



Smart Meter

ORDERING CODE	Z-WAVE FREQUENCY
ZNNHTD1	868.4 MHz
ZNNHTD2	921.4 MHz
ZNNHTD3	908.4 MHz
ZNNHTD4	869.0 MHz
ZNNHTD5	916.0 MHz
ZNNHTD8	865.2 MHz

This Z-Wave module is used for energy measurements in single-phase electrical power network and can be used in residential, industrial and utility applications. Meters measure energy directly in 2-wire networks according to the principle of fast sampling of voltage and current signals. A built-in microprocessor calculates energy, power and power factor from the measured signals. The module can be controlled through Z-wave network and it acts as repeater in order to improve range and stability of Z-wave network. It is designed to be mounted on DIN rail.

Installation

- To prevent electrical shock and/or equipment damage, disconnect electrical power: remove main fuse or put on OFF position a main disconnection switch (or circuit breaker if it is compliant to standard IEC947-2), before installation or any servicing.
 - Make sure, that no voltage is present in the installation.
 - Prevent the disconnecting device from being switched on accidentally.
 - Connect the module according to electrical diagram.
 - Locate the antenna far from metal elements (as far as possible).
 - Do not shorten the antenna.
- Danger of electrocution!**
Module installation requires a great degree of skill and may be performed only by a qualified and licensed electrician.

- Even when the module is turned off, voltage may be present on its terminals.

Note!

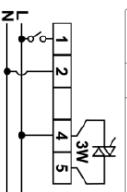
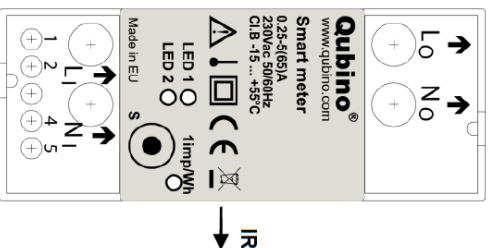
Do not connect the module to loads exceeding

recommended values. Connect the module only in accordance to the below diagrams. Improper connections may be dangerous.
Electrical installation must be protected by over current protection fuse with rated current up to 63A. It must be used according to wiring diagram to achieve appropriate overload protection of the module.

Package contents

- Smart Meter

Electrical diagram 230VAC



Notes for the diagram:

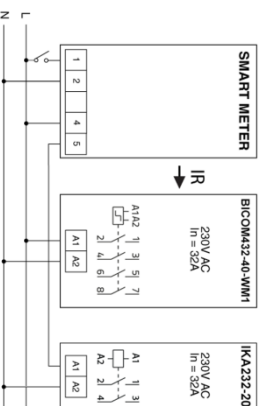
- L1** Live input
 - N1** Neutral input
 - L0** Live output
 - No** Neutral output
 - 1** Input for IR external relay/Ext. relay
 - 2** Neutral lead for input
 - 4** Live lead for External relay output
 - 5** Output for External relay (max. 3W)
 - S** Service button (used to add or remove module from the Z-Wave network).
- LED1** Green - Power on (solid) / no ID (blinking slow 1s) / Inc./Exc. mode (blinking fast 0.5s)
- LED2** Yellow on – output on (any) / Yellow off – outputs off (both)
- IR** Output for IR external relay
- ImpWh** Red - Pulse rate (On – no load indication)

Measurements

Measurement	Unit
Voltage	V
Current	I
Power – Active	W
Power – Active total Import	kWh
Power – Active total Export	kWh
Power – Reactive	var
Power – Reactive total	kvarh
Power – Apparent total	kVAh
Power Factor	PF

External relays

It is possible to connect two external relay to Smart Meter module. One controlled by built-in optical (IR) communication port on the side, second controlled by output on terminal 5.



Module Inclusion (Adding to Z-wave network)

- Connect module to power supply
 - enable add/remove mode on main controller
 - auto-inclusion (works for about 5 seconds after connected to power supply) or
 - press service button **S** for more than 2 second
- NOTE: For auto-inclusion procedure, first set main controller into inclusion mode and then connect module to power supply.

Module Exclusion/Reset (Removing from Z-Wave network)

- Connect module to power supply
 - bring module within maximum 1 Meter (3 feet) of the main controller.
 - enable add/remove mode on main controller
 - press service button **S** for more than 6 seconds.
- By this function all parameters of the module are set to default values and own ID is deleted.
If service button **S** is pressed more than 2 and less than 6 seconds module is excluded, but configuration parameters are not set to default values.

Association

Association enables Smart Meter module to transfer commands inside Z-Wave network directly to other Z-Wave modules.

Associated Groups:

Group 1: Lifetime group (reserved for communication with the main controller), 1 node allowed.

Configuration parameters

Parameter no. 7 – Input 1 switch function selection

Available config. parameters (data type is 1 Byte DEC):

- default value 4
- 0 - disabled
- 2 - IR external relay control – mono stable push button
- 3 - IR external relay control - bi stable switch
- 4 - External relay control – mono stable push button
- 5 - External relay control – bi stable switch

Parameter no. 10 - Activate / deactivate functions ALL ON / ALL OFF

Available config. parameters (data type is 2 Byte DEC):
default value: 255

- 255 - ALL ON active, ALL OFF active.
 - 0 - ALL ON is not active, ALL OFF is not active
 - 1 - ALL ON is not active, ALL OFF active
 - 2 - ALL ON active, ALL OFF is not active
- Smart Meter module responds to commands ALL ON/ ALL OFF that may be sent by the main controller or by other controller belonging to the system

Parameter no. 11 - Automatic turning off IR external relay output after set time

When IR external relay is ON it goes automatically OFF after time defined by this Parameter. Timer is reset to zero each time the module receive ON command regardless from where it comes (push button, associated module, controller,...). Available configuration parameters

- (data type is 2 Byte DEC):
- default value 0
- 0 - Auto OFF disabled
- 1 - 32535 = 1second - 32535 seconds. Auto OFF enabled with define time, step is 1s.

Parameter no. 12 - Automatic turning on IR external relay output after set time

When IR external relay is OFF it goes automatically ON after time defined by this Parameter. Timer is reset to zero each time the module receive OFF command regardless from where it comes (push button, associated module, controller,...). Available configuration parameters

- (data type is 2 Byte DEC):
- default value 0
- 0 - Auto ON disabled
- 1 - 32535 = 1second - 32535 seconds. Auto ON enabled with define time, step is 1s.

Parameter no. 13 - Automatic turning off External relay output after set time

When External relay is ON it goes automatically OFF after time defined by this parameter. Timer is reset to zero each time the module receive ON command regardless from where it comes (push button, associated module, controller,...). Available configuration parameters (data

type is 2 Byte DEC):

- default value 0
- 0 - Auto OFF disabled
- 1 - 32535 = 1second - 32535 seconds. Auto OFF enabled with define time, step is 1s.

Parameter no. 14 - Automatic turning on External relay after output set time

When External relay is OFF it goes automatically ON after time defined by this parameter. Timer is reset to zero each time the module receive OFF command regardless from where it comes (push button, associated module, controller,...). Available configuration parameters (data type is 2 Byte DEC):

- default value 0
- 0 - Auto ON disabled
- 1 - 32535 = 1second - 32535 seconds. Auto ON enabled with define time, step is 1s.

Parameter no. 40 – Power reporting in Watts on power change

Set value means percentage, set value from 0 – 100 = 0% - 100%. Available configuration parameters (data type is 1 Byte DEC):

- default value 10
- 0 - reporting disabled
- 1 - 100 = 1% - 100% Reporting enabled. Power report is send (push) only when actual power in Watts in real time changes for more than set percentage comparing to previous actual power in Watts, step is 1%.

NOTE: if power changed is less than 1W, the report is not send (pushed), independent of percentage set. When reporting Watts, module will automatically reports also V (Voltage), A (Amperes). Power factor, kVar (Reactive Power).

Parameter no. 42 – Power reporting in Watts by time interval

Set value means time interval (0 – 32535) in seconds, when power report is send. Available config. parameters (data type is 2 Byte DEC):

- default value 0
- 0 - Reporting Disabled
- 1 - 32535 = 1 second - 32535 seconds. Reporting enabled. Power report is send with time interval set by entered value. When reporting Watts, module will automatically reports also V (Voltage), A (Amperes). Power factor, kVar (Reactive Power).

Parameter no. 45 – Reset Power counters

Available config. parameters (data type is 1 Byte DEC):

- default value 0
- 0 - no function
- 1 - reset counter 1 – kWh
- 2 - reset counter 2 – kVAh
- 4 - reset counter 3 – kVAh

