MY HOME – Load control management

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The end of the black-out

The My Home load control management system manages the maximum power used, by automatically disconnecting the least important appliances in case of overload.

The system:
- Manages up to 63 loads.
- Displays on the display interfaces (e.g., Local Display, Touch Screen, Webserver) the instantaneous and cumulative consumption on hourly, daily, and monthly basis, of the controlled phase. In addition, thanks to the actuator with sensor, it is possible to measure the actual consumption of the controlled load.
- It gives the possibility of disabling or re-enabling, using the display interfaces, the priorities configured based on the changed needs of the customer.
- It gives the possibility of checking on the display interfaces the correct operation of the load using the measurement of the earth leakage current absorbed by the same.
- Its devices (central unit and actuators) only require the space of one DIN module. This ensures optimisation of spaces inside the distribution boards.
- By configuring the actuators of the load control system in automation mode, it is possible to use display interfaces to set the time delays for the activation of the loads at set times.

Dedicated icon on the screen of the touch screen

Its devices (central unit and actuators) only require the space of one DIN module. This ensures optimisation of spaces inside the distribution boards.
Energy management

- Energy consumption display icon
- Load control management icon
- Diagnostic icon
- Power consumption screen (instantaneous / cumulative)
- Monthly power consumption graph
- Controlled loads screen
- Controlled load consumption display screen (with item F522)
Operation

Using the external toroid, the central unit measures the power used by the loads connected and compares it with the value preselected during the installation (using the configurators it is possible to select powers between 1.5 and 18 kW, with tolerances up to +/- 20%). An actuator is associated to each appliance being controlled. The actuator receives the information from the central unit and disconnects the load from the network in case of overload.

The disconnection sequence of the actuators is defined during the installation using a simple configuration operation to be carried out on the devices themselves.

The central unit gives the possibility of managing up to 63 priority levels, and a number of devices depending on the available supply current.

In the example shown, the oven, the microwave oven, and the washing machine represent the loads controlled using actuators, while the refrigerator, which operation is imperative that is not interrupted, is connected to his socket without actuator.

In case of overload, the first device that disconnects is the one considered the least important by the user, in the example the oven, which actuator has configurator no. 1. The microwave is on the other hand the most important device, and the corresponding actuator has configurator no. 3. This load therefore only disconnects after the oven and the washing machine.

The user can reactivate the disconnected device at any time using the actuator pushbutton or the touch screen. In this case, if the overload condition still exists, the central unit will enable the operation of the selected load, but will disconnect the subsequent loads starting from the least important, until the overload situation is resolved.

The operating status of the loads is notified both by the actuators and the touch screens.

By configuring the actuators of the load control management system also in automation mode, it is possible to use the touch screen to set the time delays for the activation of the loads at set times.
DISPLAY FUNCTION
The central unit for load management is capable of measuring the consumption of the controlled line using the toroid supplied. The information is displayed on the touch screens, local displays, and on the web pages of the web server and the energy data logger.

The processing and accounting functions are:
- instantaneous consumption of the controlled line;
- hourly, daily, monthly and last 12 months cumulative consumptions.

DIAGNOSTIC FUNCTION
Thanks to the actuator with probe (Item F522), it is possible to display, in addition to consumptions, also the diagnostic, using the additional toroid (item 3523) of the controlled load.
Device selection criteria

CENTRAL UNIT FOR LOAD MANAGEMENT F521

The device is capable of measuring the input power from the electric system and to control the status of the actuators of the load management system, to prevent the risk of tripping of the power meter. The central unit manages up to 63 appliances or electric loads per each phase, measures currents and voltages, and processes these data to provide energy and power information.

ACTUATOR 16 A WITH CURRENT PROBE - ITEM F522

The device is an actuator with an integrated current probe for the measurement of controlled load consumptions (instantaneous consumption and 2 independently resettable energy totalizers), and is capable of performing both ENERGY MANAGEMENT and automation functions.

When configured in ENERGY MANAGEMENT mode, it gives the possibility of measuring the load input power, the power and the earth leakage current (through the connection of an external toroid, item 3523).

The actuator is suitable for installation inside distribution boards and switchboards and requires the space of 1 DIN module.
ACTUATOR 16A F523

The device is an actuator capable of performing both energy management and automation functions. The actuator is suitable for installation inside distribution boards and switchboards and requires the space of 1 DIN module.

FLUSH MOUNTED ACTUATOR 16 A ITEMHC/HS/HD/L/N/NT4672N

Actuator conceived for installation in Living, Light, Light Tech and Axolute flush mounted supports, intended for the automation and/or ENERGY MANAGEMENT functions. The device has:

- a local load forcing pushbutton;
- a red/green two-colour LED for the notification of the status of the actuator;
- central unit for load management red disabling signalling LED.

LOAD CONTROL PANEL HD/HC/HS/L/N/NT4673

The load control panel is a device that enables displaying the status of the loads controlled by the load control central unit, item F521, and force their operation independently from the central unit itself. It is therefore possible to:

- Force the priority of the load during normal operation. In this case the central unit cannot disable the load for 4 hours.
- Re-enable a load disabled by the central unit, the duration of this operation lasts for 4 hours, unless the disabling key is pressed manually.

The functions that can be performed by the load control panel can also be performed by Local Display (HD/HC/HS/L/N/NT4685). With Local Display it is however possible to manage up to 20 loads.
Building Layout
The BUS system layout for the installation of Load Control Management System and the Display of Consumptions System offers the following advantages:

- Both for new systems, and installation in existing electric systems, the BUS line can use the same conduits of the energy system used for the wiring of power sockets. However, this is only possible when using the BUS cable, Item L4669, with insulation voltage 300/500 Vdc.
- Depending on the needs of the user and the type of building, the load control actuators may be installed:
  1. in DIN distribution board, if it is not required to display and reactivate the load directly in the room where the load is located;
  2. near each current socket for the load to be controlled, to ensure the possibility of controlling the status and/or forcing the load.

Physical Limit
The maximum number of devices that can be connected to the BUS (central unit for load management, actuator, power meter, and pulse counter interface) depends on the total absorption of the same, and on the distance between the connection point and the power supply.

If the system uses the same cable as the Automation/temperature control system, the calculation of the maximum number of devices must be performed taking into account the general absorption of the same. For the purpose of the above calculations, the table shows the current absorbed by each device.

Maximum Number of Actuators
The Central Unit for Load Management can control up to 63 actuators (appliances or electric loads).

If the system is solely dedicated to Load Management, or if it shares the same BUS line of the Automation/ Temperature control system, the number of actuators shall depend on the limit of the available current.
1. The length of the connection between the power supply and the furthest device cannot exceed 250 m.

2. The total length of the connections must not exceed 500 m (extended cable).
Load control management and consumption display

In order to ensure optimum distribution of the currents on the BUS line, it is recommended to position the power supply in an intermediate position.

With E46ADCN power supply:
- A = 250 m max
- B = 250 m max
- A + B = 500 m

The maximum current supplied by the power supply is: 1200 mA.

With E49 power supply:
- A = 250 m max
- B = 250 m max
- A + B = 500 m

The maximum current supplied by the power supply is: 600 mA.

NOTE: If a UTP5 cable is used instead of a BUS L4669 cable, distances must halved.
Load control management and consumption display

The load management control and consumption display systems must be correctly configured to ensure that they can operate correctly, and that each item can perform the desired function. The mode of configuration must be the physical one. The physical configuration entails interaction with the devices - pulse counter interface (Item 3522), bus meter with 3 inputs for toroids (Item F520), central unit for load management (Item F521), load control actuators (Item F522, F523, L/N/NT/HC/HS/ HD4672N) – and consists in physically connecting the connection components, called configurators to the appropriate housings of the devices. The configurators have different numbers, letters, colours, or graphics.

The products may be split in two classes:
1. Pulse counter interface (item 3522), Bus meter with 3 inputs for toroids (item F520), Central unit for load management (item F521). All these devices have an address from 1 to 127.

**CONFIGURATOR SOCKET** | **CONFIGURATORS USED**
--- | ---
A1 is the configurator indicating the hundreds | 0, 1
A2 is the configurator indicating the tens | From 0 to 9
A3 is the configurator indicating the units | From 1 to 9
A3-Ta | From 1 to 9 (a configurator must be in this housing)
A3-Tb | From 1 to 9
A3-Tc | From 1 to 9

**WARNING:** The 0 configurator in A3-Ta indicates that the toroid input is not being used. A3 or A3Ta cannot be equal to 0. In the case of the bus meter with 3 inputs for toroids, item F520, if only one toroid is used, this must be connected to A3-Ta.

Configuration examples:
For bus meter with three inputs for toroids, item F520, and pulse counter interface, item 3522:

<table>
<thead>
<tr>
<th>VALUE OF CONFIGURATORS</th>
<th>ADDRESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Toroid connected to Ta with address 001</td>
</tr>
<tr>
<td></td>
<td>Toroid connected to Tb with address 002</td>
</tr>
<tr>
<td></td>
<td>Toroid connected to Tc with address 003</td>
</tr>
</tbody>
</table>

**WARNING:** The devices in this class must be a different address from each other: for example, there cannot be a pulse counter interface and a bus meter with three inputs for toroids with the same address. Also two toroids cannot have the same address.

In case two consumption/load control devices are installed on an automation or temperature control bus, the configured addresses are not in conflict with the other devices on the system: a temperature control probe configured with address 11 is not in conflict with a bus meter with 3 inputs for toroids with address 11.

It is possible to manage up to 20 lines (toroids) maximum per power supply. Example: 6 meters for 3 lines plus 1 meter for 2 lines (total 20).
Load control management and consumption display

2. Load control actuators:
The actuators may be used both as automation actuators and ENERGY MANAGEMENT actuators. The configuration in automation mode follows the same rules outlined in the automation guide (see the device TECHNICAL SHEETS); the configuration in Energy Management mode requires a progressive address from 1 to 63. These addresses are used in the appropriate configuration software programs in the touch screens, and define the disconnection priorities for the controlled load.

Configuration examples:
For actuator 16 A with probe Item F522 and actuator 16 A Item F523:

<table>
<thead>
<tr>
<th>VALUE OF CONFIGURATORS</th>
<th>ADDRESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuator 16 A and probe</td>
<td>Address priority 01</td>
</tr>
<tr>
<td>Actuator 16 A</td>
<td>Address priority 10</td>
</tr>
</tbody>
</table>

CONFIGURATOR SOCKET | CONFIGURATORS USED
P1 is the configurator indicating the tens From 0 to 6
P2 is the configurator indicating the units From 0 to 9

WARNING: In the case of consumption display/ load control actuators installed on an automation or temperature control bus, and configured also in automation mode (A, PL...), the load control actuator must not have the same address as another actuator on the automation bus. Example: if actuator F411/1N A = 1 PL = 1, then actuator F522 cannot be configured with PL = 1.

SYSTEM EXPANSIONS
The “energy management” system is a very flexible system, for the installation of the devices on the automation/temperature control bus, or for creating a system solely dedicated to energy management, with dedicated power supply. In general, all energy management devices may be installed on each bus branch and on each expansion, provided this is allowed by the absorption calculations. The only exceptions are the actuators, which, when configured in automation mode, during system expansions follow the same rules of the automation bus (automation technical guide).
**AVAILABLE FUNCTIONS**

<table>
<thead>
<tr>
<th>Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power bus meter with 3 inputs for toroids</td>
</tr>
<tr>
<td>Central unit for load management</td>
</tr>
<tr>
<td>Actuator 16 A with current probe</td>
</tr>
<tr>
<td>Actuator 16 A</td>
</tr>
<tr>
<td>Flush mounted Actuator 16 A</td>
</tr>
<tr>
<td>Pulse counter interface</td>
</tr>
<tr>
<td>Load management panel</td>
</tr>
</tbody>
</table>

**AVAILABLE FUNCTIONS**

<table>
<thead>
<tr>
<th>Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local display</td>
</tr>
<tr>
<td>Touch screen 3,5</td>
</tr>
<tr>
<td>Touch screen 10</td>
</tr>
<tr>
<td>Energy data logger</td>
</tr>
<tr>
<td>Webserver</td>
</tr>
</tbody>
</table>

**Visualisation**

**Load control**

**Diagnostic**

*NOTE 1): in combination with additional toroid, item 3523*
Display of electricity, water and gas consumptions

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCCD</td>
<td>General switch</td>
</tr>
<tr>
<td>MCB1</td>
<td>4 A MCB switch</td>
</tr>
<tr>
<td>E49</td>
<td>Compact power supply</td>
</tr>
<tr>
<td>FS20</td>
<td>Bus meter with three inputs for toroids</td>
</tr>
<tr>
<td>3523</td>
<td>Toroid</td>
</tr>
<tr>
<td>Touch Screen</td>
<td>Touch Screen 3.5&quot;/ Multimedia Touch Screen 10&quot;</td>
</tr>
<tr>
<td>3522</td>
<td>Pulse counter interface</td>
</tr>
</tbody>
</table>

**WARNING**

A. The following Touch Screens may be installed:
- H4684 AXOLUTE
- L4684 LIVING / LIGHT / LIGHT TECH
- AMS864 MATIX
- Multimedia Touch Screen HD/HC/HS4690

B. Each FS20 is supplied as standard with one toroid, item 3523

C. The general switch RCCD must be selected depending on general absorption. For better safety and comfort, the installation of an additional STOP&GO device is also recommended.

- **NOTES:** 1) the barrier must meet the Atex requirements and must be installed outside the Atex area.
Display of electric consumptions on several lines

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>E49</td>
<td>Compact power supply</td>
</tr>
<tr>
<td>F520</td>
<td>Bus meter with three inputs for toroids</td>
</tr>
<tr>
<td>3523</td>
<td>Toroid</td>
</tr>
<tr>
<td>Touch Screen</td>
<td>Touch Screen 3.5&quot; / Multimedia Touch Screen 10&quot;</td>
</tr>
<tr>
<td>RCCD</td>
<td>General switch</td>
</tr>
<tr>
<td>MCB1-S</td>
<td>Linear protection switch</td>
</tr>
<tr>
<td>MCB6</td>
<td>4 A MCB switch</td>
</tr>
</tbody>
</table>

**WARNING**

A. The following Touch Screens may be installed:
- H4684 AXOLUTE
- L4684 LIVING / LIGHT / LIGHT TECH
- AM5864 MATRIX
- Multimedia Touch Screen HD/HC/HS-4690

B. General NCB switches must be selected depending on load absorption

C. Each F520 is supplied as standard with one toroid, item 3523

D. The general switch RCCD must be selected depending on general absorption. For better safety and comfort, the installation of an additional STOP&GO device is also recommended.
Display of produced and consumed energy

If a photovoltaic system and a thermal solar system for the production of energy and hot water are installed, by using energy measurement devices and the pulse counter interface the user can display the energy produced, or the amount of heated water on the touch screen.

**ITEM** | **DESCRIPTION**
--- | ---
E49 | Compact power supply
FS20 | Bus meter with three inputs for toroids
3523 | Toroid
3522 | Pulse counter interface
Touch Screen | Touch Screen 3.5"/Multimedia Touch Screen 10"
RCCD | General switch
MCB 1-2 | MCB protection switch

**WARNING**

A. The following Touch Screens may be installed:
- H4684 AXOLUTE
- L4684 LIVING / LIGHT / LIGHT TECH
- AM5864 MATIX
- Multimedia Touch Screen HD/HC/HS4690

B. General MCB switches must be selected depending on load absorption.

C. Each FS20 is supplied as standard with one toroid, item 3523, for current reading.

D. The general switch RCCD must be selected depending on general absorption. For better safety and comfort, the installation of an additional STOP&GO device is also recommended.
Display of produced and consumed energy in exchange mode on location

In the presence of a photovoltaic panels system configured for a delivery of energy in “local exchange” mode, the bus meter with 3 inputs for toroids can be installed as shown in the figure: one toroid measures the current produced by the photovoltaic panels, the other the home consumption. WARNING: avoid fitting the measuring toroid directly on the main bidirectional meter.

WARNING

A. The following Touch Screens may be installed:
   - H4684 AXOLUTE
   - L4684 LIVING / LIGHT / LIGHT TECH
   - AM5864 MATIX
   - Multimedia Touch Screen HD/HC/H5/H5A690

B. General MCB switches must be selected depending on load absorption

C. Each FS20 is supplied as standard with one toroid, item 3523, for current reading

D. The general switch RCCD must be selected depending on general absorption. For better safety and comfort, the installation of an additional STOP&GO device is also recommended

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>E49</td>
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<tr>
<td>FS20</td>
<td>Bus meter with three inputs for toroids</td>
</tr>
<tr>
<td>3523</td>
<td>Toroid</td>
</tr>
<tr>
<td>Touch Screen</td>
<td>Touch Screen 3.5” / Multimedia Touch Screen 10”</td>
</tr>
<tr>
<td>RCCD</td>
<td>General switch</td>
</tr>
<tr>
<td>MCB1-3</td>
<td>MCB protection switch</td>
</tr>
</tbody>
</table>

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**WARNING**: avoid fitting the measuring toroid directly on the main bidirectional meter.
### Display of the consumption of thermal power / hot water by individual home

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>E46ADCN</td>
<td>Power supply</td>
</tr>
<tr>
<td>...</td>
<td>4 zone central units</td>
</tr>
<tr>
<td>...4695</td>
<td>probe with adjustment knob</td>
</tr>
<tr>
<td>...4692</td>
<td>2 relay DIN actuator</td>
</tr>
<tr>
<td>F430/2</td>
<td>4 relay DIN actuator</td>
</tr>
<tr>
<td>F430/4</td>
<td>Pulse counter interface</td>
</tr>
<tr>
<td>3522</td>
<td>Touch Screen 3.5” / Multimedia Touch Screen 10”</td>
</tr>
</tbody>
</table>

**WARNING**

A. The following Touch Screens may be installed:
- H4684 AXOLUTE
- L4684 LIVING / LIGHT / LIGHT TECH
- AM5864 MATIX
- Multimedia Touch Screen HD/HC/HS4690

B. The following 4 zone central units may be installed:
- HC/HS4695 AXOLUTE
- L/N/NT4695 LIVING/LIGHT/LIGHT TECH
- AM5875 MATIX

C. The following probes with knob may be installed:
- HC/HS4692 AXOLUTE
- L/N/NT4692 LIVING/LIGHT/LIGHT TECH
- AM5872 MATIX

In an establishment with central heating, by connecting a Pulse counter interface to the pulse output of the meter of a My Home system, it is possible to display on the touch screen the data made available by the meter (water consumption of the individual home, thermal power). The meter must have pulse outputs, and must be installed at the input of the distribution manifold.

**NOTE**: the pulse counter interface is recommended ($M=2$) to detect the thermal power.
Load control management with total consumption display

### ITEM DESCRIPTION

<table>
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<tbody>
<tr>
<td>E49</td>
<td>Compact power supply</td>
</tr>
<tr>
<td>FS21</td>
<td>Central unit for load management</td>
</tr>
<tr>
<td>FS23</td>
<td>16 A 1 M DIN basic actuator</td>
</tr>
<tr>
<td>3523</td>
<td>Toroid</td>
</tr>
<tr>
<td>Touch Screen</td>
<td>Touch Screen 3.5” / Multimedia Touch 10”</td>
</tr>
<tr>
<td>RCCD</td>
<td>General switch</td>
</tr>
<tr>
<td>MCB1</td>
<td>4 A MCB switch</td>
</tr>
<tr>
<td><em>...4672N</em></td>
<td>Flush mounted actuator</td>
</tr>
</tbody>
</table>

### WARNING

A. The following Touch Screens may be installed:
- H4684 AXOLUTE
- L4684 LIVING / LIGHT / LIGHT TECH
- AM5864 MÀTIX
- Multimedia Touch Screen HD/HG/HS4690

B. The following 2 module flush mounted 16 A actuators may be installed
- HC/NS/HS4672N AXOLUTE
- L/N/NT4672N LIVING/LIGHT/LIGHTTECH

C. General MCB switches must be selected depending on load absorption

D. The general switch RCCD must be selected depending on general absorption. For better safety and comfort, the installation of an additional STOP&GO device is also recommended

E. Each FS20 is supplied as standard with one toroid, item 3523, for current reading

---

**Switchboard or distribution board**
Load control management with total display, of loads and diagnostics

<table>
<thead>
<tr>
<th>ITEM</th>
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<tbody>
<tr>
<td>E49</td>
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</tr>
<tr>
<td>FS22</td>
<td>Actuator 16 A with probe</td>
</tr>
<tr>
<td>3523</td>
<td>Toroid</td>
</tr>
<tr>
<td>Touch Screen</td>
<td>Touch Screen 3.5” / Multimedia Touch Screen 10”</td>
</tr>
<tr>
<td>RCCD</td>
<td>General switch</td>
</tr>
<tr>
<td>MCB1</td>
<td>4 A MCB switch</td>
</tr>
</tbody>
</table>

WARNING

A The following Touch Screens may be installed:
- H4684 AXOLUTE
- L4684 LIVING / LIGHT / LIGHT TECH
- ANS5664 MÀTIX
- Multimedia Touch Screen HD/HC/HS4690

B General MCB switches must be selected depending on load absorption.

C Each FS20 is supplied as standard with one toroid, item 3523, for current reading.

D The general switch RCCD must be selected depending on general absorption. For better safety and comfort, the installation of an additional STOP&GO device is also recommended.

E FS22 actuator 16 A with integrated current probe, capable of measuring the consumptions of the controlled load. By connecting a toroid, item 3523 to the device, it is possible to measure the earth leakage current and display the load status on the Touch screen.
Three-phase and one-phase load control management

**ITEM** | **DESCRIPTION**
---|---
E49 | Compact power supply
F521 | Central unit for load management
F523 | 16 A 1 M DIN basic actuator
3523 | Toroid
MCB | MCB switch
FC4A... | AC contactor

**WARNING**
A | General MCB switches must be selected depending on load absorption
B | The contactor must be selected depending on the absorption of the load
C | The three-phase line must be balanced

**NOTE:** 1) the configurators must be selected depending on the rated power