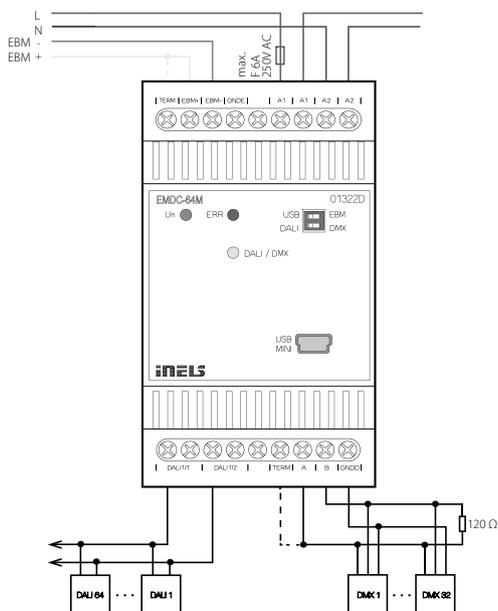




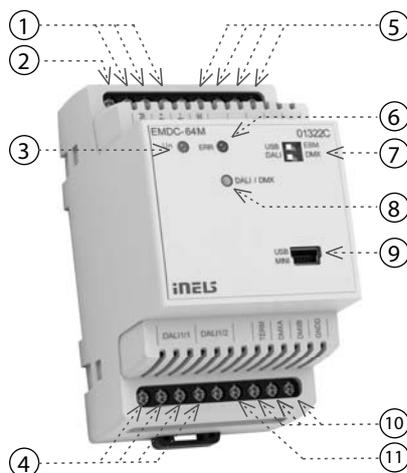
## Characteristics

- The unit EMDC-64M is designed to control DALI electronic ballasts and DMX receivers from the iNELS system.
- EMDC-64M enables control of up to 64 independent electronic ballasts DALI (Digital Addressable Lighting Interface) for fluorescent lamps, LEDs and other light sources.
- EMDC-64M also enables connection of up to 32 receivers DMX (Digital MultipleX) in a single segment. When used repeaters can control up to 64 devices. Maximum amount of DMX controlled channels is 64 channels.
- Control from iNELS BUS System via EBM BUS.
- DIP switches on the front panel to select the control interface (DALI/DMX).
- Addressing of DALI ballast units can be done via the central unit and iDM3 software or via MINI USB on the front panel of the EMDC-64M and DALI Configurator software.
- The required functionality is set in user project in iDM3 software.
- The unit EMDC-64M is powered from the mains voltage 230 V AC.
- DALI BUS power supply is 16V/250 mA via an EMDC-64M unit.
- The system BUS EBM is galvanically separated from the BUSes DALI/DMX. Terminals for connecting the DALI BUS are equipped with short circuit and surge protection.
- It is possible to connect up to 8 EMDC-64M units to one EBM BUS.
- If this concerns the last unit on a system BUS EBM, it is necessary to terminate the wire with a resistor with nominal resistance of 120 Ω. The resistor is inside the unit, termination is made by shorting neighboring terminals TERM and EBM+.
- The BUS DMX must be terminated at its end by a resistor with nominal resistive value 120 Ω. The resistor for DMX BUS termination is on the side of the EMDC- 64M inside the unit, termination is performed by shorting adjacent terminals TERM and A.
- Updating the firmware of the EMDC-64M can be done through the central unit and software iDM3 or via MINI USB on the front panel and EMDC-64M Flasher software. Updating through MINI USB must be done while system BUS EBM is disconnected.
- When configuring DALI addresses two types are necessary to distinguished:
  - MASTER - this group includes sensors and detectors and one DALI branch can connect up to 4 DALI MASTER units
    - lighting intensity sensor DLS3-1
    - motion detector DMD3-1
  - SLAVE - electronic lighting ballast
- EMDC-64M in 3-MODULE design is designed for mounting in a control panel on a DIN rail EN60715.

## Connection



## Description of device



1. Terminals of EBM BUS
2. Terminal for EBM BUS termination
3. LED indication of power supply
4. Terminals of DALI BUS
5. Terminals of power supply
6. LED indication of overload
7. Interface settings
8. LED indication of unit's state
9. Mini USB connector
10. Terminals of DMX BUS
11. Terminal for DMX BUS termination

## General instructions

### CONNECTION TO THE SYSTEM, BUS SYSTEM EBM

System units MI3-02M, EMDC-64M and GSM3-01M connect to the system through the EBM BUS system. The BUS system conductors are connected to the terminals EBM+ and EBM-, wires can not be interchanged. The BUS system EBM is essentially a symmetrical high-speed RS485 interface and, as such, subject to requirements of the appropriate conduit. When installing the EBM BUS system it is necessary to observe all the requirements for the installation of the RS485 interface. It is particularly important to avoid overlapping with power lines (maintain a distance of at least 30 cm) and pay attention to equipment generating emissions when these are located in the vicinity of system units or the EBM BUS management system. These emissions must be suppressed to a desired level. For the EBM BUS system it is necessary to use CAT5e UTP cable or higher, or an FTP CAT5e and higher STP CAT5e or higher. For the EBM BUS management system it is not possible to use JYSTY cable or iNELS BUS Cable, which are used to guide the installation of BUS. EBM system BUS topology is strictly linear and there are no branches on the BUS. Both ends of the EMB BUS system require to terminate by using a resistor with a nominal value of 120Ω resistance. Units CU3-01M, CU3-02M, M13-02M and GSM3-01M this resistor is inserted between the terminals and EBM+ EBM-. The unit EMDC-64M resistor is included with the unit and closing is done by shorting adjacent terminals TERM and EBM+.

To power units CU3-01M, CU3-02M, M13-02M and GSM3-01M it is recommended to use the PS3-100/iNELS power supply. The EMDC-64M is powered by AC 230V. When installed, it is necessary to ensure that the power cord itself does not cause interference with the unit.

### CONNECTION TO THE SYSTEM, INSTALLATION BUS

iNELS3 peripheral units are connected to the system through the BUS installation. Installation BUS conductors are connected to the terminal units to BUS+ and BUS- terminals, wires cannot be interchanged. For installation of BUS it is necessary to use a cable with a twisted pair of wires with a diameter of at least 0.8 mm, the recommended cable is iNELS BUS Cable, whose features best meet the requirements of the BUS installation. Bearing in mind that in terms of all the properties it is possible in most cases also use the cable JYSTY 1x2x0.8 or JYSTY 2x2x0.8, however it is not recommended as the best option. In the case of a cable with two pairs of twisted wires it is not possible to use the second pair of the other for modulated signal due to the speed of communications; it is not possible within one cable to use one pair for one segment BUS and the second pair for the second segment BUS. For installation of BUS it is vital to ensure that it is kept at a distance from the power lines of at least 30 cm and must be installed in accordance with its mechanical properties. To increase mechanical resistance of cables we recommend installation into a conduit of suitable diameter. Topology installation of BUS is free except for a circle, each end of the BUS must terminate at terminals BUS+ and BUS-. While maintaining all the above requirements, the maximum length of one segment of the installation BUS can reach up to 500 m. Due to the data communication and supply of units in one pair of wires, it is necessary to keep in mind the diameter of wires with regards to voltage loss on the lead and the maximum current drawn. The maximum length of the BUS applies provided that they comply with the tolerance of the supply voltage.

### OUTPUT BUS DALI AND DMX

DALI BUS is a two wire and polarization-independent BUS. The EMDC-64M converter has a power supply installed inside (16 V / 250 mA). DALI BUS must not be connected to any external source. For the management of DALI BUS there is not an exact cable type recommended, but it is important to keep some installation conditions. For DALI BUS lines up to 100 m the recommended min. conductor cross section is 0.5 mm<sup>2</sup>. For management between 100 m -150 m a cross section of 0.75 mm<sup>2</sup> and more than 150 m the recommended min is 1.5 mm<sup>2</sup>. Management of more than 300 m is not recommended. The voltage drop at the end of the installation may not be greater than 2 V. In the case of a 5-pin cable, be sure to avoid any confusion with the management of the BUS power line. BUS connection topology is arbitrary and is not required to terminate. DMX was developed as a digital interface for the control of effect lighting. BUS topology is strictly linear and must be terminated at both ends of the resistor with a nominal value of 120Ω. With EMDC-64M this can be done by shorting the ends of adjacent terminals TERM and A. In general, when you install DMX BUS follow all RS485 installation requirements. When using repeaters you can control up to 64 receivers. Ideally, the range may be up to 1200 m.

**EMDC-64M**
**Power supply**

Supply voltage /	AC 230 V (50 - 60 Hz),
Rated current:	-15 / +10 % / max. 100 mA
DALI power supply:	16 V, 250 mA
Dissipated power:	max. 3 W

**Communication**

Input interface:	EBM BUS (RS485 communication)
Output interface:	DALI (max. 64 ballasts) DMX (max. 32 receivers, with repeater to 64)

**Indication**

Power supply:	green LED Un
Error surge or short DALI:	illuminated red LED ERR
Indication of unit status:	LED DALI/DMX (see iNELS installation handbook)

**Operating conditions**

Relative humidity:	max. 80 %
Operating temperature:	-20 .. +55 °C
Storage temperature:	-30 .. +70 °C
Protection degree:	IP20 device, IP40 mounitg in the switchboard
Control device purpose:	operating control device
Control device construction:	individual control device
Characteristic of automatic action:	2.5 kV
Overvoltage category:	II.
Pollution degree:	2
Operating position:	vertical
Installation:	into switchboard on DIN rail EN60715
Implementation:	3-MODULLE

**Dimension and weight**

Dimension:	90 x 52 x 65 mm
Weight:	140 g

Before the device is installed and operated, read this instruction manual carefully and with full understanding and Installation Guide System iNELS3. The instruction manual is designated for mounting the device and for the user of such device. It has to be attached to electro-installation documentation. The instruction manual can be also found on a web site [www.inels.com](http://www.inels.com). Attention, danger of injury by electrical current! Mounting and connection can be done only by a professional with an adequate electrical qualification, and all has to be done while observing valid regulations. Do not touch parts of the device that are energized. Danger of life-threat! While mounting, servicing, executing any changes, and repairing it is essential to observe safety regulations, norms, directives and special regulations for working with electrical equipment. Before you start working with the device, it is essential to have all wires, connected parts, and terminals de-energized. This instruction manual contains only general directions which need to be applied in a particular installation. In the course of inspections and maintenance, always check (while de-energized) if terminals are tightened.