

# INDUSTRIAL + COMMERCIAL

Landis+Gyr Dialog

## ZMG400AR/CR, ZFG400AR/CR

### TECHNICAL DATA



#### General

##### Voltage ZMG400xR

Nominal Voltage  $U_n$  3 x 58/100 to 69/120 VVoltage Range 80% to 115%  $U_n$ Nominal Voltage  $U_n$  3 x 220/380 to 240/415 VVoltage Range 70% to 125%  $U_n$ 

##### Voltage ZFG400xR

Nominal Voltage  $U_n$  3 x 100 to 120 VVoltage Range 80% to 115%  $U_n$ 

##### Frequency

Nominal Frequency  $f_n$  50 or 60 Hztolerance  $\pm 2\%$ 

#### IEC-specific data

##### Current

Nominal Current  $I_n$  1 A, 5 A, 5||1 A

##### Maximal Current $I_{max}$

metrological 1 A, 5A 200%

metrological 5||1 A 6 A

thermal 1 A 2.4 A

thermal 5 A 12 A

thermal 5||1 8 A

Short Circuit 0.5 s with  $20 \times I_{max}$ 

##### Measurement Accuracy

Accuracy ZxG405xR – only with  $I_n = 5$  A

active energy to IEC 62053-22 class 0.5 S

reactive energy to IEC 62053-23 class 1

##### Accuracy ZxG410xR

active energy to IEC 62053-21 class 1

reactive energy to IEC 62053-23 class 2

##### Measurement Behaviour

##### Starting Current ZxG405xR

according to IEC 0.1%  $I_n = 5$  Atypical 0.07%  $I_n = 5$  A

##### Starting Current ZxG410xR

according to IEC 0.2%  $I_n$ typical 0.14%  $I_n$ 5||1 A  $I_n = 1$  A

The startup of the meter is controlled by the starting power and not by the starting current.

##### Starting Power in M-Circuit single phase

nominal voltage x starting current

##### Starting Power in F-Circuit all phases

nominal voltage x starting current x  $\sqrt{3}$

## MID-specific data

### Current (for Classes B/C)

Reference Current  $I_{ref}$  1.0, 5.0 A/5.0 A

Minimum Current  $I_{min}$  0.01, 0.05 A/0.05 A

Transitional Current  $I_{tr}$  0.05, 0.25 A/0.25 A

Maximum Current  $I_{max}$  2.0, 6.0, 10.0 A/10.0 A

### Measurement Accuracy

ZxD400AR/CR; to EN 50470-3 Classes B and C

### Measurement Behaviour

Starting Current  $I_{st}$

Class B:  $I_{st}$  0.002, 0.01 A

Class C:  $I_{st}$  0.005 A

## General

### Operating Behaviour

Voltage Failure (Power Down)

bridging time according to IEC 0.5 s

data storage after another 0.2 s

switch off after approx. 1 s

Voltage Restoration (Power Up)

function standby 3 phases after 4 s

function standby 1 phase after 5 s

detection of

energy direction + phase voltage after 4 to 5 s

### Power Consumption

Power Consumption per Phase in Voltage Circuit

phase voltage 58 V 100 V 240 V

active power (typical) 0.5 W 0.5 W 0.8 W

apparent power (typical) 1.5 VA 1.5 VA 5 VA

Power Consumption per Phase in Current Circuit

phase current 1 A 5 A 10 A

active power (typical) 0.08 W 0.125 W 0.5 W

apparent power (typical) 0.1 VA 0.15 VA 0.6 VA

### Environmental Influences

Temperature Range to IEC 62052-11

operation class 1 -40 °C to +70 °C

operation class 0.5 -25 °C to +70 °C

storage -40 °C to +85 °C

Temperature Coefficient

range -25 °C to +70 °C

average value (typical)  $\pm 0.012\%$  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

Impermeability according to IEC 60529

IP53

### Electromagnetic Compatibility

Electrostatic Discharges to IEC 61000-4-2

contact discharge 15 kV

Electromagnetic RF Fields to IEC 61000-4-3

80 MHz – 2 GHz 10 and 30 V/m

Radio Interference Suppression

according to IEC/CISPR 22 class B

Fast Transient Burst Test to IEC 61000-4-4

current and voltage circuits not under load 4 kV

current and voltage circuits under load

according to IEC 62053-21/22/23 2 kV

auxiliary circuits > 40 V 1 kV

Fast Transient Surge Test to IEC 61000-4-5

current and voltage circuits 4 kV

auxiliary circuits > 40 V 1 kV

### Insulation Strength

Insulation Strength 4 kV @ 50 Hz during 1 min

Impulse Voltage 1.2/50 $\mu$ s to IEC 62052-11

current and voltage circuits 10 kV

For version 3 x 58/100 to 69/120 V:

current and voltage circuits 8 kV

auxiliary circuits > 40 V 6 kV

Protection Class II according to IEC 60050-131 

### Calendar Clock

Accuracy < 5 ppm

Calendar Type Gregorian or Persian (Jalaali)

Backup Time (Power Reserve)

with supercap > 21 days

loading time for max. backup time 300 h

with battery 1

(calendar clock, display readout) 10 years

battery type UM3-R6-AA

with battery 2 (calendar clock only) 10 years

battery type CR2032

### Display

Characteristics

type LCD liquid crystal display

digit size in value field 9 mm

number of digits in value field up to 8

digit size in index field 6 mm

number of digits in index field up to 7

## Inputs and Outputs

### Control Inputs

control voltage  $U_s$  100–240 V AC  
input current < 2 mA ohmic at 230 V AC

### Output Contacts

type solid state relay  
voltage 12–240 V AC/DC  
max. current 100 mA  
max. switching frequency (pulse length 20 ms) 25 Hz

### Optical Test Output Active and Reactive Energy

type red LED  
number 2  
meter constant selectable

## Communication Interfaces

### Optical Interface according to IEC 62056-21

type serial, asynchronous, half duplex  
max. bit rate 19'200 bps  
protocols IEC 62056-21 and dlms

### RS232 Interface to DIN 61393/DIN 66259

type serial, asymmetric, asynchronous, bidirectional  
operating mode intelligent or transparent  
nominal voltage  $\pm 9$  V DC  
maximum voltage  $\pm 15$  V DC  
minimum voltage  $\pm 5$  V DC  
max. bit rate 38'400 bps  
protocols IEC 62056-21 and dlms  
max. conductor length depending on environment and connecting cable 30 m  
insulation resistance to meter 4 kVAC/50 Hz, 1 min  
creep distance  $\geq 6.2$  mm

### RS485 Interface according to ISO-8482

type serial, symmetrical, half duplex  
nominal voltage range  $-7$  to  $+12$  V DC  
binary 1 state difference voltage <  $-0.2$  V  
binary 0 state difference voltage >  $0.2$  V  
max. bit rate 38'400 bps  
max. number of slaves 32  
protocols IEC 62056-21 and dlms  
max. conductor length depending on environment and connecting cable  $\leq 1000$  m  
insulation resistance to meter 4 kVAC/50 Hz, 1 min  
creep distance  $\geq 6.2$  mm

### CS Interface to IEC 62056-21/DIN 66258

type serial, bidirectional current interface  
nominal voltage without load 24 V DC  
max. voltage without load 30 V DC  
binary 1 state 10–30 mA  
binary 0 state  $\leq 2$  mA  
max. bit rate 9600 bps  
protocols IEC 62056-21 and dlms  
insulation resistance to meter 4 kVAC/50 Hz, 1 min  
creep distance  $\geq 6.2$  mm

## Weight and Dimensions

Weight approx. 1.5 kg

### External Dimensions

width 177 mm  
height (with short terminal cover) 244 mm  
height (with standard terminal cover) 281.5 mm  
height (with extended hook) 305.5 mm  
depth 75 mm

### Suspension Triangle

height (with extended hook) 230 mm  
height (suspension eyelet open) 206 mm  
height (suspension eyelet covered) 190 mm  
width 150 mm

### Terminal Cover

short no free space  
standard 40 mm free space  
long 60 mm free space  
ZxB-type 80 mm 80 mm free space  
ZxB-type 110 mm 110 mm free space  
ADP1 adapter  
RCR/FTY adapter

## Connections

### Phase Connections

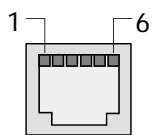
type cage type terminals  
cross section 5.2 x 5.2 mm  
recommended conductor cross section 4 – 6 mm<sup>2</sup>  
screw head Pozidrive Combi No. 2  
screw dimension M4 x 15  
screw head diameter max. 5.6 mm  
tightening torque 1.5 to 2 Nm

### RS232 Interface

type designation .02/.42

type RJ 12

pin assignment



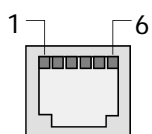
- 1 CTS
- 2 TxD
- 3 GND
- 4 DTR
- 5 RxD
- 6 DSR

### RS485 Interface

type designation .03/.43

type RJ 12

pin assignment

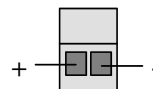


- 1 c (ground)
- 2 a (data a)
- 3 b (data b)
- 4 b
- 5 a
- 6 c

### CS Interface

type designation .40/.42/.43

type screw type terminals



### Other Connections

type screw type terminals

max. current of voltage outputs 1 A

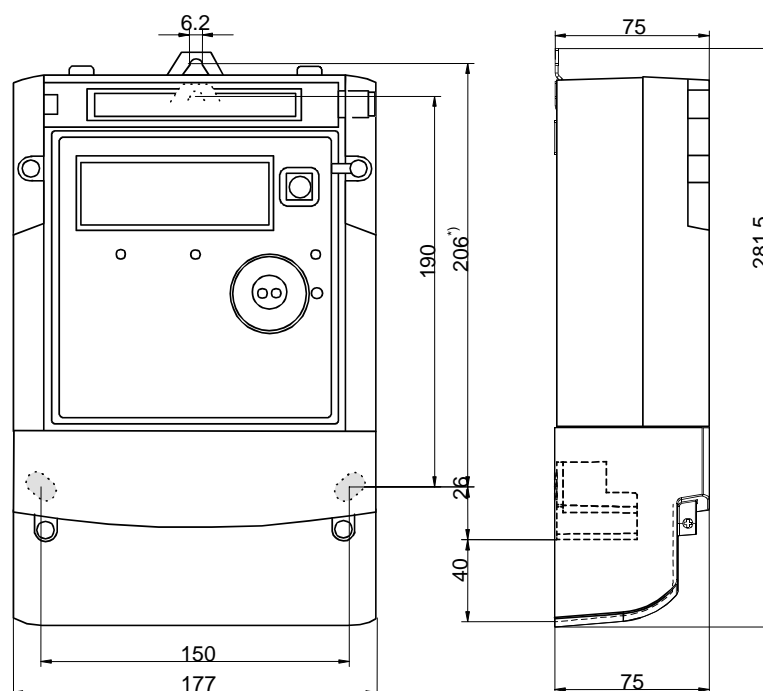
max. voltage of control inputs 300 V

### Material

#### Housing

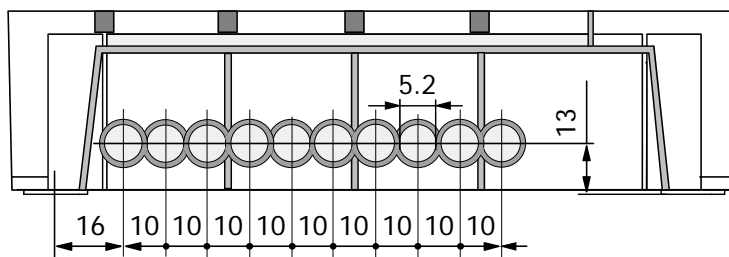
The meter housing is made of polycarbonate which is partly glass-fibre reinforced.

### Meter Dimensions (Standard Terminal Cover)

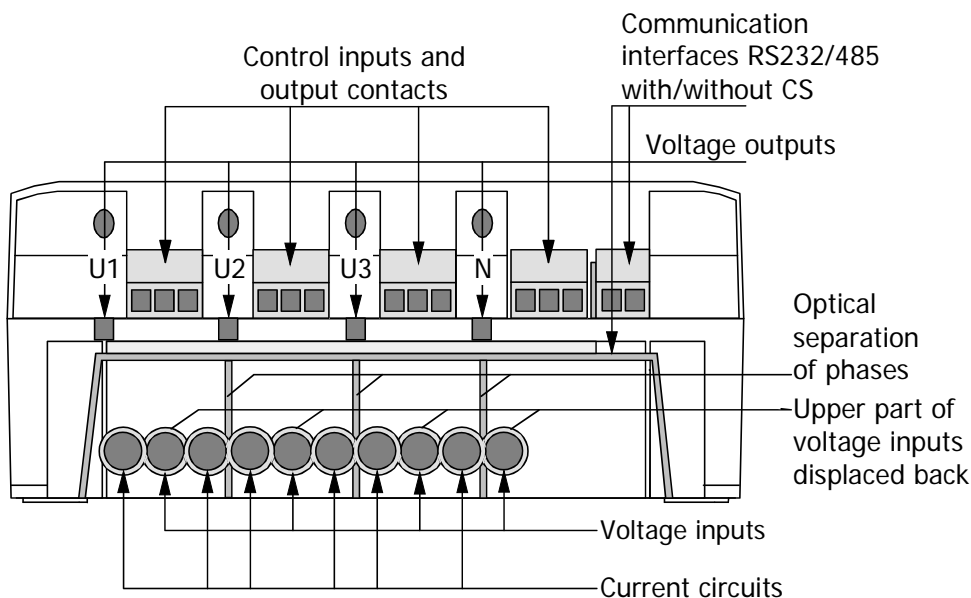


\*) The height of the suspension triangle with extended hook is 230 mm. See also User Manual.

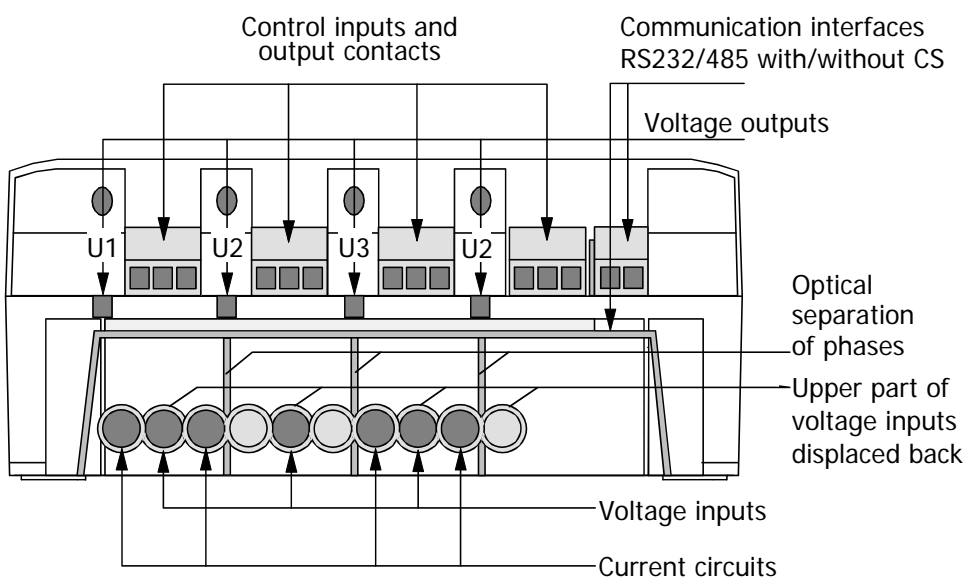
Terminal Dimensions



Terminal Layout according to DIN – 4-wire ZMG400



Terminal Layout according to DIN – 3-wire ZFG400



<b>Type Designation</b>	ZMG	4	10	CR	4.26	0	b	.43
<b>Network Type</b>	_____							
ZFG	3-phase 3 wire network (F-connection)							
ZMG	3-phase 4 wire network (M-connection)							
<b>Connection Type</b>	_____							
3	Direct connection							
4	Transformer connection							
<b>Accuracy Class</b>	_____							
10	Class 1 (IEC), B (MID) ZMG310/410..							
05	Class 0.5 (IEC), C (MID) ZMG405..							
<b>Measured Quantities</b>	_____							
AR	Active energy meter							
CR	Combi meter for active and reactive energy							
<b>Tariff Functions; Control Inputs/Output Contacts</b>	_____							
1.xx	Energy rates, externally controlled							
2.xx	Energy rates, internally controlled with time switch							
3.xx	Energy and demand rates, externally controlled							
4.xx	Energy and demand rates, internally controlled with time switch							
x.00	no inputs/output contacts							
x.02	2 output contacts							
x.26	2 control inputs/6 output contacts							
x.44	4 control inputs/4 output contacts							
<b>Special Functions</b>	_____							
0	none							
<b>Further Functions</b>	_____							
0	none							
3	with software events							
4	with hard- and software events							
7	with load profile							
a	with load profile and software events							
b	with load profile and hard- and software events							
<b>Interfaces</b>	_____							
00	none							
02	with RS232							
03	with RS485							
40 <sup>*)</sup>	with CS							
42 <sup>*)</sup>	with CS and RS232							
43 <sup>*)</sup>	with CS and RS485							
	*) Available for x.00, x.26, x.44 only							

Data subject to change without notice.

**Landis+Gyr AG**  
 Feldstrasse 1  
 CH-6301 Zug  
 Switzerland  
 Phone: +41 41 935 60 00  
 www.landisgyr.com

