Smart Dupline®
Wireless Relay Output module
Type SHDWRE16AE230

- **Wireless relay output module for building automation application**
- **Designed to fit into the eurobox**
- **Power supply 230 VAC**
- **Wireless transmission based on IEE802.15.4 @ 2.4 GHz**
- **Programmable routing function**
- **Load: 16A / 250VAC**
- **Withstands 130A inrush current**
- **Energy measurement: kWh**
- **Instantaneous variables readout: current, voltage, power**

Product Description

The SHDWRE16AE230 is a wireless module with a single relay output and energy measurement. Single phase variables: VLN, A, W. Energy measurements: total kWh. The measured values are then logged in the SH2WEB24. It is part of the smart-house concept and can be used with all the functions supported by the smart-house controller.
When an activation radio command is received, the output turns ON and remains ON until a deactivation radio command is recieved. It must always be coupled to an SH2WBU230 module.

Ordering Key

SH D W RE 16A E 230

- **SH** — **Smart-house**
- **D** — **Decentral module**
- **W** — **Wireless**
- **RE** — **Relay**
- **16A** — **Resistive load**
- **E** — **Energy measurement**
- **230** — **Power supply**

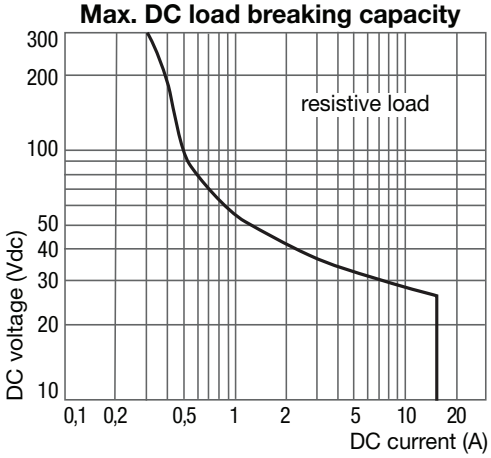
Type Selection

Relay max. Load	Relay Output	Supply: 115 to 240 VAC
16A	1 SPST relay	**SHDWRE16AE230**

Output Specifications

Output	1 SPST relay
Contact ratings (AgSnO2)	μ (micro gap)
Resistive load AC 1	16 A/250 VAC
Minimum load (recommended)	100mA/12 V
Lifetime	See table to the right
Operating frequency	≤60 operations/minute

Max. DC load breaking capacity



Relay Data VAC	
Load	**Typ. N. of Operations**
250 V, 12A, cos φ=1	1.0 x 10^5
250 V, 8A, cos φ=1	3.5 x 10^5
250 V, 4A, cos φ=1	5.0 x 10^5
250 V, 3A, cos φ=1	7.5 x 10^5
230 V, 550 W filament lamps Iin ≤ 40 Apeak Ioff = 2.5 A	2.0 x 10^5
230 V, 1000 W filament lamps Iin ≤ 71.5 Apeak Ioff = 4.5 A	7.0 x 10^4
230 V, 900 W fluorescent tubes (25 x 36W) parallel compensated, 30 μF	1.0 x 10^4
230 V, compressor Iin ≤ 21 Apeak Ioff = 3.5 A cos φ = 0.5	1.7 x 10^5
250V, 8A, cos φ = 0.3	1.0 x 10^5

WiDup Specifications

Bus	Wireless dupline
Frequency	IEE 802.15.4, @ 2.4 Ghz
Diagnostic	1. Field strength 2. Network activites 3. Devices' presence
Network Topology	Star with max one wireless repeater
Antenna	Internal
Transmission power	According to IEEE 802.15.4
Sensitivity	According to IEEE 802.15.4
Number of slave nodes	Up to 250
Transmission range	<100 m in the open air

Supply Specifications

Power supply	Overvoltage cat. II (IEC 60664-1, par. 4.3.3.2)
Rated operational voltage	115/240 VAC
Rated impulse voltage	2.5 kV
Rated operational power	1 W, 2.5 VA
Power on delay	Typ. 2 s

General Specifications

Installation category	Cat. II
Insulation voltage	2 kVAC rms (3 mm)
Address assignment	The address assignment is automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be filled in the Sx tool.
Fail-safe mode	In case of interruption of the smart-house connection, the channel will be forced into a specific optional status as described below.
Environment	
Degree of protection	
Front	IP 50
Screw terminal	IP 20
Pollution degree	2 (IEC 60664-1, par. 4.6.2)
Operating temperature	-20° to +50°C (-4° to 122°F)
Storage temperature	-50° to +85°C (-58° to 185°F)
Humidity (non-condensing)	20 to 80% RH
LED's indication	
Power LED	1 green
Output LED	1 blue

Housing	
Dimensions	43 x 43 x 25 mm
Material	Noryl
Weight	150 g
Approvals	cURus according to UL60950
CE Marking	Yes
EMC	
Immunity	EN 61000-6-2
- Electrostatic discharge	EN 61000-4-2
- Radiated radiofrequency	EN 61000-4-3
- Burst immunity	EN 61000-4-4
- Surge	EN 61000-4-5
- Conducted radio frequency	EN 61000-4-6
- Power frequency magnetic fields	EN 61000-4-8
- Voltage dips, variations, interruptions	EN 61000-4-11
Emission	EN 61000-6-3
- Conducted and radiated emissions	CISPR 22 (EN55022), cl. B
- Conducted emissions	CISPR 16-2-1 (EN55016-2-1)
- Radiated emissions	CISPR 16-2-3 (EN55016-2-3)

Electrical Values Readout

Rated values	
Current	0 to 32,000 mA
Voltage	103 to 260,0 V
Power	0.1 to 6500,0 W
Energy	0.1 to 99999999.9 kWh with roll over

Wire connections

Power supply	Brown, blue = 2 x 1.5 mm^2, 250 V isolation, single core, 150 mm
Output	Orange = 2 x 1.5 mm^2, 250 V isolation, single core, 150 mm

Mode of Operation

The SHDWRE16AE230 is fully programmable via the Sx tool: the output can be individually associated to one of the functions supported by the smart-house system.

Fail/safe condition
The output status of the relays, when the wireless bus is not working, is programmed via the Sx tool and the user can choose between the following options:

1. Output always OFF
2. Output always ON
3. The output maintains the status it had before the disconnection
4. The output runs in a cycle with programmable on and off periods: the user can set both the off and on period from 1 to 255 minutes.

The factory setting is output always OFF.

Coding/Addressing
No addressing is needed since the module is provided with a specific identification number (SIN): the user has only to insert the SIN number in the Sx tool when creating the system configuration.

Faulty lamps recognition
If the measured current is lower than 20mA, the relay module gives a message of faulty load (the connected lamp might be broken). This information can be read by the Sx2WEB24, via smart-dupline and then shown on the Sx Tool if connected to the Sx2WEB24.

Energy measurement
The electrical values measured by the SHDWRE16AE230 are: current, voltage, power, energy. These readouts are sent to the Sx2WEB24 and logged there, the instant values and the logged ones are accessible to the user by connecting to the webserver resident in the Sx2WEB24.

Transmission range

The main factors that influence the transmission range of the SHDWRE16AE230 are the antenna location of the receivers and transmitters, the building structure and the number of obstacles in the connection path.
Other factors are noise sources (wi-fi routers, micro oven, blue tooth devices,…) that affect the receiver and dead spots caused by signal reflection from nearby conductive objects.
Since the anticipated transmission range depends on these system conditions, range tests should be performed before a specific range is determined for an application.
The following transmission ranges are to be viewed as general guidelines:

Device Position	Operating Distance
In the open air	Approx. 100m
Plasterboard/wood	Approx. 30 m Max. 5 walls
Tile and cellular concrete	Approx. 20 m Max. 3 walls
Reinforced concrete walls/ceilings	Approx. 10 m Max. 1 ceiling/wall

The transmission range is limited by:
- insulation material with metal foil
- intermediate ceilings with metal or carbon fibre panels
- lead glass or metal-coated glass
- mounting wall transmitters on metal walls

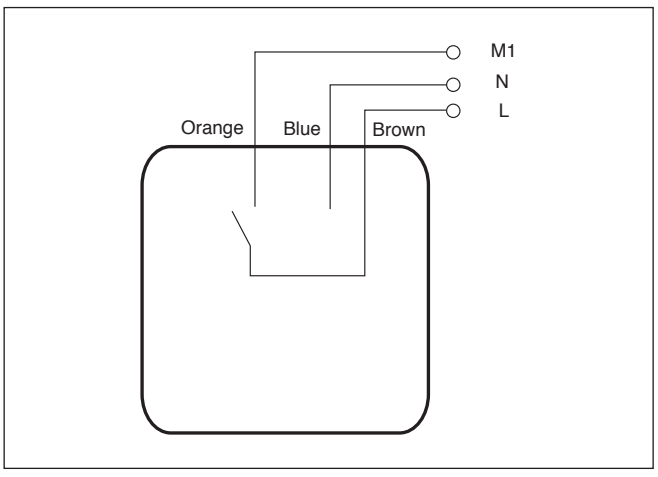
For more information about how to install a wireless network, please read here (link).

LEDs Indication

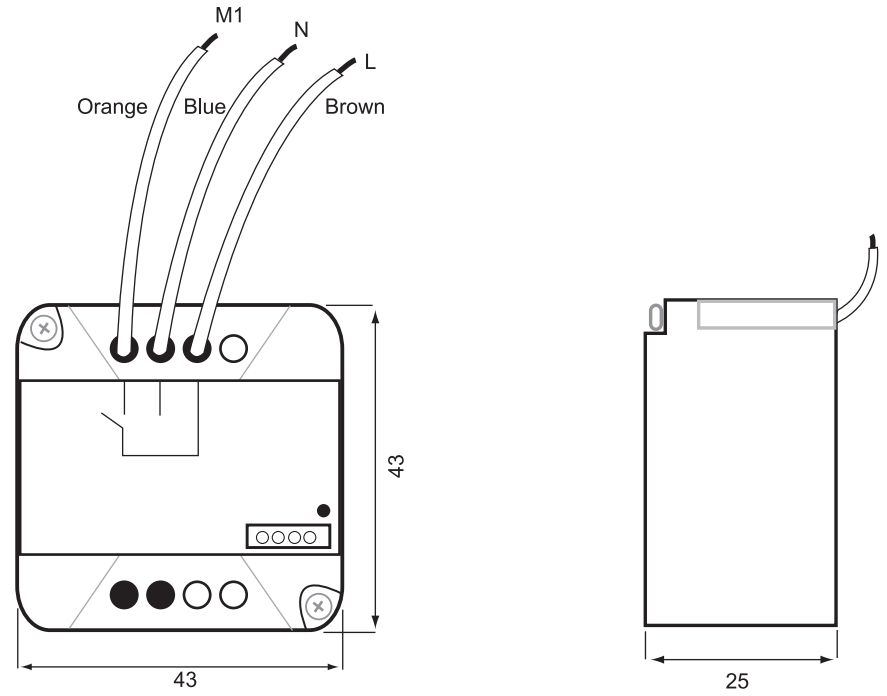
Green LED:
Power and Output status
ON: Supply ON and output OFF
Blinking: Supply ON and output ON
OFF: Supply OFF

Blue LED:
Short blink: Sending data when associated to a SH2WBU230
Long blink: Sending data when not associated to any SH2WBU230 or when receiving a network configuration
ON: During network configuration when configured as a router

Wiring Diagrams



Dimensions (mm)



Derating Curve