SAIA BURGESS CONTROLS

3-Phase Energy meter
with serial S-Bus interface

Energy meters with an integrated S-Bus 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
- Measurement up to 300 A through a current transformer 1 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
- 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:	AWC3D5WS00C2A00
Sealing cap:	4 104 7485 0

Technical data

Precision class	B according to EN50470-3, 1 according to IEC62053-21
Operating voltage	3 × 230 / 400 VAC, 50 Hz
	Tolerance –20 % / +15 %
Power consumption	Active 0.4 W per phase
Counting range	000000,0 ... 999999,9 1000000 ... 9999999
Display	LCD backlit, digits 6 mm high
Display without mains power	Capacitor based LCD
	max. 2 times over 10 days

Mounting

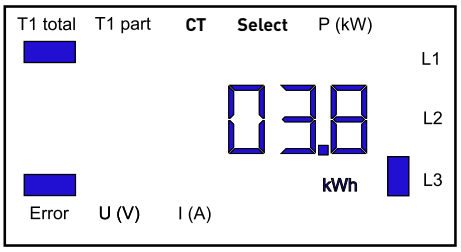
Mounting	On 35 mm rail, according to EN60715TH35
Terminal connections main circuit	Conductor cross-section 1.5 –16 mm², screwdriver Pozidrive no. 1, slot no. 2, torque 1.5 –2 Nm
Terminal connections control circuit	Conductor cross-section max. 2.5 mm², screwdriver Pozidrive no. 0, slot no. 2, torque 0.8 Nm
Insulation characteristics	4 kV / 50 Hz test according to VDE0435
	6 kV 1.2 / 50 µs surge voltage according to IEC255-4
	2 kV / 50 Hz test for interface
	Device protection class II
Ambient temperature	–25°…+55 °C
Storage temperature	–30°…+85 °C
Relative humidity	75 % 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

CT measurement

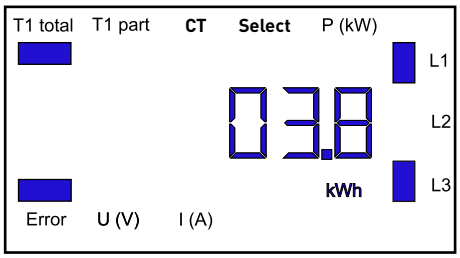
		1…300 A			
Reference/maximum current		I_{ref} = 1 A, I_{max} = 1.2 A			
Starting/minimum current		I_{st} = 2 mA, I_{min} = 0.01 A			
Converter ratio		1:1	10:1	20:1	30:1
		40:1	50:1	60:1	80:1
		100:1	120:1	150:1	200:1
		250:1	300:1		
Pulses per kWh	LED	10 Imp/kWh			

Error indication

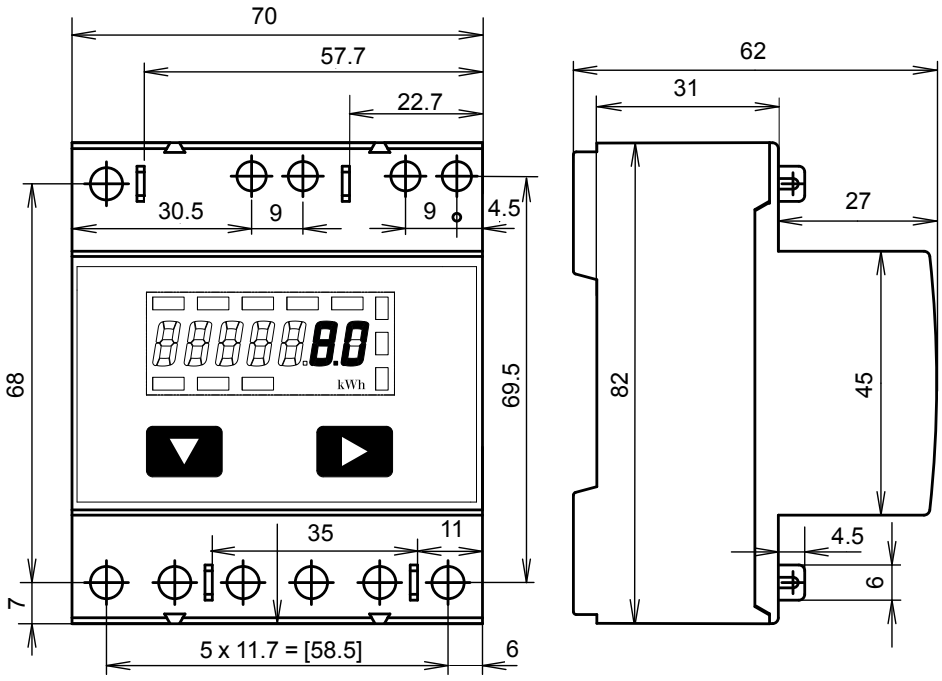
Example: connection error at L3



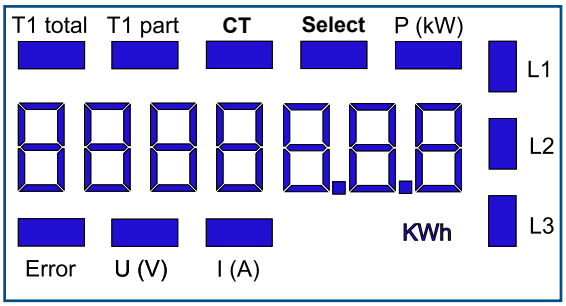
Example: connection error at L1 and L3



Dimensioned drawings

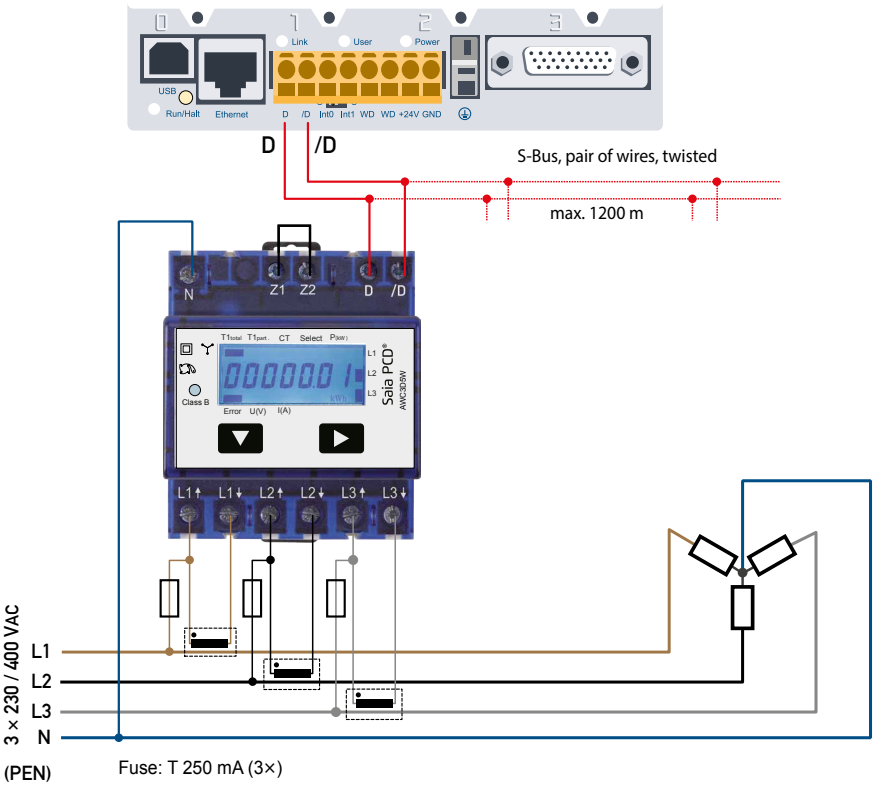


Display elements



- T1 total Indicates total consumption
- T1 part Indicates partial consumption This value can be reset
- CT Indicates the setting for the current transformer ratio
- Select When bridge Z1-Z2 is open, the transformer ratio can be adjusted under menu item: Select
- P (kW) Indicates the instantaneous output per phase or for all phases
- U (V) Indicates voltage per phase
- I (A) Indicates current per phase
- kWh Indicates the unit kWh for display of consumption (only for standard version)
- L1/L2/L3 Whenever the display shows P, U, I or Error, the corresponding phase will be indicated
- Error When phase is absent or current direction is wrong. The corresponding phase will also be indicated.

Wirings Diagram



The secondary, mains current transformer connection has to be connected to the phase to be measured and therefore the transformer don't have to be grounded.

Technical data S-Bus

Bus system	S-Bus
Transmission rate	1200-2400-4800-9600-19'200-38'400-57'600-115'200.
	The transmission Baud rate is automatically detected
Transmission mode	Data
Bus length (max.)	1200 m (without repeater)
Response time	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

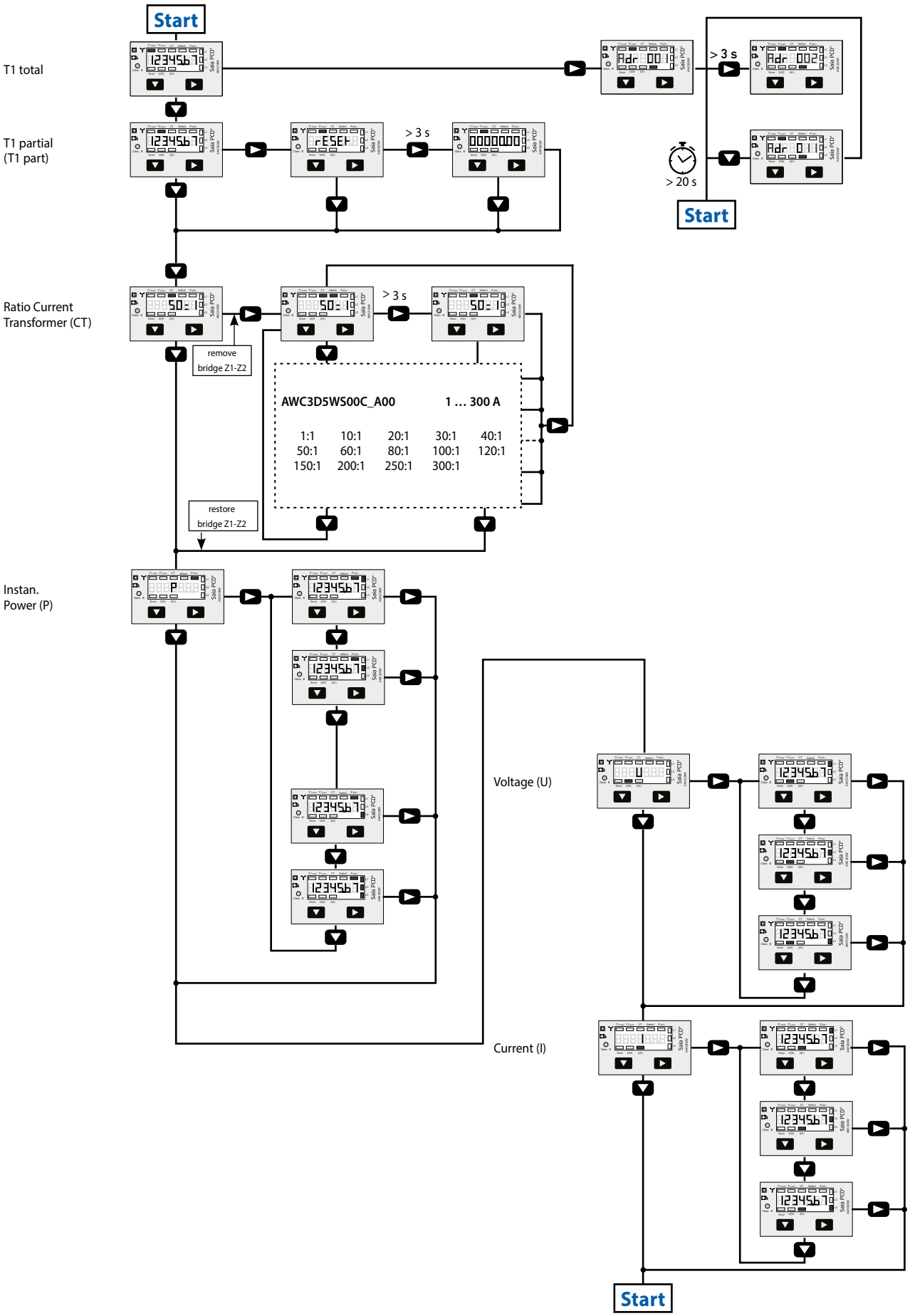
Data transmission

- 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

Menu to display the value on LCD



Register

The following Registers are available. All values are in HEX.

R	Read	Write	Description	Unit or Value
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			Not used	will give a «0»
5	X		ASN (1-4)	will give «AWC3»
6	X		ASN (5-8)	will give «D5WS»
7	X		ASN (9-12)	will give «00Cx» x : 2 = non MID x : 3 = MID
8	X		ASN (13-15)	will give «A00»
9	X		HW Vers. Modif	Ex: «11»= HW 1.1
10			Not used	will give a «0»
11	X		Serial numer	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 Phase 1 2: Error Phase 2 3: Error Phase 1 and 2 4: Error Phase 3 5: Error Phase 1and 3 6: Error Phase 2 and 3 7: Error Phase 1, 2 and 3
18	X		Current transformer ratio	Ex: Transformer 100/1 give 100
19			Not used	will give a «0»
20	X		WT1 total Counter Energy Total Tarif 1	10^{-1} kWh. (multiplier 0,1) Ex: 00912351= 0091235,1 kWh
21	X	X	WT1partial Counter Energy partial Tarif 1 Any value written reset the counter	10^{-1} kWh. (multiplier 0,1) Ex: 00912351= 0091235,1 kWh
22			Not used	will give a «0»
23			Not used	will give a «0»
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	A / Except. 1/1 = 10^{-1} A Ex: 145 = 145 A
26	X		PRMS phase 1 Effective active Power of phase 1	10^{-1} kW (multiplier 0,1) Ex: 154 = 15,4 kW
27	X		QRMS phase 1 Effective reactive power of phase 1	10^{-1} kVAr (multiplier 0,1) Ex: 154 = 15,4 kVAr
28	X		cos phi phase 1	10^{-2} (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	A / Except. 1/1 = 10^{-1} A Ex: 145 = 145 A
31	X		PRMS phase 2 Effective active Power of phase 2	10^{-1} kW (multiplier 0,1) Ex: 154 = 15,4 kW
32	X		QRMS phase 2 Effective reactive power of phase 2	10^{-1} kVAr (multiplier 0,1) Ex: 154 = 15,4 kVAr
33	X		cos phi phase 2	10^{-2} (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	A / Except. 1/1 = 10^{-1} A Ex: 145 = 145 A
36	X		PRMS phase 3 Effective active Power of phase 2	10^{-1} kW (multiplier 0,1) Ex: 154 = 15,4 kW
37	X		QRMS phase 3 Effective reactive power of phase 3	10^{-1} kVAr (multiplier 0,1) Ex: 154 = 15,4 kVAr
38	X		cos phi phase 3	10^{-2} (multiplier 0.01) Ex: 67 = 0.67
39	X		PRMS total Effective active Power of all phase	10^{-1} kW (multiplier 0,1) Ex: 154 = 15,4 kW
40	X		QRMS total Effective reactive power of all phase	10^{-1} kVAr (multiplier 0,1) Ex: 154 = 15,4 kVAr

Saia-Burgess Controls AG
Bahnhofstrasse 18 | 3280 Murten, Switzerland
T +41 26 672 72 72 | F +41 26 672 74 99
www.saia-pcd.com

support@saia-pcd.com | www.sbc-support.com

P+P26/558 EN03 10.2013 Subjects to change without notice