

# INDUSTRIAL + COMMERCIAL

Landis+Gyr Dialog

## ZMG400AR/CR

### TECHNICAL DATA



#### General

##### Voltage

Nominal Voltage  $U_n$  ZMG400xR  
3 x 120/208 to 240/415 V

Voltage Range 80% to 115%  $U_n$

##### Frequency

Nominal Frequency  $f_n$  60 Hz  
tolerance  $\pm 2\%$

#### IEC-specific data

##### Current

Nominal Current  $I_n$  5 A

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

metrological 5A	10 A
thermal 5 A	12 A

Short Circuit 0.5 s with 20 x  $I_{max}$

#### Measurement Accuracy

##### Accuracy ZMG405xR

active energy to IEC 62053-22	class 0.5 S
reactive energy to IEC 62053-23	class 1

##### Accuracy ZMG410xR

active energy to IEC 62053-21	class 1
reactive energy to IEC 62053-23	class 2

#### Measurement Behaviour

##### Starting Current ZMG405xR

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

##### Starting Current ZMG410xR

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

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	

#### MID-specific data

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

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

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

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

Maximum Current  $I_{max}$  10.0 A/10.0 A

#### Measurement Accuracy

ZMD400AR/CR; to EN 50470-3 Classes B and C

## Measurement Behaviour

Starting Current $I_{st}$	
Class B: $I_{st}$	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	120 V	220 V
active power (typical)	0.6 W	1.0 W
apparent power (typical)	2.8 VA	11 VA

Power Consumption per Phase in Current Circuit		
phase current	5 A	10 A
active power (typical)	0.125 W	0.5 W
apparent power (typical)	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
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### 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

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
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Impulse Voltage 1.2/50 $\mu$ s	to IEC 62052-11
current and voltage circuits	10 kV
auxiliary circuits > 40 V	6 kV

Protection Class according to IEC 60050-131	<input type="checkbox"/> 2
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### Calendar Clock

Accuracy	< 5 ppm
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Calendar Type	Gregorian or Persian (Jalaali)
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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 type	Active and Reactive Energy	red LED
number		2
meter constant		selectable

## Communication Interfaces

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

RS232 Interface type	to DIN 61393/DIN 66259	serial, asymmetric, asynchronous, bidirectional
operating mode		intelligent or transparent
nominal voltage		±9 V DC
maximum voltage		±15 V DC
minimum voltage		±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		≥ 6.2 mm

RS485 Interface type	according to ISO-8482	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		≤ 1000 m
insulation resistance to meter		4 kVAC/50 Hz, 1 min
creep distance		≥ 6.2 mm

CS Interface type	to IEC 62056-21/DIN 66258	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		≤ 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		≥ 6.2 mm

## Weight and Dimensions

Weight	approx. 1.5 kg
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### External Dimensions

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

### Suspension Triangle

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	

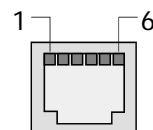
## Connections

### 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

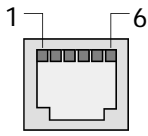
type designation	.02/.42
type	RJ 12
pin assignment	



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

### RS485 Interface

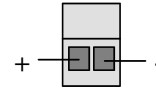
type designation .03/.43  
type RJ 12  
pin assignment



- 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

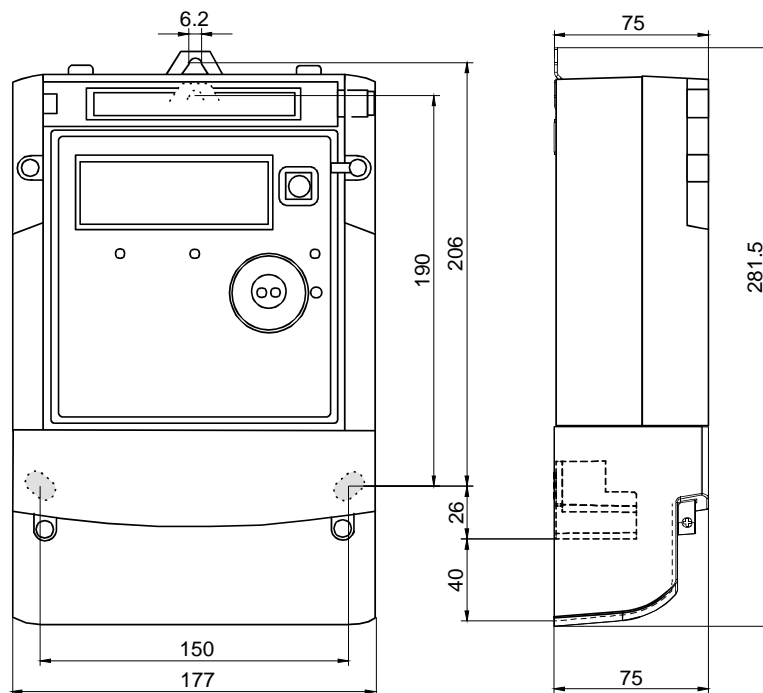
type screw type terminals  
max. current of voltage outputs 1 A  
max. voltage of control inputs 300 V

### Material

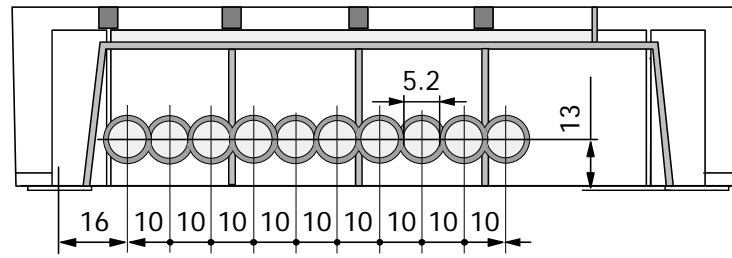
#### Housing

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

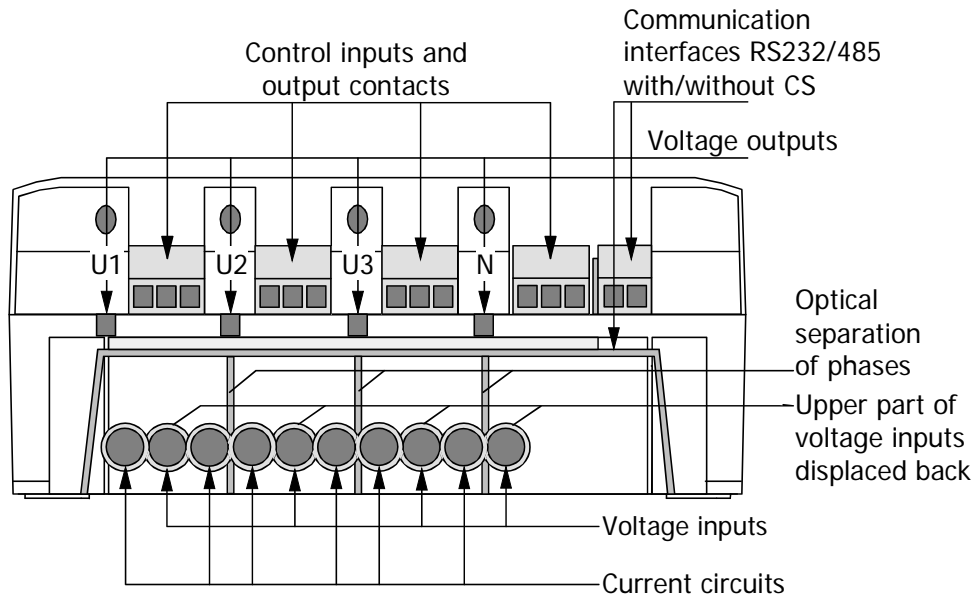
### Meter Dimensions (Standard Terminal Cover)



## Terminal Dimensions



## Terminal Layout



Type Designation	ZMG	4	10	CR	4.26	0	b	.43
<b>Network Type</b>	_____							
ZMG	3-phase 4 wire network (M-connection)							
<b>Connection Type</b>	_____							
4	Transformer connection							
<b>Accuracy Class</b>	_____							
10	Class 1 (IEC), B (MID) ZMG410..							
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.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 (not yet available)							
40	with CS							
42	with CS and RS232							
43	with CS and RS485 (not yet available)							

Data subject to change without notice.

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