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DIGITAL INPUT / OUTPUT MODULE

MDI4

INSTALLATION MANUAL

02/2008

General description:

Module is designated to receiving/transmitting digital information to/from superior system containing RS485 serial link. Module type range includes 8 types varied by power supply voltage and number of inputs/outputs. Each type is described briefly in the following table:

Type	Voltage	Inputs	Outputs
MDI40	230V~	4	0
MDI41	230V~	4	1
MDI42	(9..30)V=	4	0
MDI43	(9..30)V=	4	1
MDI44	230V~	0	4
MDI45	230V~	1	4
MDI46	(9..30)V=	0	4
MDI47	(9..30)V=	1	4

Device is placed in a plastic modular box, 4 module width with 35mm DIN fixation. There is LED lights signalling the state of device, serial link communication, inputs/outputs and current configuration on the front side of the box. Buttons to set adress and run mode of the module are placed under front-cover.

Technical parameters of the MDI4:

Power supply:	230V/50Hz, 2VA or (9..30)V=, 1W
Digital input:	6-30V - galvanically separated
Pulse counters:	16bit (65536 states)
Pulse timing:	2ms – 65535ms
Relay outputs:	250V~, 8A
Communication link:	RS485, 1200bps or 9600bps, N, 8, 1
Dimensions:	70mm * 90mm * 60mm (4M)
Protection:	IP20

Power supply:

Module is due to its type supplied by 230V~/50Hz or (9..30)V DC connected through suitable fuse element. In case of 230V~ is module protected by T32mA fuse placed inside the modular box.

Presence of power supply and run mode of module is indicated by blinking green LED on the front side of the module.

Digital inputs:

Each input is galvanically separated from the others, connected to an isolated cable connector and independent to other circuits. Inputs are also protected from reversing polarity including RC filter avoiding signal bouncing. DC voltage ranged from 6-30V can be connected to each input from active output of connected device or from passive switch powered from terminals of auxiliary power supply (types MDI40,

MDI41, MDI44, MDI45) or from power supply unit (types MDI42, MDI43, MDI46, MDI47). Inputs active state are signalized by red LEDs on the front side of the module.

Due to module configuration settings inputs can be used beside digital information transfer to pulse counting. Pulse counter state changes at the rising edge of input signal and period of impulse can be measured also if pulse period not exceeds 1 minute. First input can be used to synchronize measured interval to rising or falling edge of input signal.

Digital outputs:

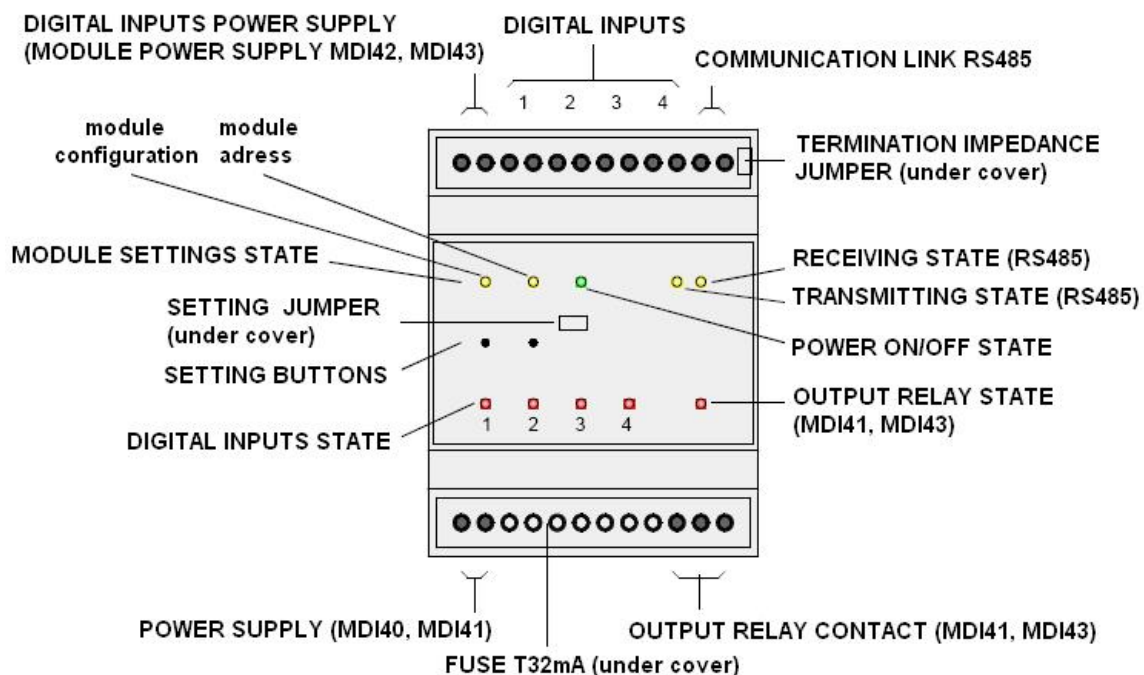
Outputs of module have relay switching contact 8A/250V connected to the module terminals. Relay active state is indicated by red LED of each output on the front side of the module.

Communication interface:

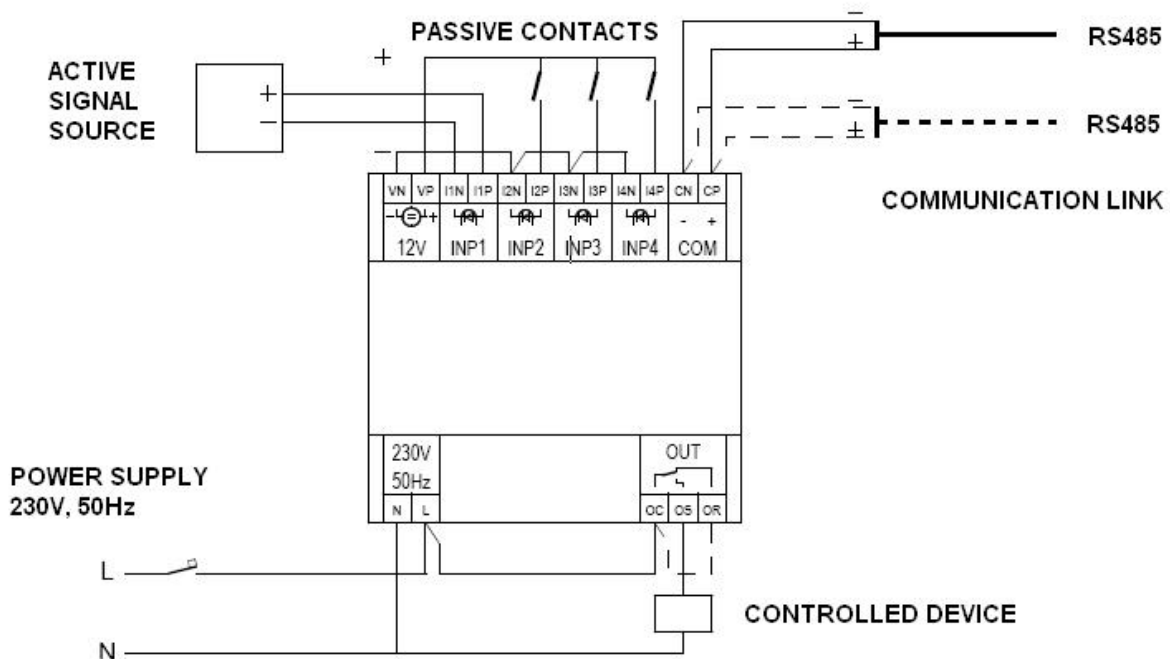
Communication link RS485 is equipped with surge protection. There's jumper under the cover of the terminal board which enable or disable termination impedance 150 Ohm. This should be done in case module is topologically situated at the end of link. If serial link continues jumper should be disconnected. Receiving and transmitting of data is signalized by yellow LEDs on the front side of the module.

Topology of terminals, control and signalization elements:

Topology of each element on module types MDI40, MDI41, MDI42, MDI43 is shown in following picture:



MDI41 typical scheme:



SETTING THE MODULE:

There are 2 numeric parameters to set by setting buttons : module address and module configuration. Settings jumper is to connect and 2 yellow LEDs shows the state of configuration; one for address, one for module configuration. These elements are accessible after removing front cover of the module. Following action are possible:

Parameter value checking:

To check parameter value simply press and release button. Yellow LED goes on for time of pressing button and after releasing it blink so many times as the current value is.

Parameter value setting:

To set parameter value following actions are necessary: At first connect the settings jumper (jumper from termination impedance can be used). For setting the parameter to chosen value press and hold the button till the yellow LED blink so many times as the chosen value is. If the wrong value is set, simply repeat the parameter value setting actions. If you press the button for the time when yellow LED doesn't blink value is reset to default. When you finish setting the parameter, disconnect the jumper. Parameter value checking is recommended.

Parameter initialization:

It means resetting both parameters at once. Connect the setting jumper and press the both setting buttons at once for a short time (for the time when yellow LEDs don't blink). Yellow LEDs turns off after next press of any button.

Setting of following parameters:

Module address setting:

For communication purpose with superior system module is expressly identified by address. If there is more modules on the link, none of it should have equal addresses. Module enables address setting from 0 to 31.

Module configuration setting:

Configuration parameter determines run mode of the module and type of communication protocol with superior system.

For module types can configuration parameter has the values from 0 – 7 according to the following table:

Configuration parameter for:		Input signals processing	Communication protocol
1200bps	9600bps		
0	4	Real-time input signals transfer only	11
1	5	Measure and count period of impulses for all inputs	15
2	6	Rising edge impulse synchronization for the first input (*)	16
3	7	Falling edge impulse synchronization for the first input (*)	16

Note: (*) Measure and count period of impulses for other inputs.

For module types MDI44, MDI45, MDI46, MDI47 configuration parameter has no use.

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