GE552-4

Wired M-Bus centralization System overview

| GE552Y059 | GE552Y050 | GE552Y061 | GE552Y056 | GE552Y060 |

The new M-bus modular centralization system comprises two solutions and allows to place the various devices in series expanding the reading possibility from 60 to 500 devices (250 devices for line).

The standard solution is to use a local M-Bus concentrator that supports up to 60 devices and allows the on-site consultation and acquisition of data on the PC through a special software and USB cable.

The complete solution consists of a data logger with integrated web server that supports up to 6 local concentrators expanding the network to 500 devices.

Advantages

• The integrated web server allows the set-up, the search and the consultation of data from all the devices that make up the M-Bus network directly on the display of the device.

• Through a dial-up router all data can be managed and viewed on a PC or smartphone.

• Management of alarms due to failure, tampering or the exceeding of configurable thresholds with the sending of email notifications.

• Scheduling for the generation and forwarding of reports on the data gathered.

❯ Versions and product codes

PRODUCT CODE	DESCRIPTION
GE552Y059	Local concentrator for the collection, processing and recording of data originated from the M-Bus network. Capable of managing up to 250 devices
GE552Y050	Local concentrator for the collection, processing and recording of data originated from the M-Bus network. Capable of managing up to 60 devices
GE552Y061	Wireless M-Bus / M-Bus datalogger for acquisition, processing, recording of data originated by M-Bus wired or wireless devices. Directly controls up to 3000 devices (2500 wireless + 500 wired)
GE552Y056	Software for data acquisition from the M-Bus central unit. To be combined with the GE552Y050/GE552Y059 data concentrator
GE552Y060	4G/LTE – wireless modem router for remote connection of the GE552Y061 datalogger

❯ Example diagram
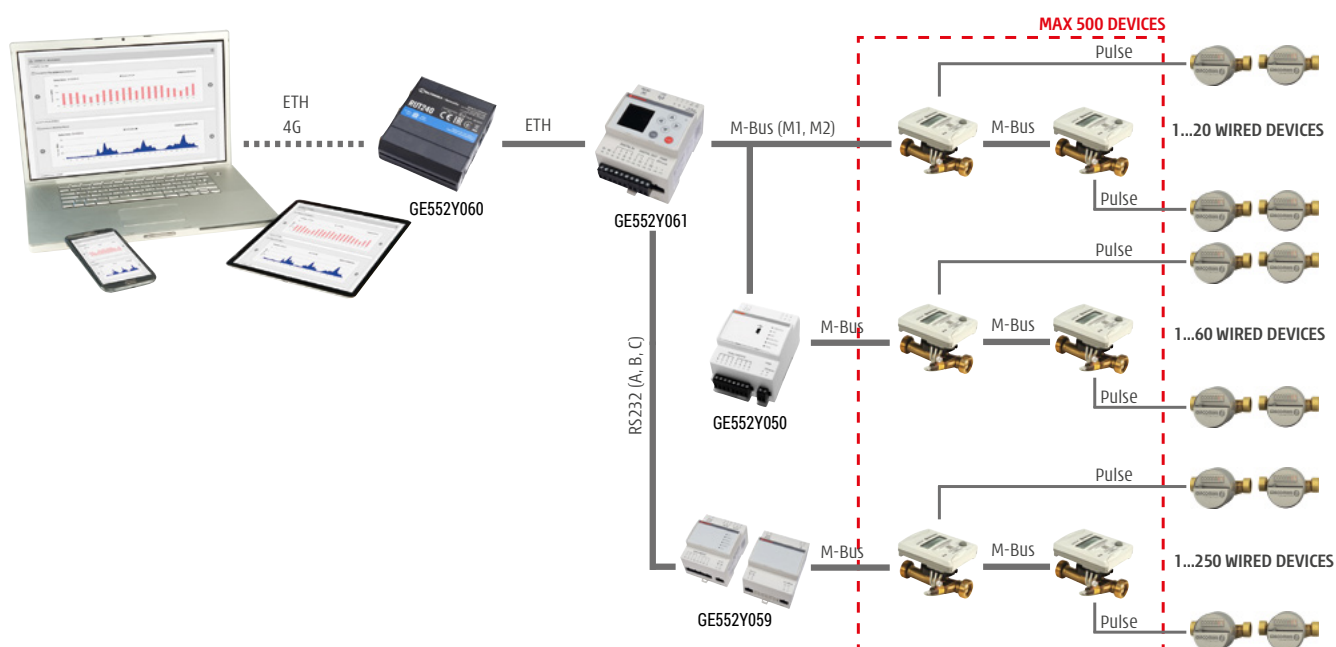
❯ GE552Y059 local concetrator

Description

The GE552Y059 M-Bus local concentrator enables interfacing with a network of devices complying with the M-Bus standard (EN13757-2 Physical Layer) and can support up to 250 devices.

It is designed to be combined with GE552Y061 dataloggers and can be used in stand-alone mode through the RS-232/RS-485 port or as an M-Bus repeater.

It can also be used as master in an M-Bus network of 250 devices connected to a single line.

The local concentrator can be connected:
- via the RS-232/RS-485 serial port to a datalogger or a software
- via an M-Bus slave port as repeater to add 250 additional devices to an existing M-Bus network.

M-Bus selection
- Standard of reference: EN13757-2 (Physical Layer)
- Baud rate: Min. 300bps – Max. 9600bps
- Max number of M-Bus devices: 250 (≤ 1,5 mA)
- Max number of repeaters: Up to 6 with parallel connection
- Tension on Bus: 39V
- Short-circuit protection: Yes
- Galvanic insulation: Yes (See EN13757-2)
- M-Bus Master galvanic insulation – M-Bus Slave: Yes
- Echo muffler: Yes
- Collision identification with breaking alarm: Yes

Electric characteristics
- Power: 110÷240 Vac, 47÷63 Hz through a dedicated power supply unit, included
- Installation category: Class II - according to EN 62368-1
- Nominal consumption: 6 W + (0,07 W *number of M-Bus slaves)
- Max consumption: 45 W, 45 VA Vout: DC 24 V, max 15 VA

Mechanical characteristics
- Working temperature range: -20÷55 ˚C
- Storage temperature range: -25÷65 ˚C
- Materials and colors: PC+ASA, RAL9010 (white)
- Dimensions: (2x) 110x71x62 mm (HxLxW) terminals included
- Assembly: 35-mm DIN bar (EN60715)
- Protection class: IP20 (EN60529)
- EU compliance (EC): MOD 07 AA Rev. 0
- Connections: Power 110÷240 Vac
- Functional grounding:
  - Vin LC/Vout LC: Power for level converter/repeater
  - Vout 24V DC (Max 15VA)
  - M-Bus Slave: Connection same as repeater/extender
  - RS-485: Connection for datalogger and software
  - RS-232: Connection for datalogger and software
  - M-Bus Master: For connection to M-Bus meter network
- Buttons: Firmware updating button

Alarm LEDs
- Run (green Led): Device working status
- TX M-Bus (green Led): M-Bus Master transmission status
- RX M-Bus (orange Led): M-Bus Master reception status
- Short-circuit (red Led): Shows short-circuit of the M-Bus Master line
- Overload (Orange): Shows overloading of the M-Bus Master line
- Power (green Led): Shows the correct power of the device

⊙ GE552Y050 local concetrator

Description

The M-Bus GE552Y050 local concentrator enables connection with a network of devices compliant with the M-Bus standard (EN13757-2 Physical Layer) and supports up to 60 devices.

It has been designed to be used in combination with the GE552Y051 data logger, the GE552Y056 software or as an M-Bus repeater. Moreover, it can be used to interface with other software programmes or third-party devices.

Characteristics

• Flexible: it can be used both as a "Master" in an M-Bus network, connected in series with a data logger, and as a repeater, to extend an existing M-Bus network with a further 60 devices.

Its modularity enables the optimal calibration of the cost of the reading system.

In "Master" mode, the device enables the GE552Y051 data logger to communicate with the M-Bus devices linked to the M-Bus Master port.

The datalogger must be connected to the local concentrator via a RS232 serial bus.

In "Repeater/Slave" mode, the device works as an amplifier/signal regenerator, thus enhancing an existing M-Bus network in terms of distance and devices supported (a further 60).

• Kit: the local concentrator enables the GE552Y056 application software to communicate with the meters linked to the M-Bus Master port.

Though the GE552Y056 software it is possible to manage several systems, reading the relevant meters and generating the relevant reports.

M-Bus selection

• Reference Standard: EN13757-2 (Physical Layer)
• Baudrate: min. 300 bps – max. 9,600 bps
• M-Bus/RS232 insulation: 1 Kv AC
• M-Bus/USB insulation: 1 Kv AC
• Max. number of M-Bus devices: 60
• Max. no of repeaters:
  - unlimited in stand-alone mode for reading of current data via USB connection
  - No. 4 as slaves to GE552Y051
• Transmission speed:
  - Minimum: 300 bps
  - Typical: 2400bps
  - Maximum: 9600bps
• Voltage on the Bus:
  - Min. 12V
  - Max. 42V
• Short-circuit protection: yes

Electrical characteristics

• Nominal voltage:
  24 Vdc +/- 10 % (Rev. HW 1.0 or if not specified)
  24 Vdc +/- 10 %, 24 Vac (min. 20 Vac, max. 40 Vac) for HW 2.0 versions
• Installation class: class III
• Nominal voltage: 3 W + (0.07 W * number of M-Bus slaves)
• Maximum voltage: 12 W

Mechanical characteristics

• Operating temperature range: -20÷55 ˚C
• Storage temperature range: -25÷65 ˚C
• Size: 90x71x62 mm (HxLxP) – DIN
• Assembly: 35 mm DIN bar (EN60715)
• Protection degree: IP20 (EN60529)
• Connections:
  - M-Bus Slave: for connection as repeater/extender
  - M-Bus Master: for connection to the M-Bus meter network
  - Mini-USB type B: for connection with the GE552Y056 software

Signalling LED

• USB Activity (orange LED): connection status with GE552Y056 sw
• TXD (green LED): transmission status on M-Bus Master
• RXD (Green LED): Reception status from M-Bus Master
• M-Bus ERROR (Red LED): shows an M-bus overload or a short circuit
• M-Bus Available (Green LED): indicates the correct M-Bus polarisation
• POWER (Red LED): indicates correct device supply

❯ GE552Y061 wireless datalogger

Description

The GE552Y061 datalogger is an acquisition, processing and registration system for data originated by devices that use the M-Bus standard protocol (for example, energy meters...).

It can be connected to a maximum of 500 wired meters through an integrated M-Bus port and up to 2500 through wireless M-Bus.

The datalogger can be connected to a maximum of 20 M-Bus devices; when used as master in a M-Bus Wireless network, it can be connected to 23 GE552Y053 repeaters, each of which can be connected to 500 wireless devices.

The M-Bus network can be extended to 6 GE552Y050/59 concentrators and save the daily values read.

Through a web interface, it enables to read the meters, generate reports, setup the system and access historical data. It is provided with a graphic display to setup the system and read the values and status of the I/O without a desktop. It also includes three digital inlets and two relays.

Characteristics

• User-friendly: the graphic display enables to commission the metering system in a few steps guided by the configuration wizard. The main settings are performed locally on the display or through the web interface.

It includes two ethernet ports with switch functions, provides for connection of multiple cascade-configured devices without network systems and the device can be powered also via Power over Ethernet (PoE).

• Constantly updated: the device verifies possible updates through internet and notifies the user who may install them by clicking on the web interface.

• Smart: the user can scan the M-Bus network to acquire the wired devices using just one button. The device automatic identification enables to promptly acquire the data and automatically create reports with preset data groups which can be edited by the user and equipped with metering unit, type of dimension and description (translated), with corresponding deletion of additional required activities by the user.

M-Bus communication

• Standards of reference: EN13757-2 (Physical Layer), EN13757-3 (Application Layer)
• Baudrate: min. 300 bps – max. 9600 bps
• Number of M-Bus meters supported:
  - without M-Bus level converter: 20 (M1, M2)
  - with level converter: max 500 by using at least one level converter for each Bus (A, B, C and M1, M2)
• Reading interval: 15 min / 60 min / 6 hrs / 12 hrs / 1 day / 7 days / 1 month
• Identification of collisions on M-Bus network: yes
• Device search/acquisition: through Primary and Secondary address

Electric characteristics

• Power supply: 24 Vac/dc ± 10 % (SEV)
• Installation category: class III
• Max. consumption: 7,5W
• Ethernet: N.1:
• Digital inlets: N°3 for free contacts
• Digital outlets: N.2 relay

Mechanic characteristics

• Operational temperature range: -10÷55 °C
• Storage temperature range: -25÷65 °C
• Dimensions: 90x71x62 mm (HxLxP) – DIN
• Installation: 35 mm DIN rail (EN60715)
• Protection degree: IP20 (EN60529)

Datalogging

• Data storage: 1 year for intra-day data originated by wired metering units
• Reports: XLS, CSV, TXT format
• Transmission: Mail SMTP, FTP (Client), Webserver (report generation and download)
• Report generation planning: Daily / Monthly / Bimonthly / Quarterly / Four-monthly / Six-monthly / Yearly

User interface

• Display: graphic display, 128 x 128 px; 262k colors
• Keypad: 6-buttons tactile membrane
• Led Power: operational status
• HTTPS: multi-language webserver (SSL) for data reading and configuration

Alarm signals

• Alarm notification by device network: metering unit anomalies/alarms, communication anomaly, limit exceeding
• On-board I/O: email notifications for digital inlet status

❯ GE552Y056 software

Description

Software for data acquisition from the M-Bus central unit.
To be combined with the GE552Y050 data concentrator.

❯ GE552Y060 modem router

Description

LTE CAT4 cellular-industrial router. Compact, sturdy and powerful device for M2M/IoT industrial applications. RUT240 includes 2 Ethernet and Wireless interfaces with Hotspot functionality. The device offers safe and stable Internet connectivity for industrial applications that use the RutOS software and security functions such as OpenVPN, IPsec, Firewall, Hotspot, SMS control and RMS support.

• LTE Cat 4 up to 150Mbps
• Compact dimensions, easy integration
• Automatic switching to available | Backup connection
• Digital inlet/outlet for remote monitoring and control
• Wireless Access Point with Hotspot and station functionality
• APM TIM pre-configuration

Hardware

• Mobile: 4G (LTE) – Cat 4 DL up to 150 Mbps, UL up to 50Mbps; DC-HSPA+; UMTS; TD-SCDMA; EDGE; GPRS
• CPU: Atheros Hornet, MIPS 24Kc, 400 MHz
• Memory: 16 MBytes Flash, 128 MBytes DDR2 RAM
• Ethernet: 2 x 10/100 Ethernet ports: 1 x WAN (configurable as LAN), 1 x LAN
• Power supply: 9÷30 Vdc, 4 pin dc connector
• Inputs/Outputs: 1 x Digital Input, 1 x Digital Open Collector Output on power connector
• Connectors: 1 x 4 pin DC, 2 x Ethernet,
       2 x GSM/WCDMA/LTE antenna 703-960/1710-1990/2110-2170/2500-2690 MHz, 50 Ω, VSWR ≤ 2, gain 1 dBi, omnidirectional, SMA male connector
       1 x WiFi antenna 2401-2462 MHz, 50 Ω, gain 3dBi, VSWR ≤ 1.5, omnidirectional, RP-SMA connector
• SIM: 1 x external SIM holder
• Stato LEDs: 2 x connection type status, 5 x connection strength, 2 x LAN status, 1 x Power
• Working temperature: -40÷75 ˚C
• Housing: aluminum housing, plastic panels
• Dimensions: 83 x 74 x 25 mm
• Weight: 125 g
• Operating system: RutOS (OpenWrt based Linux OS)

Software

• Multiple PDN: possibility to use different PDNs for multiple network accesses and services
• Network protocols: TCP, UDP, IPv4, IPv6, ICMP, NTP, DHCP, DNS, HTTP, HTTPS, SSL v3, TLS, ARP, PPPoE, UPNP, SSH, Telnet, SNMP
• Network features: NAT, Static/Dynamic routing, Firewall, OpenVPN, IPsec, H.323 and SIP-alg protocol NAT helpers, allowing proper routing of VoIP packets
• Unique network features: VLAN, Load balancing, Mobile quota control, WEB Filter, Network Backup, Auto Failover
• Connection monitoring: Ping Reboot, Periodic Reboot, Wget Reboot, LCP and ICMP for link inspection
• Authentication: pre-shared key, digital certificates, X.509 certificates
• Keep settings: FW update without loss of the current configuration
• Monitoring & Management: WEB UI, SSH, SMS, SNMP, JSON-RPC, FOTA, RMS
• Supported languages: Busybox shell, Lua, C, C++
• Development tools: SDK package with the provided build environment