# Single phase Energy meter with integrated S-Bus interface

**Controls Division** 



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

### Main features:

- Single-phase energy meter, 230 VAC 50 Hz
- Measurement throught a current transformer up to 500 A
- Display of active power, voltage and current
- S-Bus Interface to query the data
- Reactive power and cosφ 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 MID version 50:5: AWD1D5GS00A3A00 MID version 100:5: AWD1D5HS00A3A00

410474200 Sealing cap:

### Technical data

Precision class	Class B according to EN50470-3 Class 1 according to IEC62053-21
Operating voltage	230 VAC, 50 Hz
	Tolerance –20 % / +15 %
Power consumption	Active 0.4W per phase
Counting range	000'000.099 9'999.9
	1'000'0009'999'999
Display	LCD backlight, digits 5 mm high

### Mounting

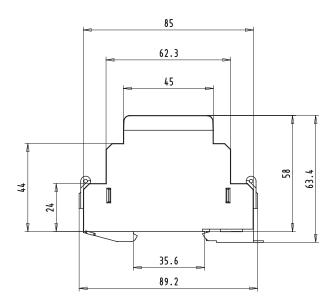
Mounting Terminal connections main circuit	On 35 mm rail, according to EN60715TH35  Conductor cross-section max. 6 mm², screwdriver Pozidrive no. 1, slot no.1  Breakaway torque: 1,2 Nm	
Terminal connections control circuit	Conductor cross-section max. 2.5 mm², screwdriver Pozidrive no. 0, or slot no.1 Breakaway torque: 0.5 Nm	
Insulation characteristics	4 kV/50 Hz test according to VDE0435 for Energy Meter part	
	6 kV 1.2/50 μs surge voltage according to IEC255-4	
	2 kV / 50 Hz test according to VDE0435 for Interface	
	device protection class II	
Ambient temperature	–10 °+55 °C	
Storage temperature		
Relative humidity	95% at 25°+40 °C, without condensation	
EMC/interference immunity	Surge voltage according to IEC61000-4-5 at main circuit, 4kV at S-Bus interface, 1kV	
	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 15kV	

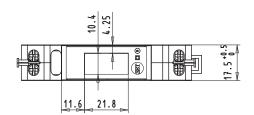
#### CT measurement

CT measurer	ment	5500 A			
Reference/max. cur	rent	$I_{ref} = 5 \text{ A}, I_{max} = 6 \text{ A}$			
Starting/minimum of	nimum current		$I_{st} = 10$ mA, $I_{min} = 0.05$ A		
		5:5	50:5	100:5	200:5
Converter ratio		250:5	300:5	400:5	500:5
Pulses per kWh	LCD Display		10 lm	p/kWh	

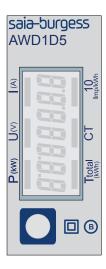
### Dimension diagram

### Structure





### Display elements, direct measurement



■ T total (kWh)

■ CT

■ P (kW)

U (V)I (A)

■ 10 pulses/kWh

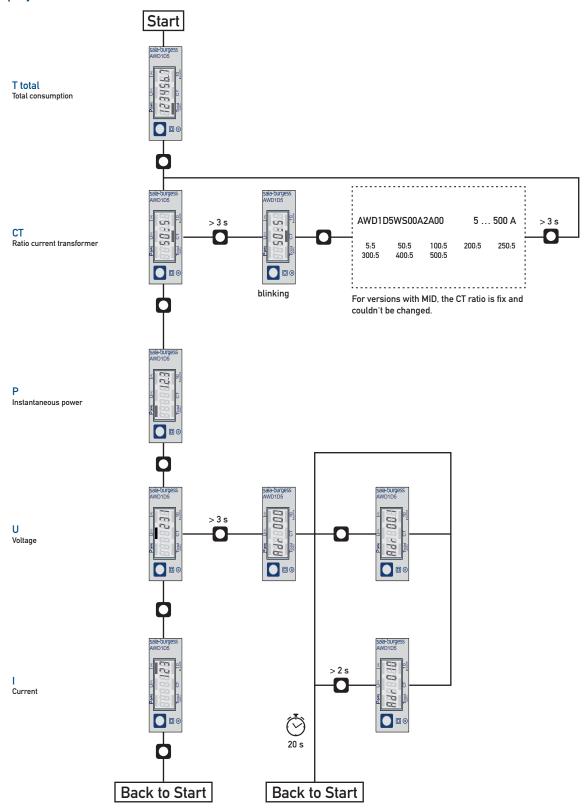
Indicates the total consumption Indicates the setting for the current transformer ratio

Indicates the instantaneous power

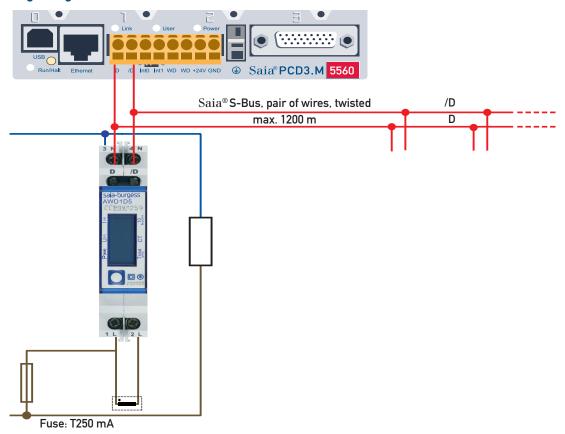
Indicates the voltage Indicates the current

Pulsates according to the amount of used power.

## Menu to display the value on LCD



### Wirings Diagram



#### Technical data S-Bus

Bus system	Saia® S-Bus
Transmission rate	2'400-4'800-9'600-19'200-38'400-57'600-115'200.
	The transmission Baud rate is automatically detected
Transmission mode	Data
Bus length (max.)	1200 m (without repeater)
Response time:	Write: up to 60 ms
(to system response)	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
- ullet 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, 11, 13, 19, 21, 22 and 23 are not used and will give always the answer 0.

R	Read	Write	Description	Unit	
0	Х		Firmware-Version	Ex: «11» = FW 1.1	
1	Х		S-Bus com. number of supported registers	will give «29»	
2	Х		S-Bus com. number of supported flags	will give «0»	
3	Х		Baudrate	BPS	
4	Х		Not used	will give a «0»	
5	Х		Type/ASN function	will give «AWD1»	
6	Х		Type/ASN function	will give «D5WS»	
7	Х		Type/ASN function	will give «00A»	
8	Х		Type/ASN function	will give « »	
9	Х		HW Vers. Modif	Ex: «11» = FW 1.1	
10	Х		Not used	will give a «0»	
11	Х		Not used	will give a «0»	
12	Х		Serial number		
13	Х		Not used	will give a «0»	
14	х		Status/Protect	<pre>«0» = no Problem «1» = Problem with last communication request</pre>	
15	Х		S-Bus timeout	ms	
16	Х	Х	S-Bus address		
17	Х		Error flags	0 : No error 1 : Error	
18	Х		Current transfrormer ratio	Ex: Transformer 100/5 give 20	
19	Х		Not used	will give «0»	
20	Х		Counter energy total	10 <sup>-1</sup> kWh. (multiplier 0.1) Ex: 00912351= 0091235.1 kWh	
21	Х		Not used	will give «0»	
22	Х		Not used	will give «0»	
23	Х		Not used	will give «0»	
24	х		Effective voltage	V Ex: 230 = 230 V	
25	Х		Effective current	A / Except: 5:5 = 10 <sup>-1</sup> A Ex: 145 = 145 A	
26	х		Effective active power	10 <sup>-1</sup> kW (multiplier 0,1) Ex: 154 = 15.4 kW	
27	Х		Effective reactive power	10 <sup>-1</sup> kVar (multiplier 0,1) Ex: 154 = 15,4 kVar	
28	х		cos phi phase	10 <sup>-2</sup> (multiplier 0.01) Ex: <i>67</i> = 0. <i>6</i> 7	



### Contact

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