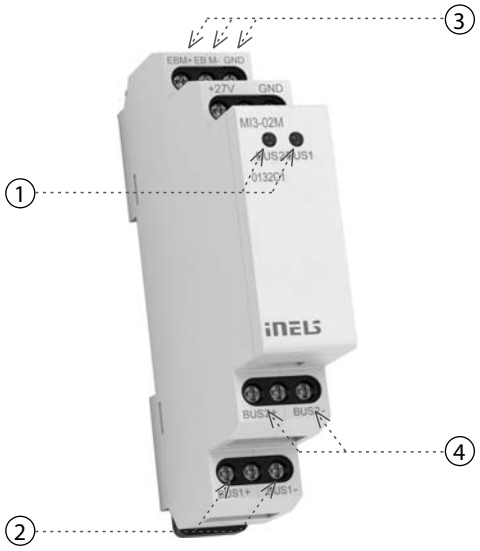
MI3-02M

EN External master BUS

Characteristics

- External master MI3-02M provides expansion of the amount of units iNELS3 connected to the central unit CU3-01M or CU3-02M of two other lines of BUS (i.e. about 2x32 peripheral units).
- If you require the use of a central unit CU3-01 (02M) in combination with the iNELS2 units, all the units must be connected to the BUS lines, which are based on an external master MI3-02M/iNELS2.
- Through the system BUS EBM, it is possible to connect to one central unit up to 8 external masters MI3-02M or MI3-02M/iNELS2.
- Combining central unit CU3-01M (02M) and 8 external masters MI3-02M we can reach maximum capacity of iNELS system up to 576 peripheral units.
- If you require an extended system then it is possible to use communication of up to 8 central units with iMM or Connection server using ELKONET protocol, eventually the integration of more central units into BMS via ASCII protocol.
- MI3-02M and MI3-02M/iNELS2 have marked on the front panel of the unique hardware address. This address belongs to the line BUS1. Hardware address of BUS2 line is always one value higher than for BUS1.
- MI3 units are supplied from PS3-100/iNELS.
- To power the lines BUS, it is necessary to use a BUS separator BPS3-02M or BPS3-01M (supply only one line). In case of using MI3-02M/iNELS2 is used BPS2-02M or BPS2-01M.
- Status signaling of each BUS (operation, fault) is indicated by two-color LEDs on the front panel of the module.
- The last MI2-02M connected to the EBM BUS must be closed with a 120 Ω termination resistor. This part adapted to be inserted between terminals is included into central units packages and it is necessary to insert between terminals EBM+ and EBM-.
- MI3-02M, MI3-02M/iNELS2 in 1-MODULE version is designed for mounting into a switchboard, on DIN rail EN60715.

Description of device



1. LED indication - operation state / LED indication - fault in BUS
2. Data BUS1
3. Terminals for EBM BUS connection
4. Data BUS2

General instrucions

CONNECTION INTO THE SYSTEM

Connect the product to the system according to the connection diagram listed with each product. The wires of data BUS of iNELS system are connected to the terminals BUS+ (standard red wire for single-pair wiring, red and yellow for two-pair wiring) and BUS - (standard black wire for single-pair wiring, black and white for two-pair wiring), and it is not possible to change the terminals. A twisted pair of wires must be used for the data BUS with a wire diameter at least 0.8 mm. Data communications and power supply to the units are led in a single pair of wires, and you must observe the power cable size with regard to voltage loss on the wire and the maximum power draw.

CAPACITY AND CENTRAL UNIT

It is possible to connect to the central unit CU3-01M or CU3-02M two independent BUSes by means of terminals BUS1+, BUS1- and BUS2+, BUS2-. It is possible to connect to each BUS up to 32 units, so it is possible to connect directly to the central unit a total of 64 units. It is necessary to comply with the requirement of a maximum load of one BUS line - maximum up to 1000 mA current. It is the sum of the rated currents of the units connected to the BUS line, other units can be connected using the units MI3-02M, which generate further BUSes. These are connected to the CU3 unit via the system BUS EBM and you can connect a total of 8 units via EBM BUS to the central unit MI3-02M.

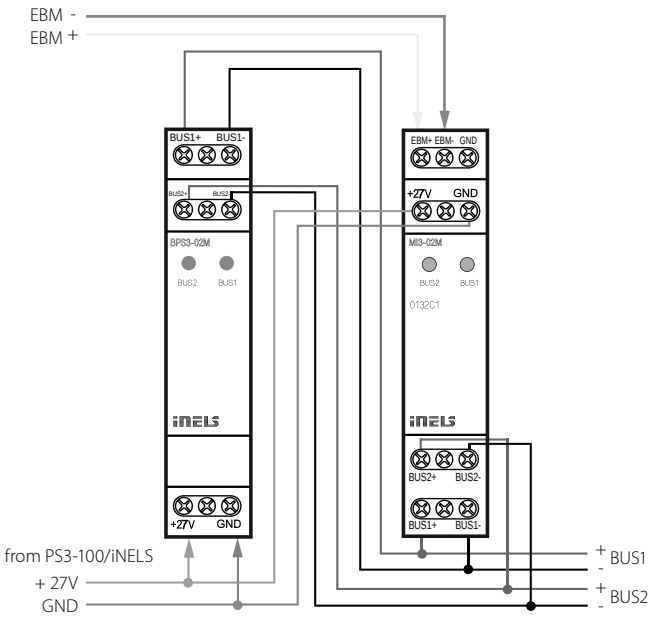
COMMUNICATION BUS OF THE SYSTEM

The BUS must have a cable created by a twisted pair of wires for data BUS of the system with a minimum wire diameter of 0.8 mm. A shielded cable must be used in case of installation of cables of the BUS in an environment with the possibility of electromagnetic interference (e.g. when running along power lines, near electric machines and devices, during LV passage through a distributor, etc.). We highly recommend using the cable JYSTY 2x2x0.8 for BUS. The BUS cable is installed in accordance with its mechanical properties given by the producer (into a pipe / bar, under plaster, underground, suspended, etc.). To increase the mechanical resistance of cables, we always recommend installing the cable into an electrical insulation pipe of the appropriate diameter. The total length of wires of the BUS for CU3-01M (CU3-02M), or MI3-02M, can be 1.100 m (550 m for each BUS). The topology of the communications BUS is open with the exception of topology of the circuit. It is necessary to use the cable FTP CAT5e or higher for the system BUS EBM - one pair of wires is connected to the terminals EBM+ and EBM - and the second pair of wires can be curled and connected to GND terminal (just on the one side of EBM BUS). The typology of EBM system BUS is strictly linear and must be terminated at both ends with a nominal resistance value of 120 Ω. It is the installer's responsibility to follow all instructions in the manual and all installation requirements for the RS485 BUS.

SUPPLYING THE SYSTEM

For supplying power to system units, it is possible to use the power sources of ELKO EP titled PS3-100/iNELS. We recommend backing up the system with backup batteries connected to the source of PS3-100/iNELS (see sample diagram of connecting the control system).

Connection



Technical parameters

MI3-02M	
Outputs	
Number of connected units:	max. 64 (2x32)
Communication	
Installation BUS:	2x BUS for connection of peripheral units
Data BUS:	for communication with central unit
Unit status indication:	green LED
BUS fault indication:	red LED
Length of BUS wire:	max. 2x 550 m
Length of BUS EBM wire:	max. 500 m
Power supply	
Supply voltage / tolerance:	27 V DC, -20 / +10 %
Rated current:	25 mA (at 27 V DC)
Operating conditions	
Operating temperature:	-20 .. +55 °C
Storage temperature:	-25 .. +70 °C
Humidity:	max. 80 %
Protection degree:	IP20 device, IP40 mounting in the switchboard
Overvoltage category:	II.
Pollution degree:	2
Operating position:	any
Installation:	in a switchboard on DIN rail EN 60715
Design:	1-MODULE
Terminal:	max. 2.5 mm^2
Dimensions and weight	
Dimensions:	90 x 17.6 x 64 mm
Weight:	58 g

Warning

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. 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.