

ZMY/ZFY405CW1, ZMY/ZFY410CW1  
E570 Series 2 P2P Transformer Connected  
3-Phase Electricity Meter  
Technical Data



E570 Series 2 is a smart CT/VT 4- and 3-wire transformer connected electricity meter for the new energy markets. It offers reliable performance and versatile functionality. E570 has built-in support for multi-energy and can be optionally equipped with exchangeable communication modules, such as RS-485,

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## Revision history

Version	Date	Comments
a.00	18.05.2017	1 <sup>st</sup> draft.
a.01	16.08.2017	2 <sup>nd</sup> draft.
a.02	05.09.2017	3 <sup>rd</sup> draft after first R&D review.
a.03	06.02.2018	4 <sup>th</sup> draft containing type designation comments and remarks.
a.04	08.02.2018	5 <sup>th</sup> draft with final corrections made by HW engineering after complete testing.
a	14.02.2018	Final version completed for 1 <sup>st</sup> release with latest drawings.

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Transformer connected E570 Series 2 electricity meter offers a flexible solution for communication between the meter and the metering system (HES, Head End System) using exchangeable E57C

communication modules, such as RS-485, 2G GPRS or 2G/4G LTE.

## E570 Series 2 P2P Transformer Connected 3-Phase Electricity Meter (ZxY400CW1) - Technical Data

### General

#### Functions

Measurement:

- Combined bi-directional measurement
- 3-phase/4-wire and 3-phase/3-wire

Communication:

- Two-way communication to the AMM system with 2G/GPRS or 2G/4G LTE
- IDIS-compliant except data type 64 bit

Serial interface:

- Integrated RS-485 with twin jack RJ12

Version with wired M-Bus interface:

- Wired M-Bus master supports up to 4 multi-energy devices (gas, water, district heating)
- Also used as a CII customer interface

Inputs and outputs:

- Up to 5 S0 outputs
- One control input
- 1 mechanical on-off latching 10 A relay
- 2 solid-state 100 mA relays
- Optical port for local reading, configuration and parameterisation

Control buttons:

- One scroll button for the display
- One sealable reset button

LCD display:

- 9 digits for displaying register values
- Phase, energy direction, no-load mode, alarm, units of measure and supply control switch state indicators on display
- Multi-energy units

External supply control switch control:

- Control for the disconnection of power
- 3 operating modes
- Can be controlled remotely from the AMM system, manually with a push-button or via local communication interfaces

Interoperability and certification

- IDIS 2 DLM, DLMS and IEC readout
- MID certification
- IEC 62052-31 safety standard compliant
- RED compliant (2G and 2G/4G)
- RoHS compliant

#### Voltage

Nominal voltage  $U_n$  ZMY

3 x 58/100 V to 277/480 VAC

Nominal voltage  $U_n$  ZFY

3 x 100 to 240VAC

Extended operating voltage range

80% – 115%  $U_n$

#### Frequency

Nominal frequency  $f_n$  50 Hz or 60 Hz

Tolerance  $\pm 5\%$

### IEC-Specific Data

#### Current

Nominal current  $I_n$

1 A, 5 A

Maximum current  $I_{max}$

Metrological 200%  $I_n$

2 A, 10 A

Thermal

12 A

Short-circuit current

0.5 s with 30 x  $I_{max}$

#### Measurement Accuracy

ZxY405

Active energy, to IEC 62053-22 class 0.5 S

Reactive energy:

ZFY to IEC 62053-23 class 2

ZMY to IEC 62053-24 class 1 S

ZxY410

Active energy, to IEC 62053-21 class 1

Reactive energy:

ZFY to IEC 62053-23 class 2

ZMY to IEC 62053-24 class 2

#### Measurement Behaviour

Starting current ZxY405

According to IEC 0.1%  $I_n$

Typical 0.07%  $I_n$

#### Starting current ZxY410

According to IEC 0.2%  $I_n$   
 Typical 0.14%  $I_n$

The start-up of the meter is controlled by the starting power and not by the starting current.

### MID-Specific Data

#### Current (for Classes B and C)

Rated current  $I_n$  1.0 A, 5.0 A

Minimum current  $I_{min}$  0.01 A, 0.05 A

Transitional current  $I_{tr}$  0.05 A, 0.25 A

Maximum current  $I_{max}$  2.0 A, 10.0 A

#### Measurement Accuracy

ZxY400CP1 to EN 50470-3  
 classes B and C

#### Measurement Behaviour

Starting current  $I_{st}$   
 Class B:  $I_{st}$  0.002 A, 0.01 A  
 Class C:  $I_{st}$  0.001 A, 0.005 A

### General Data

#### Operating Behaviour

Voltage failure (power-down)  
 Voltage < 46V  
 Bridging time 0.5 s

Voltage restoration (power-up)  
 Function stand-by 3 phases < 3 s  
 Function stand-by 1 phase < 5 s  
 Detection of energy direction / phase voltage < 3 s  
 Voltage > 47 V

#### Power Consumption

Power consumption in voltage circuit per phase  
 Active power (typical) 0.6 W  
 Apparent power (typical) 1 VA

Power consumption in current circuit per phase  
 Apparent power at 5 A (typical) 0.125 VA  
 Apparent power at 1 A (typical) 0.005 VA

### Environmental Influences

Temperature range to IEC 62052-11  
 Operation meter -40 °C to +70 °C  
 Operation LCD display -20 °C to +70 °C  
 According to IEC62052-31 -25 °C to +55 °C  
 Battery -30 °C to +60 °C  
 Storage -40 °C to +85 °C

#### Temperature coefficient

Range -40 °C to +70 °C  
 Average value (typical)  $\pm 0.01\%$  per K  
 At  $\cos\varphi=1$  (from 0.05  $I_b$  to  $I_{max}$ )  $\pm 0.02\%$  per K  
 At  $\cos\varphi=0.5$  (from 0.1  $I_b$  to  $I_{max}$ )  $\pm 0.03\%$  per K

#### Ingress protection acc. to IEC 60529

IP54

### Electromagnetic Compatibility

#### Electrostatic discharges according to IEC 61000-4-2

Contact discharge 8 kV  
 Air discharge 15 kV

Immunity conducted disturbances 2 to 150 kHz  
 According to CENELEC TR 50579

Electromagnetic RF fields acc. to IEC 61000-4-3  
 80 MHz to 2 GHz 10 and 30 V/m

#### Radio interference suppression according to IEC/CISPR 22

class B

#### Fast transient burst test acc. to IEC 61000-4-4

Current and voltage circuits under load according to IEC 62053-21 4 kV  
 Auxiliary circuits > 40 V 2 kV

#### Surge immunity acc. to IEC 61000-4-5

Current and voltage circuits 4 kV  
 Auxiliary circuits > 40 V 1 kV

### Insulation Strength

#### Insulation strength

4 kV at 50 Hz during 1 min.

#### Impulse voltage 1.2/50 $\mu$ s

Auxiliary circuits to IEC 62052-11 6 kV  
 Current and voltage circuits to IEC 62052-11 8 kV  
 According to SP 1618 12 kV

#### Protective class according to IEC 62052-11

II □

## Calendar Clock

### Normal operation

Accuracy (at +23 °C) <5 ppm (0.5 s/day)

### Back-up time (power reserve)

With supercapacitor 14 days

With battery CR2477 (opt.) exp.10 years life time

## Display

### Characteristics

Type LCD liquid crystal display with backlight

Digit size / number of value field 8 mm / up to 9

Digit size / number of index field 6 mm / up to 6

## Inputs and Outputs

Digital input S0

According to IEC 62053-31 class B

### Control input

Control voltage  $U_s$  70 to 250 VAC

Input current < 1 mA ohmic at 230 VAC

2 outputs solid-state relay

Voltage range 0 to 280 VAC/DC

Maximum switching current 100 mA

1 electromechanical output on-off latching relay

Voltage range 0 to 250 VAC

Max. resistive load 10 A

Max. operations with  $\cos\varphi \sim 1$  100,000 op.

Up to 5 digital pulse outputs S0 output

Standard IEC 62053-31

Supply voltage (nominal/max. value) 24 / 27 V

Current on-state min. 10 mA, max. 27 mA  
off-state max. 2 mA

Test output active (configurable as reactive)

Type red LED

Pulse length selectable from 2 to 40 ms

Meter constant selectable

## Communication Interfaces

### Optical interface

Type serial, bi-directional interface

Max. transmission speed 19,200 bps

Protocol according to DLMS or opt. IEC 62056-21

2G interface (GPRS) E57C G10.L

Quad-band GSM 850/900/1800/1900 MHz

GPRS Class 10 multi-slot

GPRS Class B mobile station

CSD Up to 14.4 kbit/s

RED compliant

2G/4G LTE E57C L10.L

2G bands 900/1800 MHz

4G bands B1 (2100 MHz), B3 (1800 MHz),  
B7 (2600 MHz), B8 (900 MHz), B20 (800 MHz)

4G LTE FDD Category 1 up to 10Mbps  
with GPRS fall-back

RED compliant

### P2P protocols

TCP/IPV4 protocol

DLMS communication protocol supporting:

- COSEM transport layers for IPv4 networks 62056-47 (Wrapper) used for IP connections (GPRS)
- Data Link Layer using HDLC Protocol 62056-47 used for analogue connections (CSD)
- COSEM application layer 62056-53
- COSEM application model 62056-61 (OBIS) and 62056-62 (interface classes)

Antenna for all bands

Antenna connector SMA

Wired M-Bus interface EN 13757-2: 2005

“Point-to-Point” or “Point-to-Multipoint” bus system

Max. transmission rate 2,400 bps

Max. unit loads (1 unit load = 1.5 mA) 16

Max. wiring length ≤ 50 m

Transmission from master:

MARK: H = SPACE voltage +  $\geq 10$  V but < 42 V

SPACE: L  $\geq 12$  V

Transmission from slave:

MARK: L = 0 mA to 1.5 mA

SPACE: H = (11 mA to 20 mA + MARK current)

RS-485 Interface to ISO-8482

Type serial, symmetrical, half-duplex

Nominal input voltage CMR -7 to +12 VDC

Binary 1 state difference voltage < -0.2 V

Binary 0 state difference voltage > 0.2 V

Max. transmission rate 38,400 bps

Max. number of slaves 31

Protocols IEC 62056-21 and DLMS

## Material

Case antistatic polycarbonate plastic

Case material is antistatic glass-filled polycarbonate.

Flame retardant and self-extinguishing class V0 according to IEC 60695-11-10.

High temperature deflection, UV stabilised and can withstand applicable environmental tests defined in IEC 60068.

## Connections

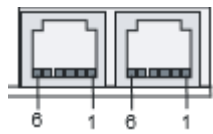
### Phase connections

Material of terminal	brass
Type	cage type terminal with one screw
Diameter	5.2 x 5.2 mm
Conductor cross-section	2.5 to 20.0 mm <sup>2</sup>
Stranded wires must be fitted with ferrules.	
Screw head	Pozidrive combi no. 2
Screw dimension	M4 x 15
Tightening torque	1.5 to 2 Nm

### RS-485 interface

 twin jack RJ12 type

#### Pin assignment



- |    |                   |
|----|-------------------|
| 1. | C (Common Ground) |
| 2. | Data A            |
| 3. | Data B            |
| 4. | Data B            |
| 5. | Data A            |
| 6. | C (Common Ground) |

## Weight and Dimensions

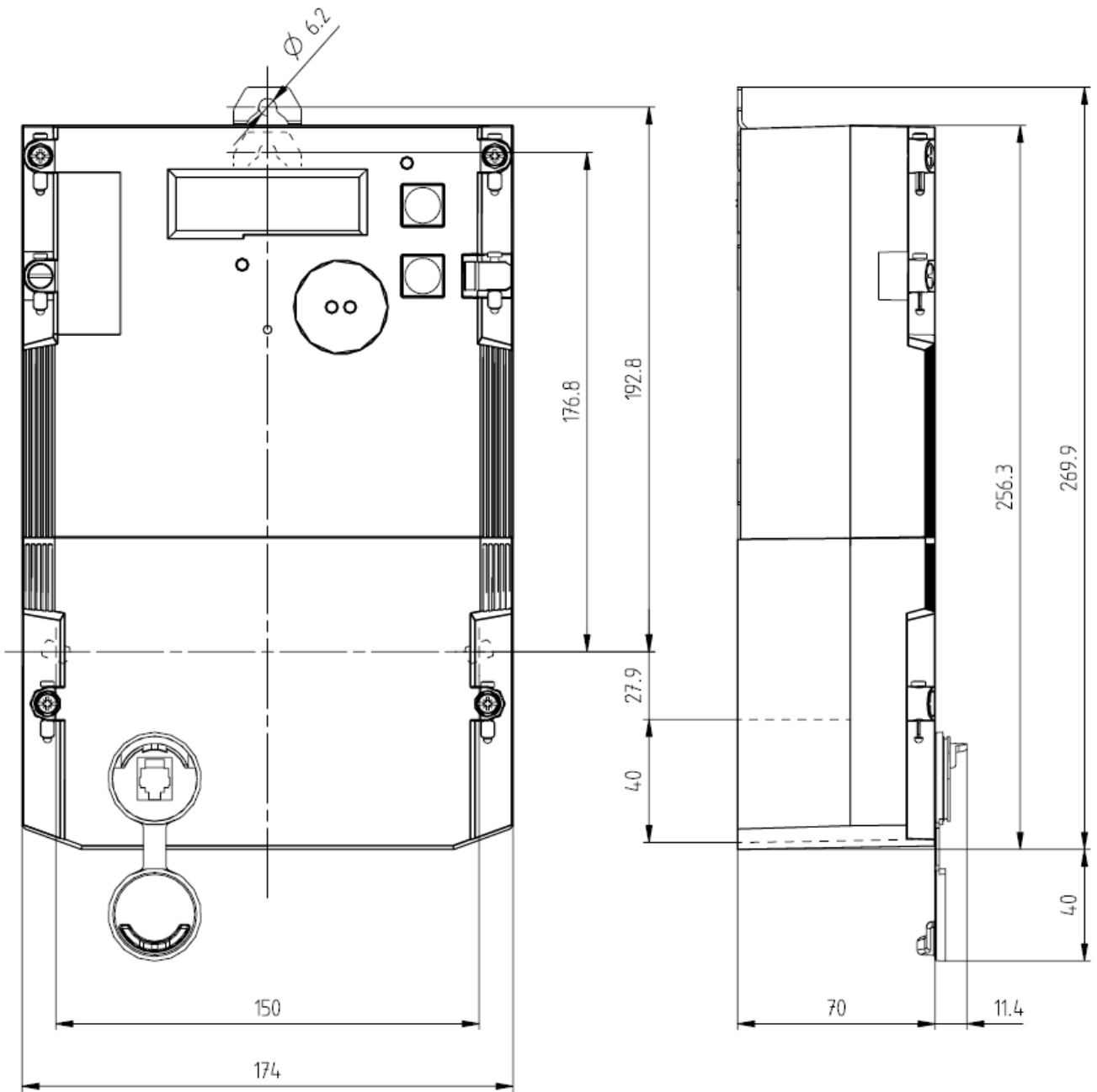
### Weight

approx. 1.2 kg

### Width/Height/Depth

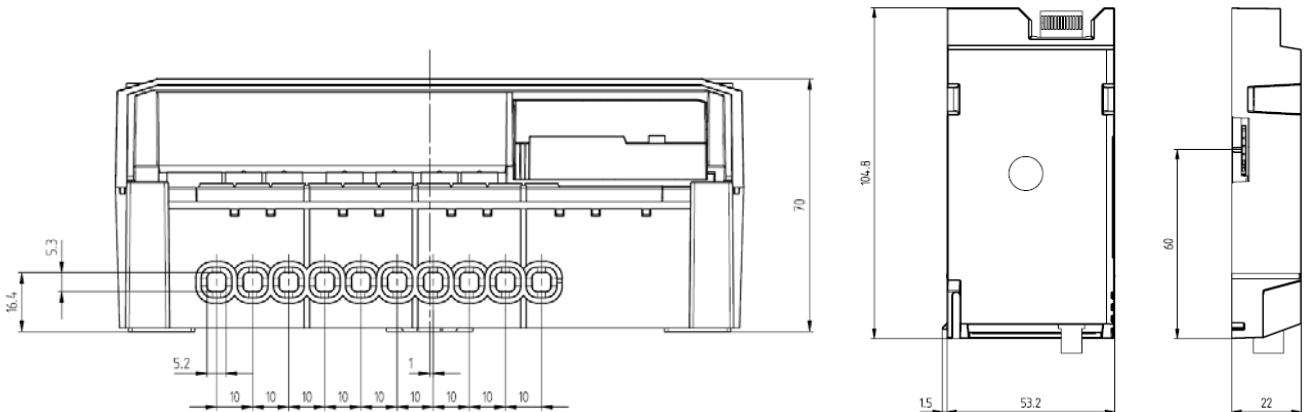
174/269/70 mm

Dimensions (with terminal cover)

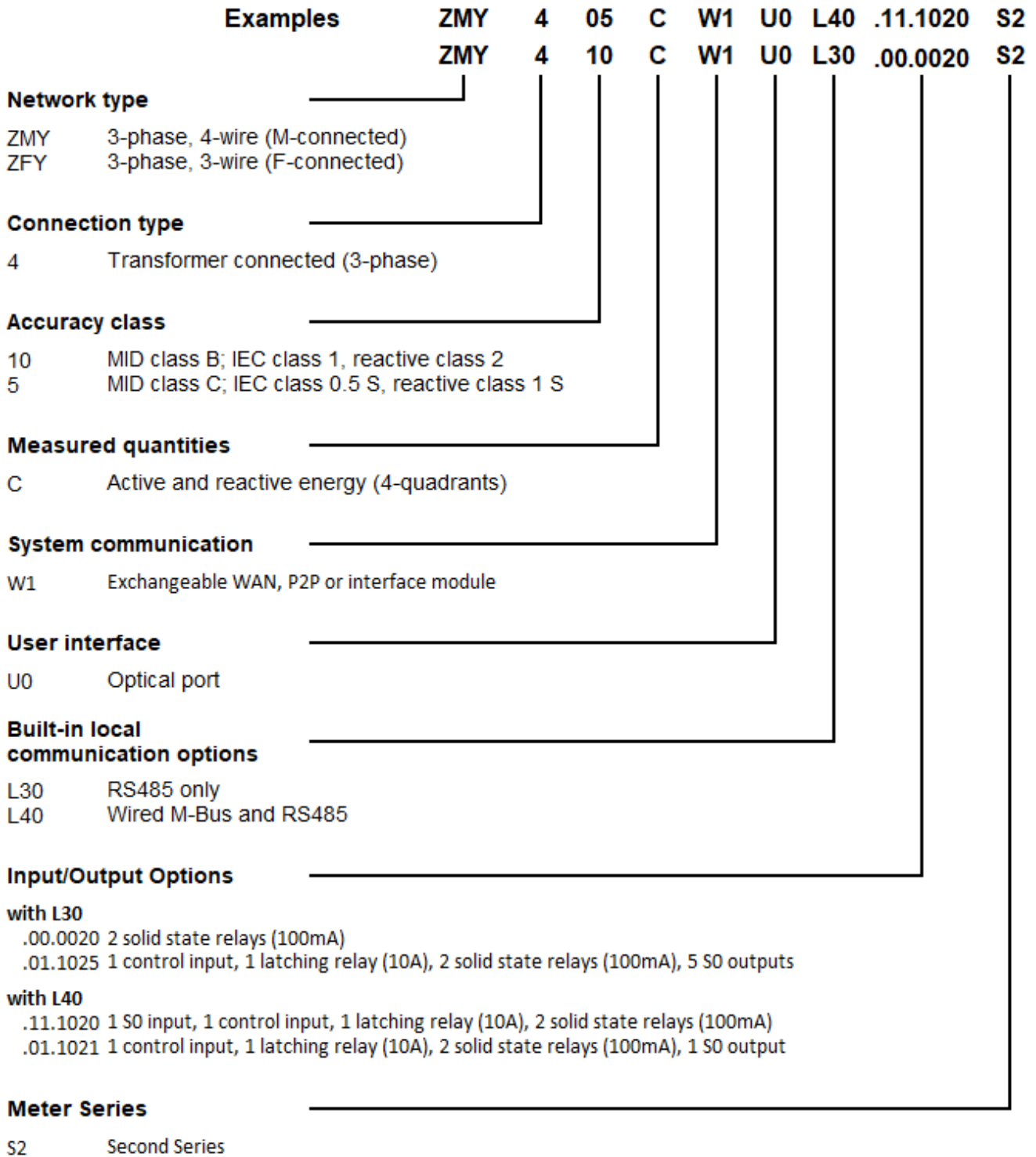


Terminal cover image used contains CII socket. Plain version available.

Dimensions of connection terminals



## E570 S2 Type Designation



### Available modules

- Var 1    **A 3 0 . 0**    RS-485 module interface
- Var 2    **G 1 0 . L**    2G with Last gasp alarming
- Var 3    **L 1 0 . L**    2G/4G with Last gasp alarming





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