

Controller with internal GSM/GPRS modem

MCL 5.xx

User manual

Version 2.0

ELGAMA SISTEMOS Ltd., Lietuva 2009



**Controller MCL 5.xx with internal 2-band or 4-band GSM/GPRS
modem**

1. Application of controller MCL 5.xx

Controller MCL 5.xx (further referred to as a controller) is used in AMR system for automated remote data reading of electricity, heat meters and other electronic devices and data transmission to dispatcher offices.

GSM radio network with CSD/GPRS technology and TRANSPARENT DATA, TCP/IP protocols is used for data transmission to dispatcher offices.

Controller supports two-direction data exchange with communication protocols IEC 62056-21 (fixed net baud rate of 300...9600 bauds, 8N1 or 7E1 bytes), DLMS or IEC 62056-31. 20mA current loop or RS485 electric communication interfaces that have flexible system of communication, parameterization and transparent data exchange protocol are used for communication. Controller is used for point-to-point data exchange.

Controller can be mounted in terminal covers of electricity meters manufactured by "Elgama-Elektronika" or fixed to 35 mm DIN bus (see Figure 1 below).

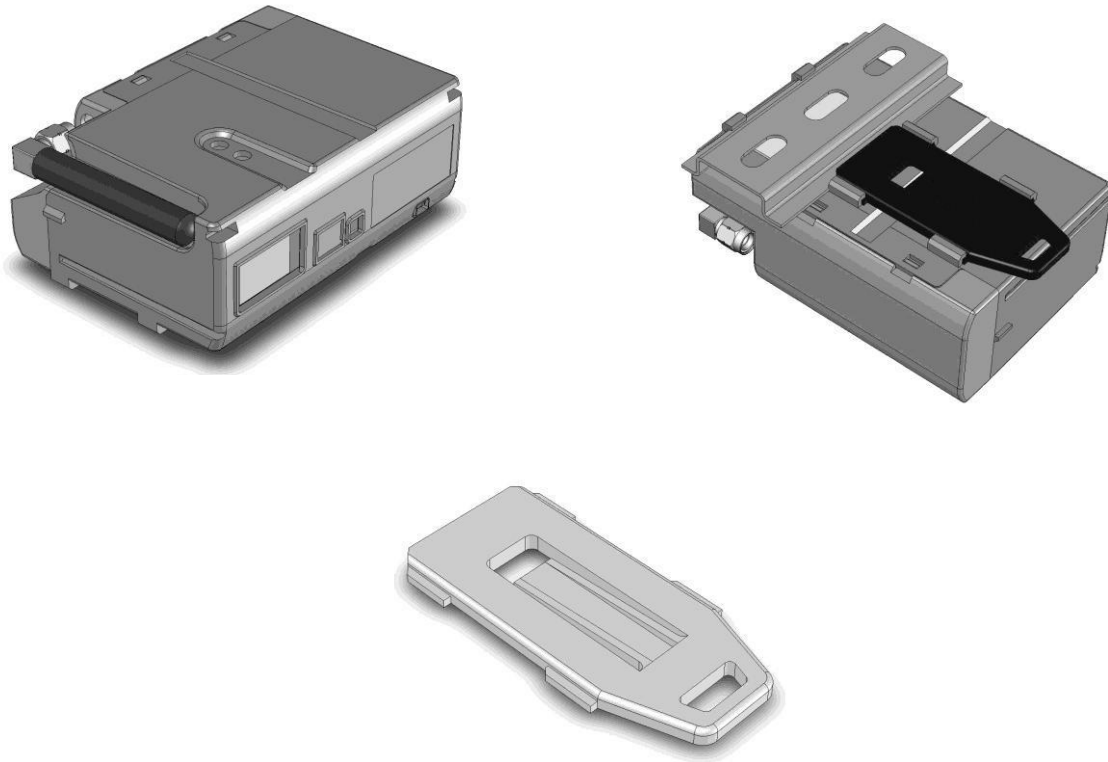


Figure 1 Exterior of controller MCL 5.xx

2. The main modules of controller MCL 5.xx

Basic block diagram of controller MCL 5.xx is displayed in Figure 2 below.

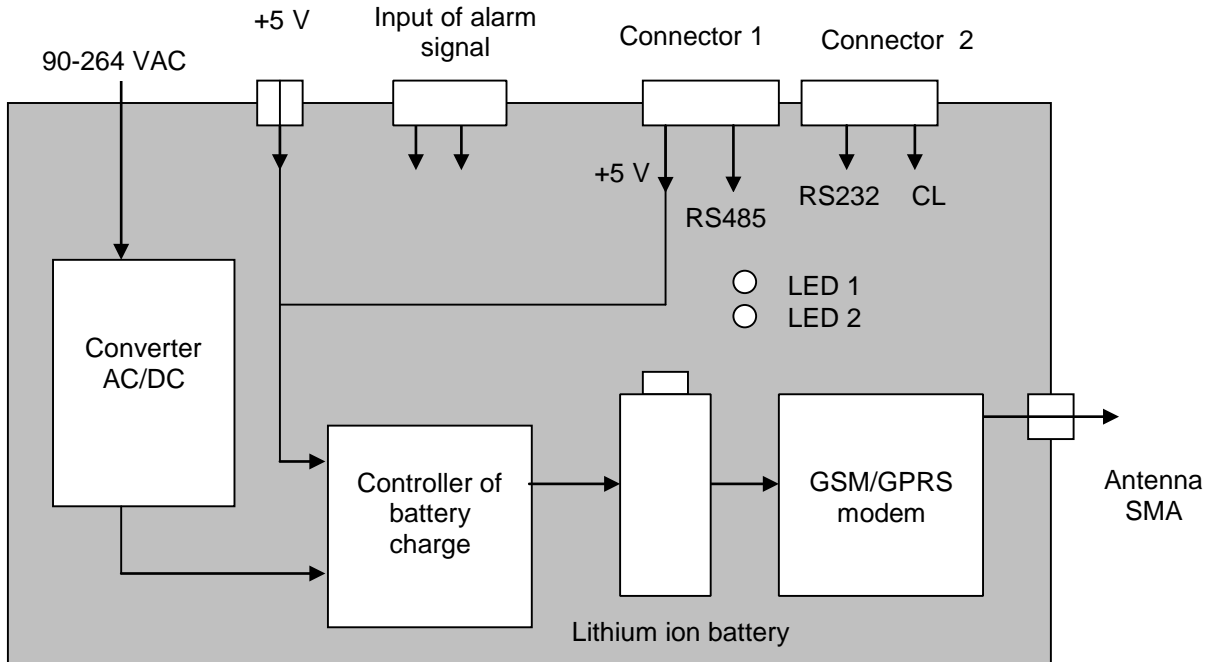


Figure 2 Block diagram of controller MCL 5.xx

Modem, depending on interface, is connected to meter via connectors 1 or 2 (RJ25 type, six wire).

Block diagram of controller can be modified depending on the AMR system size, type and variety of devices used. The main modules of controller:

- a) GSM/GPRS modem with SIM card socket (it is a possible variant with GPS clock timing technology):

Operating temperature range, °C:	from - 20 to + 50	
Frequencies of operation in GSM network, MHz:	Dual Band – 900, 1800 Quad Band - 850, 900, 1800, 1900 (EGSM 900, DCS 1800)	
GPRS class:	Mode B, Multislot 10 (4RX/2TX, Max 5 Slots) (GPS – special order)	
GPRS protocol:	GPRS Release 97 and 99, SMG 31	
GPRS code schemes:	CS1-CS4, MCS1-MCS9	
GPRS packet channel:	PBCCH/PCCCH	
Class of power transmission:	Range	GSM/GPRS

	1800/1900	Class1 (1 W)
	850/900	Class4 (2 W)
Sensibility, dB	- 106	
Net baud rate of radio channels, Baud:	75, 150, 300, 600, 1200, 2400, 4800, 7200, 9600, 14400, 19200, 28800, 33900, 38400, 57600, 115200, 230400 or 460800	
Net baud rate of physical interface, Baud:	300, 600, 1200, 2400, 4800, 7200, 9600, 14400, 19200,	
Aerial interface:	SMA	
SIM card interface, V:	1.8/3.3	
The main protocols of control:	AT Commands, Menu system	
Inner GPRS modem protocols:	TCP/IP, UDP	
Data transmission:	Asynchronous, encoded or clear up to 14,4 kb	
GSM SMS format:	Text, PDU, MO/MT Cell broadcast	

- b) Galvanically not separated communication interfaces – one or several (it is indicated in order):
- RS232: for local modem programming, data reading and parameterization of the controller;
 - CL 20 mA current loop: enables to connect in series up to 3 electricity meter interfaces;
 - RS485: enables to connect up to 8 electricity meter interfaces;
 - Controller with CL and RS485 interfaces enables to connect electricity meters to one system through different interfaces;
- c) Microprocessor core with 128 kb random-access memory and memory of 256 kb for application storage;
- d) AC/DC (90-264)/5 V, 2 A pulse power supply;
- e) Additional connector for connection of external DC 5V power supply;
- f) Rechargeable 600 mAh Lithium ion battery. The battery is charged by internal and external AC/DC supply as well as by meter's 5V voltage, which is supplied via interface RS485 connection. Battery current is used only when network voltage is absent. When the battery is discharged the controller turns off and begins to operate again when network voltage appears.
- g) Alarm input. SMS and e-mail alarm messages will be sent in the case of input short connecting. Input functions are regulated during the order acceptance. This is an optional feature, must be ordered separately.
- h) Antenna SMA type socket. Outer antenna wire with 2.5 m or 3 m of length of cable can be added if ordered.