

M-bus web server

WTV676-HB6035



The web server reads out wireless or wired M-bus devices over Ethernet or the Internet using a browser.

- Power and connect up to 20 M-bus devices directly to the web server
- Connect up to 500 M-bus devices (2 lines, each for up to 250 M-bus devices)
- M-bus network: Extendable with up to 6 parallel connected level converters per line
- Connect up to 250 districting heating controllers RVD2.. per line via M-bus
- M-bus wireless network: Extend with up to 23 RF converters, each with up to 500 wireless devices
- System formation with up to 500 logical M-bus devices and 2,500 wireless devices
- Local reading with PC / browser over Ethernet
- Simplified on-site readout via WLAN
- Remote readout service (WTV Remote Access)
- Web access: Web server access anywhere
- Synco IC-Cloud integration
- Read and write remote heating controller parameters via M-bus
- Restore customized settings (Backup)
- Consumption data, trend data, and alarm management on the cloud
- Management of multiple web servers on a common Synco IC account

The M-bus web server reads devices connected directly to the web server, via level converters to the web server as well as devices connected to the web server via RF converters.

Web server can be used:

- Alone with up to 20 directly connected, wired M-bus devices
- As master on a M-bus network with up to six parallel connected level converters per line. Per line up to 250 M-bus devices (max. 250 M-bus meters, max. 250 RVD controllers) can be connected.
- As a master on an M-bus wireless network with up to 23 RF converters, each with up to 500 wireless devices

The web server can read out up to 2,500 wireless devices and up to 500 wired devices. It records the data from the connected devices, can evaluate the data, and sends email notifications on events and alarms.

The device storage can save data for a period of up to 10 years. (over the past six months: Saving as per setting; period as of six months: One value per data point per month).

A PC/Internet browser reads the data and log files either locally over Ethernet or from anywhere over the Internet. In addition, the report files can be periodically transmitted with device data to an email recipient or to an FTP server.

An email can be sent on events and alarms.

The web server can be integrated in the Synco IC-Cloud. This permits the periodic upload of invoicing and trend data as well as alarm messages to the cloud per customized settings as well as distributing the information to the corresponding customers via email.

The web server has three digital inputs and two digital outputs. The change of state to inputs or outputs are recorded in the event log and/or per email depending on the configuration. Both outputs can be manually switched via web operation.

Web server is protected against short circuits and surges.

Readout district heating controller / heat meter

District heating controllers as well as heat meters at the district heating substations can be read over M-bus with web server WTV676... The data points for the controllers are read/write.

The restore function (backup) can restore earlier controller settings at a later date. In addition, the controller settings can be transferred to a second controller of the same type (on the same application).

We recommend connected the controllers on the one line and the meters on the other for the web server since district heating controllers send more data traffic than meters. As a result, the battery power for the meters is not unnecessarily drained when reading the controllers.

When connecting controllers and meters on the same line, operate the devices without batteries (AC/DC 24 V, AC 230 V).

Readout via WLAN

To simplify on-site readout, the web server can also be readout using a mobile phone or tablet via WLAN and the readout data can be downloaded to the mobile device.

WTV remote access

Web server WTV676.. is equipped with a WTV remote access service to simplify remote access.

Remote access requires an Internet connection connected to the web server via an ethernet cable. Web server can be comfortably operated remotely after checking the network settings on web server; the router and web server must be on the same network.

The URL for remote access is comprised of

- the WTV remote access service: www.wtv676.siemens-info.com
- the web server serial number, e.g. ev00000001

Example: www.wtv676.siemens-info.com/ev00000001

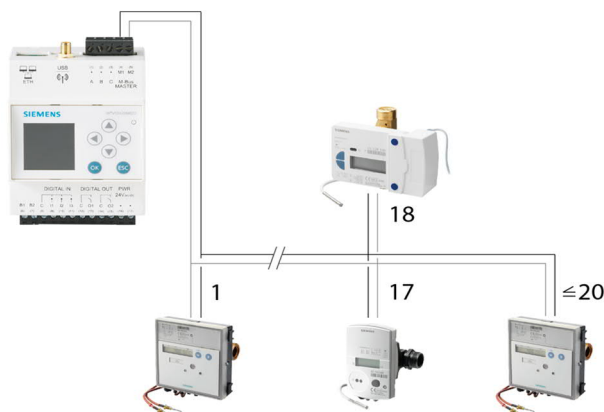
Functions

Operating modes

The M-bus web server can be used in various ways:

M-bus web server with wired M-bus devices

The Web Server is used to read up to 20 directly connected M-bus devices (20 simple M-bus loads). The M-bus devices are connected over line M1M2.

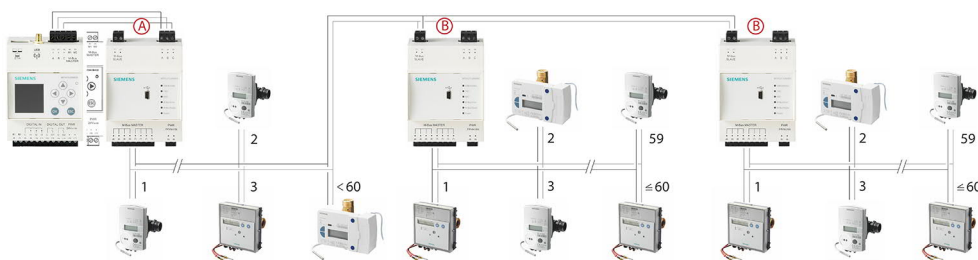


M-bus web server with level converters

Up to six level converters (WTV531, WTX631) can be connected in parallel per line to a M-bus web server.

The master level converter (A) is connected to a M-bus web server WTV676.. via the RS-232 interface (terminals A, B, C). The following slave level converters (B) can be connected via the M-bus slave connection.

Up to 60 M-bus devices can be connected to each WTV531 level converter.



A Level converter WTV531 as master

B Level converter WTV531 as slave

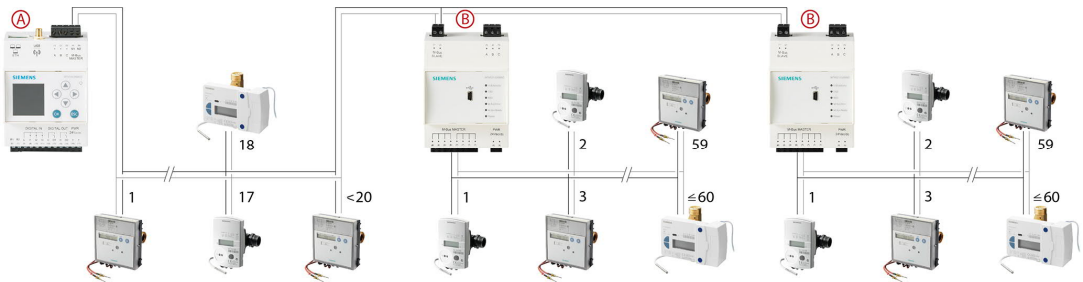
Up to 250 M-bus devices can be connected to each WTX631 level converter.

UP to six level converters WTX631 (one level converter, five repeaters) or up to two level converters WTV531 (one level converter, one repeater) can be connected in series to a M-bus web server.



NOTICE

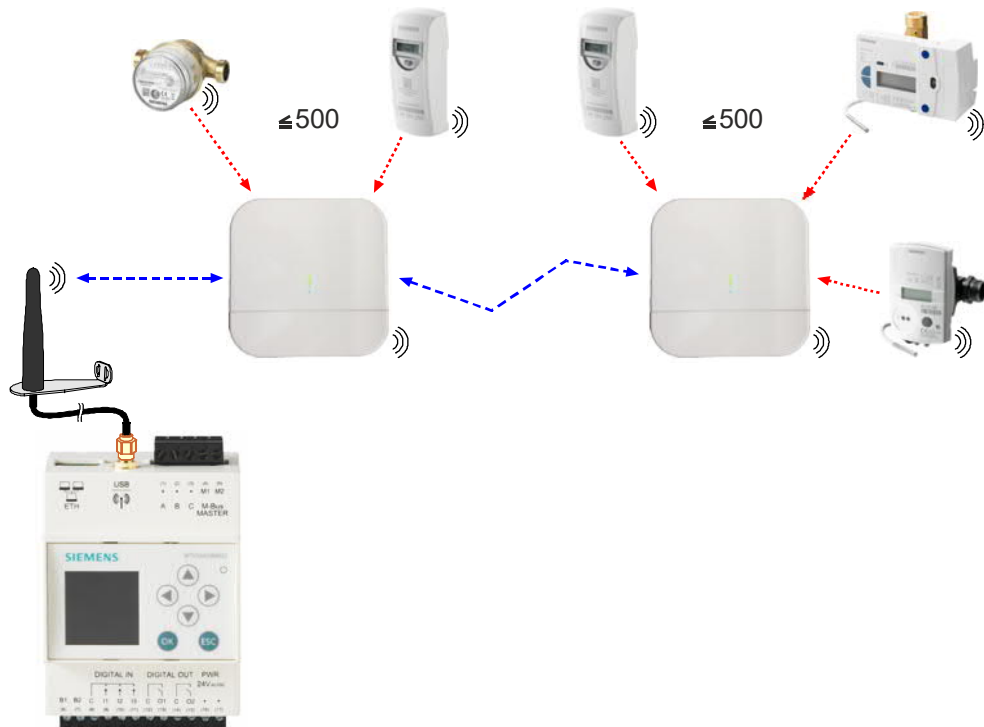
The level converter is connected as a slave (B) to the web server (A) (terminals M1M2 of the web server) if the firmware version of the web server WTV676.. is less than SIE.WTV676_WI-2.29_FW-3.0-17-2.6.



M-bus web server with wireless devices

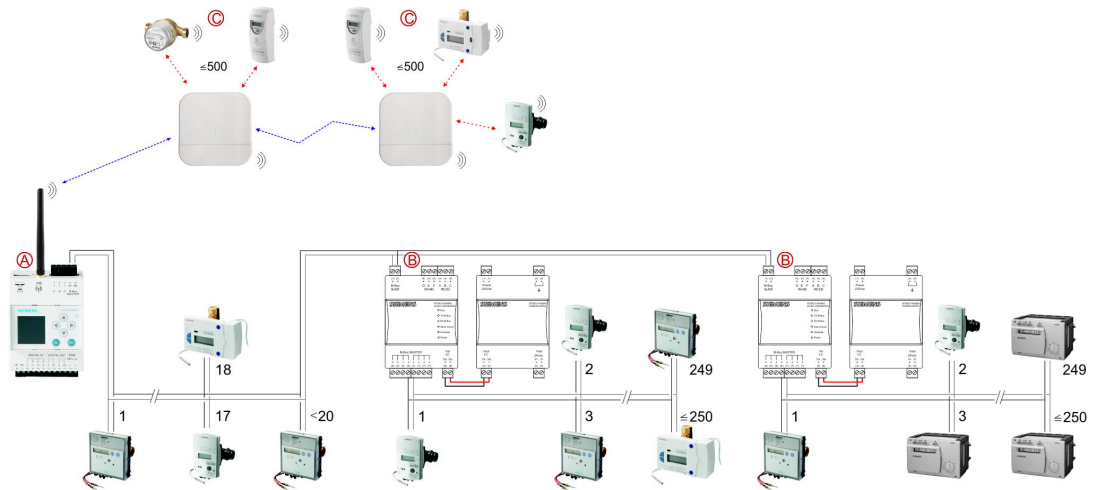
The web server is equipped with additional RF converters to extend the system up to 2,500 wireless devices. The communication between the web server and RF converters takes place over a mesh RF protocol (backbone network).

A minimum of one M-bus web server and one RF converter is required to read out wireless devices. The backbone RF network can consist of a maximum of 23 RF converters. Communication between the RF converters and wireless devices takes place over the wireless M-bus protocol. The RF converter saves the consumption data from the devices in its environment, while forwarding the data to other RF converters, up to the web server (the other RF converters act as repeaters here).



M-bus web server with level converters and district heating controllers

Up to 250 RVD2.._district heating controllers can be connected per line to a M-bus web server. The web server and RVD2.. controllers communicate over M-bus.

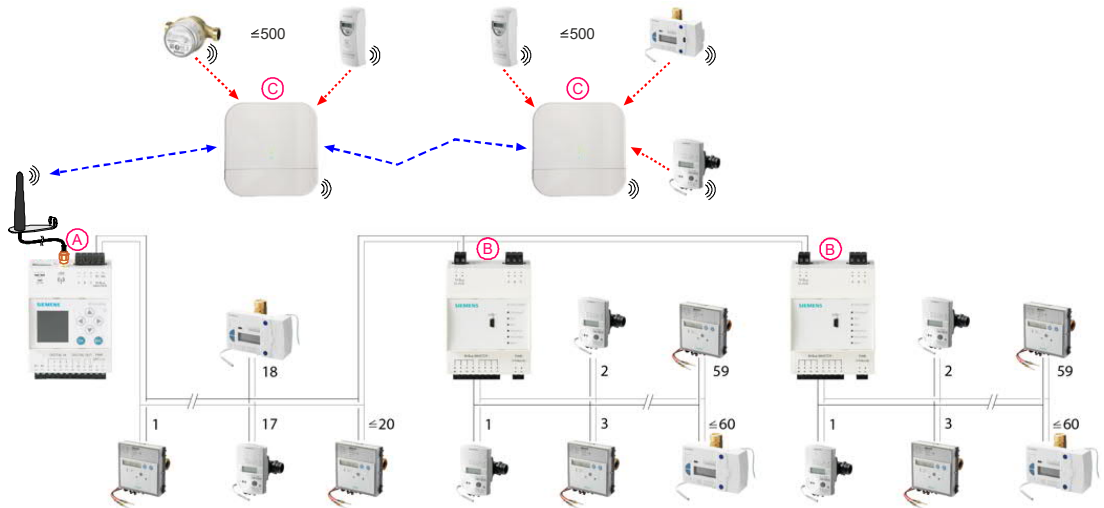


NOTICE

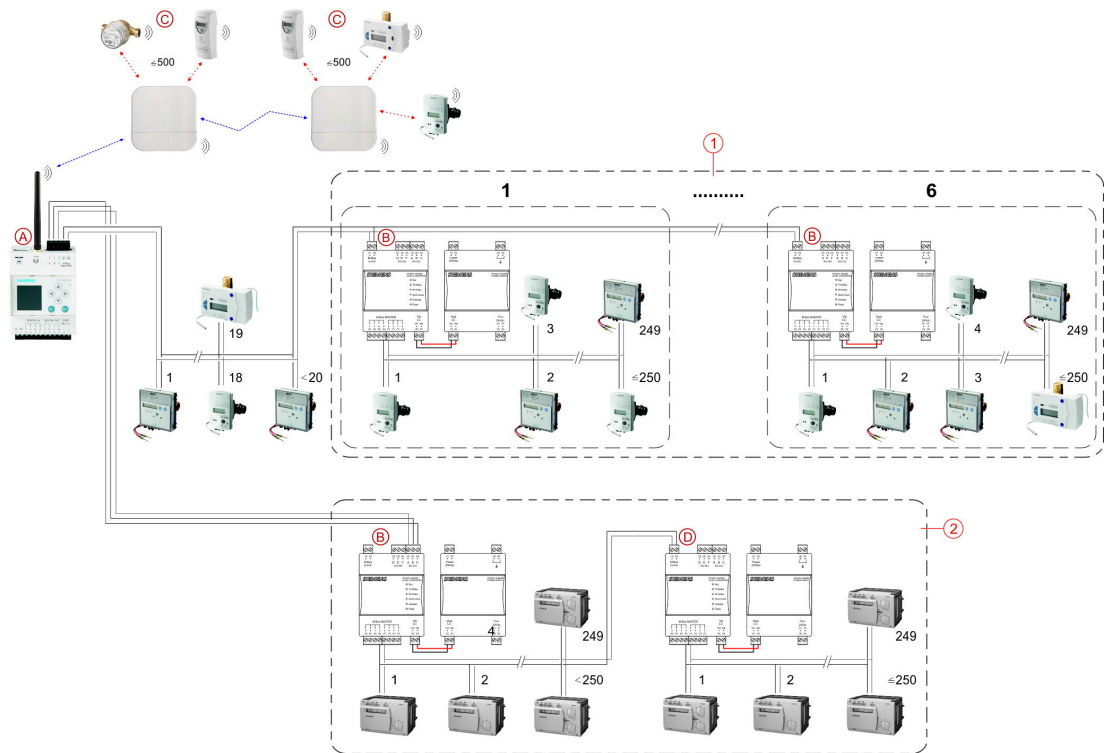
In the event M-bus devices (e.g. meters) and district heating controllers are connected to the same line, operate the devices without batteries (AC/DC 24 V, AC 230 V). Using battery-powered devices may significantly reduce the life of the batteries due to the frequency of the readouts of district heating controllers.

Combined plants

The web server can read up to 500 wired and 2,500 wireless devices.



- A Web server as master
- B Level converter WTV531 as slave
- C The RF converter as participant on the backbone mesh network and connected to the wireless devices



- A Web server as master
- B Level converter WTV631 as slave
- C The RF converter as participant on the backbone mesh network and connected to the wireless devices
- D Level converter WTX631 as repeater to overcome large distances
- 1 Parallel connection for level converter WTX631
- 2 Serial connection for level converter WTX631

Readout data

A PC/Internet browser reads the data on all operating modes either locally over Ethernet or from anywhere over the Internet using a PC/Internet browser.

Write RVD parameters

The following parameters can be written to the controllers depending on the connected controller and the corresponding plant image:

| Designation | RVD23x | RVD24x | RVD25x | RVD26x |
|---|--------|--------|--------|--------|
| DHW temperature nominal value | X | X | X | X |
| DHW temperature reduced setpoint | X | X | X | X |
| Temperature difference solar on | X | X | X | X |
| Temperature difference Solar off | X | X | X | X |
| Date of the first day of the heating period | X | X | X | X |
| Date of the last day of the heating period | X | X | X | X |
| Heating limit ECO heating circuit 1 | X | X | X | X |
| Room temperature reduced setpoint heating | X | X | X | X |

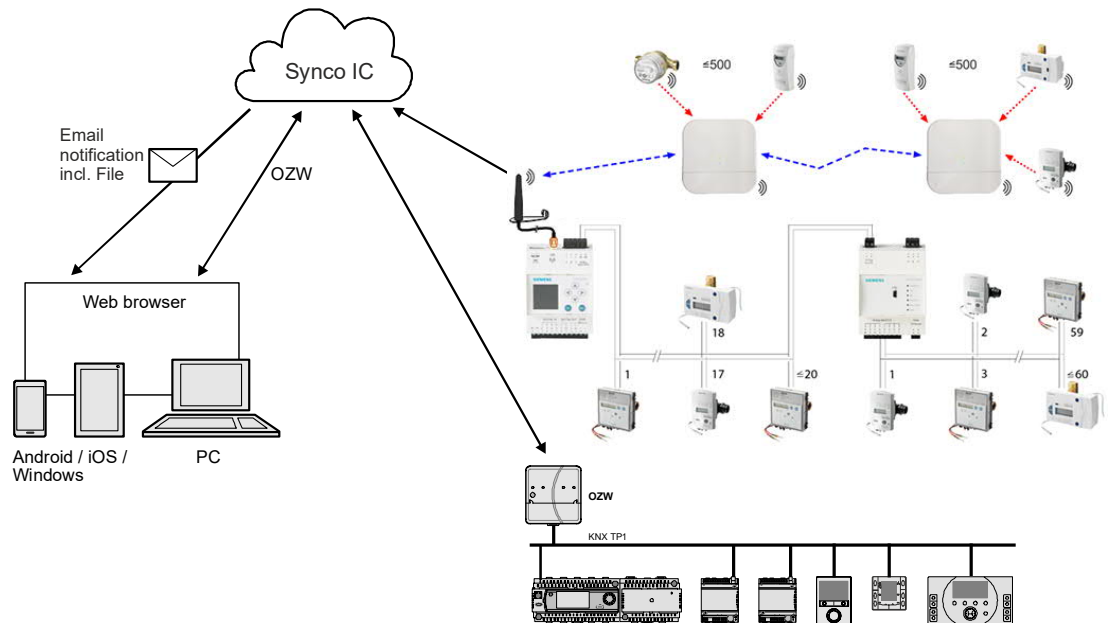
| Designation | RVD23x | RVD24x | RVD25x | RVD26x |
|---|--------|--------|--------|--------|
| circuit 1 | | | | |
| Room temperature setpoint, holiday mode/frost protection HC1 | X | X | X | X |
| Heating curve parallel shift, heating circuit 1 | X | X | X | X |
| Heating limit ECO, heating circuit 2 | - | X | - | X |
| Room temperature reduced setpoint heating circuit 2 | - | X | - | X |
| Room temperature setpoint holiday mode/frost protection heating circuit 2 | - | X | - | X |
| Heating curve parallel shift, heating circuit 2 | - | X | - | X |
| Legionella function, frequency | X | X | X | X |
| Time | X | X | X | X |
| Scheduler, heating circuit 1 Monday | X | X | X | X |
| Scheduler, heating circuit 1 Tuesday | X | X | X | X |
| Scheduler, heating circuit 1 Wednesday | X | X | X | X |
| Scheduler, heating circuit 1 Thursday | X | X | X | X |
| Scheduler, heating circuit 1 Friday | X | X | X | X |
| Scheduler, heating circuit 1 Saturday | X | X | X | X |
| Scheduler, heating circuit 1 Sunday | X | X | X | X |
| Scheduler, HC2 Monday | - | X | - | X |
| Scheduler, HC2 Tuesday | - | X | - | X |
| Scheduler, HC2 Wednesday | - | X | - | X |
| Scheduler, HC2 Thursday | - | X | - | X |
| Scheduler, HC2 Friday | - | X | - | X |
| Scheduler, HC 2 Saturday | - | X | - | X |
| Scheduler, HC2 Sunday | - | X | - | X |
| Scheduler, DHW Monday | X | X | X | X |
| Scheduler, DHW Tuesday | X | X | X | X |
| Scheduler, DHW Wednesday | X | X | X | X |
| Scheduler, DHW Thursday | X | X | X | X |
| Scheduler, DHW Friday | X | X | X | X |
| Scheduler, DHW Saturday | X | X | X | X |
| Scheduler, DHW Sunday | X | X | X | X |

Web server integration in Synco IC

The web server activation key is entered on the Synco IC-Portal to register the web server on the cloud. The activation key is available both via web browser as well as on the web server display.

After registration, invoicing and trend data as well as alarm messages can be periodically uploaded per settings and distributed to various users.

The Synco IC-Portal is located at: <https://www.siemens-syncoic.com/>.



Operating elements and display

| Front view | | |
|------------|----------|--------------------|
| | A | Operating elements |
| | B | LED |
| | C | Display |

Operating elements

The operating elements are used to navigate through the web server menu structure.

The device can be commissioned and current data can be viewed directly on the device without a PC.

Additional operating options are available when accessing via PC/Internet browser.

Install the supplied antenna for the wireless application. The antenna can be connected either directly or using a cable (recommended). Additional information on installing the antenna is available in document A6V11157964. See Section Product documentation [► 14].

LED

The LED indicates the operating state of the web server.

Display

Measured data and basic settings are displayed on an LCD display field.

Press a navigation button to switch on the display. Access is password protected. The display switches off automatically to save energy after 20 minutes.

Information is divided into four main menus:

- System info
- Wired meters
- Searching wired
- Searching wireless
- Settings



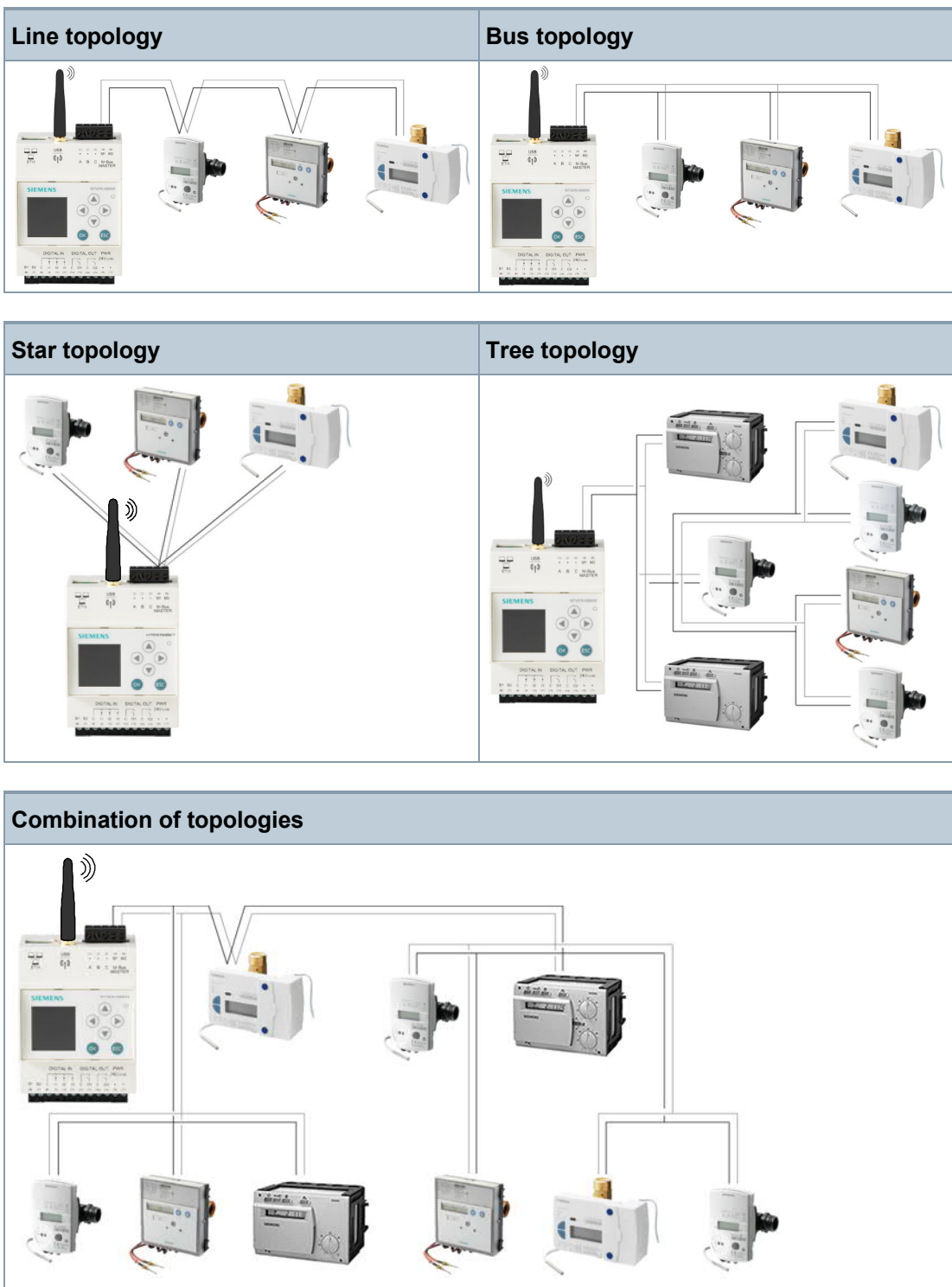
Topologies

Wired M-bus devices

The M-bus permits various network topologies. The M-bus devices and level converters can be connected with the web server in a line, bus, star, or tree topology (or a combination of topologies). The same applies to connecting M-bus devices to level converters.

Ring topology is not permitted.

Bus cable polarity is not relevant, simplifying installation.



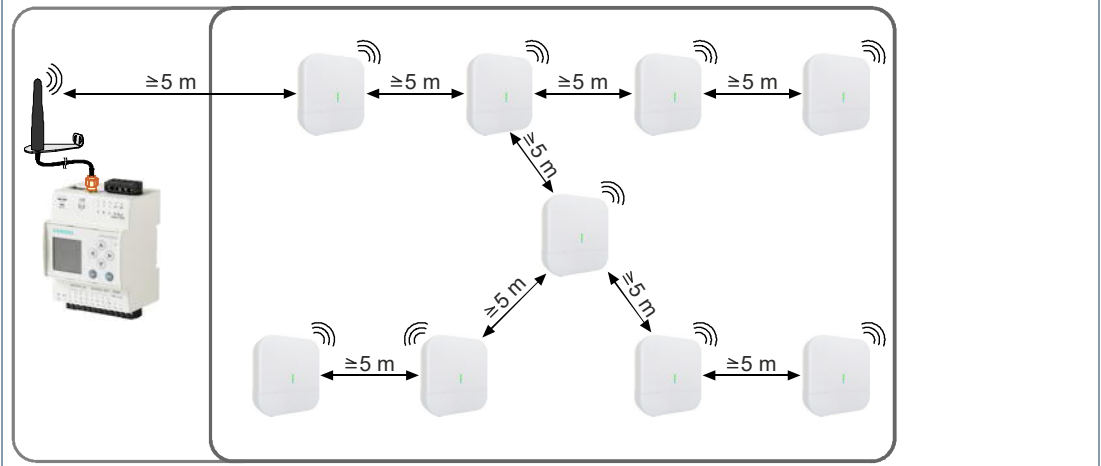
Ring topology



Wireless M-bus devices

Web server permits wireless read out using various network topologies. The RF converter is self-organizing and searches for the optimum connection to the web server (mesh network).

RF network topology



M-bus wired devices

Addressing

M-bus uses two types of addresses to recognize devices:

- Primary addressing: Up to 250 primary addresses can be assigned to an M-bus system. The primary address is normally assigned during device commissioning.
- Secondary addressing: Secondary addressing consists of 8 bytes and permits the assignment of any number. In the default setting, the secondary address for a device normally matches the serial number issued by the device manufacturer. The assignment prevents address conflicts on the bus.

Bus expansion

| Plant type | Maximum distance | Total cable length | Cable cross-section | Number of devices (slaves) | Max. transmission rate |
|-----------------------------|------------------|--------------------|---------------------|----------------------------|------------------------|
| Small residential buildings | 350 m | 1000 m | 0.8 mm ² | 500 (250 per line) | 9600 Baud |
| Large residential buildings | 350 m | 4000 m | 0.8 mm ² | 500 (250 per line) | 2400 Baud |
| | | | | 64 | 9600 Baud |
| Small developments | 1000 m | 4000 m | 0.8 mm ² | 64 | 2400 Baud |
| Large developments | 3000 m* | 5000 m | 1.5 mm ² | 64 | 2400 Baud |
| Direct vicinity | 5000 m* | 7000 m | 1.5 mm ² | 16 | 300 Baud |
| Point-to-point connection | 10000 m* | 10000 m | 1.5 mm ² | 1 | 300 Baud |

* Use shielded cables at distances greater an 1000 m (see EN13757-2 Appendix E).

Signal specification

| M-bus | Condition | Minimum | Typical | Maximum | Measuring unit |
|---|----------------------------------|---------|---------|---------|----------------|
| Number of unit M-bus loads per web server | WTV676-HB6035 | 0 | - | 20 | - |
| Transmission rate | $C_{\text{segment}} \leq 382$ nF | 300 | 2400 | 9600 | baud |
| Bus power | WTV676-HB6035 | 24 | 40 | 42 | V |
| Bus current | WTV676-HB6035 | 0 | | 30 | mA |

The device has the following connection terminals / LED

| | | |
|--|----------|--|
| | A | Ethernet connection |
| | B | USB connection (no function) |
| | C | Antenna connection |
| | D | Terminals A, B, C: Connections for follow-on level converters. Terminals M1 and M2: Connections for up to 20 M-bus devices and follow-on level converters |
| | E | Terminals (16) and (17): Power supply AC/DC 24 V |
| | F | Terminals (12) and (13): Relay connections for digital output 1, max. AC/DC 30 V |
| | G | Terminals (14) and (15): Relay connections for digital output 2, max. AC/DC 30 V |
| | H | Terminals (9), (10), and (11): Connections for the digital inputs. Terminal (8): Reference for digital inputs |
| | I | Terminals (6) and (7) are not used. Do not apply electricity to these terminals. |

| | |
|--|--|
| | NOTICE |
| | <p>Power supply DC 24 V</p> <p>The web server can be powered with DC 24 V directly from the WTX631.. level converter.</p> |

Type summary

Order information

| Description | Order number | Type |
|------------------|--------------|---------------|
| M-bus web server | S55563-F150 | WTV676-HB6035 |

Equipment combinations

The following products can be used together with the web server:

| Description | Order number | Type |
|---------------------------|--------------|---------------|
| M-bus level converter 60 | S55563-F145 | WTV531-GA5060 |
| M-bus level converter 250 | S55563-F159 | WTX631-GA0090 |
| RF converter | S55563-F149 | WTX660-E05060 |

Web server can read out the following district heating controllers:

RVD230-A, RVD230-C

RVD235

RVD240

RVD245

RVD250

RVD255

RVD260

RVD265

Product documentation

| Topic | Title | Document ID |
|---|--|-------------|
| Device mounting, wiring, connecting peripheral devices. | M-bus web server mounting instructions | A6V10844310 |
| User's guide | M-bus web server WTV676-HB6035 M-bus level converter WTV531-GA5060 M-bus level converter WTV631-GA0090 RF converter WTX660-E05060 | A6V11157985 |

| Topic | Title | Document ID |
|-----------------------|--|-------------|
| User's guide | Synco IC: Cloud and remote access for OZW772 and OZW672, cloud access for WTV676 | A6V10500249 |
| Mounting instructions | M-bus web server WTV676-HB6035 | A6V11157964 |
| Open Source Software | OSS Software Declaration | A6V10919216 |

Product inserts

The OSS Software Declaration (English only) as well as mounting instructions in the following languages are included with the web server:


German, English, French, Dutch, Italian, Finnish, Spanish, Norwegian, Polish, Czech, Slovakian, Hungarian, Greek, Croatian, Slovenia, Lithuanian, Bulgarian, Turkish.

Related documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:

<http://siemens.com/bt/download>

Notes


Safety

| | |
|--|--|
|  | <p>⚠ CAUTION</p> |
| | <p>National safety regulations</p> <p>Failure to comply with national safety regulations may result in personal injury and property damage.</p> <ul style="list-style-type: none"> Observe national provisions and comply with the appropriate safety regulations. |

Installation

Note on leakage current protection.

Applies to devices with supply output (AC 24 V or mains voltage) such as a triac output or output to power a field device.

| | |
|---|---|
|  | <p>⚠ WARNING</p> |
| | <p>No internal line protection for supply lines to external consumers</p> <p>Risk of fire and injury due to short-circuits!</p> <ul style="list-style-type: none"> Adapt the wire cross sections as per local regulations to the rated value of the installed fuse. |

The technical data must include the appropriate information on internal or external device protection.

Disposal



The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.
- Dispose of empty batteries in designated collection points.

Warranty service

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

| Power supply | |
|--|--|
| Operating voltage | AC/DC 24 V +/- 10 % (SELV) |
| AC frequency | 50 / 60 Hz |
| Maximum power consumption | 14.5 W, 15 VA |
| Internal fuse | PTC resistance and varistor |
| Transformer with secondary current limit of max. 10 A or external secondary current fuse | Non-renewable fuse: Slow to a max. 10 A Circuit breaker: Max. 13 A, type B, C, D per EN 60898 |
| Battery backup of real-time clock: Lithium type CR2032 (can be replaced on the plant) | Battery operation: A total of 5 years Unused: 7 years |

| WLAN | |
|----------------|--------------|
| Frequency band | 2.4 GHz |
| WLAN standard | 802.11 b/g/n |

| Pins (terminal block) | |
|-----------------------------------|--|
| M-bus master (terminals 4 and 5): | Connections for M-bus devices and Connection for the following level converters |
| 3 digital inputs: | Contact sensing: Voltage: DC 2.2 V Current at closed contact: 0.4 mA OFF = Resistance between terminal 8 and 9,10,11 > 6 kΩ ON = Resistance between terminal 8 and 9,10,11 < 3kΩ |
| 2 digital outputs: | Relay with max. contact rating: <ul style="list-style-type: none"> • 5 A @ AC/DC 30 V (resistive load) • 2 A @ AC/DC 30 V (inductive load $\cos\phi = 0.4$) |
| | Insulating strength between relay and electronics: <ul style="list-style-type: none"> • 1kV AC (SELV-SELV circuits) |
| | External fusing of supply line <ul style="list-style-type: none"> • Non-renewable fuse: Slow to a max. 5 A • Circuit breaker: Max. 6 A, type B, C, D per EN 60898 |

| Pins (terminal block) | |
|------------------------------|--|
| Terminals A, B, C | RS-232 interface for the following level converters A = RX B = TX C = GND |
| Terminals M1, M2 | Connections for M-bus devices (max. 20) and for follow-on level converters |

| Interfaces | |
|---|---|
| Ethernet | Interface type: 10/1000Base-TX, IEEE 802.3 compatible Bit rate: Max. 100 MBit/s Recognition: Auto MDI-X N°1 (1 MAC): ETH: Ethernet port |
| Field bus | M-bus: Max. 20 devices Max. number of wireless devices: 2,500 Max. number of wired M-bus devices: 250 |
| M-bus interface | Current draw: 1 M-bus load Addressing: Primary or secondary Baud rate: 300, 2400, or 9600 baud Max. permissible reading frequency: Typically twice a day Protocol: As per EN 13757-2/-3, EN 1434-3 |
| RF protocol backbone to RF converter (mesh network) | Frequency band: 868.00...870.00 MHz |

| M-bus¹ | |
|--|--|
| Reference standard | EN13757-4 Physical and Link Layer (Operating modes: C, S, T mode) for wireless M-bus |
| | EN13757-3 (Application layer) |
| Baud rate | 300 bps...9600 bps |
| Max. number of M-bus devices connected directly to the web server with a cable | 20 (unit M-bus loads) |
| Max. number of level converters on the web server | 6 |
| Max. number of wired M-bus devices per level converter | WTV531: 60 WTV631: 250 |
| Max. number of RVD2.. on the web server | 500 |

| M-bus¹ | |
|--|---|
| Max. number of RF converters on the web server | 23 |
| Max. number of wireless devices per RF converter | 500 |
| Max. number of readable devices | Wired: 380 M-bus loads or 500 logical M-bus devices Wireless: 2,500 devices The limitations only apply to logical M-bus devices (500). Up to six level converters WTX631 can be connected to each line (1500 M-bus loads per line). |
| Bus power | Min. 24 V |
| | Max. 42 V |
| Bus supply current | Max. 30 mA |
| Protection against short circuits | Yes |

| Ambient conditions | |
|---------------------------|-------------------------------|
| Operation | As per EN 60721-3-3 |
| Climatic conditions | Class 3K5 |
| Temperature | -25...+ 55 °C |
| Air humidity | 5...95 % r.h. |
| Mechanical conditions | Class 3M2 as per EN 60721-3-3 |
| Transportation | as per EN 60721-3-2 |
| Climatic conditions | Class 2K3 |
| Temperature | -25...+ 65 °C |
| Air humidity | 5...95 % |
| Mechanical conditions | Class 2M2 |
| Storage | To EN 60721-3-1 |
| Climatic conditions | 1K3 |
| Temperature | -25...+ 65 °C |
| Air humidity | 5...95 % r.h. |
| Mechanical conditions | Class 1M2 |

| Degree of protection | |
|----------------------|----------------------|
| Degree of protection | IP20 as per EN 60529 |
| Protection class | III per EN 62368-1 |

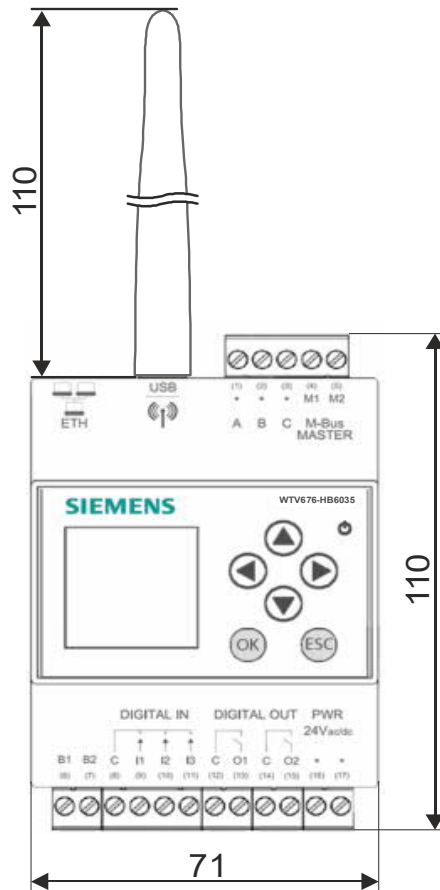
| Mounting | |
|---------------|-----------------------------|
| Mounting type | On 35mm DIN rails (EN60715) |

| Standards and guidelines | |
|-------------------------------|--|
| Product standards | EN 62368-1 Information Technology Equipment Safety |
| Electromagnetic compatibility | For residential, commercial, and industrial environments |
| EU conformity (CE) | A5W00034201 ^{*)} |
| Environmental compatibility | The product environmental declaration A5W00035027 ^{*)} contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal). |

^{*)} Documents can be downloaded at <http://siemens.com/bt/download>.

| External features | |
|---|----------------------------|
| Housing materials and colors | PC + ASA, RAL 9010 (white) |
| Dimensions (L x W x H) | 110 x 71 x 62 mm |
| Weight of web server with mounting instructions | 0.207 kg |

Dimensions



- H = 62 mm
- All dimensions in mm

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