



myTEM Radio Switch Shutter Plus
MTSWIS-101-WL

The myTEM Radio Switch Shutter Plus is a universal, Z-Wave compatible wall or ceiling switch and is used to control the motor of blinds, Venetian blinds, roller shutters, awnings, etc. These are controlled via a myTEM Radio Server, via switches or buttons connected to the inputs or via the optional myTEM Touch Add-on, which can be connected to the rear socket.

The device is intended for installation in a flush-mounted box.

Further information can be found on our website:
www.mytem-smarthome.com/web/en/downloads/



ATTENTION:

This device is not a toy. Please keep it away from children and animals!

Please read the manual before attempting to install the device!

These instructions are part of the product and must remain with the end user.

Warning and safety instructions

WARNING!

This word indicates a hazard with a risk that, if not avoided, can result in death or serious injury. Work on the device must only be carried out by persons with the necessary training or instruction.

CAUTION!

This word warns of possible damage to property.

SAFETY INSTRUCTIONS

- Operate this device only as described in the manual.
- Do not operate this device if it has obvious damage.
- This device shall not be altered, modified or opened.
- This device is intended for use in buildings in a dry, dust-free location.
- This device is intended for installation in a flush-mounted box. After installation, it must not be openly accessible.

DISCLAIMER

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What is Z-Wave?

Z-Wave is the international wireless protocol for communication in the smart home. Z-Wave ensures a reliable communication by reconfirming every message (**two-way communication**) and every mains powered node can act as a repeater for other nodes (**meshed network**) in case the receiver is not in direct wireless range of the transmitter.

Z-Wave products from different manufacturers can be used together in a wireless network. Thus, this product with any Z-Wave product from other manufacturers can be used in a common Z-Wave wireless network.

The myTEM Radio Switch Shutter Plus is a Z-Wave device with **secure communication (S2)** and uses the radio frequency of 868.4 MHz. If other devices also support the same secure communication, the data is exchanged in this secure mode. Otherwise it will switch automatically to a lower level of security to maintain backward compatibility.

For more information about frequency regulations please refer to the homepage of Silicon Labs. For more information about Z-Wave technology, devices, tutorials, etc. please refer to www.z-wave.info.

Product description

The myTEM Radio Switch Shutter Plus is a universal, Z-Wave compatible wall or ceiling switch and is used to control the motor of blinds, Venetian blinds, roller shutters, awnings, etc. Optionally, a myTEM Touch Add-on control panel with five buttons can be attached to the connector. It can be used to control the outputs or independent functions.

The two digital inputs are configured to control the outputs, but can also be used independently. The programmable behavior to the wireless commands allow flexible use in the house. At the same time, the device also serves as a Z-Wave repeater to improve range and stability of the Z-Wave network.

The device is intended for installation in a flush-mounted box, e.g. behind light switches or sockets.

Preparation for the installation

In order to include ("Add") a Z-Wave device to a network it must be in **factory default state**. Please make sure to reset the device into factory default. After power-up the status is displayed as below:

Status "Add" (included in a Z-Wave network):

The LED lights **green** for 1-2 seconds

Status "Remove" (not included):

The LED flashes **red** for 1-2 seconds

WARNING! Depending on national safety standards, only authorized and/or trained technicians may be allowed to make electrical installations on the power supply. Please inform yourself about the legal situation before installation.

Reset to factory default

If the myTEM Radio Switch Shutter Plus shows status "Add", the "Remove" can be performed with any controller in the network or with the help of a new controller. However it is recommended to use the primary controller of the previous network unless it is no longer available or damaged.

"Remove" deletes the memory chip, including all Z-Wave network settings.

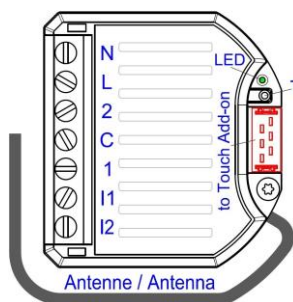
When 110 – 230 VAC is used, press a button connected to input I1 or I2 four times in quick succession to start "Remove". If a switch is used instead of the button, it must be changed accordingly eight times.

Alternatively, **when 24 VDC is used**, you can press the small lever (T) four times in quick succession with a pen to start "Remove".

The LED flashes **red** and then the new status is:

Add: The LED lights up **briefly in green**

Remove: The LED lights up **briefly in red**



Installation

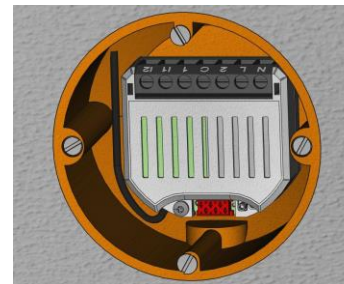
WARNING! To avoid electrical shock and/or equipment damage, disconnect power to the main fuse or circuit breaker before installation or maintenance. Prevent the fuse from being accidentally switched on again and check that the system is de-energized.

WARNING! The device shall be connected according to the wiring diagram only. Switches/buttons in the installation must comply with relevant safety standards.

WARNING! The electrical installation must be protected with a fuse of max. 10 A.

WARNING! The myTEM Radio Switch Shutter Plus should be installed in a flush-mounted box (wall, ceiling) in compliance with relevant national safety standards and with a depth of not less than 60 mm. The length of the cables between the device and a switch or the load should not exceed 10 m.

CAUTION! Maximum loads shall not exceed **6 A, 250 VAC, (cos(φ) = 1.0)**. **Due to the end position detection, only one single motor shall be connected, not several in parallel.**



1. For your safety, switch off the mains voltage (break fuse) during installation. Make sure that wires are not short-circuited during and after installation, as this may damage the device.

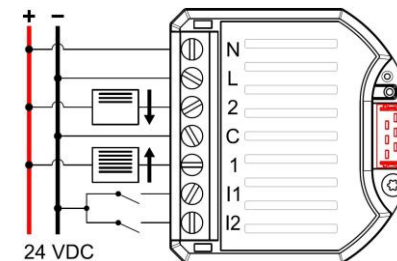
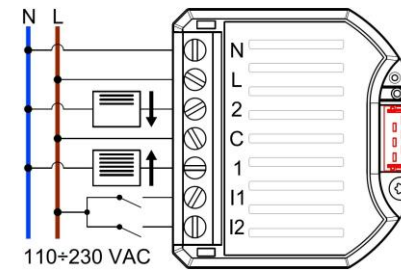
2. Connect the cables according to one of the wiring diagrams below. Rigid wires or strands, stripped by about 6.5 mm, can be used for the installation. **Option:** Connect the device with the ribbon cable to the myTEM Touch Add-on control.

3. Check the wiring and then push the device into the flush-mounted box.

4. For **maximum reach** place the antenna upright and as far away from metal parts and the wiring as possible. **Attention: Do not shorten the antenna!**

5. Switch on the mains voltage and include ("Add") the device into a Z-Wave network as described below.

6. Switch off the mains voltage and fit a cover over the flush-mounted box. When you switch the mains voltage back on again is your device ready.



Inclusion/Exclusion ("Add/Remove") of the device

On factory default the device does not belong to any Z-Wave network. In order to communicate with other Z-Wave devices, it must be included into an existing network or a new network has to be established. In Z-Wave this process is called "Add".

Devices can also be removed from networks. In Z-Wave this process is called "Remove". Both processes are initiated by the primary controller of the Z-Wave network. This controller is put into the "Add", respectively the "Remove" mode. The manual of the controller will contain the information on how to switch it into these modes. Only when the primary controller of the Z-Wave network is in the "Add" mode can devices be added. Removing a device from the network will reset it to the delivery state.

SmartStart

SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR code

present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity.

The QR code is located on the side of the housing.

When the device is in the "Add" mode, the LED flashes **green**. When finished, the new status is:

Add: The LED lights up **briefly in green**

Remove: The LED lights up **briefly in red**

Manual inclusion/exclusion ("Add/Remove")

1. Activate the "Add" or "Remove" mode on your controller.

2. **When 110 – 230 VAC is used**, press a button connected to input I1 or I2 four times in quick succession to start include/exclude ("Add/Remove"). If a switch is used instead of the button, it must be changed accordingly eight times.

3. Alternatively, **when 24 VDC is used**, you can press the small lever (T) four times in quick succession with a pen to start "Add/Remove".

When the device is in the "Add" mode, the LED flashes **green**. When finished, the new status is:

Add: The LED lights up **briefly in green**

Remove: The LED lights up **briefly in red**




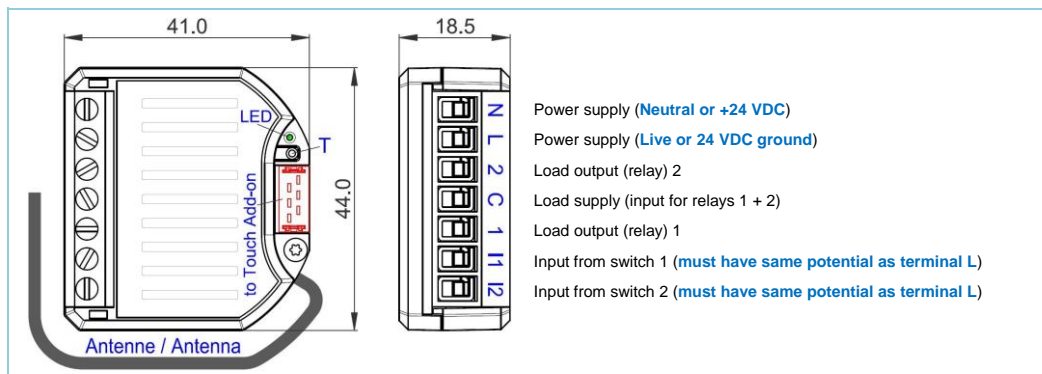
Quick trouble shooting

The following hints may help solving trouble during network installation.

1. Make sure that new devices are in factory reset state. The status is displayed at power up.
2. If a connection cannot be established, check that the controller and the device are working on the same radio frequency.
3. Remove devices that are no longer available in the Z-Wave network from all association groups. Otherwise significant delays in the execution of commands are possible.
4. Make sure you have enough mains powered devices to benefit from the meshing network.
5. If the radio signal is insufficient, try reorienting or relocating the antenna.

Technical specifications

Dimensions (W x H x D)	44 x 41 x 18.5 mm		
Installation / mounting	In flush-mounted box (wall, ceiling) ≥ Ø 60 mm, depth ≥ 60 mm		
Operating voltage	110 - 230 VAC ± 10%, 50/60Hz or 24 VDC		
Power consumption in standby	Continuous operation for wireless network, therefore no standby operation		
Power consumption in operation	0.9 W (including a myTEM Touch Add-on, without consumption of external devices)		
Switchable load	2x 6 A, 250 VAC or 30 VDC, cos(φ) = 1.0 Connect only one motor, not several in parallel !		
Ambient temperature for operation	0 °C – 40 °C		
Ambient temperature for storage	-20 °C – 60 °C		
Ambient humidity	5 %RH – 85 %RH (non condensing)		
Wire cross-section terminals	0.34 mm² – 6.0 mm² solid; 0.34 mm² – 4.0 mm² flexible; 2 x 1.5 mm² two wires		
Stripping length for terminals	6.5 mm ± 0.5 mm		
Tightening torque for terminals	0.5 Nm		
Degree of protection provided by enclosure	IP 20 (after installation) (according to EN 60529)		
Protection class	II (according to EN 60730-1)		
Overvoltage category	II (according to EN 60730-1, resp. EN 60664-1)		
Pollution degree	2 (according to EN 60730-1)		
Safety main unit	EN 60730-1:2016 + A1:2019		
EMC main unit	EN 60730-1:2016 + A1:2019 EN IEC 61000-6-2:2019 EN 61000-6-3:2007 + A1:2011 / AC:2012		
Safety radio part	EN 62368-1:2014 / AC:2017 EN 62479:2010		
EMC radio part	EN 301 489-1 V2.1.1 EN 301 489-3 V2.1.1		
Radio spectrum	EN 300 220-2 V3.2.1		
RoHS	EN IEC 63000:2018		
CE conformity	 2014/35/EU (LVD) 2014/53/EU (RED) 2014/30/EU (EMC) 2011/65/EU (RoHS)		
Z-Wave hardware platform	ZM5101		
Device Type	Window Covering – Endpoint Aware		
Role Type	Always On Slave (AOS)		



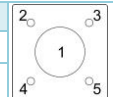
Z-Wave configuration parameters

Z-Wave products can be used out of the box after inclusion ("Add") into the network. With the configuration, however, the behavior can be better adapted to the application.

CAUTION! Depending on the function the server may change some default settings.

Par#	Description	Unit	Min	Max	Default	Digits	R/W	Size
1	Heartbeat rate	min	1	1440	60	0	r/w	2 bytes
2	Full distance down drive duration	s	0.00	300.00	—	2	r	2 bytes
3	Full distance up drive duration	s	0.00	300.00	—	2	r	2 bytes
4	Time to move slat between horizontal and vertical	s	0.00	5.00	1.20	2	r/w	2 bytes
5	Start positioning calibration	—	0	1	0	0	r/w	2 bytes
6	Invert outputs	—	0	1	0	0	r/w	2 bytes
7	Min. off time between output ON	s	0.10	0.50	0.10	2	r/w	2 bytes
8	Key assignment local control ^{x)}	—	0	6	1	0	r/w	2 bytes
9	Key hold time to move to end position	s	0.0	5.0	2.0	1	r/w	2 bytes

^{x)} If a Touch Add-on is connected during inclusion ("Add"), parameter 7 is by default set to 3.

Values Par# 8	0	1	2		3	4	5	6
Button Up / Left	Disabled	Shutter - I1	Shutter - I2	1	Touch - T2	Touch - T3	Touch - T2	Touch - T4
Button Down / Right		Shutter - I2	Shutter - I1		Touch - T4	Touch - T5	Touch - T3	Touch - T5

Positioning calibration local

The positioning calibration can be activated locally with any key (on I1, I2 or via the Touch Add-on). To do so, briefly tap the selected key twice and hold it for about 1 - 2 seconds. During calibration, the time between the end positions is measured. The process can be aborted by tapping any key once.

Operation via local keys / buttons

The blinds, Venetian blinds, shutters, roller shutters, rollers, shades or awnings may be controlled locally. The keys used for the local control are set with parameter #7. Control via local keys can also be deactivated with this parameter.

Activation of Open or Close button	Action
Press button for a time shorter than value of parameter # 8	Movement as long as button is pressed
Press button for a time longer than value of parameter # 8	Moves until end position is reached or movement is stopped
Tap 1x on button during movement	Movement is stopped

Remote Control – Central Scene Command

Independent whether the local control is activated or not, each key stroke sends a Central Scene command to the controller. Keys are digital inputs 1 – 2 and Touch Add-on buttons 1 – 5.

Key / Button / Input	Shutter – I1	Shutter – I2	Touch – T1	Touch – T2	Touch – T3	Touch – T4	Touch – T5
Scene number	1	2	3	4	5	6	7

Action	Hold	Release	Tap 1x	Tap 2x	Tap 3x
Central Scene Command	Key Held Down	Key Released	Key pressed 1 time	Key pressed 2 time	Key pressed 3 time

Use of endpoints 1 and 2

Endpoint 1 is used to set the position of the blind (Multilevel Switch Set) or to start (Multilevel Switch Start Level Change) the movement (without stop until the end position) or to stop it (Multilevel Switch Stop Level Change). When position setting is used (0% is closed, 99% is fully open), the slats are set to the same position as they were at the beginning of the movement.

Endpoint 2 is used to control the angle of the slats (Multilevel Switch Set (0% (0x00) is closed (vertical), 50% (0x32) is open (horizontal)). Tilting the slats to the other side (50 - 99%) is not supported. Sending 0xFF restores the last non-zero value.

Explanation of some Z-Wave specific terms

Controller ... is a Z-Wave device with the capability to manage a network. They are typically gateways, remote controls or wall controllers.

Primary controller ... is the central administrator of the Z-Wave network. In a Z-Wave network, only one primary controller is allowed.

Slave ... is a Z-Wave device without the ability to manage a network. Slaves can be sensors, actuators and even remote controls.

Add (Inclusion) ... is the process of adding new Z-Wave devices into a network.

Remove (Exclusion) ... is the process of removing Z-Wave devices from the network.

WakeUp Notification ... is a special wireless message issued by battery powered Z-Wave devices to announce that they are awake and able to communicate.

Node Information Frame (NIF) ... is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.

Z-Wave Association - Devices control each other

The Association Command Class is used to manage associations to NodeID destinations. An association group sends commands to the configured destinations when triggered by an event.

Association group of the myTEM Radio Switch Shutter Plus:

Root Device - Window Covering DT, Class B Motor Control:

Group ID	Profile / Name	Max. no of units	Command Class	Type / Event	Description
1	General: Lifeline / Lifeline	5	Notification Report	T: System (0x09) E: Heartbeat (0x05)	Reports to be alive (interval according to configuration)
				T: Power Management (0x08) E: Power has been applied (0x01)	Reports the device had a start-up (sent after each power-up only)
			Central Scene		Key actions remote control
			Configuration		Full distance down / up drive duration
			Multilevel Switch		Control of blind position

The reports "Heartbeat" and "Power Management" can be activated / deactivated separately via the command class **Notification**.

Endpoint 1 / Endpoint 2 - Window Covering DT, Class B Motor Control:

Group ID	Profile / Name	Max. no of units	Command Class	Description
1	General: Lifeline / Lifeline	5	Multilevel Switch	Control of slats angle of blind

Supported Command Classes

Root Device:

Command Class (CC)	Version	Not added	Non-secure added	Securely added, non-secure CC	Securely added, secure CC
Application CC	1	Support	Support		Support
Association CC	2	Support	Support		Support
Association Group Information CC	3	Support	Support		Support
Basic CC	1	Support	Support		Support
Central Scene CC	3	Support	Support		Support
Configuration CC	4	Support	Support		Support
Firmware Update MD CC	4	Support	Support		Support
Manufacturer Specific CC	2	Support	Support		Support
Multi Channel Association CC	3	Support	Support		Support
Multi Channel CC	4	Support	Support		Support
Multilevel Switch CC	4	Support	Support		Support
Notification CC	8	Support	Support		Support
Powerlevel CC	1	Support	Support		Support
Security_2 CC	1	Support	Support	Support	
Supervision CC	1	Support	Support	Support	
Transport Service CC	2	Support	Support	Support	
Version CC	3	Support	Support		Support
Z-Wave Plus Info CC	2	Support	Support	Support	

Endpoint 1 / Endpoint 2

Command Class (CC)	Version	Non-secure added	Securely added, non-secure CC	Securely added, secure CC
Association CC	2	Support		Support
Association Group Information CC	3	Support		Support
Multi Channel Association CC	3	Support		Support
Multilevel Switch CC	4	Support		Support
Security_2 CC	1		Support	
Supervision CC	1	Support	Support	
Z-Wave Plus Info CC	2	Support	Support	