

### 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
- Remote reading with PC / browser over the Internet
- Synco IC-Cloud integration
- Data logging and evaluation of all connected M-bus devices
- State and alarm message logging of connected devices
- Periodic email transmission for data reports
- Periodic transmission of data reports to a FTP server
- Email transmission on events and alarms
- 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, devices connected to the web server via level converters 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 only.

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.

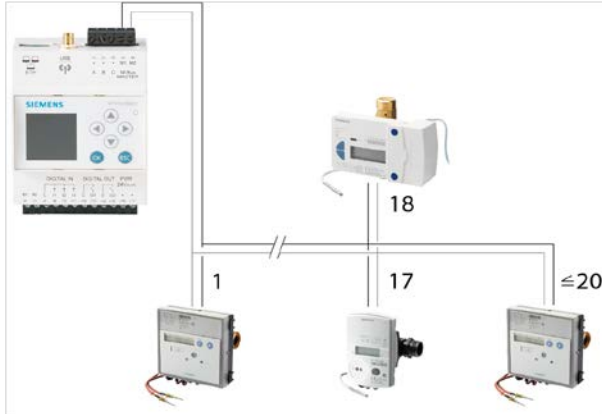
When connecting controllers and meters on the same line, operate the devices without batteries (AC/DC 24 V, AC 230 V).

**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.

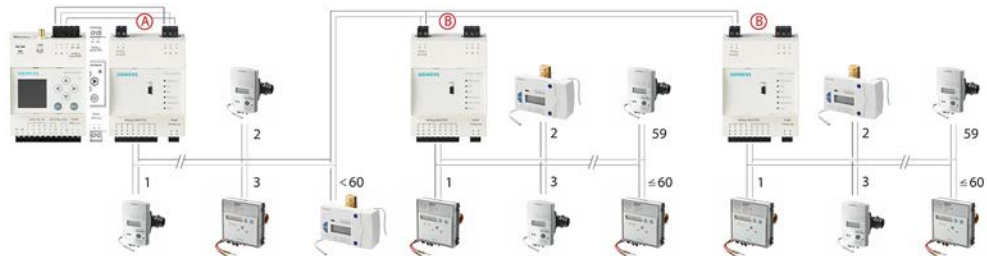


**M-bus web server with level converters**

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 WTV531.



**A** Level converter WTV531 as master

**B** Level converter WTV531 as slave

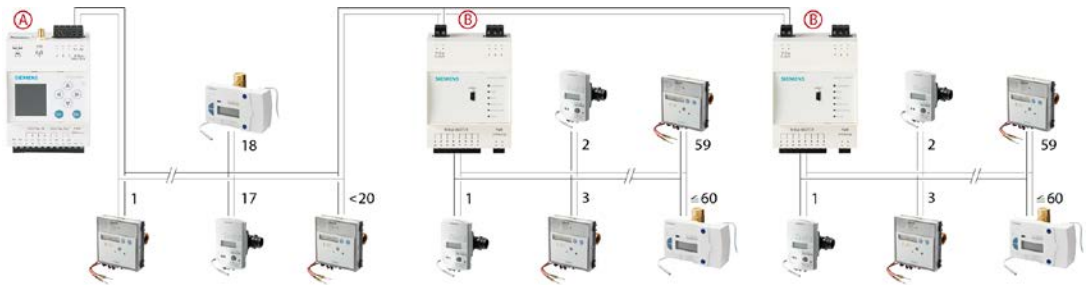
Up to 250 M-bus devices can be connected to each WTX631 level converter.

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

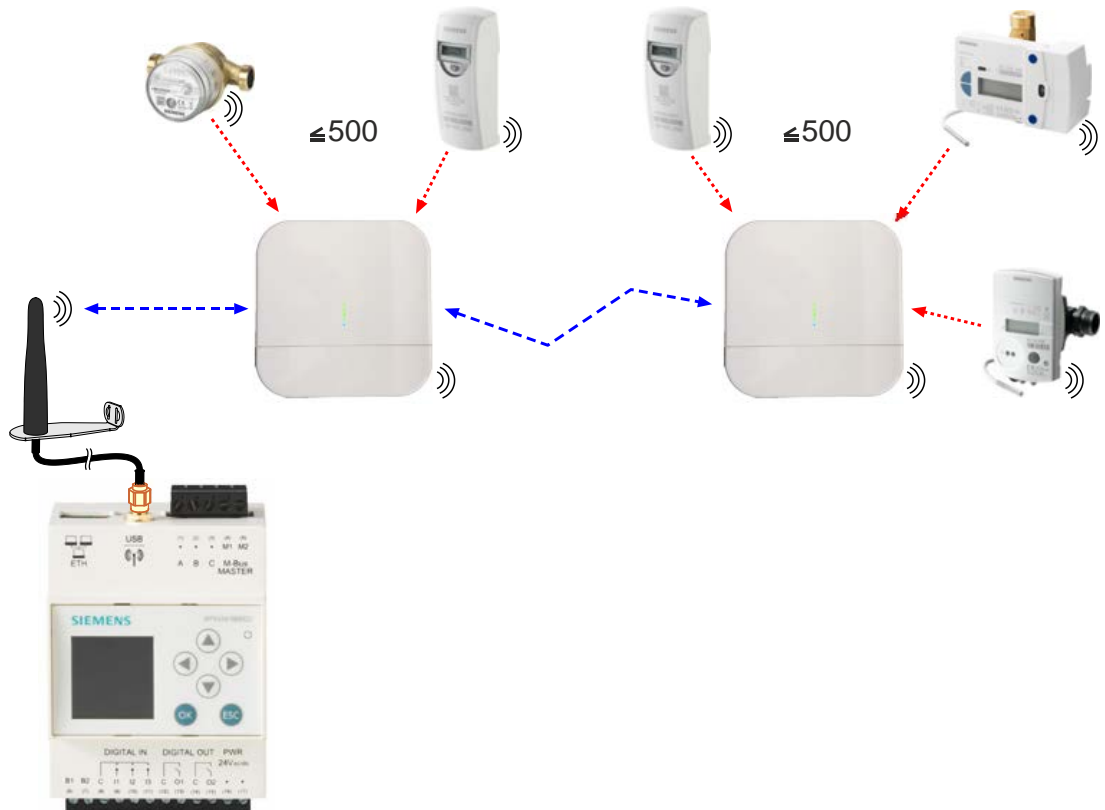
The level converter is connected as a slave (B) to the web server (A) (terminals M1M2 of the web server) if the firmware version of the web server WTV676.. is less than SIE.WTV676\_WI-2.29\_FW-3.0-17-2.6.



### M-bus web server with wireless devices

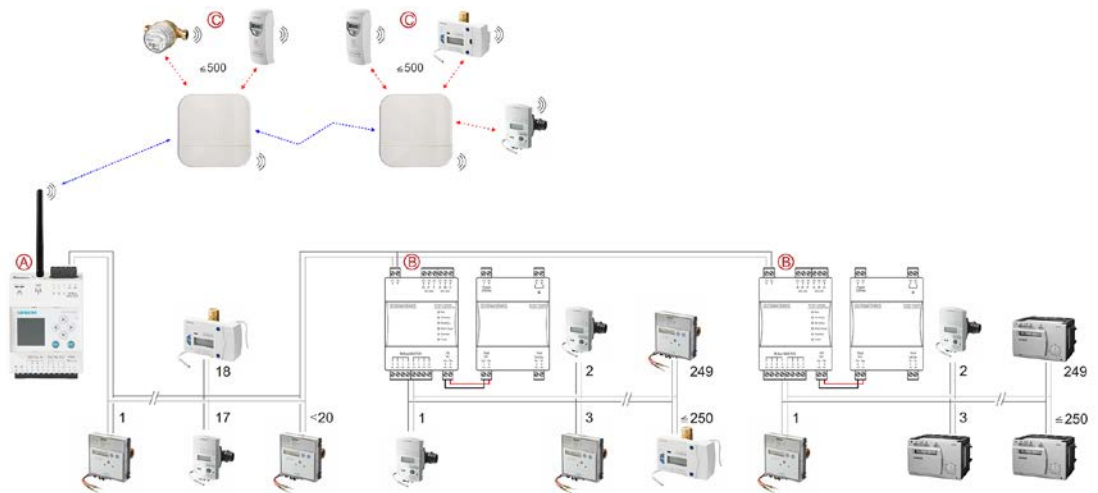
The web server is equipped with additional RF converters to extend the system up to 2,500 wireless devices. The communication between the web server and RF converters takes place over a mesh RF protocol (backbone network).

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.

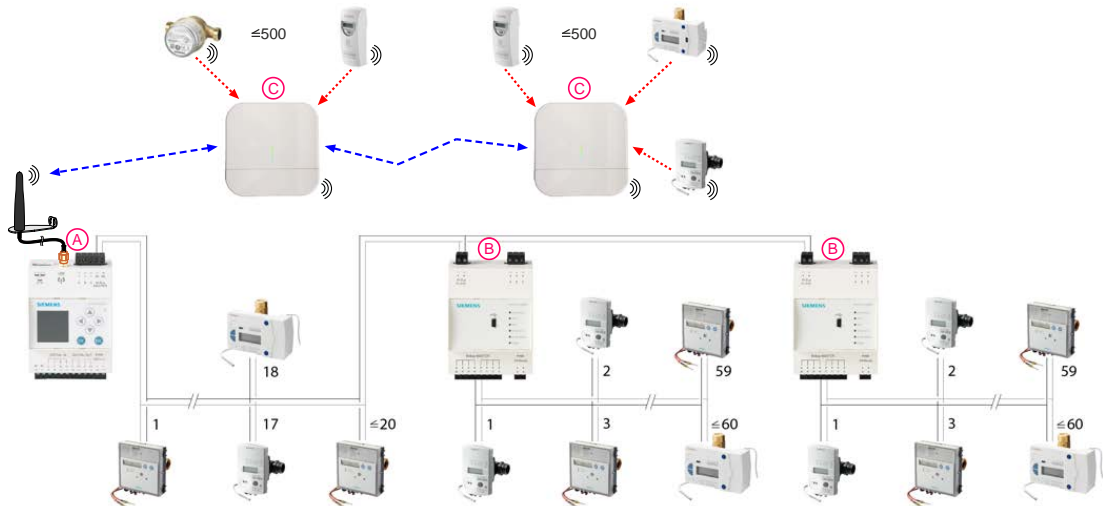


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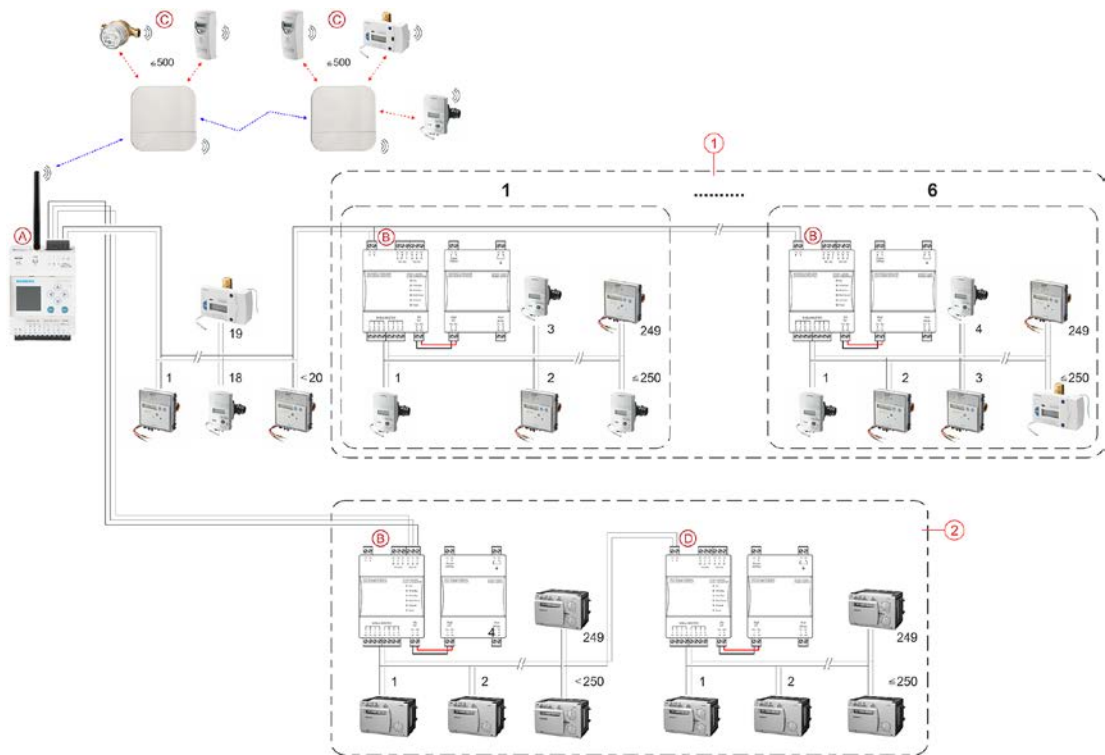
In the event M-bus devices (e.g. meters) and district heating controllers are connected to the same line, operate the devices without batteries (AC/DC 24 V, AC 230 V).  
Using battery-powered devices may significantly reduce the life of the batteries due to the frequency of the readouts of district heating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

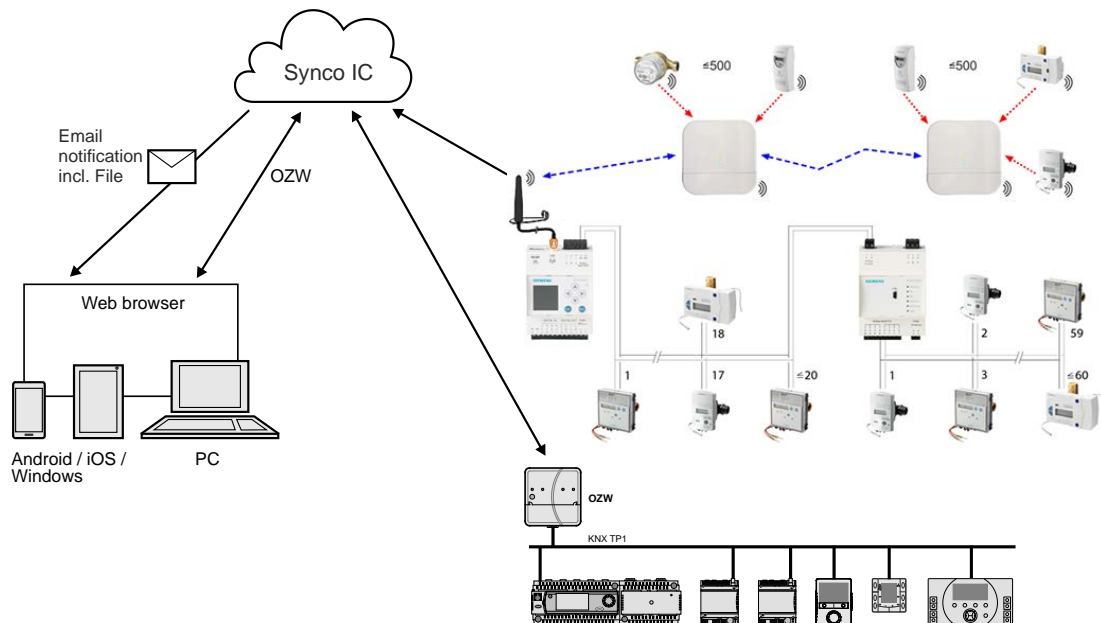
A PC/Internet browser reads the data on all operating modes either locally over Ethernet or from anywhere over the Internet using a PC/Internet browser.

### 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		
<p>The image shows the front view of the Siemens WT554-00R02 device. It features a large antenna on the left, a USB port, an Ethernet (ETH) port, and a terminal block for M-Bus (A, B, C) and M2. Below the terminal block is a display (C) and a set of operating elements (A) including a directional pad and OK/ESC buttons. A small LED indicator (B) is located above the display. At the bottom, there are terminals for Digital In (B1, B2, C, I1, I2, I3, C, O1, C, O2), Digital Out, and Power (PWR) with a 24V ac/dc input.</p>	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 [→ 12].

## LED

The LED indicates the operating state of the web server.

## Display

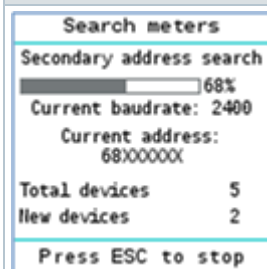
Measured data and basic settings are displayed on an LCD display field.

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

### Display example



### See also

 [Product documentation \[→ 12\]](#)

## Technical design

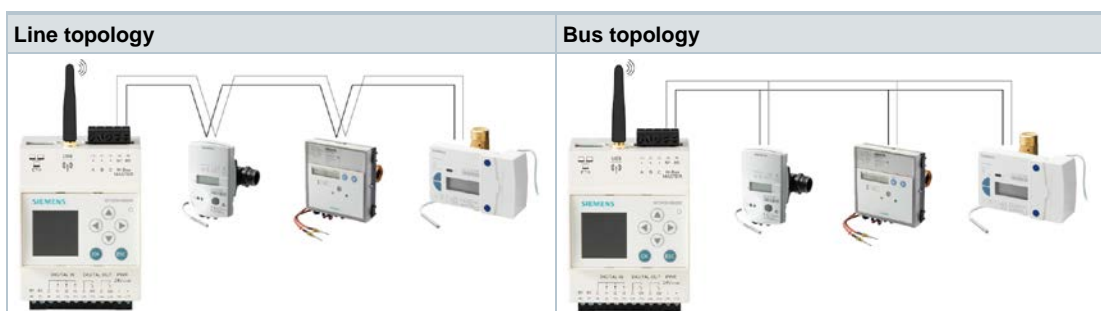
### Topologies

#### 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.

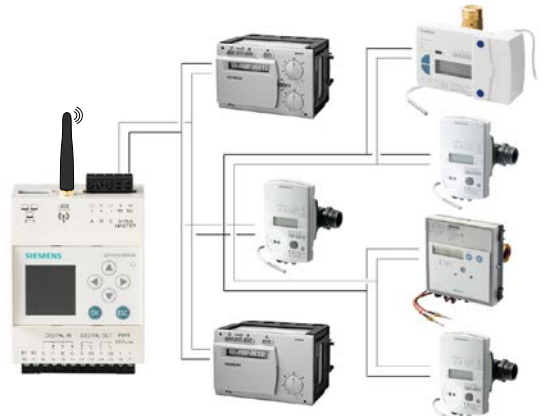




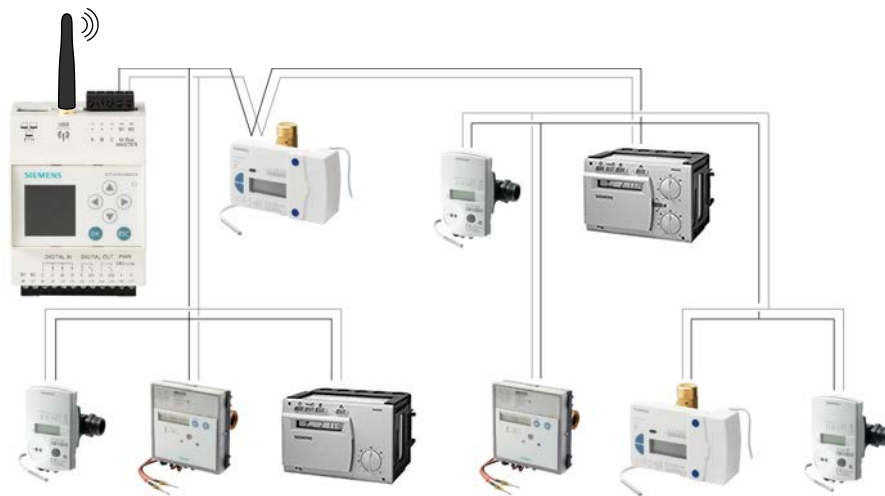
### Star topology



### Tree topology



### Combination of topologies

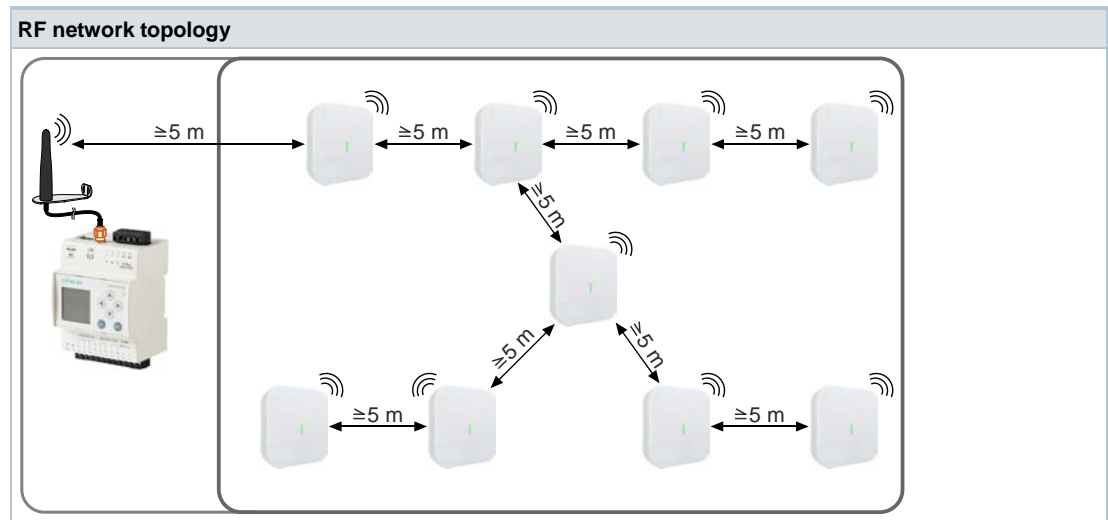


### Ring topology



## 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).



## M-bus wired devices

### Address

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 <sup>2</sup>	500 (250 per line)	9600 baud
Large residential buildings	350 m	4000 m	0.8 mm <sup>2</sup>	500 (250 per line)	2400 baud
				64	9600 baud
Small developments	1000 m	4000 m	0.8 mm <sup>2</sup>	64	2400 baud
Large developments	3000 m*	5000 m	1.5 mm <sup>2</sup>	64	2400 baud
Direct vicinity	5000 m*	7000 m	1.5 mm <sup>2</sup>	16	300 baud
Point-to-point connection	10000 m*	10000 m	1.5 mm <sup>2</sup>	1	300 baud

\* Shielded cabling required at a distance in excess of 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	-
Transfer rate	$C_{\text{segment}} \leq 382 \text{ nF}$	300	2400	9600	baud
Bus power	WTV676-HB6035	24	40	42	R
Bus current	WTV676-HB6035	0		30	mA

## Connection terminals

The device has the following connection terminals / LED		
<p>The diagram shows the Siemens WTV676-HB6035 device with various connection points. At the top, there are terminals labeled A, B, C, and D. Terminal A is for Ethernet, B for USB, C for Antenna, and D for M-Bus MASTER. Below these are terminals for Digital IN (B1, B2, C, I1, I2, I3), Digital OUT (C, O1, C, O2), and Power (PWR, 24Vac/dc). At the bottom, there are terminals labeled I, H, F, G, and E. The device also features a display screen, navigation buttons, and OK/ESC buttons.</p>	<b>A</b>	Ethernet connection
	<b>B</b>	USB connection (no function)
	<b>C</b>	Antenna connection
	<b>D</b>	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
	<b>E</b>	Terminals (16) and (17): Power supply AC/DC 24 V
	<b>F</b>	Terminals (12) and (13): Relay connections for digital output 1, max. AC/DC 30 V
	<b>G</b>	Terminals (14) and (15): Relay connections for digital output 2, max. AC/DC 30 V
	<b>H</b>	Terminals (9), (10), and (11): Connections for the digital inputs. Terminal (8): Reference for digital inputs
	<b>I</b>	Terminals (6) and (7) are not used. Do not apply electricity to these terminals.

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

### 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
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

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

### 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.

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

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. <ul style="list-style-type: none"><li>• Dispose of the device through channels provided for this purpose.</li><li>• Comply with all local and currently applicable laws and regulations.</li><li>• Dispose of empty batteries in designated collection points.</li></ul>
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## 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.

<b>Power supply</b>	
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

<b>Pins (terminal block)</b>	
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"> <li>● 5 A @ AC/DC 30 V (resistive load)</li> <li>● 2 A @ AC/DC 30 V (inductive load <math>\cos\phi = 0.4</math>)</li> </ul> Insulating strength between relay and electronics: <ul style="list-style-type: none"> <li>● 1kV AC (SELV-SELV circuits)</li> </ul> External fusing of supply line <ul style="list-style-type: none"> <li>● Non-renewable fuse: Slow to a max. 5 A</li> <li>● Circuit breaker: Max. 6 A, type B, C, D per EN 60898</li> </ul>
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

<b>Interfaces</b>	
Ethernet	Interface type: 10/1000Base-TX, IEEE 802.3 compatible Bit rate: Max. 100 Mbps 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	Power consumption: 1 M-bus load Addressing: Primary or secondary Baud rate: 300, 2400 or 9600 baud Max. permissible read-out frequency: Typically 2 times a day Protocol: To EN 13757-2/-3, EN 1434-3
RF protocol backbone to RF converter (mesh network)	Frequency band: 868.00...870.00 MHz

<b>M-bus<sup>1</sup></b>	
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
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 WTV631 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

<b>Ambient conditions</b>	
<b>Operation</b>	as per EN 60721-3-3
Climatic conditions	Class 3K5
Temperature	-20...+55 °C
Air humidity	5...95 % r.h.
Mechanical conditions	Class 3M2 as per EN 60721-3-3
<b>Transportation</b>	as per EN 60721-3-2
Climatic conditions	Class 2K3
Temperature	-25...+65 °C
Air humidity	5...95 %
Mechanical conditions	Class 2M2

<b>Ambient conditions</b>	
<b>Storage</b>	To EN 60721-3-1
Climatic conditions	1K3
Temperature	-25..+65 °C
Air humidity	5...95 % r.h.
Mechanical conditions	Class 1M2

<b>Degree of protection</b>	
IP class	IP20 as per EN 60529
Protection class	III as per EN 62368-1

<b>Mounting</b>	
Mounting type	On 35mm DIN rails (EN60715)

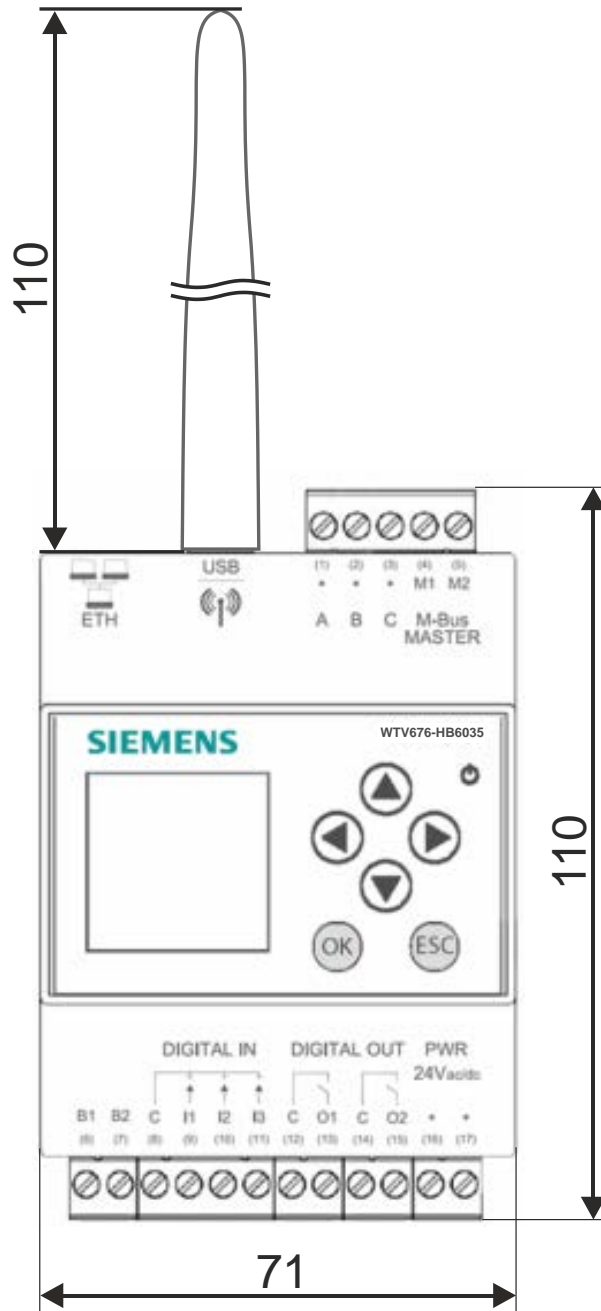
<b>Standards, guidelines</b>	
Product standards	EN 62368-1 Information Technology Equipment Safety
Electromagnetic compatibility	For residential, commercial, and industrial environments
EU conformity (CE)	A5W00034201 <sup>*)</sup>
Environmental compatibility	The product environmental declaration A5W00035027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

<sup>\*)</sup> Documents can be downloaded at <http://siemens.com/bt/download>.

<b>External features</b>	
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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