

What's new in iEM3000 series energy meters

This document highlights the updates in iEM3x35 and iEM3x55 energy meters.

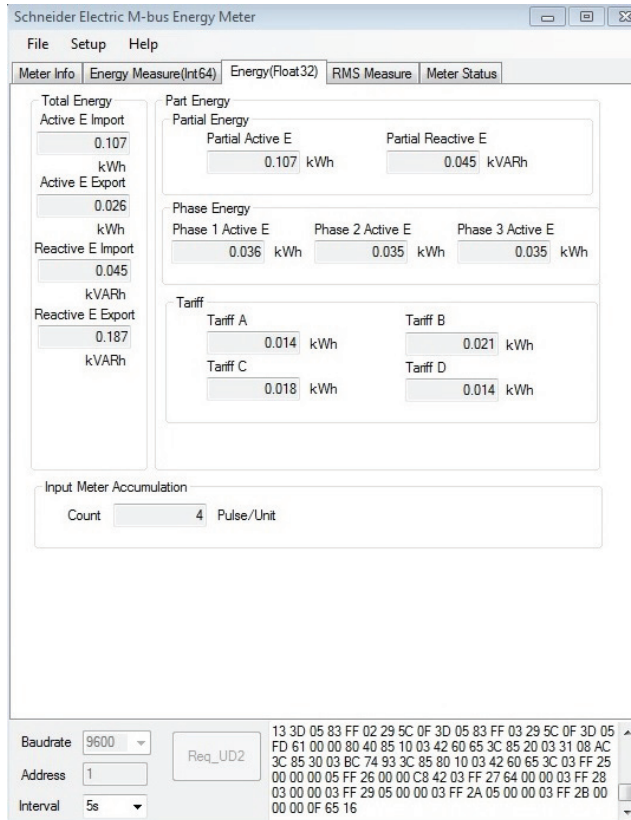
What's new in iEM3x35 energy meters

All M-Bus meters (iEM3x35) offer the following new features and updates in M-Bus firmware V1.5.

NOTE: For M-Bus communication, the device consumes 2 standard loads (2 Unit Loads or 2 UL).

Addition of energy values in FLOAT32 format

An addition of energy values in FLOAT32 format have been provided with the existing 64-bit registers.



NOTE: The unit of FLOAT32 energy value is kWh/kVARh. The software version of M-Bus Meter Config tool is V3.0.

Data Format	DIFE	Primary VIF	Primary VIFE		Manufacturer – Specific VIFE		Description
			bin	hex	bin	hex	
05	-	03	-	-	-	-	Total active energy import
05	-	83	-	-	E000 1001	09	Total active energy export
85	40	03	-	-	-	-	Total reactive energy import
85	40	83	-	-	E000 1001	09	Total reactive energy export
05	-	83	-	-	E000 1101	0D	Partial active energy import
85	40	83	-	-	E000 1101	0D	Partial reactive energy import
05	-	83	-	-	E000 0001	01	Active energy import phase 1
05	-	83	-	-	E000 0010	02	Active energy import phase 2
05	-	83	-	-	E000 0011	03	Active energy import phase 3
85	10	03	-	-	-	-	Rate A (tariff 1) active energy import
85	20	03	-	-	-	-	Rate B (tariff 2) active energy import
85	30	03	-	-	-	-	Rate C (tariff 3) active energy import
85	80	10	-	-	-	-	Rate D (tariff 4) active energy import
05	-	-	E110 0001	61	-	-	Input metering accumulation

Modification of M-Bus user guide

All the values are in hexadecimal for 3rd telegram.

Byte No	Size	Value	Description
1	1	68	Start character
2	1	F4	L-field, calculated from C field to last user data
3	1	F4	L-field, repeated
4	1	68	Start character
5	1	08	C-field, RSP_UD
6	1	XX	A-field, address
7	1	72	CI-field, variable data respond, LSB first
8-11	4	XXXXXXXX	Identification number, 8 BCD digits
12-13	2	684C	Manufacturer: SCH
14	1	00	Version
15	1	02	Medium, 02 = Electricity
16	1	XX	Number of accesses
17	1	00	Status
18-19	2	0000	Signature (0000 = no encryption)
20	1	02	DIF size, 16 Bit Integer
21	1	FF	VIF next byte is manufacturer specific
22	1	38	Unacknowledged status
23-24	2	XX	Value, Unacknowledged status
25	1	04	DIF size, 32 Bit Integer
26	1	ED	Date/Time
27	1	FF	VIF next byte is manufacturer specific
28	1	39	Date time last alarm

Byte No	Size	Value	Description
29-32	4	XXXX	Value, Date time last alarm
33	1	05	DIF size, 32 Bit Real
34	1	FF	VIF next byte is manufacturer specific
35	1	3A	Value last alarm
36-39	4	XXXX	Value last alarm
40	1	06	DIF size, 48 Bit Integer
41	1	FF	VIF next byte is manufacturer specific
42	1	20	Meter operation time
43-48	6	XXXXXX	Value, Meter operation time
49	1	03	DIF size, 24 Bit Integer
50	1	FF	VIF next byte is manufacturer specific
51	1	21	Number of phases
52-54	3	XXX	Value, Number of phases
55	1	03	DIF size, 24 Bit Integer
56	1	FF	VIF next byte is manufacturer specific
57	1	22	Number of wires
58-60	3	XXX	Value, Number of wires
61	1	03	DIF size, 24 Bit Integer
62	1	FF	VIF next byte is manufacturer specific
63	1	23	Power system configuration
64-66	3	XXX	Value, Power system configuration
67	1	03	DIF size, 24 Bit Integer
68	1	FF	VIF next byte is manufacturer specific
69	1	24	Nominal frequency
70-72	3	XXX	Value, Nominal frequency
73	1	05	DIF size, 32 Bit Real
74	1	03	Energy
75-78	8	XXXXXXXX	Total active energy delivered
79	1	05	DIF size, 32 Bit Real
80	1	83	Energy
81	1	FF	VIF next byte is manufacturer specific
82	1	09	Export energy
83-86	8	XXXXXXXX	Total active energy export
87	1	85	DIF size, 32 Bit Real
88	1	40	DIFE: Unit1
89	1	03	Energy
90-93	8	XXXXXXXX	Total reactive energy delivered
94	1	85	DIF size, 32 Bit Real
95	1	40	DIFE:Unit 1
96	1	83	Energy
97	1	FF	VIF next byte is manufacturer specific
98	1	09	Export energy
99-102	8	XXXXXXXX	Total reactive energy export
103	1	05	DIF size, 32 Bit Real
104	1	83	Energy
105	1	FF	VIF next byte is manufacturer specific
106	1	0D	Partial energy
107-110	8	XXXXXXXX	Partial active energy import
111	1	85	DIF size, 32 Bit Real
112	1	40	DIFE: Unit 1
113	1	83	Energy
114	1	FF	VIF next byte is manufacturer specific
115	1	0D	Partial energy

Byte No	Size	Value	Description
116-119	8	XXXXXXXX	Partial reactive energy import
120	1	05	DIF size, 32 Bit Real
121	1	83	Energy
122	1	FF	VIF next byte is manufacturer specific
123	1	01	L1
124-127	8	XXXXXXXX	Active energy delivered, L1
128	1	05	DIF size, 32 Bit Real
129	1	83	Energy
130	1	FF	VIF next byte is manufacturer specific
131	1	02	L2
132-135	8	XXXXXXXX	Active energy delivered, L2
136	1	05	DIF size, 32 Bit Real
137	1	83	Energy
138	1	FF	VIF next byte is manufacturer specific
139	1	03	L3
140-143	8	XXXXXXXX	Active energy delivered, L3
144	1	05	DIF size, 32 Bit Real
145	1	FD	VIF extension
146	1	61	Input metering accumulation channel 1
147-150	8	XXXXXXXX	Input metering channel 1 value
151	1	85	DIF size, 32 Bit Real
152	1	10	DIFE: Tariff 1
153	1	03	Energy
154-157	8	XXXXXXXX	Active energy delivered rate 1
158	1	85	DIF size, 32 Bit Real
159	1	20	DIFE: Tariff 2
160	1	03	Energy
161-164	8	XXXXXXXX	Active energy delivered rate 2
165	1	85	DIF size, 32 Bit Real
166	1	30	DIFE: Tariff 3
167	1	03	Energy
168-171	8	XXXXXXXX	Active energy delivered rate 3
172	1	85	DIF size, 32 Bit Real
173	1	80	DIFE: Tariff 4
174	1	10	DIFE: Tariff 4
175	1	03	Energy
176-179	8	XXXXXXXX	Active energy delivered rate 4
180	1	03	DIF size, 24 Bit Integer
181	1	FF	VIF next byte is manufacturer specific
182	1	25	Number VTs
183-185	3	XXX	Value, Number VTs
186	1	05	DIF size, 32 Bit Real
187	1	FF	VIF next byte is manufacturer specific
188	1	26	VT Primary
189-192	4	XXXX	Value, VT Primary
193	1	03	DIF size, 24 Bit Integer
194	1	FF	VIF next byte is manufacturer specific
195	1	27	VT Secondary
196-198	3	XXX	Value, VT Secondary
199	1	03	DIF size, 24 Bit Integer
200	1	FF	VIF next byte is manufacturer specific
201	1	28	Number CTs
202-204	3	XXX	Value, Number CTs

Byte No	Size	Value	Description
205	1	03	DIF size, 24 Bit Integer
206	1	FF	VIF next byte is manufacturer specific
207	1	29	CT Primary
208-210	3	XXX	Value, CT Primary
211	1	03	DIF size, 24 Bit Integer
212	1	FF	VIF next byte is manufacturer specific
213	1	2A	CT Secondary
214-216	3	XXX	Value, CT Secondary
217	1	03	DIF size, 24 Bit Integer
218	1	FF	VIF next byte is manufacturer specific
219	1	2B	VT connection type
220-222	3	XXX	Value, VT connection type
223	1	0F	DIF indicating that this is the last telegram
224	1	XX	CS checksum, calculated from C field to last data
225	1	16	Stop character

Decoding secondary address and M-Bus serial number

Each M-Bus meter has a unique secondary address. The secondary address of a meter includes 4 parts: serial number, M-Bus firmware version, medium, and manufacturer.

The format of the secondary address is **SSSSSSSVVME**MA. The decoding of the secondary address is given below:

SSSSSSSS: Serial Number

VV: M-Bus Firmware Version

ME: Medium

Common Medium list:

01 = Oil

02 = Electricity

03 = Gas

04 = Heat

MA: Manufacturer

The main board serial number format is **YYWWDNNN**. The decoding of the M-Bus serial number is given below followed with an example:

YY: Year

WW: Week

D: Day

NNN: Number

The following example distinguishes the M-Bus serial number for iEM3135/iEM3235/iEM3335 meters.

Main Board SN	M-Bus SN		
	iEM3135	iEM3235	iEM3335
14053100 └─┬─ YY	01053100 └─┬─ YY-13	31053100 └─┬─ YY+17	61053100 └─┬─ YY+47

What's new in iEM3x55 energy meters

All Modbus meters iEM3155 (V1.3.007), iEM3255 (V1.3.007), and iEM3355 (V1.1.003) offer the following new features and updates:

NOTE: The latest evolution of the firmware is compatible only with meters produced from January 2016.

Updates in iEM3x55 energy meters: 1PH4W Multi LN

All Modbus meters (iEM3x55) offer the following new features and 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.

Updates in iEM3x55 energy meters: PF firmware

All Modbus meters (iEM3x55) offer the following update:

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	FLOAT32	-	Power Factor Total IEC
3194	R	R	R	2	FLOAT32	-	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