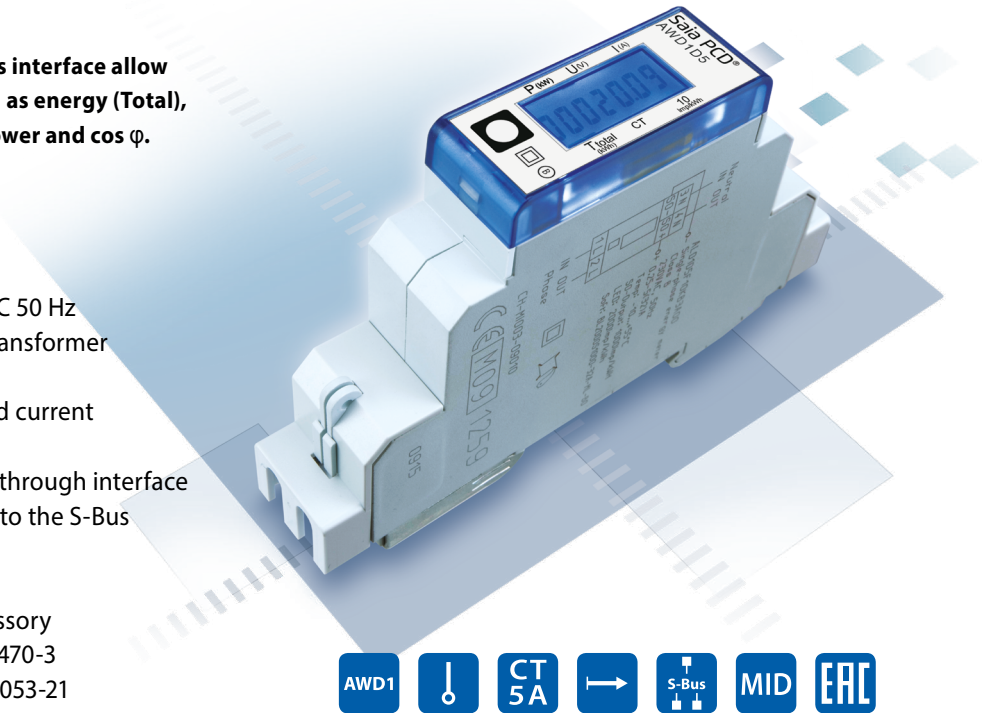


# Single phase Energy meter for transformer connection with serial S-Bus interface

Energy meters with an integrated S-Bus interface allow direct reading of all relevant data, such as energy (Total), current, voltage, active and reactive power and  $\cos \varphi$ .

## Main features:

- Single-phase energy meter, 230 VAC 50 Hz
- Measurement through a current transformer up to 500 A
- Display of active power, voltage and current
- S-Bus Interface to query the data
- Reactive power and  $\cos\varphi$  available through interface
- Up to 254 meter can be connected to the S-Bus Interface
- 7-digit display
- Lead seal possible with cap as accessory
- Accuracy class B according to EN50470-3  
Accuracy class 1 according to IEC62053-21



## Order Number

Standard version: AWD1D5WS00A2A00  
Sealing cap: 4 104 74 20 0

## Mounting

<b>Mounting</b>	On 35 mm rail, according to EN60715TH35
<b>Terminal connections main circuit</b>	Conductor cross-section max. 6 mm <sup>2</sup> , screwdriver Pozidrive no. 1, slot no.1 Breakaway torque: 1,2 Nm
<b>Terminal connections control circuit</b>	Conductor cross-section max. 2.5 mm <sup>2</sup> , screwdriver Pozidrive no. 0, or slot no.1 Breakaway torque: 0,5 Nm
<b>Insulation characteristics</b>	- 4 kV/50 Hz test according to VDE0435 for Energy Meter part - 6 kV 1.2/50 $\mu$ s surge voltage according to IEC255-4 - 2 kV/50 Hz test according to VDE0435 for Interface - device protection class II
<b>Ambient temperature</b>	-25 °...+55 °C
<b>Storage temperature</b>	-30 °...+85 °C
<b>Environment</b>	Mechanical M2 Electromagnetic E2
<b>Relative humidity</b>	75 % without condensation
<b>EMC/interference immunity</b>	- Surge voltage according to IEC61000-4-5 at main circuit, 4 kV at S-Bus interface, 1 kV - Burst voltage according to IEC61000-4-4, at main circuit 4 kV at S-Bus interface 1 kV - ESD according to IEC61000-4-2, contact 8 kV, air 15 kV

## Technical data

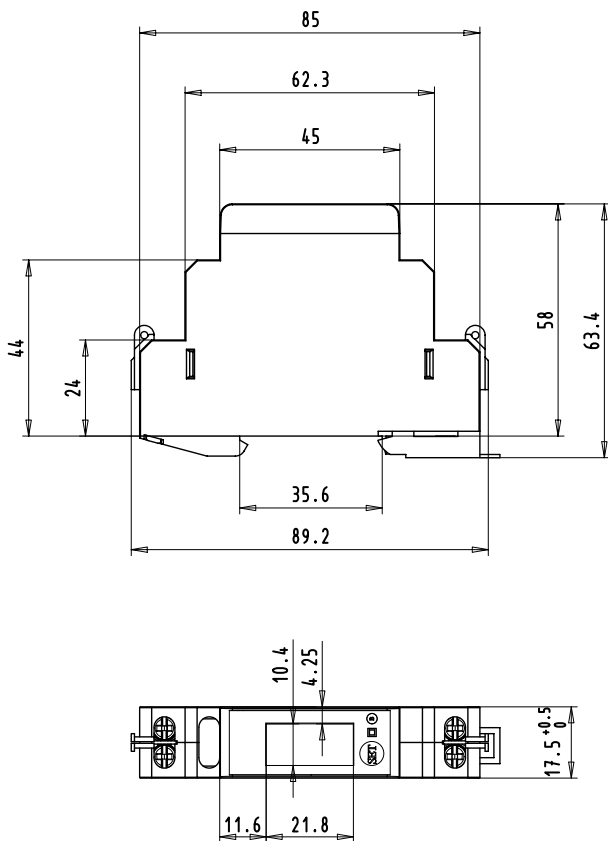
<b>Precision class</b>	B according to EN50470-3 1 according to IEC62053-21
<b>Operating voltage</b>	230 VAC, 50 Hz Tolerance -20%/+15 %
<b>Power consumption</b>	Active 0.4W per phase
<b>Counting range</b>	000'000.0... 999'999.9 1'000'000... 9'999'999
<b>Display</b>	LCD backlit, digits 5 mm high

## CT measurement

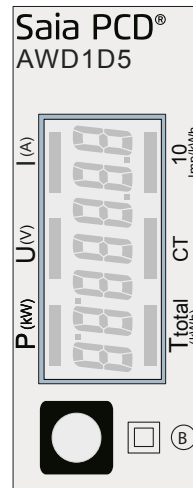
	5...500 A			
<b>Reference/max. current</b>	$I_{ref} = 5 \text{ A}, I_{max} = 6 \text{ A}$			
<b>Starting/minimum current</b>	$I_{st} = 10 \text{ mA}, I_{min} = 0.05 \text{ A}$			
<b>Converter ratio</b>	5:5	50:5	100:5	200:5
<b>Pulses per kWh</b>	250:5	300:5	400:5	500:5
	LCD Display 10 Imp/kWh			

## Dimension diagram

Structure

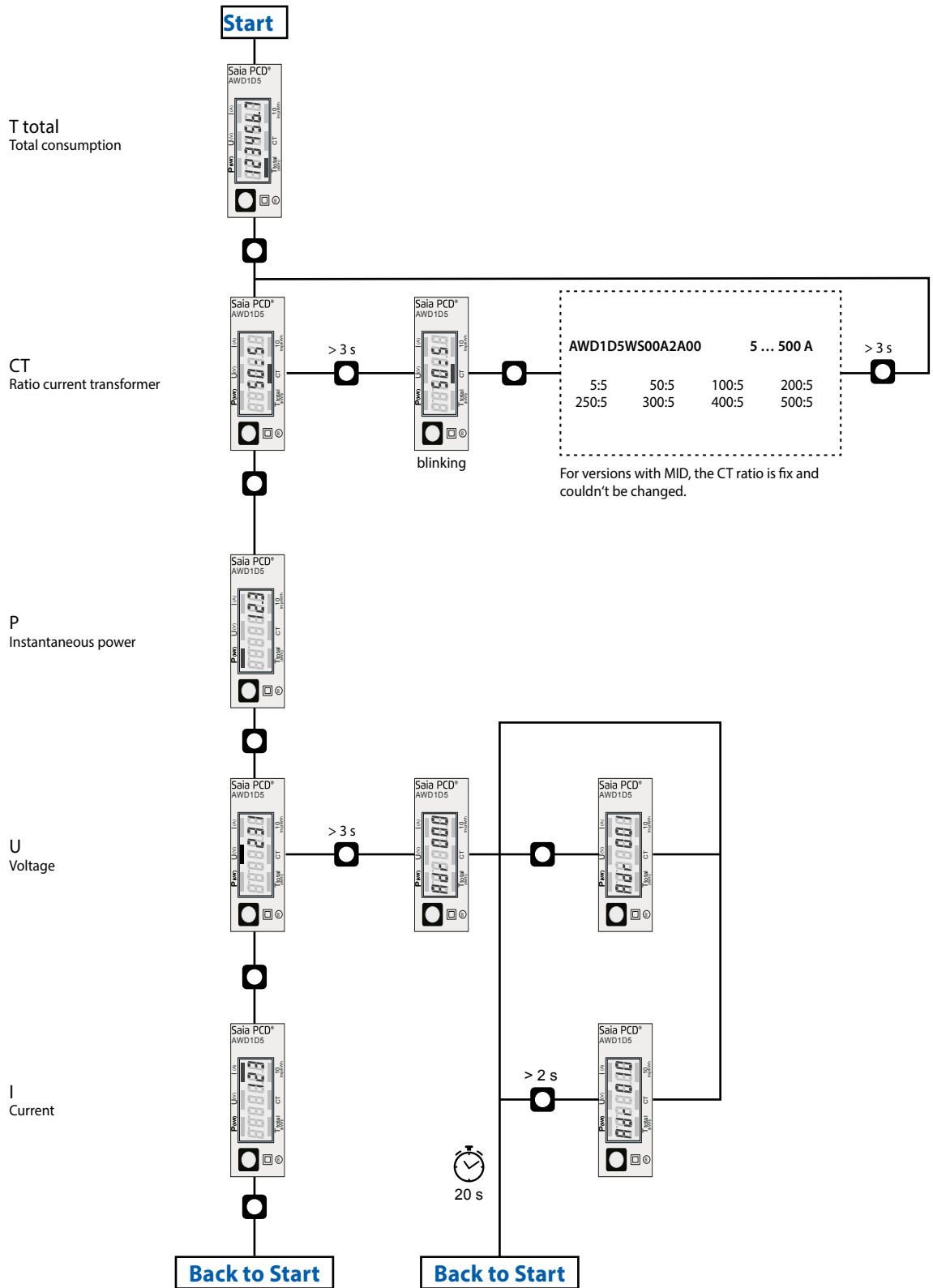


## Display elements, direct measurement

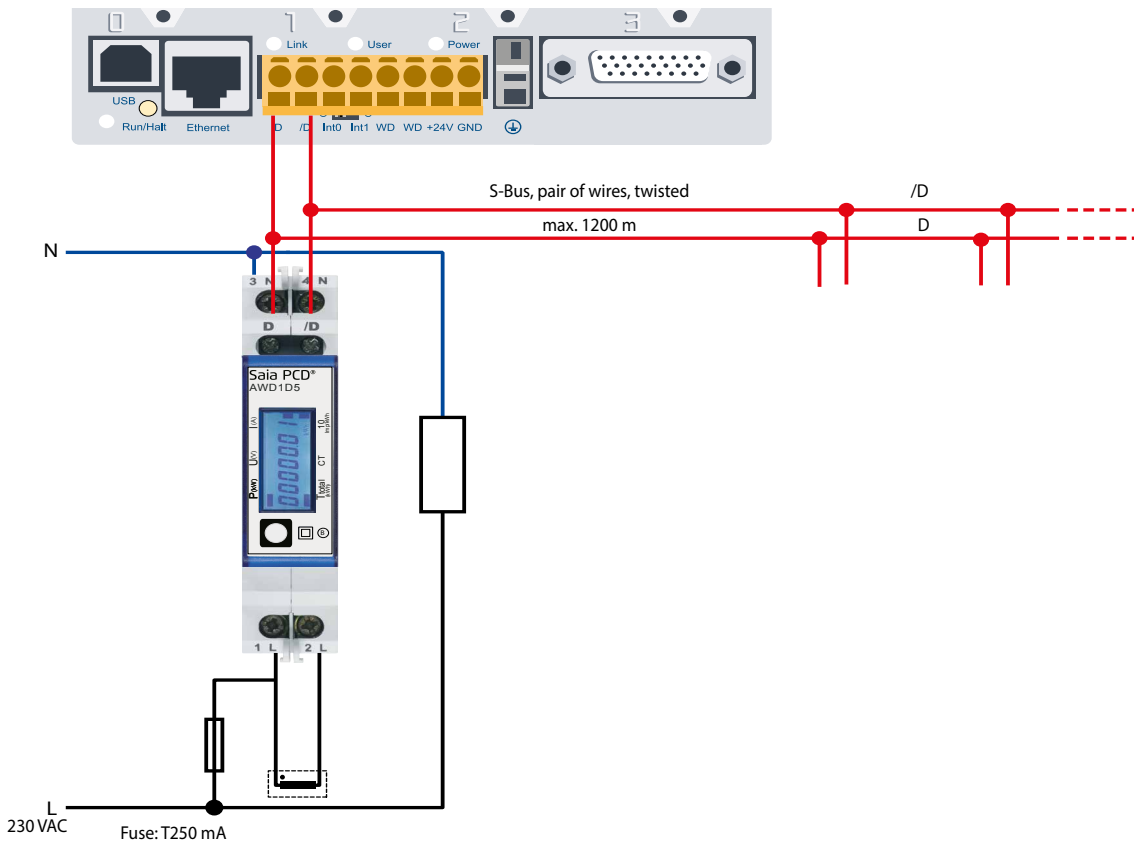


- ▶ T total (kWh) Indicates the total consumption
- ▶ CT Indicates the setting for the current transformer ratio
- ▶ P (kW) Indicates the instantaneous power
- ▶ U (V) Indicates the voltage
- ▶ I (A) Indicates the current
- ▶ 10 pulses/kWh Pulsates according to the amount of used power.

## Menu to display the value on LCD



## Wirings Diagram



## Technical data S-Bus

<b>Bus system</b>	S-Bus
<b>Transmission rate</b>	4800-9600-19'200-38'400-57'600-115'200. The transmission Baud rate is automatically detected
<b>Transmission mode</b>	Data
<b>Bus length (max.)</b>	1200 m (without repeater)
<b>Response time</b>	Write: up to 60 ms Read: up to 60 ms

- ▶ The communication is ready 30 s after the power on
- ▶ The use of energy meter in bus with intensive communication could reduce the performance of the bus
- ▶ Refresh time for the data is 5 s. For this reason one energy meter should be not polled faster as 5 s
- ▶ 254 devices could be connected to the S-Bus. Over 128 devices, a repeater should be used
- ▶ The interface don't have a terminal resistor, this should be provided external
- ▶ For a description of the used registers please look at the register page

## Data transmission

- ▶ Only «read/write» register instructions are recognized
- ▶ Only one register can be written at a time
- ▶ The device will respond «NAK» if more than 1 register is written
- ▶ Up to 10 Registers could be read at a time
- ▶ The device will respond «NAK» if more than 10 registers are read
- ▶ The device will not respond to any unknown query
- ▶ The device has a voltage monitoring system. In case of voltage loss, registers are stored in EEPROM (transmission rate) etc.

## Change the S-Bus address direct on device

- ▶ In the menu, go for «U»
- ▶ Push long (≥ 3 sec) → «ADR»
- ▶ Push short → S-Bus address +1, push long → S-Bus address +10
- ▶ Once the desired address is selected wait, to validate, till the root menu to come back

## Register

The following registers are available.

The registers 4, 10, 13, 19, 21, 22 and 23 are not used and will give always the answer 0.

R	Read	Write	Description	Unit
0	X		Firmware-Version	Ex: «11» = FW 1.1
1	X		Number of supported registers	will give «29»
2	X		Number of supported flags	will give «0»
3	X		Baudrate	BPS
4			Not used	will give a «0»
5	X		Type/ASN function	will give «AWD1»
6	X		Type/ASN function	will give «D5WS»
7	X		Type/ASN function	will give «00Ax» x : 2 = non MID x : 3 = MID
8	X		Type/ASN function	will give «A00»
9	X		HW Vers. Modif	Ex: «11» = FW 1.1
10			Not used	will give a «0»
11	X		Serial number	Serial number high
12	X		Serial number	Serial number low
13			Not used	will give a «0»
14	X		Status	«0» = no Problem «1» = Problem with last communication request
15	X		S-Bus timeout	ms
16	X	X	S-Bus address	
17	X		Error flags	0 : No error 1 : Error
18	X		Current transformer ratio	Ex: Transformer 100/5 give 20
19			Not used	will give «0»
20	X		Counter energy total	10 <sup>-1</sup> kWh. (multiplier 0,1) Ex: 00912351= 0091235,1 kWh
21			Not used	will give «0»
22			Not used	will give «0»
23			Not used	will give «0»
24	X		Effective voltage	V Ex: 230 = 230 V
25	X		Effective current	A / Except: 5:5 = 10-1 A Ex: 145 = 145 A
26	X		Effective active power	10 <sup>-1</sup> kW (multiplier 0,1) Ex: 154 = 15,4 kW
27	X		Effective reactive power	10 <sup>-1</sup> kvar (multiplier 0,1) Ex: 154 = 15,4 kvar
28	X		cos phi phase	10 <sup>-2</sup> (multiplier 0.01) Ex: 67 = 0.67

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