

Chapter 5 Communications via Modbus

Modbus communication overview

Modbus RTU protocol is available on the iEM3150, iEM3155, iEM3250, iEM3255, iEM3350, iEM3355, iEM3455, and iEM3555.

The information in this section assumes that you have an advanced understanding of Modbus communications, your communications network and the power system that your meter is connected to.

There are three different ways of using Modbus communication:

- by sending commands using the command interface (see “Command interface overview” on page 39)
- by reading the Modbus registers (see “Modbus register list” on page 44)
- by reading Device Identification (see “” on page 50)

Modbus communications settings

Before communicating with the device using Modbus protocol, use the display to configure the following settings:

Settings	Possible values
Baud rate	9600 Baud 19 200 Baud 38 400 Baud
Parity	Odd Even None NOTE: number of stop bits = 1
Address	1–247

Communications LED indicator for Modbus devices

The yellow communications LED indicates the status of communication between the meter and the master as follows:

If...	Then...
The LED is flashing	Communication with the device has been established. NOTE: If there is an error online, the LED also flashes.
The LED is off	There is no active communication between the master and the slave

Related topics

- For more information on the Modbus protocol, see the Modbus organization website at www.modbus.org.
- See “Meter sealing points” on page 15 for the location of the communications LED.

Modbus functions

Function list

The table below lists the supported Modbus functions:

Function code		Function name
Decimal	Hexadecimal	
3	0x03	Read Holding Registers
16	0x10	Write Multiple Registers
43/14	0x2B/0x0E	Read Device Identification

For example:

- To read different parameters from the meter, use function 3 (Read).
- To change the tariff, use function 16 (Write) to send a command to the meter.

Table format

Register tables have the following columns:

Register Address	Action (R/W/WC)	Size	Type	Units	Range	Description
------------------	-----------------	------	------	-------	-------	-------------

- *Register Address*: Modbus address of register encoded in the Modbus frame, in decimal (dec)
- *Action*: The read/write/write by command property of the register
- *Size*: The data size in Int16
- *Type*: The encoding data type
- *Units*: The unit of the register value
- *Range*: The permitted values for this variable, usually a subset of what the format allows
- *Description*: Provides information about the register and the values that apply

Unit table

The following data types appear in the Modbus register list:

Type	Description	Range
UInt16	16 bit unsigned integer	0 – 65535
Int16	16 bit signed integer	-32768 to +32767
UInt32	32 bit unsigned integer	0 – 4 294 967 295
Int64	64 bit unsigned integer	0 – 18 446 744 073 709 551 615
UTF8	8 bit field	multibyte character encoding for Unicode
Float32	32 bit value	Standard representation IEEE for floating number (with single precision)
Bitmap	—	—
DATETIME	See below	—

DATETIME format:

Word	Bits															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
1	Reserved (0)								R4 (0)		Year (0 – 127)					
2	0				Month (1 – 12)				WD (0)				Day (1 – 31)			
3	SU (0)	0		Hour (0 – 23)					iV	0	Minute (0 – 59)					

Word	Bits															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
4	Millisecond (0 – 59999)															
R4 :									Reserved Bit							
Year :									7 bits (year from 2000)							
Month :									4 bits							
Day :									5 bits							
Hour :									5 bits							
Minute :									6 bits							
Millisecond :									2 octets							
WD (day of the week) :									1–7: Sunday–Saturday							
SU (summer time) :									Bit to 0 if this parameter is not used.							
iV (validity of received data) :									Bit to 0 if this parameter is not valid or not used.							

Command interface

Command interface overview

The command interface allows you to configure the meter by sending specific command requests using Modbus function 16.

Command request

The following table describes a Modbus command request:

Slave Number	Function Code	Command block		CRC
		Register Address	Command Description	
1–247	16	5250 (up to 5374)	The command is made of a command number and a set of parameters. See the detailed description of each command in the command list. NOTE: All the reserved parameters can be considered as any value, e.g. 0.	Checking

The following table describes the command block: Command result

The command result can be obtained by reading registers 5375 and 5376.

The following table describes the command result:

Register Address	Content	Size (Int16)	Data (example)
5375	Requested Command Number	1	2008 (Set Tariff)
5376	Result Command result codes: – 0 = Valid Operation – 3000 = Invalid Command – 3001 = Invalid Parameter – 3002 = Invalid Number of Parameters – 3007 = Operation Not Performed	1	0 (Valid Operation)

Command list

Set Date/Time

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
1003	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	2000–2099	Year
	W	1	UInt16	—	1–12	Month
	W	1	UInt16	—	1–31	Day
	W	1	UInt16	—	23	Hour
	W	1	UInt16	—	0–59	Minute
	W	1	UInt16	—	0–59	Second
	W	1	UInt16	—	—	(Reserved)

Set Wiring

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2000	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1, 2, 3, 11, 13	Power System Configuration 0 = 1PH2W L-N 1 = 1PH2W L-L 2 = 1PH3W L-L-N 3 = 3PH3W 11 = 3PH4W 13 = 1PH4W L-N
	W	1	UInt16	Hz	50, 60	Nominal Frequency
	W	2	Float32	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	2	Float32	V	VT Secondary— 1000000.0	VT Primary NOTE: For iEM3250 / iEM3255 / iEM3455 / iEM3555. Reserved by iEM3150 / iEM3155 / iEM3350 / iEM3355
	W	1	UInt16	V	100, 110, 115, 120	VT Secondary NOTE: For iEM3250 / iEM3255 / iEM3455 / iEM3555. Reserved by iEM3150 / iEM3155 / iEM3350 / iEM3355
	W	1	UInt16	—	1, 2, 3	Number of CTs NOTE: For iEM3250 / iEM3255 / iEM3455 / iEM3555. Reserved by iEM3150 / iEM3155 / iEM3350 / iEM3355
	W	1	UInt16	A	1–32767	CT Primary NOTE: For iEM3250 / iEM3255 / iEM3455 / iEM3465. Reserved by iEM3150 / iEM3155 / iEM3350 / iEM3355
					5000	CT Primary NOTE: For iEM3555 / iEM3565.
	W	1	UInt16	mV	333, 1000	CT Secondary NOTE: For iEM3455 / iEM3465.
				uV/kA/ Hz	1167	CT Secondary NOTE: For iEM3555 / iEM3565.
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1, 2	VT Connection type: 0 = Direct Connect 1 = 3PH3W (2 VTs) 2 = 3PH4W (3 VTs) NOTE: For iEM3250 / iEM3255. Reserved by iEM3150 / iEM3155 / iEM3350 / iEM3355

Set Pulse Output (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2003	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1	Pulse Output enable / disable 0 = Disable 1 = Enable
	W	2	Float32	pulse/kWh	iEM3155 / iEM3355: 1, 10, 20, 100, 200, 1000 iEM3255 / iEM3455 / iEM3555: 0.01, 0.1, 1, 10, 100, 500	Pulse constant
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
2038	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	ms	50, 100, 200, 300	Pulse width

Set Tariff (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2060	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1, 2, 4	Multi Tariff Mode 0 = Disable Multi Tariff 1 = Use COM as Tariff Control (maximum 4 tariffs) 2 = Use Digital Input as Tariff Control (2 tariffs) 4 = Use Internal Clock as Tariff Control (maximum 4 tariffs)
2008	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	1–4	Tariff 1 = T1 2 = T2 3 = T3 4 = T4 NOTE: You can only set the tariff using this method if the Tariff Mode is set to by Communication.

Set Digital Input as Partial Energy Reset (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
6017	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1	Digital Input to Associate: 0 = Disable 1 = Enable

Input Metering Setup (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
6014	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	1	Input Metering Channel
	W	20	UTF8	—	string size <= 40	Label
	W	2	Float32	—	1–10000	Pulse Weight
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1	Digital Input Association: 0 = Disable 1 = Enable

Overload Alarm Setup (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
7000	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	9	Alarm ID
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	0, 1	0 = Disable 1 = Enable
	W	2	Float32	—	0.0–1e10	Pickup value
	W	2	UInt32	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	2	UInt32	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	4	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
20000	W	1	UInt16	—	—	(Reserved)
	W	2	Float32	—	—	(Reserved)
	W	2	UInt32	—	—	(Reserved)
	W	1	Bitmap	—	0,1	Digital Output to Associate 0 = Unassociated 1 = Associated
20001	W	1	UInt16	—	—	Acknowledge the Overload Alarm

Communications Setup

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
5000	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	—	(Reserved)
	W	1	UInt16	—	1–247	Address
	W	1	UInt16	—	0, 1, 2	Baud Rate 0 = 9600 1 = 19200 2 = 38400
	W	1	UInt16	—	0, 1, 2	Parity 0 = Even 1 = Odd 2 = None
	W	1	UInt16	—	—	(Reserved)

Reset Partial Energy Counters

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2020	W	1	UInt16	—	—	(Reserved) iEM3150/iEM3250/iEM3350: Partial Active Energy and Phase Energy registers will be reset. iEM3155/iEM3255/iEM3355/iEM3455/iEM3555: Partial Active / Reactive Energy, Energy by tariff and Phase Energy registers will be reset.

Reset Input Metering Counter (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Command Number	Action (R/W)	Size	Type	Unit	Range	Description
2023	W	1	UInt16	—	—	(Reserved)

Modbus register list

System

Register Address	Action (R/W/WC)	Size	Type	Units	Description
30	R	20	UTF8	—	Meter Name
50	R	20	UTF8	—	Meter Model
70	R	20	UTF8	—	Manufacturer
130	R	2	UInt32	—	Serial Number
132	R	4	DATEIME	—	Date of Manufacture
136	R	5	UTF8	—	Hardware Revision
1637	R	1	UInt16	—	Present Firmware Version (DLF format): X.Y.ZTT
1845–1848	R/WC	1 X 4	UInt16	—	Date/Time Reg. 1845: Year (b6:b0) 0–99 (year from 2000 to 2099) Reg. 1846: Month (b11:b8), Weekday (b7:b5), Day (b4:b0) Reg. 1847: Hour (b12:b8), Minute (b5:b0) Reg. 1848: Millisecond

Meter Setup and Status

Register Address	Action (R/W/WC)	Size	Type	Units	Description
2004	R	2	UInt32	Second	Meter Operation Timer Not applicable for iEM3150 / iEM3250 / iEM3350
2014	R	1	UInt16	–	Number of Phases
2015	R	1	UInt16	–	Number of Wires
2016	R/WC	1	UInt16	–	Power System 0 = 1PH2W L–N 1 = 1PH2W L–L 2 = 1PH3W L–L with N 3 = 3PH3W 11 = 3PH4W 13 = 1PH4W multi L with N
2017	R/WC	1	UInt16	Hz	Nominal Frequency
2025	R	1	UInt16	–	Number VTs Not applicable for iEM3150 / iEM3155 / iEM3350 / iEM3355
2026	R/WC	2	Float32	V	VT Primary Not applicable for iEM3150 / iEM3155 / iEM3350 / iEM3355
2028	R/WC	1	UInt16	V	VT Secondary Not applicable for iEM3150 / iEM3155 / iEM3350 / iEM3355
2029	R/WC	1	UInt16	–	Number CTs Not applicable for iEM3150 / iEM3155 / iEM3350 / iEM3355
2030	R/WC	1	UInt16	A	CT Primary Not applicable for iEM3150 / iEM3155 / iEM3350 / iEM3355
2031	R/WC	1	UInt16	A	CT Secondary Not applicable for iEM3150 / iEM3155 / iEM3350 / iEM3355
2036	R/WC	1	UInt16	–	VT Connection Type 0 = Direct Connect 1 = 3PH3W (2 VTs) 2 = 3PH4W (3 VTs) Not applicable for iEM3150 / iEM3155 / iEM3350 / iEM3355

1PH4W Multi LN (iEM3x55 energy meters) updates

Addition of each phase reactive energy import register

Register	Read/Write			Size	Type	Units	Description
	iEM3155	iEM3255	iEM3355				
45128	R	R	R	2	FLOAT32	KVARH	Reactive Energy Delivered Phase A
45130	R	R	R	2	FLOAT32	KVARH	Reactive Energy Delivered Phase B
45132	R	R	R	2	FLOAT32	KVARH	Reactive Energy Delivered Phase C

You can access each phase reactive energy import values using INT64 or Float 32 register format.

Addition of each phase name register

Register	Read/Write			Size	Type	Units	Description	Default value
	iEM3155	iEM3255	iEM3355					
57000	R	R	R	5	UTF8	-	Phase 1 Name	PH1 Eng Impt
57005	R	R	R	5	UTF8	-	Phase 2 Name	PH2 Eng Impt
57010	R	R	R	5	UTF8	-	Phase 3 Name	PH3 Eng Impt

Addition of one command to set the each phase name

Command Number	Action (R/W)	Size	Type	Units	Range	Description
6018	W	1	UInt16	-	-	(Reserved)
	W	5	UTF8	-	string size <= 10	Phase 1 name Label
	W	5	UTF8	-	string size <= 10	Phase 2 name Label
	W	5	UTF8	-	string size <= 10	Phase 3 name Label

Addition to display: Each phase active/reactive values are added to HMI

NOTE: When the wiring configuration is 1PH4W Multi LN, the partial energy reset through Digital Input or Command is not possible.

PF firmware (iEM3x55 energy meters) updates

Addition to PF Registers: Values ranging from +1 to -1

Register	Read/Write			Size	Type	Units	Description
	iEM3155	iEM3255	iEM3355				
3192	R	R	R	2	FLOAT 32	-	Power Factor Total IEC
3194	R	R	R	2	FLOAT 32	-	Power Factor Total Lead Lag
3196	R	R	R	1	UInt16	-	Power Factor Total IEC
3197	R	R	R	1	UInt16	-	Power Factor Total Lead Lag

Energy Pulse Output Setup (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Register Address	Action (R/W/WC)	Size	Type	Units	Description
2129	R/WC	1	UInt16	Millisecond	Energy Pulse Duration
2131	R/WC	1	UInt16	-	Digital Output Association 0 = Disable 1 = DO1 enable for active energy pulse output
2132	R/WC	2	Float32	pulse/kWh	Pulse Weight

Command Interface

Register Address	Action (R/W/WC)	Size	Type	Units	Description
5250	R/W	1	UInt16	-	Requested Command
5252	R/W	1	UInt16	-	Command Parameter 001
5374	R/W	1	UInt16	-	Command Parameter 123
5375	R	1	UInt16	-	Command Status

Register Address	Action (R/W/WC)	Size	Type	Units	Description
5376	R	1	UInt16	–	Command Result codes: 0 = Valid Operation 3000 = Invalid Command 3001 = Invalid Parameter 3002 = Invalid Number of Parameters 3007 = Operation Not Performed
5377	R/W	1	UInt16	–	Command Data 001
5499	R	1	UInt16	–	Command Data 123

Communication

Register Address	Action (R/W/WC)	Size	Type	Units	Description
6500	R	1	UInt16	–	Protocol 0 = Modbus
6501	R/WC	1	UInt16	–	Address
6502	R/WC	1	UInt16	–	Baud Rate: 0 = 9600 1 = 19 200 2 = 38 400
6503	R/WC	1	UInt16	–	Parity: 0 = Even 1 = Odd 2 = None NOTE: number of stop bits = 1

Input Metering Setup (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Register Address	Action (R/W/WC)	Size	Type	Units	Description
7032	R/WC	20	UTF8	–	Label
7052	R/WC	2	Float32	pulse/unit	Pulse Constant
7055	R/WC	1	UInt16	–	Digital Input Association 0 = Disable for input metering 1 = Enable for input metering

Digital Input (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Register Address	Action (R/W/WC)	Size	Type	Units	Description
7274	R	1	UInt16	–	Digital Input Control Mode: 0 = Normal (Input Status) 2 = Multi Tariff Control 3 = Input Metering 5 = All Energy Reset
8905	R	2	Bitmap	–	Digital Input Status (only Bit 1 is used): Bit 1 = 0, relay open Bit 1 = 1, relay closed

Digital Output (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Register Address	Action (R/W/WC)	Size	Type	Units	Description
9673	R	1	UInt16	–	Digital Output Control Mode Status: 2 = for Alarm 3 = for Pulse (kWh) 0xFFFF = Disable

Meter Data

Current, voltage, power, power factor and frequency

Register Address	Action (R/W/WC)	Size	Type	Units	Description
Current					
3000	R	2	Float32	A	I1: phase 1 current
3002	R	2	Float32	A	I2: phase 2 current
3004	R	2	Float32	A	I3: phase 3 current
3010	R	2	Float32	A	Current Avg
Voltage					
3020	R	2	Float32	V	Voltage L1–L2
3022	R	2	Float32	V	Voltage L2–L3
3024	R	2	Float32	V	Voltage L3–L1
3026	R	2	Float32	V	Voltage L–L Avg
3028	R	2	Float32	V	Voltage L1–N
3030	R	2	Float32	V	Voltage L2–N
3032	R	2	Float32	V	Voltage L3–N
3036	R	2	Float32	V	Voltage L–N Avg
Power					
3054	R	2	Float32	kW	Active Power Phase 1
3056	R	2	Float32	kW	Active Power Phase 2
3058	R	2	Float32	kW	Active Power Phase 3
3060	R	2	Float32	kW	Total Active Power
3068	R	2	Float32	kVAR	Total Reactive Power Not applicable for iEM3150 / iEM3250 / iEM3350
3076	R	2	Float32	kVA	Total Apparent Power Not applicable for iEM3150 / iEM3250 / iEM3350
Power Factor					
3084	R	2	Float32	–	Total Power Factor: -1 < PF < 0 = Quad 2, active power negative, capacitive -2 < PF < -1 = Quad 3, active power negative, inductive 0 < PF < 1 = Quad 1, active power positive, inductive 1 < PF < 2 = Quad 4, active power positive, capacitive
Frequency					
3110	R	2	Float32	Hz	Frequency

Energy, energy by tariff and input metering

Most energy values are available in both signed 64-bit integer and 32-bit floating point format.

The energy and energy by tariff measurements listed below are preserved through power failures.

Energy reset and active tariff information					
Register Address	Action (R/W/WC)	Size	Type	Units	Description
3252	R	4	DATETIME	–	Energy Reset Date and Time
3554	R	4	DATETIME	–	Input Metering Accumulation Reset Date and Time Not applicable for iEM3150 / iEM3250 / iEM3350
4191	R/WC	1	UInt16	–	MultiTariffs Energy Active Rate 0: multi tariff disabled 1 to 4: rate A to rate D Not applicable for iEM3150 / iEM3250 / iEM3350 NOTE: You can only set the tariff using this method if the Tariff Mode is set to by Communication.

Energy values – 64-bit integer					
Register Address	Action (R/W/WC)	Size	Type	Units	Description
Total Energy (cannot be reset)					
3204	R	4	Int64	Wh	Total Active Energy Import
3208	R	4	Int64	Wh	Total Active Energy Export Not applicable for iEM3150 / iEM3250 / iEM3350
3220	R	4	Int64	VARh	Total Reactive Energy Import Not applicable for iEM3150 / iEM3250 / iEM3350
3224	R	4	Int64	VARh	Total Reactive Energy Export Not applicable for iEM3150 / iEM3250 / iEM3350
Partial Energy					
3256	R	4	Int64	Wh	Partial Active Energy Import
3272	R	4	Int64	VARh	Partial Reactive Energy Import Not applicable for iEM3150 / iEM3250 / iEM3350
Phase Energy					
3518	R	4	Int64	Wh	Active Energy Import Phase 1
3522	R	4	Int64	Wh	Active Energy Import Phase 2
3526	R	4	Int64	Wh	Active Energy Import Phase 3
Input Metering Counter					
3558	R	4	Int64	Unit	Input Metering Accumulation Not applicable for iEM3150 / iEM3250 / iEM3350
Energy by Tariff (iEM3155 / iEM3255 / iEM3355 only)					
4196	R	4	Int64	Wh	Rate A Active Energy Import
4200	R	4	Int64	Wh	Rate B Active Energy Import
4204	R	4	Int64	Wh	Rate C Active Energy Import
4208	R	4	Int64	Wh	Rate D Active Energy Import

Energy values – 32-bit floating point					
Register Address	Action (R/W/WC)	Size	Type	Units	Description
Total Energy (cannot be reset)					
45100	R	2	Float32	Wh	Total Active Energy Import
45102	R	2	Float32	Wh	Total Active Energy Export Not applicable for iEM3150 / iEM3250 / iEM3350
45104	R	2	Float32	VARh	Total Reactive Energy Import Not applicable for iEM3150 / iEM3250 / iEM3350
45106	R	2	Float32	VARh	Total Reactive Energy Export Not applicable for iEM3150 / iEM3250 / iEM3350
Partial Energy					
45108	R	2	Float32	Wh	Partial Active Energy Import
45110	R	2	Float32	VARh	Partial Reactive Energy Import Not applicable for iEM3150 / iEM3250 / iEM3350
Phase Energy					
45112	R	2	Float32	Wh	Active Energy Import Phase 1
45114	R	2	Float32	Wh	Active Energy Import Phase 2
45116	R	2	Float32	Wh	Active Energy Import Phase 3
Input Metering Counter					
45118	R	2	Float32	Unit	Input Metering Accumulation Not applicable for iEM3150 / iEM3250 / iEM3350
Energy by Tariff (iEM3155 / iEM3255 / iEM3355 only)					
45120	R	2	Float32	Wh	Rate A Active Energy Import
45122	R	2	Float32	Wh	Rate B Active Energy Import
45124	R	2	Float32	Wh	Rate C Active Energy Import
45126	R	2	Float32	Wh	Rate D Active Energy Import

Overload Alarm (iEM3155 / iEM3255 / iEM3355 / iEM3455 / iEM3555)

Register Address	Action (R/W/WC)	Size	Type	Units	Description
45001	R/WC	1	Bitmap	–	Overload Alarm Setup: 0x0000 = Disabled 0x0100 = Enabled
45002	R/WC	2	Float32	kW	Pickup Setpoint
45004	R/WC	1	Bitmap	–	Digital Output to Associate: 0x0000 = Digital Output unassociated to overload alarm 0x0100 = Digital Output associated to overload alarm
45005	R	1	Bitmap	–	Activated Status: 0x0000 = Alarm is inactive 0x0100 = Alarm is active
45006	R	1	Bitmap	–	Unacknowledged Status: 0x0000 = Historic alarm is acknowledged by the user 0x0100 = Historic alarm is unacknowledged by the user
45007	R	4	DATETIME	–	Last Alarm - Time Stamp
45011	R	2	Float32	kW	Last Alarm - Value

Read Device Identification

The meters supports the Read Device Identification function with the mandatory objects VendorName, ProductCode and Revision Number.

Object ID	Name/Description	Length	Value	Note
0x00	VendorName	16	SchneiderElectric	–
0x01	ProductCode	09	A9MEM3150 A9MEM3155 A9MEM3250 A9MEM3255 A9MEM3350 A9MEM3355 A9MEM3455 A9MEM3555	The ProductCode value is identical to the catalog number of each device.
0x02	MajorMinorRevision	04	V1.0	Equivalent to X.Y in register 1637

The Read Device ID codes 01 and 04 are supported:

- 01 = request to get basic device identification (stream access)
- 04 = request to get one specific identification object (individual access)

The Modbus request and response are compliant with the Modbus Application Protocol Specification.