

A series

Product brief

2



Key applications

- Applications in industry
- Applications in commercial buildings
- Object metering
- Billing applications

Meter performance

- Three phase and single phase
- Direct connected up to 80 A
- Transformer connected 1, 2 or 5 A
- Active or active and reactive energy
- Accuracy class C, B or A (Cl. 0,5 S, 1 or 2)
- Import or import and export measurement of energy
- Wide voltage range (100 – 500 V)
- Pixel-oriented display
- Up to 4 tariffs
- Up to 4 inputs and outputs
- Low power consumption
- Optional clock functionality with tariff control, previous values, max/min demand, load profiles
- Harmonics measurement up to 16th harmonic and THD evaluation

Communication

- Pulse output
- Built-in M-Bus
- Built-in RS-485 for Modbus RTU and EQ bus
- IR port for Serial Communication Adapters

Installation

- Terminal according to DIN 43857 ("Utility terminal")
- Wide temperature range
- Sealable push buttons for configuration

Approvals

- MID type approval "annex B"
- MID initial verification "annex D"
- IEC type approval

A series

Description

The A series EQ meters are meters for single phase and three phase metering. The A series meters are mounted on a DIN rail and are suitable for installation in distribution boards and small enclosures such as consumer units. With the main terminals in accordance with DIN 43857 and accessible from the below the meters, the A series is suitable for many applications.

General features

The A series meters are ideal for many applications and installations. The meters support a wide voltage range as well as a wide temperature range. The display is pixel-oriented and can display up to four quantities at the same time. Navigating the meter is easily done via the push-buttons below the display. To configure the meter settings, the set button must be accessed and this button is protected against unauthorized use when the “glass lid” on the front of the meter is closed and sealed. The power consumption of the meter is very low, less than 0.8 VA.

Communication

Data from the A series meters can be collected via pulse output or serial communication. The pulse output is a solid state relay that generates pulses proportionally to the measured energy. The meters can also be equipped with built-in serial communication interfaces for M-Bus or Modbus RTU (RS-485). Meters with RS-485 interface can also be set to communicate over the new EQ bus with the new gateway G13. All meters in the A series come with an infrared port for communication with an external Serial Communication Adapter (SCA) such as the KNX adapter.

Instrumentation

The A series meters support reading of instrument values. A large number of electrical properties can be read. Depending on version of the meter the following data is available:

- Active power
- Apparent power
- Reactive power
- Current
- Voltage
- Frequency
- Power factor
- Harmonics
- Total harmonic distortion

Inputs and outputs

The A series support up to four I/O's. It can be two inputs and two outputs in a fixed configuration or four I/O points that are freely configured to input or output. Inputs can be used for counting pulses from e.g. a water meter, or reading status



from external devices. Outputs can be used as pulse outputs or controlling external apparatus like a contactor or an alarm (connected via an external relay). Outputs need an external voltage supply.

Approvals

The A series meters are type approved according to IEC and they are both type approved and verified according to MID. MID is the Measuring Instruments Directive 2004/22/EC from the European Commission. MID type approval and verification is mandatory for meters in billing applications within EU and EEA. The type approval is according to standards that covers all relevant technical aspects of the meter. These include climate conditions, electromagnetic compatibility (EMC), electrical requirements, mechanical requirements and accuracy.

Tariffs

The tariffs are controlled via inputs, via communication or via an internal clock.

Event log

Gold and Platinum meters have an event log function. The event log will log overvoltage, undervoltage, phase voltage outage, negative power, total power outage and presence of harmonics.

Optional functionality

A series meters with a functionality level of Gold or Platinum have an internal clock for advanced functionality. The clock functions are briefly presented below.

A series Description

2

Internal clock

The internal clock, sometimes called real time clock or RTC, has a built-in calendar and automatically keeps track of leap year and daylight savings time (DST). The DST function is optional. Backup of the clock during a power failure is provided by a supercapacitor. The time is controlled by a quartz crystal based clock. Time and date is set via push buttons or via communication. The internal clock is approved according to IEC 62052-21 and IEC 62054-21. These standards specify the requirements for time switches in electricity meter related products. The accuracy is better than 5 ppm at room temperature.

Previous values

The previous value feature is available on Gold and Platinum meters and will store all energy registers and input counter values together with a date/time stamp upon change of day, week or month. All total values are stored and in meters equipped with the tariff feature all the tariff registers will also be stored.

Maximum and minimum demand

The demand function is available on Gold and Platinum meters. In the demand function, the mean power in each interval is measured and the maximum and minimum mean values are stored together with a date/time stamp.

For each set of demand values the end date/time of the period is stored. The quantities that can be stored for each interval are active, reactive and apparent power (imported power only), and the number of pulses registered on inputs.

Load profile

The load profile function is available on the Platinum meters. The load profile stores the energy consumption at pre-defined intervals. The quantities that can be stored for each interval are active and reactive energy, both imported and exported energy, and the number of pulses registered on inputs. The load profile function uses the standard time setting irrespective if the daylight savings time function is activated or not.

THD

The THD and harmonics measurement is available on the Platinum meters. The voltage and current harmonics (2-16) together with the fundamental is measured sequentially one at a time. The total harmonic distortion is evaluated and displayed in percent. The separate harmonic frequencies measured are multiples of the fundamental frequency up to the 16th harmonic. THD data as well as individual harmonics are shown on the display. THD data and data for individual harmonics can also be read out via serial communication.



A41

Single phase meter

80A, 4 DIN with IR port



A41

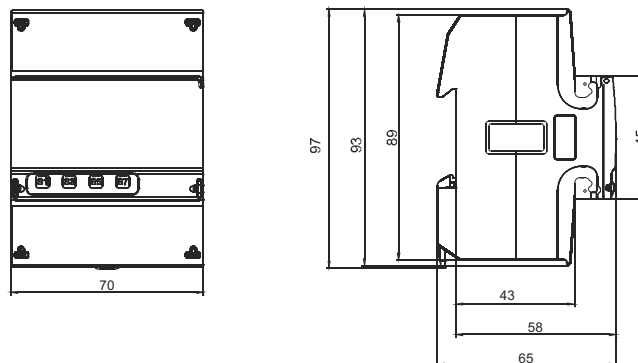
Description

Direct connected electricity meter. Verified and approved according to MID. IEC approval. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

Ordering details

Voltage V	Accuracy Class	I/O	Communication	Type	Order Code	Pkg qty	Weight 1 pc
Steel							
Active energy							
57.7...288 V AC	Class B (Cl. 1)	Pulse output	-	A41 111 - 100	2CMA170554R1000	1	0.23
			RS-485	A41 112 - 100	2CMA170500R1000	1	0.23
			M-Bus	A41 113 - 100	2CMA100240R1000	1	0.23
Bronze							
Active and reactive energy, import/export.							
57.7...288 V AC	Class B (Cl. 1) Reactive Cl. 2	Pulse output	RS-485	A41 212 - 100	2CMA170501R1000	1	0.23
Silver							
Active and reactive energy, import/export, tariffs 1-4, tariff control via inputs and communication.							
57.7...288 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	-	A41 311 - 100	2CMA170502R1000	1	0.23
			RS-485	A41 312 - 100	2CMA170503R1000	1	0.23
			M-Bus	A41 313 - 100	2CMA170504R1000	1	0.23
Gold							
Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand.							
57.7...288 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	RS-485	A41 412 - 100	2CMA170505R1000	1	0.23
			M-Bus	A41 413 - 100	2CMA170506R1000	1	0.23
Platinum							
Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand, advanced load profiles, harmonics and THD.							
57.7...288 V AC	Class B (Cl. 1) Reactive Cl. 2	Configurable 4 I/O channels	RS-485	A41 512 - 100	2CMA100237R1000	1	0.23
			M-Bus	A41 513 - 100	2CMA170508R1000	1	0.23

Dimensions



A42

Single phase meter

6A, 4 DIN with IR port

2



A42

2CMC481003C0201

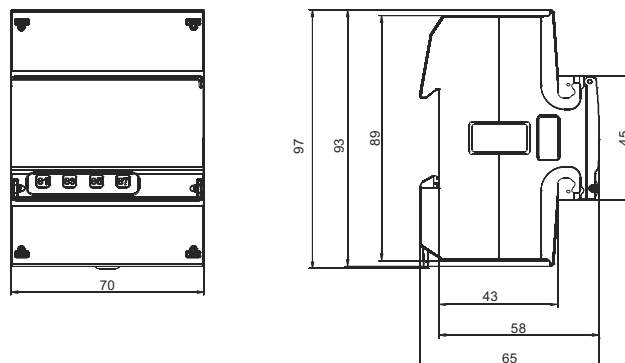
Description

Transformer CTVT connected electricity meter. Verified and approved according to MID. IEC approval. Voltage V - 57...288 V AC. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

Ordering details

Voltage V	Accuracy Class	I/O	Communi- cation	Type	Order Code	Pkg qty	Weight 1 pc
Steel							
Active energy							
57.7...288 V AC	Class B (Cl. 1)	Pulse output	-	A42 111 - 100	2CMA170555R1000	1	0.20
			RS-485	A42 112 - 100	2CMA170510R1000	1	0.20
			M-Bus	A42 113 - 100	2CMA100242R1000	1	0.20
Bronze							
Active and reactive energy, import/export.							
57.7...288 V AC	Class B (Cl. 1) Reactive Cl. 2	Pulse output	RS-485	A42 212 - 100	2CMA170511R1000	1	0.20
Silver							
Active and reactive energy, import/export, tariffs 1-4, tariff controll via inputs and communication.							
57.7...288 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	RS-485	A42 312 - 100	2CMA170512R1000	1	0.20
Gold							
Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand.							
57.7...288 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	RS-485	A42 412 - 100	2CMA170513R1000	1	0.20
			M-Bus	A42 413 - 100	2CMA170514R1000	1	0.20
Platinum							
Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand, advanced load profiles, harmonics and THD.							
57.7...288 V AC	Class C (Cl. 0,5 S) Reactive Cl. 2	Configurable 4 I/O channels	RS-485	A42 552 - 100	2CMA100238R1000	1	0.20
			M-Bus	A42 553 - 100	2CMA170516R1000	1	0.20

Dimensions



A43

Three phase meter

80A, 7 DIN with IR port



A43

2CMC481003C0201

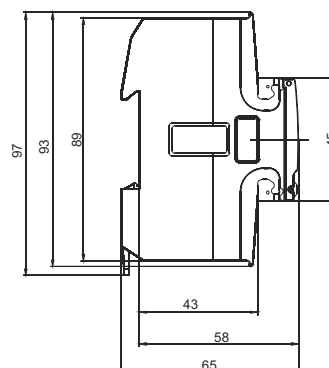
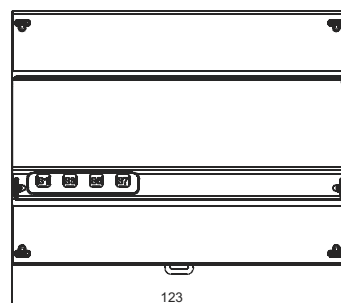
Description

Direct connected electricity meter. Verified and approved according to MID. IEC approval. 2- and 3-element metering. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

Ordering details

Voltage V	Accuracy Class	I/O	Communication	Type	Order Code	Pkg qty	Weight 1 pc
Steel							
Active energy							
3 x 57.7/100... 288/500 V AC	Class B (Cl. 1)	Pulse output	-	A43 111 - 100	2CMA170520R1000	1	0.44
			RS-485	A43 112 - 100	2CMA100244R1000	1	0.44
			M-Bus	A43 113 - 100	2CMA100245R1000	1	0.44
	Class A (Cl. 2)	-	A43 121 - 100	2CMA170521R1000	1	0.44	
Bronze							
Active and reactive energy, import/export.							
3 x 57.7/100... 288/500 V AC	Class B (Cl. 1) Reactive Cl. 2	Pulse output	-	A43 211 - 100	2CMA100012R1000	1	0.44
			RS-485	A43 212 - 100	2CMA170522R1000	1	0.44
	M-Bus		A43 213 - 100	2CMA170523R1000	1	0.44	
Silver							
Active and reactive energy, import/export, tariffs 1-4, tariff control via inputs and communication.							
3 x 57.7/100... 288/500 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	-	A43 311 - 100	2CMA170524R1000	1	0.44
			RS-485	A43 312 - 100	2CMA170525R1000	1	0.44
			M-Bus	A43 313 - 100	2CMA170526R1000	1	0.44
Gold							
Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand.							
3 x 57.7/100... 288/500 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	RS-485	A43 412 - 100	2CMA170528R1000	1	0.44
			M-Bus	A43 413 - 100	2CMA170529R1000	1	0.44
Platinum							
Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand, advanced load profiles, harmonics and THD.							
3 x 57.7/100... 288/500 V AC	Class B (Cl. 1) Reactive Cl. 2	Configurable 4 I/O channels	-	A43 511 - 100	2CMA100143R1000	1	0.44
			RS-485	A43 512 - 100	2CMA170531R1000	1	0.44
			M-Bus	A43 513 - 100	2CMA170532R1000	1	0.44

Dimensions



A44

Three phase meter

6A, 7 DIN with IR port

2



A44

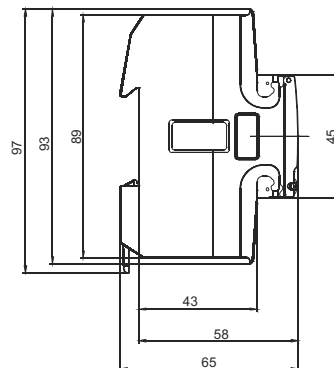
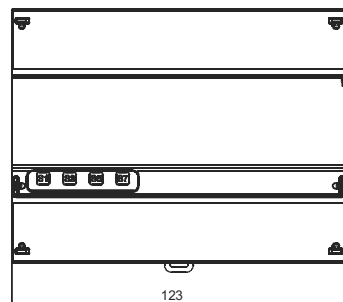
Description

Transformer CTVT connected electricity meter. Verified and approved according to MID. IEC approval. 2- and 3-element metering. Instrument values. Alarm function. Communication - Infrared (M-Bus). Optional - Communication with M-Bus, RS-485 Modbus, RS-485 EQ bus.

Ordering details

Voltage V	Accuracy Class	I/O	Communication	Type	Order Code	Pkg qty	Weight 1 pc
Steel							
Active energy							
3 x 57.7/100... 288/500 V AC	Class B (Cl. 1)	Pulse output	-	A44 111 - 100	2CMA170533R1000	1	0.35
			RS-485	A44 112 - 100	2CMA100248R1000	1	0.35
			M-Bus	A44 113 - 100	2CMA100249R1000	1	0.35
Bronze							
Active and reactive energy, import/export.							
3 x 57.7/100... 288/500 V AC	Class B (Cl. 1) Reactive Cl. 2	Pulse output	-	A44 211 - 100	2CMA100013R1000	1	0.35
			RS-485	A44 212 - 100	2CMA170534R1000	1	0.35
			M-Bus	A44 213 - 100	2CMA170535R1000	1	0.35
Silver							
Active and reactive energy, import/export, tariffs 1-4, tariff control via inputs and communication.							
3 x 57.7/100... 288/500 V AC	Class B (Cl. 1) Reactive Cl. 2	2 output, 2 input	-	A44 311 - 100	2CMA170536R1000	1	0.35
			RS-485	A44 352 - 100	2CMA170537R1000	1	0.35
			M-Bus	A44 353 - 100	2CMA170538R1000	1	0.35
3 x 57.7/100... 288/500 V AC	Class C (Cl. 0,5 S) Reactive Cl. 2	2 output, 2 input	RS-485	A44 452 - 100	2CMA170540R1000	1	0.35
			M-Bus	A44 453 - 100	2CMA170541R1000	1	0.35
Gold							
Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand.							
3 x 57.7/100... 288/500 V AC	Class C (Cl. 0,5 S) Reactive Cl. 2	2 output, 2 input	RS-485	A44 452 - 100	2CMA170540R1000	1	0.35
			M-Bus	A44 453 - 100	2CMA170541R1000	1	0.35
Platinum							
Active and reactive energy, import/export, tariffs 1-4, tariff controlled via inputs, communication or clock, previous values, max and min demand, advanced load profiles, harmonics and THD.							
3 x 57.7/100... 288/500 V AC	Class C (Cl. 0,5 S) Reactive Cl. 2	Configurable 4 I/O channels	RS-485	A44 552 - 100	2CMA170545R1000	1	0.35
			M-Bus	A44 553 - 100	2CMA170546R1000	1	0.35

Dimensions



A series

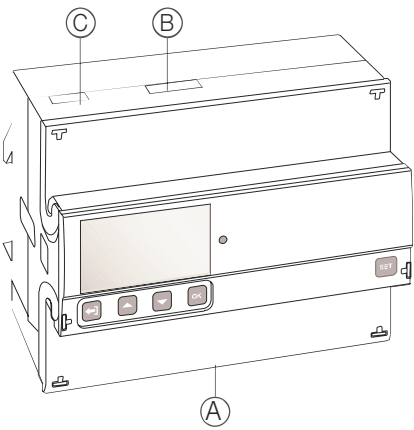
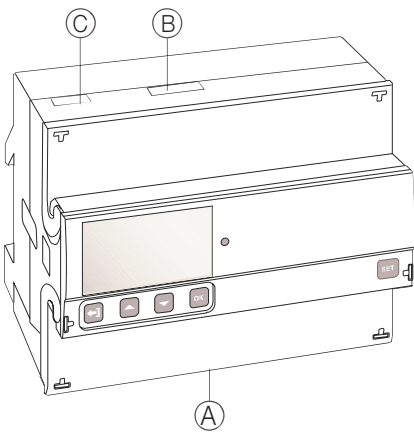
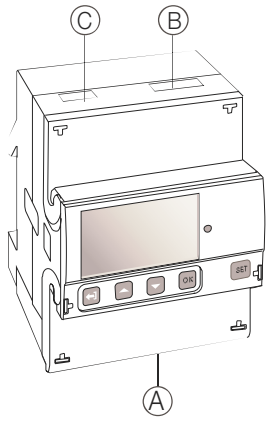
Technical data

	A41	A42	A43	A44
Voltage/current inputs				
Nominal voltage	230 V AC		3x230/400 V AC	
Voltage range	57.7 - 288 V AC (-20% - +15%)		3x57.7/100 ... 288/500 V AC (-20% - +15%)	
Power dissipation voltage circuits	0.8 VA (0.8 W) total			
Power dissipation current circuits	0.007 VA (0.007 W) at 230 VAC	0.001 VA (0.001 W) at 230 VAC	0.007 VA (0.007 W) per phase at 230 VAC and I _b	0.001 VA (0.001 W) per phase at 230 VAC and I _b
Base current I _b	5 A	-	5 A	-
Rated current I _r	-	1 A	-	1 A
Reference current I _{ref}	5 A	-	5 A	-
Transitional current I _t	0.5 A	0.05 A	0.5 A	0.05 A
Maximum current I _{max}	80 A	6 A	80 A	6 A
Minimum current I _{min}	0.25 A	0.02 A	0.25 A	0.01 A
Starting current I _s	< 20 mA	< 1 mA	< 20 mA	< 1 mA
Terminal wire area	1 - 25 mm ²	0.5 - 10 mm ²	1 - 25 mm ²	0.5 - 10 mm ²
Recommended tightening torque	3 Nm	1.5 Nm	3 Nm	1.5 Nm
Communication				
Terminal wire area	0.5 - 1 mm ²		0.5 - 1 mm ²	
Recommended tightening torque	0.25 Nm			
Transformer ratios				
Configurable voltage ratio (VT)	-	1/999 - 999999/1	-	1/999 - 999999/1
Configurable current ratio (CT)	-	1/9 - 9999/1	-	1/9 - 9999/1
Pulse indicator (LED)				
Pulse frequency	1000 imp/kWh	5000 imp/kWh	1000 imp/kWh	5000 imp/kWh
Pulse length	40 ms	40 ms	40 ms	40 ms
General data				
Frequency	50 or 60 Hz ± 5%			
Accuracy Class	B (Cl.1) or Reactive Cl. 2	B (Cl.1), C (Cl. 0.5 S) or Reactive Cl. 2	A (Cl.2), B (Cl.1) or Reactive Cl. 2	B (Cl.1), C (Cl. 0.5 S) or Reactive Cl. 2
Active energy	1%	0.5%, 1%	1%, 2%	0.5%, 1%
Display of energy	Pixel oriented			
Environmental				
Operating temperature	-40°C - +70°C			
Storage temperature	-40°C - +85°C			
Humidity	75% yearly average, 95% on 30 days/year			
Resistance to fire and heat	Terminal 960°C, cover 650°C (IEC 60695-2-1)			
Resistance to water and dust	IP20 on terminal block without protective enclosure and IP51 in protective enclosure, according to IEC 60529.			
Mechanical environment	Class M1 in accordance with the Measuring Instrument Directive (MID), (2004/22/EC).			
Electromagnetic environment	Class E2 in accordance with the Measuring Instrument Directive (MID), (2004/22/EC).			
Outputs				
Current	2 - 100 mA			
Voltage	5 - 240 V AC/DC. For meters with only 1 output, 5 - 40 V DC.			
Pulse output frequency	Programmable: 1 - 999999 imp/kWh			
Pulse length	Programmable: 10 - 990 ms			
Terminal wire area	0.5 - 1 mm ²			
Recommended tightening torque	0.25 Nm			
Inputs				
Voltage	0 - 240 V AC/DC			
OFF	0 - 12 V AC/DC			
ON	57-240 V AC/24 - 240 V DC			
Min. pulse length	30 ms			
Terminal wire area	0.5 - 1 mm ²			
Recommended tightening torque	0.25 Nm			
EMC compatibility				
Impulse voltage test	6 kV 1.2/50 μs (IEC 60060-1)			
Surge voltage test	4 kV 1.2/50 μs (IEC 61000-4-5)			
Fast transient burn test	4 kV (IEC 61000-4-4)			
Immunity to electromagnetic HF-fields	80 MHz - 2 GHz at 10 V/m (IEC 61000-4-3)			
Immunity to conducted disturbance	150 kHz - 80 MHz, (IEC 61000-4-6)			
Immunity to disturbance with harmonics	2kHz - 150kHz			
Radio frequency emission	EN 55022, class B (CISPR22)			
Electrostatic discharge	15 kV (IEC 61000-4-2)			
Standards	IEC 62052-11, IEC 62053-21 class 1 & 2, IEC 62053-22 class 0,5 S, IEC 62053-23 class 2, IEC 62054-21, GB/T 17215.211-2006, GBT 17215.321-2008 class 1 & 2, GB/T 17215.322-2008 class 0,5 S, GB 4208-2008, EN 50470-1, EN 50470-3 category A, B & C			
Mechanical				
Material	Polycarbonate in transparent front glass, bottom case, upper case and terminal cover, Glass reinforced polycarbonate in terminal block.			
Dimensions				
Width	70 mm		123 mm	
Height	97 mm		97 mm	
Depth	65 mm		65 mm	
DIN modules	4		7	

¹ Only A44 552 - 110 and A44 553 - 110

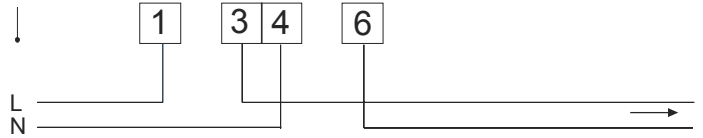
A series Wiring diagram

2

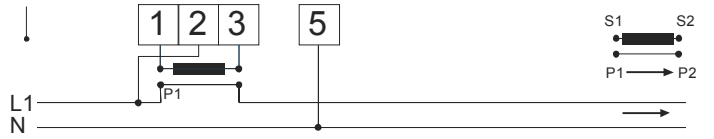


Terminal blocks (A) = Please see the pictures

A41

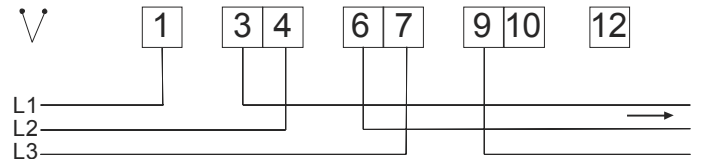


A42

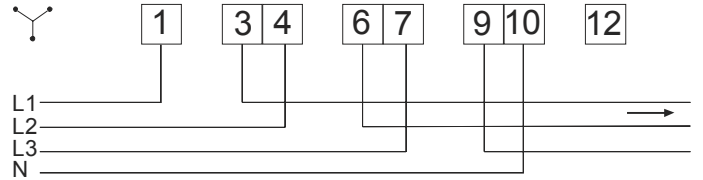


A43

3 wire connection, 2 elements

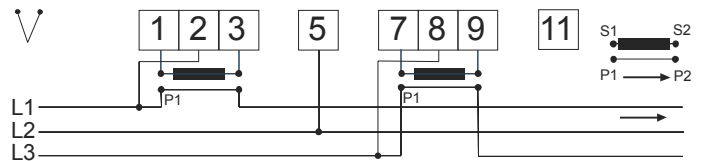


4 wire connection, 3 elements

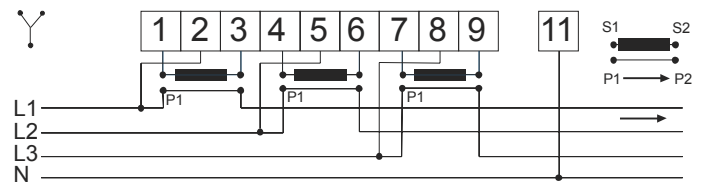


A44

3 wire connection, 2 elements



4 wire connection, 3 elements

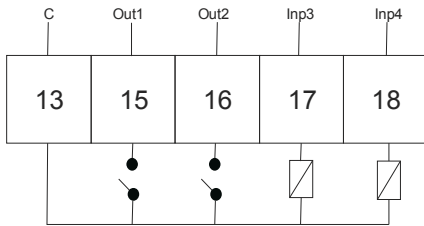


A series

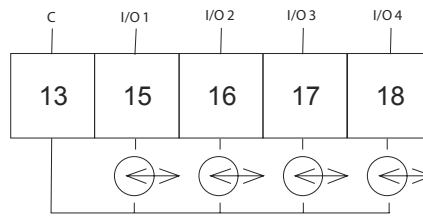
Inputs/outputs and communication

Inputs/Outputs (B) = Please see the pictures on page 20

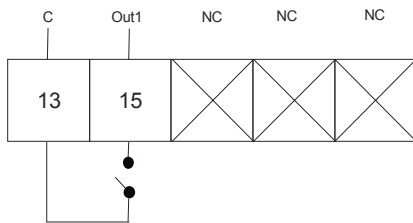
2 outputs, 2 inputs



4 Configurable inputs/outputs

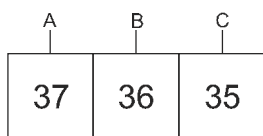


1 output



Communication (C) = Please see the pictures on page 20

RS-485



M-Bus

