

FA3-612M

EN Fan Coil Control Actuator



iNELS
BUS System

02-10/2019 Rev.0

Characteristics

- FA3-612M is a unit (actuator) designed to control fan coil units using analogue / digital inputs and analog / relay outputs.
- Analog inputs for temperature, voltage or current measurement (URef reference voltage can also be used).
- The digital inputs are galvanically isolated with positive logic (Sink) in the 24-230V AC / DC voltage range.
- Analog outputs 0-10V.
- Connection to the installation BUS.
- Buttons for closing / opening the valve, fan and heating relay.
- The LEDs on the front panel indicate FAN, RE, VALVE1, VALVE2, OVERRANGE, and OVERLOAD status.
- FA3-066M in 6-MODULE version is designed for mounting into a switchboard, on DIN rail EN60715.

General instructions

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. BUS topology installation is free except for the ring, wherein each end of the bus must terminate at the terminals BUS + and BUS- peripheral unit. 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.

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. When connecting units which draw greater than 1A, BPS3-01M with 3A sampling can be used. 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.

SUPPLYING THE SYSTEM

For supplying power to system units, it is recommended to use the power source 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).

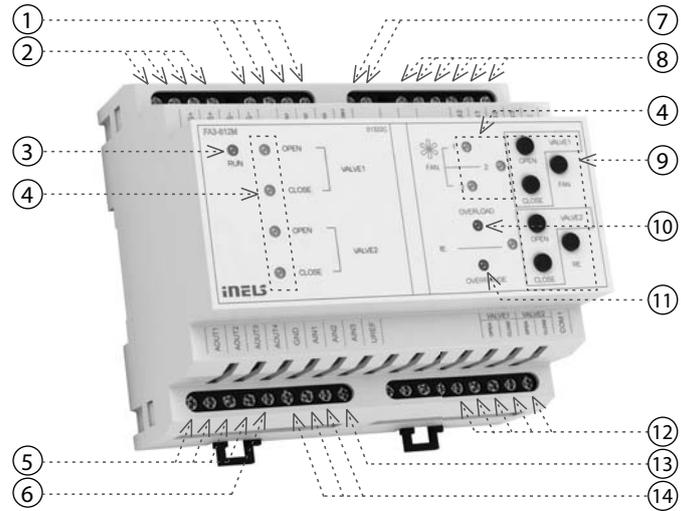
GENERAL INFORMATION

To operate the unit, it is necessary that the unit is connected to a central unit CU3 series, connected to the central unit of the system CU3, or to a system that already contains this unit as its expansion to include further system.

All unit parameters are set through the central unit CU3-01M in the software iDM3.

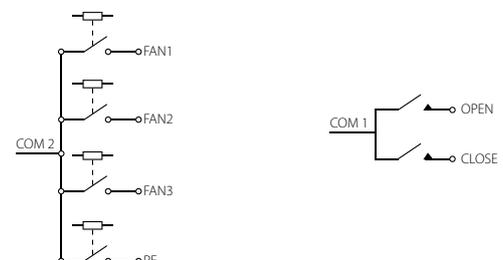
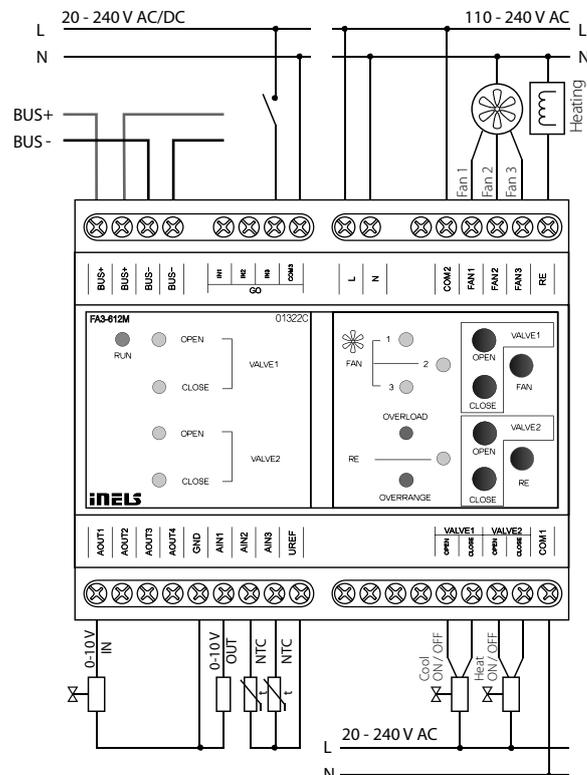
There is LED diode on the PCB for indication of supply voltage and communication with the central unit series CU3. In case that the RUN diode flashes at regular intervals, so there is standard communication between the unit and BUS. If the RUN diode lights permanently, so the unit is supplied from BUS, but there is no communication between BUS and unit. In case that RUN diode is OFF, so there is no supply voltage on the terminals BUS+ and BUS-.

Description of device



- | | |
|-----------------------------------|------------------------------|
| 1. Galvanically isolated inputs | 8. Relay output |
| 2. Data BUS | 9. Control buttons |
| 3. LED indication - state of unit | 10. Output overload |
| 4. LED output indication | 11. Range Exceeded |
| 5. Analog outputs | 12. SSR relay output |
| 6. GND terminal | 13. Reference voltage output |
| 7. Terminals of supply voltage | 14. Analog inputs |

Connection



Technical parameters

Input	
Analog inputs:	3x voltage, current or temperature input
Number of inputs:	3
Galv. separation from inner circuits:	No
Diagnostic:	indication red LED OVERRANGE (exceeding the range, interruption of a sensor or overload of Uref output)
Common terminal:	GND
Converter resolution:	14 bits
Input resistance	
- for voltage ranges:	approx. 150 kΩ
- for current ranges:	100 Ω
Types of inputs / measuring ranges*:	Voltage (U): 0 ÷ +10 V (U) ; 0 ÷ +2 V (U) Current (I): 0 ÷ +20 mA (I) ; ÷ +20 mA (I) temperature: input at ext. temperature sensor TC, TZ, Ni1000**, Pt1000**, Pt100** see accessories / according to used sensor from -30°C to 250°C
Digital inputs:	3x switching or expansion, positive logic (SINK)
Input voltage:	20 - 240 V AC (50 - 60 Hz) / DC
Galv. separation from internal circuits:	Yes
Common lead:	GO COM3

Outputs	
Analog:	4x (A_OUT1 - A_OUT4)
Voltage analog. output / max. Current:	4x 0(1) - 10 V / 10 mA
Uref reference voltage outputs	
Voltage / Current Uref:	10 V DC / 100 mA
Output overload indication:	red LED OVERLOAD
SSR (Electronic Relay):	4x (VALVE1 - VALVE2)
Switching voltage:	20 - 240 V AC
Switching capacity:	480 VA
Peak current:	20 A, $t \leq 16$ ms
Output indication:	yellow LED
Relay 6A:	4x (FAN1-FAN3, RE)
Switching voltage:	250 V AC, 24 V DC
Switching capacity:	1500 VA / AC1; 300 VA / AC15; 180 W/DC, AC3
Relay outputs separated from from all internal circuits:	reinforced Insulation (Cat. II surges by EN 60664-1)
Minimum switching load:	500 mW (12 V / 10 mA)
Mechanical life:	10x10 ⁶
Electrical life AC1:	6x10 ⁴
Output indication:	yellow LED

Communication	
Installation BUS:	BUS
Status indication unit:	green LED RUN

Power supply	
Voltage of BUS / tolerance / rated current:	27 V DC, -20 / +10 %, 5 mA
Supply voltage of power section (relay) / tolerance / nominal current:	AC 230V (50 Hz), -15 / +10 %, 20 mA
Dissipated power:	max. 1 W

Connection	
Terminal:	max. 2.5 mm ² / 1.5 mm ² with sleeve

* Selectable for each input individually by configuration in the user program iDM3.

** The FA3-612M/Pt version is available for these sensors.

Operating conditions	
Operating temperature:	-20 .. +55°C
Storing temperature:	-30 .. +70°C
Protection degree:	IP20 device, IP40 mounting in the switchboard
Overvoltage category:	II.
Pollution degree:	2
Operating position:	any
Installation:	switchboard on DIN rail EN 60715
Design:	6-MODUL

Dimensions and weight	
Dimensions:	90 x 105 x 65 mm
Weight:	307 g

Indication LED

Flashing interval of the respective LED when the maximum number of contacts is exceeded when the relay is switched on (FAN, RE):



Flashing interval of the respective LED when the max. Number of contacts is exceeded when the relay is switched off (FAN, RE):



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.