



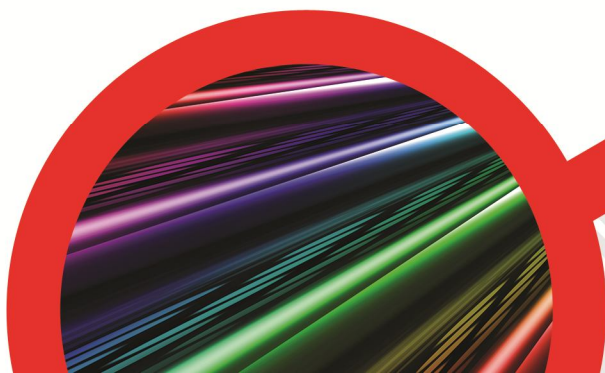
Concentrator **MEC 500**

Concentrator is designed to manage and communicate with electricity meters through low voltage network using a PLC modem. The concentrator controls communication with the meters, detects newly connected meters and reads the measured values and statuses from meters. Connection with the system for remote monitoring and control is accomplished through GSM / GPRS 3G channel or Ethernet interface. It connects to the grid with 4 line leads.

General description

Case and covers are made of high quality materials with self-extinguishing feature, which are resistant to mechanical influences, UV radiation and penetration of dust, water and solid materials, according to EN 62052-11. The level of dust and moisture protection meets IP54 standard, according to EN 60529. The degree of electrical insulation of the concentrator is class II. The case of the concentrator is made of recyclable material. Design and construction of the concentrator provide protection from electric shock, excessive heat or inflammation. Concentrator monitors CPU and case temperature.

Electronic modules are multi-layer circuit boards with separate analog and digital components. This means that resistance to electromagnetic and other interferences is achieved by technological procedures of board production. The new generations of components used in production of concentrator are almost all made in SM technology (surface mounting). The real time clock function is also included.



General description of functions

Software package in the data concentrators provide the following functions:

- Reading and storing the data
- Management/parameterization
- Communication
- Data processing
- Data protection and access security
- Administration

Reading and storing the data

One of the basic functions of the concentrator is reading of meters located in its communication network. Reading function is accomplished through the reading program / sequence. Data reading according to sequence include the following:

- Daily values of registers
- Meter statuses
- Quality of delivered energy log (Voltage unbalance log)
- Event log
- Load profile
- Hourly values of registers
- Monthly values of billing registers
- Time and date

Data read on request includes the following, in addition to all data indicated as read according to sequence:

- Effective voltage values per phases at the moment of reading
- Instantaneous power – (load power at the moment of reading)
- Tariff program
- Integration period for 15-minute maximum power
- Consumption management parameters
- Parameters for voltage thresholds within Voltage unbalance log
- Parameters for time intervals of profiles
- Parameters for registers within profiles
- Parameters related to presentation on meter display
- Archived values of accounting registers
- Current state of load control switch
- Meter firmware version
- Meter factory number and type

Data concentrator has enough memory space so that the function of storing (archiving) data in a reliable way keeps the data for the period of minimum 6 months, except for billing data which must be kept for at least 12 months.

Management and parameterization

1. According to the amount of managed / parameterized meter:

- Management / parameterization of individual meter
- Management / parameterization of the group of meters

2. According to frequency:

- Management/parameterization according to sequence (it is possible to specify daily, weekly or monthly sequences)
- Management/parameterization on request from AMM Centre

Possible parameterization:

- Real time clock synchronization
- Daylight saving time changes
- Tariff program change
- Change of value for the presentation period on meter display
- Change of sequence and selection of registers for presentation on meter display
- Key button roles – conditional reconnection
- Change of integration period in case of 15-minute power
- Change of voltage threshold for detecting existence of phase
- Change of maximum per limit
- Remote disconnection/connection of the customer
- Management of control output
- Automatic or conditional repeated disconnection
- Penalty time
- Change of the time interval in which data is recorded in the profile
- Voltage thresholds related to electricity quality
- Changing meter firmware

Management/parameterization function generates a corresponding report to be sent to AMM Centre after it's every action, containing assigned action success percentage and the list of meters from which there is no management / parameterization execution.

Management / parameterization function initially has execution priority over automated regular reading function. Setting of priorities is fully configurable.

Communication

During communication data model, application layer and identification structure according to DLMS / COSEM is used.

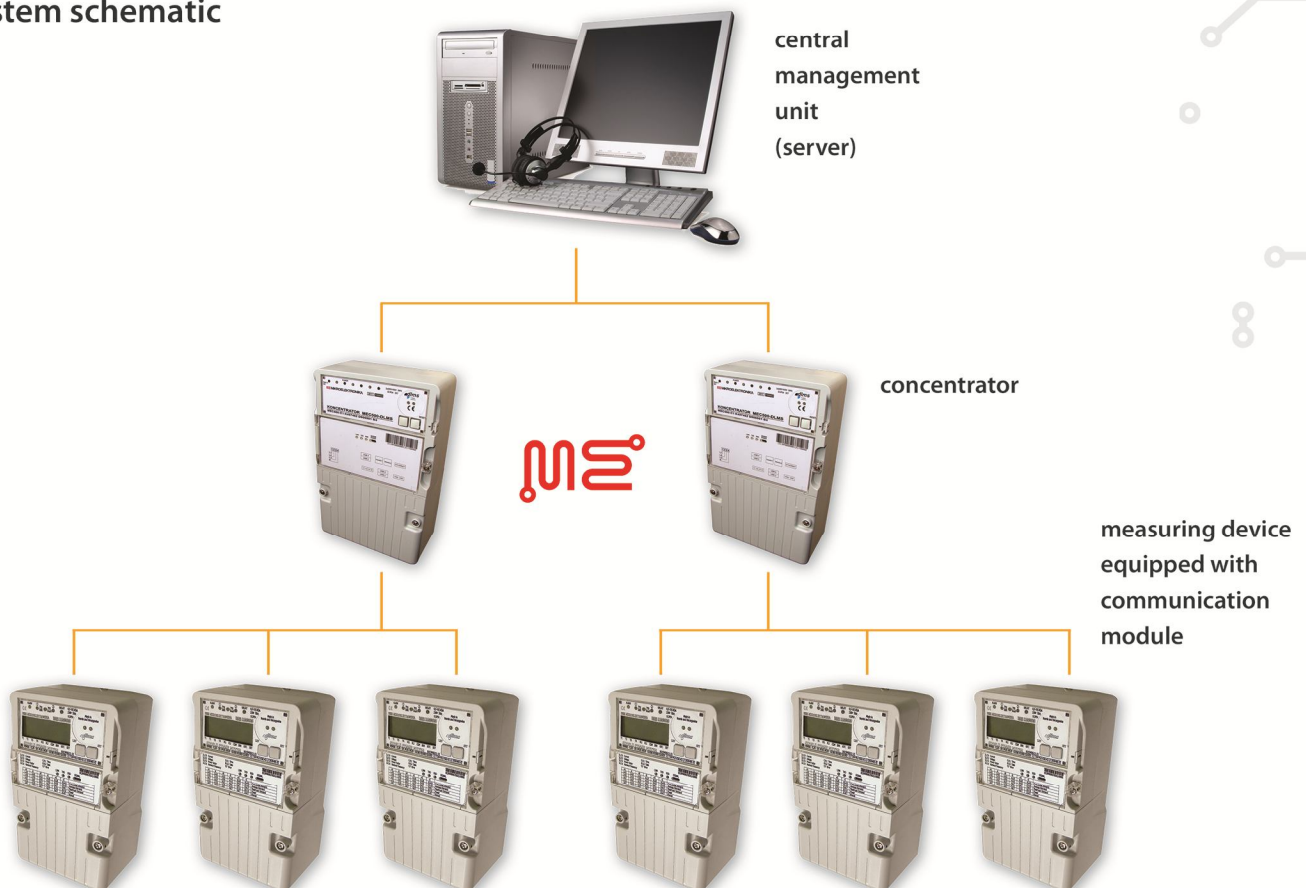
Data processing

Concentrator software, in addition to reading and data sending towards AMM Centre as primary functions, also performs partial processing of collected data. Distributed data processing is introduced in this manner, as well as partial reduction of pressure on transmission communication path to AMM Centre, and on AMM Centre servers.

Data protection and access security

Access to data and functions of the concentrator is protected by authentication and authorization procedure. Concentrator has the possibility of creating access logs, both for local or remote access, through communication channels. Concentrator supports communication encryption with meters and with AMM Centre.

Remote data management system schematic



Administration

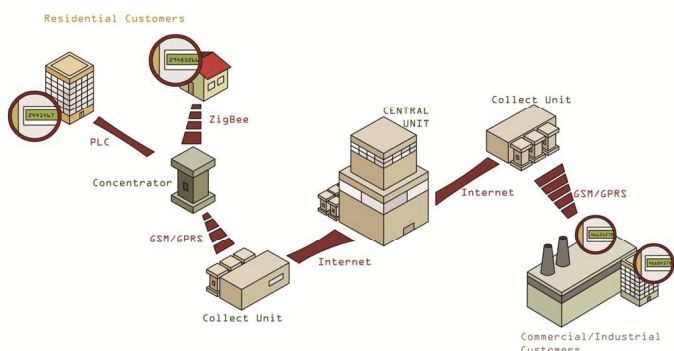
Administration can be done remotely, or locally. Functionalities that are required for administration of concentrator are:

- Review and synchronization of reading programs / sequences with AMM Centre or a laptop
- Review and synchronization of management/parameterization programs / sequences with AMM Centre or local laptop
- Review and change of programs / sequences execution priorities
- Real time clock synchronization
- Review of communication with PLC modem
- Review and change of concentrator reporting frequency and time parameters
- Review and change of concentrator events on exceptional reporting parameters
- Review and change of communication parameters of concentrator
- Review and change of all other concentrator parameters
- Change of concentrator management software

Concentrator keeps data (in form of log/logs) about parameters changes and settings for at least 6 months.

Concentrator as a part of AMM system

Our MESMET software package enables reading and programming of all necessary parameters according to the EN 62056-46 (DLMS) protocol. These applications allow parameterization of the concentrator, reading parameters and measurement data from the concentrator, and graphical and tabular representation of obtained data.

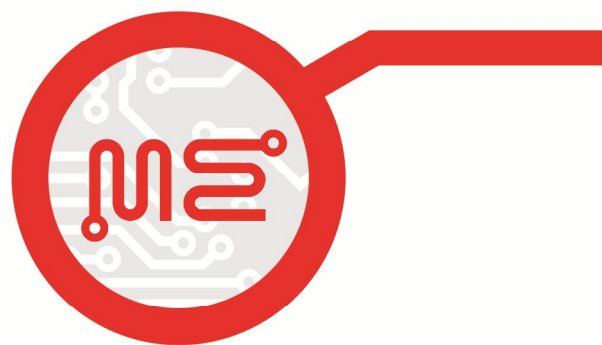
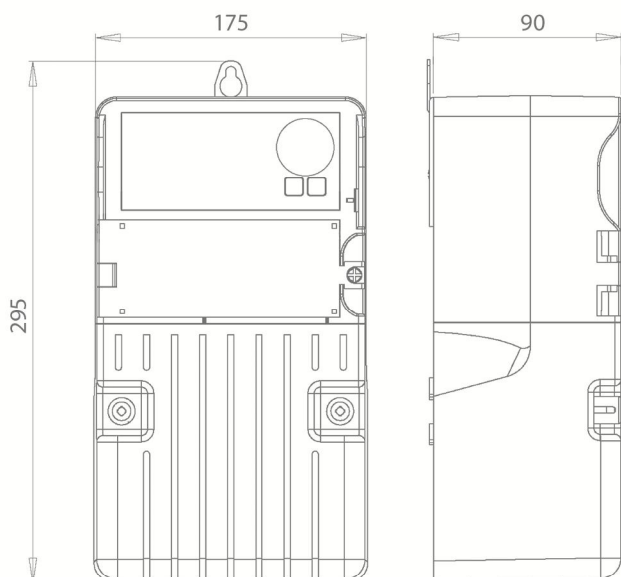


Being developed to meet DLMS, our concentrator can be a part of any AMM system, on the same standard. This characteristic enables our systems to interoperate with all others with similar functions and characteristics, meeting modern requests of DLMS.

Technical information

Nominal voltage
Nominal frequency
Number of supported meters
Concentrator life time
Communication ports
Other ports
Communication protocol
Type/size of memory
Operating system
Operating temperature range
Storage temperature
Relative humidity
Mass
Dimensions
IP degree of protection

230 V / 400 V + 15/-20 %
50 Hz
1000
10 years
RS485, LAN, PLC, GPRS-3G
2x USB, PS2 KB/Mouse, VGA
DLMS/COSEM
Compact flash
Type I or II 4GB to 16GB
Windows XP Embedded
-20° C to +65° C
-40° C to +85° C
< 90%
< 1.2 kg
295 x 175 x 90 mm
IP54



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