

## Energy meter with integrated Serial S-Net interface

Controls Division

Energy meters with an integrated Serial S-Net interface allow direct reading of all relevant data, such as energy (Total and partial), current and voltage for every phase and active and reactive power for every phase and for the three phases.

### Main features:

- 3-phase energy meter, 3 × 230 / 400 VAC 50 Hz
- Direct measurement up to 65 A
- Display of active power, voltage and current for every phase
- Display of active power for all phase
- S-Bus Interface to query the data
- Reactive power for every and/or all Phase available through interface
- Up to 254 meter can be connected to the S-Bus Interface
- 7-digit display for 1 or 2 tariffs
- 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: ALE3D5FS10C2A00

MID Version: ALE3D5FS10C3A00

### Technical data

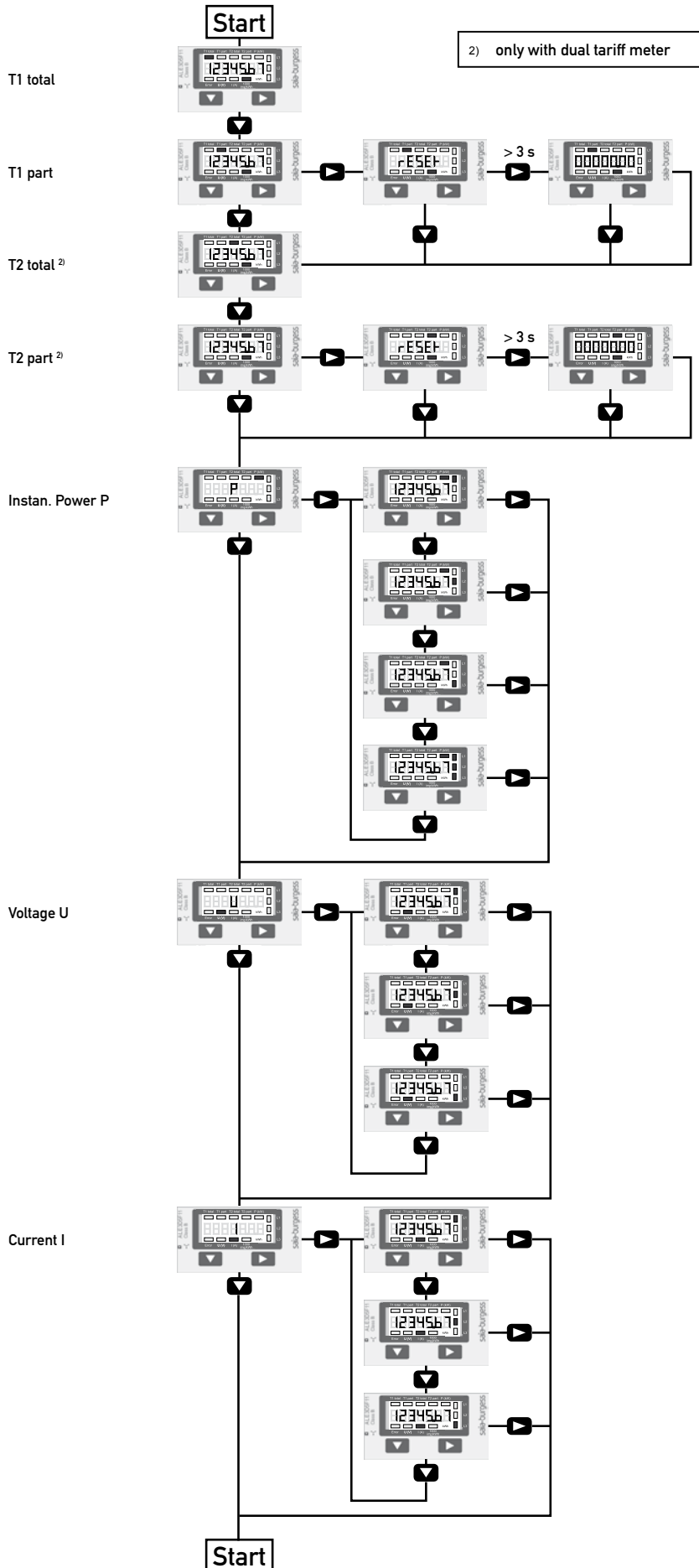
Precision class	B according to EN50470-3, class 1 according to IEC62053-21	
Operating voltage	3 × 230 / 400 VAC, 50 Hz Tolerance -20% / +15%	
Reference/ measurement current	$I_{ref} = 10 A, I_{max} = 65 A$	
Starting/minimum current	$I_{st} = 40 mA, I_{min} = 0.5 A$	
Power consumption	Active 0.4 W per phase	
Counting range	00'000.00...99'999.99 100'000.0...999'999.9	
Display	LCD backlit, digits 6 mm high	
Display without mains power	Capacitor based LCD max. 2 times over 10 days	
Pulses per kWh		
Standard Version	LC-Display	100 Imp./kWh
MID Version	LED	1'000 Imp./kWh

### Mounting

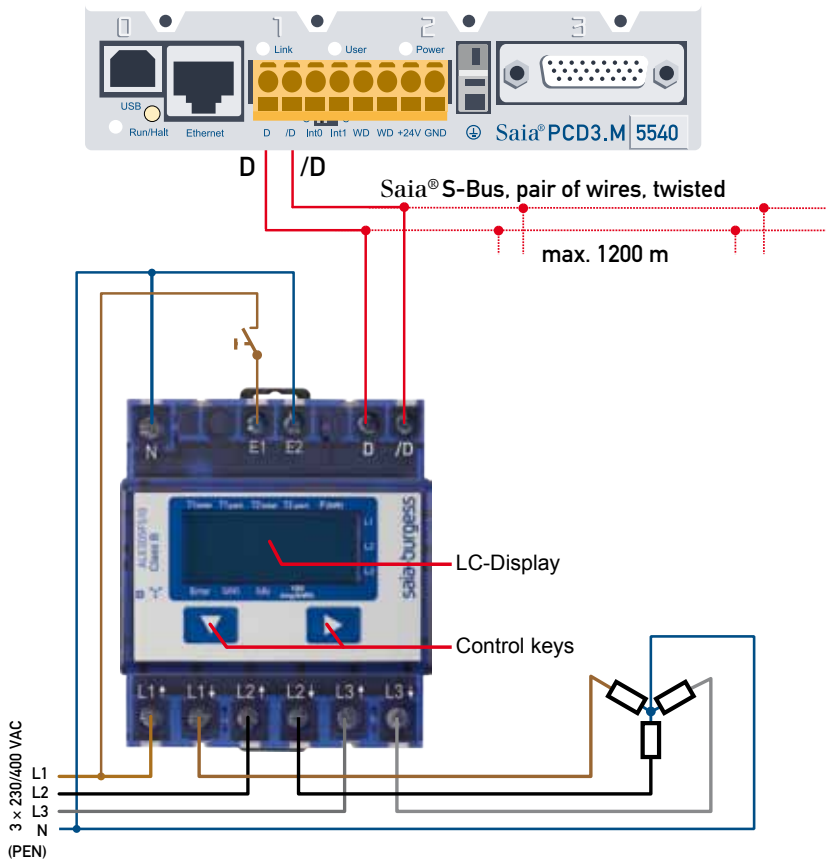
Mounting	On 35 mm rail, according to EN60715TH35
Terminal connections main circuit	Conductor cross-section 1.5–16 mm <sup>2</sup> , screwdriver Pozidrive no. 1, slot no.2, torque 1.5–2 Nm
Terminal connections control circuit	Conductor cross-section max. 2.5 mm <sup>2</sup> , screwdriver Pozidrive no. 0, slot no. 2, torque 0.8 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	-30 °...+85 °C
Relative humidity	95 % at 25 °...+40 °C, without condensation
EMC/interference immunity	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



## Menu to display the value on LCD



## Wirings Diagram



### Technical data S-Bus

Bus system	Saia® S-Bus
Transmission rate	1'200-2'400-4'800-9600-19'200-38'400-57'600-115'200. The transmission Baud rate is automatically detected
Transmission mode	Data
Bus length (max.)	1200 m (without repeater)
Response time: (to system response)	Write : 60 ms Read : 60 ms

- The Interface works only if the Phase 1 is connected.
- 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 10 s. For this reason one energy meter should be not polled faster as 10 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

- To modify the S-Bus address, press 3 sec on ► touch
- In menu, ▼ increase address by 10, ► increase by 1
- Once the address is selected wait for the root menu to come back

## Register

The following registers are available. The registers 4, 10, 11, 12, 13 and 18 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		S-Bus com. number of supported registers	will give „41“
2	X		S-Bus com. number of supported flags	will give „0“
3	X		Baudrate	BPS
4	X		Not used	will give a „0“
5	X		Type/ASN function	will give „ALE3“
6	X		Type/ASN function	will give “D5FS”
7	X		Type/ASN function	will give “10C”
8	X		Type/ASN function	will give “ ”
9	X		HW Vers. Modif	Ex: „11“= FW 1.1
10	X		Not used	will give a „0“
11	X		Not used	will give a „0“
12	X	X	Not used	will give a „0“
13	X	X	Not used	will give a „0“
14	X		Status/Protect	„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 Phase 1 2 : Error Phase 2 3 : Error Phase 1 and 2 4 : Error Phase 3 5 : Error Phase 1 and 3 6 : Error Phase 2 and 3 7 : Error Phase 1, 2 and 3
18	X		Not used	will give „0“
19	X		Tariff flag	0 is Tariff 1 4 is Tariff 2
20	X		WT1 total Counter Energy Total Tarif 1	10 <sup>-2</sup> kWh. (multiplier 0.01) Ex: 00912351= 009123.51 kWh
21	X	X	WT1partial Counter Energy partial Tarif 1 To reset the counter, 0 should be write	10 <sup>-2</sup> kWh. (multiplier 0.01) Ex: 00912351= 009123.51 kWh
22	X		WT2 total Counter Energy Total Tarif 2	10 <sup>-2</sup> kWh. (multiplier 0.01) Ex: 00912351= 009123.51 kWh
23	X	X	WT2partial Counter Energy partial Tarif 2 To reset the counter, 0 should be write	10 <sup>-2</sup> kWh. (multiplier 0.01) Ex: 00912351= 009123.51 kWh
24	X		URMS phase 1 Effective Voltage of Phase 1	V Ex: 230 = 230 V
25	X		IRMS phase 1 Effective Current of phase 1	10 <sup>-1</sup> A (multiplier 0.1) Ex: 314 = 31.4 A
26	X		PRMS phase 1 Effective active Power of phase 1	10 <sup>-2</sup> kW (multiplier 0.01) Ex: 1545 = 15.45 kW
27	X		QRMS phase 1 Effective reactive power of phase 1	10 <sup>-2</sup> kVA (multiplier 0.01) Ex: 1545 = 15.45 kVA
28	X		cos phi phase 1	10 <sup>-2</sup> (multiplier 0.01) Ex: 67 = 0.67
29	X		URMS phase 2 Effective Voltage of Phase 2	V Ex: 230 = 230 V
30	X		IRMS phase 2 Effective Current of phase 2	10 <sup>-1</sup> A (multiplier 0.1) Ex: 314 = 31.4 A
31	X		PRMS phase 2 Effective active Power of phase 2	10 <sup>-2</sup> kW (multiplier 0.01) Ex: 1545 = 15.45 kW
32	X		QRMS phase 2 Effective reactive power of phase 2	10 <sup>-2</sup> kVA (multiplier 0.01) Ex: 1545 = 15.45 kVA
33	X		cos phi phase 2	10 <sup>-2</sup> (multiplier 0.01) Ex: 67 = 0.67
34	X		URMS phase 3 Effective Voltage of Phase 3	V Ex: 230 = 230 V
35	X		IRMS phase 3 Effective Current of phase 3	10 <sup>-1</sup> A (multiplier 0.1) Ex: 314 = 31.4 A
36	X		PRMS phase 3 Effective active Power of phase 2	10 <sup>-2</sup> kW (multiplier 0.01) Ex: 1545 = 15.45 kW
37	X		QRMS phase 3 Effective reactive power of phase 3	10 <sup>-2</sup> kVA (multiplier 0.01) Ex: 1545 = 15.45 kVA
38	X		cos phi phase 3	10 <sup>-2</sup> (multiplier 0.01) Ex: 67 = 0.67
39	X		PRMS total Effective active Power of all phase	10 <sup>-2</sup> kW (multiplier 0.01) Ex: 1545 = 15.45 kW
40	X		QRMS total Effective reactive power of all phase	10 <sup>-2</sup> kVA (multiplier 0.01) Ex: 1545 = 15.45 kVA

## Contact

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