GridVis®

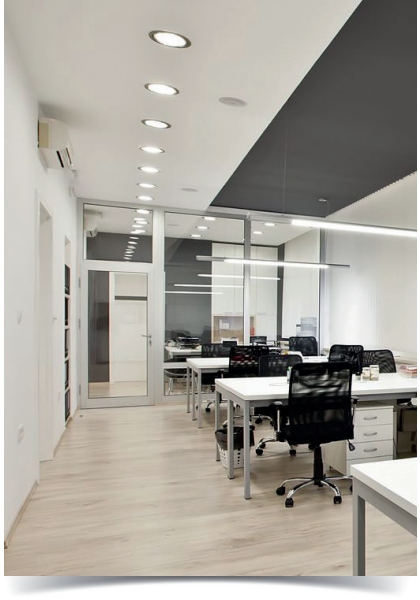
2 tariffs

MID

Pulse output

Modbus

MID energy meter ECSEM series



Areas of application

- Energy management
- Cost centre analysis
- Measured value transducer for PLC controls or building management systems (BMS)
- For energy billing purposes

Main features

- Communication: Modbus, M-Bus, S0 pulse outputs, EIB-KNX (for single-phase measurement)
- Direct measurement up to 63 A or via current transformer (.../1 A or .../5 A)
- 1 or 2 tariffs
- With MID approval
- Terminal cover can be lead-sealed
- 2 or 4-quadrant measurement
- Measured values: Effective energy, reactive energy, effective power, reactive power
- Precision class 1 for effective energy and class 2 for reactive energy

Fig.: Sealed device protects against manipulations.

Applications

- Logging of active and reactive energy
- Effective pulses can be connected on a control system PLC, SCADA system or data logger via pulse outputs as a measured value transducer.
- Integrated interface makes available protocols such as M-Bus and Modbus RTU
- Measurements of 1 and 3-phase systems with a voltage of L-N 230 V AC / L-L 400 V AC
- Measurement of input currents via direct connection or via current transformer (.../1 A or .../5 A)
- DIN rail installation

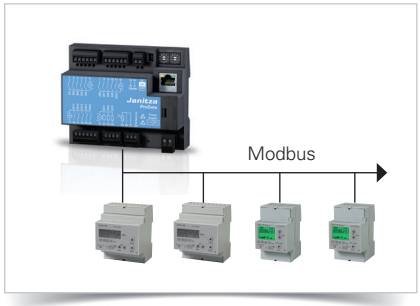


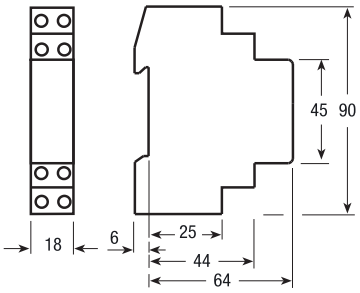
Fig.: Measured energy values are available via the integrated communication interface Modbus RTU.

Dimension diagrams and typical connection

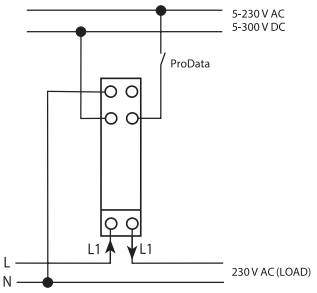
All dimensions in mm

ECSEM88MID meter (Pulse output)

Dimension diagram

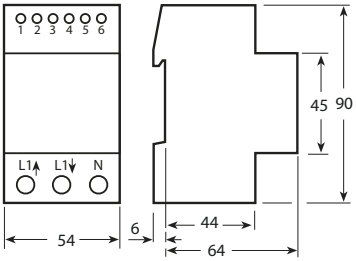


Circuit diagram

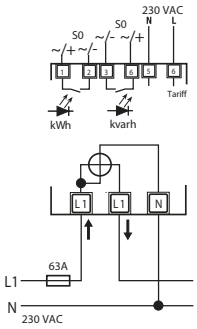


ECSEM212MID meter (Pulse output)

Dimension diagram

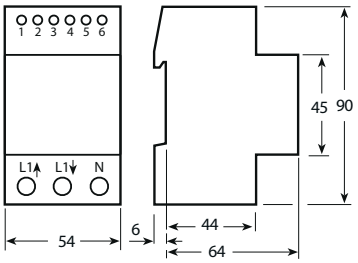


Circuit diagram

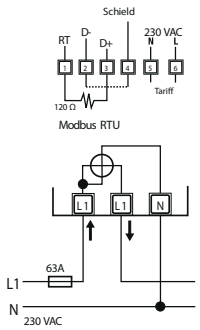


ECSEM214MID meter (Modbus)

Dimension diagram

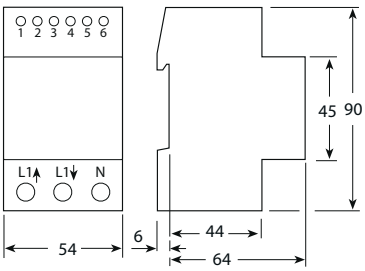


Circuit diagram

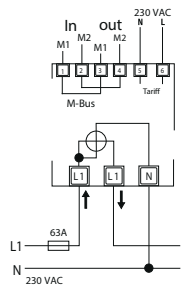


ECSEM216MID meter (M-Bus)

Dimension diagram

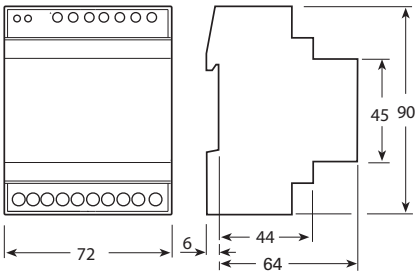


Circuit diagram

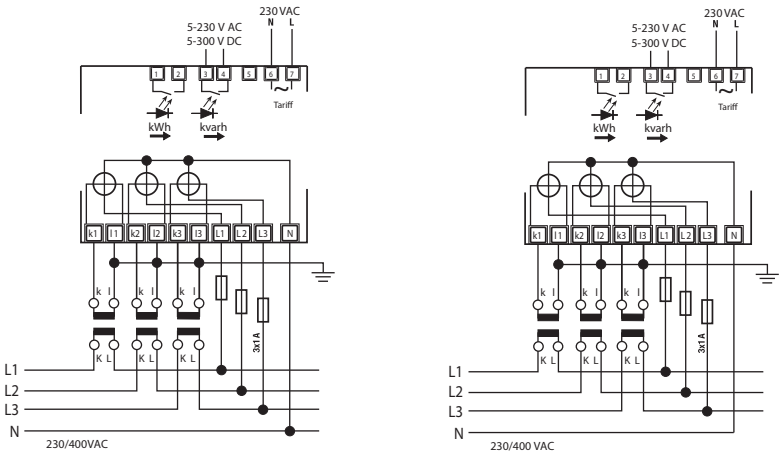


ECSEM129MID meter
(Pulse output, current transformer x/1 A)

Dimension diagram



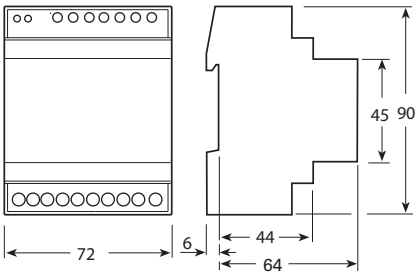
Circuit diagram



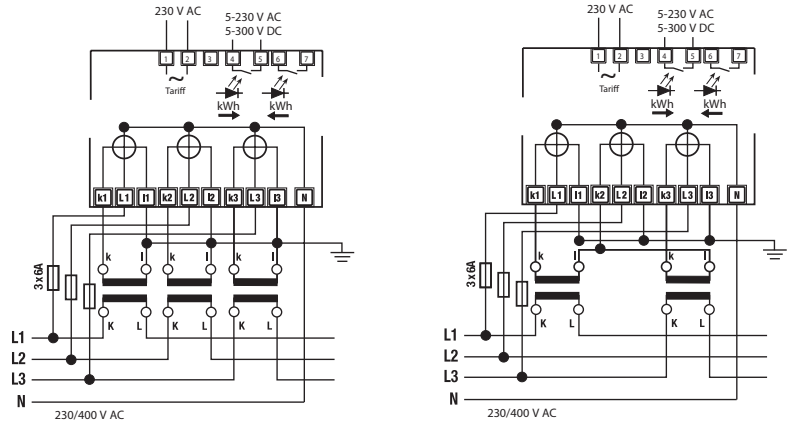
A neutral conductor at the energy meter is essential. Earthing the secondary winding of the external current transformer is mandatory by law in many countries. Please check the regional requirements (utility technical connection requirements) prior to installation.

ECSEM66MID meter
(Pulse output, current transformer x/5 A)

Dimension diagram



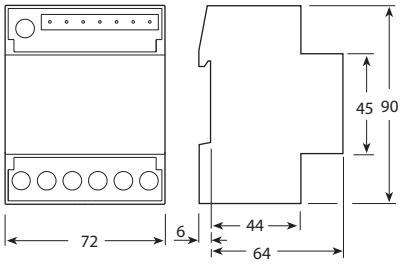
Circuit diagram



A neutral conductor at the energy meter is essential. Earthing the secondary winding of the external current transformer is mandatory by law in many countries. Please check the regional requirements (utility technical connection requirements) prior to installation.

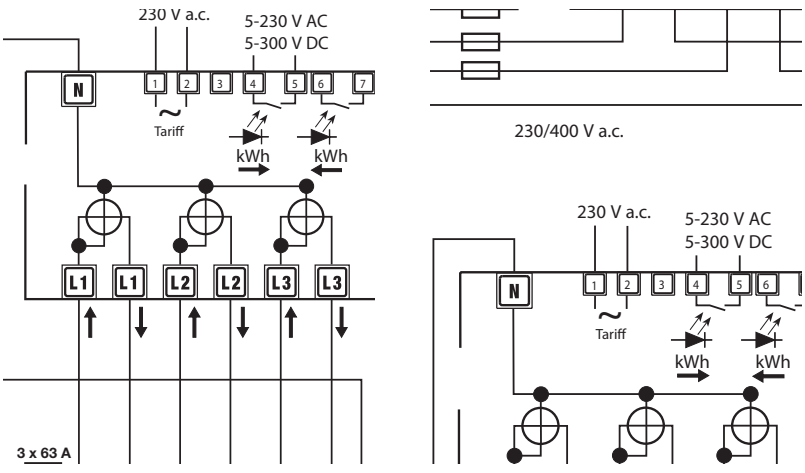
ECSEM110MID meter
(Pulse output, 63 A direct measurement)

Dimension diagram



A neutral conductor at the energy meter is essential.

Circuit diagram



Device overview and technical data

Image similar

	Single-phase energy meter				Three-phase energy meter (S0 pulse outputs)		
Types	**ECSEM88MID**	**ECSEM212MID**	**ECSEM214MID**	**ECSEM216MID**	**ECSEM129MID**	**ECSEM66MID**	**ECSEM110MID**
	1 S0 pulse output	2 S0 pulse outputs	Modbus	M-Bus	2 S0 pulse outputs	2 S0 pulse outputs	2 S0 pulse outputs
	Pulse value 1,000 pulses/kWh, Duration 30 ... 100 ms	Pulse value 500 pulses/kWh/kvarh, Duration 30 ... 50 ms			Pulse value 100-10-1 pulses/kWh/kvarh, depending on the CT Duration 30 ... 100 ms	Pulse value 100-10-1 pulses/kWh/kvarh, depending on the CT Duration 30 ± 2 ms	Pulse value 500 pulses/kWh/kvarh, Duration 30 ± 2 ms
Item number	**14.01.335**	**14.01.342**	**14.01.343**	**14.01.344**	**14.01.338**	**14.01.339**	**14.01.345**
Communication module for the expansion of the energy meter with an optical IR interface on the side							
EIB-KNX*	•	-	-	-	-	-	-

* Item number: 14.01.412
Baud rate: 9,600 Baud; transferred variables: Wh, kvarh, V, A, Hz, cos phi, kW, kvar.

Technical data								
Connection		32 A Direct measurement	63 A Direct measurement	63 A Direct measurement	63 A Direct measurement	... 1/A Current transformer	... 5/A Current transformer	63 A Direct measurement
Dimensions in mm (H x W x D)		90 x 18 x 70	90 x 36 x 64+6	90 x 36 x 64+6	90 x 30 x 64+6	90 x 72 x 70	90 x 72 x 70	90 x 72 x 70
Units width		1	2	2	2	4	4	4
Power consumption		8 VA	2.1 VA	2.1 VA	2.1 VA	2.1 VA	2.1 VA	2.1 VA
Max. burden at current connections (I_{Max})		0.9 VA	2.0 VA	2.0 VA	2.0 VA	0.5 VA per phase	0.5 VA per phase	2.0 VA per phase
Working temperature (°C)		-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55
Storage temperature (°C)		-25 ... +70	-25 ... +70	-25 ... +70	-25 ... +70	-25 ... +70	-25 ... +70	-25 ... +70
Protection type (front / terminals)		IP51*3 / IP20	IP51*3 / IP40	IP51*3 / IP40	IP51*3 / IP40	IP51*3 / IP40	IP51*3 / IP40	IP51*3 / IP40
Max. connectible wires cross sections (mm^2)		Measurement: 16	Measurement: 35 Tariff input: 1.5	Measurement: 35 Tariff input: 1.5	Measurement: 35 Tariff input: 1.5	Measurement: 4 Tariff input: 1.5	Measurement: 4 Tariff input: 1.5	Measurement: 35 Tariff input: 1.5 flex
Supply voltage		Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied
Measurement range								
Voltage range (V AC)		184 ... 276 V AC	92 ... 276 V AC	92 ... 276 V AC	92 ... 276 V AC	110 ... 276 V AC 190 ... 480 V AC	184 ... 276 V AC 319 ... 480 V AC	92 ... 276 V AC 160 ... 480 V AC
Current range (A)		0.02 ... 32	0.015 ... 63	0.015 ... 63	0.015 ... 63	0.001 ... 1.2	0.003 ... 6	0.015 ... 63
Frequency, Fundamental oscillation (Hz)*1		50	45 ... 65	45 ... 65	45 ... 65	50	50	45 ... 65
Measurement		1-phase	1-phase	1-phase	1-phase	3-phase (4 conductor)	3-phase (4 conductor)	3-phase (4 conductor)
Measured values								
Measuring accuracy Active energy		Class B	Class B	Class B	Class B	Class B	Class B	Class B
Measuring accuracy Reactive energy		Class 2	Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
Tariffs		1	2	2	2	2	2	2
Voltage	L1, L2, L3	-	□*2	□*2	□*2	-	-	-
	L1-2, L2-3, L3-1	-	-	-	-	-	-	-
Current	L1, L2, L3	-	□*2	□*2	□*2	-	-	-
	N	-	-	-	-	-	-	-
Power factor	L1, L2, L3	-	□*2	□*2	□*2	-	-	-
	ΣL	-	-	-	-	-	-	-

□ Remote read-out *1 MID only 50 Hz *2 Only L1 *3 For the installation in a cabinet at least with IP51 protection

Measured values								
Frequency		-	□	□	□	-	-	-
Active power	L1, L2, L3	●*2	●*2	●*2 □*2	●*2 □*2	-	-	-
	∑L	-	-	-	-	-	-	-
Reactive power	L1, L2, L3	-	●*2	●*2 □*2	●*2 □*2	-	-	-
	∑L	-	-	-	-	-	-	-
Apparent power	L1, L2, L3	-	-	-	-	-	-	-
	∑L	-	-	-	-	-	-	-
Active energy (consumption)	L1, L2, L3, ∑L	●*2	●*2	●*2 □*2	●*2 □*2	●	●	●
	Tariffs 1 and 2	●*3	●*2	●*2 □*2	●*2 □*2	●	●	●
Active energy (delivery)	L1, L2, L3, ∑L	●*2	-	□*2	□*2	●	●	●
	Tariffs 1 and 2	●*3	-	□*2	□*2	●	●	●
Reactive energy (consumption)	L1, L2, L3, ∑L	-	●*2	●*2 □*2	●*2 □*2	-	-	-
	Tariffs 1 and 2	-	●*2	●*2 □*2	●*2 □*2	-	-	-
Reactive energy (delivery)	L1, L2, L3, ∑L	-	-	□*2	□*2	-	-	-
	Tariffs 1 and 2	-	-	□*2	□*2	-	-	-
Active energy (part. consumption)	∑L	-	-	-	-	-	-	-
	Tariffs 1 and 2	-	-	-	-	-	-	-

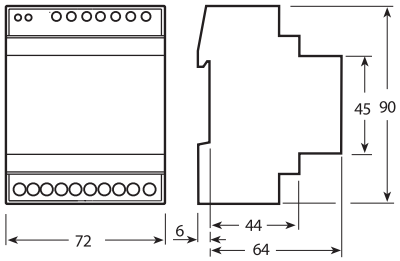
● Display □ Remote read-out *2 Only L1 *3 Only tariff 1

Dimension diagrams and typical connection

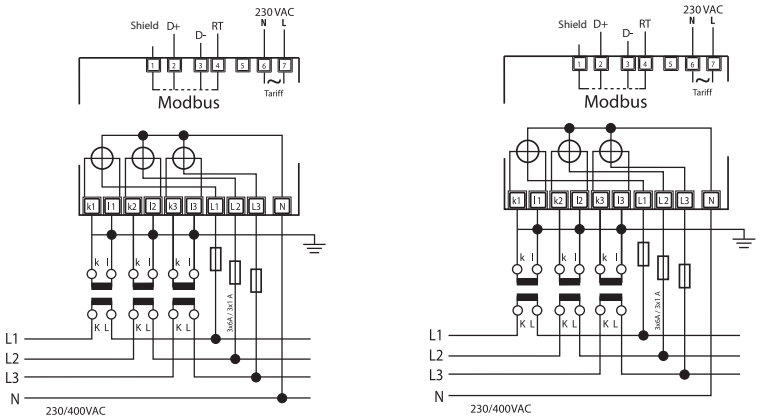
All dimensions in mm

ECSEM155MID meter
(Modbus, current transformer x/1 A)

Dimension diagram



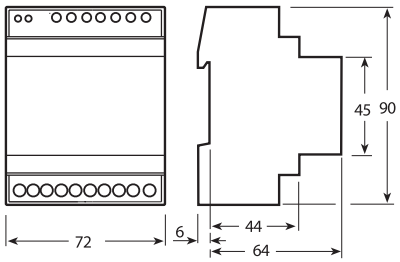
ECSEM155MID circuit diagram (Modbus)



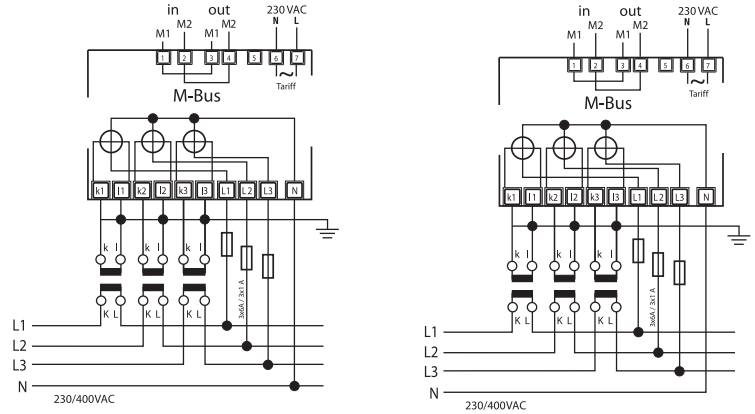
A neutral conductor at the energy meter is essential. Earthing the secondary winding of the external current transformer is mandatory by law in many countries. Please check the regional requirements (utility technical connection requirements) prior to installation.

ECSEM157MID meter
(M-Bus, current transformer x/1 A)

Dimension diagram



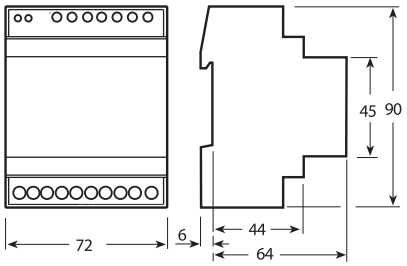
ECSEM157MID circuit diagram (M-Bus)



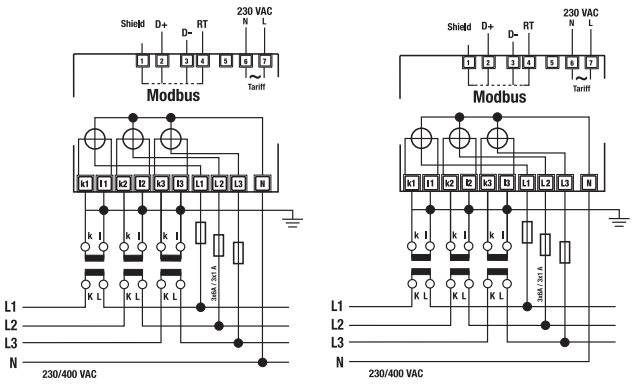
A neutral conductor at the energy meter is essential. Earthing the secondary winding of the external current transformer is mandatory by law in many countries. Please check the regional requirements (utility technical connection requirements) prior to installation.

ECSEM68MID / ECSEM67MID meter group (current transformer x/5 A)

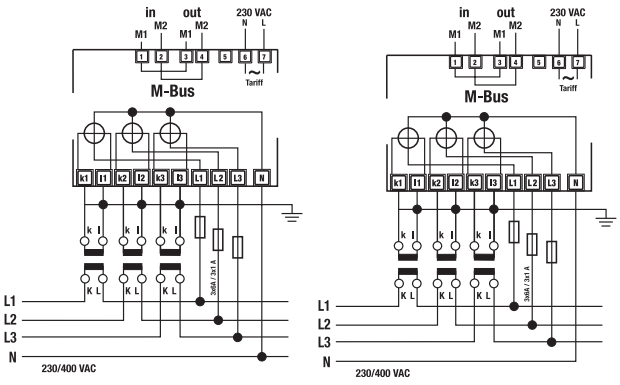
Dimension diagram



ECSEM68MID circuit diagram (Modbus)



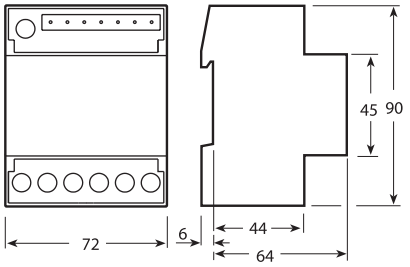
ECSEM67MID circuit diagram (M-Bus)



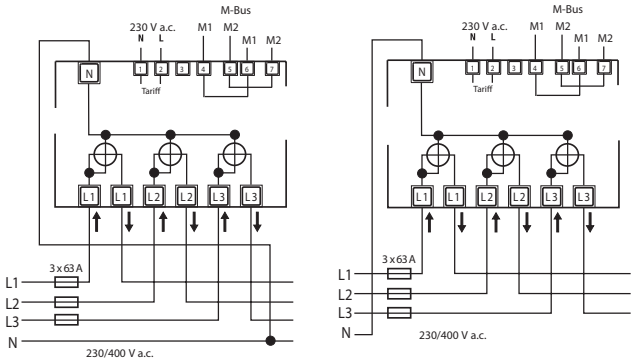
A neutral conductor at the energy meter is essential. Earthing the secondary winding of the external current transformer is mandatory by law in many countries. Please check the regional requirements (utility technical connection requirements) prior to installation.

ECSEM112MID / ECSEM114MID meter group (63 A direct measurement)

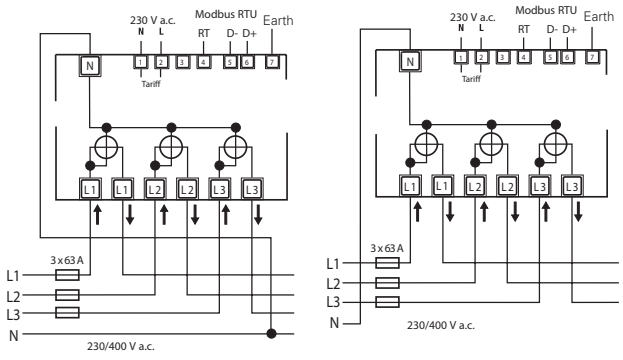
Dimension diagram



ECSEM112MID circuit diagram (M-Bus)



ECSEM114MID circuit diagram (Modbus)



A neutral conductor at the energy meter is essential.

Device overview and technical data

Three-phase energy meter with integrated communications interface

Types*1	ECSEM155MID (Modbus)	ECSEM157MID (M-Bus)	ECSEM68MID (Modbus)	ECSEM67MID (M-Bus)	ECSEM114MID (Modbus)	ECSEM112MID (M-Bus)
Item number	**14.01.323**	**14.01.325**	**14.01.313**	**14.01.317**	**14.01.346**	**14.01.347**

*1 Please note: Due to the integrated interface, these energy meters are supplied without IR interface.

Technical data							
Connection		... 1/A Current transformer	... 1/A Current transformer	... 5/A Current transformer	... 5/A Current transformer	63 A Direct measurement	63 A Direct measurement
Device dimensions in mm (H x W x D)		90 x 72 x 70	90 x 72 x 70	90 x 72 x 70	90 x 72 x 70	90 x 72 x 70	90 x 72 x 70
Units width		4	4	4	4	4	4
Power consumption		2.1 VA	2.1 VA	2.1 VA	2.1 VA	2.1 VA	2.1 VA
Max. burden at current connections (I_{Max})		0.5 VA per phase	0.5 VA per phase	0.5 VA per phase	0.5 VA per phase	2.0 VA per phase	2.0 VA per phase
Working temperature (°C)		-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55
Storage temperature (°C)		-25 ... +70	-25 ... +70	-25 ... +70	-25 ... +70	-25 ... +70	-25 ... +70
Protection type (front / terminals)		IP51 / IP20	IP51 / IP20	IP51 / IP20	IP51 / IP20	IP51 / IP20	IP51 / IP20
Max. connectible wires cross sections (mm^2)		Measurement: 4 Tariff input: 1.5	Measurement: 4 Tariff input: 1.5	Measurement: 4 Tariff input: 1.5	Measurement: 4 Tariff input: 1.5	Measurement: 35 Tariff input: 1.5	Measurement: 35 Tariff input: 1.5
Supply voltage		Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied
Measurement range							
Voltage range (V AC)		110 ... 276 V AC 190 ... 480 V AC	110 ... 276 V AC 190 ... 480 V AC	110 ... 276 V AC 190 ... 480 V AC	110 ... 276 V AC 190 ... 480 V AC	92 ... 276 V AC 160 ... 480 V AC	92 ... 276 V AC 160 ... 480 V AC
Current range (A)		0.001 ... 1.2	0.001 ... 1.2	0.003 ... 6	0.003 ... 6	0.015 ... 63	0.015 ... 63
Frequency, fundamental oscillation (Hz)*2		50	50	50	50	45 ... 65	45 ... 65
Measurement		3-phase (4 conductor)	3-phase (4 conductor)	3-phase (4 conductor)	3-phase (4 conductor)	3-phase (4 conductor)	3-phase (4 conductor)
Measured values							
Measuring accuracy Active energy		Class B	Class B	Class B	Class B	Class B	Class B
Measuring accuracy Reactive power		Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
Tariffs		2	2	2	2	2	2
Voltage	L1, L2, L3	▯	▯	▯	▯	▯	▯
	L1-2, L2-3, L3-1	▯	▯	▯	▯	▯	▯
Current	L1, L2, L3, N	▯	▯	▯	▯	▯	▯
Power factor	L1, L2, L3, ΣL	▯	▯	▯	▯	▯	▯
Frequency		▯	▯	▯	▯	▯	▯
Active power	L1, L2, L3, ΣL	▯	▯	▯	▯	▯	▯
Reactive power	L1, L2, L3, ΣL	▯	▯	▯	▯	▯	▯
Apparent power	L1, L2, L3, ΣL	▯	▯	▯	▯	▯	▯

▯ Remote read-out

*2 MID only 50 Hz

Three-phase energy meter with integrated communications interface

Types*1	ECSEM155MID (Modbus)	ECSEM157MID (M-Bus)	ECSEM68MID (Modbus)	ECSEM67MID (M-Bus)	ECSEM114MID (Modbus)	ECSEM112MID (M-Bus)
Item number	**14.01.323**	**14.01.325**	**14.01.313**	**14.01.317**	**14.01.346**	**14.01.347**

*1 Please note: Due to the integrated interface, these energy meters are supplied without IR interface.

Measured values							
Active energy (consumption)	L1, L2, L3, ΣL	● ▯	● ▯	● ▯	● ▯	● ▯	● ▯
	Tariffs 1 and 2	● ▯	● ▯	● ▯	● ▯	● ▯	● ▯
Active energy (delivery)	L1, L2, L3, ΣL	● ▯	● ▯	● ▯	● ▯	● ▯	● ▯
	Tariffs 1 and 2	● ▯	● ▯	● ▯	● ▯	● ▯	● ▯
Reactive energy (consumption)	L1, L2, L3, ΣL	▯	▯	▯	▯	▯	▯
	Tariffs 1 and 2	▯	▯	▯	▯	▯	▯
Reactive energy (delivery)	L1, L2, L3, ΣL	▯	▯	▯	▯	▯	▯
	Tariffs 1 and 2	▯	▯	▯	▯	▯	▯
Active energy (part. consumption)	ΣL	-	▯	-	▯	-	▯
	Tariffs 1 and 2	●	●	●	●	●	●

● Display ▯ Remote read-out

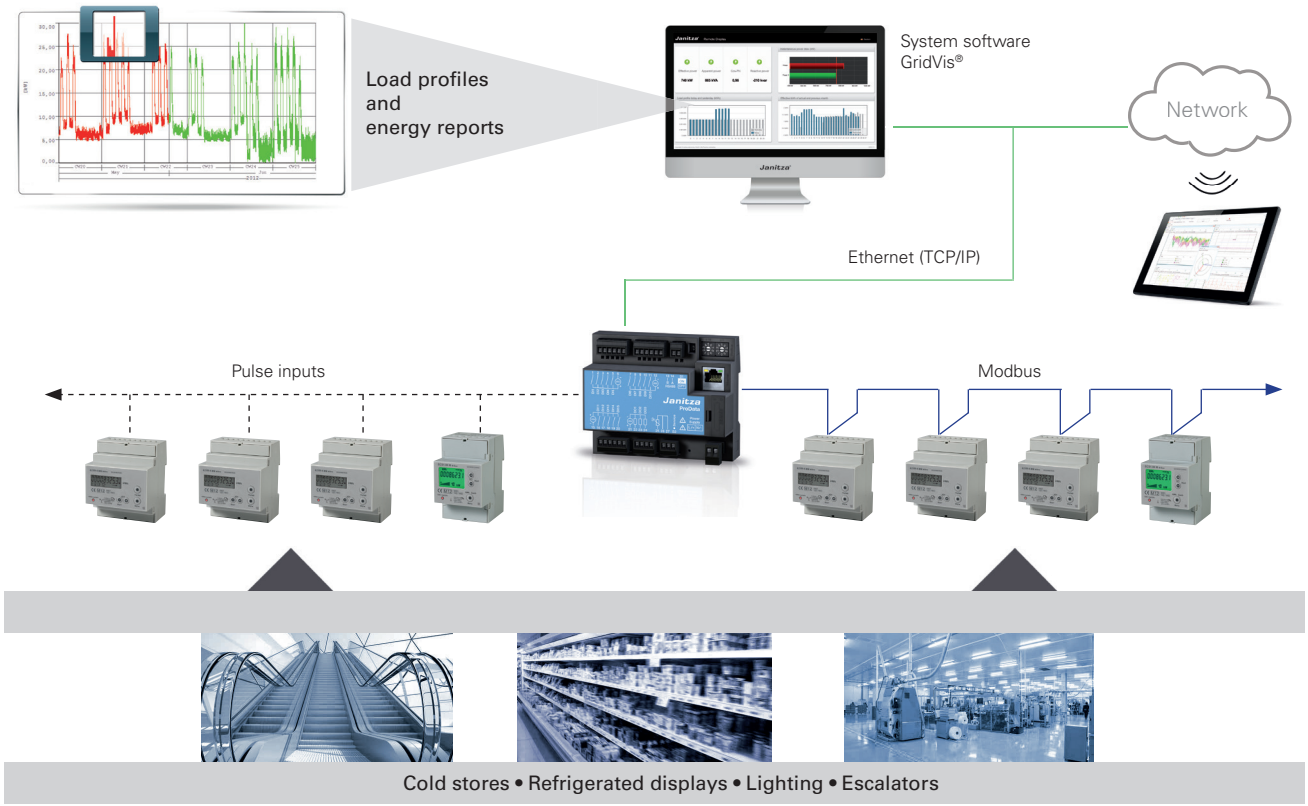


Fig.: Remote read-out with a superordinate PC via the Ethernet-Modbus gateway of the ProData® data logger

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