

**Electricity Meters**  
Industrial & Commercial

**Landis+Gyr+**  
manage energy better



Electricity Meter  
**Landis+Gyr E650**  
ZMD300/400  
ZFD400

The ultimate building block for your  
industrial and commercial metering  
infrastructure

Информацията е заличена съгл. чл. 45 и чл. 59, ал. 1 от ЗЗЛД



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# E650

Today, the changing market landscape demands open solutions. That is why you need a safe metering investment for the future. The E650 meter family offers you maximum flexibility through unique communication modularity, high interoperability and a comprehensive functionality set, which includes:

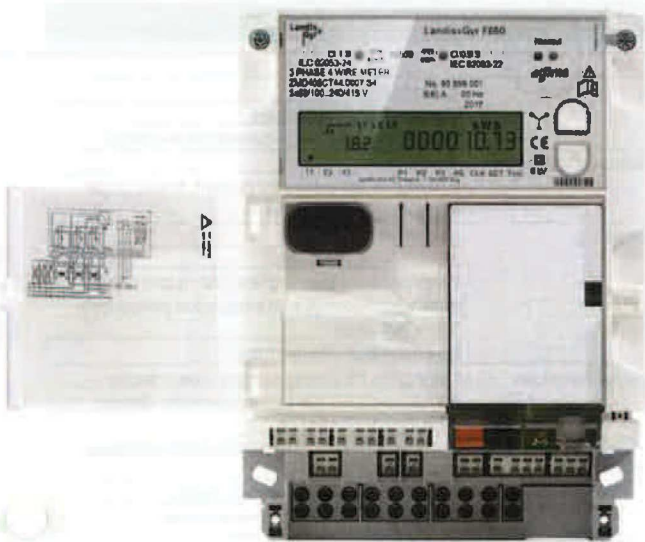
- maintenance-free and robust long-life design in electronics and mechanics
- lowest failure rate in the market
- more than 30 different communication options
- extensive functionality covering a broad range of applications
- installation support and anti-tampering features
- built-in smart grid functionality



## Leading and most proven industrial & commercial meter

Over 2 million metering devices installed in 80 countries around the world

E650 is the most proven meter, which achieves maximum performance in all industrial and commercial application areas thanks to its unique modular architecture, exceptional feature set and high interoperability.



### Basic Functionality

Quality and Safety: The extensive basic functionality already meets all major IEC standards applicable to the respective requirements.

Electronics	Wide-voltage power supply
	Large LCD display
	Up and down buttons for display
	Optical button for the display
	Utility sealed reset button
	Optical interface (IEC 62056)
	Optical test output
	3 control inputs
	2 output contacts
	8 measurement channels with total register
Recording	24 energy registers
	Stored values register
	9 operating time registers
	Event log
Functions	Installation support on display
	Set mode via buttons
	Real-time clock with power reserve
	Instantaneous voltage values
	Voltage monitoring
	Gregorian and Persian calendar
	Remote control of output contacts
Housing	Glass fiber reinforced, antistatic
	Crystal clear, unbreakable windows
	Wiring diagram on faceplate
	Utility sealed battery box

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## Basic Configuration

Landis+Gyr E650 (ZMD300/400 and ZFD400) is the answer to your specific needs: from the reliable commercial meter to the complex measuring device with comprehensive additional functionality for advanced data acquisition and flexible tariff control of large industrial customers.

Modular communication units provide the right choice for the best data channel at all times. «Plug and Play» modules also offer you full freedom of choice for deployment of new communication technologies.

		E650 (ZFD402C)	E650 (ZFD405C)	E650 (ZFD410C)	E650 (ZMD402C)	E650 (ZMD405C)	E650 (ZMD410C)	E650 (ZMD310C)	E650 (ZFD410A)	E650 (ZMD410A)	E650 (ZMD310A)
Application	High voltage	■	■	■	■	■	■	■	■	■	■
	Medium voltage	■	■	■	■	■	■	■	■	■	■
	Low voltage	■	■	■	■	■	■	■	■	■	■
Connection Type	Transformer conn.	■	■	■	■	■	■	■	■	■	■
	Direct connection	■	■	■	■	■	■	■	■	■	■
Metering accuracy (active/reactive energy)	Class 0.2/0.5	■	■	■	■	■	■	■	■	■	■
	Class 0.5/1.0 MID C	■	■	■	■	■	■	■	■	■	■
	Class 1.0/1.0 MID B	■	■	■	■	■	■	■	■	■	■
		Combi									Active

## Additional Functionality

Tariff functions	<u>Average demand</u> <u>Time-of-use (TOU) tables</u> Programmable matrix-based mixes control
Measured Values	<u>Power factor</u> Instantaneous values for current, phase angle, frequency, power factor
Recording	<u>24 demand registers</u> <u>2 power factor register</u> 2 independent load profiles (billing and power quality monitoring) with integration period from 1 to 60 minutes 26-channel profile memory
Special functions	<u>Monitoring for power, current, power factor</u> <u>Backlit and LED Alert programmable display</u> <u>CT/VT error correction</u> THD measurements and calculation of losses (Transformer and Line) <u>Detection of strong magnetic fields</u> Opening detection of terminal cover
Extension boards (only one possible)	<u>6 outputs</u> <u>2 control inputs, 4 outputs</u> <u>4 control inputs, 2 outputs</u> <u>4 active inputs, 2 relay outputs 8A</u> 3 control inputs, 2 relay outputs, auxiliary power supply 4 outputs, various auxiliary power supply

## Software Tools

MAP 120	Parameterisation
MAP 110	Installation support
(missing dot in the front)	<u>Meter data readout</u> <u>Load profile analysis</u> <u>Security system visualisation</u> Communications settings

Energy Type	Active energy	Информацията е заличена съгл. чл. 45 и чл. 59, ал. 1 от ЗЗЛД
	Reactive energy	
	Apparent energy	

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## Enhanced communication capability through combined IEC 1107 and DLMS™ protocols

Only complete availability of reliable metering data guarantees an efficient billing process. The range of Landis+Gyr E650 (ZMD300/400 and ZFD400) meters is «bilingual»: handling the legacy IEC1107 protocol and the well established DLMS™ both of which comply with the IEC62056 standard.

An optimal data flow is achieved through the built-in communication interface or by readily interchangeable communication units.

### Exceptional functionality for demanding I&C metering

#### Billing data management:

- Large variety of registers to track and record the measured quantities you require
- High flexibility to link register values

#### Network monitoring:

- Monitor instantaneous values against threshold and record deviations in a snapshot event log
- Monitor and record disturbances for analysis and preventive network maintenance
- Protect your assets, e.g. transformers, against overload with real-time alarm information through SMS
- Detect tampering attempts and trigger real-time alarms (SMS)

#### Adaptation and installation support:

- Smart installation support tools to avoid errors, simplify installation and service processes
- A set of powerful software tools (MAP Suite) to customise meter to your application needs, e.g. time-of-use tables, billing lists, profile memory, remote parameter modification, etc.

#### Smart grid applications:

- Additional auxiliary power supply to assure data reading during power down phases
- Power quality monitoring functions with alarm and log features
- Real-time alarm system (SMS)
- Boolean I/O

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## Manage energy better

Landis+Gyr is the leading global provider of integrated energy management solutions for the utility sector. Offering one of the broadest portfolios of products and services to address complex industry challenges, the company delivers comprehensive solutions for the foundation of a smarter grid, including smart metering, distribution network sensing and automation tools, load control, analytics and energy storage.

Landis+Gyr operates in over 30 countries across five continents. With sales of approximately USD 1.7 billion, the company employs c. 6,000 people with the sole mission of helping the world manage energy better.

More information is available at [www.landisgyr.eu](http://www.landisgyr.eu)

### Landis+Gyr in short

- 6000 employees worldwide
- 120 Years of service to customers as a trusted partner to utilities
- Operations in over 30 countries across five continents
- Broadest portfolio of products and services in the industry
- more than 15 million meter points under managed services
- Serving 3,500+ utilities worldwide
- The largest installed base with 300+ million devices globally
- Largest relevant engineering capacity in the industry
- Over 60 million smart grid connected intelligent devices deployed
- ISO certified for quality and environmental processes
- World leader in integrated energy management solutions
- Committed to improved energy efficiency and environmental conservation
- Solid and established partner network

### Landis+Gyr AG

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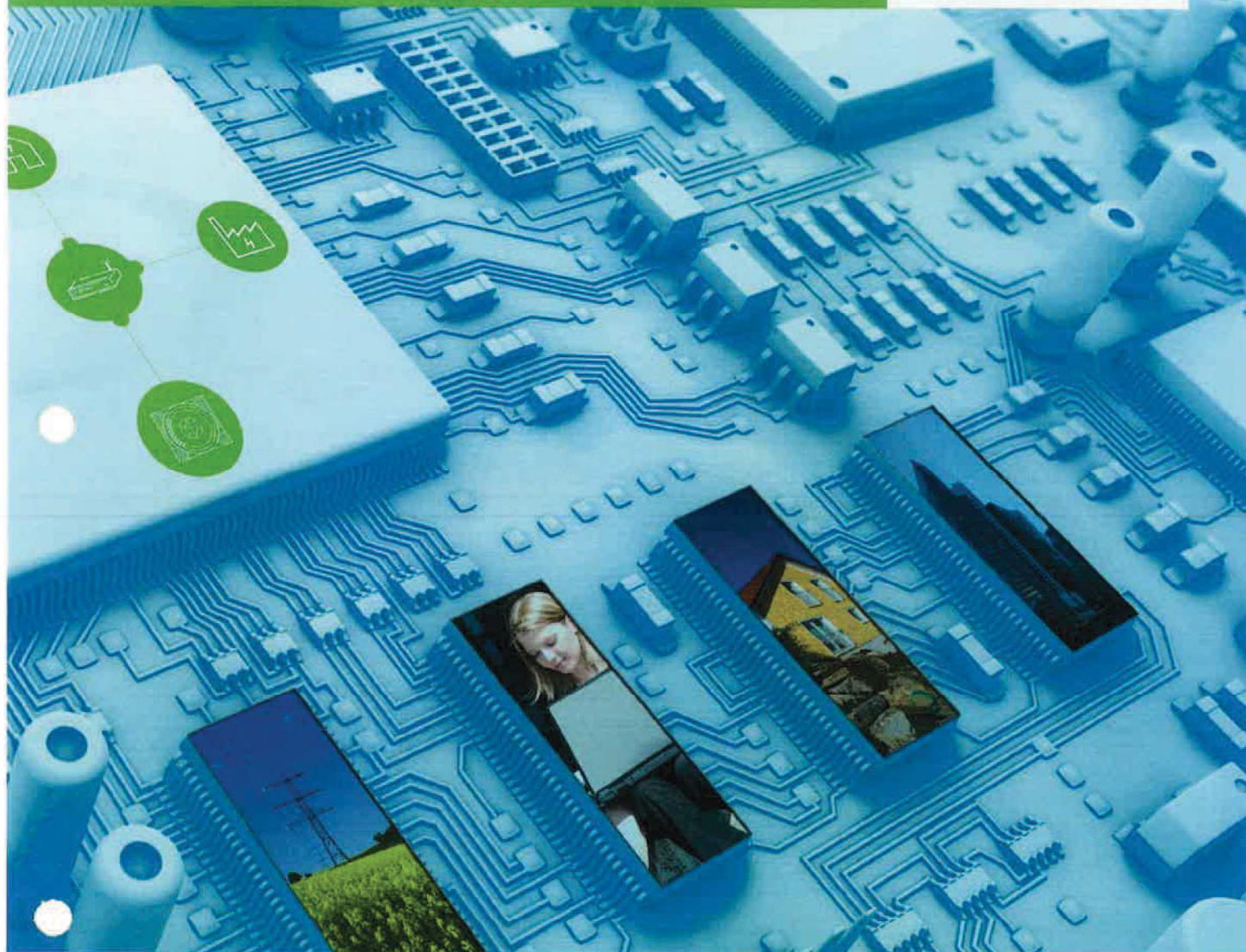
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## Electricity Meters

Communication Units for Industrial,  
Commercial and Grid metering

Landis  
Gyr<sup>+</sup>  
manage energy better



## Communication Units



E65C

The ultimate in flexibility

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The meter will stay - communication technology can change.

The ongoing liberalisation of the energy market brings new challenges for energy suppliers. Maximising the security of investments now has top priority.

Landis+Gyr communication units offer:

- open, standard-based communication
- highest possible flexibility
- extensive functionality
- unique modularity
- intelligent communication capability.



## Comprehensive functionality - intelligent communication

The market demands ever more flexibility and lower-cost solutions which new communication possibilities can deliver. Landis+Gyr offers you a comprehensive product range, for all measurement applications including commercial and industrial metering. The integrated or exchangeable communication units provide you with the tools you need for automatic meter reading applications.



Applications	Meter reading
	Maximum demand reset
	Meter synchronisation
	Meter check
	Operational check
Communication Modes	Re-programming
	Internet via Ethernet and GPRS - static or dynamic IP-address possible
	Public mobile telephone network via GSM/GPRS or UMTS modems
	Standard interfaces and bus systems, e.g. RS232, RS485, CS, SO, Ethernet
Communication protocols	DLMS
	IEC 62056-21
	TCP/IP
	IPT according to DIN 43863-4
Plug+play installation	No external power supply
	No wiring
	Free choice of terminal cover
	SIM card easily exchanged
	4-level field -strength display
	Connection check
	Customer-specified information on faceplate, e.g. company logo or barcode
Additional functions	Multi-master operation
	Time windows and time-master functionality
	Modem initialisation, reset and data flow control
	Communication monitoring

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## Communication

In „master“ operating mode, the communication units permit metering data with other protocols (e.g. SCTM, FNP, etc.) to be transmitted.

Additionally, multi-master operation permits path redundancy for up to 32 locally connected meters with multiple central stations. This guarantees high availability. Simple „plug+play“ installation also keeps installation costs to a minimum.

Complete and reliable access of metering data ensures an efficient billing process for invoices which can be verified by the customer.

With a wide product portfolio, you can employ the most suitable technology for your local conditions, now and in the future, to read out, reset, synchronise, check or re-program your meters from a central station comfortably and in the most cost-effective way.

### Communication solution for legacy meters

Meters which are already installed (including from other suppliers) can be equipped with our adapter CU-ADP2, provided that they have a CS, RS232 or RS485 interface.

## Software Tools

MAP 110	Service tool for test, certification, installation and local service work of meters and their communication units
MAP 120	Programming tool for reprogramming meters and their communication units

## Basic Functionality

Interchangeable Module (Meter-Type T)	A4	A5	B1**	B2	B4	D2	XE111**	P40	P41*	P42*	U52*	L52*
LTE Module												■
UMTS Module												■
GPRS+GSM Module								■	■	■	■	■
Fast Ethernet Interface							■					
RS485 Interface			■	■	■		■			■	■	■
RS232 Interface		■	■		■		■		■			
CS Interface	■								■	■		
MBUS Interface						■						

\* can be used as external communication units

\*\* has two Fast Ethernet Interfaces

\*\*\* 2 S0 Pulse Inputs

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## IP based communication – open and cost efficient

Worldwide access to the Internet, with its low communication costs and open standards, creates completely new communication possibilities for advanced metering.

Meters can communicate using Internet Protocol (IP) via GPRS-based or Ethernet-based connections. Because of open communication standards, you get flexibility and future-proof media choices.

IP technology also offers other advantages: for example, reduction of communication costs by simultaneous data collection of multiple meters. New applications can also be generated. A flexible solution package from Landis+Gyr lets you continue to operate your existing infrastructure, such as central system, meters, etc. and simply upgrade to IP based communication.

If the central AMM system does not support dynamic addressing of IP based metering directly, we have developed the software necessary for remote meter reading via the Internet: iMEGA. This package forms the interface between the meters and the central system, and is also an important security component for the overall system, since access to the meter is password protected. The software can be implemented for meters and AMR systems from several equipment suppliers.

## Manage energy better

Landis+Gyr is the leading global provider of integrated energy management products tailored to energy company needs and unique in its ability to deliver true end-to-end advanced metering solutions. Today, the Company offers the broadest portfolio of products and services in the electricity metering industry, and is paving the way for the next generation of smart grid.

With annualized sales of more than US\$1.5 billion, Landis+Gyr, a independent growth platform of the Toshiba Corporation (TKY:6502) and 40% owned by the Innovation Network Corporation of Japan, operates in 30 countries across five continents, and employs 5,000 people with the sole mission of helping the world manage energy better.

More information is available at [landisgyr.eu](http://landisgyr.eu)

### Landis+Gyr in short

- 5000 employees worldwide
- Operations on all five continents
- Broadest portfolio of products and services in the industry
- 25 years of smart metering experience
- 1000 AMM systems delivered
- 300 million energy meters produced
- Largest relevant engineering capacity in the industry
- 65 years of direct load management experience
- 25 million load management receivers produced
- ISO certified for quality and environmental processes
- World leader in integrated energy management solutions
- Committed to improved energy efficiency and environmental conservation
- Solid and established partner network

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