

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
- M-bus network: Extend with up to six level converters, each with up to 60 M-bus devices and/or
- Extend with up to 23 RF converters, each with up to 500 wireless devices
- System formation with up to 250 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 a master on an M-bus network with up to six connected level converters, each with up to 60 M-bus devices and/or
- As a master on an M-bus network with up to 23 RF converters, each with up to 500 RF devices

The web server can read out up to 2,500 wireless devices and up to 250 wired devices. It records the data from the connected M-bus devices, can evaluate the data, and sends email notifications on events and alarms.

The device storage can save data for a period of max. 10 years (data is read once a day).

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.



NOTICE

Forgotten password

In the event a password for web server access via an Internet browser is lost, it can no longer be reset or requested. The web server must be replaced.

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.

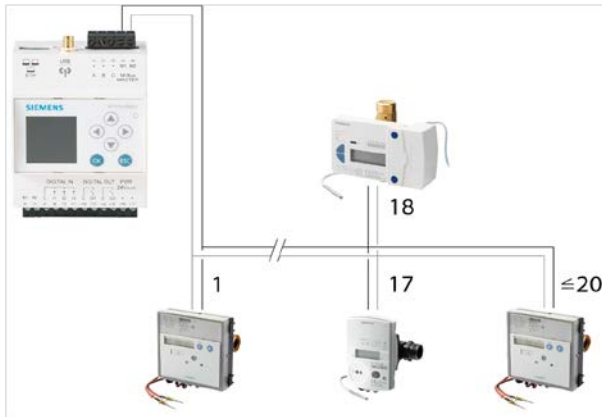
Web server is protected against short circuits and surges.

Operating modes

The web server can be used in various ways:

M-bus web server with wired M-bus devices

The web server reads up to 20 directly connected devices (20 unit M-bus loads).



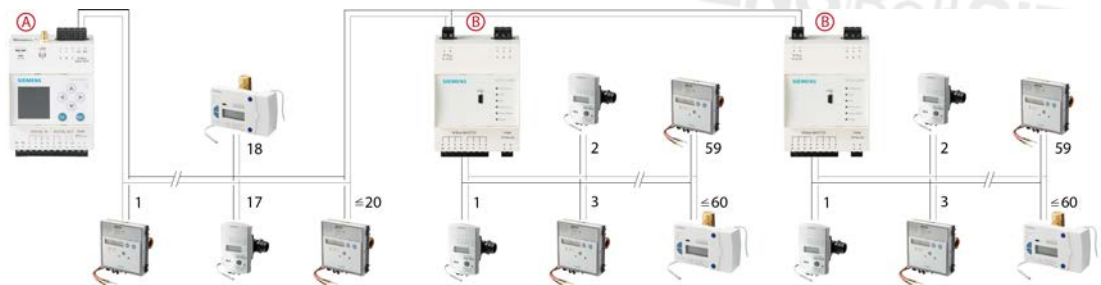
M-bus web server with level converter

The web server is equipped with additional level converters to extend the system by up to 250 devices (250 M-bus loads).

The web server is operated as the master. Up to 20 M-bus devices can be directly connected.

The level converters are connected as slaves to the web server. Up to 60 M-bus devices can be connected to each level converter.

Up to six level converters can be connected to the web server.



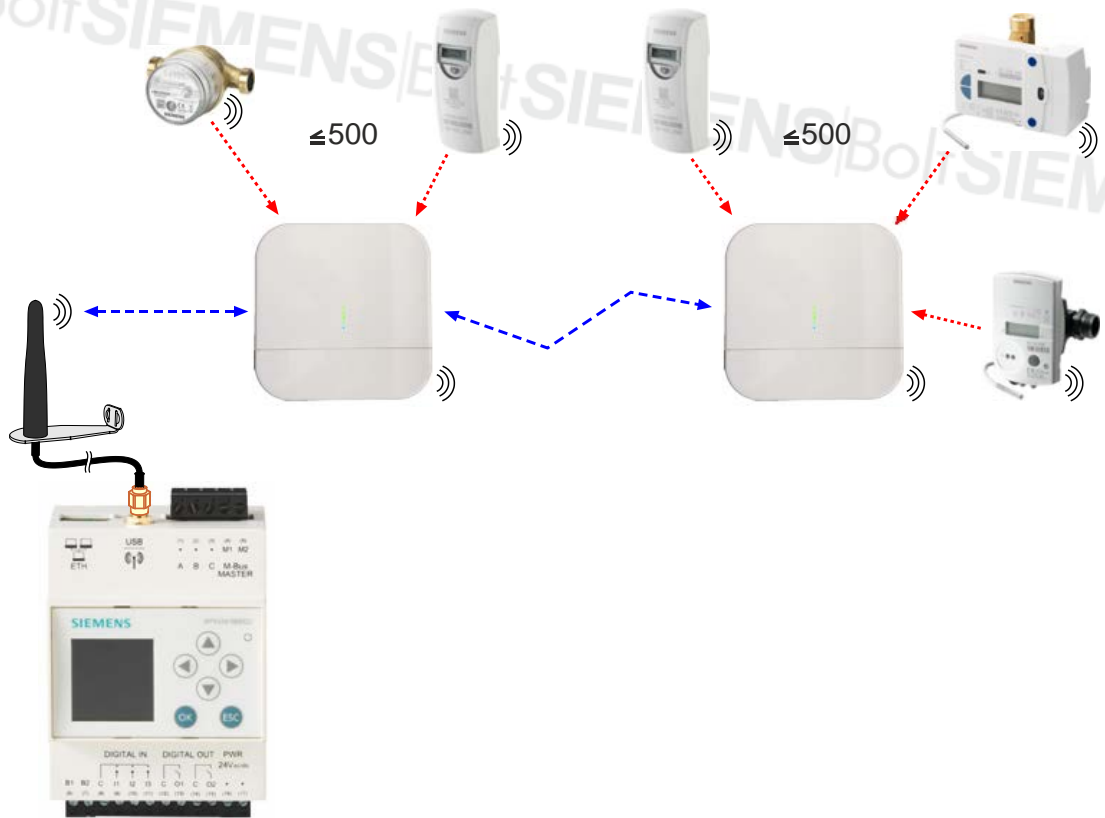
- A Web server as master
- B Level converter as slave

M-bus web server for reading 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).

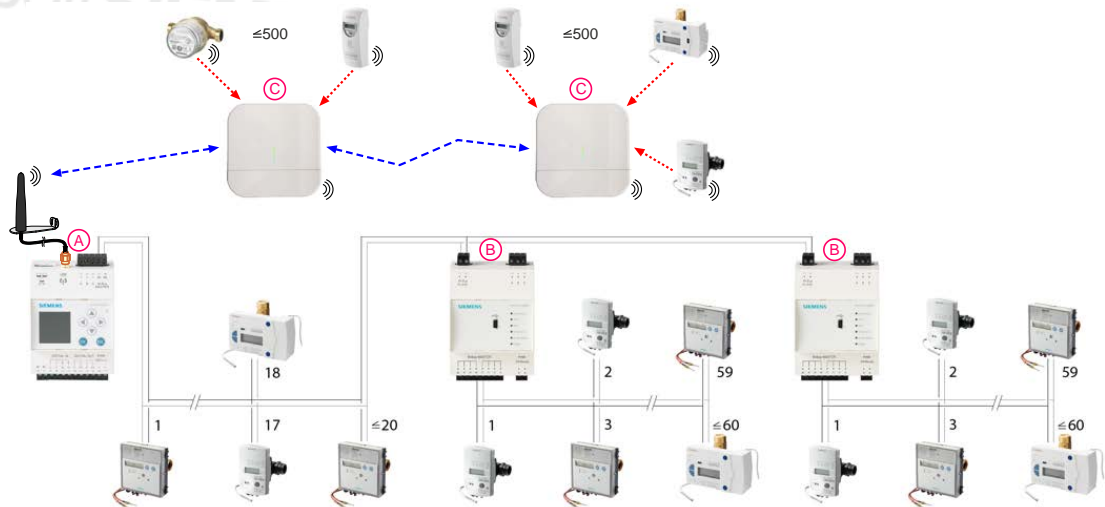
A minimum of one M-bus web server and one RF converter is required to read out wireless devices. The backbone RF network can consist of a maximum of 23 RF converters.

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).



Combined plants

The web server can read up to 250 wired and 2,500 wireless devices.



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

Readout data

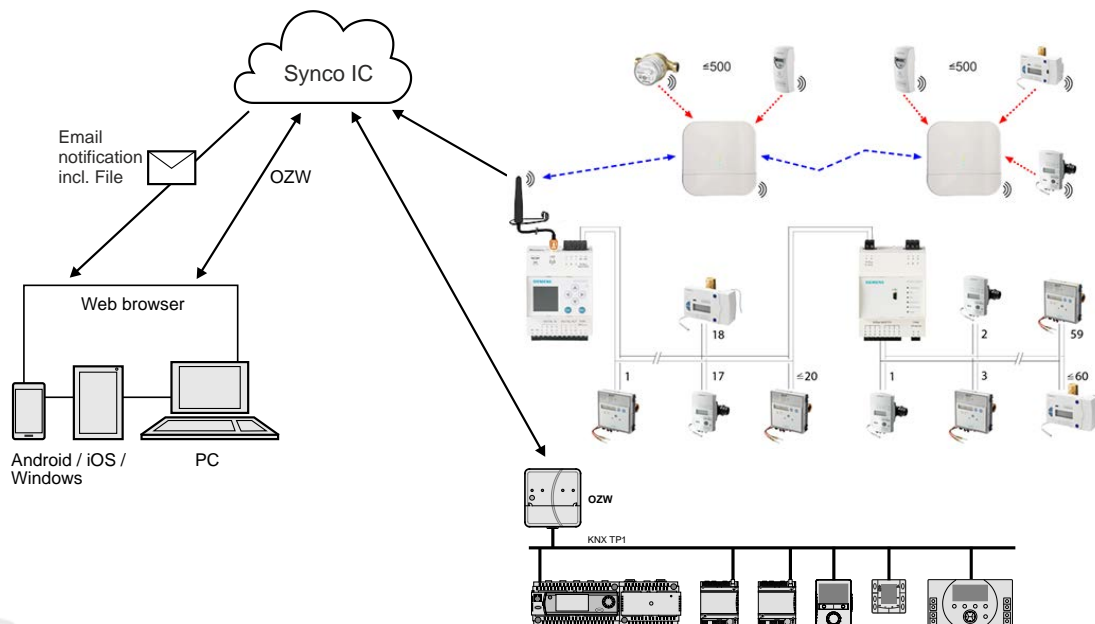
A PC/Internet browser reads the data on all operating modes either locally over Ethernet or from anywhere over the Internet using a PC/Internet browser.

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 WT53A 004022 device. It features a large antenna on the left, a USB port, an Ethernet (ETH) port, and a Wi-Fi symbol. Below these are terminals for M1, M2, A, B, C, and M-Bus MASTER. The central part of the device has a display (C) and several buttons (A) including OK and ESC. A small LED indicator (B) is located above the buttons. At the bottom, there are terminals for DIGITAL IN (B1, B2, C1, C2), DIGITAL OUT (D1, D2), and PWR (24V ac/dc).</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 [→ 10].

LED

The LED indicates the operating state of the web server.

Display

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

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 devices
- Wireless devices
- Device search
- Settings

Display example



The screenshot shows a monochrome LCD display with the following text:

Search meters	
Secondary address search	
	68%
Current baudrate:	2400
Current address:	68XXXXXX
Total devices	5
New devices	2
Press ESC to stop	

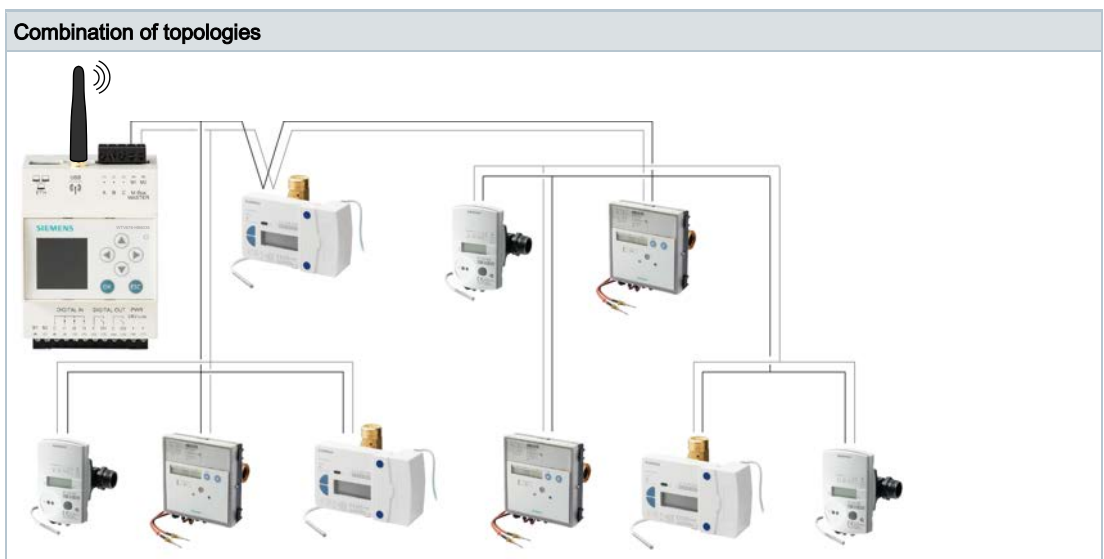
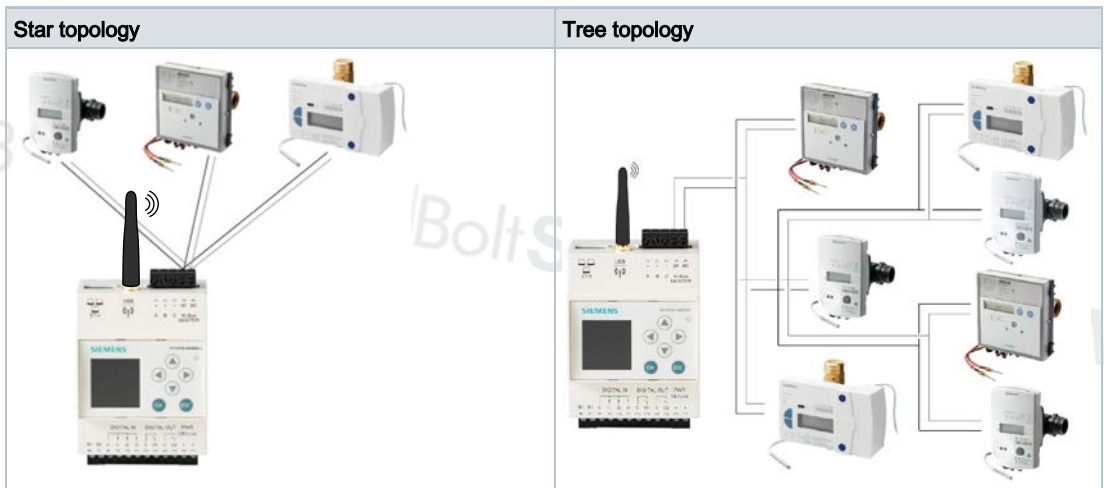
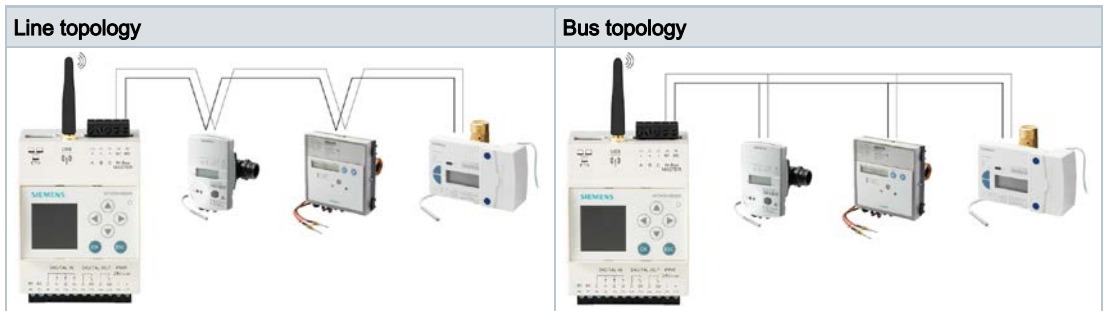
Topologies

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.



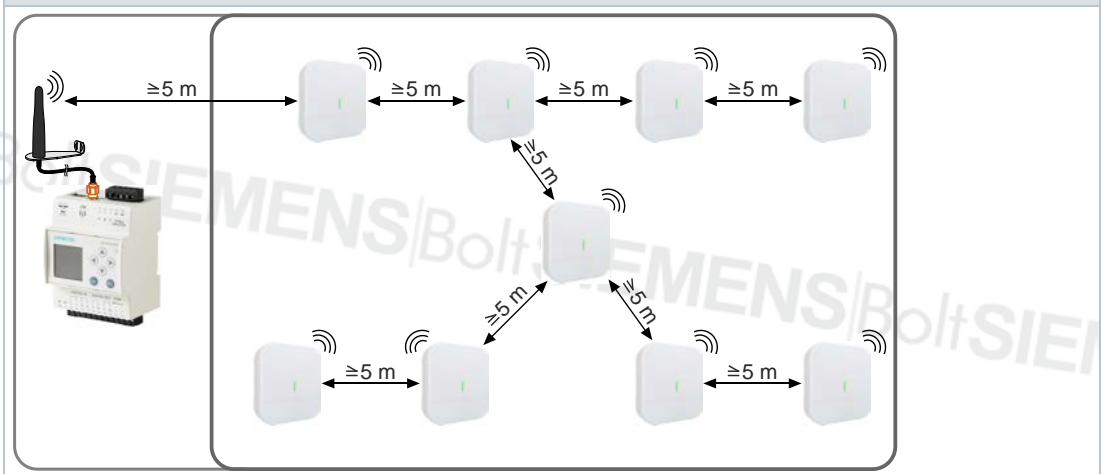
Ring topology



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

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 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	250	9600 baud
Large residential buildings	350 m	4000 m	0.8 mm ²	250	2400 baud
				64	9600 baud

Plant type	Maximum distance	Total cable length	Cable cross-section	Number of devices (slaves)	Max. transmission rate
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

* 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	$C_{segment} \leq 382 \text{ nF}$	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		
	A	Ethernet connection
	B	USB connection (no function)
	C	Antenna connection
	D	Terminals (4) and (5): Connections M1 and M2 for M-bus devices and the following level converters. Terminals (1), (2) and (3) are not used. Do not apply electricity to these terminals.
	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.

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	S55563-F145	WTV531-GA5060
RF converter	S55563-F149	WTV660-E05060

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 RF converter WTV660-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

	⚠ CAUTION
	National safety regulations Failure to comply with national safety regulations may result in personal injury and property damage. <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.

	⚠ WARNING
	No internal line protection for supply lines to external consumers Risk of fire and injury due to short-circuits! <ul style="list-style-type: none">• Adapt the line diameters 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. <ul style="list-style-type: none">• 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.
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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.

Technical data

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

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

Interfaces	
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

M-bus	
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	60
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 250 logical M-bus devices Wireless: 2,500 devices
Bus power	Min. 24 V Max. 42 V
Bus supply current	Min. 0 mA Max. 30 mA
Protection against short circuits	Yes

Ambient conditions	
Operation	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
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	
IP class	IP20 as per EN 60529
Protection class	III as per EN 62368-1

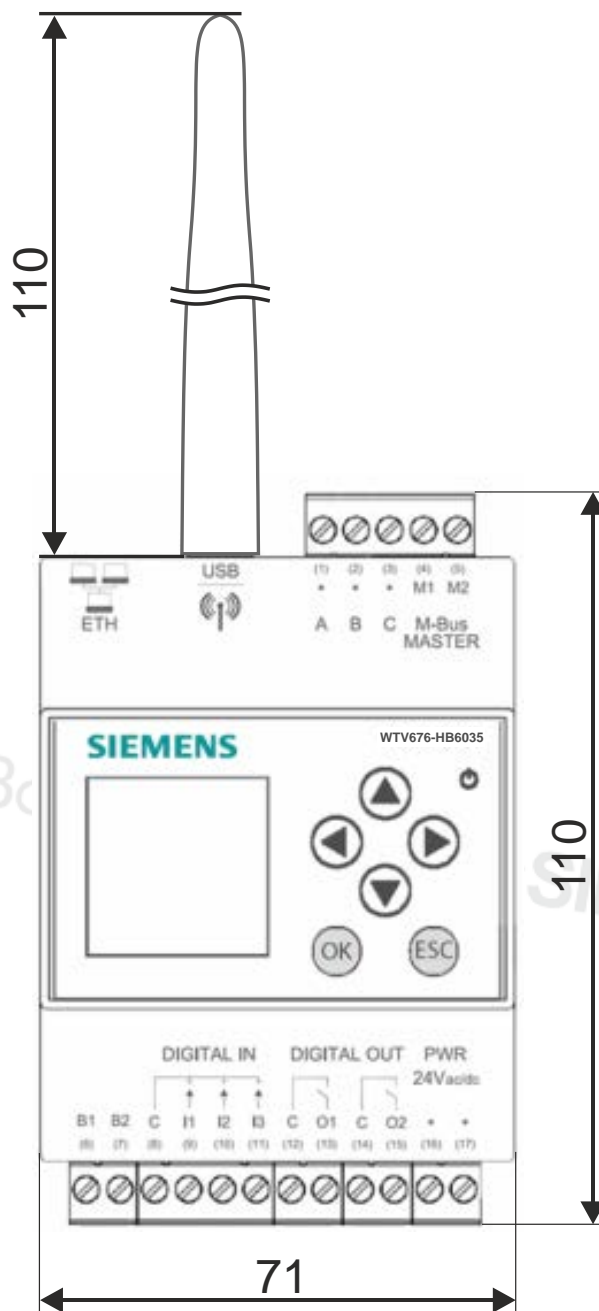
Mounting	
Mounting type	On 35mm DIN rails (EN60715)

Standards, 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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