

MICROMODULE SWITCH DOUBLE

QUICK INSTALLATION GUIDE
v1.3

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ELECTROMAGNETIC COMPATIBILITY

In proper state and when operated properly, the product complies with all the requirements in respect of interference radiation according to EN 301 489-17, EN 301 489-1 and EN 300 328. The connections conducting HF signals must neither be manipulated nor damaged.

TAKE CARE OF YOUR SAFETY

Display extreme caution when using ladders or steps, please follow manufacturer's instructions. Be careful when using hand and power tools and follow the manufacturer's guidelines when using them. Take care that the correct tools are used. Wear goggles or protective clothing where required.

DANGER

RISK OF ELECTROCUTION

All work on the device should only be carried out by trained and skilled electricians. Observe the country-specific regulations.

CAUTION

The connected devices and the flush-mounted receiver can become damaged if devices are operated that do not correspond to the technical specifications [see technical data].

DANGER

RISK OF FATAL INJURY FROM ELECTRIC CURRENT.

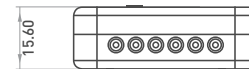
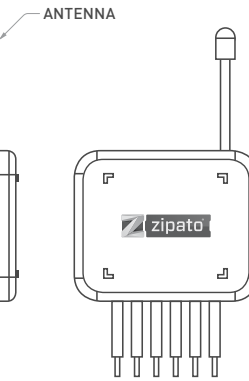
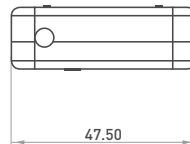
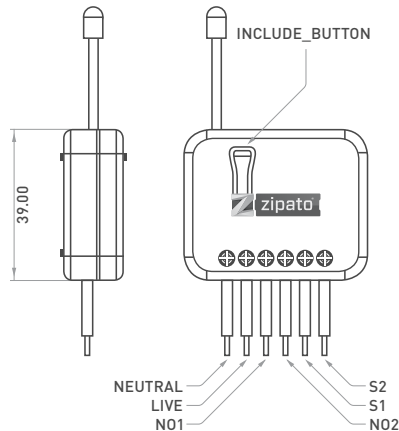
The device has no basic insulation and must therefore be installed in a way that protects against accidental contact.

DANGER

RISK OF FATAL INJURY FROM ELECTRIC CURRENT.

When installing a wall plate, the distance between the cover's fixing brackets or screws and the connections of the flush-mounted MicroModule Switch Double must be at least 4 mm once installed. If the distance is less than 4 mm, a deeper installation box must be used. The fixing brackets or screws of the cover must not press against the housing. Only insulated tools may be used for operation on the device, e.g. an insulated phase tester.

FIGURE 1
Dimensions (unit: mm)



INTRODUCTION

MicroModule Switch Double is a transceiver which is a Z-Wave™ enabled device and is fully compatible with any Z-Wave™ enabled network. Mini size design let the module can easily hide itself into the wall box and that will be good for the house decoration.

There are many kind of application by using the module to switch AC power ON and OFF, one main application is the light control. The new smart relay calibration technology can reduce the inrush current caused by the load and let the module work perfectly with many kind of light like incandescent, fluorescent and LED light.

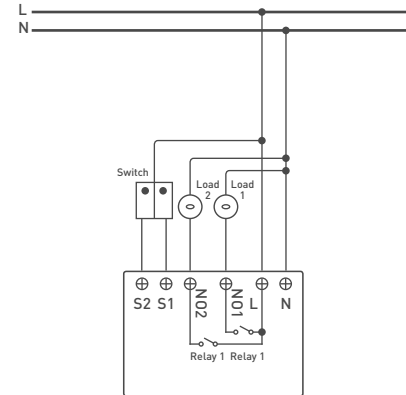
This MicroModule Switch Double is able to detect Instant power wattage (5~1500W) and overload wattage (1600~1700W) of connected light or appliances. When detecting overload state, the Module will be disabled and its ON/OFF button will be lockout of which LED will flash quickly for 30 seconds. However, unplug and re-connect the Module will reset its overload condition to normal status.

This MicroModule Switch Double can active sent out instant power wattage when variation over 5% or active sent out state change by using S1,S2 input , this allows the controller to avoid polling the reading wattage value and state of the switch and can increase the efficiency of controller.



APPLICATION

IN WALL SWITCH 2 RELAY; 1A TYPE



SPECIFICATION

POWER

NO LOAD STANDBY POWER

0.48W (230V) 0.35W (120V)

INPUT VOLTAGE

110 ~230VAC
24-60V DC ±10% (working in this voltage range will have no meter function)

RF

REGULATION

FCC part15.249 / EN300 220-1/ NCC

DISTANCE

min. 40m indoor/min. 100m outdoor

MECHANICAL

WEIGHT

30g

DIMENSION (W x H x D)

47.5x39x15.6 mm

ENVIRONMENT

OPERATION TEMPERATURE

0~40°C

HUMIDITY

85%RH max

LOAD

RESISTIVE LOAD

1500W X2 (230V) 800W X 2 (120V)

OVERLOAD

1650W (220V) 880W (120V)

LOAD RETURN ERROR RATE 5W~40W

±3W

LOAD RETURN ERROR RATE 40W~1500W

±5%

FEATURES

- Adopt Z-Wave protocol to secure the success of wireless two way communication
- Adopt newest Z-wave 400series chip, support multichannel operation and higher data rate (9.6/40/100kpbs)
- Higher RF output power (+2.5dBm output power as compared to -2.5dBm 300 series Z-wave module) to enhance the communication range
- With zero crossing technology to extend the number of switching
- Sim design, easy install
- Resistive load 1500W X 2
- Instant power Wattage and Accumulated power consumption KWh report
- Overload protection
- Auto report the state when manually push the ON/OFF button
- Auto report the wattage when variation over 5%
- Z-Wave V6.02
- Very low Electricity consumption, meet Europe year 2012 energy-related products requirement directive 2009/125/EC no. 1275/2008
- Z-Wave Certified No. ZC08-13040018
- LVD: EN 60669-2-1:2004+A1:2009+A12:2010, EN 60669-2-2 :2006, EN 60669-1:1999+A1:2002+A2:2008+IS1:2009
- R&TTE: EN 301489, EN 300200

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ADDING TO Z-WAVE NETWORK

In the front casing, there is an on/off button with LED indicator below which is used to toggle switch on and off or carry out inclusion, exclusion, reset or association. When first power is applied, its LED flashes on and off alternately and repeatedly at 2-second intervals. It implies that it has not been assigned a node ID and cannot work with Z-Wave enabled devices.

➔ AUTO INCLUSION

The function of auto inclusion will be executed as long as the in wall switch does not have Node ID and just connect the switch to main power.

Note: Auto inclusion timeout is 4 minute during which the node information of explorer frame will be emitted once every 5 seconds. Unlike "inclusion" function as shown in the table below, the execution of auto inclusion is free from pressing the On/Off button on the Switch.

The table below lists an operation summary of basic Z-Wave functions. Please refer to the instructions for your Z-Wave Certified Primary Controller to access the Setup function, and to include/exclude/associate devices.

Function	Description	LED Indication
No node ID	The Z-Wave Controller does not allocate a node ID to the MM Switch Double.	2-second on, 2-second off
Inclusion	Have Z-Wave Controller entered inclusion mode.	One press one flash
	Pressing INCLUDE_BUTTON threetimes within 1.5 seconds will enter inclusion mode.	
Exclusion	Have Z-Wave Controller entered exclusion mode.	One press one flash
	Pressing INCLUDE_BUTTON three times within 1.5 seconds will enter exclusion mode. Node ID has been excluded.	2-second on, 2-second off
Reset	Pressing INCLUDE_BUTTON three times within 1.5 seconds will enter inclusion mode.	One press one flash
	Within 1 second, press On/Off button again for 5 seconds until LED is off. IDs are excluded.	2-second on, 2-second off
Association	Have Z-Wave Controller entered association mode. OR Pressing INCLUDE_BUTTON three times within 1.5 seconds will enter association mode	One press one flash
	There are 3 groups for the switch	

Including a node ID allocated by Z-Wave Controller means inclusion. Excluding a node ID allocated by Z-Wave Controller means exclusion. Failed or success in including/excluding the node ID can be viewed from the Z-Wave Controller.

LED INDICATION

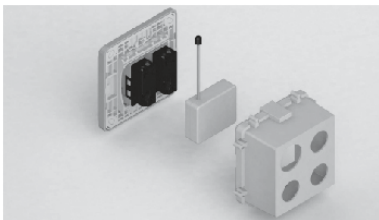
State Type	LED Indication
Normal	Whatever we switch On and off of the MicroModule Switch Double by S1 S2 or On/Off button or RF command , the LED will lights up 1 second and then off.
No node ID	Under normal operation, when the Switch has not been allocated a node ID, the LED flashes on and off alternately at 2-second intervals. By pressing S1 S2 or On/Off button, it will stop flashing temporarily. However, after disconnect and reconnect the Switch, the LED will flash on and off alternately at 2-second intervals.
Overload	When overload state occurs, the Switch is disabled of which LED flashes on and off alternately at 0.5 second intervals. Overload state can be cleared by disconnect and reconnect the Switch to the main power

CHOOSING A SUITABLE LOCATION

- Do not locate the Switch facing direct sunlight, humid or dusty place.
- The suitable ambient temperature for the Switch is 0°C~40°C.
- Do not locate the Switch where exists combustible substances or any source of heat, e.g. fans, radiators, boiler etc.
- After putting it into use, the body of Switch will become a little bit hot of which phenomenon is normal.

INSTALLATION AND OPERATION

- Put the in wall Switch into a wall box and connect the AC power wire L,N to Switch connector L, N.
- Connect the wall Switch Double to the Switch as shown in picture
- To manually turn ON the Switch, press and release the On/Off button. The LED will light ON for 1 second, and the load plugged into the Switch will also turn ON.
- To manually turn OFF the Switch, simply press and release the On/Off button. The LED will light ON for 1 second and the load plugged into the Switch will turn OFF.



PROGRAMMING

➔ BASIC COMMAND CLASS / BINARY SWITCH COMMAND CLASS

The Switch will respond to BASIC and BINARY commands that are part of the Z-Wave system.

■ BASIC_GET / BINARY_SWITCH_GET

Since the switch have two relay, the Switch will report its On/Off state to the Controller by setting Configuration parameter 3.

Configuration parameter 3=1 (default)	Report ON either relay 1 ON or relay 2 ON Report OFF when both relay 1 and relay 2 OFF
Configuration parameter 3=2	Report ON when relay 1 ON Report OFF when relay 1 OFF
Configuration parameter 3=3	Report ON when relay 2 ON Report OFF when relay 2 OFF

- Basic Get Command: [Command Class Basic, Basic Get]
- Basic Report Command: Report OFF: [Command Class Basic, Basic Report, Value = 0(0x00)]
- Report ON: [Command Class Basic, Basic Report, Value = {255}0xFF]
- Binary Switch Get Command: [Command Class Switch Binary, Switch Binary Get]
- Report OFF: [Command Class Switch Binary, Switch Binary Report, Value = 0(0x00)]
- Report ON: [Command Class Switch Binary, Switch Binary Report, Value = {255}0xFF]

■ BASIC_SET / SWITCH_BINARY_SET

Since the switch have two relay, the load attached to the Switch will turn on or off upon receipt of the following commands from a Z-Wave Controller by setting Configuration parameter 3.

- Configuration parameter 3=1 (default)
 - switch ON and OFF both relay 1 and relay 2
- Configuration parameter 3=2
 - switch ON and OFF of relay 1
- Configuration parameter 3=3
 - switch ON and OFF of relay 2

- [Command Class Basic, Basic Set, Value = {255}0xFF]: the load attached to the Switch turns on.
- [Command Class Basic, Basic Set, Value = 0(0x00)]: the load attached to the Switch turns off.
- [Command Class Switch Binary, Switch Binary Set, Value = {255}0xFF]: the load attached to the Switch turns on.
- [Command Class Switch Binary, Switch Binary Set, Value = 0(0x00)]: the load attached to the Switch turns off.

➔ Z-WAVE'S GROUPS (ASSOCIATION COMMAND CLASS VERSION 1)

The Switch can be set to send reports to control associated Z-Wave devices. It supports 3 association groups which every group has one node support. Group1-Group3 support SWITCH_BINARY_REPORT, METER_REPORT_COMMAND_V3

For group 1, the Switch will report (1) ON/OFF status of Relay1 and Relay2 (2) Instant Power Consumption (Watt) of Relay1 and Relay2 (3) Accumulated Power Consumption (KWh) of Relay1 and Relay2 to Z-Wave Controller.

For group 2, the Switch will report (1) ON/OFF status of Relay1 (2) Instant Power Consumption (Watt) of Relay1 (3) Accumulated Power Consumption (KWh) of Relay1 to Z-Wave Controller.

For group 3, the Switch will report (1) ON/OFF status of Relay2 (2) Instant Power Consumption (Watt) of Relay2 (3) Accumulated Power Consumption (KWh) of Relay2 to Z-Wave Controller.

- Auto report to Grouping 1-3 (Maximum Node 1)

□ On/Off Event Report

When "on" or "off" state has been changed by pressing S1, S2 or on/off button, it will send Binary Switch Report to the nodes of Group1-3.

Binary Switch Report:

ON: [Command Class Switch Binary, Switch Binary Report, Value={255}0xFF]
OFF: [Command Class Switch Binary, Switch Binary Report, Value=0(0x00)]

- Instant Power Consumption vary over 5% report
When the power consumption of load vary over 5%, it will

send Meter report to the nodes of Group

Meter Report Command: [Command Class Meter, Meter Report, scale[bit2] +Rate Type +Meter Type, Precision + Scale[bit 1,0]-Size, Meter Value1, Meter Value 2, Meter Value 3, Meter Value 4]

- Overload alarm report command
When MM Switch Double detect the overload, it will send Alarm Report to the correspond Group
The content of Alarm Report:

Alarm report command: [Command_Class_Alarm, Alarm_Report, Alarm Type = 0x08, Alarm Level = 0xFF]

■ Response to Meter Get Command

The Switch will report its (1) instant Power Consumption (Watt) or (2) accumulated power consumption(KWH) or (3) AC load Voltage (V) or (4) AC load current (I) (5) load power factor (PF) to Z-Wave Controller after receive the Meter Get Command from Z-Wave Controller.

- Instant Power Consumption (Watt) of Switch
When receiving Meter Get Command, it will report Meter Report Command to the node asked.

Meter Get Command: [Command Class Meter, Meter Get, Scale=0x02(W)]

Meter Report Command: [Command Class Meter, Meter Report, scale[bit2] +Rate Type +Meter Type, Precision + Scale[bit 1,0]-Size, Meter Value 1, Meter Value 2, Meter Value 3, Meter Value 4]

Rate Type = 0x01
Meter Type = 0x01

Precision = 1
Scale = 0x02(W)
Size = 4 Bytes (Meter Value)
Meter Value 1 = (W)
MSB
Meter Value 2 = (W)
Meter Value 3 = (W)
Meter Value 4 = (W)
LSB

Example:

Meter Value 1 = 0x00 (W)
Meter Value 2 = 0x00 (W)
Meter Value 3 = 0x03 (W)
Meter Value 4 = 0xEA (W)
Meter(W) = Meter Value 3 *256 + Meter Value 4 = 100.2W

- Accumulated Power Consumption (KW/h)
When receiving Meter Get Command, it will report Meter Report Command to the node asked.

Meter Get Command: [Command Class Meter, Meter Get, Scale = 0x00 (KW/h)]

Meter Report Command: [Command Class Meter, Meter Report, scale[bit 2] +Rate Type +Meter Type, Precision + Scale[bit 1,0]-Size, Meter Value 1, Meter Value 2, Meter Value 3, Meter Value 4]

Rate Type = 0x01
Meter Type = 0x01

Precision = 2
Scale = 0x00 (KWh)
Size = 4 bytes (Meter Value)
Meter Value 1 = (KWh)
MSB
Meter Value 2 = (KWh)
Meter Value 3 = (KWh)
Meter Value 4 = (KWh)
LSB

Example:

Scale = 0x00 (KWh)
Precision = 2
Size = 4 Bytes (KW/h)
Meter Value 1 = 0x00(KWh)
Meter Value 2 = 0x01(KWh)
Meter Value 3 = 0x38(KWh)
Meter Value 4 = 0xA3(KWh)

- Accumulated power consumption (KW/h) = (Meter Value 2*65536) + (Meter Value 3*256) + (Meter Value 4) = 800.35 (KW/h)

- Clearing accumulated power consumption

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Meter Reset Command: [Command Class Meter, Meter Reset]

- AC load Voltage [V]
When receiving Meter Get Command, it will report Meter Report Command to the node asked.
Meter Get Command: [Command Class Meter, Meter Get, Scale=0x04[V]]

Meter Report Command: [Command Class Meter, Meter Report, scale[bit 2] +Rate Type +Meter Type, Precision + Scale[bit 1,0]+ Size, Meter Value 1, Meter Value 2]

Rate Type = 0x01 Meter Type = 0x01 Precision = 1 Scale = 0x04[V] Size = 2 Bytes (Meter Value) Meter Value 1 = High Byte [V] Meter Value 2 = Low Byte [V]	Example: Scale = 0x04 [V] Precision = 1 Size = 2 [2 Bytes of V] Meter Value 1 = 0x09[V] Meter Value 2 = 0x01[V] AC load Voltage = (Meter Value 1*256) +(Meter Value 2) = 230.5 [V]
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- AC load current [I]
When receiving Meter Get Command, it will report Meter Report Command to the node asked.

Meter Get Command: [Command Class Meter, Meter Get, Scale=0x05[I]]

Meter Report Command: [Command Class Meter, Meter Report, scale[bit 2] +Rate Type +Meter Type, Precision + Scale[bit 1,0]+ Size, Meter Value 1, Meter Value 2]

Rate Type = 0x01 Meter Type = 0x01 Precision = 2 Scale = 0x05[I] Size = 2 Bytes (Meter Value) Meter Value 1 = High Byte [I] Meter Value 2 = Low Byte [I]	Example: Precision = 2 Size = 2 [2 Bytes of I] Meter Value 1 = 0x01[I] Meter Value 2 = 0x21[I] AC load current = (Meter Value 1*256) +(Meter Value 2) = 2.89 [A]
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- Load power factor [PF]
When receiving Meter Get Command, it will report Meter Report Command to the node asked.

Meter Get Command: [Command Class Meter, Meter Get, Scale=0x06[PF]]

Meter Report Command: [Command Class Meter, Meter Report, scale[bit 2] +Rate Type +Meter Type, Precision + Scale[bit 1,0]+ Size, Meter Value 1]

Rate Type = 0x01 Meter Type = 0x01 Precision = 2 Scale = 0x05[I] Size = 2 Bytes (Meter Value) Meter Value 1 = High Byte [I] Meter Value 2 = Low Byte [I]	Example: Scale = 0x05 [I] Precision = 2 Size = 2 [2 Bytes of I] Meter Value 1 = 0x01[I] Meter Value 2 = 0x21[I] AC load current = (Meter Value 1*256) +(Meter Value 2) = 2.89 [A]
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- Multi Channel Command Class Version 3
Switch also support multi channel command class(version 3), which include BINARY_SWITCH_GET, BINARY_SWITCH_SET, METER_SUPPORTED_GET, METER_RESET, METER_GET
You may control or get report from 3 endpoint of MicroModule Switch Double
- BINARY_SWITCH_GET
You may get the ON/OFF state from every endpoint, when endpoint set to 1, Switch will reply ON(0xFF) either Relay 1 or Relay2 is ON, report OFF (0x00) when both Relay 1 and Relay2 OFF. If endpoint set to 2, Switch will reply state of Relay1. If endpoint set to 3 and Switch will reply state of Relay2. Below is a example show a source endpoint 5 send a get command to Switch endpoint 1.
- COMMAND_CLASS_MULTI_CHANNEL
MULTI_CHANNEL_CMD_ENCAP
Source End Point = 0x05
- this is the endpoint of command owner here we assume endpoint is 5, if the owner doesn't support multi Channel this value will be 0
- [Bit Address+Destination End Point = 0x01]
- [Bit Address=0, Destination End Point range from 1-3]
- Command Class = 0x25
- [Command_Class_Switch_Binary = 0x25]
- Command =0x02
- [Switch_Binary_Get = 0x02]

- Below is the example show MM Switch Double report to last command:
- COMMAND_CLASS_MULTI_CHANNEL
 - MULTI_CHANNEL_CMD_ENCAP
 - Source End Point = 0x01
 - Since the endpoint is 1 so MicroModule Switch Double will reply ON(0xFF) either Relay 1 or Relay2 is ON, report OFF (0x00) when both Relay 1 and Relay2 OFF
 - [Bit Address+Destination End Point = 0x05]
 - [Bit Address=0; Destination End Point]
 - Command Class = 0x25
 - [Command_Class_Switch_Binary = 0x25]
 - Command =0x03
 - [Switch_Binary_Reportet = 0x3]
 - Parameter 1 = 0xFF
 - [ON=0xFF, OFF=0x00]

- BINARY_SWITCH_SET
By using BINARY_SWITCH_SET Command of Multi Channel Command Class Encapsulation Command, you can switch both Relay1 and Relay2 ON/OFF by setting endpoint to 1 or switch Relay1 ON/OFF by setting endpoint to 2 or switch Relay2 ON/OFF by setting endpoint to 3.
The example of the command show that switch off relay1 of MicroModule Switch Double.
- COMMAND_CLASS_MULTI_CHANNEL
MULTI_CHANNEL_CMD_ENCAP
Source End Point = 0x01
- this is the endpoint of command owner, here we assume endpoint is 1, if the owner doesn't support multi Channel this value will be 0
- [Bit Address+Destination End Point = 0x02]
- [Bit Address=0; Destination End Point range 1-3]
- Command Class = 0x25
- [Command_Class_Switch_Binary = 0x25]
- Command =0x01
- [Switch_Binary_Set = 0x01] [ON=0xFF, OFF=0x00]

- Parameter 1 = 0x00
 - [ON=0xFF, OFF=0x00]
 - METER_SUPPORTED_GET
This command is to ask the endpoint of Switch what kind of meter data can be reported. The example show how to get the meter report type.
 - COMMAND_CLASS_MULTI_CHANNEL
MULTI_CHANNEL_CMD_ENCAP
Source End Point = 0x0
 - this is the endpoint of command owner here we assume endpoint is 1, if the owner doesn't support multi Channel this value will be 0
 - [Bit Address+Destination End Point = 0x03]
 - [Bit Address=0; Destination End Point range 1-3]
 - Command Class = 0x32
 - [Command_Class_Meter_V3 = 0x32]
 - Command =0x03
 - [Meter_Supported_Get = 0x03]
- Below is the example show Switch report to last command.
- COMMAND_CLASS_MULTI_CHANNEL
 - MULTI_CHANNEL_CMD_ENCAP
 - Source End Point = 0x03
 - [Bit Address+Destination End Point = 0x01]
 - Command Class = 0x32
 - [Command_Class_Meter_V3 = 0x32]
 - Command =0x04
 - [Meter_Supported_Report = 0x04]
 - Parameter 1 = 0x81
 - [Meter Reset = 1, Meter Type=0x01]
 - Parameter 2 = 0x75
 - [Scale Supported = KWh+W+V+A+Power Factor = 0x75]

- METER_RESET
This command is to reset the Accumulated Power Consumption [KWh] to 0. The example show how to reset the KWh.
- COMMAND_CLASS_MULTI_CHANNEL
COMMAND_CLASS_MULTI_CHANNEL
Source End Point = 0x03
- this is the endpoint of command owner, here we assume endpoint is 3, if the owner doesn't support multi Channel this value will be 0
- [Bit Address+Destination End Point = 0x01]
- [Bit Address=0; Destination End Point range 1-3]
- Command Class = 0x32
- [Command_Class_Meter_V3 = 0x32]
- Command =0x05
- [Meter_Reset = 0x05]

- METER_GET
Using meter get command to get the KWH,W,V,I,PF from endpoint of Switch. Example:
- COMMAND_CLASS_MULTI_CHANNEL
MULTI_CHANNEL_CMD_ENCAP
Source End Point = 0x05
- this is the endpoint of command owner, here we assume endpoint is 5, if the owner doesn't support multi Channel this value will be 0
- [Bit Address+Destination End Point = 0x03]
- [Bit Address=0; Destination End Point range 1-3]
- Command Class = 0x32
- [Command_Class_Meter_V3 = 0x32]
- Command =0x01
- [Meter_Get = 0x01]
- Parameter 1 = 0x00
- [Scale = KWH = 0x00]

- Accumulated power consumption [KWH] Report example:
- COMMAND_CLASS_MULTI_CHANNEL
 - MULTI_CHANNEL_CMD_ENCAP
 - Source End Point = 0x03
 - [Meter report = Endpoint3]

- [Bit Address+Destination End Point = 0x05]
- [Bit Address=0; Destination End Point = command owner Endpoint value]
- Command Class = 0x32
- [Command_Class_Meter_V3 = 0x32]
- Command =0x02
- [Meter_Report = 0x02]
- Parameter 1 = 0x21
- [Scale Bit2 = 0, Rate Type = 0x01, Meter Type=0x01]
- Parameter 2 = 0x44
- [Precision = 2, Scale Bit1Bit0 = 0, Size = 4]
- Parameter 3; 4 = 0x00
- Accumulated Power Consumption = 0x000005FD = 15.33 KWh
- Parameter 5 = 0x05
- Parameter 6 = 0xFF

- Get Instant Power Consumption [Watt] from endpoint.
METER_GET example:
- COMMAND_CLASS_MULTI_CHANNEL
 - MULTI_CHANNEL_CMD_ENCAP
 - Source End Point = 0x05
 - this is the endpoint of command owner, here we assume endpoint is 5, if the owner doesn't support multi Channel this value will be 0
 - [Bit Address+Destination End Point = 0x03]
 - [Bit Address=0; Destination End Point range 1-3]
 - Command Class = 0x32
 - [Command_Class_Meter_V3 = 0x32]
 - Command =0x01
 - [Meter_Get = 0x01]
 - Parameter 1 = 0x10
 - [Scale = W = 0x02]

- MM Switch Double Power Consumption [W] Report example:
- COMMAND_CLASS_MULTI_CHANNEL
 - MULTI_CHANNEL_CMD_ENCAP
 - Source End Point = 0x03
 - [Meter report = Endpoint3]
 - [Bit Address+Destination End Point = 0x05]
 - [Bit Address=0; Destination End Point = command owner Endpoint value]
 - Command Class = 0x32
 - [Command_Class_Meter_V3 = 0x32]
 - Command =0x02
 - [Meter_Report = 0x02]
 - Parameter 1 = 0x21
 - [Scale Bit2 = 0, Rate Type = 0x01, Meter Type=0x01]
 - Parameter 2 = 0x34
 - [Precision = 1, Scale Bit1Bit0 = 0x02, Size = 4]
 - Parameter 3; 4 = 0x00
 - Instant Power Consumption = 0x000003EA = 100.2W
 - Parameter 5 = 0x03
 - Parameter 6 = 0xEA

- Get load voltage V from endpoint
METER_GET example:
- COMMAND_CLASS_MULTI_CHANNEL
 - MULTI_CHANNEL_CMD_ENCAP
 - Source End Point = 0x05
 - this is the endpoint of command owner, here we assume endpoint is 5, if the owner doesn't support multi Channel this value will be 0
 - [Bit Address+Destination End Point = 0x03]
 - [Bit Address=0; Destination End Point range 1-3]
 - Command Class = 0x32
 - [Command_Class_Meter_V3 = 0x32]
 - Command =0x01
 - [Meter_Get = 0x01]
 - Parameter 1 = 0x21
 - [Scale = V = 0x04]

- MicroModule Switch Double AC load Voltage example:
- COMMAND_CLASS_MULTI_CHANNEL
 - MULTI_CHANNEL_CMD_ENCAP
 - Source End Point = 0x03

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- [Meter report = Endpoint3]
- [Bit Address+Destination End Point = 0x05]
- [Bit Address =0, Destination End Point = command owner Endpoint value]
- Command Class = 0x32
- [Command_Class_Meter_V3 = 0x32]
- Command =0x02
- [Meter_Get = 0x01]
- Parameter 1 = 0xA1
- [Scale Bit2 = 1, Rate Type = 0x01, Meter Type=0x01]
- Parameter 2 = 0x22
- [Precision = 1, Scale Bit1Bit0 = 0x00, Size = 2]
- Parameter 3 = 0x09
- Voltage = 0x0910 = 232.0V
- Parameter 4 = 0x10

Get load current I from endpoint

Meter_GET example:

- COMMAND_CLASS_MULTI_CHANNEL
- MULTI_CHANNEL_CMD_ENCAP
- Source End Point = 0x05
- this is the endpoint of command owner, here we assume endpoint is 5, if the owner doesn't support multi Channel this value will be 0
- [Bit Address+Destination End Point = 0x03]
- [Bit Address =0 Destination End Point range1-3]
- Command Class = 0x32
- [Command_Class_Meter_V3 = 0x32]
- Command =0x01
- [Meter_Get = 0x01]
- Parameter 1 = 0x28
- [Scale = A = 0x05]

MicroModule Switch Double AC load current (I) example:

- COMMAND_CLASS_MULTI_CHANNEL
- MULTI_CHANNEL_CMD_ENCAP
- Source End Point = 0x03
- [Meter report = Endpoint3]
- [Bit Address+Destination End Point = 0x05]
- [Bit Address =0, Destination End Point = command owner Endpoint value]
- Command Class = 0x32
- [Command_Class_Meter_V3 = 0x32]
- Command =0x02
- [Meter_Report = 0x02]
- Parameter 1 = 0xA1
- [Scale Bit2 = 1, Rate Type = 0x01, Meter Type=0x01]
- Parameter 2 = 0x4A
- [Precision = 2, Scale Bit1Bit0 = 0x01, Size = 2]
- Parameter 3 = 0x00
- Current = 0x002B = 0.43A
- Parameter 4 = 0x2B

Get power factor PF from endpoint

Meter_GET example:

- COMMAND_CLASS_MULTI_CHANNEL
- MULTI_CHANNEL_CMD_ENCAP
- Source End Point = 0x05
- this is the endpoint of command owner, here we assume

endpoint is 5, if the owner doesn't support multi Channel this value will be 0

- [Bit Address+Destination End Point = 0x03]
- [Bit Address =0, Destination End Point range1-3]
- Command Class = 0x32
- [Command_Class_Meter_V3 = 0x32]
- Command =0x01
- [Meter_Get = 0x01]
- Parameter 1 = 0x30
- [Scale = PF = 0x06]

MicroModule Switch Double power factor report example:

- COMMAND_CLASS_MULTI_CHANNEL
- MULTI_CHANNEL_CMD_ENCAP
- Source End Point = 0x03
- [Meter report = Endpoint3]
- [Bit Address+Destination End Point = 0x05]
- [Bit Address =0, Destination End Point = command owner Endpoint value]
- Command Class = 0x32
- [Command_Class_Meter_V3 = 0x32]
- Command =0x02
- [Meter_Report = 0x02]
- Parameter 1 = 0xA1
- [Scale Bit2 = 1, Rate Type = 0x01, Meter Type=0x01]
- Parameter 2 = 0x51
- [Precision = 2, Scale Bit1Bit0 = 0x10, Size = 1]
- Parameter 3 = 0x63
- Power Factor = 0x63 = 0.99

Z-WAVE'S CONFIGURATION

Watt Meter Report Period:

If the setting is configured for 1hour (set value =720), the MicroModule Switch Double will report its instant power consumption every 1 hour to the node of correspond Group. The maximum interval to report its instant power consumption is 45 hours (5s*32767/3600=45hr).

KWH Meter Report Period:

If the setting is configured for 1hour (set value =6), the MicroModule Switch Double will report its Accumulated Power Consumption (KW/h) every 1 hour to the node of correspond Group. The maximum interval to report its Accumulated Power Consumption (KW/h) is 227.55 days (10min*32767/1440=227.55 days).

Selected Endpoint

If Controller not using Multi_Channel command class to access the endpoint of MicroModule Switch Double, you may configure the endpoint value to react the Basic Command Class, Binary Switch Command Class or Meter Command Class V3

- Selected Endpoint: Default Selected Endpoint is 1

Set command	Relay state
Basic Set or Binary_Switch_Set ON	Relay1 ON & Relay2 ON
Basic Set or Binary_Switch_Set OFF	Relay1 OFF & Relay2 OFF

Get command	Relay state	Report to command sender
Basic_Get or Binary_Switch_Get	Relay1 ON & Relay2 ON	ON
Basic_Get or Binary_Switch_Get	Relay1 OFF & Relay2 OFF	OFF

Get command	Parameter	Report to command sender
Meter_Get	KWh	Relay1 KWh1+Relay2 KWh2
Meter_Get	Watt	Relay1 W1+Relay2 W2
Meter_Get	Voltage	Relay1 and Relay2 are the same voltage

Meter_Get	Current	Relay1 I1+Relay2 I2
Meter_Get	Power factor PF	Relay1

- Selected Endpoint 2
- Similar like Selected Endpoint 1 but only relate to Relay1 and ignore Relay2
- Selected Endpoint 3
- Similar like Selected Endpoint 1 but only relate to Relay2 and ignore Relay1
- Edge and Pulse mode
- Manual switch S1 and S2 can set to Edge mode or Pulse mode or Edge-Toggle mode, default value is Edge mode.
- Edge mode: this mode is suitable for the bi stable wall switch that has indicator point on the switch, and the same position correspond to same state of relay1 and relay2. If the MicroModule Switch Double relay change the state because of receiving Z-Wave RF command, it may need two times of change (switch on to off or switch off to on) to let relay back to the correspond state.
- Pulse mode: this mode is suitable for the toggle type wall switch to swap the state of Relay1 or Relay2.
- Edge-Toggle mode: this mode is suitable for the normal bi-stable switch, every time when change the state of the wall switch will also swap the state of Relay1 or Relay2.
- Threshold of Watt for Load Caution
- This is a warning when the wattage of load over the preset threshold value, If the setting value is 1500, when the load wattage of Relay1 or Relay2 over this value, MicroModule Switch Double will send Watt Meter Report command to the node of correspond Group
- Threshold of KWh for Load Caution
- This is a warning when the KWh of load over the preset threshold value, If the setting value is 10000, when the Accumulated Power Consumption of Relay1 or Relay2 over this value, MicroModule Switch Double will send KWh Meter Report command to the node of correspond Group, minimum value is 1KWh and default value is 10000 kWh.

Configuration Parameter	Function	Size (Bytes)	Value	Unit	Default	Description
1	Watt Meter Report Period	2	0x01-0x7FFF	5s	720	5*720s=3600s=1 hour
2	KWH Meter Report Period	2	0x01-0x7FFF	10min	6	6*10min=1 hour
3	Selected End Point	1	1-3		1	1: Relay1 & Relay2 2: Relay1 3: Relay2
4	Edge or Pulse mode or Edge-Toggle mode	1	1-3		1	1: Edge mode 2: Pulse mode 3: Edge-Toggle mode
5	Threshold of Watt for Load Caution	2	10-1500	1watt	1500	
6	Threshold of KWH for Load Caution	2	1-10000	1KWh	10000	

COMMAND CLASSES

The Switch supports Command Classes including:

- COMMAND_CLASS_SWITCH_BINARY
- COMMAND_CLASS_BASIC
- COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2
- COMMAND_CLASS_VERSION
- COMMAND_CLASS_SWITCH_ALL
- COMMAND_CLASS_ASSOCIATION_V1
- COMMAND_CLASS_METER_V3
- COMMAND_CLASS_CONFIGURATION
- COMMAND_CLASS_MULTI_CHANNEL_V3
- COMMAND_CLASS_ALARM

TROUBLESHOOTING

- The Switch not working and LED off**
 - Cause of Failure:
 - The Switch is not connect to the Main power
 - The Switch break down
 - Recommendation:
 - Check power connections
 - Don't open up the Switch and send it for repair.
- The Switch LED illuminating, but cannot control the ON/OFF Switch of the load attached**
 - Cause of Failure:
 - Check if the load connect into the Switch has its own ON/OFF switch
 - Recommendation:
 - Set the ON/OFF switch of the load attached to ON
- The Switch LED illuminating, but the Detector cannot control the Switch**
 - Cause of Failure:
 - Not carry out association
 - Same frequency interference
 - Recommendation:
 - Carry out association
 - Wait for a while to re-try
- LED keep flashing, but cannot control**
 - Cause of Failure:
 - Overload occurs
 - Recommendation:
 - Remove the load attached or check max. load cannot exceed 1500W-1650W

MICROMODULE SWITCH DOUBLE

QUICK INSTALLATION GUIDE
v1.3

TECHNICAL SUPPORT

Having trouble installing your new product?

Zipato's website contains the latest user documentation and software updates for Zipato products and services.

www.zipato.com

CONTACT SUPPORT

E-MAIL: support@zipato.com
(Mon-Fri) 9.00am-05.00pm (CET)

MODELS AND FREQUENCIES

MODELS

EUROPEAN UNION - EU version	ph-pan04.eu
UNITED STATES - US version	ph-pan04.us
RUSSIA - RU version	ph-pan04.ru
ISRAEL - IS version	ph-pan04.is
AUSTRALIA - AU version	ph-pan04.au
INDIA - IN version	ph-pan04.in

FREQUENCIES

EUROPEAN UNION - EU	868.42 MHz
UNITED STATES - US	908.42 MHz
RUSSIA - RU	869.02 MHz
ISRAEL - IS	916.02 MHz
AUSTRALIA - AU	921.42 MHz
INDIA - IN	865.20 MHz

LIMITED PRODUCT WARRANTY

GENERAL TERMS

Nothing in this Limited Product Warranty affects your statutory rights as a consumer.

The Limited Product Warranty set forth below is given by Tri plus grupa d.o.o. (Europe) [herein referred to as "ZIPATO"]. This Limited Product Warranty is only effective upon presentation of the proof of purchase. Upon further request by ZIPATO, this warranty card has to be presented, too.

EXCEPT AS EXPRESSLY SET FORTH IN THIS LIMITED WARRANTY, ZIPATO MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. ZIPATO EXPRESSLY DISCLAIMS ALL WARRANTIES NOT STATED IN THIS LIMITED WARRANTY. ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW ARE LIMITED IN DURATION TO THE LIMITED WARRANTY PERIOD. TO THE EXTENT ALLOWED BY LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES AGAINST ZIPATO. THEY DO NOT, HOWEVER, AFFECT OR RESTRICT THE RIGHTS YOU HAVE AGAINST THE BUSINESS YOU BOUGHT A ZIPATO PRODUCT FROM. IN NO EVENT WILL ZIPATO BE LIABLE FOR LOSS OF DATA OR FOR

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The term "ZIPATO Hardware Product" is limited to the hardware components and all its internal components including firmware. The term "ZIPATO Hardware Product" DOES NOT include any software applications or programs.

GEOGRAPHICAL SCOPE OF THE LIMITED PRODUCT WARRANTY

This Limited Product Warranty is applicable to Hardware Products sold by Zipato Resellers in all countries listed at the beginning of this document under the heading "Countries in which this ZIPATO Limited Product Warranty applies".

The Limited Product Warranty will be honored in any country where ZIPATO or its authorized service providers offer warranty service subject to the terms and conditions set forth in this Limited Product Warranty. However, warranty service availability and response times may vary from country to country and may also be subject to registration requirements.

LIMITATION OF PRODUCT WARRANTY

ZIPATO warrants that the products described below under normal use are free from material defects in materials and workmanship during the Limited Product Warranty Period set forth below ("Limited Product Warranty Period"), if the product is used and serviced in accordance with the user manual and other documentation provided to the purchaser at the time of purchase (or as amended from time to time).

ZIPATO does not warrant that the products will operate uninterrupted or error-free or that all deficiencies, errors, defects or non-conformities will be corrected.

This warranty shall not apply to problems resulting from: (a) unauthorized alterations or attachments; (b) negligence, abuse or misuse, including failure to operate the product in accordance with specifications or interface requirements; (c) improper handling; (d) failure of goods or services not obtained from ZIPATO or not subject to a then-effective ZIPATO warranty or maintenance agreement; (e) improper use or storage; or (f) fire, water, acts of God or other catastrophic events. This warranty shall also not apply to any particular product if any ZIPATO serial number has been removed or defaced in any way.

ZIPATO IS NOT RESPONSIBLE FOR DAMAGE THAT OCCURS AS A RESULT OF YOUR FAILURE TO FOLLOW THE INSTRUCTIONS FOR THE ZIPATO HARDWARE PRODUCT.

LIMITED PRODUCT WARRANTY PERIOD

The Limited Product Warranty Period starts on the date of purchase from ZIPATO. Your dated sales or delivery receipt,

showing the date of purchase of the product, is your proof of the purchase date. You may be required to provide proof of purchase as a condition of receiving warranty service. You are entitled to warranty service according to the terms and conditions of this document if a repair to your ZIPATO branded hardware is required within the Limited Product Warranty Period.

[Other than in respect of products for domestic use (in particular those listed in the first and last boxes in the table below), this Limited Product Warranty extends only to the original end user purchaser of this ZIPATO Hardware Product and is not transferable to anyone who obtains ownership of the ZIPATO Hardware Product from the original end-user purchaser.

PRODUCT WARRANTY PERIOD TABLE

PRODUCT TYPE	Micromodule Switch Double
PRODUCT WARRANTY PERIOD	One (1) year

IMPORTANT

The content of "Product Type" listed above is subject to change; please refer to the www.zipato.com for latest update.

PERFORMANCE OF THE LIMITED PRODUCT WARRANTY

If a product defect occurs, ZIPATO's sole obligation shall be to repair or replace any defective Zipato Hardware Product free of charge provided it is returned to an Authorized ZIPATO Service Centre during the Limited Warranty Period. Such repair or replacement will be rendered by ZIPATO at an Authorized ZIPATO Service Centre. All component parts or hardware products that are replaced under this Limited Product Warranty become the property of ZIPATO.

The replacement part or product takes on the remaining Limited Warranty Period of the replaced part or product. The replacement product need not be new or of an identical make, model or part; ZIPATO may in its discretion replace the defective product (or any part thereof) with any reconditioned equivalent (or superior) product in all material respects to the defective product.

WARRANTOR

Tri plus grupa d.o.o.
Banjaveciva 11
10 000 Zagreb
CROATIA

TEL +385 (0)1 4004 404

FAX +385 (0)1 4004 405

DECLARATION OF CONFORMITY

The Manufacturer Tri plus grupa d.o.o. hereby declares that the product:

Zipabox Smart home controller 1



In accordance with the following Directive(s): 2006/95/EC The Low Voltage Directive, 89/336/EEC The Electromagnetic Compatibility Directive and 1999/5/EC R&T TE Directive is in conformity with the applicable requirements of the following documents:

EN 61326 EN 61000-3-3 EN 61000-4-4 EN 61000-4-11
IEC/EN 55011 EN 61000-6-2 EN 61000-4-5 EN 301 489-1-3
EN 300 220-2 EN 61000-4-2 EN 61000-4-6 AS/NZS/IEC 60335-2-97
EN 61000-3-2 EN 61000-4-3 EN 61000-4-8 EN 60335-1

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable Essential Requirements of the Directives.

Person responsible for this declaration:
Dean Janacek, Certification Manager
01.09.2012

Changes or modifications not expressly approved Tri plus grupa d.o.o. for compliance could void the user's authority to operate the equipment.



THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

Operation is subject to the following two conditions:
1 | This device may not cause harmful interference, and
2 | This device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1 | l'appareil ne doit pas produire de brouillage, et
2 | l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

NOTE: Changes or modifications not expressly approved by Zipato for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

DISPOSING AND RECYCLING YOUR PRODUCT



This symbol on the product or packaging means that according to local laws and regulations needs to be disposed of separately from household waste and sent to recycling because it contains electronic components and a battery. Once this product has reached the end of its life, please take it to a collection point (recycle facilities) designated by your local authorities, some will accept your product for free or simply drop it off at your Zipato re-seller store. By recycling the product and its packaging in this manner you help to conserve the environment and protect human health. At Zipato, we understand and are committed to reducing any impact our operations and products may have on the environment. To minimize this impact Zipato designs and builds its products to be as environmentally friendly as possible, by using recyclable, low toxic materials in both products and packaging.

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