 s			UINT32	
	6	N21 80%/0,2s	0xC905	Number of polyphase dips <80% and duration <=0.2 s			UINT32	
	7	N22 80%/0,5s	0xC906	Number of polyphase dips <80% and duration <=0.5 s			UINT32	
	8	N23 80%/1s	0xC907	Number of polyphase dips <80% and duration <=1 s			UINT32	
	9	N24 80%/5s	0xC908	Number of polyphase dips <80% and duration <=5 s			UINT32	
	10	N25 80%/60s	0xC909	Number of polyphase dips <80% and duration <=60 s			UINT32	
	11	N31 70%/0,2s	0xC90A	Number of polyphase dips <70% and duration <=0.2 s			UINT32	
	12	N32 70%/0,5s	0xC90B	Number of polyphase dips <70% and duration <=0.5 s			UINT32	
	13	N33 70%/1s	0xC90C	Number of polyphase dips <70% and duration <=1 s			UINT32	
	14	N34 70%/5s	0xC90D	Number of polyphase dips <70% and duration <=5 s			UINT32	
	15	N35 70%/60s	0xC90E	Number of polyphase dips <70% and duration <=60 s			UINT32	
	16	N41 40%/0,2s	0xC90F	Number of polyphase dips <40% and duration <=0.2 s			UINT32	
	17	N42 40%/0,5s	0xC910	Number of polyphase dips <40% and duration <=0.5 s			UINT32	
	18	N43 40%/1s	0xC911	Number of polyphase dips <40% and duration <=1 s			UINT32	
	19	N44 40%/5s	0xC912	Number of polyphase dips <40% and duration <=5 s			UINT32	
	20	N45 40%/60s	0xC913	Number of polyphase dips <40% and duration <=60 s			UINT32	
	21	N51 5%/0,2s	0xC914	Number of polyphase dips <5% and duration <=0.2 s			UINT32	
	22	N52 5%/0,5s	0xC915	Number of polyphase dips <5% and duration <=0.5 s			UINT32	
	23	N53 5%/1s	0xC916	Number of polyphase dips <5% and duration <=1 s			UINT32	
	24	N54 5%/5s	0xC917	Number of polyphase dips <5% and duration <=5 s			UINT32	
	25	N55 5%/60s	0xC918	Number of polyphase dips <5% and duration <=60 s			UINT32	
	26	dt max 90%	0xC919	Maximum duration of a polyphase dip < 90%		ms	UINT32	
	27	dt max 85%	0xC91A	Maximum duration of a polyphase dip < 80%		ms	UINT32	
	28	dt max 70%	0xC91B	Maximum duration of a polyphase dip < 70%		ms	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	29	dt max 40%	0xC91C	Maximum duration of a polyphase dip < 40%		ms	UINT32	
	30	dt max 10%	0xC91D	Maximum duration of a polyphase dip < 5%		ms	UINT32	
	31	V min 0.2s	0xC91E	Minimum residual voltage of polyphase dips with duration <=0.2 s, %Un		0.01%	UINT32	
	32	V min 0.5s	0xC91F	Minimum residual voltage of polyphase dips with duration <=0.5 s, %Un		0.01%	UINT32	
	33	V min 1s	0xC920	Minimum residual voltage of polyphase dips with duration <=1 s, %Un		0.01%	UINT32	
	34	V min 5s	0xC921	Minimum residual voltage of polyphase dips with duration <=5 s, %Un		0.01%	UINT32	
	35	V min 60s	0xC922	Minimum residual voltage of polyphase dips with duration <=60 s, %Un		0.01%	UINT32	
	36	dt tot	0xC923	Total duration of polyphase dips		ms	UINT32	
9/9				**Voltage Swells** (indicative statistics)				
	1	N11 120%/0,5s	0xC980	Number of polyphase swells >=120% and duration <=0.5 s			UINT32	
	2	N12 120%/5s	0xC981	Number of polyphase swells >=120% and duration <=5 s			UINT32	
	3	N13 120%/60s	0xC982	Number of polyphase swells >=120% and duration <=60 s			UINT32	
	4	N21 110%/0,5s	0xC983	Number of polyphase swells >110% and duration <=0.5 s			UINT32	
	5	N22 110%/5s	0xC984	Number of polyphase swells >110% and duration <=5 s			UINT32	
	6	N23 110%/60s	0xC985	Number of polyphase swells >110% and duration <=60 s			UINT32	
	7	dt max 120%	0xC986	Maximum duration of polyphase swells >=120%		ms	UINT32	
	8	dt max 110%	0xC987	Maximum duration of polyphase swells >110%		ms	UINT32	
	9	V max 0,5s	0xC988	Maximum polyphase swell voltage with duration <=0.5 s, %Un		0.01%	UINT32	
	10	V max 5s	0xC989	Maximum polyphase swell voltage with duration <=5 s, %Un		0.01%	UINT32	
	11	V max 60s	0xC98A	Maximum polyphase swell voltage with duration <=60 s, %Un		0.01%	UINT32	
	12	dt tot	0xC98B	Total duration of polyphase swells		ms	UINT32	
10/10				**Transient Overvoltages** (indicative statistics)				
	1	N11 20%/0,1ms	0xCA00	Number of polyphase impulses >20% and duration <=0.1 ms			UINT32	
	2	N12 20%/0,2ms	0xCA01	Number of polyphase impulses >20% and duration <=0.2 ms			UINT32	
	3	N13 20%/0,5ms	0xCA02	Number of polyphase impulses >20% and duration <=0.5 ms			UINT32	
	4	N14 20%/1ms	0xCA03	Number of polyphase impulses >20% and duration <=1 ms			UINT32	
	5	N15 20%/5ms	0xCA04	Number of polyphase impulses >20% and duration <=5 ms			UINT32	
	6	N16 20%/10ms	0xCA05	Number of polyphase impulses >20% and duration <=10 ms			UINT32	
	7	N21 100%/0,1ms	0xCA06	Number of polyphase impulses >100% and duration <=0.1 ms			UINT32	
	8	N22 100%/0,2ms	0xCA07	Number of polyphase impulses >100% and duration <=0.2 ms			UINT32	
	9	N23 100%/0,5ms	0xCA08	Number of polyphase impulses >100% and duration <=0.5 ms			UINT32	
	10	N24 100%/1ms	0xCA09	Number of polyphase impulses >100% and duration <=1 ms			UINT32	
	11	N25 100%/5ms	0xCA0A	Number of polyphase impulses >100% and duration <=5 ms			UINT32	
	12	N26 100%/10ms	0xCA0B	Number of polyphase impulses >100% and duration <=10 ms			UINT32	
	13	N31 200%/0,1ms	0xCA0C	Number of polyphase impulses >200% and duration <=0.1 ms			UINT32	
	14	N32 200%/0,2ms	0xCA0D	Number of polyphase impulses >200% and duration <=0.2 ms			UINT32	
	15	N33 200%/0,5ms	0xCA0E	Number of polyphase impulses >200% and duration <=0.5 ms			UINT32	
	16	N34 200%/1ms	0xCA0F	Number of polyphase impulses >200% and duration <=1 ms			UINT32	
	17	N35 200%/5ms	0xCA10	Number of polyphase impulses >200% and duration <=5 ms			UINT32	
	18	N36 200%/10ms	0xCA11	Number of polyphase impulses >200% and duration <=10 ms			UINT32	
	19	N41 400%/0,1ms	0xCA12	Number of polyphase impulses >400% and duration <=0.1 ms			UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	20	N42 400%/0,2ms	0xCA13	Number of polyphase impulses >400% and duration <=0.2 ms			UINT32	
	21	N43 400%/0.5ms	0xCA14	Number of polyphase impulses >400% and duration <=0.5 ms			UINT32	
	22	N44 400%/1ms	0xCA15	Number of polyphase impulses >400% and duration <=1 ms			UINT32	
	23	N45 400%/5ms	0xCA16	Number of polyphase impulses >400% and duration <=5 ms			UINT32	
	24	N46 400%/10ms	0xCA17	Number of polyphase impulses >400% and duration <=10 ms			UINT32	
	25	N51 800%/0,1ms	0xCA18	Number of polyphase impulses >800% and duration <=0.1 ms			UINT32	
	26	N52 800%/0,2ms	0xCA19	Number of polyphase impulses >800% and duration <=0.2 ms			UINT32	
	27	N53 800%/0.5ms	0xCA1A	Number of polyphase impulses >800% and duration <=0.5 ms			UINT32	
	28	N54 800%/1ms	0xCA1B	Number of polyphase impulses >800% and duration <=1 ms			UINT32	
	29	N55 800%/5ms	0xCA1C	Number of polyphase impulses >800% and duration <=5 ms			UINT32	
	30	N56 800%/10ms	0xCA1D	Number of polyphase impulses >800% and duration <=10 ms			UINT32	
	31	V max 0,1ms	0xCA1E	Maximum impulsive voltage with duration <=0.1 ms, %Un peak		0.01%	UINT32	
	32	V max 0,2ms	0xCA1F	Maximum impulsive voltage with duration <=0.2 ms, %Un peak		0.01%	UINT32	
	33	V max 0,5ms	0xCA20	Maximum impulsive voltage with duration <=0.5 ms, %Un peak		0.01%	UINT32	
	34	V max 1ms	0xCA21	Maximum impulsive voltage with duration <=1 ms, %Un peak		0.01%	UINT32	
	35	V max 5ms	0xCA22	Maximum impulsive voltage with duration <=5 ms, %Un peak		0.01%	UINT32	
	36	V max 10ms	0xCA23	Maximum impulsive voltage with duration <=10 ms, %Un peak		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.

3.14 EN 50160:2010 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	0xCD00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCD01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCD02	Number of H02 values exceeded percentile limit on phase A/AB			UINT32	
	4	H03 N1	0xCD03	Number of H03 values exceeded percentile limit on phase A/AB			UINT32	
		...					UINT32	
	41	H40 N1	0xCD28	Number of H40 values exceeded percentile limit on phase A/AB			UINT32	
	42	PercRank	0xCD29	Compliance percentile rank, %		0.1%	UINT32	
1/1				**V2 Harmonic Compliance**			UINT32	
	1	Nnv	0xCD00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCD01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCD02	Number of H02 values exceeded percentile limit on phase B/BC			UINT32	
	4	H03 N1	0xCD03	Number of H03 values exceeded percentile limit on phase B/BC			UINT32	
		...					UINT32	
	41	H40 N1	0xCD28	Number of H40 values exceeded percentile limit on phase B/BC			UINT32	
	42	PercRank	0xCD29	Compliance percentile rank, %		0.1%	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
2/2				**V3 Harmonic Compliance**			UINT32	
	1	Nnv	0xCD00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCD01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCD02	Number of H02 values exceeded percentile limit on phase C/CA			UINT32	
	4	H03 N1	0xCD03	Number of H03 values exceeded percentile limit on phase C/CA			UINT32	
		...					UINT32	
	41	H40 N1	0xCD28	Number of H40 values exceeded percentile limit on phase C/CA			UINT32	
	42	PercRank	0xCD29	Compliance percentile rank, %		0.1%	UINT32	
3/3				**V1 Harmonic Voltages**			UINT32	
	1	%H02 max1	0xCC80	High percentile probability value of H02 on phase A/AB, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	High percentile probability value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	High percentile probability value of H40 on phase A/AB, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum value of H02 on phase A/AB, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum value of H40 on phase A/AB, %		0.01%	UINT32	
4/4				**V2 Harmonic Voltages**			UINT32	
	1	%H02 max1	0xCC80	High percentile probability value of H02 on phase B/BC, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	High percentile probability value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	High percentile probability value of H40 on phase B/BC, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum value of H02 on phase B/BC, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum value of H40 on phase B/BC, %		0.01%	UINT32	
5/5				**V3 Harmonic Voltages**			UINT32	
	1	%H02 max1	0xCC80	High percentile probability value of H02 on phase C/CA, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	High percentile probability value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	High percentile probability value of H40 on phase C/CA, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum value of H02 on phase C/CA, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum value of H40 on phase C/CA, %		0.01%	UINT32	
6/6				**V1 Interharmonic Compliance**			UINT32	
	1	Nnv	0xCD00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCD01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCD02	Number of H02 values exceeded percentile limit on phase A/AB			UINT32	
	4	H03 N1	0xCD03	Number of H03 values exceeded percentile limit on phase A/AB			UINT32	
		...					UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	41	H40 N1	0xCD28	Number of H40 values exceeded percentile limit on phase A/AB			UINT32	
	42	PercRank	0xCD29	Compliance percentile rank, %		0.1%	UINT32	
7/7				**V2 Interharmonic Compliance**			UINT32	
	1	Nnv	0xCD00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCD01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCD02	Number of H02 values exceeded percentile limit on phase B/BC			UINT32	
	4	H03 N1	0xCD03	Number of H03 values exceeded percentile limit on phase B/BC			UINT32	
		...					UINT32	
	41	H40 N1	0xCD28	Number of H40 values exceeded percentile limit on phase B/BC			UINT32	
	42	PercRank	0xCD29	Compliance percentile rank, %		0.1%	UINT32	
8/8				**V3 Interharmonic Compliance**			UINT32	
	1	Nnv	0xCD00	Number of non-valid 10-min intervals			UINT32	
	2	N	0xCD01	Number of valid 10-min intervals			UINT32	
	3	H02 N1	0xCD02	Number of H02 values exceeded percentile limit on phase C/CA			UINT32	
	4	H03 N1	0xCD03	Number of H03 values exceeded percentile limit on phase C/CA			UINT32	
		...					UINT32	
	41	H40 N1	0xCD28	Number of H40 values exceeded percentile limit on phase C/CA			UINT32	
	42	PercRank	0xCD29	Compliance percentile rank, %		0.1%	UINT32	
9/9				**V1 Interharmonic Voltages**			UINT32	
	1	%H02 max1	0xCC80	High percentile probability value of H02 on phase A/AB, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	High percentile probability value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	High percentile probability value of H40 on phase A/AB, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum value of H02 on phase A/AB, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum value of H03 on phase A/AB, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum value of H40 on phase A/AB, %		0.01%	UINT32	
10/10				**V2 Interharmonic Voltages**			UINT32	
	1	%H02 max1	0xCC80	High percentile probability value of H02 on phase B/BC, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	High percentile probability value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	High percentile probability value of H40 on phase B/BC, %		0.01%	UINT32	
	40	%H02 max2	0xCCA7	Maximum value of H02 on phase B/BC, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum value of H03 on phase B/BC, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum value of H40 on phase B/BC, %		0.01%	UINT32	
11/11				**V3 Interharmonic Voltages**			UINT32	
	1	%H02 max1	0xCC80	High percentile probability value of H02 on phase C/CA, %		0.01%	UINT32	
	2	%H03 max1	0xCC81	High percentile probability value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	39	%H40 max1	0xCCA6	High percentile probability value of H40 on phase C/CA, %		0.01%	UINT32	

File Channel / Section	Record Field No.	Point Label	Point ID	Description[1]	Range	Units	Type	Notes
	40	%H02 max2	0xCCA7	Maximum value of H02 on phase C/CA, %		0.01%	UINT32	
	41	%H03 max2	0xCCA8	Maximum value of H03 on phase C/CA, %		0.01%	UINT32	
		...					UINT32	
	78	%H40 max2	0xCCCD	Maximum value of H40 on phase C/CA, %		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.

3.15 Billing/TOU Monthly Profile Data Log

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	0.1 kWh	UINT32	
	2	TRF1	0x7000	Tariff #1 energy reading	0-999,999,999	0.1 kWh	UINT32	
	3	TRF2	0x7001	Tariff #2 energy reading	0-999,999,999	0.1 kWh	UINT32	
	4	TRF3	0x7002	Tariff #3 energy reading	0-999,999,999	0.1 kWh	UINT32	
	5	TRF4	0x7003	Tariff #4 energy reading	0-999,999,999	0.1 kWh	UINT32	
	6	TRF5	0x7004	Tariff #5 energy reading	0-999,999,999	0.1 kWh	UINT32	
	7	TRF6	0x7005	Tariff #6 energy reading	0-999,999,999	0.1 kWh	UINT32	
	8	TRF7	0x7006	Tariff #7 energy reading	0-999,999,999	0.1 kWh	UINT32	
	9	TRF8	0x7007	Tariff #8 energy reading	0-999,999,999	0.1 kWh	UINT32	
...				...				
9/9				**Energy Register #10**				
	1	REG10	0x1789	Summary (total) energy reading	0-999,999,999	0.1 kWh	UINT32	
	2	TRF1	0x7000	Tariff #1 energy reading	0-999,999,999	0.1 kWh	UINT32	
	3	TRF2	0x7001	Tariff #2 energy reading	0-999,999,999	0.1 kWh	UINT32	
	4	TRF3	0x7002	Tariff #3 energy reading	0-999,999,999	0.1 kWh	UINT32	
	5	TRF4	0x7003	Tariff #4 energy reading	0-999,999,999	0.1 kWh	UINT32	
	6	TRF5	0x7004	Tariff #5 energy reading	0-999,999,999	0.1 kWh	UINT32	
	7	TRF6	0x7005	Tariff #6 energy reading	0-999,999,999	0.1 kWh	UINT32	
	8	TRF7	0x7006	Tariff #7 energy reading	0-999,999,999	0.1 kWh	UINT32	
	9	TRF8	0x7007	Tariff #8 energy reading	0-999,999,999	0.1 kWh	UINT32	
16/10				**Monthly Maximum Demand Register #1**				
	1	REG1 MD	0x4780	Summary (total) maximum demand	0-Pmax	U3	UINT32	
	2	TIME0	0x7700	Summary (total) maximum demand timestamp		F1	UINT32	
	3	REG1 CMD	0x4790	Summary (total) cumulative maximum demand	0-999,999,999	U3	UINT32	
	4	TRF1 MD	0x7100	Tariff #1 maximum demand	0-Pmax	U3	UINT32	
	5	TIME1	0x7701	Tariff #1 maximum demand timestamp		F1	UINT32	
	6	TRF1 CMD	0x7180	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	
	7	TRF2 MD	0x7101	Tariff #2 maximum demand	0-Pmax	U3	UINT32	
	8	TIME2	0x7702	Tariff #2 maximum demand timestamp		F1	UINT32	
	9	TRF2 CMD	0x7181	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	
	10	TRF3 MD	0x7102	Tariff #3 maximum demand	0-Pmax	U3	UINT32	
	11	TIME3	0x7703	Tariff #3 maximum demand timestamp		F1	UINT32	
	12	TRF3 CMD	0x7183	Tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	
	13	TRF4 MD	0x7103	Tariff #4 maximum demand	0-Pmax	U3	UINT32	
	14	TIME4	0x7704	Tariff #4 maximum demand timestamp		F1	UINT32	
	15	TRF4 CMD	0x7183	Tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	
	16	TRF5 MD	0x7104	Tariff #5 maximum demand	0-Pmax	U3	UINT32	

File Channel / Section [1]	Record Field No. [2]	Point Label	Point ID	Description	Range	Units [3]	Type	Notes
	17	TIME5	0x7705	Tariff #5 maximum demand timestamp		F1	UINT32	
	18	TRF5 CMD	0x7184	Tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	
	19	TRF6 MD	0x7105	Tariff #6 maximum demand	0-Pmax	U3	UINT32	
	20	TIME6	0x7786	Tariff #6 maximum demand timestamp		F1	UINT32	
	21	TRF6 CMD	0x7185	Tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	
	22	TRF7 MD	0x7106	Tariff #7 maximum demand	0-Pmax	U3	UINT32	
	23	TIME7	0x7707	Tariff #7 maximum demand timestamp		F1	UINT32	
	24	TRF7 CMD	0x7186	Tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	
	25	TRF8 MD	0x7107	Tariff #8 maximum demand	0-Pmax	U3	UINT32	
	26	TIME8	0x7708	Tariff #8 maximum demand timestamp		F1	UINT32	
	27	TRF8 CMD	0x7187	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	
...				...				
25/19				**Monthly Maximum Demand Register #10**				
	1	REG10 MD	0x4789	Summary (total) maximum demand	0-Pmax	U3	UINT32	
	2	TIME0	0x7700	Summary (total) maximum demand timestamp		F1	UINT32	
	3	REG10 CMD	0x4799	Summary (total) cumulative maximum demand	0-999,999,999	U3	UINT32	
	4	TRF1 MD	0x7100	Tariff #1 maximum demand	0-Pmax	U3	UINT32	
	5	TIME1	0x7701	Tariff #1 maximum demand timestamp		F1	UINT32	
	6	TRF1 CMD	0x7180	Tariff #1 cumulative maximum demand	0-999,999,999	U3	UINT32	
	7	TRF2 MD	0x7101	Tariff #2 maximum demand	0-Pmax	U3	UINT32	
	8	TIME2	0x7702	Tariff #2 maximum demand timestamp		F1	UINT32	
	9	TRF2 CMD	0x7181	Tariff #2 cumulative maximum demand	0-999,999,999	U3	UINT32	
	10	TRF3 MD	0x7102	Tariff #3 maximum demand	0-Pmax	U3	UINT32	
	11	TIME3	0x7703	Tariff #3 maximum demand timestamp		F1	UINT32	
	12	TRF3 CMD	0x7183	Tariff #3 cumulative maximum demand	0-999,999,999	U3	UINT32	
	13	TRF4 MD	0x7103	Tariff #4 maximum demand	0-Pmax	U3	UINT32	
	14	TIME4	0x7704	Tariff #4 maximum demand timestamp		F1	UINT32	
	15	TRF4 CMD	0x7183	Tariff #4 cumulative maximum demand	0-999,999,999	U3	UINT32	
	16	TRF5 MD	0x7104	Tariff #5 maximum demand	0-Pmax	U3	UINT32	
	17	TIME5	0x7705	Tariff #5 maximum demand timestamp		F1	UINT32	
	18	TRF5 CMD	0x7184	Tariff #5 cumulative maximum demand	0-999,999,999	U3	UINT32	
	19	TRF6 MD	0x7105	Tariff #6 maximum demand	0-Pmax	U3	UINT32	
	20	TIME6	0x7786	Tariff #6 maximum demand timestamp		F1	UINT32	
	21	TRF6 CMD	0x7185	Tariff #6 cumulative maximum demand	0-999,999,999	U3	UINT32	
	22	TRF7 MD	0x7106	Tariff #7 maximum demand	0-Pmax	U3	UINT32	
	23	TIME7	0x7707	Tariff #7 maximum demand timestamp		F1	UINT32	
	24	TRF7 CMD	0x7186	Tariff #7 cumulative maximum demand	0-999,999,999	U3	UINT32	
	25	TRF8 MD	0x7107	Tariff #8 maximum demand	0-Pmax	U3	UINT32	
	26	TIME8	0x7708	Tariff #8 maximum demand timestamp		F1	UINT32	
	27	TRF8 CMD	0x7187	Tariff #8 cumulative maximum demand	0-999,999,999	U3	UINT32	

[1] An energy use profile section is allocated for registers for which a source input is selected in the Energy/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 Energy/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”.

3.16 Billing/TOU Daily Profile Data Log

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	0.1 kWh	UINT32	
	2	TRF1	0x7000	Tariff #1 energy reading	0-999,999,999	0.1 kWh	UINT32	
	3	TRF2	0x7001	Tariff #2 energy reading	0-999,999,999	0.1 kWh	UINT32	
	4	TRF3	0x7002	Tariff #3 energy reading	0-999,999,999	0.1 kWh	UINT32	
	5	TRF4	0x7003	Tariff #4 energy reading	0-999,999,999	0.1 kWh	UINT32	
	6	TRF5	0x7004	Tariff #5 energy reading	0-999,999,999	0.1 kWh	UINT32	
	7	TRF6	0x7005	Tariff #6 energy reading	0-999,999,999	0.1 kWh	UINT32	
	8	TRF7	0x7006	Tariff #7 energy reading	0-999,999,999	0.1 kWh	UINT32	
	9	TRF8	0x7007	Tariff #8 energy reading	0-999,999,999	0.1 kWh	UINT32	
...				...				
9/9				**Energy Register #10**				
	1	REG10	0x1789	Summary (total) energy reading	0-999,999,999	0.1 kWh	UINT32	
	2	TRF1	0x7000	Tariff #1 energy reading	0-999,999,999	0.1 kWh	UINT32	
	3	TRF2	0x7001	Tariff #2 energy reading	0-999,999,999	0.1 kWh	UINT32	
	4	TRF3	0x7002	Tariff #3 energy reading	0-999,999,999	0.1 kWh	UINT32	
	5	TRF4	0x7003	Tariff #4 energy reading	0-999,999,999	0.1 kWh	UINT32	
	6	TRF5	0x7004	Tariff #5 energy reading	0-999,999,999	0.1 kWh	UINT32	
	7	TRF6	0x7005	Tariff #6 energy reading	0-999,999,999	0.1 kWh	UINT32	
	8	TRF7	0x7006	Tariff #7 energy reading	0-999,999,999	0.1 kWh	UINT32	
	9	TRF8	0x7007	Tariff #8 energy reading	0-999,999,999	0.1 kWh	UINT32	
16/10				**Daily 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	
...				...				

File Channel / Section [1]	Record Field No. [2]	Point Label	Point ID	Description	Range	Units [3]	Type	Notes
25/19				**Daily Maximum Demand Register #10**				
	1	REG10 MD	0x4789	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	

[1] An energy use profile section is allocated for registers for which a source input is selected in the Energy/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 Energy/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”.

3.17 Energy Load Profile Data Log

File Section	Record Field No. [1]	Point Label	Point ID	Description	Range	Units	Type	Notes
0	1	REG1	0x1780	Summary (total) energy register 1 reading	0-999,999,999	0.1 kWh	UINT32	
	2	REG2	0x1781	Summary (total) energy register 2 reading	0-999,999,999	0.1 kWh	UINT32	
	3	REG3	0x1782	Summary (total) energy register 3 reading	0-999,999,999	0.1 kWh	UINT32	
	4	REG4	0x1783	Summary (total) energy register 4 reading	0-999,999,999	0.1 kWh	UINT32	
	5	REG5	0x1784	Summary (total) energy register 5 reading	0-999,999,999	0.1 kWh	UINT32	
	6	REG6	0x1785	Summary (total) energy register 6 reading	0-999,999,999	0.1 kWh	UINT32	
	7	REG7	0x1786	Summary (total) energy register 7 reading	0-999,999,999	0.1 kWh	UINT32	
	8	REG8	0x1787	Summary (total) energy register 8 reading	0-999,999,999	0.1 kWh	UINT32	
	9	REG9	0x1788	Summary (total) energy register 9 reading	0-999,999,999	0.1 kWh	UINT32	
	10	REG10	0x1789	Summary (total) energy register 10 reading	0-999,999,999	0.1 kWh	UINT32	

[1] The number of parameters in a file is automatically configured depending on the number of registers for which a source input is selected in the Energy/TOU Register setup.

4 Data Scales and Units

Code	Condition	Value	Range	Notes
Data Scales				
Vmax		Voltage scale × PT Ratio, V		2
Imax		Current Scale × CT Ratio [1], A		3
I4max		Current Scale × I4 CT Ratio [1], A		3
Pmax		Vmax × Imax × 2, W		4
Fmax		100 Hz		
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		
Data Units				
U1	PT Ratio = 1	0.1 V		
	PT Ratio > 1	1 V		
U2		0.01 A	0 to 2×CT primary current	
U3	PT Ratio = 1	1 W/Var/VA		
	PT Ratio > 1	1 kW/kvar/kVA		
U4		0.01 A	0 to 10×CT primary current	

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

[2] The default Voltage scale is 144V (120V +20%). You can change it via the Device Data Scale setup (see Section 3.1) or via the Device Options setup in PAS.

[3] The default Current scale is 2 × CT secondary current (2 × 1A or 2 × 5A depending on the order).

[4] Pmax is rounded to whole kilowatts. With PT=1.0, if Pmax is greater than 9,999,000 W, it is truncated to 9,999,000 W.

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	Data log #1-8	
	9	Data log #9 – EN50160 Compliance Statistics	
	10	Data log #10 – EN50160 Harmonic Statistics	
	11	Data log #11	
	12	Data log #12 – Energy Load Profile log	
	13	Data log #13 – Fault RMS Profile log	
	14	Data log #14 – PQ RMS Profile log	
	15	Data log #15 – Energy/TOU Monthly Profile log	
	16	Data log #16 – Energy/TOU Daily Profile log	
	17-19	Waveform log #1-3	
	26	Power quality (PQ) event log	
	27	Fault event 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 4:7 =	Multi-section data log file attributes:	
	0	Regular file	
	1	Energy/TOU Monthly Profile log	Multi-section file
	2	Energy/TOU Daily Profile log	Multi-section file
	3	EN50160:2007 Compliance Statistics	Multi-section file
	4	EN50160:2007 Harmonic Statistics	Multi-section file
	9	EN50160:2010 Compliance Statistics	Multi-section file
	10	EN50160:2010 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)	
TOU Profile Log Channel ID			
F6	0-9	Billing/TOU energy usage registers #1-#10	
	16-25	Billing/TOU maximum demand registers #1-#10	
Waveform Log Channel ID			
F7	0	Channel V1/V12	[1]
	1	Channel V2/V23	[1]
	2	Channel V3/V31	[1]
	3	Channel V4 (neutral-ground)	
	4	Channel I1	
	5	Channel I2	
	6	Channel I3	
	7	Channel I4	

Format Code	Value	Description	Notes
Profile Log Sections Mask			
F8	Bit 0:7 = 1	Billing/TOU energy usage registers #1-#8	
	Bit 16:23 = 1	Billing/TOU maximum demand registers #1-#8	
Waveform Log Channel Mask			
F9	Bit 0 = 1	Channel V1/V12	[1]
	Bit 1 = 1	Channel V2/V23	[1]
	Bit 2 = 1	Channel V3/V31	[1]
	Bit 3 = 1	Channel V4 (neutral-ground)	
	Bit 4 = 1	Channel I1	
	Bit 5 = 1	Channel I2	
	Bit 6 = 1	Channel I3	
	Bit 7 = 1	Channel I4	
TOU Tariff Change Time			
F10	Bits 8:15 = 0-7	Tariff number #1-#8	
	Bits 2:7 = 0-23	Tariff start hour	
	Bits 0:1 = 0-3	Tariff start quarter of an hour	
Billing/TOU Register Source ID			
F11	0x0000	None	
	0x0700-0x0707	Pulse input DI1-DI8	
	0x1700	kWh import	
	0x1701	kWh export	
	0x1704	kvarh import	
	0x1705	kvarh export	
	0x1708	kVAh	
	0x1709	kVAh import	
	0x170A	kVAh export	
	0x170B	kvarh Q1	
	0x170C	kvarh Q2	
	0x170D	kvarh Q3	
	0x170E	kvarh Q4	
Setpoint Trigger Parameters ID			
F12	0x0000-0xFFFF	Any data point ID excluding energy counters	See Section 3.4
Setpoint Relational Operator			
F13	0 = NONE	None (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	
Setpoint Action ID			
F14	0x0000	No action	
	0x2000-0x2007	Set user event flag #1-#8	
	0x2100-0x2107	Clear user event flag #1-#8	
	0x3000-0x3003	Operate relay RO1-RO4	
	0x3100-0x3103	Release latched relay RO1-RO4	
	0x4000-0x4007	Increment counter #1-#8	
	0x4200-0x4207	Clear counter #1-#8	
	0x5100	Send event notification	
	0x6100	Reset all total maximum demand registers	
	0x6101	Reset maximum power demand registers	
	0x6102	Reset maximum volt and ampere demand registers	
	0x6103	Reset maximum volt demand registers	
	0x6104	Reset maximum ampere demand registers	
	0x6105	Reset maximum harmonic demand registers	
	0x6300	Reset Billing/TOU maximum demands	
	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	
	0x7100-0x710D	Data log #1-#14	
	0x7200-0x7201	Waveform Log #1-#2	
Counter Source ID			
F16	0x0000	None	
	0x0001-0x0008	Pulse input DI1-D8	

Format Code	Value	Description	Notes
Relay Output Pulse Source ID			
F17	0x0000	None	
	0x0400	kWh import pulse	
	0x0401	kWh export pulse	
	0x0403	kvarh import pulse	
	0x0404	kvarh export pulse	
	0x0405	kvarh total pulse	
	0x0406	kVAh pulse	
AO Output Parameters ID			
F18	0x0000	None (output disabled)	[2]
		1-Cycle Phase Values	
	0x0C00	V1/V12 Voltage	
	0x0C01	V2/V23 Voltage	
	0x0C02	V3/V31 Voltage	
	0x0C03	I1 Current	
	0x0C04	I2 Current	
	0x0C05	I3 Current	
	0x0C1E	V12 Voltage	
	0x0C1F	V23 Voltage	
	0x0C20	V31 Voltage	
		1-Cycle Total Values	
	0x0F00	Total kW	
	0x0F01	Total kvar	
	0x0F02	Total kVA	
	0x0F03	Total PF	
	0x0F04	Total PF Lag	
	0x0F05	Total PF Lead	
	0x0F0A	3-phase average L-N/L-L voltage	[1]
	0x0F0B	3-phase average L-L voltage	
	0x0F0C	3-phase average current	
		1-Cycle Auxiliary Values	
	0x1001	In Current	
	0x1002	Frequency	
		1-Sec Phase Values	
	0x1100	V1/V12 Voltage	
	0x1101	V2/V23 Voltage	
	0x1102	V3/V31 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/L-L voltage	[1]
	0x140B	3-phase average L-L voltage	
	0x140C	3-phase average current	
		1-Sec Auxiliary Values	
	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 Cause/Point ID			
F19		**Setpoint Operation Events**	
	0x0000-0x59FF	Trigger parameter ID	
	0x6400-0xFFFF	Trigger parameter ID	
		Setpoint Action Events	

Format Code	Value	Description	Notes
	0x5A00-0x5A0F	Setpoint #1-#16	
		Communications Events	
	0x5B00-0x5BFF	Point ID (low byte, see F21)	
		Front Panel Operations	
	0x5C00-0x5CFF	Point ID (low byte, see F21)	
		Self-Check Diagnostics Events	
	0x5D00-0x5DFF	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	
		Hardware Diagnostics Events	
	0x6202	RAM/Data error	
	0x6203	Hardware watchdog reset	
	0x6204	Sampling fault	
	0x6205	CPU exception	
	0x6206	Reserved	
	0x6207	Software watchdog reset	
	0x620D	Low battery	
	0x620E	Expanded/FLASH memory fault	
	0x620F	CPU EEPROM fault	
	0x6211	I/O board EEPROM fault	
	0x6212	Transient coprocessor fault	
		External Events	
	0x6300	Power down	
	0x6308	Power up	
	0x6309	External reset	
	0x6318	IRIG-B signal lost	
	0x6319	IRIG-B time unlocked	
	0x631A	IRIG-B time locked	
	0x631B	Magnetic interference	
	0x631D	Motion/tilt sensor operation	
	0x6320	SNTP server failed	[4]
	0x6321	SNTP server reconnected	[4]
Event Effect ID			
F20		**Communications/Self-check/Front Panel Events**	
	0x0000	None	
	0x6100	All total maximum demands cleared	
	0x6101	Power maximum demands cleared	
	0x6102	Volt and ampere maximum demands cleared	
	0x6103	Volt maximum demands cleared	
	0x6104	Ampere maximum demands cleared	
	0x6105	Harmonic maximum demands cleared	
	0x6300	Billing/TOU maximum demand registers cleared	
	0x6400	All counters cleared	
	0x6401-0x6407	Counter cleared (low byte = counter ID)	
	0x6500	Min/Max log cleared	
	0x6A00-0x6A1A	Log file cleared (low byte = File ID)	
	0x6B00	EN50160 statistics cleared	
	0x6B01	Diagnostics cleared	
	0x6B02	Device operation time cleared	
	0x6B03	Battery operation time cleared	
	0x6B04	Aux. battery operation time cleared	
	0x6B05	Failure counters cleared	
	0xF000-0xF00F	Setpoint set (low byte = setpoint ID)	
	0xF100-0xF10F	Setpoint cleared (low byte = setpoint ID)	
	0xF200	Setup/Data cleared	
	0xF300	Setup reset (set by default)	
	0xF400	Setup changed	
	0xF500	RTC set	
	0xF600	Enabled	
	0xF700	Disabled	
	0xF800	Started	
	0xF801	Begin	
	0xF900	Stopped	

Format Code	Value	Description	Notes
	0xF901	End	
		Setpoint Operation Events	
	0xE100-0xE10F	Setpoint operated (low byte = setpoint ID)	
	0xE200-0xE20F	Setpoint released (low byte = setpoint ID)	
		Setpoint Action Events	
	See F14	Setpoint action ID	
Data Point ID			
F21		**Data Locations**	
	0x03	Data memory	
	0x04	Factory setup	
	0x05	Access/Password setup	
	0x06	Basic setup	
	0x07	Communications setup	
	0x08	Real-time clock	[3]
	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	Programmable Min/Max log setup	
	0x14	Data log setup	
	0x15	File/Memory setup	
	0x16	TOU energy registers setup	
	0x18	TOU daily profiles	
	0x19	TOU calendar	
	0x1C	User selectable device options	
	0x1D	RO Setup	
	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	
	0x2E	IEC 61850 setup	
	0x2F	Transformer/line loss compensation	
	0x30-0x4E	Reserved	
	0x4F	Password tampering attempt	
Event Type ID			
F22		**Setpoint Events**	
	0x0000	SP: Generic setpoint event	
	0x0001-0x0010	SP1-SP16: Setpoint #1-#16 event	
		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	
	0x0206	FE6: Undervoltage	
	0x0207	FE7: Neutral current (I4)	
		DI Events	
	0x0300	DI: Generic DI event	
	0x0301-0x0308	DI1-DI8: DI1-DI8 event	
		EN 50160:2007 PQ Events (EN 50160 categories)	
	0x0500	PQE: Generic EN50160 PQ event	
	0x0501	PQE1: Frequency variation	
	0x0502	PQE2: Voltage variation	

Format Code	Value	Description	Notes
	0x0503	PQE3: Rapid voltage change	
	0x0504	PQE4: Flicker	
	0x0505	PQE5: Voltage dip	
	0x0506	PQE6: Voltage interruption	
	0x0507	PQE7: Temporary overvoltage	
	0x0508	PQE8: Transient overvoltage	
	0x0509	PQE9: Voltage unbalance	
	0x050A	PQE10: Harmonic voltage	
	0x050B	PQE11: Interharmonic voltage	
	0x050C	PQE12: Mains signaling voltage	
		EN 50160:2010 PQ Events (EN 50160 categories)	
	0x0800	PQE: Generic PQ event	
	0x0801	PQE1: Frequency variation	
	0x0802	PQE2: Voltage variation	
	0x0803	PQE3: Rapid voltage change	
	0x0804	PQE4: Flicker	
	0x0805	PQE5: Voltage unbalance	
	0x0806	PQE6: Voltage THD	
	0x0807	PQE7: Harmonic voltage	
	0x0808	PQE8: Interharmonic voltage	
	0x0809	PQE9: Mains signaling voltage	
	0x080A	PQE10: Voltage interruption	
	0x080B	PQE11: Voltage dip	
	0x080C	PQE12: Voltage swell	
	0x080D	PQE13: Transient overvoltage	
		Data Log Events	
	0x0900	Online PQ statistics	
Device Diagnostics (bitmap)			
F23	Bit 0 = 1	Reserved	
	Bit 1 = 1	Permanent fault	
	Bit 2 = 1	RAM/Data error	
	Bit 3 = 1	CPU watchdog reset	
	Bit 4 = 1	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	
	Bit 12 = 1	Configuration fault	
	Bit 13	Reserved	
	Bit 14 = 1	Expanded/Data FLASH memory fault	
	Bit 15 = 1	CPU EEPROM fault	
	Bit 16	Reserved	
	Bit 17 = 1	I/O board EEPROM fault	
	Bit 18	Transient coprocessor fault	
	Bit 19	Reserved	
	Bit 20 = 1	C Library error	
	Bit 21 = 1	RTOS Kernel error	
	Bit 22 = 1	Task error	
	Bit 23	Reserved	
	Bit 24 = 1	IRIG-B signal lost	
	Bit 25 = 1	IRIG-B time unlocked	
	Bit 26	Reserved	
	Bit 27 = 1	Magnetic interference	
	Bit 28	Reserved	
	Bit 29 = 1	Motion/tilt sensor	
	Bit 30 = 1	Circuit fault	
	Bit 31	Reserved	
DNP Object Types			
F24		**Static Binary Input Objects**	
	0	Single-Bit Binary Input	
	1	Binary Input With Status	
		Binary Input Change Event Objects	
	0	Binary Input Change Without Time	
	1	Binary Input Change With Time	

Format Code	Value	Description	Notes
		Static Binary Counters	
	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 Events	
	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 Counters	
	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	
		Static Analog Input Objects	
	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 Events	
	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	
	6	3LL3 - 4-wire WYE using 2 PTs (2 1/2 element), line-to-line voltage readings	
Factory Device Options (bitmap)			
F27	0	Fast transient recorder option (special order)	
	1:15	Not used	
	16:19	PQ option (user-selectable): 2 = EN 50160:2007 5 = EN 50160:2010	V26.XX.20 and later
	20:31	Not used	
IEC 61850 Measured Value Indices			
F28	0	Phase voltage	
	1	Not used	

Format Code	Value	Description	Notes
	2	Not used	
	3	Phase currents	
	4	Neutral current	
	5	Auxiliary current I4	
	6	Not used	
	7	Not used	
	8	Not used	
	9	Voltage sequence	
	10	Current sequence	
	11	Not used	
	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	

NOTES:

[1] Voltage

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

[2] Analog Outputs

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 meter time in the F1 format (starting with V26.1.2).

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