



Overview of the software features for our data concentrators (data loggers) and gateways*

We are continuously adding features to our devices, striving to always provide the latest and suitable products for different applications. Here, we provide an overview of our software features.

Read out DLMS meters (only for MUC.easy^{plus})

The RS-485 interface in the data concentrators of our MUC.easy^{plus} family is enriched by an additional protocol.

DLMS is joining Modbus RTU and DLDE in the set of supported protocols, and hence DLMS meters can be read out.

Extended state reports of the radio connection

The web-based front end on the device now displays extended state reports of the radio connection, like the radio band, the provider and the SIM card number.

Further, the reception quality can now be assessed by the network connectivity for signal and noise. This is achieved using a test mode on the web-based front end which updates frequently the network connectivity, aiming to detect the optimum antenna location.

Furthermore, we have extended the reconnection to radio and linked it to the reception of data or the successful transmission of data. Both can be set on the web-based front end.

Read out Modbus meters

Modbus is supported to integrate Modbus meters into our data loggers and gateways. There are two types of Modbus.

Modbus TCP is available globally on all data concentrators and gateways because each device has an Ethernet interface.

Modbus RTU is usually operated via an RS-485 interface. This interface is available on the MUC.easy^{plus}.

As with the M-Bus meters, the integration of the meters is done via the website of the devices.

Modbus Templates

Unlike the M-Bus, the Modbus meters cannot be scanned, but have to be added manually once.

The creation of individual meter values can be very time-consuming in projects involving many meters.

The manual process to create meters can be automatized and accelerated in order to save time when commissioning.

With the so-called "Modbus templates", you can set up templates for certain meters. This option is especially helpful if you have many meters from the same manufacturer and of the same kind, and from which you want to collect the same meter values.

Load profile recording (only for MUC.easy^{plus})

In industry-scale metering, the recording of load profiles and meter values must adhere to calibration law. Traditionally, a Registered Performance Measurement (RLM) is done. Precise information is revealed to both the network operator and the customer as to when and where how much electrical power is consumed. Till the mid of the year 2022, the EEG (Renewable Energy Sources Act in Germany) fee and the ability to delimit it for third-party amounts provided a powerful lever in using load profiles compliant to calibration law.

A load profile compliant to calibration law requires meters recording the power in 15-minute intervals of the network operator and save the values unalterably. The load profile readout is slightly different from the M-Bus standard. Special commands have to be sent to the meter. Therefore, we have written a special driver for reading the load profile. The meter can be read out with the necessary software extension, load profile recording for EMH meters.

The recording of load profiles is not only available via M-Bus, but also via DLDE (IEC 62056-21/IEC 61107) and Modbus RTU.



The implementation and development for DLDE was carried out with an EMH meter and for Modbus RTU with a Janitza meter.

Script solutions

Individual solutions are demanded in special use cases to export meter data conveniently in an importable format into the respective downstream system. These solutions are created on the basis of defined customer requirements.

Reporting script:

The reporting script refers to the way in which data should be transferred to a server. Standard interfaces are TCP, TLS, SMTP, FTP. For example, the meter data can be exported also directly into a database such as InfluxDB.

Formatting script:

This script offers the possibility to customize the format of the standard output formats XML and CSV by use of XSLT scripts. Own formats can also be created. For example, the Unix timestamp can be changed to a human readable UTC timestamp or the order of meters and meter values can be re-sorted and changed.

System meter script/Measurement script:

The system meter provides values for tracing the status of the device, such as operating time or bus load in mA. By use of Bash scripts, individual system values can be generated and logged. When using a mobile data communication, it is possible for example, to display the RSSI of this connection as a value in the system meter, to read it out periodically and to log it.

Extended analysis options

The underrated *Tab Log* offers a powerful tool for analysing the logged communication history and system events, such as status messages of reports, error codes and user logins.

This means that the customer can do the failure mode analysis and resolve the issue on his own. This saves time and is advantageous, for example, if one is directly on-site at the facility. In most cases the error can be fixed by the customer.

Additionally, there is a filter function and a file export function. The exported log file can be sent

to our support department (support@solvimus.de) for a detailed analysis.

System events and application messages are immediately available when the device is taken into operation.

The logging of the interfaces M-Bus, wM-Bus and DLDE is initially disabled due to many potentially incoming telegrams and the related memory requirements. Logging can be activated in the *Tab Configuration* using "Raw log active".

Furthermore, a manual export of an individual report can be defined in the *Tab Meter* (via the button "Export"). This is very helpful in case of a server failure and missed reports.

Ex- and Import of the configuration

This feature enables an easy transfer of the device configuration from one device to another.

After the device has been configured, its configuration can be exported and imported to any other device to be configured. This saves time for configuring other individual devices with the same configuration.

Once the configuration has been set, it can also be used as a backup for a defective device. In this way, the created configuration can easily be installed on the new device / replacement device.

In that way, system/meter and certificate configurations can be exported. The meter list can be exported directly from the website as a CSV file as well, e.g. for checking the configuration.

Provisioning / Rollout support

Users deploying several of our devices can manage them simultaneously by using our tool Netdiscover. It enables updating both the firmware and the configuration on different devices at the same time. This greatly speeds up this process.

Readouts at intervals and at due dates

The readout of the meters and sending the reports can be done at certain intervals and also at certain instants (due dates). For the intervals, the user can select an arbitrary number of seconds, minutes, or hours. For the due dates, the user can set the time



and the day for a daily, weekly, monthly, quarterly, or yearly reading, for example every first day of a month at 4:00 a.m.

Multi Channel Reporting (MCR)

The report data can now be sent to up to 10 independent instances. It is possible to set up 10 different configurations for sending meter data, which are executed in parallel. For each instance, the communication protocol used (e.g. SMTP, FTP, TLS) with the necessary output format (XML, CSV, JSON, user-specific) can be individually set for the corresponding destination address.

Example:

- Instance 1: Daily report of a user-specific CSV file to an energy management system (e.g. SFTP-Server)
- Instance 2: Hourly report of an XML file to a web server

Instance-specific reports

- The web page of the device also allows the manual data transmission of meter values.
- After pressing the "Report" button, the desired report instance can be selected in the subsequent dialog.
- Furthermore, an optional start date can be defined from which the history of meter data will be retransmitted if necessary.

Highlighting of entries

Duplicates are now marked yellow in the *Tab Meter*. This is helpful for finding, for example, duplicated primary addresses or inconsistencies in meter data allocation.

In the *Tab Meter* the "Search" button can be used to search for meters or other values, such as a specific meter value or user label. The found data is highlighted with a green font.

This is advantageous if many meters are installed and a specific one is being searched for.

Encryption

We are also improving on security issues. The data transfer is carried out via HTTPS, SSH, FTPS, SFTP, MQTT or via encrypted e-mail and can be secured via OpenVPN if required.

Database

Meter data is stored directly in a database. In the database, all meter values are collected with the correlating time (based on the timestamp). The reports are generated from this database. So, any data can be exported later again and also be accessed directly via SSH.

This increases the flexibility and availability of your data.

* Our gateways and the MUC.one do not provide all the listed software features.

For detailed information please contact our sales department at sales@solvimus.de or +49 3677 7613066.