

Smart load shedder

Cat. number : 4 121 72 – 1 991 20



Only suitable for single-phase installation.

Requires beforehand installation of a “with Netatmo” connected starter pack or a Control module (gateway) and at least one product from “with Netatmo” offer offering the measurement plus command functions (e.g. : connected socket, connected cable outlet, connected contactor ...)

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1. DESCRIPTION - USE

Use:

. Allows the user to save money by decreasing his electrical contract expenses while maintaining his comfort by avoiding power supply shutdowns based on appliances priorities. Some of them will never be powered off as considered as "high priority". So, this module can measure the house total electricity consumption via the included closed current transformer and to display it on Home + Control smartphone app. The load shedder is thus able to detect when the subscribed power (or the maximum consumption threshold defined in the App) is about to be exceeded and to intelligently turn off loads previously connected to “with Netatmo” devices such as; Connected cable outlets, Connected contactors, Connected power outlets... in accordance with predefined priorities. These priorities can be easily customized in the smartphone app. Then, the smart load shedder will automatically turn back on these loads after the drop of the consumption peak.

This connected version gets the following functions:

- Real-time measurement: automatically reads the total electrical consumption of the home.
- History of electricity consumption, available in the Home + Control app.
- Turn off/back on loads one by one for a very precise management of the load shedding function.
- Set-up of the subscribed power / maximum consumption threshold (which act as a load shedding threshold) and customization of load shedding priorities between loads via the Home + Control app.

Technology:

. Single-phase current measurement, by field effect using a closed current transformer (delivered with the smart load shedder) and data transmission by radio frequency to the connected network.

2. RANGE

Width:

. 1 module. 17,7 mm wide.

Rated primary current:

. I_{pn} = 80A AC single phase

1. DESCRIPTION – USE (continued)

Power consumption:

. 0.3W Max

Rated voltage:

. 100V to 240V AC

Rated frequency:

. 50Hz / 60Hz

Configuration and use:

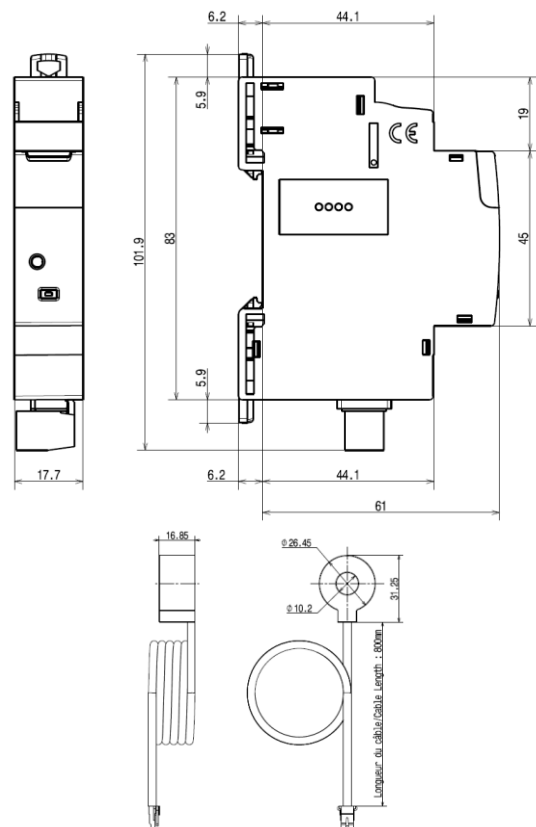
Can be used with:

- Legrand smartphone app
« HOME + CONTROL »

. Available for free on Google Play or App Store



3. OVERALL DIMENSIONS



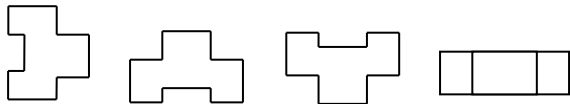
4. PREPARATION - CONNECTION

Mounting:

. On symmetrical rail EN / IEC 60715 or DIN 35.

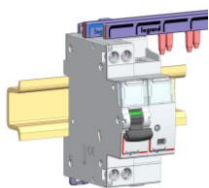
Operating position:

. Vertical, Horizontal, Flat.



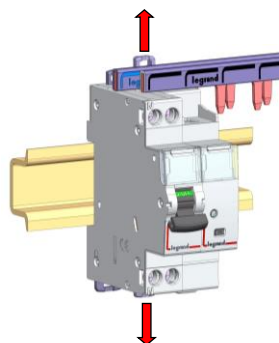
Row positioning:

. The product shape and the positioning of the terminals allow the passage of single-line, three-lines and plug-in supply busbars in the upper part of the product. Then, it is possible to freely choose the position of the Smart load shedder in the row and to connect by supply busbar the other devices put on the same DIN rail.

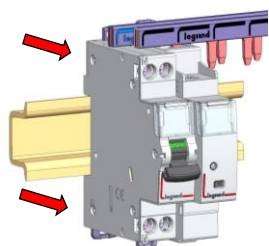


Module maintenance:

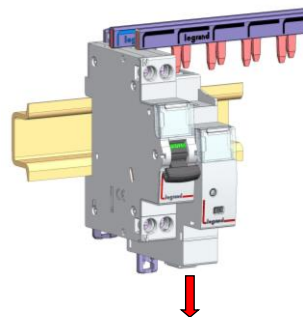
. It is possible to switch a Smart load shedder in the middle of a row supplied with an upstream busbar without disconnecting the other devices on the same DIN rail.



1. Unclip the clamps to put it in open position



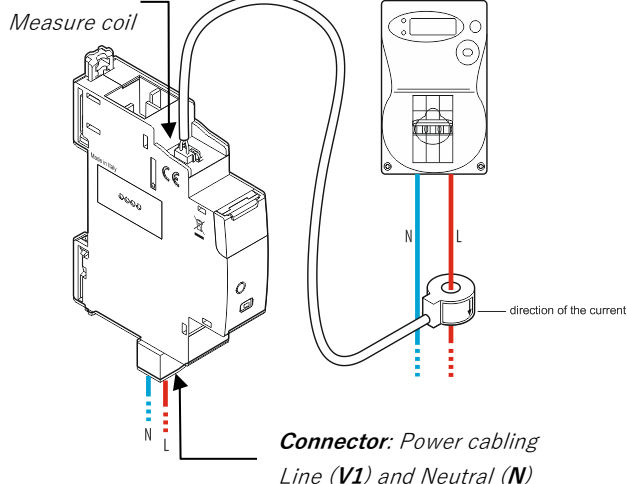
2. Pull the device forward in order to release it from the DIN rail



3. Pull the device downward in order to completely release it from the prongs of the busbar

4. PREPARATION - CONNECTION (continued)

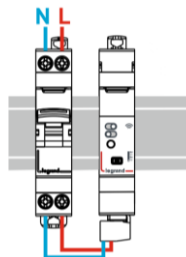
Connector :



. The measuring coil of the smart load shedder must be installed on the main power supply electrical line to get the total consumption information.

. Wire the Smart load shedder after a circuit breaker C2 to C16 according to the cross section of the used cables.

. The measurement coil must simply be clipped at the upstream terminal of the device (the word COIL has been printed near to this terminal to easily spot it).



Recommended tools:

- . For the terminals:
Screwdriver flat-blade 3.5 mm
- . For clamping:
Screwdriver flat-blade (5,5 mm or less).

Connection:

- . Power screw terminals:
 - Terminal type: cage
 - Depth: 9 mm
 - Stripping length recommended: 8 mm
 - Screw head: slotted 3.5 mm
 - Type of screw: M3
 - Tightening torque: 0.5 Nm

Conductor type:

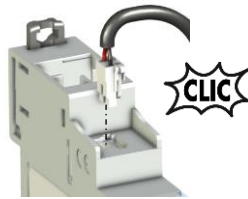
- . Copper cables

	Without ferrule	With ferrule
Rigid cable	1x (1 to 2.5mm ²) 2 x (1 to 1.5mm ²)	-
Flexible cable	1x (1 to 2.5mm ²) 2 x (1 to 1.5mm ²)	1 x (1 to 1.5mm ²)

4. PREPARATION - CONNECTION *(continued)*

Measure coil connection:

Insert the measure coil connector into the housing provided on the Smart load shedder until it locks (clips).



NB: If necessary, to disconnect it, use a small screwdriver on the clips.

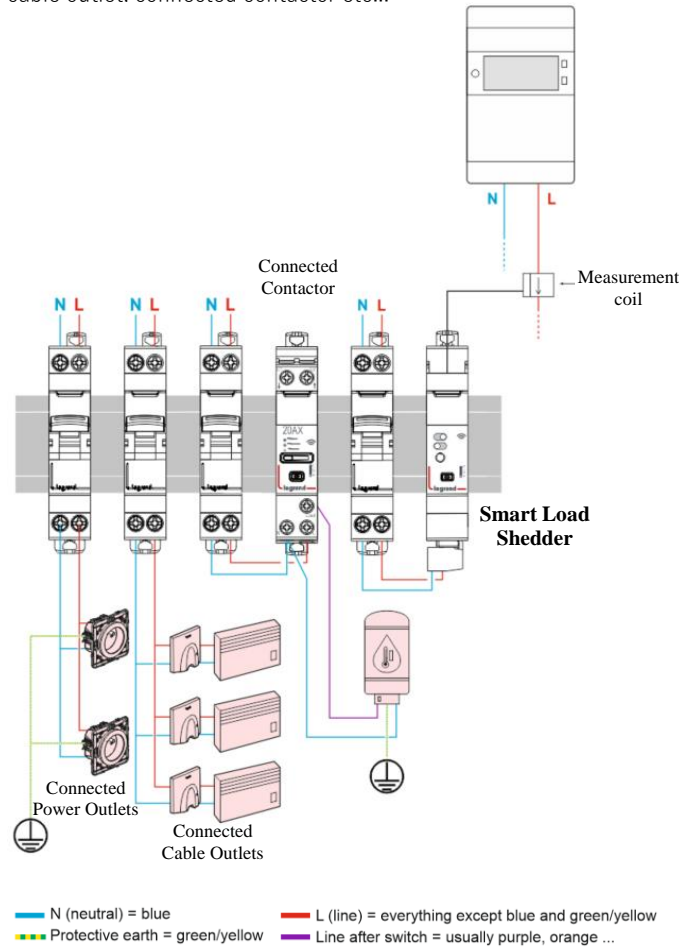
Capacity of the measure coil:

Cable Cross section	1.5mm ²	2.5mm ²	6mm ²	10mm ² to 25mm ²
Number of flexible or rigid cables	8	5	3	1

Wiring diagrams:

. Example of wiring diagram in an installation:

As a reminder, the load shedding function requires the installation of a connected smart load shedder as well as at least one device from the "with Netatmo" offer with the measurement plus command functions, e.g. : connected power outlet, connected cable outlet, connected contactor etc...



4. PREPARATION - CONNECTION *(continued)*

Real-time and historical data visualization:

. Via smartphone with the Home+Control app.

Operating algorithm of the smart load shedder:

. The maximum power subscribed to the energy supplier must be filled in the smartphone app..

The instantaneous overconsumption threshold from which the device goes into load shedding mode (automatically turn off a power line) is set by default at 130%.

This value can be adjusted from 100% at least to 200% in steps of 10% in the smartphone app.

Minimum time before turn back ON a load:

. The smart load shedder checks every 10s the total instantaneous consumption level to check if this level allows it to turn back on the previously turn off loads.

Priority of loads to be shed:

The list of loads being allowed to be turned off and their priorities must be configured in the smartphone app.

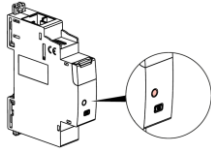
When the instantaneous total consumption goes over the threshold, the load shedding operation takes place according to the defined priorities for loads to be turned off until the total consumption goes under this threshold.

ⓘ: The load shedder does not turn off loads whom consumption is under 50W. For obvious reasons, the "fridge" and "Wi-Fi box" circuits cannot be turned off.

4. PREPARATION - CONNECTION *(continued)*

Visualization of the setup of the device:

. Via the LED on the front face



In configuration:

Color	Status	Signification
 Red	Fixed	Temporary status. Device not connected to the radio network
 Green	Fixed	Temporary status. Device correctly paired to the radio network (when the radio network is still open)
 OFF	OFF	Normal status. Device paired to the radio network (when the radio network is closed)

Operating :

Color	Status	Signification
 OFF	OFF	No load shedding in progress
 Red	Blinking	. Three phase installation: Check whether the connected load shedder is connected to the same phase as the measuring coil. . Any installation: Strong phase shift between voltage and current on the line caused by a load with an unfavorable power factor (Motor, swimming pool pump, certain lighting, etc.)
 Blue	Blinking	Effective load shedding (loads to be shed are set to OFF in order of priority until they are below the power subscribed to the supplier)

Important information about the TOTAL measurement:

- . Maximum 1 load shedder per installation.
- . Several measuring coils can be put on the general power supply electrical line (total consumption), eg the coil of the Connected Ecometer or the one of the Connected Energy Meter.
- . If the installation gets several connected devices which measure the total consumption, then, this information will be displayed only once a time in the smartphone app following a device priority list:
 - The connected Ecometer,
 - The smart load shedder,
 - The connected energy meter.

4. PREPARATION - CONNECTION *(continued)*

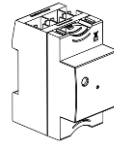
Important information:

- . Maximum 1 load shedder per installation.
- . The connected load shedder does not support photovoltaics.

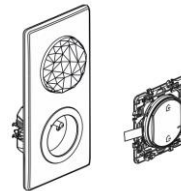
Add a Smart Load Shedder in a connected installation (several steps):

. 1/ Beforehand, to create a connected installation you must install:

Either a gateway module

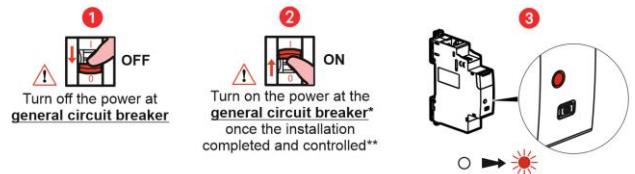


Or a connected starter pack (drawing of principle, works with anykind of "with Netatmo" connected starter pack).



Or any kind of « with Netatmo » gateway

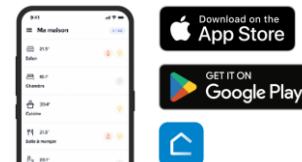
. 2/ Beforehand, the general circuit breaker must be turned OFF. Then after wiring step done, installation controlled, refit the front plate so that no active live part is accessible. Then the general circuit breaker can be powered back ON to simultaneously power devices and allow them to be connected to the network.



* In order to restart all connected products at the same time.
** : After wiring the installation, refit the front plate so that no active live part is accessible.

. 3/ Finalize the installation in the Legrand Home + Control app

Download the Home + Control App and follow the instructions for adding the connected product in your setup.



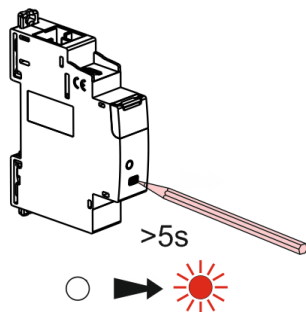
You also have the option of controlling your installation via a voice assistant and can customize your scenarios via the Home + Control App.



4. PREPARATION - CONNECTION *(continued)*

Smart load shedder resetting to remove it from a connected installation

. Press and hold over 5 seconds on the setting button until the LED on the setting button be fixed red. It is no longer paired with the Gateway module / Gateway power outlet.

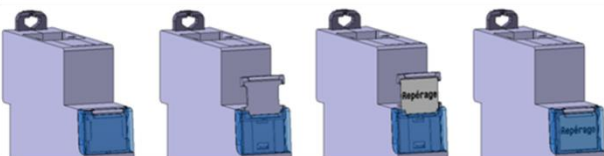


Other configurations & actions

. All other features and settings such as scenarios etc... are directly explained step by step in the Home + Control app.

Labelling:

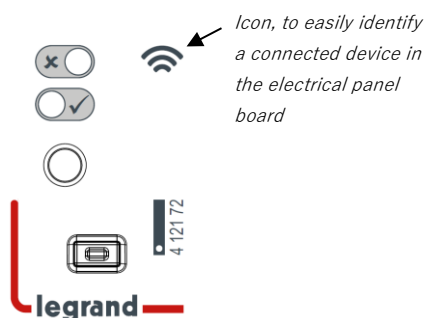
. Circuit identification thanks to a label inserted in the label holder situated on the front face of the product.



5. GENERAL CHARACTERISTICS

Marking of the Smart Load Shedder:

Markings of the front side:



5. GENERAL CHARACTERISTICS *(continued)*

Characteristics of the measure coil:

Maxi measured primary current:

. 80A AC

Transformation ratio:

1000 :1

Rated short-time thermal current:

. $I_{th} = 3kA \text{ rms} / 1s$

Rated dynamic current:

. $I_{dyn} = 9kA$

Rated insulation level:

. 3kV rms 50Hz/1min

Class of insulation:

Measure sensor Class A following EN/IEC 61869-2

Measurement Accuracy:

Module + coil measurement chain accuracy:
+/-1% for a measured current >2A and $\cos \varphi \geq 0.8$

Rated impulse withstand voltage (Uimp):

4kv

Overvoltage category:

. III

Degree of pollution:

. 2

Influence of altitude:

. No influence up to 2 000 m

Rated frequency :

. 50 / 60Hz

Rated voltage of use (Ue):

. $U_e = 100 \text{ to } 240 \text{ V} \sim$

Recommandations :

. For the protection of the Smart load shedder, it is recommended to use a circuit breaker C2 to C16 according to the cross section of the used cables.

Characteristics of the radio interface:

. Standard IEEE 802.15.4
. Frequencies 2,4 à 2,4835Ghz
. Transmitter output power <100mW

Protection degree:

. Protection index of terminals against direct contacts: IP2X (wired device).
. Protection index of the front face against direct contacts: IP3XD
. Class II, front panel with front plate.
. Class of protection against mechanical impacts IK04

5. GENERAL CHARACTERISTICS *(continued)*

Plastic material:

- . Self-extinguishing polycarbonate.
- . Classification UL 94: V0

Ambient operating temperature:

- . Min. = + 5 ° C Max. = + 45 ° C.

Ambient storage temperature:

- . Min. = - 40 ° C Max. = + 70 ° C.

Average weight:

- . 91g

Volume when packed:

- . 0,62 dm³.

6. COMPLIANCE AND APPROVALS

Compliance to standards:

- EN/IEC 61010-1

Environment respect – Compliance with European Union Directives:

- . Compliance with Directive 2002/95/EC of 27/01/03 known as "RoHS" which provides for a restriction on the use of dangerous substances such as lead, mercury, cadmium, hexavalent chromium and polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) brominated flame retardants from 1st July 2006
- . Compliance with the Directive 91/338/EEC of 18/06/91 and decree 94-647 of 27/07/04
- . Compliant with regulation REACH

Plastic materials:

- . Halogen-free plastics.
- . Marking of parts according to ISO 11469 and ISO 1043.
- . ISO 7000: 2004, Graphical symbols to be used on equipment - Index and synopsis

Packaging:

- . Design and manufacture of packaging in accordance with Decree 98-638 of 20/07/98 and Directive 94/62 / EC.