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M-Bus reading device **MBM-TFT-□□□** **M-Bus Series**

Instruction Manual

MBM-TFT is a reading device for tax meters, connected directly or through m-bus counters to an m-bus network. It is both m-bus converter and local display for reading data. MBM can read and store data for up to 250 tax meters. Data is shown on device TFT display, but can also be read with a personal computer/notebook via RS-232 interface and free Gineers software. Furthermore, transmitting devices like Ethernet or GPRS converters can be connected so data can be read remotely. Normally it is mounted on a flat vertical or horizontal surface.

1. Main Technical Parameters

- max. number of devices to read	– 64/128/250
- power supply voltage	– 55-250 Vac
- m-bus nominal output voltage	- 35.5 VDC ± 1V
- max. m-bus output current	- 450mA/210/140mA for 250/128/64 slvs
- max. power consumption	– < 21 W (for 250 devices, max load)
- display	– TFT 5", 800x480 px
- keyboard	– 6 tactile buttons
- Interfaces	– 1xM-bus, 1xRS232C
- storage temperature	– -20÷+50 °C
- air humidity	– 40÷90 %
- dimension (H/W/D)	– 160/175/65 mm
- protection class	- IP 33
- serial port RS-232C baud rate	– 300/1200/**2400**/4800 bps, 8, E, 1
- m-bus speed	– 300/1200/**2400**/4800 bps, 8, E, 1
- weight	– 1.1 kg

2. MBM-TFT operation

MBM must be set by qualified personnel, familiar with safety instructions and regarding this instruction. In normal working mode MBM-TFT displays sequentially shows the values of tax meters to be read. The display information changes every 4-12s (this parameter can be set with our software). The display for every tax meter shows following information:

- user number (0 to 9999)
- medium (cold/hot water, electricity, gas, etc.). Medium is visual and text
- Main information - free text up to 50 symbols
- Additional information – free text up to 50 symbols (smaller font than Main)
- Main value and type of measured medium (like 465.8 m^3 or 44556.3 kWh)
- Second Main value, if applicable (for Heat/Cold meters)
- If turned on – additional values like pulse inputs, temperature, volume flow and Power

The data is shown with accuracy 0.1 of measured value.

In the upper field of the screen user can see current date, time and status LEDs (reading, transmitting, collision, protection on m-bus, etc.). At the bottom is placed status bar, showing number of active device and current action performed by MBM-TFT device.

Pressing «up arrow» or «down arrow» keys display data of the next or previous tax meter in the list. Pressing the «OK» key MBM-TFT will show its status and global settings.

When information for some device is on the screen, pressing «left arrow» or «right arrow» key will give user information for tariffs, historical values, etc.

MBM-TFT reads globally all devices on every 6 hours and updates information. Furthermore, it can be set for additional regular reads on every xx minutes (from 1 minute to 99 minutes).

When power is interrupted, MBM continues to work in sleep mode (only clock enabled) until the internal backup is discharged (about 30 days). The display is not lit. When the power is restored, the display starts showing the data again and if the internal backup is discharged, the clock data is lost. Tax meter data is always kept and cannot be lost.

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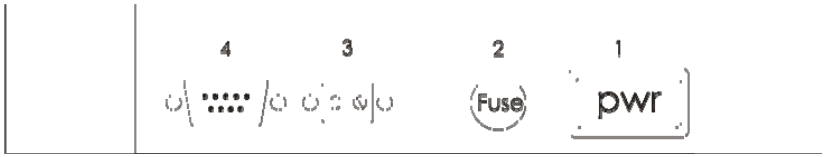
The device powers all m-bus devices connected. It tracks continuously the m-bus network and if maximum output current is reached a LED called "over" is lit. If the current reaches certain levels above maximum or there is a short circuit – LED called "Prot" is lit and m-bus network is shut down. When the problem is solved around 20 seconds later devices start to operate normally. M-bus current levels are different for MBM-TFT 250, MBM-TFT 128 and MBM-TFT 64 and are related to max number of devices that can be connected. One standard m-bus load is assumed to be 1.5mA.

MBM-TFT is programmed through RS-232 interface using free dedicated software of Gineers. Commands for programming are not complicated and can be provided to the user on request. Device can be also programmed remotely through Gineers converters MBET-2/3 (Ethernet) and MBGP-3 (GSM/GPRS).

3. Mounting, electrical connection and setup

The mounting of MBM-TFT must be done by qualified personnel, familiar with safety instructions and setup instruction for MBM-TFT.



All MBM connections are external, described below:

No	Description
1	Power 55-250 Vac (cable included)
2	Protection Fuse - 0.5A slow-blow for MBM-TFT 64, 1A slow-blow for MBM-TFT 128/250
3	M-bus – polarity does not matter
4	RS-232C DB9 null modem – for programming or readout (cable included)

4. Warranty

The warranty of the device is limited to 2 years from the date of sale. If the device shows any defect or malfunctions during that period, the manufacturer is obligated to repair the device in its own service for manufacturer's expense, or, if the repair is impossible, to replace the device with the new one. The transportation costs to the manufacturer's service are due to the client. The warranty voids if this manual's instructions are not met, warranty seals are removed or the device was opened by unauthorized by the manufacturer personnel.

Serial No:..... Sale Date:.....

Signature:.....

5. The Package Contains

- MBM – 1 pcs.
- 1xPower cable, 1xRS-232C programming cable
- Instruction Manual – 1 pcs.

6. Manufacturer

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