



## Landis+Gyr E750

ZMK 300/400

Maximum flexibility at lowest  
total cost of ownership

E750 (ZMK 300/400) - Unique multi-modular metering system provides maximum flexibility and serves as the smart grid platform

The new SyM<sup>2</sup>-compliant meter takes utilities to a new level of cost effective meter data management. Its multi-modular concept, ease of installation and provisioning ensure minimal total cost of ownership (TCO) for the customer.

- Considerable OPEX reduction through multi-modularity
- Maximum data safety delivered by certified measurement value packaging
- Enhanced flexibility for system management and tariff calculations
- Full compatibility and interoperability thanks to an open SyM<sup>2</sup> design standard
- Maximum security of investment through future-proof innovative communication interface

## Radical new concept of an industrial & commercial meter

Communication technology is the basis of any smart metering solution.  
How do we develop an industrial smart metering solution as a whole?  
And what would comprise?

The answer is our new the new SyM<sup>2</sup>-compliant meter - E750 (ZMK 300/400).  
It is the first industrial & commercial meter which has been developed as an  
integral part of the Smart Metering Solution.



### Base module (BM)

The BM sends a measurement tuple every second over the local bus.

- Direct or transformer connected measuring unit records: +A, -A, R1, R2, R3, R4 for low- and medium voltage. Reactive energy with defined accuracy for harmonics.
- Accuracy class 0,5S and 1 respectively C und B acc. to MID.
- Also works with disconnected neutral conductor or 3 phase – 3 wire connection (Aron)
- Load profile recorder capable of collecting 6 channels every 15 min. over a period of 3 months minimum
- Voltage monitoring per phase, current monitoring per phase & neutral as well as the corresponding phase angles
- Clock, counting the time as incrementing seconds index, 7 days backup (no battery)
- Ready for firmware upgrade acc. WELMEC / PTB
- Signature system to sign measurement tuples
- Illuminated display
- Optical test output
- Ethernet interface (with Power over Ethernet) for the SyM<sup>2</sup> bus
- Unique spring-loaded cage terminal (no screws necessary) to simplify installation



### E75C Communication module (CM)

Basic functionality:  
The communication module generates and transmits all commands necessary for communication between any module on the SyM<sup>2</sup> and central station.

Each of the communication modules contains a wide area interface and a local Ethernet bus to connect and power the modules. The communication protocol is SML over TCP/IP. Data can be pulled from the meter reading station as well as pushed to it.

Additionally to these interfaces the CM provides a 115 Kb/s RS232 service interface.

The CM can be parameterized locally and remotely. Firmware for remote + local upgrade is also possible. The CM supports up to 32 basic modules.

Three communication modules available:

- CM-E1P01, GSM / GPRS modem  
Tri-Band GSM/GPRS-module
- CM-E1E01, LAN/DSL modem  
WAN-Interface: 10/100 MBit, DHCP or fix IP  
DSL-Protocol: PPPoE
- CM-E1M01, PSTN modem  
Modulation: V.22bis, V.32, V32.bis and V.34  
Only pull mode

### E75M Pulse emitting module (IM)

The IM generates S0 pulses according to active and reactive energy (sent via tuples). The appropriate meter constant will be loaded from basic module (zero configuration), but can also be configured manually for special purposes.

- Six energy proportional S0 pulse outputs (24V - 240V / 100mA) for: +A, -A, R1, R2, R3, R4
- Integration period output (closed to reset)

### E75M Network node module (PM)

Multiple basic modules can be connected to a communication module through a network node module. A PM contains 4 Ethernet interfaces for local bus communication including PoE (Power over Ethernet). The PM will be connected to main.

- Wide area power supply for the PM
- 4 x LAN-Interface: 10/100 Mb/s, bridge topology
- Integrated module power supply for 4x PoE: 48 VDC

## Fundamentals of the SyM<sup>2</sup> design standard

### Modular concept: basic meter, extendable by modules

The entire platform is based on individual modules. Increased functionality will be achieved by adding an additional module. This unique approach guarantees that the cost of a meter point can be optimized according to its individual use.

The meter (Base Module) is focusing on its prime function "measurement point". Adding meters to an industrial AMM system is for the first time ever real "plug and play". No additional configuration is necessary from the meter all the way through to the central station.

### No conventional clock in the meter

The time in the meter is counted as a strictly incrementing second index. This second index will be synchronized with the real time in the central station on a regular interval.

There is no clock in the meter which has to be set according to time zone, summer and winter time. All time function will be handled in the central station, giving the utility maximum flexibility at system management and tariff calculations.

### Signed Tuple\*

Every second the base module transmits telegrams (tuples) containing signed metering data. The proofing of the data is achieved with a private / public key method using ECC (Elliptic Curve Cryptography) algorithm.

The device identification and second index together with the signature certify the authenticity of each tuple, so that tuples can be stored independently from the meter.

This mechanism represents a paradigm change, compared to traditional meters, where all billing values have to be stored in the meter.

\*) A tuple is a sequence of values, called the components of the tuple. These components can be any kind of mathematical objects, where each component of a tuple is a value of a specified type.

### Data protocol based on SML and OBIS codes

The license-free Smart-Message-Language protocol (SML protocol) serves for transmitting data between the meter and all systems requiring original metering data. SML is optimized for use in both classical communication routes (PSTN, GSM, etc.) and in package-oriented network operation.

The simple, human readable structure of SML allows to adapt it with minimum effort and time into modern AMM systems. The used OBIS codes in the XML protocol links to the existing meter world.

### SyM<sup>2</sup> is an open standard

The new open standard SyM<sup>2</sup> covers electrical, mechanical and data technology design of the devices.

The SyM<sup>2</sup> quality seal guarantees conformity to the standard and compatibility between modules of different manufactures.

## 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, we deliver innovative and flexible solutions to help utilities solve their complex challenges in smart metering, grid edge intelligence and smart infrastructure. With sales of USD 1.8 billion, Landis+Gyr employs approximately 5,600 people in over 30 countries across five continents, 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

- Swiss HQ with 5'600 employees in 30+ countries worldwide
- Serving 3'500+ utilities worldwide
- Over USD 1b of self-funded R&D investment since 2011
- Over 90 million connected intelligent devices deployed
- More than 14 million meter points under managed services
- TWorld's largest smart grid IoT project with 300+ million devices globally
- Frost & Sullivan Global AMI Company of the Year 2017 - the 4th consecutive year

Landis+Gyr AG

Theilerstr. 1  
6301 Zug  
Switzerland

Tel. +41 41 935 6000

Fax +41 41 935 6601

[info@landisgyr.com](mailto:info@landisgyr.com)

[www.landisgyr.eu](http://www.landisgyr.eu)

