

# INDUSTRIAL + COMMERCIAL

Landis+Gyr Dialog

## ZMD400AR/CR, ZFD400AR/CR

### TECHNICAL DATA



#### General

##### Voltage

Nominal Voltage  $U_n$  ZMD400xR

3 x 58/100–69/120 V

3 x 110/190–133/230 V

3 x 220/380–240/415 V

extended operating voltage range

3 x 58/100–240/415 V

Nominal Voltage  $U_n$  ZFD400xR

3 x 100–120 V

3 x 220–240 V

extended operating voltage range 3 x 100–415 V

Voltage Range

80–115%  $U_n$ 

##### Frequency

Nominal Frequency $f_n$	50 or 60 Hz
tolerance	± 2%

#### IEC-specific data

##### Current

Nominal Current $I_n$	1 A, 2 A, 5 A, 5  1 A
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Maximal Current  $I_{max}$ metrological 1 A, 2 A, 5 A 200%  $I_n$ 

metrological 5||1 A 6 A

thermal 1 A 2.4 A

thermal 2 A, 5 A, 5||1 A 12 A

Short Circuit Current	0.5 s with 20 x $I_{max}$
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##### Measurement Accuracy

Accuracy ZxD405xR

active energy to IEC 62053-22 class 0.5 S

reactive energy to IEC 62053-23 class 1

Accuracy ZxD410xR

active energy to IEC 62053-21 class 1

reactive energy to IEC 62053-23 class 1

##### Measurement Behaviour

Starting Current ZxD405xR

according to IEC 0.1%  $I_n$ typical 0.07%  $I_n$ 

5||1 A as 1 A meter

Starting Current ZxD410xR

according to IEC 0.2%  $I_n$ typical 0.14%  $I_n$ 

5||1 A as 1 A meter

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 power x starting current	

Starting Power in F-Circuit all phases  
nominal voltage /  $\sqrt{3}$  x starting current x 3

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

## MID-specific data

### Current (for Classes B and C)

Rated Current  $I_n$  1.0, 5.0 A

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

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

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

### Measurement Accuracy

ZxD400xR; 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:  $I_{st}$  0.001, 0.005 A

## General

### Operating Behaviour

Voltage Interruption (Power Down)

bridging time according to IEC 0.5 s

data storage after another 0.2 s

switch off after approx. 2.5 s

Voltage Restoration (Power Up)

function standby 3 phases after 2 s

function standby 1 phase after 5 s

detection of

energy direction + phase voltage after 2 to 3 s

### Power Consumption

Power Consumption per Phase in the Voltage Circuit

phase voltage 58 V 110 V 240 V

active power (typical) 0.65 W 0.7 W 0.8 W

apparent power (typical) 1.3 VA 1.7 VA 3.6 VA

Power Consumption per Phase in the Current Circuit

phase current 1 A 5 A 10 A

active power (typical) 5 mW 0.125 W 0.5 W

apparent power (typical) 5 mVA 0.125 VA 0.5 VA

### Environmental Influences

Temperature Range to IEC 62052-11

operation  $-25\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$

storage  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$

Temperature Coefficient

range  $-25\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$

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

Impermeability according to IEC 60529 IP52

### 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 8 kV

auxiliary circuits 6 kV

Protection Class II according to IEC 62052-11 

### Calendar Clock

Calendar Type Gregorian or Persian (Jalaali)

Accuracy < 5 ppm

Backup Time (Power Reserve)

with supercap > 20 days

loading time for max. backup time 300 h

with battery (optional) 10 years

battery type CR-P2

### Display

Characteristics

type LCD liquid crystal display

digit size in value field 8 mm

number of positions in value field up to 8

digit size in index field 6 mm

number of positions in index field up to 8

## 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. pulse 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, bidirectional, half duplex
max. bit rate	9600 bps
protocols	IEC 62056-21 and dlms

### RS232 Interface to DIN 61393 / DIN 66259

type	serial, asymmetric, asynchronous, bidirectional
operating mode	transparent
nominal voltage	$\pm 9$ V DC
maximum voltage	$\pm 15$ V DC
minimum voltage	$\pm 5$ V DC
max. bit rate	9600 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, symmetric, asynchronous, bidirectional
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	9600 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	$\geq 6.2$ 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
protocols	IEC 62056-21 and dlms
insulation resistance to meter	4 kVAC/50 Hz, 1 min
creep distance	$\geq 6.2$ mm

### RS422 Interface according to ISO-8482

type	serial, symmetric, asynchronous, bidirectional
nominal voltage range	-3 to +3 V DC
binary 1 state	difference voltage < -0.2 V
binary 0 state	difference voltage > 0.2 V
max. bit rate	9600 bps
max. number of slaves	10
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	$\geq 6.2$ mm

## Additional Power Supply (optional)

### On Extension Board 045x

nominal voltage range	100–240 V AC/DC
tolerance	80–115% $U_n$
frequency	50 or 60 Hz
max. power consumption	6.8 W

### On Extension Board 046x

nominal voltage range	12–24 VDC
tolerance	80–115% $U_n$
max. power consumption	3.5 W

## Ripple Control Receiver (optional)

### On Extension Board 043x or 003x (ZMD400 only)

Same functionality as RCR161.

All established RCR systems e.g. Semagyr, Ricontic, Decabit, Double Decabit, K22/Z22 are supported.

Code length, pulse length and pulse position can be parameterised.

### Electrical Data

nominal voltage	58 or 230 V
frequency	50 or 60 Hz

### Filter Values (parameterisable)

functional voltage $U_f$	0.3–2.5% $U_n$
control frequency $f_s$	110–2000 Hz
bandwidth	0.6–6% $f_s$

## 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

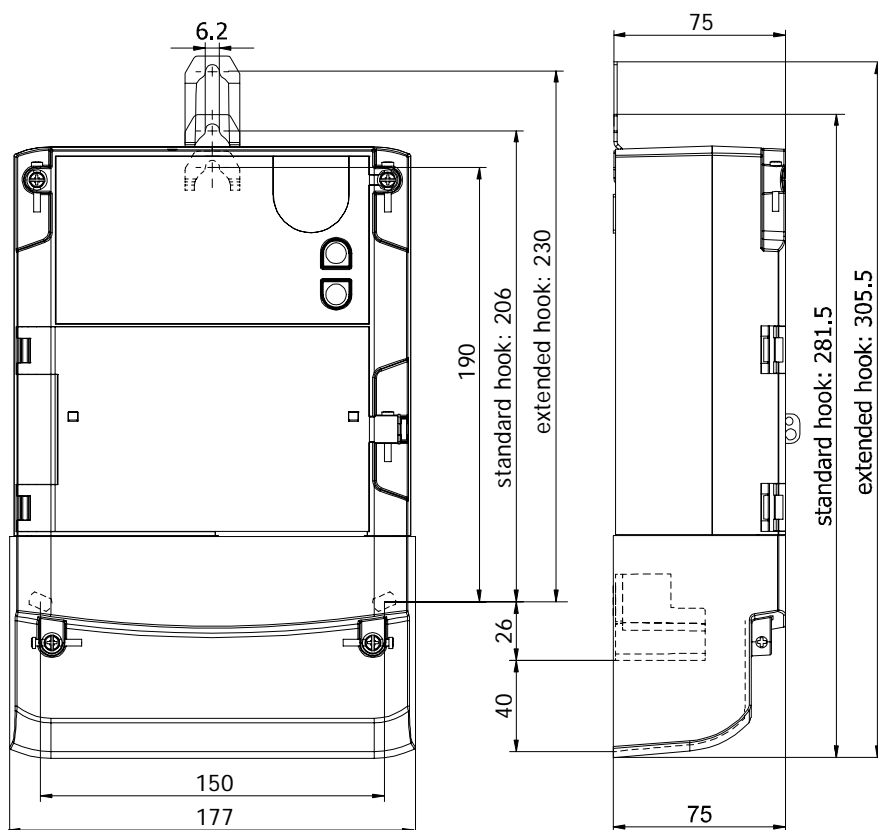
### Suspension Triangle

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
GSM	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	

### Meter Dimensions (Standard Terminal Cover)



## Connections

### Phase Connections

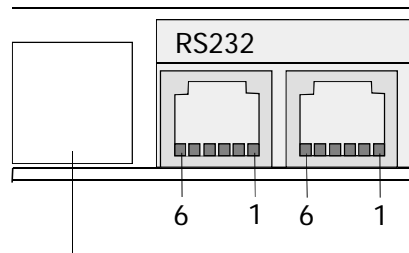
type	screw type terminals
diameter	5.2 mm
recommended conductor cross section	4–6 mm <sup>2</sup>
screw head	Pozidrive Kombi No. 2
screw dimensions	M4 x 8
screw head diameter	≤ 5.8 mm
tightening torque	< 1.7 Nm

### RS232 Interface

on interface board c1

type

RJ 12



Opening for spring-loaded terminal  
(not fitted on type c1 interface board)

Pin allocation RS232:

- 1 not used
- 2 TxD
- 3 GND
- 4 not used
- 5 RxD
- 6 not used

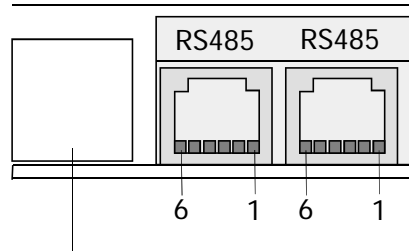
The two RJ12 jacks of the RS232 interface are looped internally. Only one of them must be used however.

### RS485 Interface

on interface board c2

type

RJ 12



Opening for spring clamp terminal  
(not fitted on type c2 interface board)

Pin allocation RS485:

- 1 GND
- 2 UP (Data a)
- 3 UN (Data b)
- 4 UN (Data b)
- 5 UP (Data a)
- 6 GND

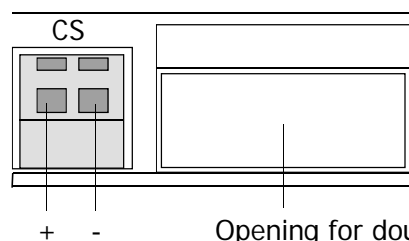
The two RJ12 jacks of the RS485 interface are looped internally to permit a connection of several meters.

### CS Interface

on interface board c3

type

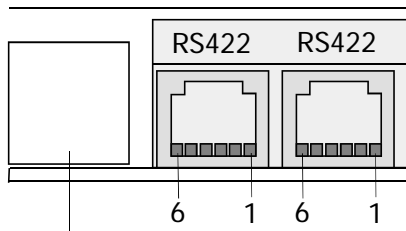
screwless spring-type terminals



Opening for double RJ12 jack  
(not fitted on type c3 interface board)

type

RJ 12



Opening for spring clamp terminal  
(not fitted on type c6 interface board)

Pin allocation RS422:

- 1 GND
- 2 UP (Data a)
- 3 UN (Data b)
- 4 UN (Data z)
- 5 UP (Data y)
- 6 GND

The two RJ12 jacks of the RS422 interface are looped internally to permit a connection of several meters.

Other Connections

type

screwless spring-type terminal

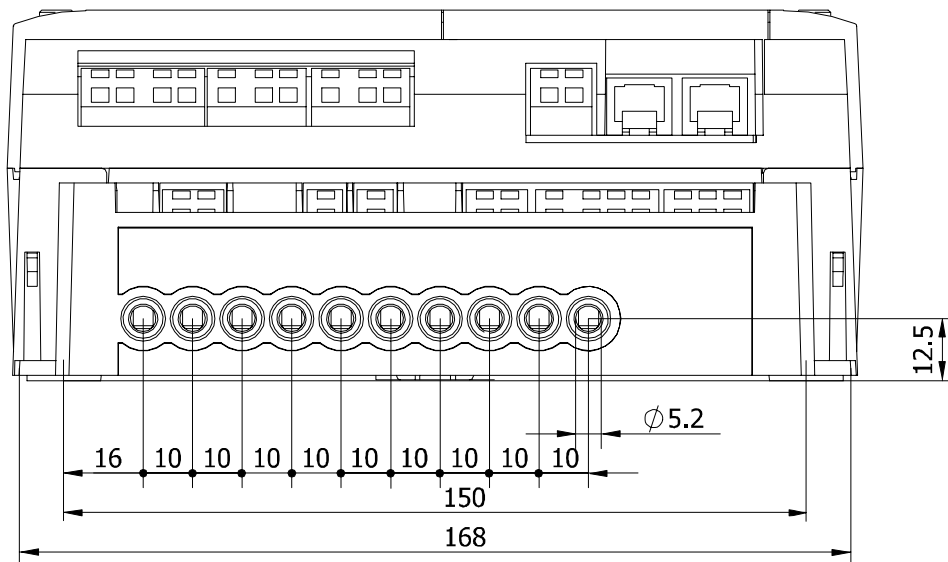
max. current of voltage outputs

1 A

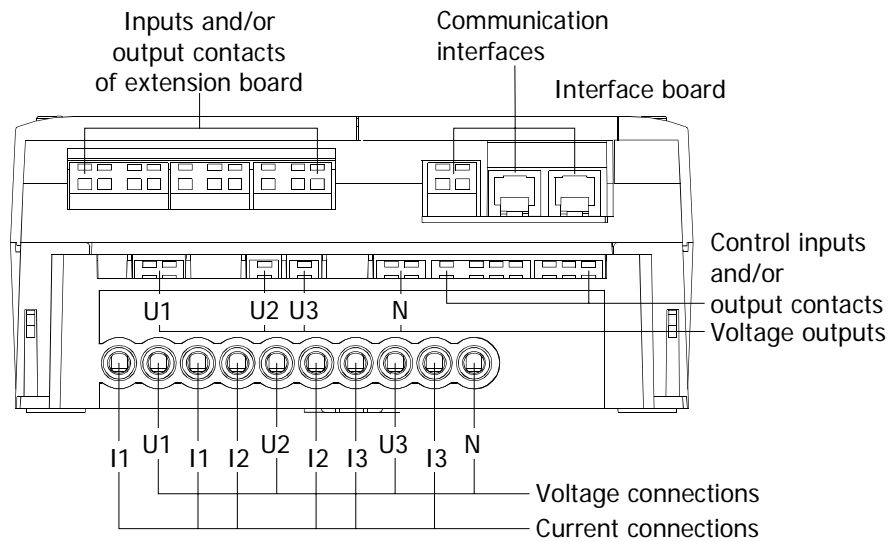
max. voltage of inputs

250 V

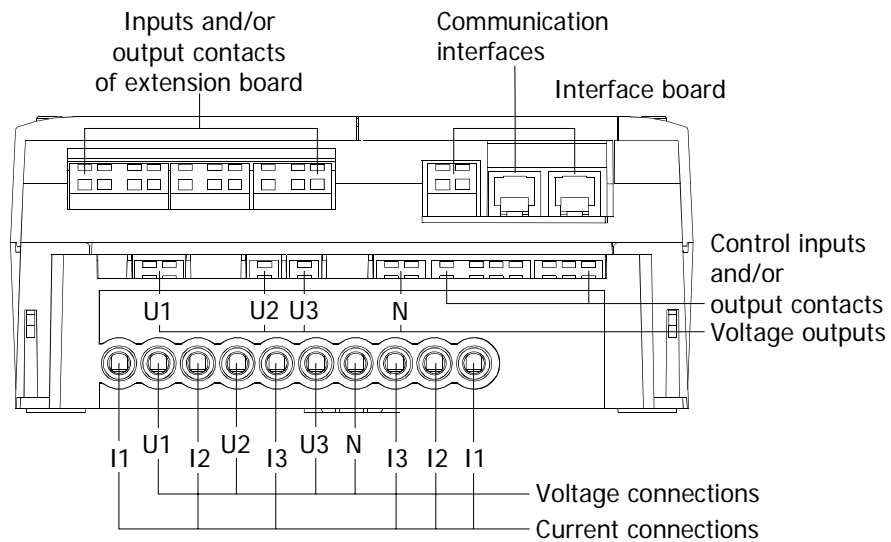
Terminal Dimensions



## Terminal Layout according to DIN



## Symmetrical Terminal Layout (optional, ZMD400 only)



## Material

### Housing

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

<b>Type designation</b>	ZMD	4	10	C	R	44	4207	.c1
<b>Network Type</b>	_____							
ZFD	3-phase 3 wire network (F-circuit)							
ZMD	3-phase 4 wire network (M-circuit)							
<b>Connection Type</b>	_____							
3	Direct connection							
4	Transformer operated							
<b>Accuracy Class</b>	_____							
10	Active energy class 1 (IEC), B (MID)							
05	Active energy class 0.5 (IEC), C (MID)							
<b>Measured Quantities</b>	_____							
C	Active and reactive energy							
A	Active energy							
<b>Construction</b>	_____							
R	With integrated interface							
T	With exchangeable communication units							
<b>Tariffication</b>	_____							
21	Energy rates, external rate control via control inputs							
24	Energy rates, internal rate control via time switch (additionally possible via control inputs)							
41	Energy and demand rates, external rate control via control inputs							
44	Energy and demand rates, internal rate control via time switch (additionally possible via control inputs)							
	All versions with 3 control inputs and 2 output contacts							
<b>Additional functions</b>	_____							
060x	6 outputs							
240x	2 control inputs, 4 outputs							
420x	4 control inputs, 2 outputs							
003x	integrated ripple control receiver							
043x	4 outputs, integrated ripple control receiver							
045x	4 outputs, additional power supply 100–240 V AC/DC							
046x	4 outputs, additional power supply 12–24 V DC							
xxx0	no additional functions							
xxx7	load profile							
<b>Integrated Interface (R-types only)</b>	_____							
c1	RS232 interface							
c2	RS485 interface							
c3	CS interface							
c6	RS422 interface							

Subject to change without notice.

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