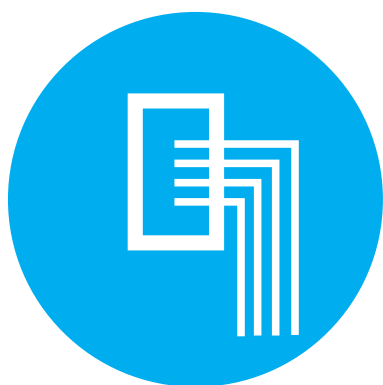
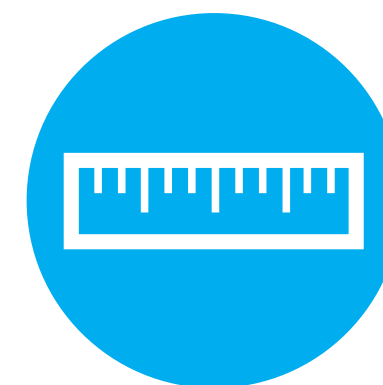
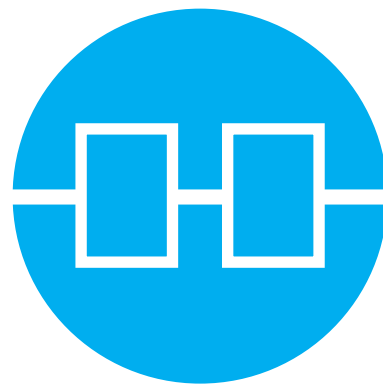
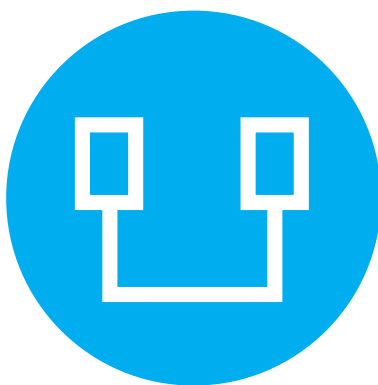


# Energy Meters





## 1

# Measurement

## Digital single-phase Energy-meters



**Direct till 32 A**

1 module DIN

page **5**

## Digital single-phase Energy-meters



**Direct till 45 A**

1 module DIN

page **6**

## Digital single-phase Energy-meters



**Direct till 80 A**

2 modules DIN

page **7**

## Digital three-phase Energy-meters



**Direct till 65 A**

3 modules DIN

page **8**

## Digital three-phase Energy-meters



**Direct till 65 A**

6 modules DIN

page **9**

## Digital three-phase Energy-meters



**Connection through CT**

6 modules DIN

page **11**

## 1

### Measurement

#### Digital single-phase Energy-meters



**Direct till 80 A**

2 modules DIN

page **13**

#### Digital single-phase Energy-meters



**Direct till 80 A  
and TA .../5 A till 10.000 A**

4 modules DIN

page **16**

#### Digital single-phase Energy-meters



**Direct till 125 A**

3 modules DIN

page **18**

#### Digital three-phase Energy-meters



**Direct till 125 A**

6 modules DIN

page **25**

## 2

### Communication

for the technical data, **see page 29 - 41**

## WS 0010, WS 0011



### ► Direct connection 32 A

### Application

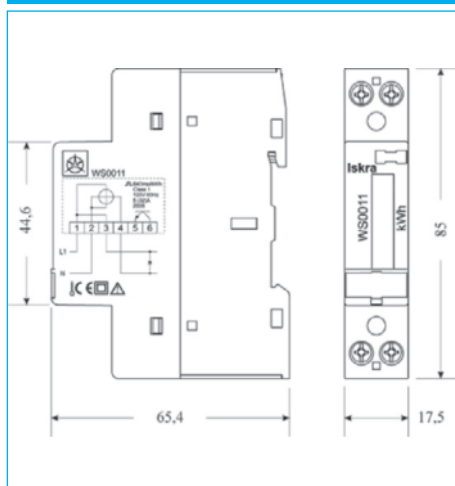
WS 0010 and WS 0011 are electronic single phase active energy meters. Meters measure positive active energy directly in 2-wire networks. There are two versions, one with pulse output (WS 0011) and the other without pulse output (WS 0010). Accuracy of the meters is class 1, according to the standard EN SIST 62053-21 for active energy meter. Meters can be mounted on DIN-rail (1 pitch).

### Features

- Single phase direct connected DIN-rail mounting meter
- Class of meter 1 according EN62053-21 and EN62052-11
- Maximum current 32 A ( $I_{max}$ )
- Base current ( $I_b$ ) 5 A
- Starting current 0,004  $I_b$
- 120V or 230V rated system voltage input ( $U_n$ )
- Voltage operating range -20%...+15%  $U_n$
- Reference frequencies 50 or 60 Hz
- Power consumption voltage circuit < 6 VA at  $U_n$
- Power consumption current circuit < 0.1 W at  $I_{max}$
- Temperature range climatic condition as indoor meter according IEC62051-11
- Display 6+1 digit (100 Wh resolution)
- Red LED for indication of energy flow and testing
- LED rate for energy flow 640 p/kWh
- Pulse output (WS0011 only) according to EN62053-31:2001
- Pulse output rate 640 p/kWh
- Pulse output type optocoupler transistor-open collector

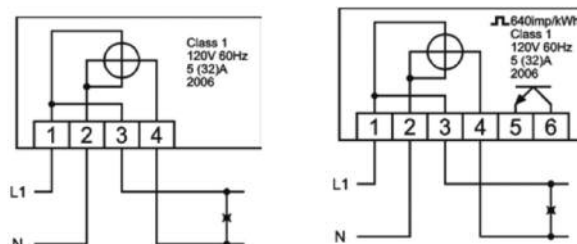


### Overall dimensions



### Installation

(see figures below) For monitoring purpose only Rail mountig according EN 60715 Power contacts capacity 2.5...10 mm<sup>2</sup> Connection screws M 3.5 Pulse output contact capacity 1... 2.5mm<sup>2</sup> Pulse output screws M3 Max torque 1.2 Nm.



active energy meter



## WS 0014



### ► Direct connection 45 A

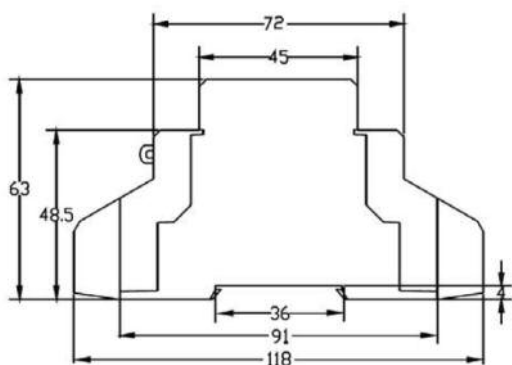
### Application

WS 0014 is an electronic single phase active energy meter. The meter measures active energy directly in a 2-wire network. Meter accuracy class is 1, according to the IEC 62053-21 standard for active energy meter. The meter can be mounted on a DIN rail (1-pitch).

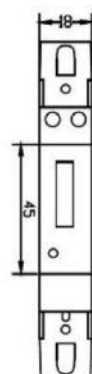
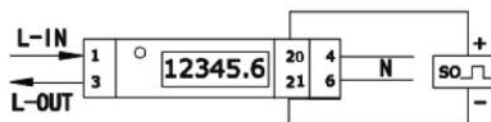
### Features

- Single phase direct connected DIN-rail mounting meter
- Class 1 according to IEC 62053-21
- Maximum current 45 A ( $I_{max}$ )
- Basic current ( $I_b$ ) 5 A
- Starting current 0,004  $I_b$
- 230 V rated system voltage input ( $U_n$ )
- Voltage operating range -30% ... +30%  $U_n$
- Reference frequencies 50 or 60 Hz
- Power consumption circuit < 8 VA,  $\leq 0.4$  W
- Temperature range as indoor meter according to IEC 62052-11
- 7-digit LCD (5+2) 99999.99 kWh
- LED rate for energy flow 1000 imp/kWh
- Pulse output 1000 imp/kWh:
  - Voltage 12 ~ 27 V, Current  $\leq 27$  mA
  - Impulse width=90 ms
  - Limits of values: max 60 VDC, max 50 mA

### Overall dimensions



### Installation



For monitoring purpose only.  
 Rail mounting according to EN 60715.  
 Power terminals capacity 15 mm<sup>2</sup>.  
 Power terminals screws M 3.5.  
 Neutral terminal screw M 3.5.  
 Max torque 1.2 Nm.  
 Pulse output contact capacity up to 15 mm<sup>2</sup>.



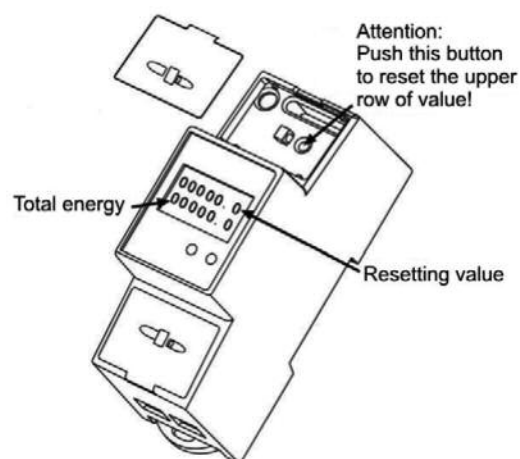
### ► Direct connection 80 A

### Application

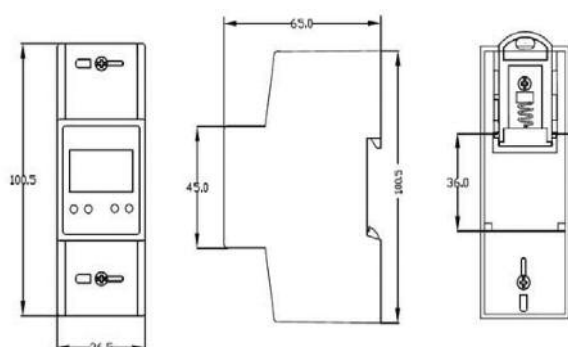
WS 0021 is an electronic single phase active energy meter. The meter measures positive active energy directly in a 2-wire network. Meter accuracy class is 1, according to the EN SIST 62053-21 standard for active energy meter. The meter can be mounted on a DIN rail (2-pitch).

### Features

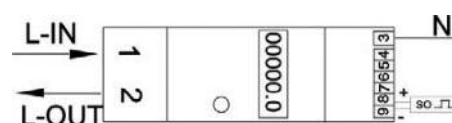
- Single phase direct connected DIN-rail mounting meter
- Class 1 according to EN 62053-21 and
- EN 62052-11
- Maximum current 80 A ( $I_{max}$ )
- Base current ( $I_b$ ) 5 A
- Starting current 0.004  $I_b$
- 230 V rated system voltage input ( $U_n$ )
- Voltage operating range -20%...+15%  $U_n$
- Reference frequency 50 or 60 Hz
- Power consumption circuit < 8 VA
- Temperature range as indoor meter according to IEC 62051-11
- 7-digit LCD
- LED rate for energy flow 1000 p/kWh
- Pulse output 1000 imp/kWh
- Two energy registers – a total register and a zero setting register



### Overall dimensions



### Installation



(see figures below) For monitoring purpose only Rail mountig according EN 60715 Power contacts capacity 2.5...10 mm<sup>2</sup> Connection screws M3.5 Pulse output contact capacity 1...2.5 mm<sup>2</sup> Pulse output screws M3 Max torque 1.2 Nm

# ENERGY-METERS THREE-PHASE

active energy meter



## WS 0030, WS 0031



### ► Direct connection 65 A

#### Application

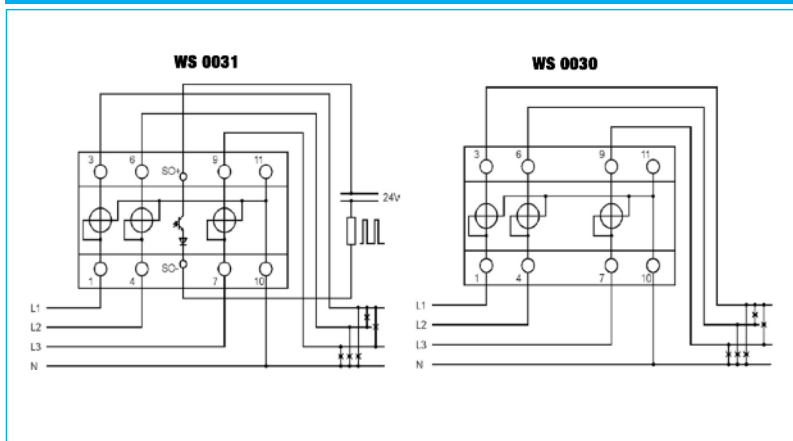
WS 0030 and WS 0031 are electronic three phase active energy meters. Meters measure positive active energy directly in 4- wire networks. There are two versions, one with pulse output (WS 0031) and the other without pulse output (WS 0030). Accuracy of the meters is class 1, according to the standard EN SIST 62053-21 for active energy meter. Meters can be mounted on a DIN-rail (3 pitch).

#### Features

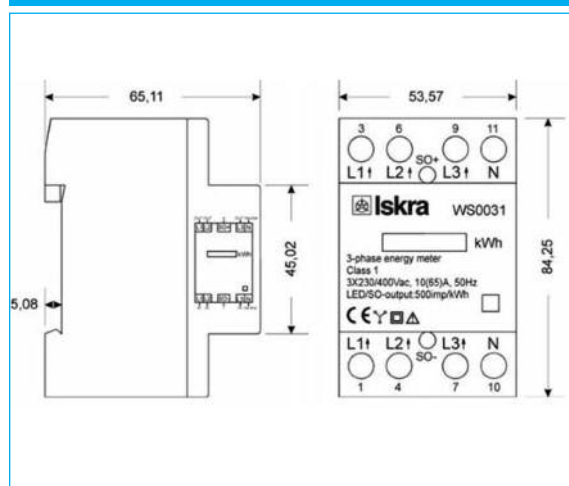
- Three phase direct connected DIN-rail mounting meter
- Class of meter 1 according EN62053-21 and EN62052-11
- Maximum current 65 A ( $I_{max}$ )
- Base current ( $I_b$ ) 10 A
- Starting current 0,004  $I_b$
- 3x 230/400 V rated system voltage input ( $U_n$ )
- Voltage operating range -20%...+15%  $U_n$
- Reference frequencies 50 or 60 Hz
- Power consumption voltage circuit < 6 VA at  $U_n$
- Power consumption current circuit < 0.85 W at  $I_{max}$
- Temperature range climatic condition as indoor meter according IEC 62051-11
- Display 6+1 digit (100 Wh resolution)
- Red LED for indication of energy flow and testing
- LED rate for energy flow 500 p/kWh
- Pulse output (WS0031 only) according to EN 62053-31:2001
- Pulse output rate 500 p/kWh
- Pulse output type optocoupler transistor-open collector

(see figures below) For monitoring purpose only Rail mountig according EN 60715 Power contacts capacity 2.5...16 mm<sup>2</sup> Connection screws M5 Pulse output contact capacity 1...2.5mm<sup>2</sup> Pulse output screws M3 Max torque 1.2 Nm

### Installation



### Overall dimensions





## WS 0101, WS 0102, WS 1102



### ► Direct connection 65 A

#### Application

The WSx30x meters are used for connection with current transformers. Optional also the measurement of apparent energy is possible. Housing is provided with terminals protection covers, which can be seal up against non-authorized access. They are built to be fastened to EN 60715 standard guides. The meters are microprocessor controlled. Display of quantities depends on meters type. They can be displayed on 7 digit electromechanical counter or on LCD display.

According to the customer's demands, meters can be equipped with a RS485 serial communication (option) with the MODBUS protocol, which enables data transmission and thus connection of the measuring places into the network for the control and management with energy. They can also be equipped with tariff input (option). A built-in pulse output (option) is designed for sending data to the devices for checking and monitoring consumed energy.



#### Features

- Connection with current transformer
- Industrial applications or meters with type approval according to European Directive 2004/22/EC MID (in progress)
- Active energy - class B in compliance with EN 50470-3, class 1 in compliance with EN 62053-21
- Reactive energy - class 2 in compliance with EN 62053-23
- Three-phase connection
- Energy measurement in both direction (import-export)
- Microprocessor control
- 7 digit energy counter (WS0301)
- Double 7 digit energy counter (WS0302)
- LCD 9 digit display (WS1302)
- Tariff inputs (option)
- Communication (option): RS485 (MODBUS protocol)
- Pulse outputs (option)
- Housing for DIN rail mounting
- Protective cover for terminals (possible seal up against non-authorized access)



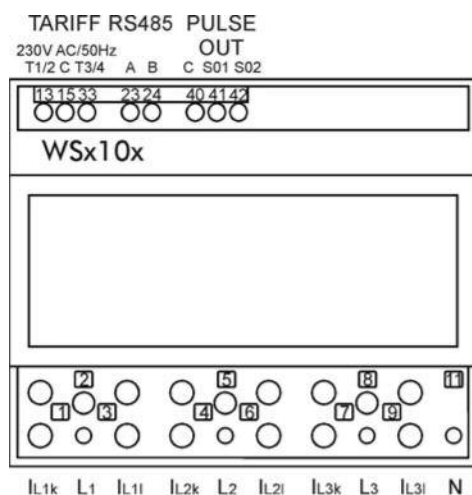
active energy meter



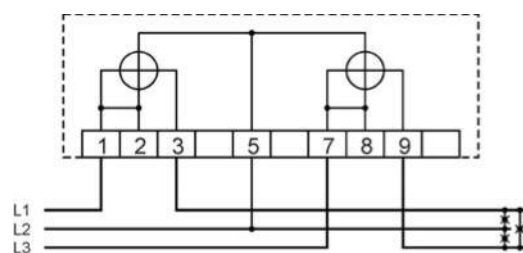
## WS 0101, WS 0102, WS 1102

### Connection

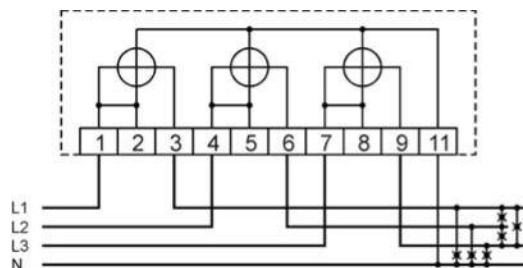
WS 0030 and WS 0031 are electronic three phase active energy meters. Meters measure positive active energy directly in 4- wire networks. There are two versions, one with pulse output (WS 0031) and the other without pulse output (WS 0030). Accuracy of the meters is class 1, according to the standard EN SIST 62053-21 for active energy meter. Meters can be mounted on a DIN-rail (3 pitch).



Picture 1: picture of connection terminals WSx10x

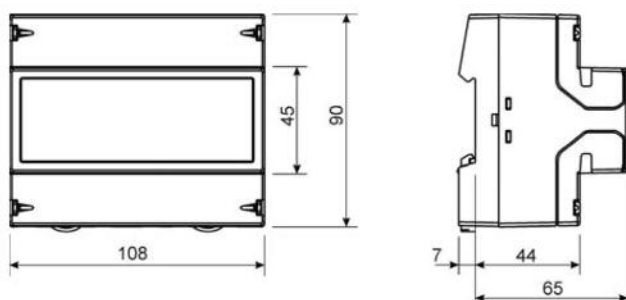


Picture 2: Three phase system  
(three wire unbalanced - 3u) WSx10x



Picture 3: Three phase system  
(four wire unbalanced - 4u) WSx10x

### Overall dimensions



## WS 0301, WS 0302, WS 1302



### ► Connection through CT

#### Application

The WSx10x energy meters are used for measuring energy using direct connection in three-phase systems with current up to 65A. Optional also the measurement of apparent energy is possible. Housing is provided with terminals protection covers, which can be seal up against non-authorized access. They are built to be fastened to EN 60715 standard guides. The meters are microprocessor controlled. Display of quantities depends on meters type. They can be displayed on 7 digit electromechanical counter or on LCD display.

According to the customer's demands, meters can be equipped with a RS485 serial communication (option) with the MODBUS protocol, which enables data transmission and thus connection of the measuring places into the network for the control and management with energy. They can also be equipped with tariff input (option). A built-in pulse output (option) is designed for sending data to the devices for checking and monitoring consumed energy.

#### Features

- Direct connection up to 65 A
- Industrial applications or meters with type approval according to European Directive 2004/22/EC MID (in progress)
- Active energy - class B in compliance with EN 50470-3, class 1 in compliance with EN 62053-21
- Reactive energy - class 2 in compliance with EN 62053-23
- Three-phase connection
- Energy measurement in both direction (import-export)
- Microprocessor control
- 7 digit energy counter (WS0101)
- Double 7 digit energy counter (WS0102)
- LCD 9 digit display (WS1102)
- Tariff inputs (option)
- Communication (option): RS485 (MODBUS protocol)
- Pulse outputs (option)
- Housing for DIN rail mounting
- Protective cover for terminals (possible seal up against non-authorized access)



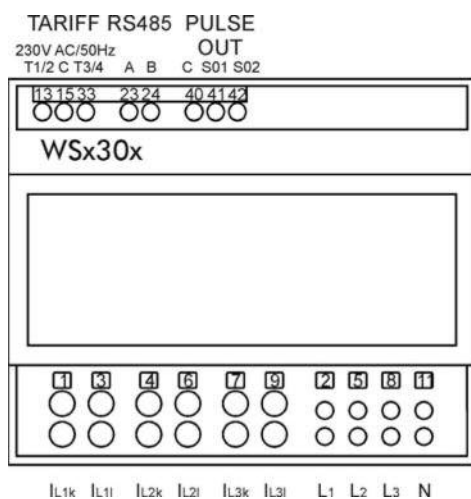
active energy meter



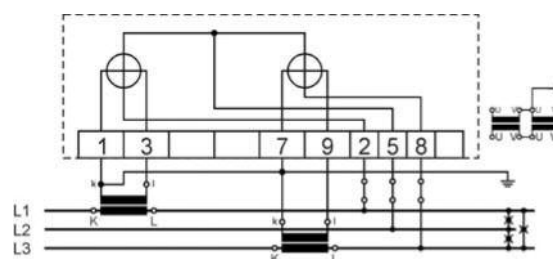
## WS 0301, WS 0302, WS 1302

### Connection

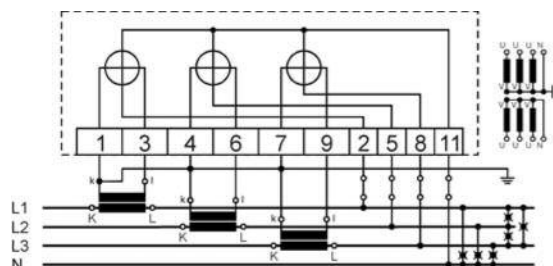
Meter terminals are positioned on the bottom and the top side of the meter and are covered with the protection cover. Current and voltage circuits are located on the bottom side as shown on the picture bellow. For the direct connection meters voltage inputs are equipped with protection bung, which allows you to physically break contact, before connecting or disconnecting voltage to the meter. On the top side are connection terminals for communication, Pulse outputs and tariff inputs (picture 1). A label with connection diagram is located on the bottom of the cover. Regarding to the meter version the meter connection can be three-phase with unbalanced load. Its measuring system can be performed either in 3 or 4-wire connection.



Picture 1: picture of connection terminals WSx30x

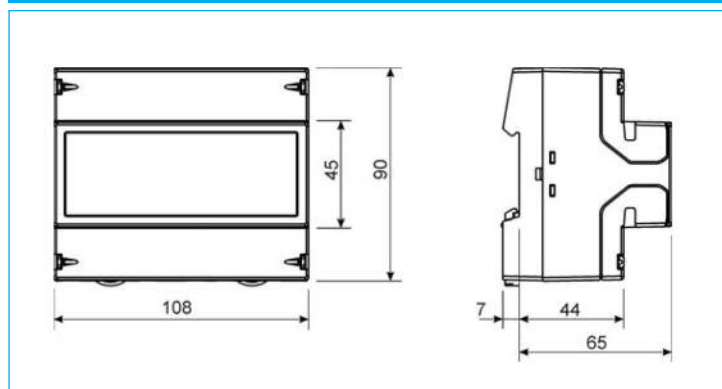


Picture 2 Three phase system (three wire unbalanced - 3u)  
WSx30x – for voltage circuits direct connection or connection with voltage transformer is used



Picture 3 Three phase system (four wire unbalanced - 4u)  
WSx30x – for voltage circuits direct connection or connection with voltage transformer is used

### Overall dimensions



digital active and reactive energy meter with measurement of active and reactive instantaneous power, set up for communication

## ► Direct connection 80 A

### Application

The energy-meters "with a green back-lighted LCD screen for perfect reading" are used to measure single-phase systems like in Residential, Utility and Industrial applications. Monitoring of the energy-consumption goes via a S0 pulse output. The products can be set up to communicate with LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces are used to analyze the energy-consumption to reduce the running cost to a minimum for Industrial plants and buildings like Offices, Hospitals, Universities etc.

- For information on the operation of the LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces, see page 29-41.



## EC1-80



### Function

#### Display

		Unit	ID
Active energy	Tariff 1	kWh	Energy absorbed or supplied
	Tariff 2	kWh	Energy absorbed or supplied
Reactive energy	Tariff 1	kvarh	Inductive or capacitive load
	Tariff 2	kvarh	Inductive or capacitive load
Active power		(k-M) W	Utilization and instantaneous value
Reactive power		(k-M) var	Utilization and instantaneous value

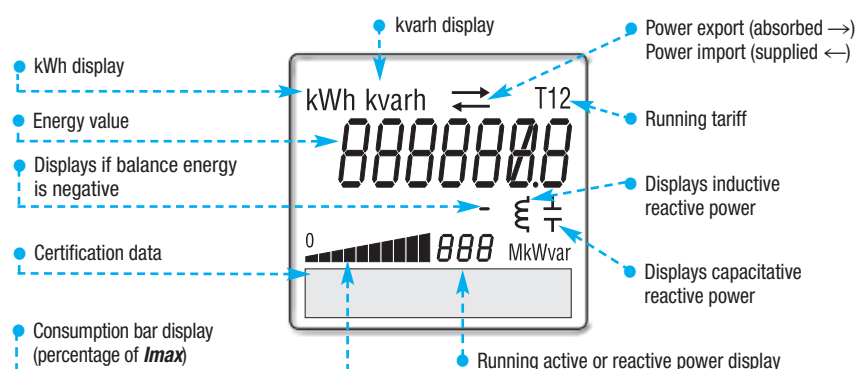
### Communication modules



for the technical data, see page 22-33.

### Display

Liquid crystal display with illuminated green background



## 2 standard module housing, suitable for DIN rail mounting

### Direct connection 80 A

Terminals S0 pulse output and Tariffs change command

Optic control IR

Precision control LED

Supply terminals 80 A direct connection Plug-and-play installation

Backlighting makes display easy to read

Space for the certification data can be provided on request MiD

Readout selection push button kWh and W or kvarh and var



### Sealable terminal covers





digital active and reactive energy meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 S0



## EC1-80



### ► Direct connection 80 A

### Overview

Active energy-meters for single-phase alternating current with either 1, 7 digits digital counters. These meters have 2 S0 output generating pulses for remote processing of the energy active and reactive measurements for 2 tariff.

- Green backlighted LCD
- For direct connection 80 A
- 7 digits for energy values indication
- Accuracy class 1 for active energy according to EN 50470-3 **(B)**
- Accuracy class 2 for reactive energy according to EN 62053-23
- The standard versions are designed to be combined with the communication module
- Energy register zero setting **(NO MiD)**
- Energy register for import and export
- Instantaneous power active and reactive display
- Sealable terminal covers
- 2 DIN modules wide (36 mm)

### Technical data

Data in compliance with EN 50470-1

#### General characteristics

• Housing	DIN 43880	DIN	2 modules
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70
• Reference standard	EN 50470-1-3, EN 62053-23-31	-	EN 50470-1-3, EN 62053-23-31

#### Operating features

• Connectivity	to single-phase network	n° wires	2
• Storage of energy values and configuration	digital display (EEPROM)	-	yes
• Display tariffs identifier	for active and reactive energy	n° 2	T1 and T2

#### Supply

• Rated control supply voltage $U_n$		VAC	230
• Operating range voltage		V	184 ... 276
• Rated frequency $f_n$		Hz	50
• Rated power dissipation (max.) $P_n$		VA (W)	≤8 (0.6)

#### Overload capability

• Voltage $U_n$	continuous	V	276
	momentary (1 s)	V	300
• Current $I_{max}$	continuous	A	80
	momentary (10 ms)	A	2400

#### Display (readouts)

• Display type	LCD	n° digits	7 (1 decimal)
	digit dimensions	mm x mm	6.00 x 3
• Active energy: 1 display, 7-digit + display import or export (arrow)	tariffs 1-2	kWh	000000.0 ... 999999.9
• Reactive energy: 1 display, 7-digit + display import or export (arrow)	overflow	kWh	999999.9 ... 000000.0
• Instantaneous active power: 1 display, 3-digit	tariffs 1-2	kvarh	000000.0 ... 999999.9
• Instantaneous reactive power: 1 display, 3-digit	overflow	kvarh	999999.9 ... 000000.0
• Instantaneous tariff measurement		W, kW or MW	000 ... 999
		var, kvar or Mvar	000 ... 999
		-	1
		-	T1 or T2
		s	1
• Display period refresh	1 display, 1-digit		

#### Measuring accuracy

• Active energy and power	at 23 ±1°C, referred to nominal values	%	±1 <b>(B)</b>
• Reactive energy and power	acc.to EN 50470-3	%	±2
	acc.to EN 62053-23		

#### Measuring input

• Type of connection	phase/N	-	direct
• Operating range voltage	phase/N	V	184 ... 276
• Current $I_{ref}$		A	15
• Current $I_{min}$		A	0.75
• Operating range current ( $I_{st} ... I_{min}$ )	direct connection	A	0.025 ... 80
• Frequency		Hz	50
• Input waveform		-	sinus. symm.
• Starting current for energy measurement ( $I_{st}$ )		mA	25

#### Pulse output S0

• Pulse output	acc.to EN 62053-31	-	yes
• Pulse quantity	for active and reactive energy T1 and T2	imp/kWh	1000
• Pulse duration		ms	30 ±2 ms
• Required voltage	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)
• Permissible current	pulse ON (max. 230 V AC/DC)	mA	90
• Permissible current	Impuls OFF (leakage cur. max. 230 V AC/DC)	μA	1

#### Optical interfaces

• Front side (accuracy control)	LED	imp/kWh	1000
---------------------------------	-----	---------	------

#### Safety acc. to EN 50470-1

• Indoor meter	-		yes
• Degree of pollution	-		4
• Operational voltage	V		300

digital active and reactive energy meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 SO

## EC1-80



### Technical data

Data in compliance with EN 50470-1			direct connection 80 A
<b>Safety acc. to EN 50470-1</b>			
• Impulse voltage test		1.2/50 µs-kV	6
• Housing material flame resistance	UL 94	class	V0
• Safety-sealing between upper and lower housing part (mod. 282551)		-	yes
<b>Adaptor for Communication</b>			
• Plug-and-play technology		-	•
• LAN Server (TCP/IP)	Ethernet 802.3	-	10/100 Mbps
• Modbus RTU, Ascii / RS-485	RS-485 - 2 wires	-	up to 19.200 bps
• Profibus DP-V0	RS-485 - 2 wires	-	up to 12 Mbps
• M-Bus	2 wires	-	up to 9.600 bps
• EIB-KNX	EIB-standard	-	up to 9.600 bps
<b>Connection terminals</b>			
• Type cage main current paths	screw head Z +/-	POZIDRIV	PZ2
• Type cage pulse output	blade for slotted screw	mm	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max.)	mm <sup>2</sup>	1.5 (35)
	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	1.5 (35)
	solid wire min. (max.)	mm <sup>2</sup>	0.14 (2.5)
	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	0.14 (1.5)
<b>Environmental conditions</b>			
• Mechanical environment		-	M1
• Electromagnetic environment		-	E2
• Operating temperature		°C	-10 ... +55
• Limit temperature of transportation and storage		°C	-25 ... +70
• Relative humidity (not condensation)		%	≤80
• Vibrations	50 Hz sinusoidal vibration amplitude	mm	±0.075
• Degree protection	housing when mounted in front (terminal)	-	IP51(*)/IP20

(\*) For the installation in a cabinet at least with IP51 protection.

### Selection and ordering data

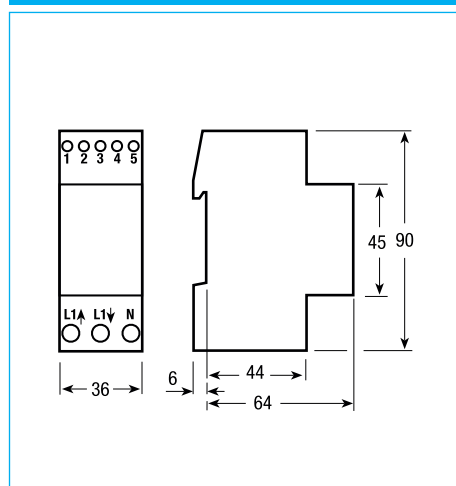
single-phase active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 modules DIN

Code	Code	Description
Energy register zero setting (not calibratable - MiD)	Energy with MiD calibration on board	
22.461.100.000	22.461.100.100	single-phase digital active and reactive energy-meter with direct connection 0.75-15 (80) A - 2 tariffs - 2 SO

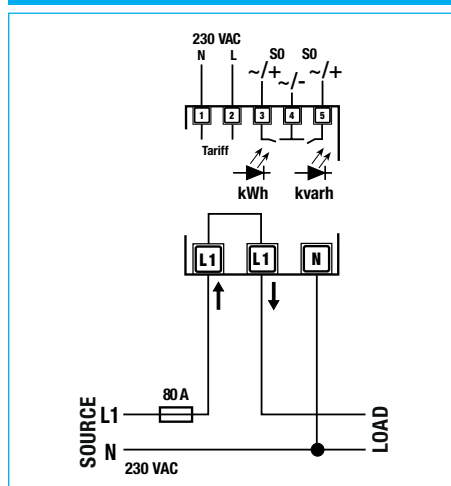
### Optional - additional communication modules - 1 or 2 modules DIN

<b>LAN</b>	<b>Modbus</b>	<b>RS-485</b>	for the technical data, see page 29-41.
<b>PROFIBUS</b>	<b>M-Bus</b>	<b>KNX EIB</b>	

### Overall dimensions

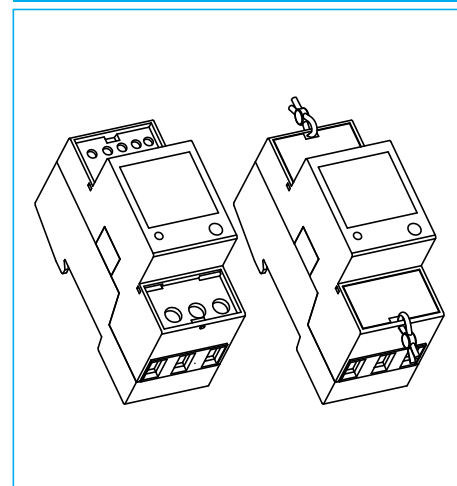


### Circuit diagrams



A fuse of 80 A is recommended for the line protection.

### Sealable terminal covers



# ENERGY-METERS THREE-PHASE

digital active and reactive energy-meters with measurement of active and reactive instantaneous power, set up for communication



## EC3-80, EC3-5

- ▶ Direct connection 80 A
- ▶ Connection through CT .../5 A till 10.000/5 A

### Application

The energy-meters "with a green back-lighted LCD screen for perfect reading" are used to measure three-phase systems or single-phase like in Residential, Utility and Industrial applications. Monitoring of the energy-consumption goes via a S0 pulse output. The products can be set up to communicate with LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces are used to analyze the energy-consumption to reduce the running cost to a minimum for Industrial plants and buildings like Offices, Hospitals, Universities etc.

- For information on the operation of the LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces, see page 29-41.

### Function

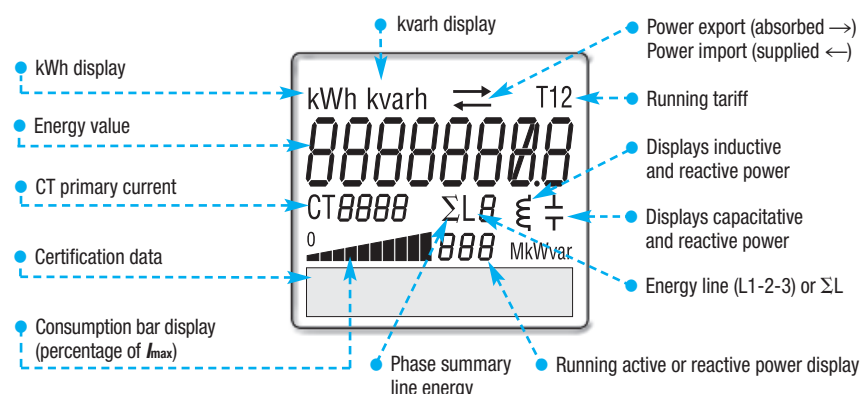
#### Display

		Unit	ID
Active energy	Tariff 1	kWh	Energy absorbed or supplied
	Tariff 2	kWh	Energy absorbed or supplied
Reactive energy	Tariff 1	kvarh	Inductive or capacitative load
	Tariff 2	kvarh	Inductive or capacitative load
Active power		(k-M) W	Utilization and instantaneous value
Reactive power		(k-M) var	Utilization and instantaneous value
Connection errors			PHASE Err
Primary transformer	5 ... 10.000/5	A	CT (current transformer)



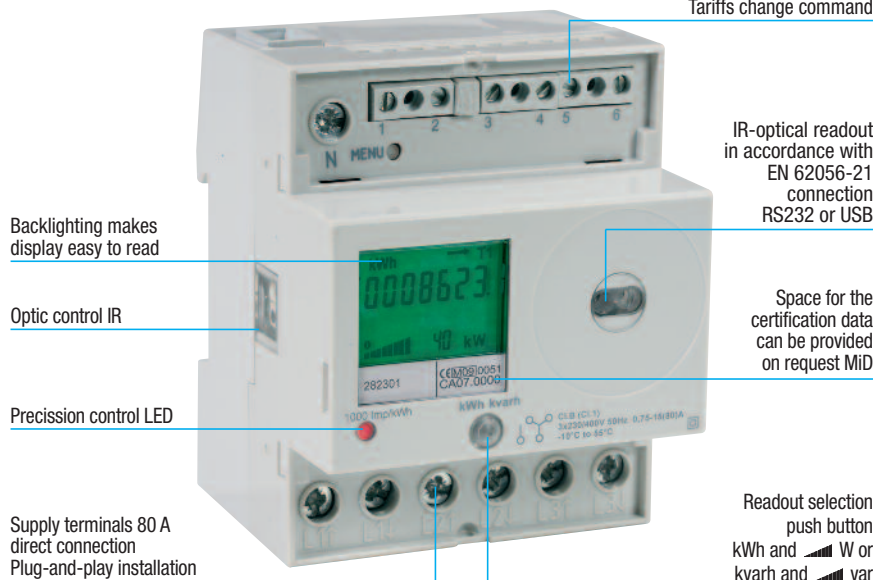
### Display

Liquid crystal display with illuminated green background



### 4 standard module housing, suitable for DIN rail mounting direct connection 80 A

Terminals S0 pulse outlet and Tariffs change command



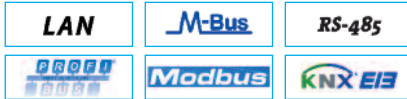


digital active and reactive energy-meters with measurement of active and reactive instantaneous power, set up for communication

## EC3-80, EC3-5



### Communication modules



for the technical data, see page 29-41.

### Optical interfaces

#### • IR

IR-optical readout in accordance with EN 62056-21 connection RS232 or USB



### 4 standard module housing, suitable for DIN rail mounting Connection through CT .../5 A till 10.000/5 A

CT selection (5 to 10.000/5 A - 5 A step)

Terminals S0 pulse outlet and Tariffs change command

Backlighting makes display easy to read

Optic control IR

Precision control LED

Supply terminals  
CT connection  
(5 to 10.000 A)  
Plug-and-play installation

IR-optical readout  
in accordance with  
EN 62056-21  
connection  
RS232 or USB

Space for the  
certification data  
can be provided  
on request MiD

Readout selection  
push button  
kWh and  $\frac{W}{h}$  or  
kvarh and  $\frac{var}{h}$



### Sealable terminal covers



# ENERGY-METERS THREE-PHASE

digital active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 S0



## EC3-80, EC3-5



- **Direct connection 80 A**
- **Connection through CT .../5 A**  
**till 10.000/5 A**

### Overview

Active energy-meters for three-phase alternating current with either 1, 8 digits digital counters.  
These meters have 2 S0 output generating pulses for remote processing of the instantaneous energy active and reactive measurements for 2 tariff.

- Green backlit LCD
- For direct connection 80 A, or for transformer .../5 A
- For transformer primary current of 5 A to 10.000/5 A. Input is in 5 A increments
- 8 digits - 8 display for energy values indication
- Parameter also readings from front mounted IR in accordance with EN 62056-21
- Detection of connection errors (phase transposition)
- Accuracy class 1 for active energy according to EN 50470-3 (B)
- Accuracy class 2 for reactive energy according to EN 62053-23
- The standard versions are designed to be combined with the communication module
- Energy register zero setting (**NO MID**)
- Energy register for import and export
- Instantaneous power active and reactive display
- Sealable terminal covers
- 4 DIN modules wide (72 mm)

### Technical data

Data in compliance with EN 50470-1

#### General characteristics

	direct connection 80 A	CT connection till 10.000/5 A
• Housing	DIN 43880	DIN 43880
• Mounting	EN 60715	EN 60715
• Depth	70 mm	70 mm
• Reference standard	EN 50470-1-3, EN 62053-23-31	EN 50470-1-3, EN 62053-23-31

#### Operating features

• Connectivity	to single/three-phase network	n° wires	2-3-4	3-4
• Storage of energy values and configuration	digital display (EEPROM)	-	yes	yes
• Display tariffs identifier	for active and reactive energy	n° 2	T1 and T2	T1 and T2

#### Supply

• Rated control supply voltage $U_n$	VAC	230	230
• Operating range voltage	V	184 ... 276	184 ... 276
• Rated frequency $f_n$	Hz	50	50
• Rated power dissipation (max. for phase) $P_v$	VA (W)	≤8 (0.6)	≤8 (0.6)

#### Overload capability

• Voltage $U_n$	continuous; phase/phase	V	480	480
	1 second; phase/phase	V	800	800
	continuous; phase/N	V	276	276
	1 second; phase/N	V	460	460
	continuous	A	80	6
	momentary (0,5 s)	A	-	120
	momentary (10 ms)	A	2400	-

#### Display (readouts)

• Connection errors and phase out	discernible from phase-sequence indic.	-	PHASE Err	PHASE Err
• Display type	LCD	n° digits	8 (1 decimal)	8
	digit dimensions	mm x mm	6.00 x 3	6.00 x 3
• Active energy: 1 display, 8 digit	tariffs 2	kWh	0000000.0 ... 9999999.9	0000000.0 ... 9999999.9
+ display import or export (arrow)	overflow	kWh	9999999.9 ... 0000000.0	9999999.9 ... 0000000.0
• Reactive energy: 1 display, 8-digit	tariffs 2	kvarh	0000000.0 ... 9999999.9	0000000.0 ... 9999999.9
+ display import or export (arrow)	overflow	kvarh	9999999.9 ... 0000000.0	9999999.9 ... 0000000.0
• Instantaneous active power: 1 display, 3-digit		W, kW or MW	000 ... 999	000 ... 999
• Instantaneous reactive power: 1 display, 3-digit		var, kvar or Mvar	000 ... 999	000 ... 999
• Instantaneous tariff measurement	1 display, 1-digit	-	T1 or T2	T1 or T2
• Transformer primary current		A	-	5 ... 10.000
• Display period refresh		s	2	2

#### Measuring accuracy

• Active energy and power	at 23 ±1°C, referred to nominal values	class 1	±1% (B)	±1% (B)
• Reactive energy and power	acc.to EN 50470-3	class 2	±2%	±2%
	acc.to EN 62053-23			

#### Measuring input

• Type of connection	direct	transformer .../5 A
• Voltage $U_n$	400	400
	230	230
• Operating range voltage	319 ... 480	319 ... 480
	184 ... 276	184 ... 276
	15	-
	-	5
• Current $I_{ref}$	0.75	0.05
• Current $I_n$	0.025 ... 80	-
• Current $I_n$	-	0.010 ... 6
• Operating range current ( $I_{st} ... I_{max}$ )	-	5 ... 10.000
	-	5
• Transformer current	-	50
	-	sinus. symm.
• Frequency	50	sinus. symm.
• Input waveform	sinus. symm.	25
• Starting current for energy measurement ( $I_{st}$ )	25	10

digital active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 SO

## EC3-80, EC3-5



### Technical data

Data in compliance with EN 50470-1			direct connection 80 A	CT connection till 10.000/5 A
<b>Pulse output S0</b>				
• Pulse output	acc.to EN 62053-31	-	yes	yes
• Terminal output	for act. and react. energy T1 and T2	Imp/kWh	500	-
	for direct connection 80 A	Imp/kWh	-	100-10-1
	depending on the transf. factor, adjus.	ms	30 ±2 ms	30 ±2 ms
• Pulse duration	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)
• Required voltage	pulse ON (max. 230 V AC/DC)	mA	90	90
• Permissible current	Imp. OFF (leak. cur. max. 230 V AC/DC)	µA	1	1
<b>Optical interfaces</b>				
• Front side ( <i>accuracy control</i> )	LED	imp/kWh	1000	10.000
<b>Safety acc. to EN 50470-1</b>				
• Indoor meter		-	yes	yes
• Degree of pollution		-	4	4
• Operational voltage		V	600	600
• Impulse voltage test		1.2/50 µs-kV	6	6
• Housing material flame resistance	UL 94	class	V0	V0
• Safety-sealing between upper and lower housing part ( <b>mod. 282331-282141</b> )		-	yes	yes
<b>Adaptor for Communication</b>				
• Plug-and-play technology		-	•	•
• LAN Server (TCP/IP)	Ethernet 802.3	-	10/100 Mbps	10/100 Mbps
• Modbus RTU, Ascii / RS-485	RS-485 - 2 wires	-	up to 19.200 bps	up to 19.200 bps
• Profibus DP-V0	RS-485 - 2 wires	-	up to 12 Mbps	up to 12 Mbps
• M-Bus	2 wires	-	up to 9.600 bps	up to 9.600 bps
• EIB-KNX	EIB-standard	-	up to 9.600 bps	up to 9.600 bps
<b>Connection terminals</b>				
• Type cage main current paths	screw head Z +/-	POZIDRIV	PZ2	PZ1
• Type cage pulse output	blade for slotted screw	mm	0.8 x 3.5	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max.)	mm <sup>2</sup>	1.5 (35)	1.5 (6)
	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	1.5 (35)	1.5 (6)
	solid wire min. (max.)	mm <sup>2</sup>	0.14 (2.5)	0.14 (2.5)
	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	0.14 (1.5)	0.14 (1.5)
• Terminal capacity pulse outlet				
<b>Environmental conditions</b>				
• Mechanical environment		-	M1	M1
• Electromagnetic environment		-	E2	E2
• Operating temperature		°C	-10 ... +55	-10 ... +55
• Limit temperature of transportation and storage		°C	-25 ... +70	-25 ... +70
• Relative humidity (not condensation)		%	≤80	≤80
• Vibrations	50 Hz sinusoidal vibration amplitude	mm	±0.075	±0.075
• Degree protection	housing when mounted in front (term.)	-	IP51(*)/IP20	IP51(*)/IP20

(\*) For the installation in a cabinet at least with IP51 protection.

### Selection and ordering data

three-phase active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 4 modules DIN

Code	Code	Description
Energy register zero setting (not calibratable - MiD)	Energy with MiD calibration on board	
22.461.300.000	22.461.300.100	three-phase digital active and reactive energy-meter with direct connection 0.75-15 (80) A - 2 tariffs - 2 SO
22.461.400.000	22.461.400.100	three-phase digital active and reactive energy-meter with connection by CT .../5 A, up to 10.000/5 A - 0.05 ... 5 (6) A - 2 tariffs - 2 SO

### Optional - additional communication modules - 1 or 2 modules DIN

<b>LAN</b>	<b>Modbus</b>	<b>RS-485</b>	for the technical data, see page 29-41.

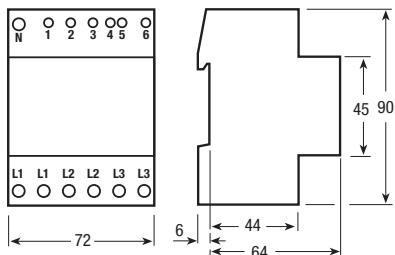
# ENERGY-METERS THREE-PHASE

digital active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 S0

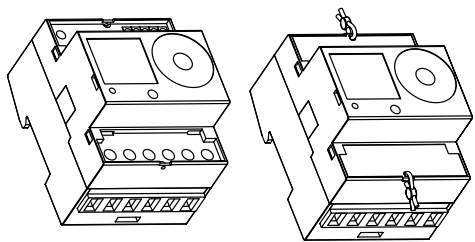


## EC3-80

### Overall dimensions

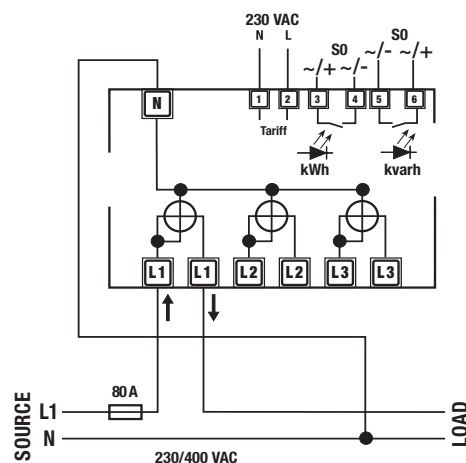
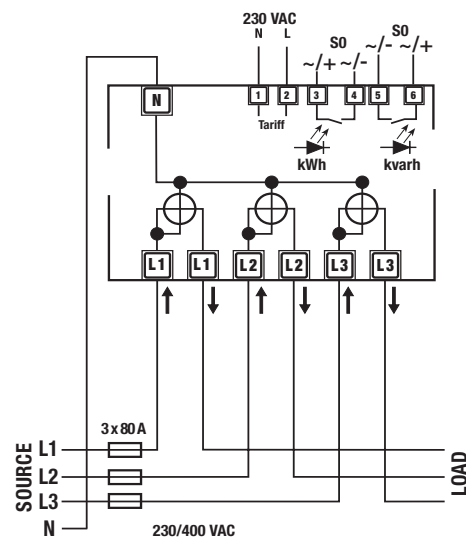
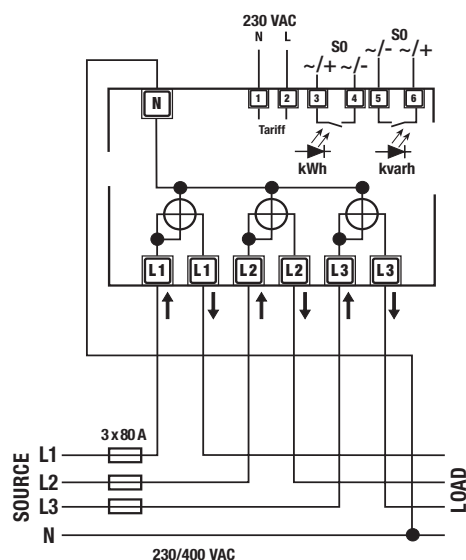


### Sealable terminal covers



A fuse of 80 A is recommended for the line protection.

### Circuit diagrams



Wire N needs to be connected to the meter in order to obtain precision

# ENERGY-METERS THREE-PHASE

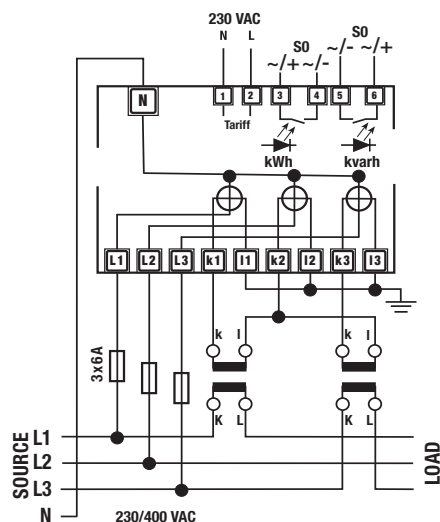
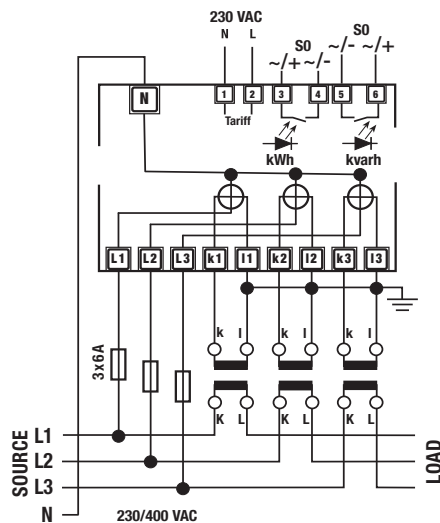
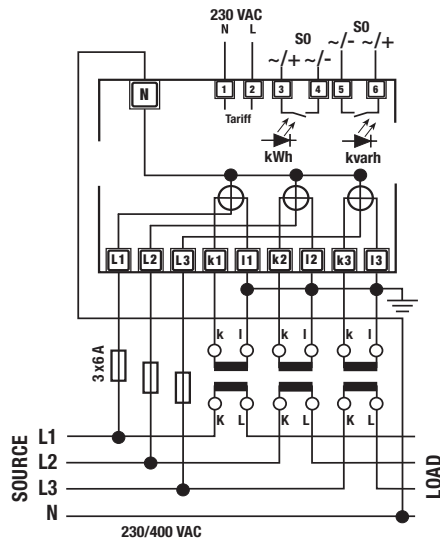
digital active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 SO

► Connection through CT .../5 A till 10.000/5 A

EC3-5

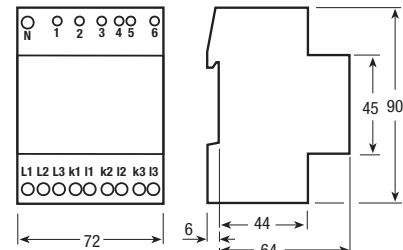


## Circuit diagrams

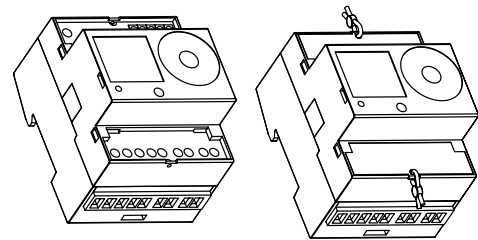


Wire N needs to be connected to the meter in order to obtain precision

## Overall dimensions



## Sealable terminal covers



## Instructions for the connection of transformer counters

A fuse of 6 A is recommended for the line protection.  
Current transformers must not be operated with open terminals since dangerous high voltages might occur which may result in personal injuries and property damage.  
In addition to this, the transformers are exposed to thermal overload.

# ENERGY-METERS SINGLE-PHASE

digital active and reactive energy meter with measurement of active and reactive instantaneous power, set up for communication



## EC1-125

► Direct connection 125 A

### Application

The energy-meters "with a green back-lighted LCD screen for perfect reading" are used to measure single-phase systems like in Residential, Utility and Industrial applications.

Monitoring of the energy-consumption goes via a S0 pulse output. The products can be set up to communicate with LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces are used to analyze the energy-consumption to reduce the running cost to a minimum for Industrial plants and buildings like Offices, Hospitals, Universities etc.

- For information on the operation of the LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces, see page 29-41.



### Function

#### Display

		Unit	ID
Active energy	Tariff 1	kWh	Energy absorbed or supplied
	Tariff 2	kWh	Energy absorbed or supplied
Reactive energy	Tariff 1	kvarh	Inductive or capacitative load
	Tariff 2	kvarh	Inductive or capacitative load
Active power		(k-M) W	Utilization and instantaneous value
Reactive power		(k-M) var	Utilization and instantaneous value

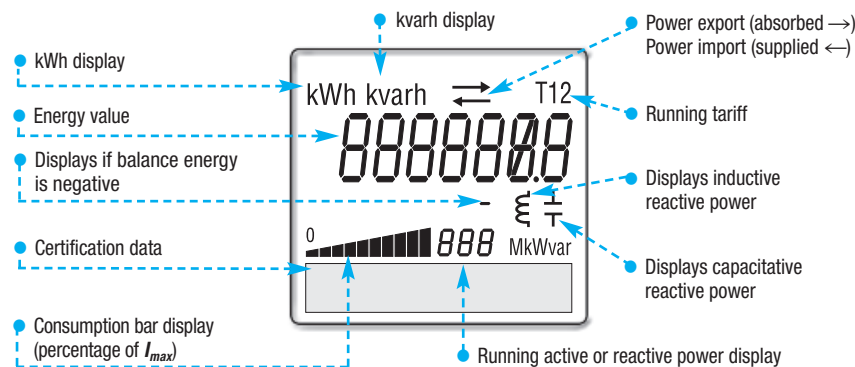
### Communication modules



for the technical data, see page 29-41.

### Display

Liquid crystal display with illuminated green background



### 3 standard module housing, suitable for DIN rail mounting

Direct connection 125 A

Terminals S0 pulse outlet and Tariffs change command

Optic control IR

Precision control LED

Supply terminals  
125 A direct connection  
Plug-and-play installation



Backlighting makes display easy to read

Space for the certification data can be provided on request MiD

Readout selection push button  
kWh and  $\frac{W}{h}$  or  
kvarh and  $\frac{var}{h}$

### Sealable terminal covers





digital active and reactive energy meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 SO

## Overview

Active energy-meters for single-phase alternating current with either 1, 7 digits digital counters. These meters have 2 SO output generating pulses for remote processing of the energy active and reactive measurements for 2 tariff.

- Green backlit LCD
- For direct connection 125 A
- 7 digits for energy values indication
- Accuracy class 1 for active energy according to EN 50470-3 (B)
- Accuracy class 2 for reactive energy according to EN 62053-23
- The standard versions are designed to be combined with the communication module
- Energy register zero setting (NO Mid)
- Energy register for import and export
- Instantaneous power active and reactive display
- Sealable terminal covers
- 3 DIN modules wide (52 mm)

► Direct connection 125 A

## EC1-125



## Technical data

Data in compliance with EN 50470-1

### General characteristics

• Housing	DIN 43880	DIN	3 modules
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70
• Reference standard	EN 50470-1-3, EN 62053-23-31	-	EN 50470-1-3, EN 62053-23-31

### Operating features

• Connectivity	to single-phase network	n° wires	2
• Storage of energy values and configuration	digital display (EEPROM)	-	yes
• Display tariffs identifier	for active and reactive energy	n° 2	T1 and T2

### Supply

• Rated control supply voltage $U_n$		VAC	230
• Operating range voltage		V	184 ... 276
• Rated frequency $f_n$		Hz	50
• Rated power dissipation (max.) $P_v$		VA (W)	≤8 (0.6)

### Overload capability

• Voltage $U_n$	continuous	V	276
	momentary (1 s)	V	300
• Current $I_{max}$	continuous	A	125
	momentary (10 ms)	A	3750

### Display (readouts)

• Display type	LCD	n° digits	7 (1 decimal)
	digit dimensions	mm x mm	6.00 x 3
• Active energy: 1 display, 7-digit + display import or export (arrow)	tariffs 1-2	kWh	000000.0 ... 999999.9
• Reactive energy: 1 display, 7-digit + display import or export (arrow)	overflow	kWh	999999.9 ... 000000.0
• Instantaneous active power: 1 display, 3-digit	tariffs 1-2	kvarh	000000.0 ... 999999.9
• Instantaneous reactive power: 1 display, 3-digit	overflow	kvarh	999999.9 ... 000000.0
• Instantaneous tariff measurement		W, kW or MW	000 ... 999
		var, kvar or Mvar	000 ... 999
		-	1
		-	T1 or T2
• Display period refresh	1 display, 1-digit	s	2

### Measuring accuracy

• Active energy and power	at 23 ±1°C, referred to nominal values	%	±1 (B)
• Reactive energy and power	acc.to EN 50470-3	%	±2
	acc.to EN 62053-23	%	±2

### Measuring input

• Type of connection	phase/N	-	direct
• Operating range voltage	phase/N	V	184 ... 276
• Current $I_{ref}$		A	10
• Current $I_{max}$		A	0.5
• Operating range current ( $I_{st} ... I_{min}$ )	direct connection	A	0.10 ... 125
• Frequency		Hz	50
• Input waveform		-	sinus. symm.
• Starting current for energy measurement ( $I_{st}$ )		mA	50

### Pulse output SO

• Pulse output	acc.to EN 62053-31	-	yes
• Pulse quantity	for active and reactive energy T1 and T2	imp/kWh	1000
• Pulse duration		ms	30 ±2 ms
• Required voltage	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)
• Permissible current	pulse ON (max. 230 V AC/DC)	mA	90
• Permissible current	Impuls OFF (leakage cur. max. 230 V AC/DC)	μA	1

### Optical interfaces

• Front side (accuracy control)	LED	imp/kWh	1000
---------------------------------	-----	---------	------

### Safety acc. to EN 50470-1

• Indoor meter	-	yes
• Degree of pollution	-	4
• Operational voltage	V	300

# ENERGY-METERS SINGLE-PHASE

digital active and reactive energy meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 S0



## EC1-125

### Technical data

Data in compliance with EN 50470-1			<b>direct connection 125 A</b>
<b>Safety acc. to EN 50470-1</b>			
• Impulse voltage test	1.2/50 µs-kV	class	6
• Housing material flame resistance	-		V0
• Safety-sealing between upper and lower housing part UL 94	-		yes
<b>Adaptor for Communication</b>			
• Plug-and-play technology	-		•
• LAN Server (TCP/IP)	Ethernet 802.3		10/100 Mbps
• Modbus RTU, Ascii / RS-485	RS-485 - 2 wires		up to 19.200 bps
• Profibus DP-V0	RS-485 - 2 wires		up to 12 Mbps
• M-Bus	2 wires		up to 9.600 bps
• EIB-KNX	EIB-standard		up to 9.600 bps
<b>Connection terminals</b>			
• Type cage main current paths	screw head Z +/-	POZIDRIV	PZ2
• Type cage pulse output	blade for slotted screw	mm	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max.)	mm <sup>2</sup>	1.5 (50)
	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	1.5 (50)
	solid wire min. (max.)	mm <sup>2</sup>	0.14 (2.5)
	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	0.14 (1.5)
<b>Environmental conditions</b>			
• Mechanical environment	-		M1
• Electromagnetic environment	-		E2
• Operating temperature	°C		-10 ... +55
• Limit temperature of transportation and storage	°C		-25 ... +70
• Relative humidity (not condensation)	%		≤80
• Vibrations	50 Hz sinusoidal vibration amplitude	mm	±0.075
• Degree protection	housing when mounted in front (terminal)	-	IP51(*)/IP20

(\*) For the installation in a cabinet at least with IP51 protection.

### Selection and ordering data

single-phase active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 3 modules DIN

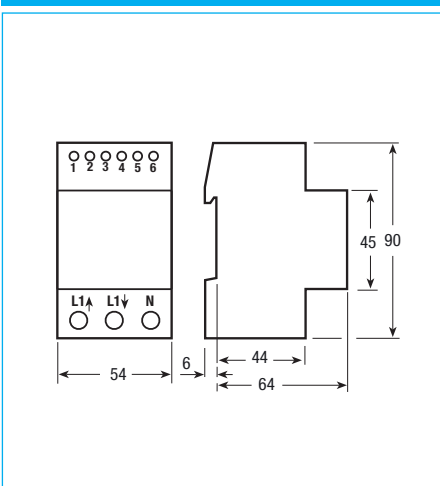
Code	Code	Description
Energy register zero setting (not calibratable - MiD)	Energy with MiD calibration on board	
22.461.200.000	22.461.200.100	single-phase digital active and reactive energy-meter with direct connection 0.5-10 (125) A - 2 tariffs - 2 S0

### Optional - additional communication modules - 1 or 2 modules DIN

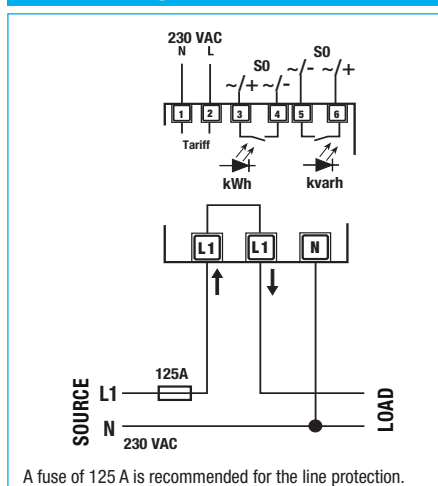
<b>LAN</b>	<b>Modbus</b>	<b>RS-485</b>
<b>M-Bus</b>	<b>KNX EIB</b>	

for the technical data, see page 29-41.

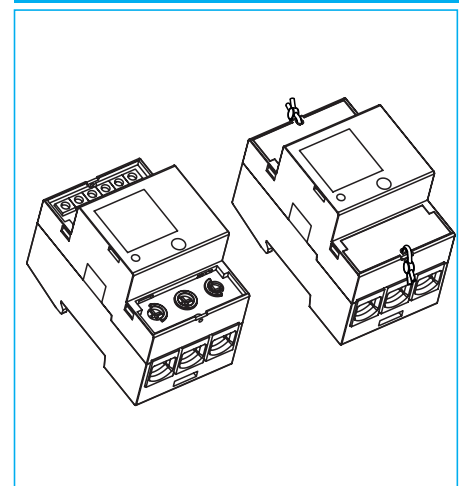
### Overall dimensions



### Circuit diagrams



### Sealable terminal covers





digital active and reactive energy-meter with measurement of active and reactive instantaneous power, set up for communication

## ► Direct connection 125 A

### Application

The energy-meters "with a green back-lighted LCD screen for perfect reading" are used to measure three-phase systems or single-phase like in Residential, Utility and Industrial applications. Monitoring of the energy-consumption goes via a S0 pulse output. The products can be set up to communicate with LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces are used to analyze the energy-consumption to reduce the running cost to a minimum for Industrial plants and buildings like Offices, Hospitals, Universities etc.

- For information on the operation of the LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces, see page 29-41.

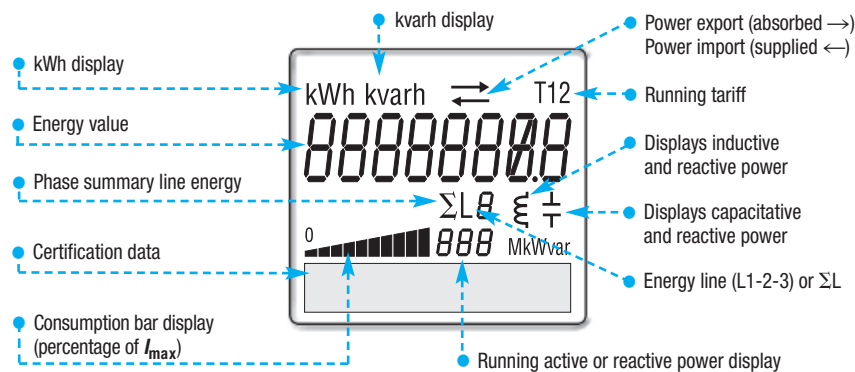
### Function

#### Display

		Unit	ID
Active energy	Tariff 1	kWh	Energy absorbed or supplied
	Tariff 2	kWh	Energy absorbed or supplied
Reactive energy	Tariff 1	kvarh	Inductive or capacitative load
	Tariff 2	kvarh	Inductive or capacitative load
Active power		(k-M) W	Utilization and instantaneous value
Reactive power		(k-M) var	Utilization and instantaneous value
Connection errors			PHASE Err

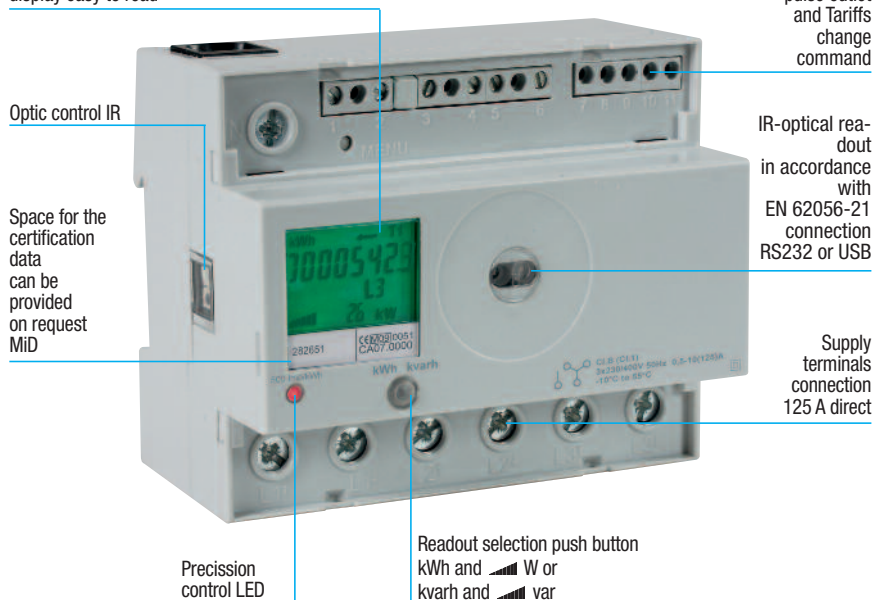
### Display

Liquid crystal display with illuminated green background



## 6 standard module housing, suitable for DIN rail mounting direct connection 125 A

Backlighting makes display easy to read



## EC3-125



### Communication modules



for the technical data, see page 22-33.



### Optical interfaces

#### • IR

IR-optical readout in accordance with EN 62056-21 connection RS232 or USB



### Sealable terminal covers



# ENERGY-METERS THREE-PHASE

digital active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 S0



## EC3-125



► Direct connection 125 A

### Overview

Active energy-meters for three-phase alternating current with either 1, 8 digits digital counters. These meters have 2 S0 output generating pulses for remote processing of the instantaneous energy active and reactive measurements for 2 tariff.

- Green backlighted LCD
- For direct connection 125 A
- 8 digits - 8 display for energy values indication
- Parameter also readings from front mounted IR in accordance with EN 62056-21
- Accuracy class 1 for active energy according to EN 50470-3 **(B)**
- Accuracy class 2 for reactive energy according to EN 62053-23
- The standard versions are designed to be combined with the communication module
- Energy register zero setting **(NO Mid)**
- Energy register for import and export
- Instantaneous power active and reactive display
- Sealable terminal covers
- 6 DIN modules wide (108 mm)

### Technical data

Data in compliance with EN 50470-1

#### General characteristics

• Housing	DIN 43880	DIN	6 modules
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70
• Reference standard	EN 50470-1-3, EN 62053-23-31	-	EN 50470-1-3, EN 62053-23-31

#### Operating features

• Connectivity	to single/three-phase network	n° wires	2-3-4
• Storage of energy values and configuration	digital display (EEPROM)	-	yes
• Display tariffs identifier	for active and reactive energy	n° 2	T1 and T2

#### Supply

• Rated control supply voltage $U_n$		VAC	230
• Operating range voltage		V	184 ... 276
• Rated frequency		Hz	50
• Rated power dissipation (max.) $P_v$		VA (W)	≤8 (0.6)

#### Overload capability

• Voltage $U_n$	continuous; phase/phase	V	480
	1 second: phase/phase	V	800
	continuous; phase/N	V	276
	1 second: phase/N	V	460
• Current $I_{max}$	continuous	A	125
	momentary (10 ms)	A	4500

#### Display (readouts)

• Connection errors and phase out	discernible from phase-sequence indication	-	PHASE Err
• Display type	LCD	n° digits	8
	digit dimensions	mm x mm	6.00 x 3
• Active energy: 1 display, 8 digit	tariffs 2	kWh	0000000.0 ... 9999999.9
+ display import or export (arrow)	overflow	kWh	9999999.9 ... 0000000.0
• Reactive energy: 1 display, 8 digit	tariffs 2	kvarh	0000000.0 ... 9999999.9
+ display import or export (arrow)	overflow	kvarh	9999999.9 ... 0000000.0
• Instantaneous active power: 1 display, 3 digit		W, kW or MW	000 ... 999
• Instantaneous reactive power: 1 display, 3 digit		var, kvar or Mvar	000 ... 999
• Instantaneous tariff measurement		-	1
		-	T1 or T2
		s	2
• Display period refresh	1 display, 1-digit		

#### Measuring accuracy

• Active energy and power	at 23 ±1°C, referred to nominal values		
• Reactive energy and power	acc.to EN 50470-3	class 1	±1% <b>(B)</b>
	acc.to EN 62053-23	class 2	±2%

#### Measuring input

• Type of connection			direct
• Voltage $U_n$	phase/phase	V	400
	phase/N	V	230
• Operating range voltage	phase/phase	V	139 ... 480
	phase/N	V	184 ... 276
• Current $I_{ref}$		A	10
• Current $I_{min}$		A	0.5
• Operating range current ( $I_{st}... I_{max}$ )	direct connection	A	0.10 ... 125
• Frequency		Hz	50
• Input waveform		-	sinus. symm.
• Starting current for energy measurement ( $I_{st}$ )		mA	50

#### Pulse output S0

• Pulse output	acc.to EN 62053-31	-	yes
• Terminal output	for active and reactive energy T1 and T2	Imp/kWh	100
• Pulse duration		ms	30 ±2 ms
• Required voltage	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)
• Permissible current	pulse ON (max. 230 V AC/DC)	mA	90
• Permissible current	Impuls OFF (leakage cur. max. 230 V AC/DC)	µA	1

#### Optical interfaces

• Front side (accuracy control)	LED	imp/kWh	500
---------------------------------	-----	---------	-----

#### Safety acc. to EN 50470-1

• Indoor meter	-		yes
• Degree of pollution	-		4

digital active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 S0

## EC3-125



### Technical data

Data in compliance with EN 50470-1			direct connection 125 A
<b>Safety acc. to EN 50470-1</b>			
• Operational voltage		V	300
• Impulse voltage test		1.2/50 µs-kV	6
• Housing material flame resistance	UL 94	class	V0
• Safety-sealing between upper and lower housing part (mod. 282651)		-	yes
<b>Adaptor for Communication</b>			
• Plug-and-play technology		-	•
• LAN Server (TCP/IP)	Ethernet 802.3	-	10/100 Mbps
• Modbus RTU, Ascii / RS-485	RS-485 - 2 wires	-	up to 19.200 bps
• Profibus DP-V0	RS-485 - 2 wires	-	up to 12 Mbps
• M-Bus	2 wires	-	up to 9.600 bps
• EIB-KNX	EIB-standard	-	up to 9.600 bps
<b>Connection terminals</b>			
• Type cage main current paths	screw head Z +/-	POZIDRIV	PZ2
• Type cage pulse output	blade for slotted screw	mm	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max.)	mm <sup>2</sup>	1.5 (50)
	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	1.5 (50)
	solid wire min. (max.)	mm <sup>2</sup>	0.14 (2.5)
• Terminal capacity pulse outlet	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	0.14 (1.5)
<b>Environmental conditions</b>			
• Mechanical environment		-	M1
• Electromagnetic environment		-	E2
• Operating temperature		°C	-10 ... +55
• Limit temperature of transportation and storage		°C	-25 ... +70
• Relative humidity (not condensation)		%	≤80
• Vibrations	50 Hz sinusoidal vibration amplitude	mm	±0.075
• Degree protection	housing when mounted in front (terminal)	-	IP51(*)/IP20

(\*) For the installation in a cabinet at least with IP51 protection.

### Selection and ordering data

three-phase active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 6 modules DIN

Code	Code	Description
Energy register zero setting (not calibratable - MiD)	Energy with MiD calibration on board	
22.461.500.000	22.461.500.100	three-phase digital active and reactive energy-meter with direct connection 0.5-10 (125) A - 2 tariffs - 2 S0

### Optional - additional communication modules - 1 or 2 modules DIN

LAN	Modbus	RS-485	for the technical data, see page 29-41.
	M-Bus	KNX EIB	

# ENERGY-METERS THREE-PHASE

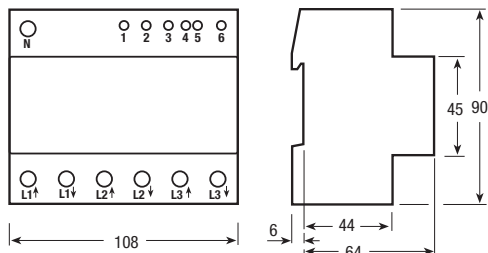
digital active and reactive energy-meter with measurement of active and reactive instantaneous power,  
set up for communication - 2 tariffs - 2 S0



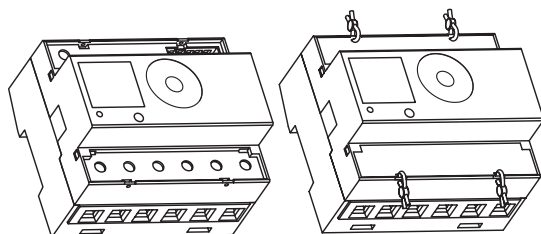
## EC3-125

### ► Direct connection 125 A

#### Overall dimensions

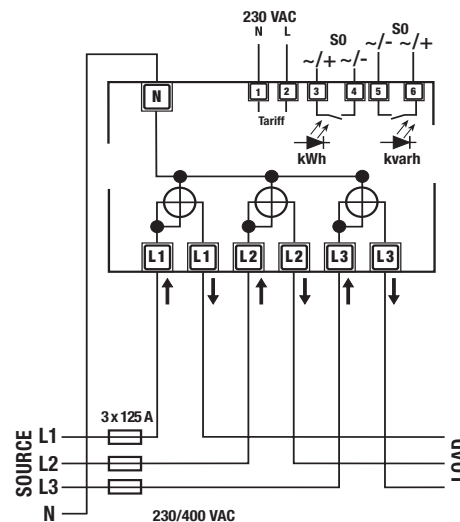
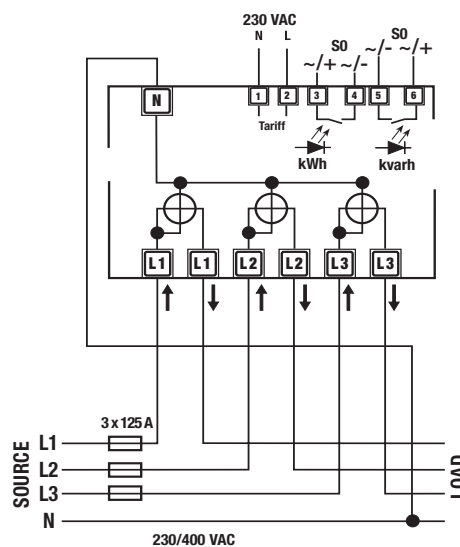


#### Sealable terminal covers

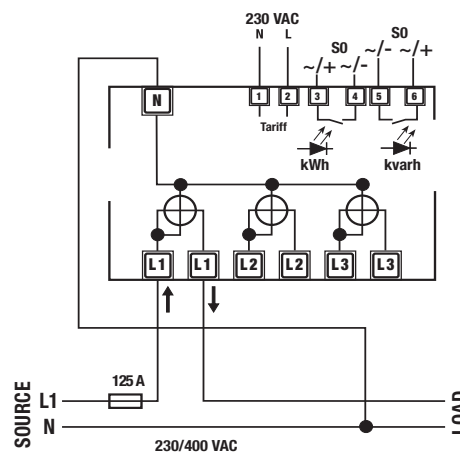


A fuse of 125 A is recommended for the line protection.

#### Circuit diagrams



Wire N needs to be connected to the meter in order to obtain precision



With the 1P+N system the display backlight is not active

# 2

## Communication

### Interface

LAN



**LAN-TCP/IP**

1 module DIN

page **30**

### Interface

Modbus



**Modbus RTU and Ascii**

1 module DIN

page **32**

### Interface

RS-485



**RS-485**

1 module DIN

page **34**

### Interface

M-Bus



**M-Bus**

1 module DIN

page **36**

### Interface

Profibus



**Profibus DP-V0**

2 modules DIN

page **38**

### Interface

KNX EIB



**EIB-KNX**

1 module DIN

page **40**



## LAN-TCP/IP INTERFACE



### Application

The product is intended to be placed side by side to an energy meter of its family, equipped with an Infra-Red port on the side, to the aim to collect the measurements data from the instrument and to transmit them to a remote collection station through a TCP/IP network. It can be used in a local network (LAN) or a geographic network (WAN), so that the product is also suitable for remote data collection via Internet. The communication module automatically recognizes the instrument connected to its Infra Red port and is in the position to transmit all the data provided by the instrument itself. Two types of modules exist. Type 1 communicates only the energies and power accounts; additional electrical quantities (voltage, current, frequency,  $\cos\varphi$ ) are transmitted by Type 2.

### Function

#### Configuration

Like all the most recent network devices, the product offers a web-based configuration interface. All the parameters that can be modified by the user can be set simply connecting to the apparatus through a normal web browser on a preset IP address. Such parameters are for instance the network parameters (IP address, subnet mask and gateway or DHCP), and the general settings.

#### Plug and play

The interface is enabled to recognize automatically the instrument connected to its Infra-Red port. This is an advantage in terms of flexibility, because the same interface can be connected, for instance, to single-phase or three-phase energy meters

#### Measurements limits management

Limits for the measured quantities can be set via Web browser. The interface can send a warning message in case the value of the measurements is beyond the limits. The management of such warning is performed by the interface itself.

#### Storage of the measurements

The measurements in transit from the instrument towards the TCP/IP network can be intercepted and stored inside the communication module itself, until the saturation of the space of memory available. The saturation condition depends, of course, on sampling frequency of the measurements and on the number of measurements (related to the type of energy meter connected to InfraRed port, for instance single-phase or three-phase). The data can be stored in the interface and subsequently downloaded to user's PC, via web for a detailed examination. The data are stored in text format (CSV, Comma Separated Values).

#### Date and time

The interface is equipped with a Real Time Clock, and it is enabled to manage Date and time information. It has the capability to synchronize date and time using NTP (Network Time Protocol).

#### Baudrate

The interface is enabled to operate in 10/100 Mbps networks

### Example



### 1 standard module housing (17,5 (18) mm wide), suitable for DIN rail mounting 35 mm

#### ► LAN-TCP/IP interface

LAN RJ 45 interface

LED link activity

Side IR for communication with energy-meters

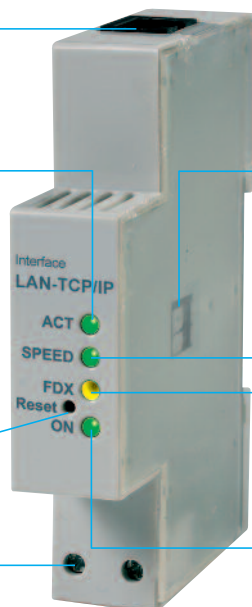
Reset push button

LED 10/100 Mb

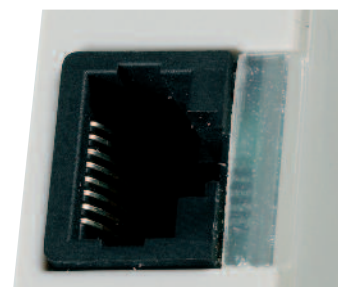
LED half/full duplex

Supply terminals

Control and operation LED



### LAN RJ 45 interface





## LAN-TCP/IP INTERFACE



### Overview

- Two models available:
  - type 1: for energy register and power measurements
  - type 2: for energy, power, V, I,  $\cos\phi$ , freq.
- Data transfer speed LAN limited Mbit/s 100
- HW interface RJ 45 connector
- SW protocol TCP/IP
- Suitable for both single-phase and three-phase energy meters
- 1 DIN module wide (18 mm)

### Technical data

Data in compliance with EN 61010-1, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2

#### General characteristics

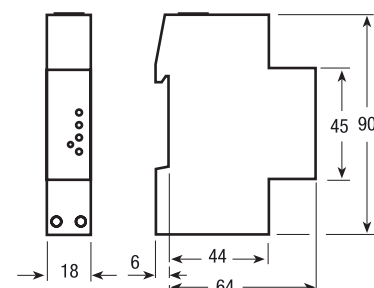
• Housing	DIN 43880	DIN	1 module
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70
<b>Power supply</b>			
• Auxiliary voltage rating $U_n$		VAC	230
• Auxiliary power rating		VA	$\leq 10$
• Auxiliary voltage range		VAC	0.80 ... 1.20 x $U_c$
• Frequency rating		Hz	50/60
• Frequency range		Hz	45 ... 65
<b>Operating features</b>			
• Two models available:	type 1: for energy register and power measurements - <b>on request</b> type 2: for energy, power, V, I, $\cos\phi$ , freq. - <b>on request</b>		
• System start		-	automatic at connection of auxiliary power by means of it IP address $\leq 100$ W3C HTML 4.01 compliant
• LAN Server data addressing		-	
• Data transfer speed	LAN limited	Mbit/s	$\leq 100$
• User interface for setup and management	Web browser		
• Suitable for both single-phase and three-phase energy meters		-	yes
<b>LAN interface</b>			
• HW interface		-	RJ 45 connector
• SW protocol		-	TCP/IP
<b>Interface to measuring instrument</b>			
• HW interface	optical IR	n°	2 (Tx, Rx)
• SW protocol		-	proprietary
<b>Safety acc. to EN 61010-1</b>			
• Degree pollution		-	2
• Overvoltage category		-	II
• Working voltage		V	300
• Material group		-	II
• Clearance		mm	$\geq 1.5$
• Creepage distance	in equipment	mm	$\geq 2.1$
	on printed wiring boards (not coated)	mm	$\geq 1.5$
	impulse (1,2/50 s) peak value	kV	2.5
	50 Hz 1 min	kV	1.35
• Test voltage		class	V0
• Housing material flame resistance	UL 94		
<b>Connection terminals</b>			
• Type cage	screw head Z +/-	POZIDRIV	PZ1
• Terminal capacity	solid wire min. (max)	mm <sup>2</sup>	0.15 (2.5)
	stranded wire with sleeve min. (max)	mm <sup>2</sup>	0.15 (4)
<b>Environmental conditions</b>			
• Operating temperature		°C	0 ... +55
• Temperature of storage		°C	-25 ... +70
• Relative humidity		%	$\leq 80$
• Vibrations	sinusoidal vibration amplitude at 50 Hz	mm	$\pm 0.25$
• Protection class	acc.to EN 61010-1	-	II
• Degree of protection	housing when mounted	-	IP20

### Selection and ordering data

#### LAN-TCP/IP interface - 1 DIN module

Code	Description	Type
<b>on request</b>	additional module for LAN-TCP/IP connection	for register and power measurements
<b>on request</b>	additional module for LAN-TCP/IP connection	for energy, power, V, I, $\cos\phi$ , freq.

### Overall dimensions







## MODBUS INTERFACE RTU AND ASCII



**Modbus**

### Application

The product is intended to be placed side by side to an energy meter of its family, equipped with an Infra-Red port on the side, to the aim to collect the measurements data from the instrument and to transmit them through an RS-485 serial line to a remote collection station using Modbus protocol.

The communication module automatically recognizes the instrument connected to its Infra-Red port and is in the position to transmit all the data provided by the instrument itself.

Two types of modules exist. Type 1 communicates only the energies and power accounts; energies and additional electrical quantities (voltage, current, frequency, cosφ) are transmitted by Type 2.

### Function

#### Configuration

The interface is provided with a software tool for Windows, for configuring installation parameters (such as Modbus address and baudrate) and general settings.

#### Plug and play

The interface is enabled to recognize automatically the instrument connected to its Infra-Red port. This is an advantage in terms of flexibility, because the same interface can be connected, for instance, to single-phase or three-phase energy meters

#### Measurements

The interface acts as a Modbus slave, so that the transmitted measurements can be collected and displayed using one of the Software tools available on the market enabled to act as a Modbus Master.

#### Baudrate

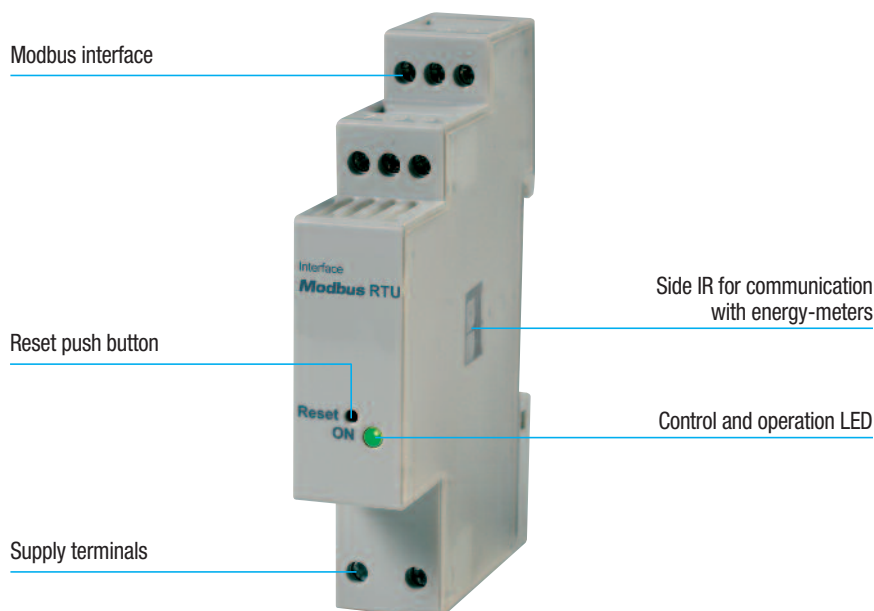
The interface is enabled to operate with a number of baudrates, up to 115200 baud.

### Example



### 1 standard module housing (17,5 (18) mm wide), suitable for DIN rail mounting 35 mm

#### ► Modbus RTU and Ascii interface





## Overview

- Two models available:
  - type 1: for energy and power measurements
  - type 2: for energy, power, V, I,  $\cos\varphi$  freq.
- Protocols Modbus Ascii - Modbus RTU
- Suitable for both single-phase and three-phase energy meters
- 1 DIN module wide (18 mm)



## MODBUS INTERFACE RTU AND ASCII



Modbus

## Technical data

Data in compliance with EN 61010-1, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2

### General characteristics

- Housing DIN 43880
- Mounting EN 60715
- Depth

### Power supply

- Auxiliary voltage rating  $U_n$
- Auxiliary power rating
- Auxiliary voltage range
- Frequency rating
- Frequency range

### Operating features

- Two models available:
  - type 1: for energy and power measurements - **22.461.920.000**
  - type 2: for energy, power, V, I,  $\cos\varphi$ , freq. - **22.461.921.000**

- Suitable for both single-phase and three-phase energy meters

### Modbus interface

- HW interface RS-485
- SW protocol SW selectable
- Data transfer speed SW selectable
- Parity
- Addressing

### Interface to measuring instrument

- HW interface optical IR
- SW protocol

### Safety acc. to EN 61010-1

- Degree pollution
- Overvoltage category
- Working voltage
- Material group
- Clearance
- Creepage distance
- Test voltage
- Housing material flame resistance

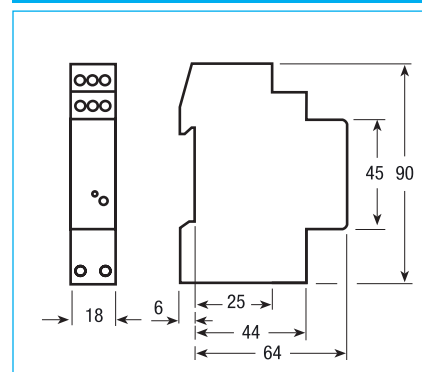
### Connection terminals

- Type cage screw head Z +/-
- Terminal capacity solid wire min. (max)
- stranded wire with sleeve min. (max)

### Environmental conditions

- Operating temperature
- Temperature of storage
- Relative humidity
- Vibrations
- Protection class
- Degree of protection

## Overall dimensions



## Selection and ordering data

### Modbus RTU and Ascii interface - 1 DIN module

Code	Description	Type
<b>22.461.920.000</b>	additional module for Modbus RTU and Ascii connection	for energy and power measurements
<b>22.461.920.000</b>	additional module for Modbus RTU and Ascii connection	for energy, power, V, I, $\cos\varphi$ , freq.



## RS-485 INTERFACE



**RS-485**

### Application

The product is intended to be placed side by side to an energy meter of its family, equipped with an Infra-Red port on the side, to the aim to collect the measurements data from the instrument and to transmit them through an RS-485 serial line to a remote collection station represented by a LAN server. The communication module automatically recognizes the instrument connected to its Infra-Red port and is in the position to transmit all the data provided by the instrument itself.

Two types of modules exist. Type 1 communicates only the energies and power accounts; energies and additional electrical quantities (voltage, current, frequency,  $\cos\varphi$ ) are transmitted by Type 2.

### Function

#### Configuration

None configuration is requested.

#### Plug and play

The interface is enabled to recognize automatically the instrument connected to its Infra-Red port. This is an advantage in terms of flexibility, because the same interface can be connected, for instance, to single-phase or three-phase energy meters.

#### Measurements

The interface sends the measurements on LAN server appliance requests.

#### Baudrate

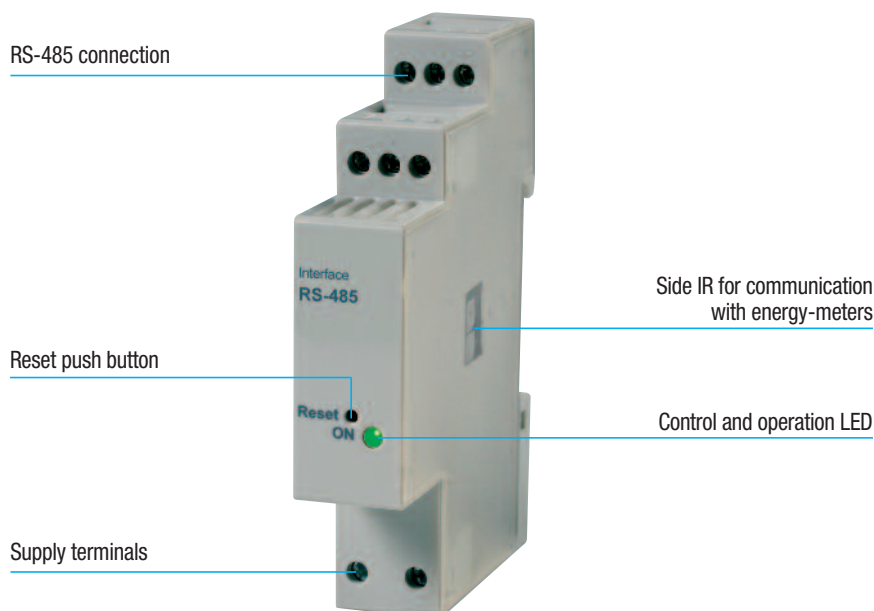
The interface operates at 19200 baud.

### Example



**1 standard module housing (17,5 (18) mm wide), suitable for DIN rail mounting 35 mm**

#### ► RS-485 interface



additional communication modules for Energy-meter

## Overview

- Two models available:
  - type 1: for energy register and power measurements
  - type 2: for energy, power, V, I,  $\cos\phi$  freq.
- Data transfer speed bytes/sec. 19200
- Suitable for both single-phase and three-phase energy meters
- 1 DIN module wide (18 mm)



## RS-485 INTERFACE



RS-485

## Technical data

Data in compliance with EN 61010-1, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2

### General characteristics

• Housing	DIN 43880	DIN	1 module
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70

### Power supply

• Auxiliary voltage rating <i>Un</i>	VAC	230
• Auxiliary power rating	VA	≤10
• Auxiliary voltage range	VAC	0.80 ... 1.20 x <i>Uc</i>
• Frequency rating	Hz	50/60
• Frequency range	Hz	45 ... 65

### Operating features

• Intended for communication with the LAN Server appliance			
• Two models available:	type 1: energy register and power measurements - <b>on request</b> type 2: for energy, power, V, I, P.F, freq. - <b>on request</b>		
• Data transfer speed	bytes/sec.	19200	
• Suitable for both single-phase and three-phase energy meters	-	yes	

### RS-485 interface

• HW interface	RS-485	terminals n°	3 (+/-, cable shield)
• SW protocol	SW selectable	-	property
• Cable	type	-	STP (shielded twisted pair)
	conductor capacitance	pF/m	≤50
	impedance	Ohm	100
		m	≤100
		-	serial

- Cable length
- Installation type

### Interface to measuring instrument

• HW interface	optical IR	n°	2 (Tx, Rx)
• SW protocol		-	proprietary

### Safety acc. to EN 61010-1

• Degree pollution	-	2	
• Overvoltage category	-	II	
• Working voltage	V	300	
• Material group	-	II	
• Clearance	mm	≥1.5	
• Creepage distance	in equipment on printed wiring boards (not coated)	mm mm	≥2.1 ≥1.5
• Test voltage	impulse (1,2/50 μs) peak value 50 Hz 1 min	kV kV	2.5 1.35
• Housing material flame resistance	UL 94	class	V0

- Test voltage

- Housing material flame resistance

### Connection terminals

• Type cage	screw head Z +/-	POZIDRIV	PZ1
• Terminal capacity	solid wire min. (max)	mm <sup>2</sup>	0.15 (2,5)
	stranded wire with sleeve min. (max)	mm <sup>2</sup>	0.15 (4)

### Environmental conditions

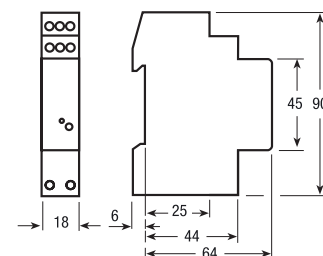
<b>Environmental conditions</b>			
• Operating temperature		°C	0 ... +55
• Temperature of storage		°C	-25 ... +70
• Relative humidity		%	≤80
• Vibrations	sinusoidal vibration amplitude at 50 Hz	mm	±0.25
• Protection class	acc.to EN 61010-1	-	II
• Degree of protection	housing when mounted	-	IP20

## Selection and ordering data

### RS-485 interface - 1 DIN module

Code	Description	Type
on request	additional module for RS-485 connection	for energy register and power measurements
on request	additional module for RS-485 connection	for energy, power, V, I, $\cos\phi$ , freq.

## Overall dimensions





## M-BUS INTERFACE



**M-Bus**

### Application

The M-Bus interface (1 module wide, DIN rail mount) is intended for connecting the energy meter to M-Bus. M-Bus is a standard widely used for remote reading of various types of consumption meters and sensors. The interface receives the measurement data from the energy meter by means of the infrared port available on the side of the meter itself, and gets the power supply from the bus, so that only the bus wiring (a two-wire standard telephone cable) must be connected, no additional wiring is requested. The interface is suitable for both single-phase and three-phase energy meters.

### Function

#### Measurements

Two types of M-Bus interfaces are available.

Type 1 is for remote reading of all of the energy and power registers available in the measuring instrument. Additional measurements (voltage, current, frequency,  $\cos\phi$ ) are readable with Type 2 interface only. Status bytes are available as well, containing information about the status of the energy meter (running tariff nominal, voltage and current range overflow).

#### Commands

Commands can be sent via M-Bus to the interface for resetting the energy accounts  
Commands are enabled only on relevant measuring instruments models

### Example



**1 standard module housing (17,5 (18) mm wide), suitable for DIN rail mounting 35 mm**

#### ► M-Bus interface

M-Bus connection



Side IR for communication  
with energy-meters

Control and operation LED

## Overview

- Two models available:
  - type 1: for energy and power measurements
  - type 2: for energy, power, V, I,  $\cos\varphi$ , freq.
- M-Bus according to EN1434
- Suitable for both single-phase and three-phase energy meters
- 1 DIN module wide (18 mm)



## M-BUS INTERFACE



## Technical data

Data in compliance with EN 61010-1, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2

### General characteristics

• Housing	DIN 43880	DIN	1 module
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70

### Power supply

• Power supply	-		through bus connection
----------------	---	--	------------------------

### Operating features

• Two models available:	type 1: for energy and power measurements - <b>22.461.910.000</b> type 2: for energy, power, V, I, P.F, freq. - <b>22.461.911.000</b>		
• Suitable for both single-phase and three-phase energy meters	-		yes

### M-bus interface

• HW interface	-		2 screw clamps
• SW protocol	-		M-Bus according to EN 1434
• Baudrate	Baud		300 to 9600

### Interface to measuring instrument

• HW interface	optical IR	n°	2 (Tx, Rx)
• SW protocol		-	proprietary

### Safety acc. to EN 61010-1

• Degree pollution	-		2
• Overvoltage category	-		II
• Working voltage	V		300
• Material group	-		II
• Clearance	mm		≥1.5
• Creepage distance	in equipment on printed wiring boards (not coated)	mm	≥2.1
	impulse (1,2/50 µs) peak value	mm	≥1.5
	50 Hz 1 min	kV	2.5
	UL 94	kV	1.35
		class	V0

### Connection terminals

• Type cage	screw head Z +/-	POZIDRIV	PZ1
• Terminal capacity	solid wire min. (max)	mm²	0.15 (2.5)
	stranded wire with sleeve min. (max)	mm²	0.15 (4)

### Environmental conditions

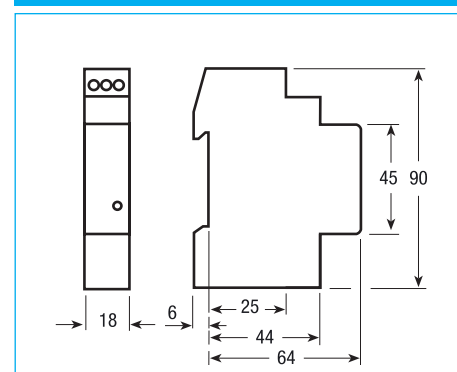
• Operating temperature		°C	0 ... +55
• Temperature of storage		°C	-25 ... +70
• Relative humidity		%	≤80
• Vibrations	sinusoidal vibration amplitude at 50 Hz	mm	±0.25
• Protection class	acc.to EN 61010-1	-	II
• Degree of protection	housing when mounted	-	IP20

## Selection and ordering data

### M-Bus interface - 1 DIN module

Code	Description	Type
<b>22.461.911.000</b>	additional module for M-Bus connection	for energy and power measurements
<b>22.461.911.000</b>	additional module for M-Bus connection	for energy, power, V, I, $\cos\varphi$ , freq.

## Overall dimensions





## PROFIBUS DP-V0 INTERFACE



### Application

The Profibus DP-V0 interface (2 module wide, DIN rail mount) is intended for connecting the energy meter as a slave to Profibus networks. Profibus is widely used for industrial applications. The interface receives the measurement data from the energy meter by means of the infrared port available on the side of the meter itself, and is equipped with a standard 9 pole female connector for bus connection. The interface is suitable for both single-phase and three-phase energy meters.

### Function

#### Configuration

The interface is enabled to work with a number of baud rates, up to 12 Mbps, and is provided with a GSD file to be installed in master system in order to allow the configuration of the communication.

#### Measurements

Two types of Profibus interfaces are available. Type 1 is for remote reading of all of the energy and power registers available in the measuring instrument. Additional measurements (voltage, current, frequency,  $\cos\phi$ ) are readable with Type 2 interface only. Status bytes are available as well, containing information about the status of the energy meter and the load (load type, running Tariff, energy import or export and so on). Some measurements and status information are available only on relevant models

#### Commands

Commands can be sent via Profibus to the interface for resetting the energy accounts  
Commands are enabled only on relevant measuring instruments models

### Example



**2 standard module housing (35 (36) mm wide), suitable for DIN rail mounting 35 mm**

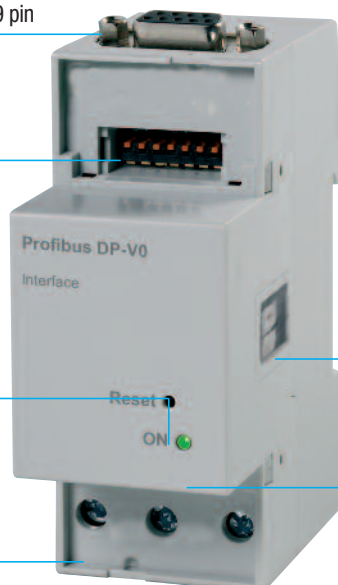
### ▶ Profibus DP-V0 interface

Profibus connection SUB-D 9 pin

Dip-switch

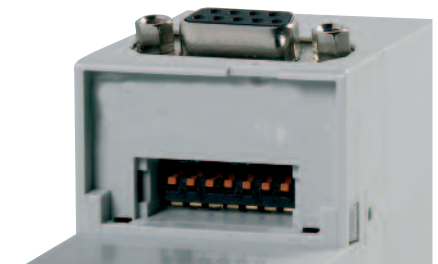
Reset push button

Supply terminals



Side IR for communication with energy-meters

ON-line LED



**Profibus DP-V0 interface**

additional communication modules for Energy-meter

## Overview

- Two models available:
  - type 1: for energy register and power measurements
  - type 2: for energy, power, V, I,  $\cos\varphi$ , freq.
- Communication in compliance with Profibus DP-V0 standard
- DIP-Switch for address setting
- GSD file for master setting
- HW interface RS-485 - SUB-D 9 Pin connector
- SW protocol PROFIBUS DP-V0
- Data transfer speed from 9.6 Kbps to 12 Mbps
- Suitable for both single-phase and three-phase energy meters
- 2 DIN modules wide (36 mm)

## PROFIBUS DP-V0 INTERFACE



## Technical data

Data in compliance with EN 61010-1, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2

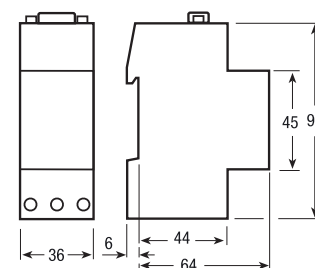
General characteristics			
• Housing	DIN 43880	DIN	2 modules
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70
Power supply			
• Auxiliary voltage rating $U_n$		VAC	230
• Auxiliary power rating		VA	$\leq 4$
• Auxiliary voltage range		VAC	0.80 ... 1.20 x $U_c$
• Frequency rating		Hz	50/60
• Frequency range		Hz	45 ... 65
Operating features			
• Two models available:	type 1: for energy register and power measurements - <b>on request</b> type 2: for energy, power, V, I, P.F, freq. - <b>on request</b>		
• All quantities transmitted as float values			
• Communication in compliance with Profibus DP-V0 standard			
• DIP-Switch for address setting			
• GSD file for master setting			
• Easy selection via master of the quantities to be transmitted			
• Status bytes transmitted			
• Energy account remote reset available (on selected energy meters models)			
• Suitable for both single-phase and three-phase energy meters			yes
Profibus interface			
• HW interface	RS485	-	SUB-D 9 Pin connector
• SW protocol		-	Profibus DP-V0
• Data transfer speed		-	from 9.6 Kbps to 12 Mbps
Interface to measuring instrument			
• HW interface	optical IR	n°	2 (Tx, Rx)
• SW protocol		-	proprietary
Safety acc. to EN 61010-1			
• Degree pollution		-	2
• Overvoltage category		-	II
• Working voltage		V	300
• Material group		-	II
• Clearance		mm	$\geq 1.5$
• Creepage distance	in equipment	mm	$\geq 2.1$
	on printed wiring boards (not coated)	mm	$\geq 1.5$
	impulse (1,2/50 $\mu$ s) peak value	kV	2.5
	50 Hz 1 min	kV	1.35
• Test voltage	UL 94	class	V0
• Housing material flame resistance			
Connection terminals			
• Type cage	screw head Z +/-	POZIDRIV	PZ1
• Terminal capacity	solid wire min. (max)	mm <sup>2</sup>	0.75 (6)
	stranded wire with sleeve min. (max)	mm <sup>2</sup>	0.75 (6)
Environmental conditions			
• Operating temperature		°C	0 ... +55
• Temperature of storage		°C	-25 ... +70
• Relative humidity		%	$\leq 80$
• Vibrations	sinusoidal vibration amplitude at 50 Hz	mm	$\pm 0.25$
• Protection class	acc.to EN 61010-1	-	II
• Degree of protection	housing when mounted	-	IP20

## Selection and ordering data

### Profibus DP-V0 interface - 2 DIN modules

Code	Description	Type
on request	additional module for Profibus DP-V0 connection	for energy register and power measurements
on request	additional module for Profibus DP-V0 connection	for energy, power, V, I, $\cos\varphi$ , freq.

## Overall dimensions







## EIB-KNX INTERFACE



### Application

The EIB-KNX interface (1 module wide, DIN rail mount) is intended for connecting the energy meter to EIB-KNX bus. EIB-KNX bus is widely used for home and building control applications. The interface receives the measurement data from the energy meter by means of the infrared port available on the side of the energy meter itself, and gets the power supply from the bus. Only the bus wiring (twisted pair) must be connected, no additional wiring is requested. The interface is suitable for both single-phase and three-phase energy meters.

### Function

#### Configuration

The interface is provided with an application program to be imported in ETS3, in order to allow the configuration of the communication. ETS3 is the standard software for EIB-KNX systems configuration.

#### Measurements

All the active and reactive energy registers available on the measuring instrument can be transmitted over the bus. Transmission modes are available: transmission on request, automatic transmission based on adjustable energy account increment (for instance a message every 10 KWh). Status bytes are available as well, containing information about the status of the energy meter and the load (load type, running Tariff, energy import or export and so on). (Some measurements and status information are available only on selected models)

#### Voltage limits

Upper and lower voltage limits can be set via ETS3. A warning message will be sent over the bus by the interface, in case the voltage value goes beyond the limits.

#### Energy reset

Commands can be sent via bus to the interface for resetting the energy accounts (Enabled only on selected measuring instruments models)

### Example



**1 standard module housing (17,5 (18) mm wide), suitable for DIN rail mounting 35 mm**

#### ► EIB-KNX interface

EIB-KNX interface connection



Side IR for communication with energy-meters

Configuration LED

Configuration push button

### EIB-KNX interface





additional communication modules for Energy-meter

## EIB-KNX INTERFACE



### Overview

- Model available:
  - type: for energy register and power measurements
- Communication in compliance with EIB-KNX standard for home and building control
- Configuration via ETS3
- Energy registers transmitted as float values (EIS9)
- Suitable for both single-phase and three-phase energy meters
- 1 DIN module wide (18 mm)



### Technical data

Data in compliance with EN 61010-1, EN 61000-6-2, EN 61000-6-3 and EN 61000-4-2

#### General characteristics

• Housing	DIN 43880	DIN	1 module
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70

#### Power supply

• Power supply	-	through bus connection
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#### Operating features

• Models available:	type: for energy register and power measurements		
• Communication in compliance with EIB-KNX standard for home and building control			
• Energy registers transmitted as float values (EIS9)			
• Status bytes available			
• Energy account remote reset available (on selected energy meters models)			
• Suitable for both single-phase and three-phase energy meters	-		yes
• Configuration via ETS3			

#### EIB-KNX interface

• HW interface	-	black/red terminals for connection to Twisted Pair type 1 (TP-1)
• Bitrate	-	9600 bps

#### Interface to measuring instrument

• HW interface	optical IR	n°	2 (Tx, Rx)
• SW protocol		-	proprietary

#### Safety acc. to EN 61010-1

• Degree pollution	-	2	
• Overvoltage category	-	II	
• Working voltage	V	300	
• Material group	-	II	
• Clearance	mm	≥1.5	
• Creepage distance	in equipment	mm	≥2.1
	on printed wiring boards (not coated)	mm	≥1.5
• Test voltage	impulse (1,2/50 μs) peak value	kV	2.5
	50 Hz 1 min	kV	1.35
• Housing material flame resistance	UL 94	class	V0

#### Environmental conditions

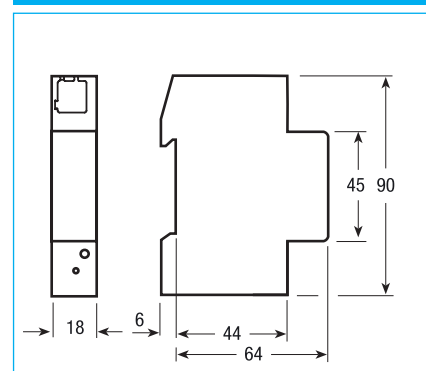
• Operating temperature	°C	0 ... +55
• Temperature of storage	°C	-25 ... +70
• Relative humidity	%	≤80
• Vibrations	mm	±0.25
• Protection class	-	II
• Degree of protection	-	IP20

### Selection and ordering data

#### EIB-KNX interface - 1 DIN module

Code	Description	Type
22.461.930.000	additional module for EIB-KNX connection	for energy register and power measurements

### Overall dimensions



## NOTES





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