

EMS CX³ – Universal control module

Cat. N° : 4 149 32

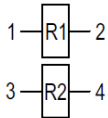


Contents	Pages
1. Description - Use.....	1
2. Range.....	1
3. Overall dimensions.....	1
4. Preparation - Connection.....	1
5. General characteristics.....	7
6. System architectures.....	12
6.1 Stand Alone.....	12
6.1.1 with local addressing.....	12
6.1.2 with remote addressing.....	13
6.2 Supervised.....	14
6.2.1 with local addressing.....	14
7. Compliance and approvals.....	18
8. Annex – dip switch.....	19

1. DESCRIPTION - USE

- . Module dedicated to Energy Management System (EMS CX³) use.
- . Enables to remotely command different electrical loads and motor driven control modules of modular devices (MCBs, RCCBs, RCBOs...) or power devices (e.g. MCCBs...).
- . Allowing product configuration of:
 - contacts type (NO or NC contacts)
 - working method (maintained or momentary contact)

Symbol:



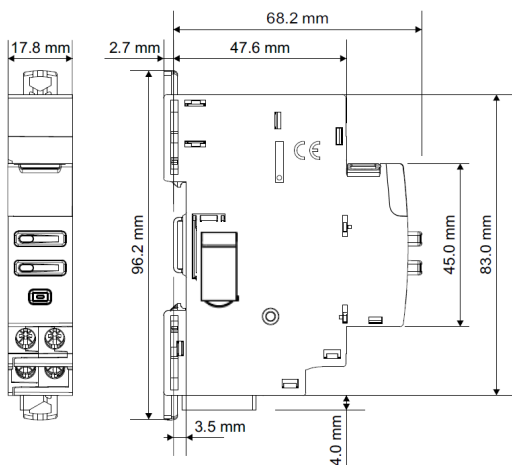
2. RANGE

. Cat. n° 4 149 32: Universal Control Module, with 2 configurable relays 250 V~ -6 A contacts

Width:

. 1 module. 17,8 mm width.

3. OVERALL DIMENSIONS



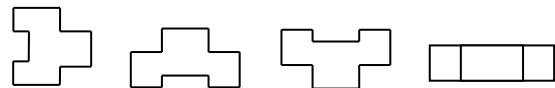
4. PREPARATION -CONNECTION

Fixing:

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

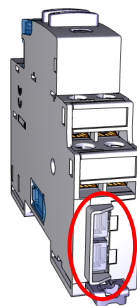
Operating positions:

. Vertical, Horizontal, Upside down, On the side

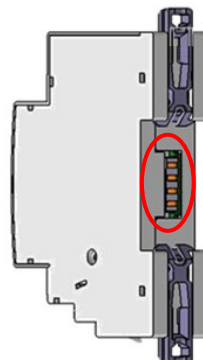


Power Supply:

- . Mandatory in 12 VDC via the specific Power supply module Cat n° 4 149 45
- . Two ways:
 - via specific communication patch cords (cat. nos 4 149 07/08/09) to connect at the downstream through dedicated ports



via specific communication rails (cat. nos 4 149 01/02/03) to connect at the rear through dedicated connectors.



EMS CX³ - Universal control module

Cat. N° : 4 149 32

4. PREPARATION –CONNECTION (continued)

Terminals:

- . Terminal depth: 8 mm.
- . Stripping length: 8 mm

Screw head:

- . Mixed, slotted and Pozidriv n° 1 (UNI7596 type Z1).

Recommended tightening torque:

- . 1 Nm.

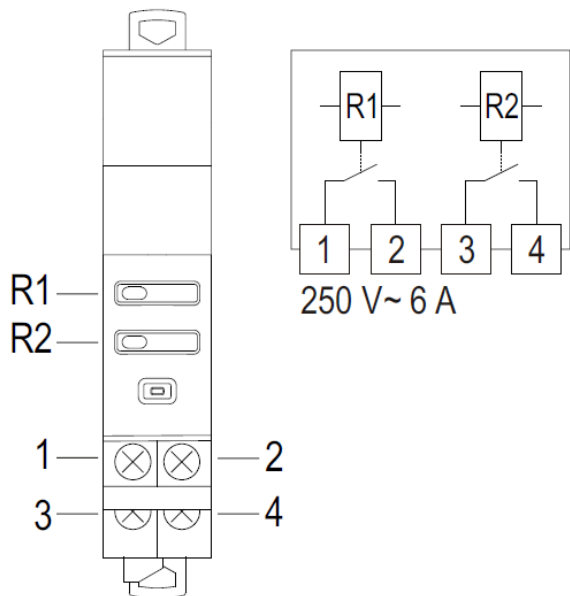
Recommended tools:

- . For the terminals: Pozidriv n° 1 or flat screwdriver 4 mm.
- . For fixing: flat screwdriver 5.5 mm (6 mm maximum).

Conductor type:

	Copper cable	
	Without ferrule	With ferrule
Rigid Cable	1 x 0,5 mm ² to 1,5 mm ² 2 x 1,5 mm ²	-
Flexible Cable	1 x 0,5 mm ² to 1,5 mm ² 2 x 1,5 mm ²	1 x 0,5 mm ² to 1,5 mm ² 2 x 1,5 mm ²

Wiring diagrams:



- . Pushbutton R1: controls the relay between terminals 1 and 2
- . Pushbutton R2: controls the relay between terminals 3 and 4
- . Both relays are configurable. Refer to § “Module Configuration”

4. PREPARATION –CONNECTION (continued)

Module configuration:

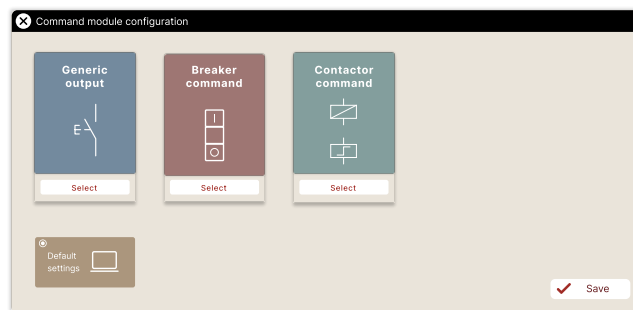
Module configuration:

- . Configuration is possible remotely, via EMS CX3 Configuration software (**module firmware version ≥ 3.0.2** [production date ≥ 18W39] & **Configuration software ≥ 2.00.00**).



Configuration allows to set:

- Contacts type (NO or NC contacts)
- Working method (maintained or momentary contact)




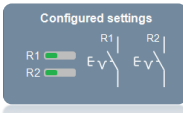
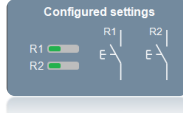
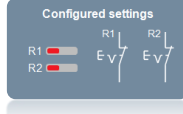
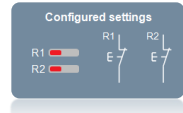
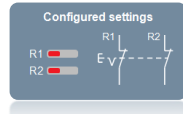
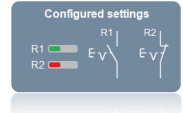
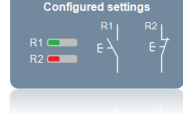
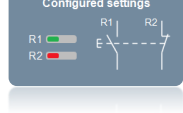
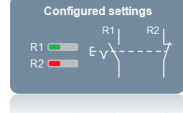
Possible configurations are listed as shown below.

Note:

	NO contact Impulsive command
	NC contact Impulsive command
	NO contact Maintained command
	NC contact Maintained command
----- -	Contacts interlocked
	Motor Driven control module

4. PREPARATION –CONNECTION *(continued)*

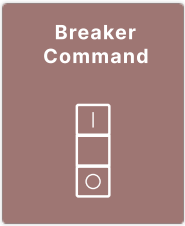
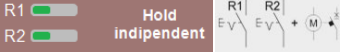


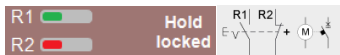
Configuration: “Generic” outputs

Device	R1	R2	Command Relay 1	Command Relay 2	Relay	Schema
 <p>Generic Output</p>	N O	N O	Hold	Hold	Independent	
	N O	N O	Impulsive	Impulsive	Independent	
	N C	N C	Hold	Hold	Independent	
	N C	N C	Impulsive	Impulsive	Independent	
	N C	N C	Hold	Hold	Locked	
	N O	N C	Hold	Hold	Independent	
	N O	N C	Impulsive	Impulsive	Independent	
	N O	N C	Impulsive	Impulsive	Locked	
	N O	N C	Hold	Hold	Locked	

4. PREPARATION –CONNECTION *(continued)*



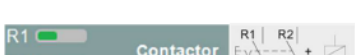
Configuration: Breaker Command.

EMS CX3 module associated with Motor Controls

Device	Relay 1	Relay 2	Command Relay 1	Command Relay 2	Relay	Schema
	N O	N O	Hold	Hold	Independent	
	N O	N O	Impulsive	Impulsive	Independent	
	N O	N O	Impulsive	Impulsive	Locked	
	N O	N C	Hold	Hold	Locked	

Configuration: Contactor Command

EMS CX3 module associated with contactors or contactors

Device	Relay 1	Relay 2	Command Relay 1	Command Relay 2	Relay	Schema
	N O	N O	Impulsive	Impulsive	Locked	
	N O	N O	Hold	Hold	Locked	

EMS CX3 - Universal control module

Cat. N° :
4 149 32

4. PREPARATION –CONNECTION (continued)

Configuration: Breaker Command



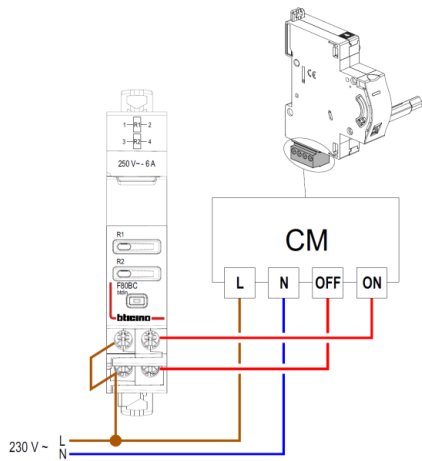
Connection with an associated device:

. Association with Motor Driven Control module DX³ (cat. nos 4 062 90/91/92/93/95) with ON/OFF separated commands

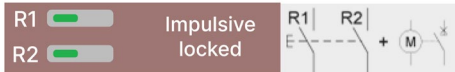
. EMS CX³ universal control module must be configured remotely as shown:



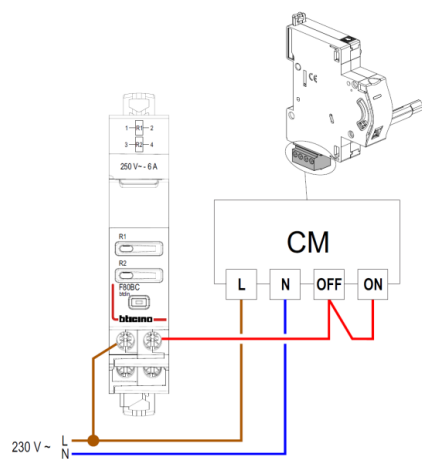
. Wiring diagram:



. Association with Motor Driven Control module DX³ (cat. nos 4 062 90/91/92) with ON/OFF cyclic command



. Wiring diagram:



4. PREPARATION –CONNECTION (continued)

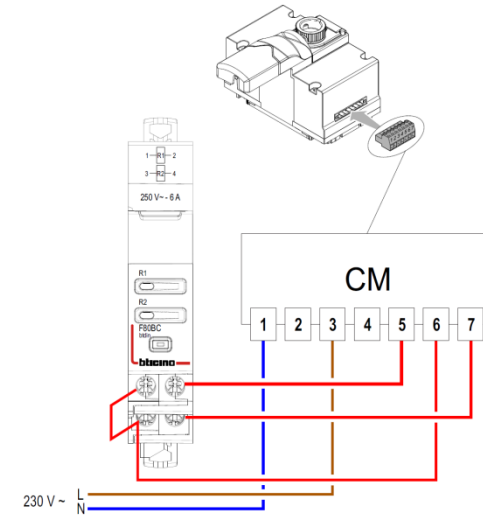
Connection with an associated device (continued):

. Association with Motor Driven Control module DPX³ 160/250 (cat. nos 4 210 60/61) with ON/OFF separated commands

. EMS CX³ universal control module must be configured remotely as shown:



. Wiring diagram:



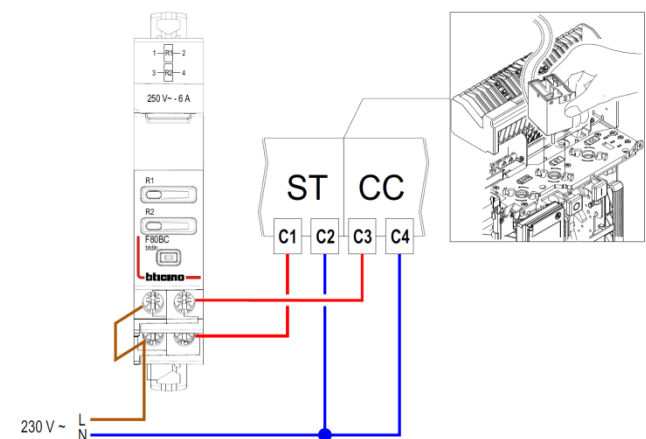
. Association with Motor Driven Control module DMX³ 1600 (cat. nos 0 281 20/21/23) or Motor Driven Control module DMX³ 2500/4000/6300 (cat. nos 0 288 34/35/37) with ON/OFF separated commands.

Note: to motorise a DMX³, must added to the motor drive, a shunt trip release or an under-voltage release, and a closing coil

. EMS CX³ universal control module must be configured remotely as shown:



. Wiring diagram:



EMS CX³ - Universal control module

Cat. N° : 4 149 32

4. PREPARATION –CONNECTION (continued)

Connection with an associated device (continued):

Configuration: EMS CX3 module associated with contactors or contactors

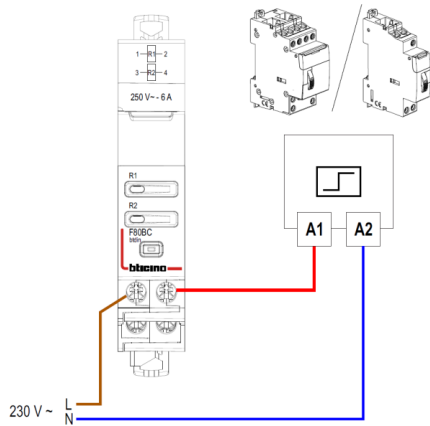


. Association with Latching relay (e.g. cat. nos 4 124 04) or other brands Latching relays

. EMS CX3 universal control module must be configured remotely as shown:



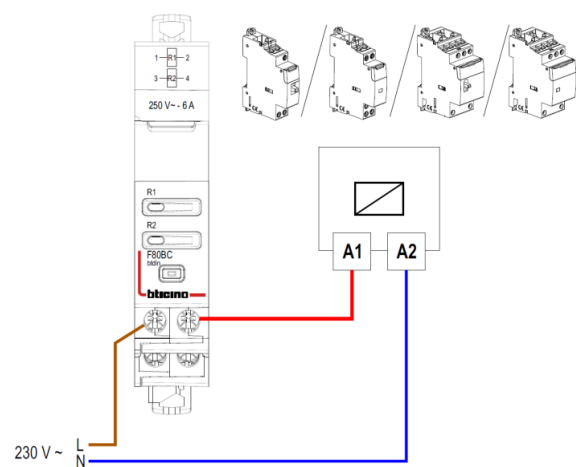
. Wiring diagram:



. Association with Contactors (e.g. cat. nos 4 125 14) or other brands Contactors

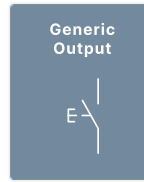


. Wiring diagram:



4. PREPARATION –CONNECTION (continued)

Connection with an associated device (continued):



For all possible configurations, consult the table on page. 4. in the configuration section: “Generic” outputs”

Note: local command of the Motor Driven Control module with buttons of the EMS CX3 Universal control module it is still possible to push on the button of the EMS CX3 module; however, between 2 orders (open → closed or closed → open) wait at least 5 sec. because of the mechanical actions of the Motor driven control.

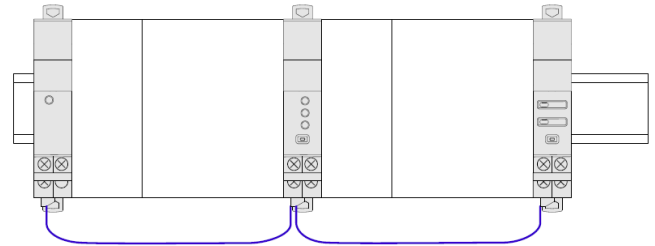
Data connection (EMS CX3 modules inter-connection):

. Via specific communication patch cords (cat. nos F80BC250/500/1000)

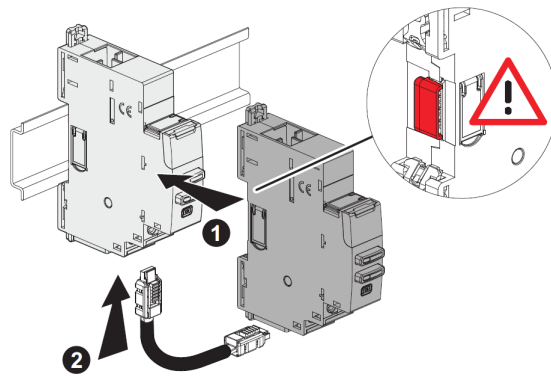


Allow data transmission between the different EMS CX3 modules.

This type of connection is recommended when there are few EMS CX3 modules, distributed all over the enclosure.



Implementing: with this configuration, the plastic protection cover of the backside communication ports on the EMS CX3 module must be keep on.



EMS CX³ - Universal control module

Cat. N° : 4 149 32

4. PREPARATION –CONNECTION (continued)

Connection with an associated device (continued):

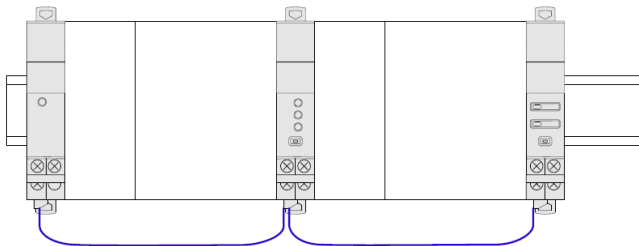
Note: local command of the Motor Driven Control module with buttons of the EMS CX3 Universal control module it is still possible to push on the button of the EMS CX3 module; however, between 2 orders (open → closed or closed → open) wait at least 5 sec. because of the mechanical actions of the Motor driven control.

Data connection (EMS CX³ modules inter-connection):

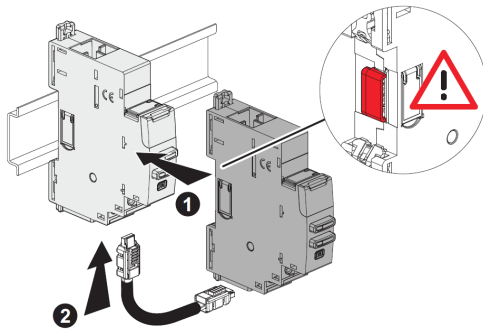
. Via specific communication patch cords (cat. nos 4 149 07/08/09)



Allow data transmission between the different EMS CX³ modules. This type of connection is recommended when there are few EMS CX³ modules, distributed all over the enclosure.



Implementing: with this configuration, the plastic protection cover of the backside communication ports on the EMS CX³ module must be keep on.

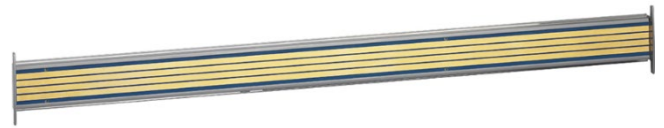


4. PREPARATION –CONNECTION (continued)

Data connection (EMS CX³ modules inter-connection)

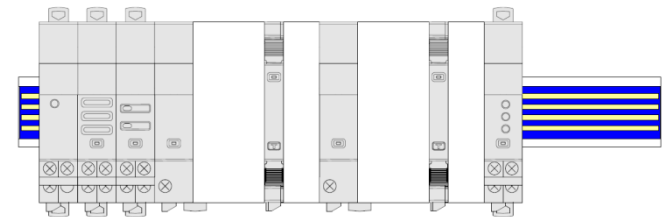
(continued):

. Via specific communication rails (cat. nos 4 149 01/02/03).

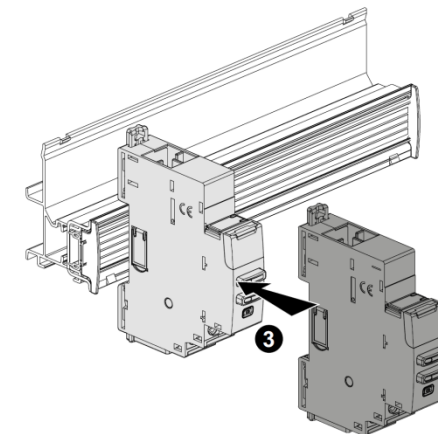
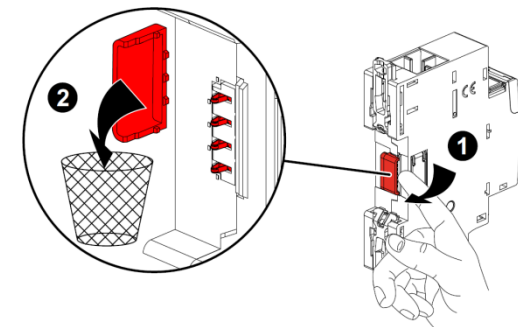


. Allow data transmission between the different EMS CX³ modules.

This type of connection is recommended when there are several EMS CX³ modules on the same DIN row.



Implementing: with this configuration, the plastic protection cover of the backside communication ports on the EMS CX³ module must be removed.



Note: Sliding the form to the right or left is prohibited.

EMS CX³ - Universal control module

Cat. N° : 4 149 32

4. PREPARATION –CONNECTION (continued)

Data connection (EMS CX³ modules inter-connection)

(continued):

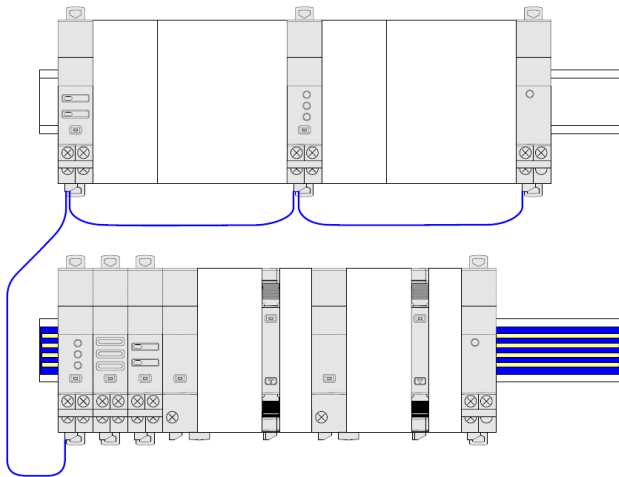
. Via a mix between specific communication patch cords and communication rails in order to create a link between several rows

Two situations:

- Individually connected with communication rails.
The communication patch cord allows to connect two rows.

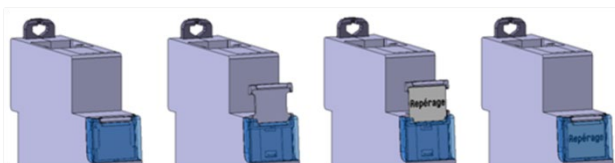


- Individually connected with communication patch cords & communication rail.
The communication patch cords allow to connect EMS CX³ module on a row and to connect two rows.



Labelling:

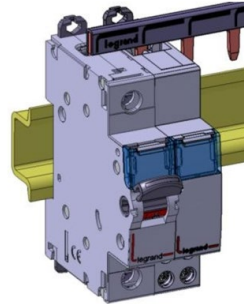
. Circuit identification by way of a label inserted in the label holder situated on the front of the product.



4. PREPARATION –CONNECTION (continued)

Position in a row:

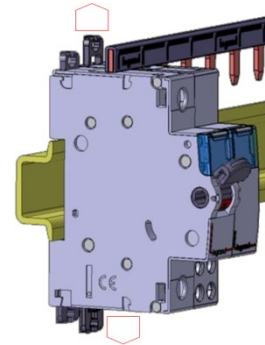
. The product profile and the position of the terminals at the downstream allow the insertion of the prong-busbar by the upstream. In this way the position of the EMS CX³ device in a row can be freely chosen



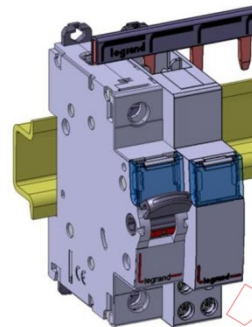
Module maintenance:

. A device may be replaced in the middle of a row supplied with prong-busbar without disconnecting the other devices.

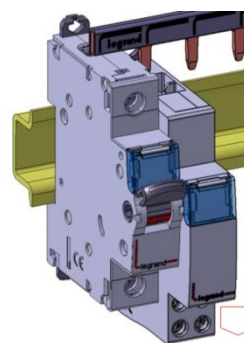
1. Put the clamp in the unlocking position



1. Put the clamp in the unlocking position



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

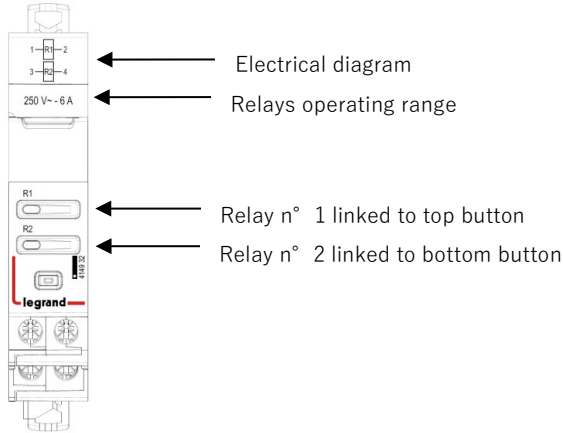


3. Pull the device downward in order to release it completely from the prongs of the busbar

5. GENERAL CHARACTERISTICS

Front face marking:

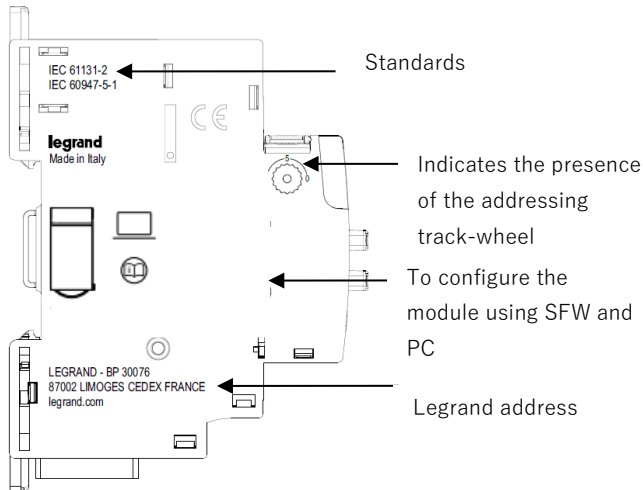
. By permanent ink pad printing (red line) and laser marking



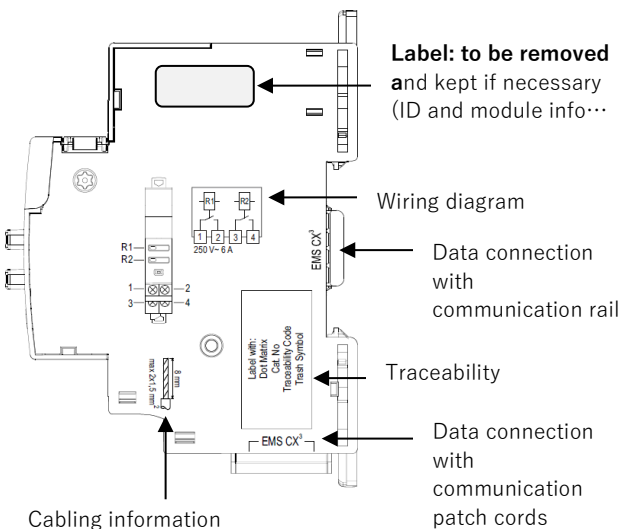
Lateral side marking:

. By laser.

left side: Standard and programming information



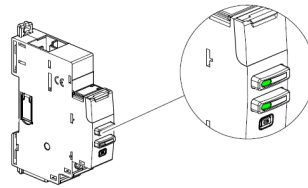
right side: cabling and traceability information



5. GENERAL CHARACTERISTICS (continued)

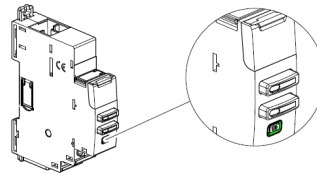
Pushbutton:

- . Equipped with LED with two possible colours:
 - Steady green → the corresponding relay is inactive (relay not power supplied)
 - Steady red → the corresponding relay is power supplied
 - Blinking (red or green) → the EMS CX³ universal control module has received a command but not been executed yet. This is the case of programmed activation time-delay (the delay time is settable only with the remote addressing. See § 6). The led stay blinking until the command is executed. Then becomes steady red or green according to the state of the relay.






Multi-Functions button:

. Front face button as several functions:



. Gives information about the operating state on the module
Possible states:

Led colour	State	Meaning
 red	Slow blinking	Error (e.g. addressing error)
	Fast blinking	No function
	Steady (pressing the multifunction button longer than 10 sec.)	Total reset [any firmware updates are preserved]
 green	Slow blinking	System process is running. Wait until the Led turns steady
	Fast blinking (pressing the multifunction button for 5 sec.)	put in "Stand-by" the EMS CX ³ module (no remote action and communication available)
	Steady	System OK, connection is running
 orange	Slow blinking	Creation of a link with "Link Functionality" procedure (see next §)
	Fast blinking	Device's firmware update in progress
	Steady	Start of FW update or active Link functionality (see next §)


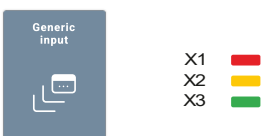
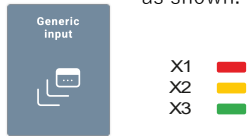
5. GENERAL CHARACTERISTICS *(continued)*

Link Functionality:

. This function allows you to link two EMS CX³ modules to create automatic actions that, once programmed, can run independently without a connection to a manager is needed.

The basic rule is the link between an event (circuit breaker that trip, a threshold exceeded, etc.) and an action accordingly (signalling, opening of a circuit by motorized control or contactor, etc.).

Possible associations are:

Event generator	Action module		
	Command: 4 149 32	State + Command: 4 149 31	State: 4 149 30
Measure: 4 149 18/19/20/21/ 22/23/24/25/27	✓	✓	✓ Only with the module configured remotely as shown: 
State: 4 149 29/30	✓	✓	✗ It's enough to configure the module remotely as "Replica"
State + Command: 4 149 31	✓	✓	✗ It's enough to configure the module remotely as "Replica"
Interface: 4 238 90	✓	✗	✓ Only with the module configured remotely as shown: 
Circuit breaker S10	✓	✗	✓ Only with the module configured remotely as shown: 

Note:

- association can only be of type 1 to 1 (1 event and 1 action).
- modules already associated cannot be used for other associations.
- all the configuring procedure will be done with the Configuration Software (available online for free). *[For more details refer to the Installation Manual of EMS CX³ Configuration software]*

5. GENERAL CHARACTERISTICS *(continued)*

Link Functionality *(continued)*:

Modules compatible with “Link Functionality” feature: firmware versions and production date:

Cat n°	Firmware version	Production date indicated on the label stucked on the side of the module
4 149 18	all firmware versions	any production date
4 149 19	ver. ≥ 2.0.1	date ≥ 18W29
4 149 20	ver. ≥ 2.0.1	date ≥ 18W49
4 149 21	all firmware versions	any production date
4 149 22	all firmware versions	any production date
4 149 23	ver. ≥ 2.0.1	date ≥ 18W49
4 149 24	all firmware versions	any production date
4 149 25	all firmware versions	any production date
4 149 27	all firmware versions	any production date
4 149 29	ver. ≥ 2.0.1	date ≥ 18W49
4 149 30	ver. ≥ 2.0.2	date ≥ 18W32
4 149 31	ver. ≥ 2.0.6	date ≥ 18W45
4 149 32	ver. ≥ 3.0.2	date ≥ 18W39
4 149 36	ver. ≥ 2.0.4	date ≥ 18W38
4 149 37	ver. ≥ 2.0.4	date ≥ 18W43
4 149 40	ver. ≥ 3.0.8	date ≥ 18W34
4 238 90	all firmware versions	any production date
Circuits breaker S10	all firmware versions	any production date

Relays operating voltage:

. U_e = 250 V ~

Relays rated current:

. I_n = 6 A @ cos φ = 1

Rated frequency:

. 50/60 Hz with standard tolerances.

Insulation voltage:

. U_i = 400 V

Impulse withstand voltage U_{imp}:

. EMS ports / Relay terminals:

wave 1,2 / 50 μs: 6 kV

alternate current 50 Hz / 1 min.: 3 kV

. Relay terminal 1 / Relay terminal 2:

wave 1,2 / 50 μs: 4 kV

alternate current 50 Hz / 1 min.: 1,9 kV

Pollution degree:

. 2 according to IEC/EN 60898-1.

Overvoltage category:

. III

5. GENERAL CHARACTERISTICS *(continued)*

Dielectric strength:

. 2500 V

Mechanical endurance:

. Min. 10 x 10⁶ operations.

Utilization category:

. AC15: electromagnetic load, according to IEC 60947-5-1

Plastic material:

- . Self-extinguishing polycarbonate.
- . Heat and fire resistant according to IEC/EN 60695-2-12, glow-wire test at 960° C.
- . Classification UL 94 / IECEN 60695-11-10: V1

Ambient operating temperature:

. Min. = -25° C. Max. = +70° C

Ambient storage temperature:

. Min. = -40° C. Max. = +70° C

Protection Index:

- . Protection index of terminals against direct contacts: IP2X (IEC/EN 60529).
- . Protection index of terminals against solid and liquid bodies (wired device): IP 20 (IEC/EN 60529).
- . Protection index of the front face against solid and liquid bodies: IP 40 (IEC/EN 60529).
- . Class II, front panel with faceplate.

Average weight per device:

. 0,065 kg.

Volume when packed:

. 0,21 dm³.

Consumption:

. Values at 12 VDC

Configuration	W	mA
Stand-by	0,265	22
2 Open contacts	0,265	22
1 Open contact & 1 Closed contact	0,375	31
2 Closed contacts	0,458	38

5. GENERAL CHARACTERISTICS *(continued)*

Load shedding Function:

. Allows to automatically carry out load shedding in case of power demand when a circuit exceeds a threshold.

. Function is implementable using together following EMS CX³ modules:

- Universal Control module (cat. no 4 149 32) default configuration (see § "Module configuration")
- Measurement modules (cat. nos 4 149 18/19/20/21/22/23/24/25/27)

To set the different parameters it is necessary to use the EMS Configuration software (available online for free)

. Procedure:

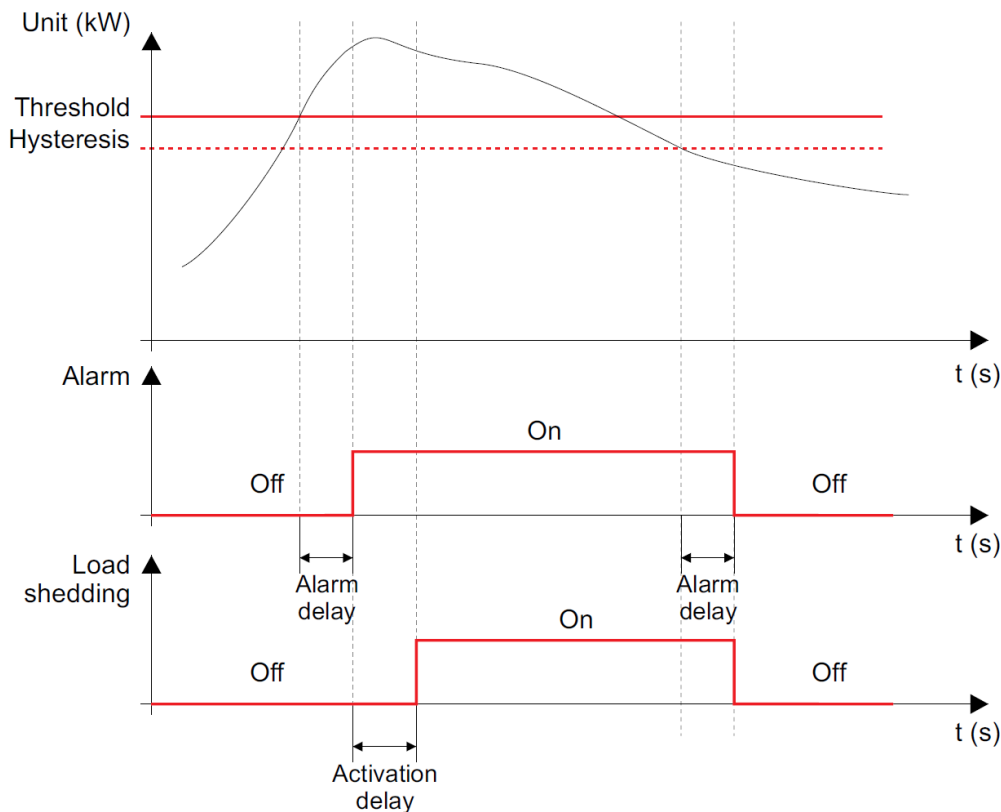
1. Assign the same address to the EMS CX³ modules (Universal control and Measurement modules) which require to be linked
2. Connect a computer to the Modbus/EMS CX³ interface or to the Mini configuration module (according to the system architecture type; see § "System architectures")
3. In the EMS Configuration software pages adjust the parameters:

. In the dedicated page of the Measurement module:

- **Threshold:** value of Total active power (kW) above which procedure starts. *(default value 100 kW)*
- **Hysteresis:** value expressed in % of the threshold under which the alarm is over and the disconnected loads are restored. *(default value 5%, max value 100%)*
- **Alarm delay (s)** - *(default value 1 sec., max. value 30000 sec):*
during the activation of an alarm: is the waiting time between the threshold point and the alarm on the EMS bus
during the de-activation of an alarm: is the waiting time between the hysteresis point and the alarm is deactivation on the EMS bus

. In the dedicated page of the Universal control module:

- **Relay normal state:** the rest position of the relay; normally open (NO) or normally closed (NC).
- **Relay activation:** impulsive or maintained
- **Relay activation time (s):** used for the impulsive work method only; represents the time in which the relay remains in the working position. *(default value 1 sec., max. value 6000 sec):*
- **Activation delay (s):** waiting time between the alarm on the EMS bus and the action done by the universal control module *(default value 0 sec, max. value 6000 sec):*



6. SYSTEM ARCHITECTURES

The EMS CX³ is a polyvalent system and, according to the needs of the customer, can be set up and/or used as “Stand-alone” or “Supervised” system. Based on this choice the configuration and addressing methods are different.

Four possible architectures are provided:

6.1 Stand-alone system

6.1.1 with local addressing (through the track wheel)

6.1.2 with remote addressing (through a computer)

6.2 Supervised (Computer Supervisory System)

6.2.1 with local addressing

6.2.2 with remote addressing

6.1 Stand-alone system

. **Stand-alone** = autonomous system. To be used by the end-user if it is not necessary to have a computer for the supervision outside the envelope. Everything can be managed on site.

6.1.1 Stand-alone system with local addressing (through the track wheel)

Local addressing advantages:

- No configuration software needed to set-up the installation
- **It is not necessary to use a computer to manage settings** (configurations, test, ...) and to use the system (visualize and be alerted, ...). Everything can be done through the Mini configuration module (local display, cat. no 4 149 36/37). [Refer to the technical sheet dedicated to this module for details].
- No communication Interfaces or gateways are required.
- Installation can be done without the intervention of a System Integrator

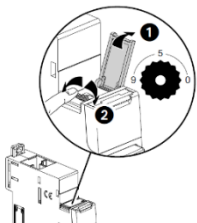
Programming procedure:

. For EMS CX³ modules which need some: mandatory through EMS Configuration software (see § "Module configuration")

Addressing procedure:

. For all EMS CX³ modules: mandatory through the track wheel located on the top upper face of each EMS CX³ modules

. Marked from 0 to 9 in order to locally define the Modbus address of the EMS CX³ modules

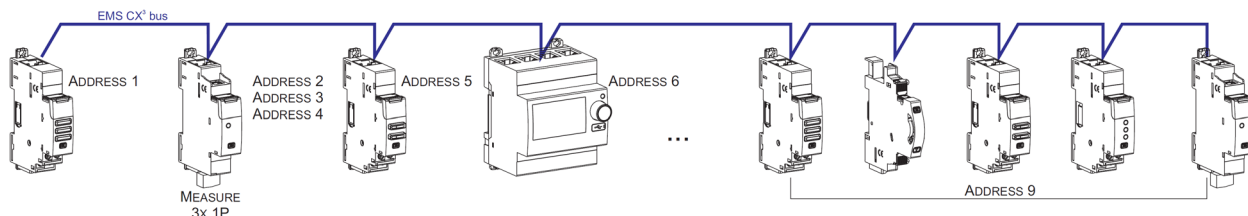


Note for Measure Module “3x single phase”:

This module is to be consider as 3 modules with 3 different Modbus Address. The module takes automatically the two addresses immediately following the setting one (e.g. Programmed address = 2, Addresses of the module 2, 3, 4)

Consequences of the local addressing mode (through the track wheel):

- . Each device of the system must be addressed.
- . Addresses available: from 1 to 9
- . Address 0 not permitted
- . It is possible to assign to several devices the same address with the purpose of grouping different functions, **because they are related to the same electrical circuit**. For example, it is possible to assign the same address to a signalling auxiliary module (cat. no 4 149 29), a universal control module (cat. no 4 149 32), a measuring module, and so on. In this way on the EMS CX³ mini configuration module (local display) the grouped function will be displayed as a unique “device” with all grouped functions. [Refer to the schemes hereunder]



Note for the mini configuration module (local display)

. It is necessary to assign the mini configurator a different address from all the other EMS CX³ modules through the device programming menu.

The mini configuration module can be placed everywhere in the EMS CX³ bus

6. SYSTEM ARCHITECTURES

6.1 Stand-alone system *(continued)*

6.1.2 Stand-alone system with remote addressing (through a computer)

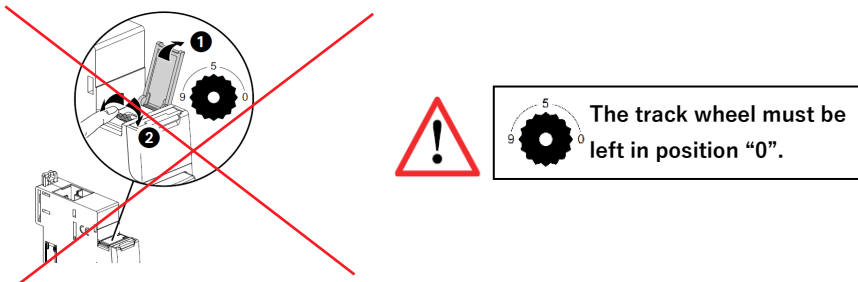
Remote addressing advantages:

- Whole configuration (addresses and functions) can be set up through the EMS Configuration software
- Configuration software available for free
- **Automatic detection of the EMS CX³ modules** installed in the system (characteristics, functions, configuration...)
- **Increased settings possibilities: load shedding function**
- Increased addressing: **up to 30 Modbus addresses in a system**

Programming procedure:

. For EMS CX³ modules which need some: mandatory through EMS Configuration software *(see § "Module configuration")*

Addressing procedure:

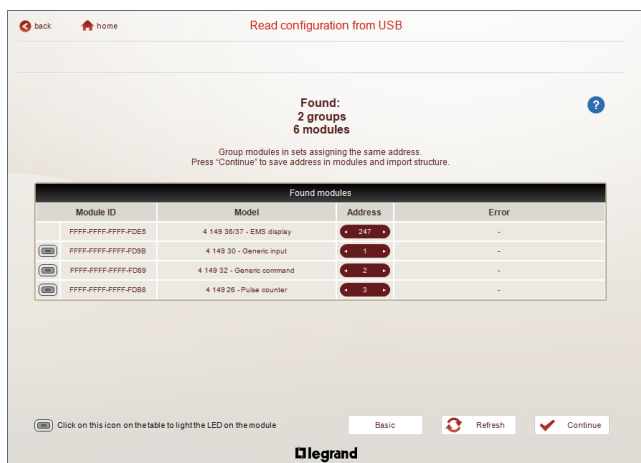
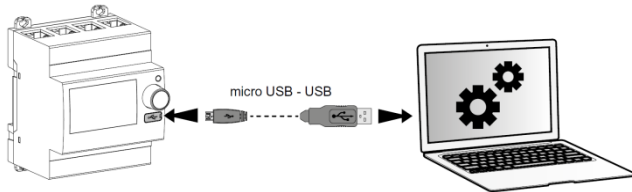


. It is not necessary to assign an address via rotary, **the track wheel must be left in default position "0"**.

. All the addressing/configuring procedure will be done with the Configuration Software (available online for free)

. With remote addressing, the software does the automatic detection of modules installed in the system, but the supervision is not possible until the user assigns the remote address and all the characteristics to each module.

Note: it is mandatory to connect the computer to the Mini configuration module with an USB-micro USB cable. *[For more details, refer to the technical data sheet of the Mini configuration module EMS CX²]*



Note for Measure Module "3x single phase":

This module is to be consider as 3 modules with 3 different Modbus Address. The module takes automatically the two addresses immediately following to the programmed one (e.g. Programmed address = 2, Addresses of the module 2, 3, 4)

6. SYSTEM ARCHITECTURES

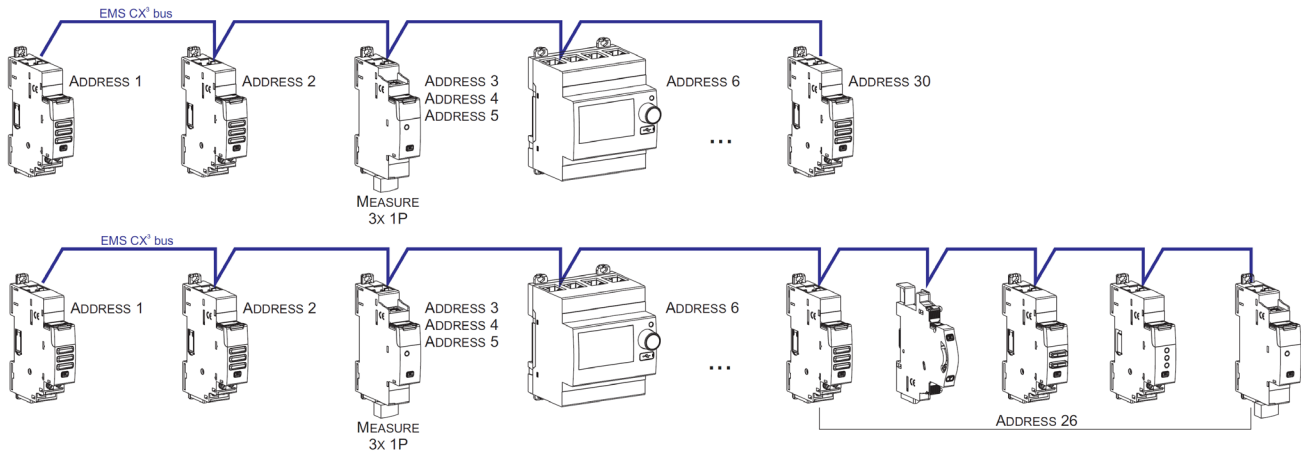
6.1 Stand-alone system *(continued)*

6.1.2 Stand-alone system with remote addressing (through a computer) *(continued)*

Consequences for the system architecture:

- for 1 mini configuration module (cat. no 4 149 36/37)
 - o up to **30 EMS CX³ modules** (e.g. 30 devices grouped per functions with addresses from 1 to 30)

It is possible to assign to several devices the same address with the purpose of grouping different functions, **because they are related to the same electrical circuit**. For example, it is possible to assign the same address to a signalling auxiliary module (cat. no 4 149 29), a universal control module (cat. no 4 149 32), a measuring module, and so on. In this way on the EMS CX³ display or in a supervision system the grouped function will be displayed as a unique “device” with all grouped functions. *[Refer to the schemes here under]*



Note for the mini configuration module (local display)

- . It is necessary to assign the mini configurator a different address from all the other EMS CX³ modules through the device programming menu.
- . The mini configuration module can be placed everywhere in the EMS CX³ bus

6.2 Supervised system (Computer Supervisory System)

. **Supervised system** = System to be used through a Computer Supervisory System to remotely read data from the EMS CX³ devices and/or do operations on these devices (e.g. commands of a motor driven or contactor ...).

6.2.1 Supervised system-with local addressing (through the track wheel)

Local addressing advantages:

- No configuration software needed to set-up the installation
- Installation can be done without the intervention of a System Integrator

Programming procedure:

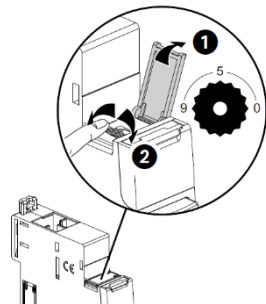
. For EMS CX³ modules which need some: mandatory via the configuration software *(see § "Module configuration")*

Addressing procedure:

. For all EMS CX³ modules: mandatory through the track wheel located on the top upper face of each EMS CX³ modules

. Marked from 0 to 9 in order to locally define the Modbus address to EMS CX³ modules

In this system the Modbus address of an EMS CX³ module device or group of modules (several functions) is obtained considering the address of the interface Modbus/EMS CX³ Interface as tenth and the address of a device or group of function as unit (e.g. Interface address 1 = 10 → address of module n° 5 = Modbus address 15)



Note for Measure Module “3x single phase”:

This module is to be consider as 3 modules with 3 different Modbus Address. The module takes automatically the two addresses immediately following to the programmed one (e.g. Programmed address = 12, Addresses of the module 12, 13, 14)

6. SYSTEM ARCHITECTURES *(continued)*

6.2 Supervised system (Computer Supervisory System) *(continued)*

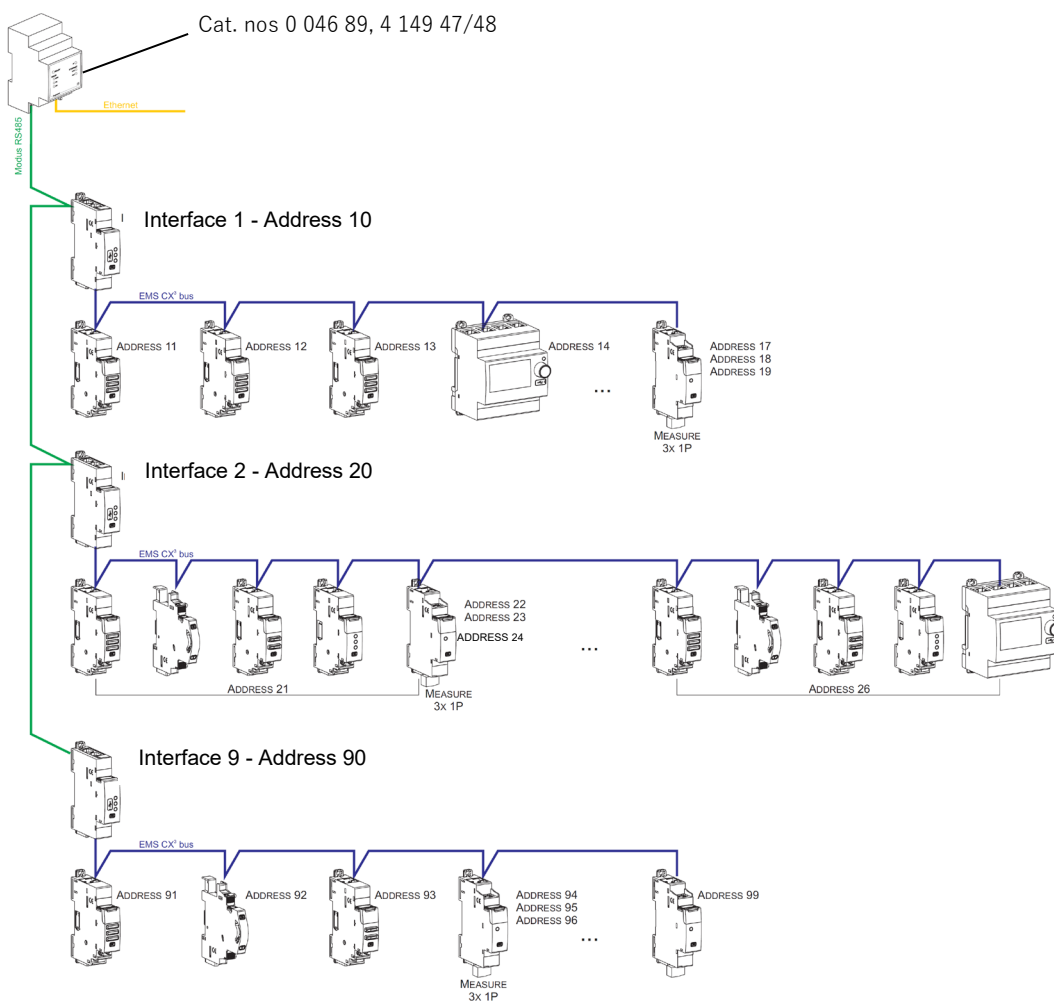
6.2.1 Supervised system-with local addressing (through the track wheel) *(continued)*

Consequences of the local addressing mode (through the track wheel):

- . Each device of the system must be addressed.
- . Rotary position available: from 1 to 9
- . Rotary position in 0 not permitted

It is possible to assign to several devices the same address with the purpose of grouping different functions, **because they are related to the same electrical circuit**. For example, it is possible to assign the same address to a signalling auxiliary module (cat. no 4 149 29), a universal control module (cat. no 4 149 32), a measuring module, and so on. In this way on the EMS CX³ display or in a supervision system the grouped function will be displayed as a unique “device” with all grouped functions. *[Refer to the scheme hereunder]*

Note: In this configuration the Modbus address of an EMS CX³ module device or group of modules (several functions) is obtained considering the address of the interface Modbus/EMS CX³ Interface as tenth and the address of a device or group of function as unit (e.g. Interface rotary 1 = 10 and device rotary = 5 → Modbus address = 15)



Consequences for the system architecture:

- for 1 IP/Modbus gateway (cat. no 0 046 89):
 - o up to **81 Modbus address**
 - o mandatory limit of max. **9 Modbus/EMS CX³ interfaces** or max. **1000 m of Modbus cable** (cable Belden 9842, Belden 3106A or equivalent) or max. **50 m of Category 6 cable** (FTP or UTP).
- for 1 Modbus/EMS CX³ Interface (cat. no 4 149 40):
 - o up to **30 EMS CX³ modules** (ex. 30 devices grouped per functions with rotary from 1 to 9)

Note: with local addressing, the Modbus/EMS CX³ interface, does the automatic detection of modules (characteristics, functions, configuration...)

6. SYSTEM ARCHITECTURES *(continued)*

6.2 Supervised system (Computer Supervisory System) *(continued)*

6.2.2 Supervised system-with remote addressing (through a computer)

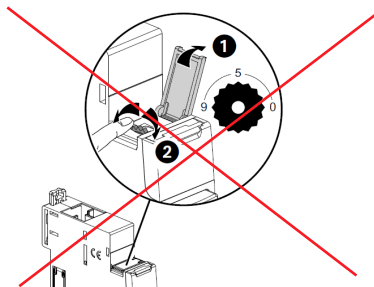
Remote addressing advantages:


- Whole of configuration (addresses and functions) can be done a remotely through the EMS Configuration software
- Configuration software available for free
- **Automatic detection of the EMS CX³ modules** installed in the system (characteristics, functions, configuration...)
- **Increased settings possibilities: load shedding function**
- Increased addressing: **up to 32 Modbus/EMS CX³ interfaces**
- Increased addressing: **up to 247 Modbus addresses in a system**

Programming procedure:

. For EMS CX³ modules which need some use the configuration software (see § "Module configuration").

Addressing procedure:



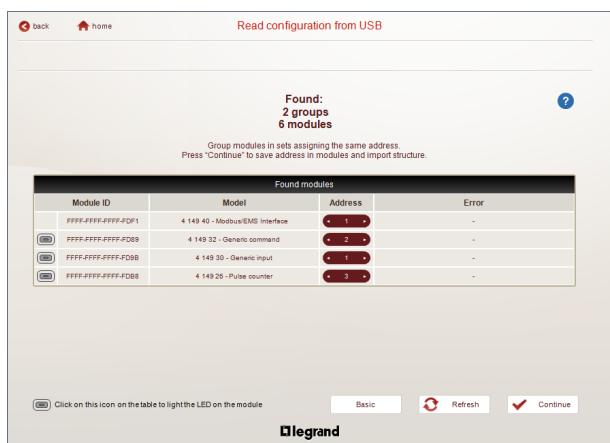
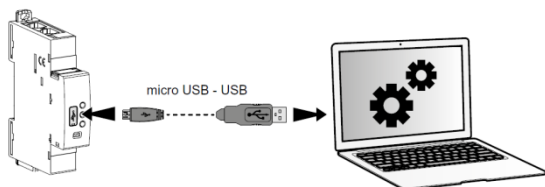
 **The track wheel must be left in position "0".**

. It is not necessary to assign an address via rotary. **The track wheel must be left in default position "0".**

. all the addressing/configuring procedure will be done with the Configuration Software (available online for free)

. With remote addressing, the software does the automatic detection of modules installed in the system, but the supervision is not possible until the user assigns the remote address and all the characteristics to each module.

Note: it is mandatory to connect the computer to the different Modbus/EMS CX³ interface with an USB-micro USB cable (one interface at a time). [For more details, refer to the technical data sheet of the Modbus/EMS CX³ interface]



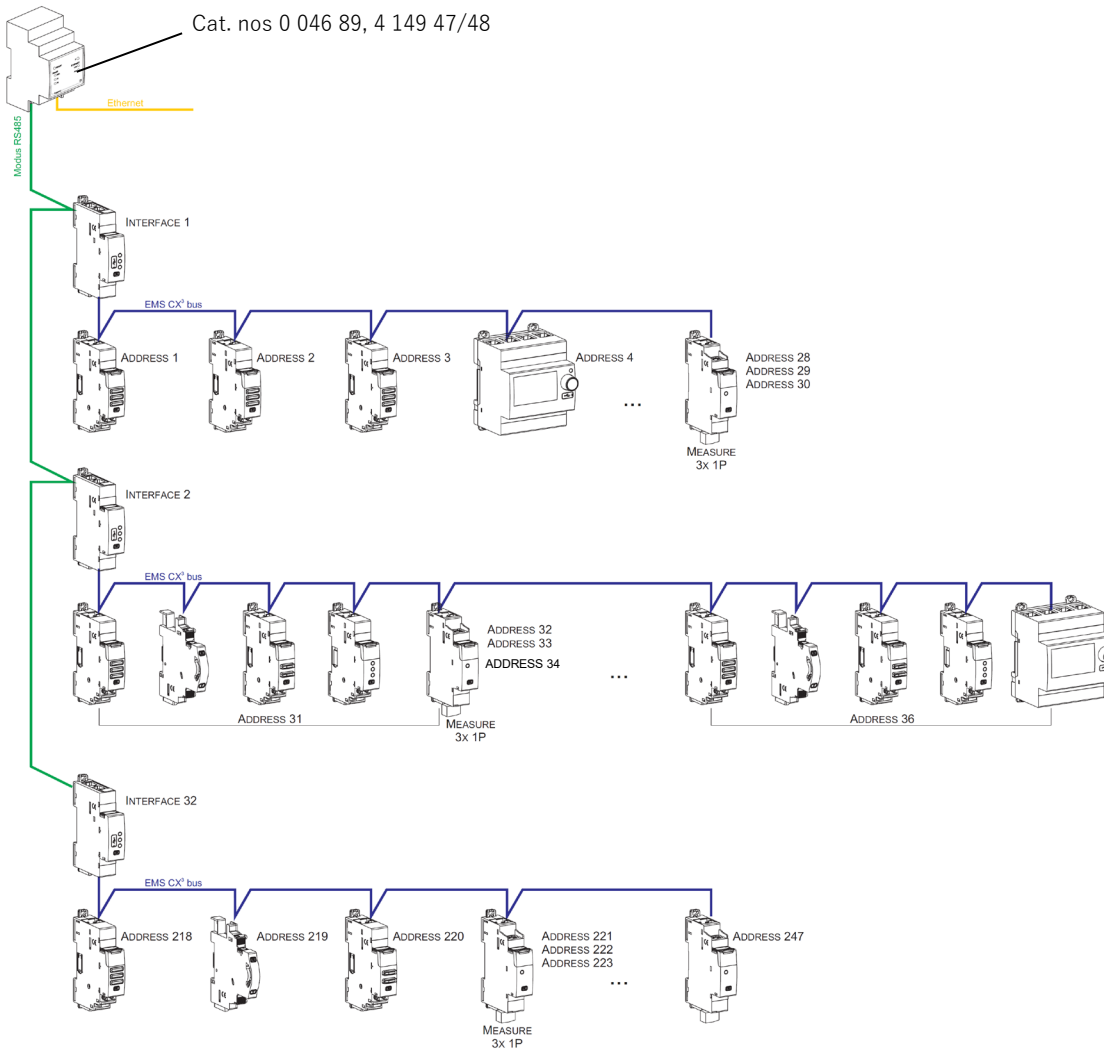
Note for Measure Module "3x single phase":

This module is to be consider as 3 modules with 3 different Modbus Address. The module takes automatically the two addresses immediately following to the programmed one (e.g. Programmed address = 2, Addresses of the module 2, 3, 4)

6. SYSTEM ARCHITECTURES *(continued)*

6.2 Supervised system (Computer Supervisory System) *(continued)*

6.2.2 Supervised system-with remote addressing (through a computer) *(continued)*



Consequences for the system architecture:

- for 1 IP/Modbus gateway (cat. no 0 046 89):
 - o up to **247 Modbus address**
 - o Because of Modbus: mandatory limit of max. **32 Modbus/EMS CX³ interfaces** or max. **1000 m of Modbus cable** (cable Belden 9842, Belden 3106A or equivalent) or max. **50 m of Category 6 cable** (FTP or UTP).
- for 1 Modbus/EMS CX³ Interface (cat. no 4 149 40):
 - o up to **30 EMS CX³ modules or grouped modules** (e.g. 30 devices grouped per functions with addresses from 1 to 30)

It is possible to assign to several devices the same address with the purpose of grouping different functions, **because they are related to the same electrical circuit**. For example, it is possible to assign the same address to a signalling auxiliary module (cat. no 4 149 29), a universal control module (cat. no 4 149 32), a measuring module, and so on. In this way on the EMS CX³ display or in a supervision system the grouped function will be displayed as a unique "device" with all grouped functions. *[Refer to the scheme up here]*

7. COMPLIANCE AND APPROVALS

Compliance to standards:

- . Compliance with Directive on electromagnetic compatibility (EMC) n° 2014/30/EU
- . Compliance with low voltage directive n° 2014/35/EU.
- . Electromagnetic Compatibility:
 - IEC/EN 61131-2
 - IEC/EN 60947-5-1

Environment respect - Compliance with EU directives:

- . Compliance with Directive 2011/65/EU as amended by Directive 2015/863 (RoHS 2) on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
- . Compliance with REACH regulation (1907/2006): at the date of the publication of this document no element of the SVHC substance list (updated on 27/06/2018) is present in these products.
- . WEEE directive (2012/19/EU): the sale of this product is subject to a contribution to eco-organisations in each country responsible for managing end-of-life products in the field of application of the European Waste Electronic and Electrical Equipment Directive.

Plastic materials:

- . Halogens-free plastic materials.
- . Marking of parts according to ISO 11469 and ISO 1043.

Packaging:

- . Design and manufacture of packaging compliant to decree 98-638 of the 20/07/98 and also to directive 94/62/CE.

Environmental profile:

- . PEP document available

Installation software:

- . XL PRO³.

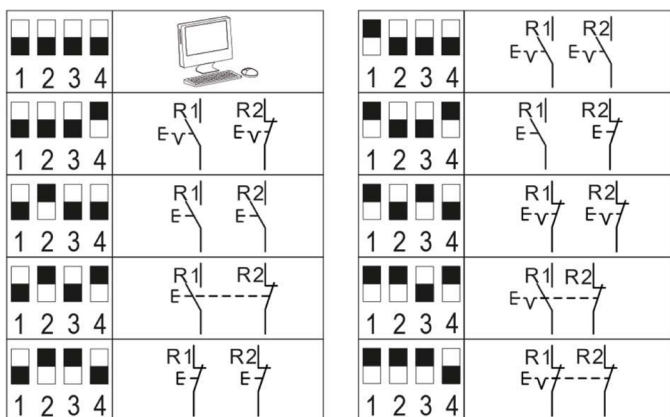
8. ANNEX: configuration with dip switch for the previous version

The black color indicates the position of the dip switch.

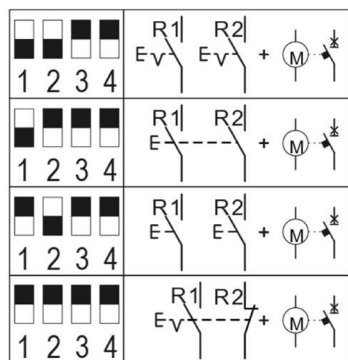


Universal control module

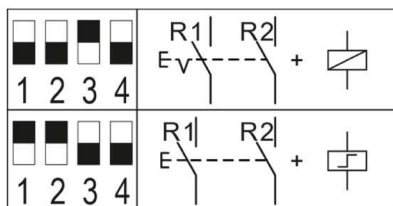
Generic outputs



Associated with Motor driven control



Associated with Latching relays or Contactors



8. ANNEX: configuration with dip switch for the previous version *(continued)*

Universal state module

1	2	3	4	
				X1
1	2	3	4	X2
				X3
				REPLU/A
1	2	3	4	X1
				X2
				X3
				X1
1	2	3	4	X2
				X3
				REPLU/A
1	2	3	4	X1
				X2
				X3
				X1
1	2	3	4	X2
				X3
				REPLU/A
1	2	3	4	X1
				X2
				X3
				X1
1	2	3	4	X2
				X3
				REPLU/A
1	2	3	4	X1
				X2
				X3

State and control module for Latching relays and Contactors

	1	2	3	4