

BL-ZMRE230/1

Manufactured by:

Landis
Gyr+
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ZMR E230

Residential polyphase electricity meter BS/IEC/MID



The E230 meters record active and reactive energy consumption primarily in three phase four wire networks. The meter can operate on one phase (any phase and neutral), two phases (any two phases and neutral), three phases with or without neutral and three phases delta configuration (F-Circuit). Tamper detection features and No Power read functionality are available upon request.

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Residential Meter

E230 is a residential meter for active and reactive energy with up to our tariffs. The meter can operate in 4-wire networks in one, two or three phases configurations and 3-wire networks. The tariffs can be controlled externally via control terminals.

Diagnostic Values

Several diagnostic values provide invaluable support during installation and for trouble-shooting. It is possible to display voltages, currents, active and reactive power.

Special features

The meter can be ordered with several anti-tampering features such as dc field detection, terminal and meter cover removal detection as well as with a No Power Read function which allows a meter readout via optical interface and LCD even in case of a power cut.

E230 Technical Specifications

General	
Voltage	
Rated voltage U_n E230 (Wye connection)	
nominal value	3 x 230/400 V 3x 120/208 V
permissible range	3x220/380 V to 3x 240/415 V 3 x 110/190 V to 3 x 240/415 V
Extended operating voltage range	0.8 - 1.15 U_n
Frequency	
Rated supply frequency f_n	50-60 Hz \pm 5%
IEC-specific data	
Current	
base current I_b	selectable: 5, 10, 20 or 40 A
Maximal current I_{max}	
metrological	select: 40, 60, 80, 100, 120 or 125 A
thermal	125 A
Starting current	
according to IEC	Class 2, 0.5% I_b Class 1, 0.4% I_b
typical	approx. 0.3 % I_b
Max. measuring range	approx. 15 mA to 125 A
Short-circuit \leq 10 ms	10,000 A
Measuring accuracy	
Accuracy class	
Active	Class 1 and 2 (to IEC 62053-21)
Reactive	Class 2 and 3 (to IEC 62053-23)
Typical starting power	
Starting Power in M-circuit: single phase nominal voltage x starting current	
Starting Power in F-circuit: all phases nominal voltage x starting current	

MID-specific data	
Current (for Classes A and B)	
Reference current I_{ref}	5 A; 10 A; 15 A or 20 A
Minimum current I_{min}	$\leq 0.05 \times I_{ref}$
Transitional current I_{tr}	0.5 A; 1 A, 1.5 A or 2 A
Maximum current I_{max}	125 A
Measurement Accuracy	
E230 110, to EN 50470-3	Class B
E230 120, to EN 50470-3	Class A
Measurement Behaviour	
Starting current I_{st}	
Class A: I_{st}	$\leq 0.005 \times I_{ref}$
Class B: I_{st}	$\leq 0.004 \times I_{ref}$
General	
Operating behaviour	
Voltage Interruption	
blocking of inputs and outputs	immediate
standby operation	for aprox. 0.5 s
data storage	immediate
disconnection	after approx. 1 s
Voltage Restoration (power up)	
function standby (depending on duration of failure)	< 5 s
detection of energy direction and phase voltage	< 5 s
Power consumption	
Power consumption in voltage path	
active energy at U_n (typical)	0.15 W 0.5 W
apparent energy at U_n (typical)	1 VA 2.5 VA
Power consumption in current path	
	120 V 230 V
apparent energy at 10 a (typical)	0.01 VA 0.03 VA


External Influences

Temperature range	
operation	-40 °C to + 70 °C
storage	-40 °C to + 85 °C
Temperature coefficient	
range	-25 °C to + 70 °C
typical mean value	±0.02 % per K
with $\cos\phi=1$ (from 0.1 lb to I_{max})	±0.05 % per K
with $\cos\phi=0.5$ (from 0.2 lb to I_{max})	±0.075 % per K
Impermeability to IEC 60529	IP 52

Electromagnetic Compatibility

Electrostatic discharges	to IEC 61000-4-2
contact discharges- conductive surfaces	8 kV
contact discharges - non conductive surfaces	15 kV
Electromagn. High frequency fields	
80 MHz to 2 GHz	to IEC 61000-4-3 10 V/m and 30 V/m
Dwell time	2 s
Radio interference suppr.	to IEC/CISPR 22 Cl B
Fast transient Burst test	
for current and voltage circuits	to IEC 61000-4-4 4 kV
for auxiliary circuits > 40 V	2 kV
Surge immunity test	
for current and voltage circuits	to IEC 61000-4-5 4 kV
for auxiliary circuits > 40 V	1 kV

Insulation Strength

Insulation strength	4 kV at 50 Hz for 1 min.
Impulse voltage strength	
impulse voltage	IEC 62052-11 12 kV
rise time of impulse voltage	1.2 μ s
decay time of impulse voltage	50 μ s
source resistance of generator	500 Ω
Protection Class II to IEC 62052-11	

Display

Characteristics	
type	LCD liquid crystal display
digit size	10 mm
number of digits	up to 8
Digit size in Index field	6 mm
Number of digits in Index field	up to 5

Inputs and Outputs

Tariff control	
control voltage U_t	110 to 240 V
range	0.8 to 1.05 U_t
current input	<2 mA ohmic at 230 V
Test output	
Type	Active and Reactive RED LED
Meter constant R	100 imp/kwh
Pulse length	10 ms
Pulse output r53	
	(no measurement of load curve)
type	SO interface
standard	IEC 61393/ DIN 43864
values configurable	imp/kwh or imp/kvarh
pulse constant	configurable 1 to 1000
Pulse length	configurable 10 ms to 1000 ms
Supply voltage (nominal value)	24 V
Supply voltage (max)	50 V
Current	10 mA to 20 mA DC

The pulse output can be parameterised as unidirectional communication interface. In this mode every 30 seconds the billing values are given out at 300 Baud according to IEC 62056-21 (data readout)

Communication Interfaces

Optical interface	
type	serial, bi-directional interface
standard	IEC 62056-21
Max. Baud	9600 Baud

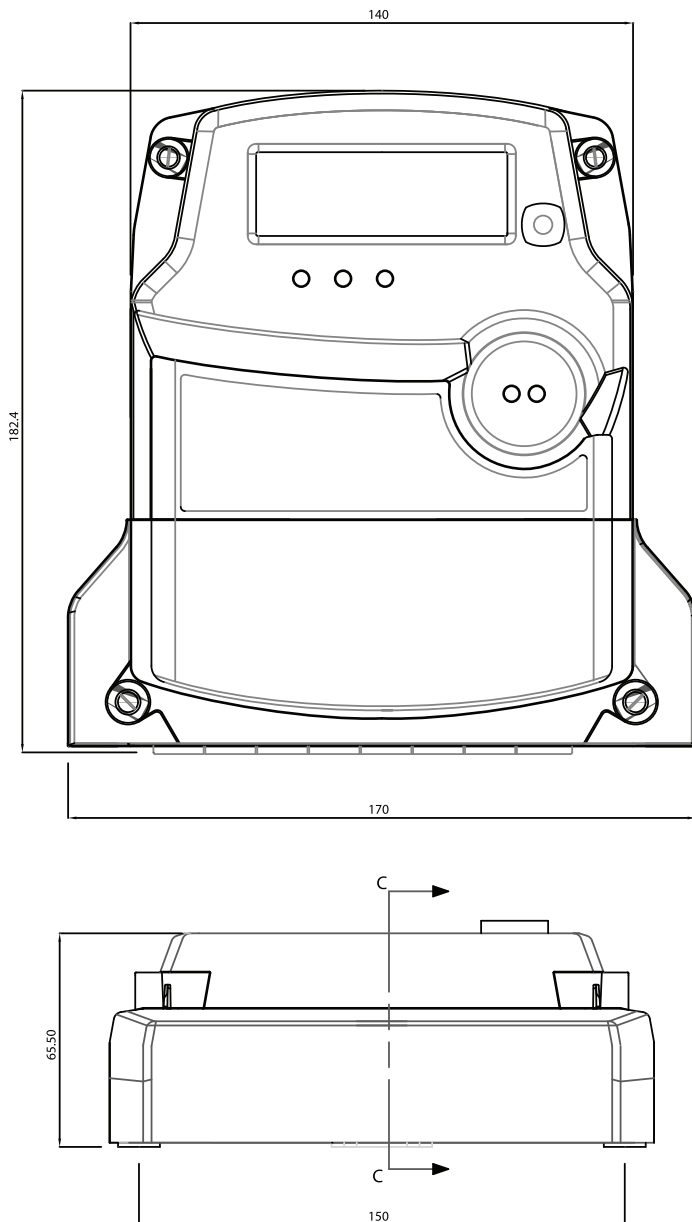
Application

data readout according to IEC 62056-21 (all data)
transmission of formatted commands

CS interface	
	to IEC 61107 / DIN 66258
type	serial, bi-directional current interface
rated voltage	24 V DC
max. voltage	30 V DC
Transmitter current	
"On" state	min. 11, typ. 20, max. 30 mA
"Off" state	max. 2.5 mA
Receiver current	
"On state"	min. 9, typ. 20, max. 30 mA
"Off" state	max. 3 mA
max. transmission speed	9600 Baud
max. conductor length	depending on environment and connecting cable
Insulation resistance to meter	4 kV

Weight and dimensions

Weight	approx. 1 kg
External dimensions	comply with DIN 43857
width	170 mm
height (with standard terminal cover)	182.4 mm
height (with standard terminal cover)	239.1 mm
depth	65.5 mm
Suspension triangle	m10 mm
height (standard fixing)	230 mm
height (extended fixing)	150 mm
Terminal cover	
Short	no free space
Standard	60 mm free space
Dimensions	



Connections

Phase connections

type	screw type terminals
diameter with steel terminals	8.5 mm
diameter with brass terminals	9.5 mm
minimum conductor cross-section	4 mm ²
Max. conductor with brass terminal	35 mm ²
max. conductor with steel terminals	25 mm ²
screw dimensions	M6 x 14
head diameter	max. 6.6 mm
cross-slot	type Z, size 2, to ISO-4757-1983
slot	0.8 + 0.2/ + 0.06 mm
tightening torque	max. 3 Nm
Adaptation to plug adapters for Geyer terminals, ODU contacts, Amphenol Tuchel plugs is ensured.	

Other connections (voltage outputs)

type	screw type terminals
maximum current of voltage outputs	1 A

Other connections (inputs/outputs)

type	screw less spring-loaded terminals
maximum voltage of control inputs	275 V
maximum voltage r53 (observe polarity)	50 V DC

Terminal layout and dimensions

