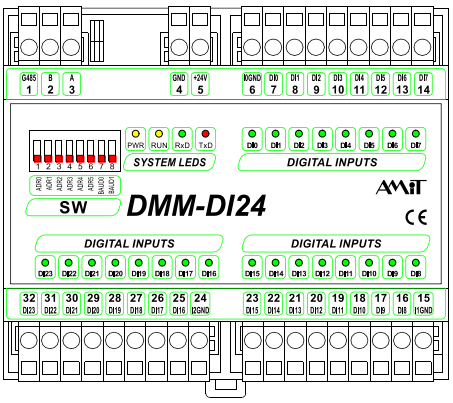
Industrial
Control Systems

DMM-DI24

Digital AC/DC inputs module with protocol MODBUS

- **24 digital inputs module 24 V DC / AC**
- **Possibility of impulse counting on each DI**
- **Inputs with galvanic isolation partitioned per eight**
- **Operation through RS485 interface, protocol MODBUS RTU**



TECHNICAL DATA

Inputs	3 × 8
Common wire	Minus
Logical 0	Min. -30V DC / AC, max. 5 V AC / DC
Logical 1	Min. 16 V DC / AC, max. 30 V AC / DC
Input current	6 mA at 24 V AC / DC
Input peak current	Max. 10 mA at 30 V AC / DC
Maximum frequency for counter	80 Hz, duty cycle 1:1
Overvoltage protection	Transil 600 W
Input voltage max. (1 s)	50 V AC / DC
Galvanic isolation of inputs	Yes *)
Communication	RS485
Line galvanic isolation	Yes *)
Overvoltage line protection	Transil 600 W
Communication speeds	9600 bps to 57600 bps
Number of modules on RS485 network	63
Number of modules on RS485 segment	31
Power supply	19.2 V to 28.8 V DC
Power consumption	Max. 150 mA at 24 V DC
Others	
Connection	WAGO cage clamps 231
Ingress protection rate	IP20
Operating temperature range	0 °C to 50 °C
Maximum ambient humidity	< 95 % non-condensing
Mounting	DIN rail 35 mm
Weight	250 g
Dimensions (w × h × d)	(106 × 97 × 73) mm

*) Insulation strength 500 V AC / 1 minute, galvanic isolation must not be used for safe and unsafe parts separation.

ORDERING INFORMATION

DMM-DI24	24 digital inputs module with protocol MODBUS, connectors WAGO

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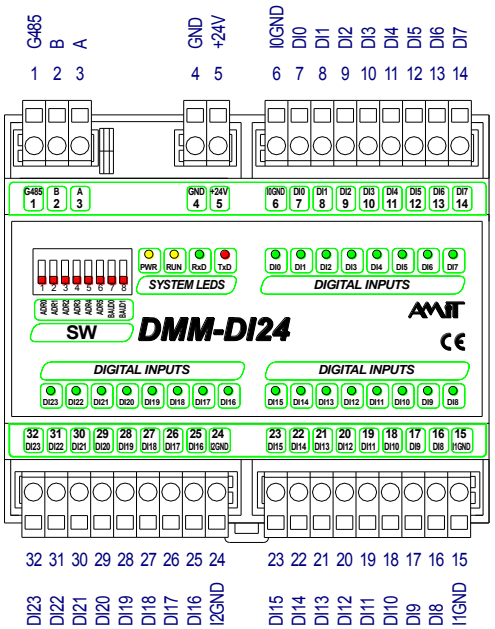
TERMINALS IDENTIFICATION

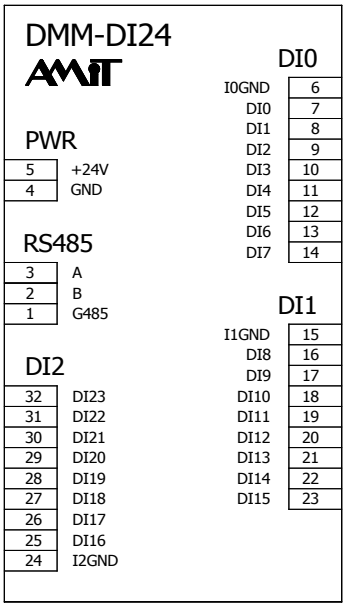
Terminal	Signal	Description
1	G485	RS485, shielding
2	B	RS485, line B
3	A	RS485, line A
4	GND	Power supply, ground
5	+24V	Power supply +24 V DC
6	I0GND	External GND
7	DI0	Input 0
8	DI1	Input 1
9	DI2	Input 2
10	DI3	Input 3
11	DI4	Input 4
12	DI5	Input 5
13	DI6	Input 6
14	DI7	Input 7
15	I1GND	External GND
16	DI8	Input 8

Terminal	Signal	Description
17	DI9	Input 9
18	DI10	Input 10
19	DI11	Input 11
20	DI12	Input 12
21	DI13	Input 13
22	DI14	Input 14
23	DI15	Input 15
24	I2GND	External GND
25	DI16	Input 16
26	DI17	Input 17
27	DI18	Input 18
28	DI19	Input 19
29	DI20	Input 20
30	DI21	Input 21
31	DI22	Input 22
32	DI23	Input 23

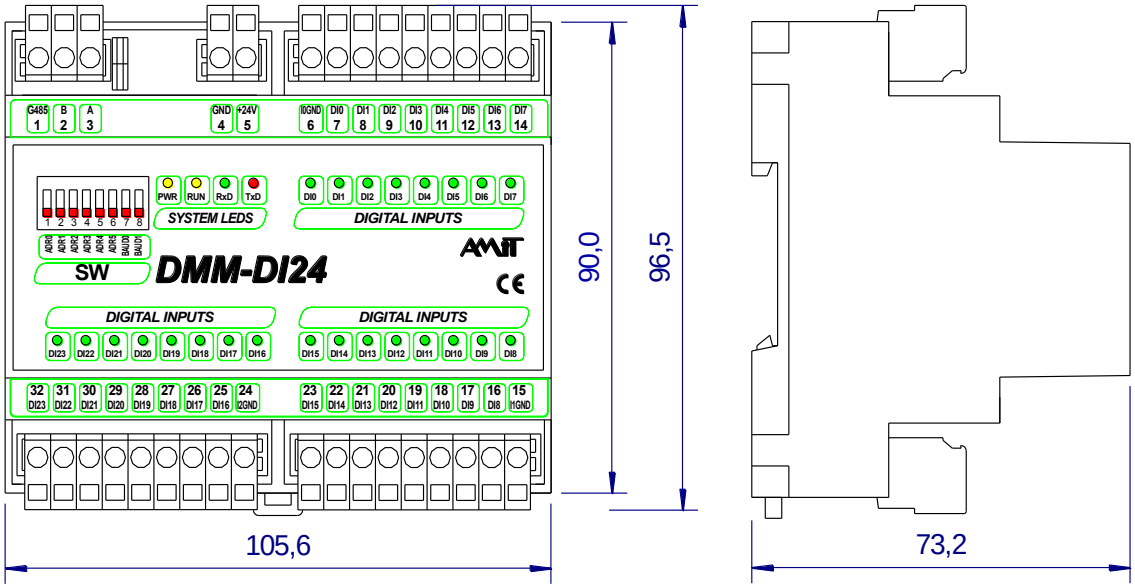
TERMINALS LOCATION



RECOMMENDED DRAWING SYMBOL



MECHANICAL DIMENSIONS



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JUMPERS – RS485 INTERFACE

J8, 1-2	Idle state line definition + A line termination
J8, 3-4	Idle state line definition + B line termination

PARITY SETTING

Switch the unit power supply off, set all switches to OFF position and turn on the power again. Parity can be set by ADR0 (DIP 1) and ADR1 (DIP 2) switches according to the following table:

ADR0 (DIP 1)	ADR1 (DIP 2)	Parity
OFF	OFF	None
ON	OFF	Even
OFF	ON	Odd

Confirm the settings by switching the BAUD1 (DIP 8) switch to ON state (LEDs on module will flash sequentially). Parity setting is displayed on the corresponding LEDs. Change will be active after turning the module off and on again.

SETTING OF ADDRESS AND COMMUNICATION SPEED

Address setting can be done by ADR0 (DIP 1) to ADR5 (DIP 6) switches. Available address values are 1 to 63. **Address value 0 is not allowed!** Communication speed settings can be done by BAUD0 (DIP 7) and BAUD1 (DIP 8) switches.

ADDRESS

DIP	Value
ADR0 (DIP 1)	Value of 1
ADR1 (DIP 2)	Value of 2
ADR2 (DIP 3)	Value of 4
ADR3 (DIP 4)	Value of 8
ADR4 (DIP 5)	Value of 16
ADR5 (DIP 6)	Value of 32

COMMUNICATION SPEED¶

BAUD0 (DIP 7)	BAUD1 (DIP 8)	Communication speed
OFF	OFF	9600 bps
ON	OFF	19200 bps
OFF	ON	38400 bps
ON	ON	57600 bps

An example of address construction: Adr. = 35, therefore 1, 2 and 6 (1+2+32) switches are ON. Change of switch setting will be active after turning the module off and on again.

SUPPORTED MODBUS FUNCTIONS

Function	Description
2	Read digital inputs state
3	Read the counter values
4	Read the counter values (same as function 3)
6	Write single counter value
16	Write all counters values

The states of the digital inputs are mapped to the Modbus network through discrete inputs according to the table.

DMM-DI24 input	Modbus DI number	Modbus DI type	Description
DI0	0	R	DI0 state
DI1	1	R	DI1 state
DI2	2	R	DI2 state
…	…	…	…
DI21	21	R	DI21 state
DI22	22	R	DI22 state
DI23	23	R	DI23 state

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Counter values are mapped to the Modbus network through the input and holding registers according to the table.

DMM-DI24 input	Modbus IR (HR) number	Modbus IR (HR) type	Description
DI0	0	R (R/W)	DI0 counter value
DI1	1	R (R/W)	DI1 counter value
DI2	2	R (R/W)	DI2 counter value
…	…	…	…
DI21	21	R (R/W)	DI21 counter value
DI22	22	R (R/W)	DI22 counter value
DI23	23	R (R/W)	DI23 counter value