SOLVIMUS
METERING SOLUTIONS

M-Bus data read out parallelly

Increasingly, meter data is playing an important role in the fields of facility management, building management system and monitoring. In many properties, meter data is already being collected. However, these data cannot usually be accessed via a higher-level control system, as this is not supported by the existing readout system. This is particularly critical with the M-Bus because only one master is allowed to operate this bus. A solution that enables a quasi-parallel access to the M-Bus can be helpful for this issue.

Existing readout systems

In many properties and facilities, it is already possible to find meters that are read electronically. The data collected by the meters is used, for example, to give the local technician an overview of the property in order to monitor it. That is common in many modern buildings of public administration, schools and gymnasiums. But even such dedicated facilities like an industrial heating control system have access to individual meters, whether to monitor the heat quantity or the supply of the heating medium.

In such readout systems, the M-Bus has established itself as communication interface. The M-Bus is a fieldbus, which was primarily developed for the consumption data acquisition. Therefore, M-Bus meters are available for all media. The transfer is carried out serially on a two-wire line between the master and the connected slaves (consumption meter or sensor technology).

Typical readout systems, which e.g. collect data via M-Bus, are generally characterised by the meter data remaining in this system. External access is not possible. It is also noticeable that this readout systems are very inflexible. They are usually programmed exactly for one specific system state.

This means that an adaptation to changes, e.g. the installation of another meter, entails high maintenance effort or is not possible at all. Especially during meter reading, there are restrictions regarding the readout rate and the available measured values.

Complementary control systems

These solitary readout systems meet modern requirements in only a few cases.

In this context, increasing facility management is the greatest factor. Properties are considered more and more holistically. For a detailed monitoring of one or more properties directly on site or remotely within a facility management system, access to all property data, including meter data, is required.

Another example is a building management system that requires additional meter data from the heating control system.

With already existing remote reading systems, it may also be desirable to install a local display with the meter data on-site.

In all cases, the connection to a mostly closed, solitary system has to be enabled. As the direct access to the system data is not provided, it is advisable to have a direct connection to the interface of the meters. Parallel readout via this interface means that the meter data is also available to other systems.

Integration in existing M-Bus

The M-Bus is a communication system that impresses with its robustness and convenience. One master controls the entire communication process and supplies the meters with energy directly via the bus.

However, this convenience is the greatest challenge upon the parallel readout of M-Bus networks.

In this respect, several aspects play a role. First, the M-Bus is not multi-master capable. This means that only one master is allowed to operate the M-Bus and to control the communication. A second master, which also accesses the bus, cannot be physically connected. Switching the bus to several meters would be possible in principle, but on the one hand, delays are to be expected due to short-term loss of bus voltage and on the other hand, a complex time management, which always switches at the right moment, is necessary.

It should also be noted that the masters operate the M-Bus differently on the logical level. As a result, re-parameterization, communication conflicts and data loss could occur. Therefore, it is recommended to operate the M-Bus only by a real master and not to switch over.

It is necessary to install a new master in the M-Bus, which is invisible for the existing readout system and acts transparently. The master virtualises the connected meters and transfers them to the existing readout system.

Realisation in the MBUS-GSLE

The MBUS-GSLE, which is available for 125, 250 and 500 unit loads, enables this parallel readout. It is an M-Bus master, which independently collects the meter data of the connected meters and transmits these data via an M-Bus slave interface to another master. At the same time, further systems can be connected via Ethernet.

As the MBUS-GSLE retrieves the meters autonomously, an initial configuration of the device is necessary.

This configuration can be executed via the configuration website of the device. Using a standard web browser, the complete setting can be carried out without using additional tools. The whole range of devices features is shown here. In addition to the basis configuration, the provided values can be selected, bus scans can be executed and the current data can also be viewed. Thus, the remote maintenance via a service computer is also possible.

A powerful protocol stack is implemented in the MBUS-GSLE, which makes it possible to read out all meters available on the market and to interpret their data without any further configuration effort. Therefore, the data can be provided to other systems without any effort.

The typical data formats are XML and CSV. Both are perfectly suited for connecting databases. Consequently, meter data can be integrated parallelly into almost any facility management system. Moreover, Modbus TCP is available as a software option. With this software, any control system, like SPS or GLT, can be connected.

The MBUS-GSLE has status LEDs to indicate the operating status and LEDs, which visualize the M-Bus communication (transmitting, receiving, collision).
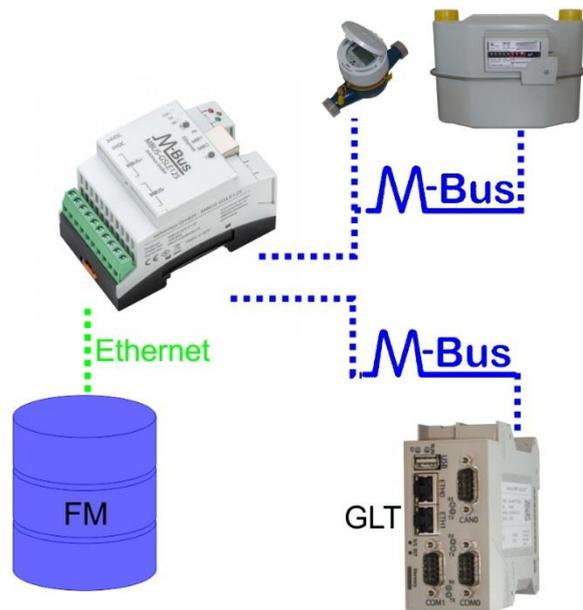
Transparent mode

The transparent mode enables the direct access to the M-Bus meters to parameterize them. For example, it is possible to set the primary address or the baud rate remotely from the PC.

Technical data MBUS-GSLE

Architecture	Controller–based gateway
Supply	12-36 VDC, <500 mA, max. 2,5 mm²
Connections M-Bus	Screw clamp, max. 2,5 mm²
Ethernet port	100 MBit, RJ45, shielded
Measurements	54 x 90 x 60 (B x H x T in mm)
Installation	DIN support rail 35 mm, IP20
Max. baud rate	19200 bps
Quantity of slaves	Max. 500 unit loads
Load of master	Max. 2 standard loads
IP address	Freely configurable or via DHCP

You can find the vast software functionalities on the information sheet: "Overview of the software features for our data concentrators (data loggers)".