



MID Energy Meter and Measurement System

with integrated interface for Modbus or M-Bus

Electronic DIN-rail energy meter ECSEM series

Area of application

Electronic energy meters are primarily used for the recording of effective and reactive energy. Their area of application is in the field of energy management or cost centre analysis. Various communication options are available for this in order to avoid the time consuming process of manually reading at site. As a transducer the effective pulses can be sent to a control system, e.g. BMS, PLC, SCADA or the ProData® data acquisition device.

The M-Bus and Modbus RTU protocols are available via the integrated communications interface for the field of building control technology. With the corresponding selections these interfaces enable the additional values of voltage, current, power, power factor and frequency on the bus, alongside effective power and reactive power. For consumption data acquisition the ECSEM meter can also be used as a device for the sub-measurement connected to the UMG 604 via the Modbus RTU.



Main features

- Communication: Modbus, M-Bus, S0 pulse outputs
- Direct measurement up to 80 A or via current transformer
- 1 or 2 Tariffs
- With MID approval
- Terminal cover can be sealed
- 2 or 4 quadrant measurement
- Measured values: Effective energy, reactive energy, effective power, reactive power
- Class 1 for effective energy

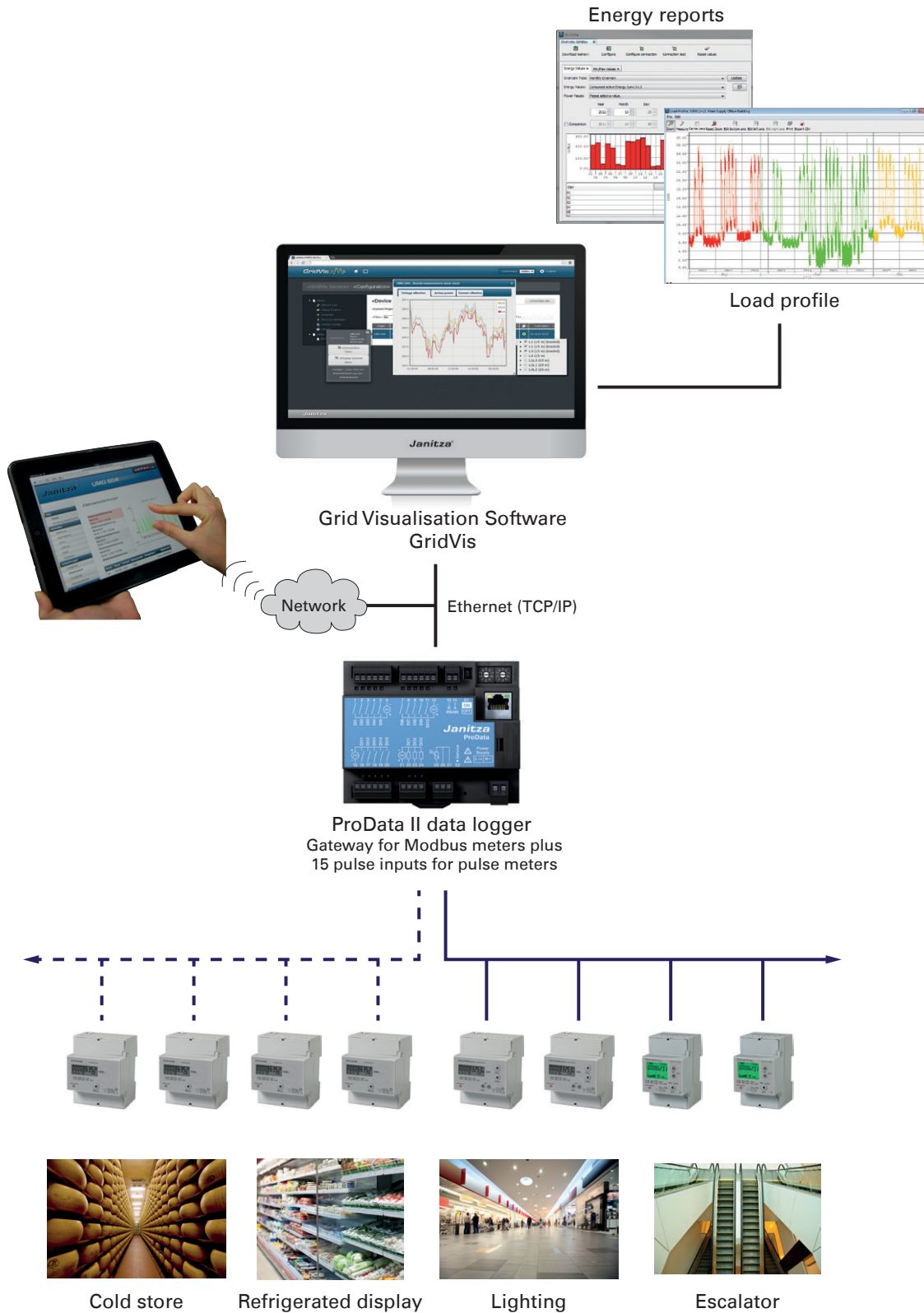
Applications

The ECSEM series electronic energy meter is suitable for the measurement of effective and reactive energy consumption. The measurement is designed for 1-phase and 3-phase systems with a voltage of L-N 230 VAC $\pm 20\%$. The current inputs are designed for either direct connection or measurement via a current transformer. The installation is via DIN-rails, where special value is placed on the extraordinarily compact construction. All ECSEM series meters can be lead-sealed. Effective and reactive power are available in one tariff or two tariffs and in two or four quadrants. The accuracy of the meter is class 1 for effective energy and class 2 for reactive energy.

Capture and recording

All meters save the energy readings to non-volatile memory. The meter reading cannot be reset in the MID version.

Remote read-out with a PC and central data logging on a data server



Overview of devices



	Single-phase energy meter			Three-phase energy meter (two S0 pulse output)		
Types	ECSEM88MID	ECSEM121MID	ECSEM123MID	ECSEM129MID	ECSEM66MID	ECSEM74MID
	1 S0 pulse output	Modbus	M-Bus	2 S0 pulse outputs	2 S0 pulse outputs	2 S0 pulse outputs
	Pulse value 1000 Imp/kWh length 90 ms	optional connectable via IR modules	optional connectable via IR modules	Pulse value 100-10-1 Imp/kWh/kvarh depending converters length 30 ... 100 ms	Pulse value 100-10-1 Imp/kWh/kvarh depending converters length 30 ± 2 ms	Pulse value 500 Imp/kWh/kvarh length 30 ± 2 ms
Item number	14.01.335	14.01.336	14.01.337	14.01.338	14.01.339	14.01.340
EIB-KNX					Baud rate: 9600Baud Applicable parameters: Wh, kvarh, V, A, Hz, cos-phi, kW, kvar Item number: 14.01.412	

The lateral optical IR-interface and desired communication module allows the power meter to be integrated into the building-services engineering easily and cost-effectively. The simple click-assembly of the communication module allows the power meter to be expanded with further communication technologies.

General technical data

Connection	32 A Direct measurement	80 A Direct measurement	80 A Direct measurement	... 1/A Current transformer	... 5/A Current transformer	80 A Direct measurement
Dimensions (W x H x D mm)	18 x 90 x 70	54 x 90 x 70	54 x 90 x 70	72 x 90 x 70	72 x 90 x 70	72 x 90 x 70
Units wide	1	3	3	4	4	4
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)	IP 51*/20	IP 51*/20	IP 51*/20	IP 51*/20	IP 51*/20	IP 51*/20
Max. connectible wires (mm ²)	Measurement: 16	Measurement: 50 Input tariff: 1.5	Measurement: 50 Input tariff: 1.5	Measurement: 4 Input tariff: 1.5	Measurement: 4 Input tariff: 1.5	Measurement: 35 Input tariff: 1.5
Supply voltage	Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied

Measurement range

Voltage range (V; AC)	230 VAC ±20 %	230 VAC ±20 %	230 VAC ±20 %	230 / 400 VAC ±20 %	230 / 400 VAC ±20 %	230 / 400 VAC ±20 %
Current range (A)	0.02 ... 32	0.02 ... 80	0.02 ... 80	0.001 ... 1.2	0.003 ... 6	0.015 ... 80
Frequency, mains (Hz)	49 ... 51	49 ... 61	49 ... 61	49 ... 61	49 ... 51	49 ... 51
Measurement	1-phase	1-phase	1-phase	3-phase	3-phase	3-phase

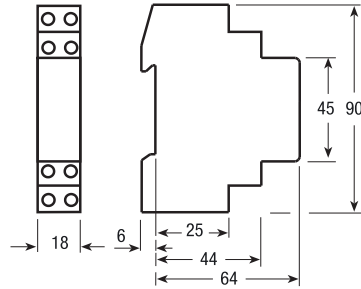
Measured values

Types		ECSEM88MID (S0 pulse)	ECSEM121MID (Modbus)	ECSEM123MID (M-Bus)	ECSEM129MID (S0 pulse)	ECSEM66MID (S0 pulse)	ECSEM74MID (S0 pulse)
Effective energy measurement accuracy		Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Reactive energy measurement accuracy		Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
Tariffs		1	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		-	□	□	-	-	-
Effective power	L1, L2, L3, ΣL	○*	○* □*	○* □*	-	-	-
	Tariffs 1 and 2	○**	○* □*	○* □*	-	-	-
Reactive power	L1, L2, L3, ΣL	-	○* □*	○* □*	-	-	-
	Tariffs 1 and 2	-	□*	□*	-	-	-
Apparent power	L1, L2, L3	-	□*	□*	-	-	-
	ΣL	-	-	-	-	-	-
Effective energy (consumption)	L1, L2, L3, ΣL	○*	○* □*	○* □*	○	○	○
	Tariffs 1 and 2	○**	○* □*	○* □*	○	○	○
Effective 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	-	○* □*	○* □*	-	-	-
Effective energy (partial consumption)	ΣL	-	-	-	-	-	-
	Tariffs 1 and 2	-	-	-	-	-	-

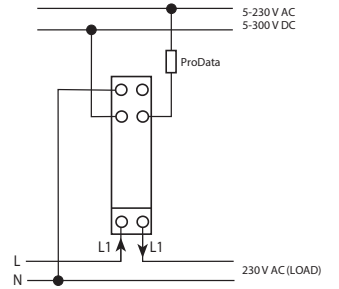
○ Display □ Remote read-out * only L1 ** only tariff 1

Meter group
ECSEM88MID
(pulse output)

Dimensional drawing

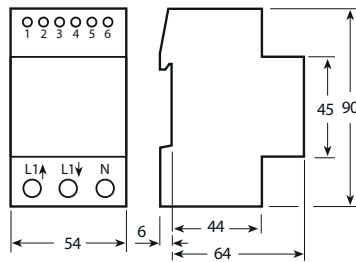


Circuit diagram

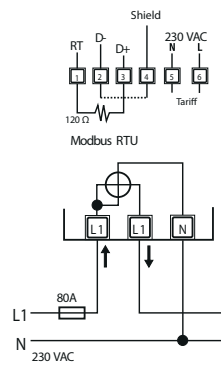


Meter group
ECSEM121MID
(Modbus)

Dimensional drawing

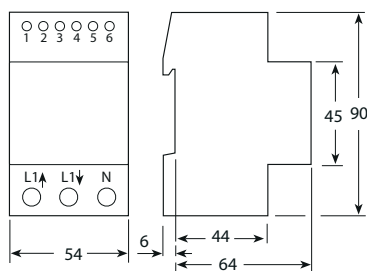


Circuit diagram

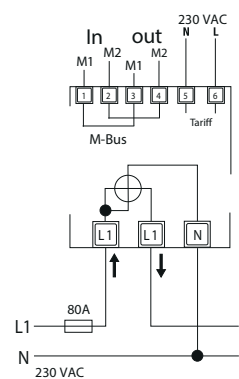


Meter group
ECSEM123MID
(M-Bus)

Dimensional drawing

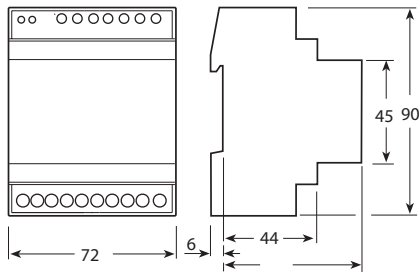


Circuit diagram

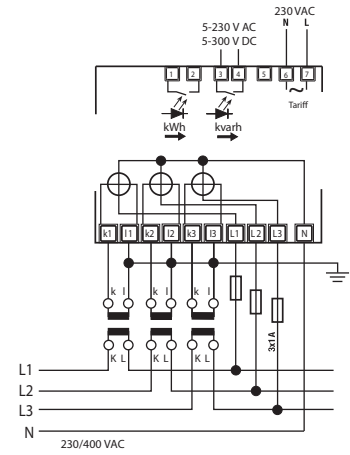
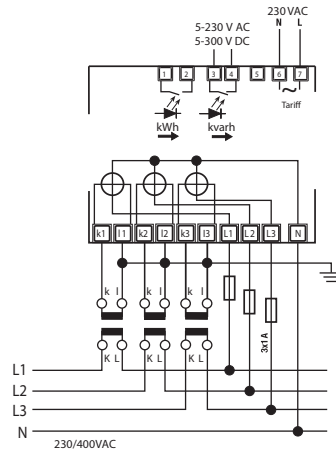


Meter group
ECSEM129MID
 (pulse output, current transformer x/1A)

Dimensional drawing

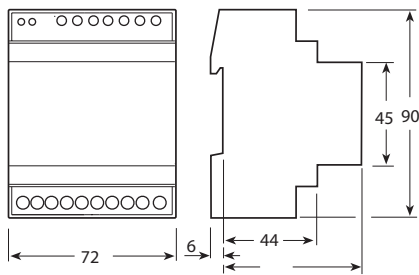


Circuit diagram

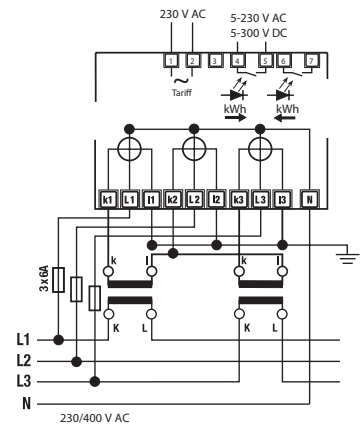
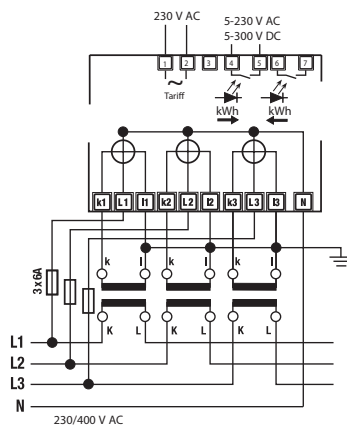


Meter group
ECSEM66MID
 (pulse output, current transformer x/5A)

Dimensional drawing

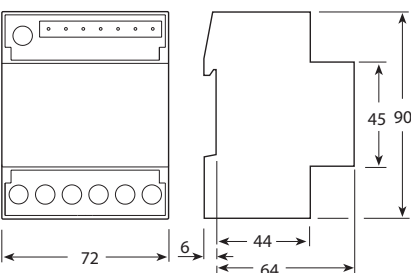


Circuit diagram

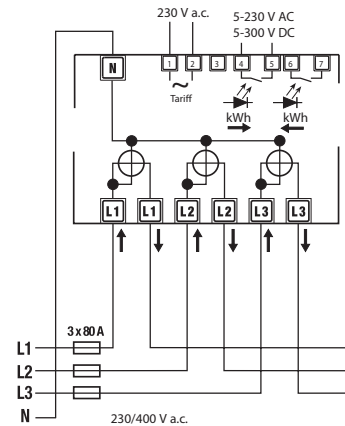
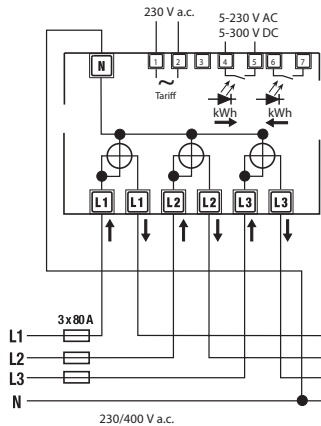


Meter group
ECSEM74MID
 (pulse output, 80 A direct measurement)

Dimensional drawing



Circuit diagram



Overview of devices



Three-phase energy meters with integrated communication interface						
Types	ECSEM155MID (Modbus)	ECSEM157MID (M-Bus)	ECSEM68MID (Modbus)	ECSEM67MID (M-Bus)	ECSEM76MID (Modbus)	ECSEM75MID (M-Bus)
Item number	14.01.323	14.01.325	14.01.313	14.01.317	14.01.315	14.01.319

General technical data

Connection	... 1/A Current transformer	... 1/A Current transformer	... 5/A Current transformer	... 5/A Current transformer	80 A Direct measurement	80 A Direct measurement
Dimensions (W x H x D mm)	72 x 90 x 70	72 x 90 x 70	72 x 90 x 70	72 x 90 x 70	72 x 90 x 70	72 x 90 x 70
Units wide	4	4	4	4	4	4
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)	IP 51*/20	IP 51*/20	IP 51*/20	IP 51*/20	IP 51*/20	IP 51*/20
Max. connectible wires (mm ²)	Measurement: 4 Input tariff: 1.5	Measurement: 4 Input tariff: 1.5	Measurement: 4 Input tariff: 1.5	Measurement: 4 Input tariff: 1.5	Measurement: 35 Input tariff: 1.5	Measurement: 35 Input tariff: 1.5
Supply voltage	Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied	Self-supplied

Measurement range

Voltage range (V; AC)	230 / 400 VAC ±20 %	230 / 400 VAC ±20 %	230 / 400 VAC ±20 %	230 / 400 VAC ±20 %	230 / 400 VAC ±20 %	230 / 400 VAC ±20 %
Current range (A)	0.003 ... 1	0.003 ... 1	0.003 ... 6	0.003 ... 6	0.015 ... 80	0.015 ... 80
Frequency, mains (Hz)	49 ... 61	49 ... 61	48 ... 62	48 ... 62	49 ... 51	49 ... 51
Measurement	3-phase	3-phase	3-phase	3-phase	3-phase	3-phase

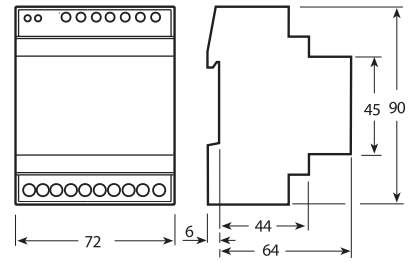
Measured values

Types		ECSEM155MID (Modbus)	ECSEM157MID (M-Bus)	ECSEM68MID (Modbus)	ECSEM67MID (M-Bus)	ECSEM76MID (Modbus)	ECSEM75MID (M-Bus)
Effective energy measurement accuracy		Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Reactive energy measurement accuracy		Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
Tariffs		2	2	2	2	2	2
Voltage	L1, L2, L3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	L1-2, L2-3, L3-1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Current	L1, L2, L3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	N	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power factor	L1, L2, L3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	ΣL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequency		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effective power	L1, L2, L3, ΣL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tariffs 1 and 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reactive power	L1, L2, L3, ΣL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tariffs 1 and 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apparent power	L1, L2, L3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	ΣL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effective energy (consumption)	L1, L2, L3, ΣL	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>
	Tariffs 1 and 2	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>
Effective energy (delivery)	L1, L2, L3, ΣL	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>
	Tariffs 1 and 2	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/> <input type="checkbox"/>
Reactive energy (consumption)	L1, L2, L3, ΣL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tariffs 1 and 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reactive energy (delivery)	L1, L2, L3, ΣL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tariffs 1 and 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effective energy (partial consumption)	ΣL	-	<input type="checkbox"/>	-	<input type="checkbox"/>	-	<input type="checkbox"/>
	Tariffs 1 and 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

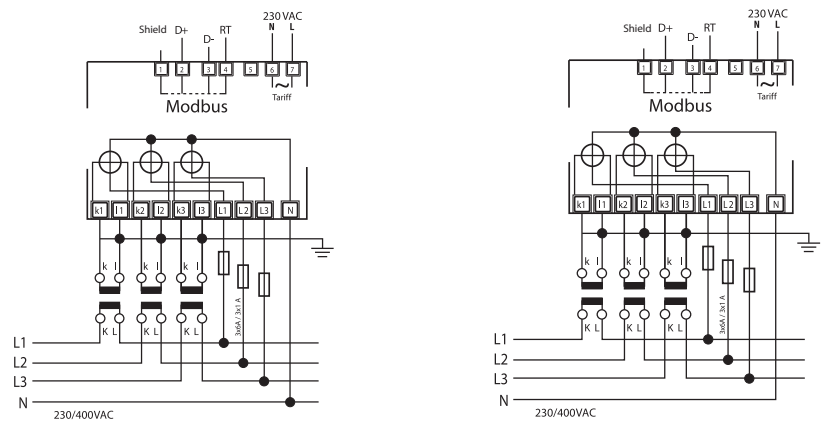
Display Remote read-out

Meter group
ECSEM155MID
 (Modbus, current transformer x/1A)

Dimensional drawing

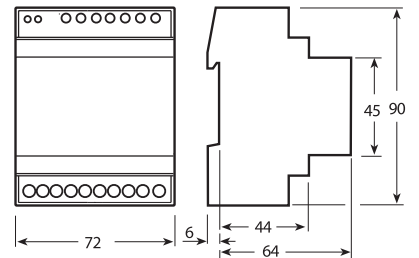


ECSEM155MID circuit diagram

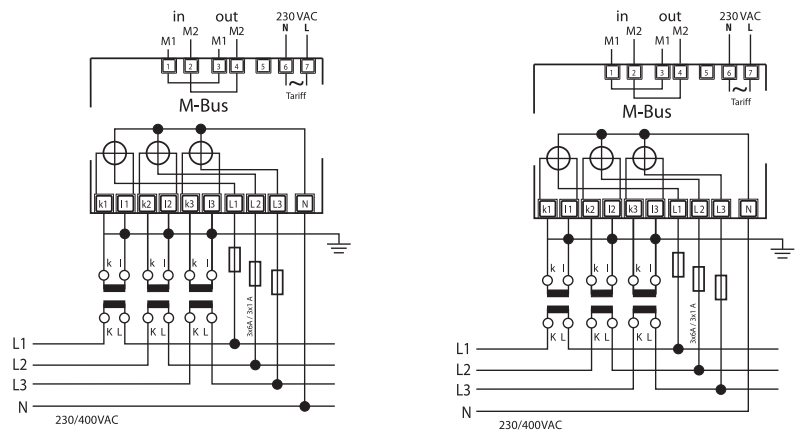


Meter group
ECSEM157MID
 (M-Bus, current transformer x/1A)

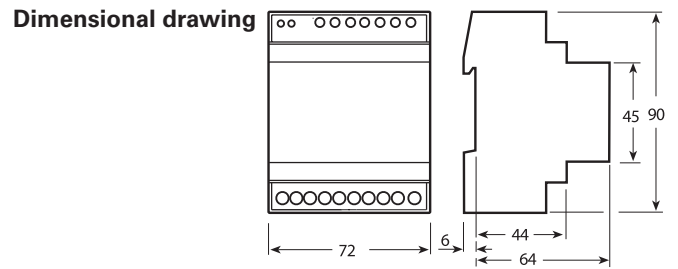
Dimensional drawing



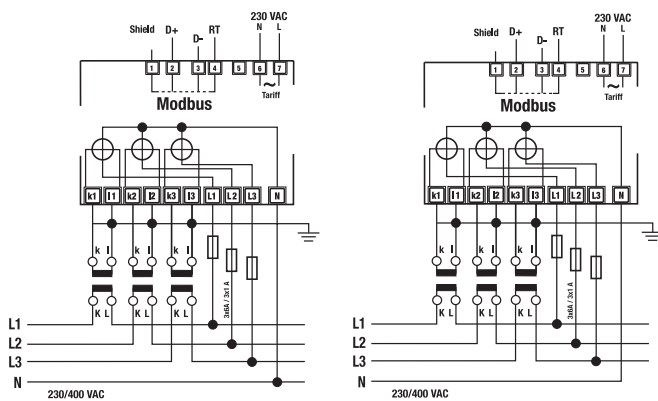
ECSEM157MID circuit diagram



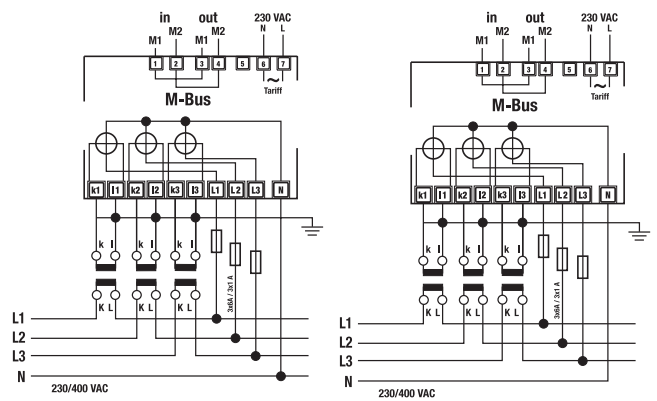
Meter group
ECSEM68MID / ECSEM67MID
 (current transformer x/5A)



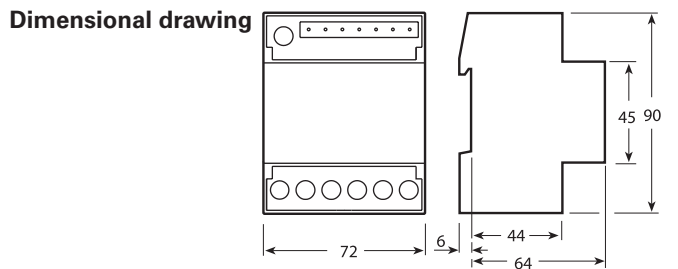
ECSEM68MID circuit diagram
 (Modbus)



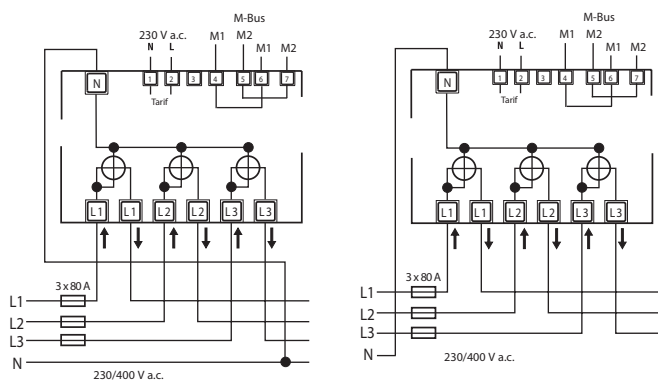
ECSEM67MID circuit diagram
 (M-Bus)



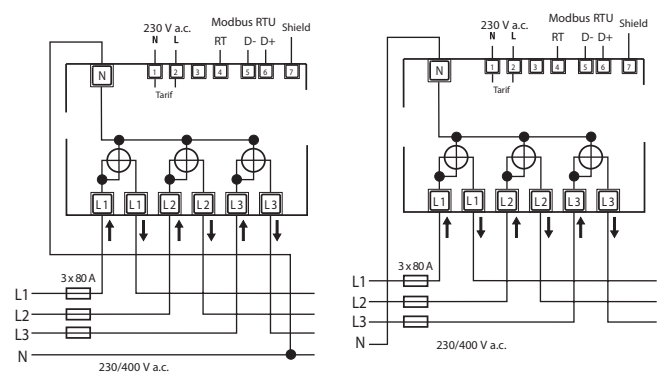
Meter group
ECSEM75MID / ECSEM76MID
 (80 A direct measurement)



ECSEM75MID circuit diagram
 (M-Bus)



ECSEM76MID circuit diagram
 (Modbus)



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