Electricity Meters IEC

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

Maximal Current I_{max}	
metrological 1 A, 2 A, 5A	200% I_n
metrological 5||1 A	6 A
thermal 1 A	2.4 A
thermal 2 A, 5A, 5||1 A	12 A

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

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 / √3 x starting current x 3	

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 °C to +70 °C
storage	–40 °C to +85 °C

Temperature Coefficent	
range	–25 °C to +70 °C
average value (typical)	± 0.012% per K
at cosφ=1 (from 0.05 I_b to I_{max})	± 0.02% per K
at cosφ=0.5 (from 0.1 I_b to I_{max})	± 0.03% 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 Strenght

Insulation Strenght	4 kV @ 50 Hz during 1 min

Impulse Voltage 1.2/50µs	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 Us	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	±9 V DC
maximum voltage	±15 V DC
minimum voltage	±5 V DC
max. bit rate	9600 bps
protocols	IEC 62056-21 and dlms
max. conductor lenght 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	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 lenght 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	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	≤ 2 mA
protocols	IEC 62056-21 and dlms
insulation resistance to meter	4 kVAC/50 Hz, 1 min
creep distance	≥ 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 lenght depending on environment and connecting cable	1000 m
insulation resistance to meter	4 kVAC / 50 Hz, 1 min
creep distance	≥ 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

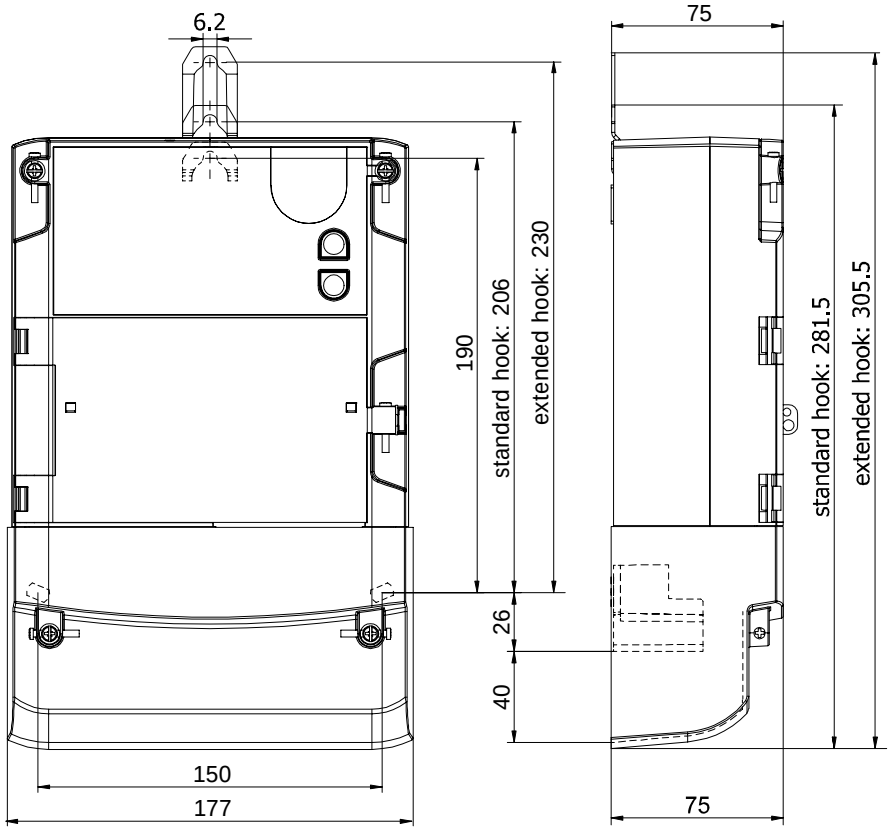
Weight	approx. 1.5 kg

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	

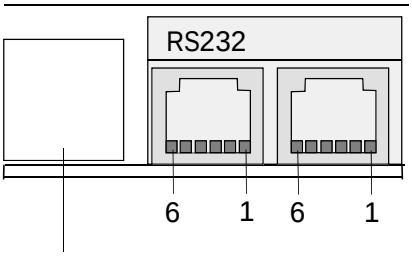
Meter Dimensions (Standard Terminal Cover)



Connections

Phase Connections	
type	screw type terminals
diameter	5.2 mm
recommended conductor cross section	4–6 mm^2
screw head	Pozidrive Kombi No. 1
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

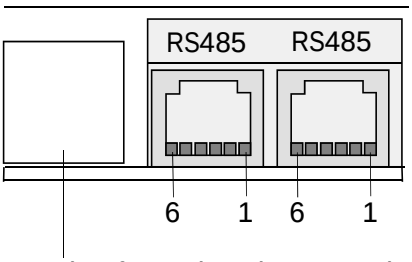


Opening for spring-loaded terminal
(not fitted on type c1 interface board)

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

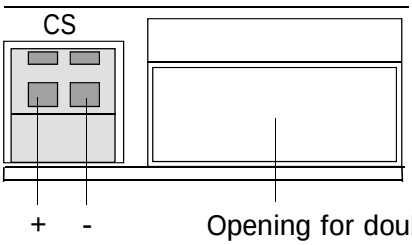


Opening for spring clamp terminal
(not fitted on type c2 interface board)

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.

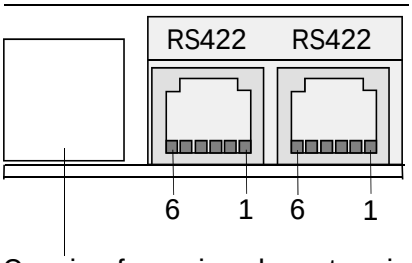
CS Interface	on interface board c3
type	screwless spring-type terminals



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

RS422 Interface — on interface board c6

type: RJ 12



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

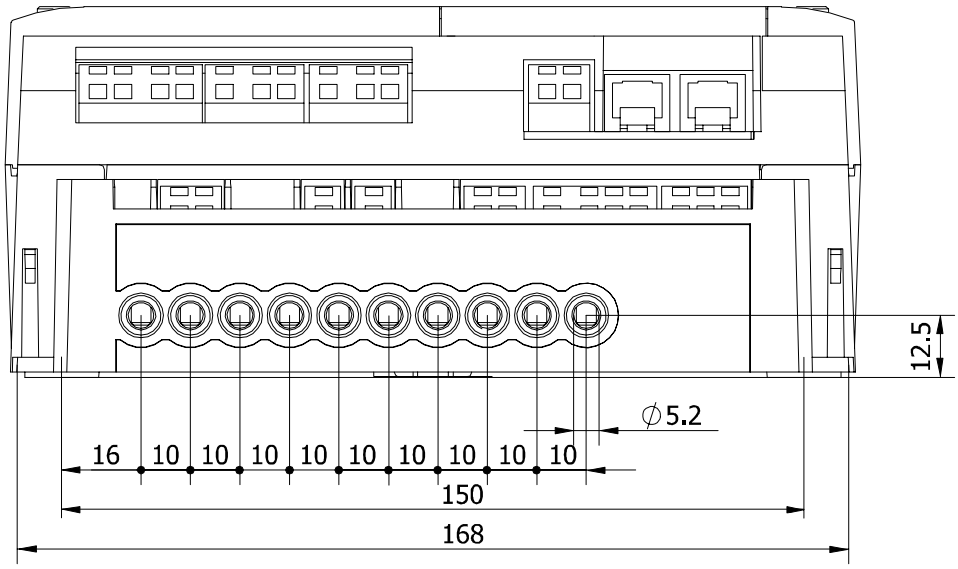
Pin allocation RS422:
1 GND
2 UP (Data a)
3 UN (Data b)
4 UN (Data z)
5 UP (Data y)
6 GND

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

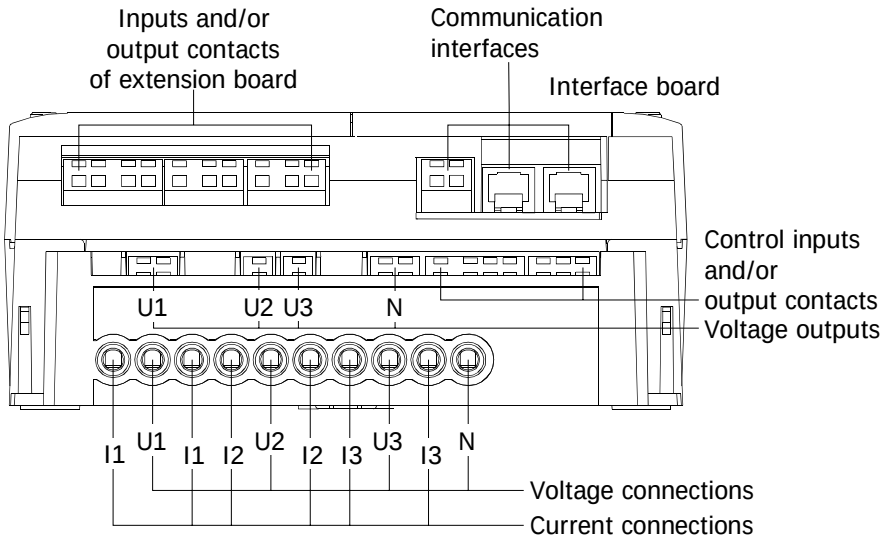
Other Connections

type	screwless spring-type terminal
max. current of voltage outputs	1 A
max. voltage of inputs	250 V

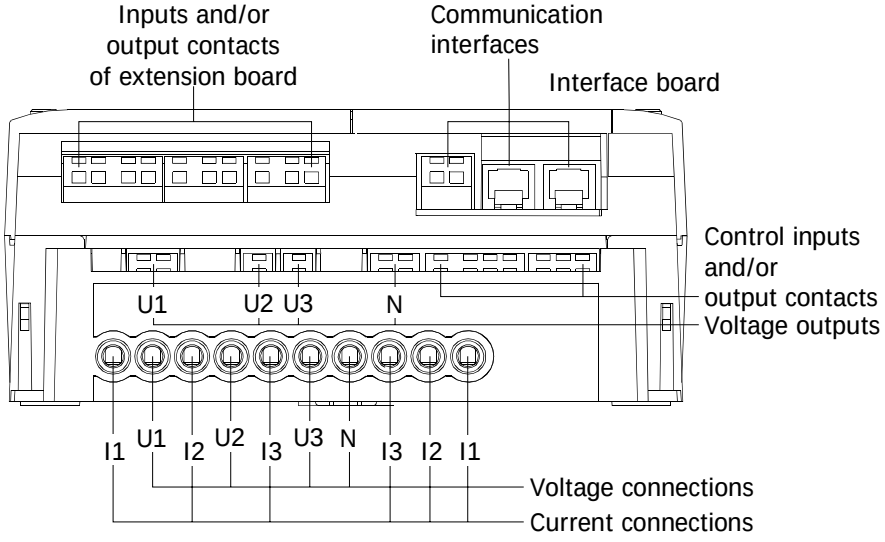
Terminal Dimensions



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.

Type designation **ZMD 4 10 C R 44 4207 .c1**

Network Type

ZFD 3-phase 3 wire network (F-circuit)
ZMD 3-phase 4 wire network (M-circuit)

Connection Type

3: Direct connection
4: Transformer operated

Accuracy Class

10: Active energy class 1 (IEC), B (MID)
05: Active energy class 0.5 (IEC), C (MID)

Measured Quantities

C: Active and reactive energy
A: Active energy

Construction

R: With integrated interface
T: With exchangeable communication units

Tariffication

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

Additional functions

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 VAC
046x 4 outputs, additional power supply 12–24 VDC

xxx0 no additional functions
xxx7 load profile

Integrated Interface (R-types only)

c1: RS232 interface
c2: RS485 interface
c3: CS interface
c6: RS422 interface

Subject to change without notice.

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