

# Smart Dupline® Wireless Energy Meter Type SHJWEM16Axxx

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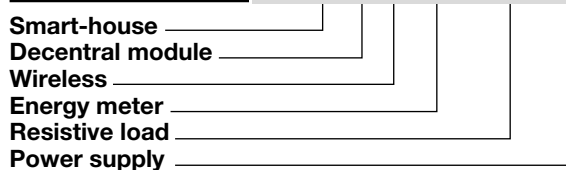
- Wireless energy meter
- Class 2 (kWh) according to EN62053-21
- Designed to fit into the eurobox
- Power supply 230 VAC and 115 VAC
- Wireless transmission based on IEEE802.15.4 @ 2.4 GHz
- Programmable routing function
- Load: 16A / 250 VAC
- Spring terminals
- Energy measurement: kWh
- Instantaneous variables readout: A, V, W, Wdmd, VA, var, PF

## Product Description

The SHJWEM16Axxx is a wireless energy meter. Single phase variables read: A, V, W, Wdmd, VA, var, PF. Energy measurements: total kWh. The measured values are then logged into

the Sx2WEB24. It is part of the Smart Dupline® system and can be used with all the functions supported by the Sx2WEB24 master unit. It must always be coupled to an SH2WBU230x module.

## Ordering Key **SH J W EM 16A 230**



## Type Selection

Supply: 220...240 V ±10%

Supply: 110...120 V ±10%

SHJWEM16A230

SHJWEM16A115

## Supply Specifications

<b>Power supply</b>	Overvoltage cat. II (IEC 60664-1, par. 4.3.3.2)
Rated operational voltage	
SH...230	220...240 VAC ±10%
SH...115	110...120 VAC ±10%
<b>Rated impulse voltage</b>	2.5 kV
<b>Rated operational power</b>	3 VA
<b>Power on delay</b>	Typ. 2 s

## WiDup Specifications

<b>Bus</b>	Wireless dupline
<b>Frequency</b>	IEEE 802.15.4, @ 2.4 Ghz
<b>Diagnostic</b>	1. Field strength 2. network activities 3. Devices' presence
<b>Network Topology</b>	Star with max two wireless repeaters
<b>Antenna</b>	Internal
<b>Transmission power</b>	According to IEEE 802.15.4
<b>Sensitivity</b>	According to IEEE 802.15.4
<b>Number of slave nodes</b>	Up to 250
<b>Transmission range</b>	< 700 m in the open air

## Electrical Values Readout

<b>Rated values</b>	
A (direct)	0 to 16000 mA
V	
SHJWEM16A115	99 to 132.0 V
SHJWEM16A230	198 to 264.0 V
W	3.0 to 4500.0 W
kWh	0.1 to 99999999.9 kWh with roll over
Wdmd	0.1 to 4500.0 W
VA	0.1 to 4500.0 VA
var	0.1 to 4500.0 var
PF	-0.99 to 1.000 PF

## Input specifications

<b>Rated Inputs</b>		<b>Energy additional errors</b>	
Current type	1-phase loads, direct connection	Influence quantities	According to EN62053-21
Current range	16A	<b>Temperature drift</b>	≤200ppm/°C
Nominal voltage	230VLN AC (SHJ...230), 120 VLN (SHJ...115)	<b>Sampling rate</b>	4096 samples/s @ 50Hz 4096 samples/s @ 60Hz
<b>Accuracy</b>	(@25°C ±5°C, R.H. ≤60%, 50 Hz, 230 VAC) I <sub>min</sub> =0.15A; I <sub>b</sub> : 3A, I <sub>max</sub> : 15A U <sub>n</sub> : 230VLN ±10%	<b>Memory energy storage</b>	
Energies		Energy	10 <sup>10</sup> cycles. Energy value is saved every time the less significant digit increases.
Active energy	Class 2 according to EN62053-21, (Class A (kWh) according to EN50470-3)	Programming parameters	10 <sup>10</sup> cycles. When a parameter is modified, only the relevant memory cell is overwritten
Reactive energy	Class 2 according to EN62053-23	<b>Voltage Overloads</b>	
Start-up current:	15mA	Continuous	1.2 U <sub>n</sub>
<b>Resolution</b>		For 500ms	2 U <sub>n</sub>
Current	0.1/0.001 A		
Voltage	0.1/0.1 V		
Power	0.01 kW or kVar/ 0.1 W or var		
Frequency	0.1 Hz/0.1Hz		
PF	0.01/ 0.001		
Energies (positive)	0.01 kWh or kvarh / 0.1 kWh or kvarh		
Energies (negative)	0.01 kWh or kvarh / 0.1 kWh or kvarh		

## General Specifications

<b>Address assignment</b>	Automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be fitted in the Sx Tool	<b>CE Marking</b>	Yes
<b>Environment</b>		<b>EMC</b>	
Degree of protection	IP 20	Immunity	EN 61000-6-2
Pollution degree	3 (IEC 60664)	- Electrostatic discharge	EN 61000-4-2
Operating temperature	-20° to +50°C (-4° to 122°F)	- Radiated radiofrequency	EN 61000-4-3
Storage temperature	-50° to +85°C (-58° to 158°F)	- Burst immunity	EN 61000-4-4
Humidity (non-condensing)	20 to 90% RH	- Surge	EN 61000-4-5
<b>LED's indication</b>		- Conducted radio frequency	EN 61000-4-6
Power LED	1 green	- Power frequency magnetic fields	EN 61000-4-8
WiDup LED	1 blue	- Voltage dips, variations, interruptions	EN 61000-4-11
<b>Housing</b>	40.8 x 45.5 x 21.5 mm	Emission	EN 61000-6-3
<b>Weight</b>	65 g	- Conducted and radiated emissions	CISPR 22 (EN55022), cl. B
<b>Approvals</b>	cULus, according to UL60950; R&TTE	- Conducted emissions	CISPR 16-2-1 (EN55016-2-1)
		- Radiated emissions	CISPR 16-2-3 (EN55016-2-3)

## LEDs Indication

**Green LED:**

**Power status**

ON: Supply On

OFF: Supply OFF

when receiving a network configuration

On: During network configuration when configured as a router

**Blue LED: WiDup**

Short blink: Sending data when associated to a SH2WBU230x

Long blink: Sending data when not associated to any SH2WBU230x or

## Mode of Operation

**Energy measurement**

The electrical values measured by the SHJWEM16Axxx are: A, V, W, Wdmd, VA, var, PF, kWh. 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.

**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.

## Transmission range

The main factors that influence the transmission range of the SHJWEM16Axxx 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:

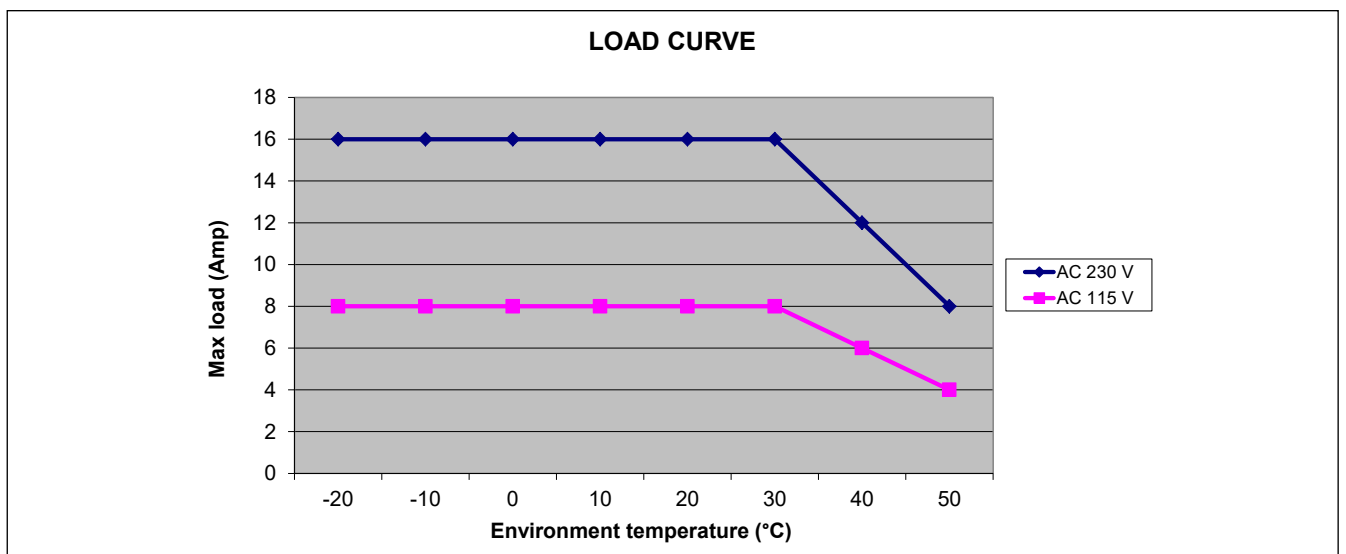
Device Position	Operating Distance
In the open air	Approx. 700 m
Plaster-board/wood	Approx. 30 m Max. 5 walls
Tile and cellular concrete	Approx. 20 m Max. 3 walls
Reinforced concrete walls/ceilings	Approx. 10 m Max. 1 ceiling/wall

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

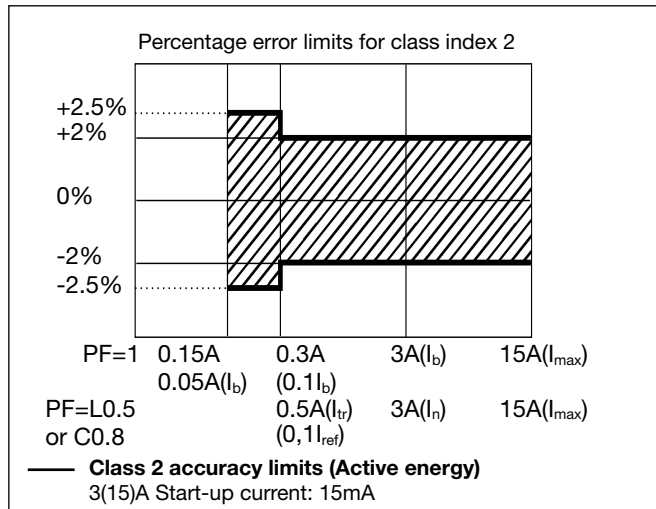
For more information about how to install a wireless network, please read here (link).

## Derating Curve

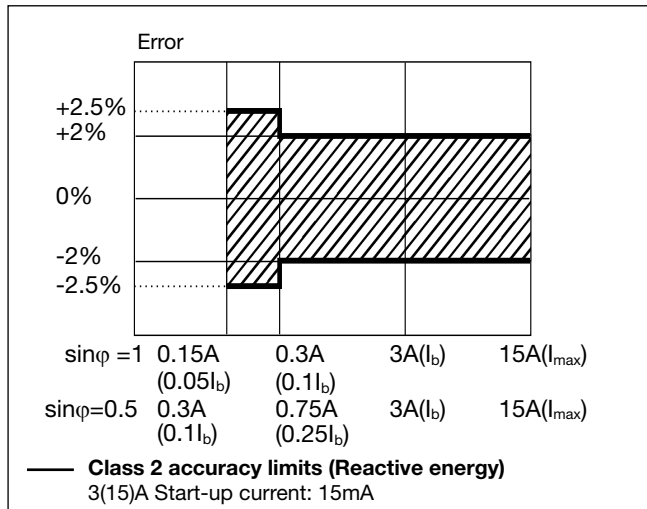


## Accuracy (according to EN62053-21 and EN62053-23)

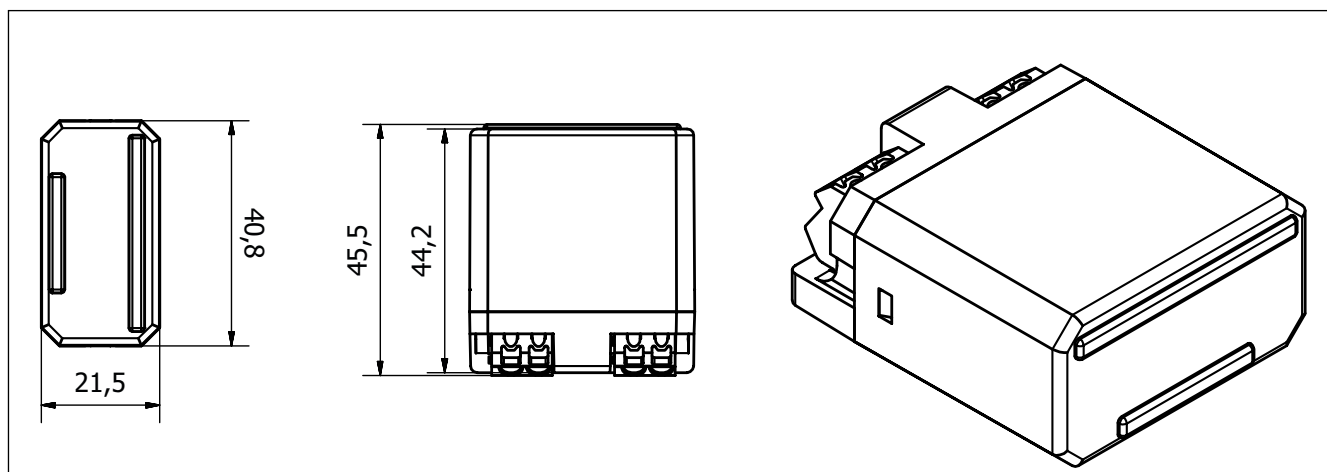
kWh, accuracy (RDG) depending on the current



kvarh, accuracy (RDG) depending on the current



## Dimensions



## Wiring Diagram

