Electricity Meters IEC/MID
Industrial+Commercial

ZMD310AT/CT

E650 Series 3 (ZMD310AT/CT)

Technical Data

Building on its tradition of industrial meters, Landis+Gyr is now bringing out the E650 series 3, the latest generation of ZxD300 meters. These meters feature a new hardware platform, combining modern technology with proven functions.

Date: 06.04.2010
Filename: D000030104 E650 ZMD300xT series 3 Technical Data

The E650 directly connected I&C meters record active and reactive energy consumption in all three-phase four-wire and three-phase three-wire networks.

Range

E650 meters are the answer to a wide range of specific needs: from the reliable commercial meter to the complex measuring device with comprehensive additional functionality for sophisticated data acquisition and flexible tariff control of large industrial customers.

Communication

AT/CT-type meters are equipped with modular communication units which provide the right choice for the best data channel at all times. «Plug+Play» modules also offer you full freedom of choice for deployment of new communication technologies.

Installation support

The monitoring of voltage, current, demand and power factor supports the installation.

E650 Series 3 – ZMD310AT/CT

Technical specifications

General

Voltage

Nominal voltage U_n	
	3 x 220/380 V to 240/415 V
	3 x 110/190 V to 133/230 V
Voltage range	80% to 115% U_n

Frequency

Nominal frequency f_n	50 or 60 Hz
tolerance	± 2%

IEC-specific Data

Current

Base current I_b	selectable: 5, 10, 20 or 40 A
Maximum current I_{max}	
metrological	selectable: 40, 60, 80, 100 or 120 A
thermal	120 A
Short circuit ≤ 10 ms	5000 A

Measurement Accuracy

ZMD310xT	
active energy, to IEC 62053-21	class 1
reactive energy, to IEC 62053-23	accuracy 1%

Measurement Behaviour

Starting current	
according to IEC	0.4% I_b
typical	0.3% I_b

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 class B)

Minimum current I_{min}	0.25, 0.5, 0.75, 1.0 A
Transitional current I_{tr}	0.5, 1.0, 1.5, 2.0 A
Maximum current I_{max}	120 A

Measurement Accuracy to EN 50470-3

ZMD310AT/CT	class B

Measurement Behaviour

Starting current I_{st}	0.02, 0.04, 0.06, 0.08 A

General

Operating Behaviour

Voltage failure (Power Down)	
bridging time	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 and phase voltage	after 2 to 3 s

Power Consumption

Power consumption per phase in voltage circuit		
phase voltage	110 V	240 V
active power (typical)	0.5 W	0.7 W
apparent power (typical)	1.0 VA	1.7 VA

Power consumption per phase in current circuit	
phase current	10 A
apparent power (typical)	0.03 VA

Environmental Influences

Temperature range	to IEC 62052-11
operation	–25 °C to +70 °C
storage	–40 °C to +85 °C

Temperature coefficient	
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 to IEC 60529	IP51

Electromagnetic Compatibility

Electrostatic discharges	to IEC 61000-4-2
contact discharge	15 kV

Electromagnetic RF fields	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	to IEC 61000-4-4
current and voltage circuits under load according to IEC 62053-21/23	4 kV
auxiliary circuits > 40 V	2 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 at 50 Hz during 1 min.

Impulse voltage 1.2/50 µs	to IEC 62052-11
current and voltage circuits	8 kV
auxiliary circuits > 40 V	6 kV

Protection class II to IEC 62052-11	⧈

Calendar Clock

Calendar Type	Gregorian or Persian (Jalaali)

Accuracy	< 5 ppm

Backup time (power reserve)	
with supercap	> 20 days
charging 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 digits in value field	up to 8
digit size in index field	6 mm
number of digits in index field	up to 8

Inputs and Outputs

Control inputs	
control voltage U_S	100 to 240 V_{AC}
input current	< 2 mA ohmic at 230 V_{AC}

Output contacts	
type	solid state relay
voltage	12 to 240 $V_{AC/DC}$
max. current	100 mA
max. switching frequency (pulse length 20 ms)	25 Hz

Optical test outputs	active and reactive energy
type	red LED
number	2
meter constant	selectable

Communication Interface

Optical interface	to IEC 62056-21
type	serial, bidirectional, half-duplex
max. transmission rate	9600 bps
protocols	IEC 62056-21 and dlms

Communication units
Exchangeable communciation units for various applications

Additional Power Supply (optional)

On Extension Board 045x	
nominal voltage range	100 to 240 $V_{AC/DC}$
tolerance	80 to 115% U_n
frequency	50 or 60 Hz
max. power consumption	6.8 W

On Extension Board 046x	
nominal voltage range	12 to 24 V_{DC}
tolerance	80 to 115% U_n
max. power consumption	3.5 W

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	

Connections

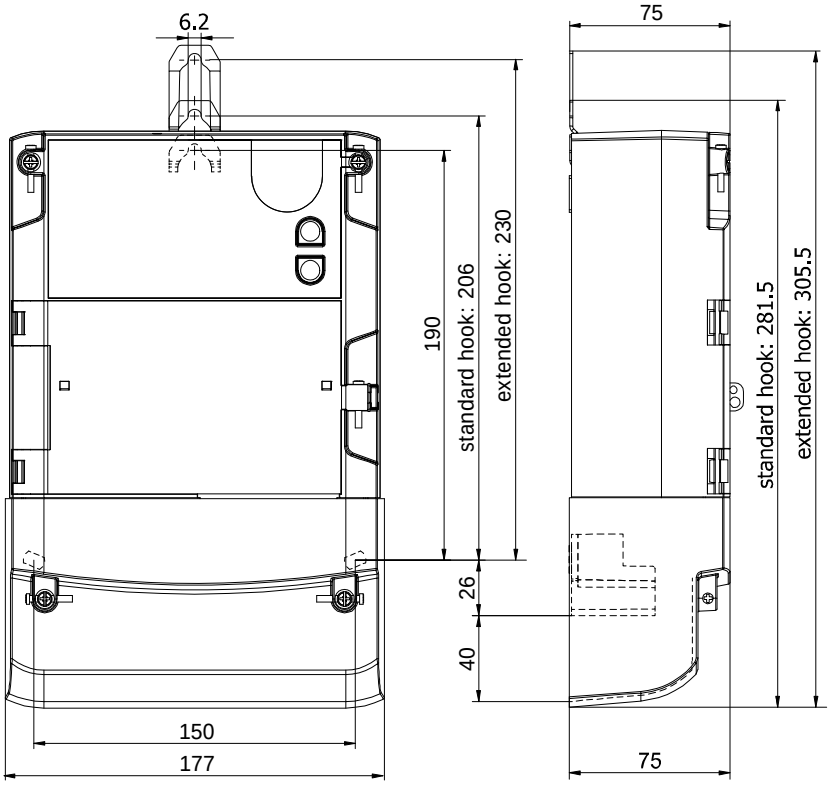
Phase Connections	
type	screw type terminals
diameter for I_{max} ≤ 80 A	8.5 mm
diameter for I_{max} > 80 A	9.5 mm
minimal conductor cross section	4 mm^2
max. cross section cable	35 mm^2 (up to 120 A)
max. cross section strand	25 mm^2 (up to 80 A)
screw head	Pozidrive Combi No. 2
screw dimension	M6 x 14
max. screw head diameter	≤ 6.6 mm
tightening torque	< 3 Nm

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

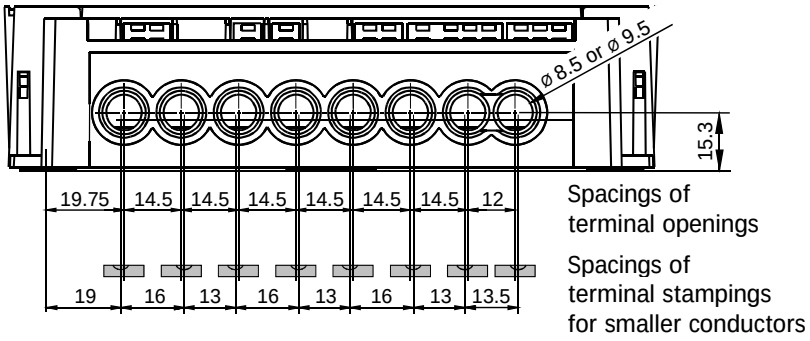
Material

Housing
Polycarbonate, partly glass-fibre reinforced

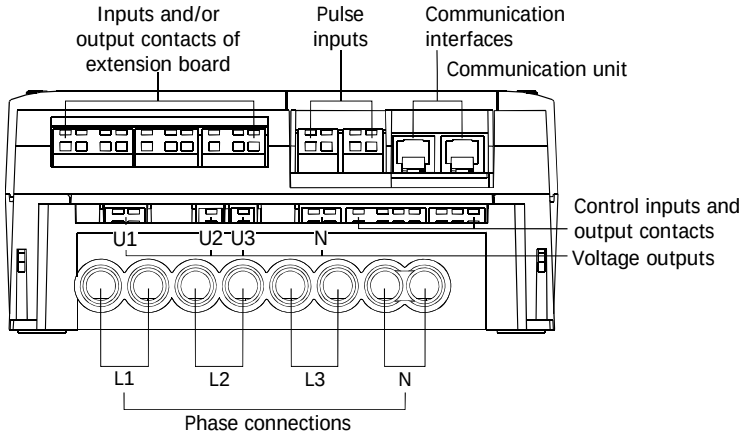
Meter Dimensions (standard terminal cover)



Terminal Dimensions



Terminal Layout



ZMD 3 10 C T 44 4207 S3a

Network Type

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

Connection Type

3 Direct connection

Accuracy Class

10 Active energy class 1 (IEC), B (MID)

Measured Quantities

C Active and reactive energy
A Active energy

Construction

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
045x 4 outputs, auxiliary power supply 100 to 240 VAC
046x 4 outputs, auxiliary power supply 12 to 24 VDC

xxx0 no additional functions
xxx2 DC-magnet-detection
xxx7 load profile
xxx9 DC-magnet-detection and load profile

Series 3

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Landis+Gyr manage energy better