

Digital Input Module

BMT-DI10

1108811319

7622/899299-02



1. Description

The BACnet MS/TP module with 10 digital inputs was developed for decentralized switching tasks. It is suitable for detecting potential-free switch states, for example electrical limit switches on vent valves or auxiliary contacts of power contactors. The inputs can be used as contact or voltage inputs. The inputs can be scanned by means of standard objects via a BACnet client. The module is addressed and the baud rate is set by means of two address switches on the front.

Suitable for decentralized mounting in serial sub-distributor.

2. Declaration of Conformity

The device was tested according to the applicable standards. Conformity was proved. The declaration of conformity is available at the manufacturer METZ CONNECT GmbH.

Notes Regarding Device Description

These instructions include indications for use and mounting of the device. In case of questions that cannot be answered with these instructions please consult supplier or manufacturer.

The indicated installation directions or rules are applicable to the Federal Republic of Germany. If the device is used in other countries it applies to the equipment installer or the user to meet the national directions.

Safety Instructions

Keep the applicable directions for industrial safety and prevention of accidents as well as the VDE rules.

Technicians and/or installers are informed that they have to electrically discharge themselves as prescribed before installation or maintenance of the devices.

Only qualified personnel shall do mounting and installation work with the devices, see section "qualified personnel".

The information of these instructions have to be read and understood by every person using this device.

Symbols

Warning of dangerous electrical voltage

Danger

means that non-observance may cause risk of life, grievous bodily harm or heavy material damage.

Qualified Personnel

Qualified personnel in the sense of these instructions are persons who are well versed in the use and installation of such devices and whose professional qualification meets the requirements of their work.

This includes for example:

- Qualification to connect the device according to the VDE specifications and the local regulations and a qualification to put this device into operation, to power it down or to activate it by respecting the internal directions.
- Knowledge of safety rules.
- Knowledge about application and use of the device within the equipment system etc.

3. Technical Data

BACnet Interface

Protocol: BACnet MS/TP
 Transmission rate: 9600 to 115200 Bd (factory setting 9600 Bd)
 Cabling: RS485 two wire bus with voltage equalizing cable in bus / line topology terminate with 120 Ohms

Supply

Operating voltage range: 20 to 28 V AC/DC (SELV)
 Current consumption: 85 mA (AC) / 75 mA (DC)
 Relative duty cycle: 100 %

Input

Input voltage: 30 V DC
 High-signal recognition: >7 V AC/DC

Housing

Dimensions WxHxD: 1.4 x 2.8 x 2.6 in. (35 x 70 x 65 mm)
 Weight: 83 g
 Mounting position: any
 Mounting: standard rail TH35 per IEC 60715
 Mounting in series without space

Material

Housing: Polyamide 6.6 V0
 Terminal blocks: Polyamide 6.6 V0
 Cover plate: Polycarbonate

Type of protection (IEC 60529)

Housing: IP40
 Terminal blocks: IP20

Terminal blocks

Supply and bus: 4 pole terminal block
 max. AWG 16 (1.5 mm²) solid wire
 max. AWG 18 (1.0 mm²) stranded wire
 Wire diameter: min. 0.3 mm up to max. 1.4 mm (terminal block and jumper plug are included to each packing unit)

Module connection

Inputs: max. AWG 12 (4.0 mm²) solid wire
 max. AWG 14 (2.5 mm²) stranded wire
 Wire diameter: min. 0.3 mm up to max 2.7 mm
 Protective circuitry: polarity reversal protection of operating voltage
 polarity reversal protection of supply and bus

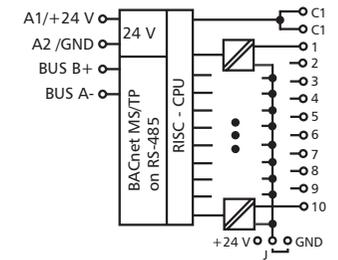
Temperature range

Operation: -5 °C to +55 °C
 Storage: -20 °C to +70 °C

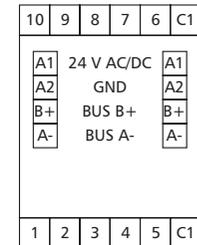
Display

Operating / bus activity: green LED
 Error indication: red LED
 Status of the inputs: yellow LED

4. Wiring Diagram



5. Connection Diagram



6. Mounting

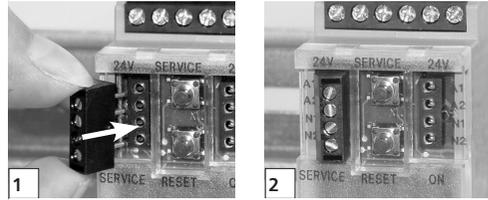
Power down the equipment

Mount the module on standard rail (TH35 per IEC 60715 in junction boxes and/or on distribution panels).

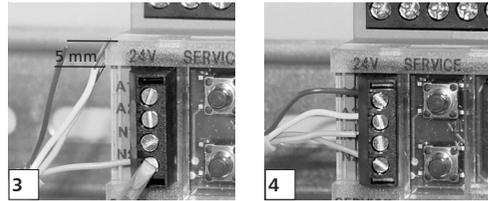
Installation

Electric installation and device termination shall be done by qualified persons only, by respecting all applicable specifications and regulations.

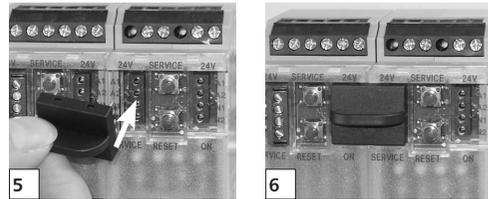
Plug in the terminal block for bus connection



1 Connect the cable for bus supply



3 Mounting in series



The module can be aligned without interspace. Use the jumper plug to connect bus and supply voltage when the modules are mounted in series.

The maximum quantity of modules connected in line is limited to 15 or to a maximum power consumption of 2 Amps (AC or DC) per connection to the power supply. For any similar block of additional modules a separate connection to the power supply is mandatory.

7. Network address and Bit rate setting

Configuration Switches

Hexadecimal Switches x10, x1 define the Network Address (00 - F9; e.g. F9h = 15x16+9 = 249d) and Baud rate (FA - FF).

- Turn Switch x10 to E (Device is temporarily configured as Slave)
- Turn Switch x1 to A - F to select Baud rate
- Turn Switch x10 to F, wait 1 second
- Red and green LEDs are blinking when Baud rate is stored in EEPROM

• Turn Switch x10 to select Network Address

• Turn Switch x1 to select Network Address

MS/TP Master if using Network Address 0x00 ... Max_Master,

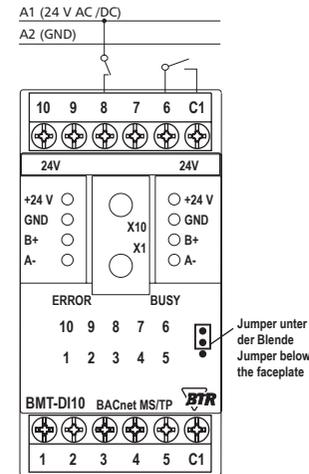
MS/TP Slave if using Network Address Max_Master + 1 ... 0xF9.

Address switch x10	F	F	F	F	F	F
Address switch x1	A	B	C	D	E	F
Bit rate (Bit/s)	9600	19200	38400	57600	76800	115200

Factory setting: 9600 Bit/s

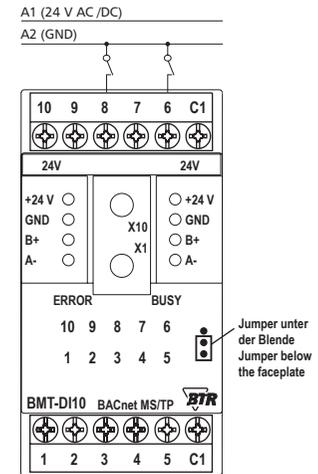
8. Connection examples

Connection examples 1+2



Jumper unter der Blende
Jumper below the faceplate

Connection example 3



Jumper unter der Blende
Jumper below the faceplate

9. Software Description

Device Object

Property	Remark / Value	RW
Object_Identifier	device, default instance: 421000 + Network-Address	RW-E
Object_Name	max. 63 Bytes, default "BMT-DI10_" + Network-Address (Hexadecimal)	RW-E
Object_Type	DEVICE (8)	R
System_Status	OPERATIONAL (0)	R
Vendor_Name	"BTR Netcom GmbH"	R
Vendor_Identifier	421	R
Model_Name	"BMT-DI10"	R
Description	max. 127 Bytes, default ""	RW-E
Location	max. 63 Bytes, default ""	RW-E
Firmware_Revision	"1.2"	R
Application_Software_Version	"1.0"	R
Protocol_Version	1	R
Protocol_Revision	12	R
Protocol_Services_Supported	read-property, write-property, subscribe-cov, who-has, who-is, device-communication-control, reinitialize-device	R
Protocol_Object_Types_Supported	DEVICE, BINARY_INPUT, GROUP	R
Object_List [22]	device, binary-input 1...10, group 1...11	R
Max_APDU_Length_Accepted	480	R
Segmentation_Supported	NO_SEGMENTATION (3)	R
APDU_Timeout	10000	R
Number_Of_APDU_Retries	3	R
Device_Address_Binding	-	R
Database_Revision	0	R
Max_Master	0...127, default 127	RW-E
Max_Info_Frames	1...255, default 1	RW-E
Active_COV_Subscriptions	max. 12 Subscriptions, for binary-input 1...10, Confirmed / Unconfirmed, Lifetime = 0...65535 sec.	R

R: Read Property, W: Write Property, -E: Storage in EEPROM / Flash

Continuation Software Description

Binary Input Object 1...10

Property	Remark / Value	RW
Object_Identifier	binary-input, instance 1 ... 10	R
Object_Type	BINARY_INPUT (3)	R
Object_Name	max. 42 Bytes, default "Input 1" ... "Input 10"	RW-E
Description	max. 84 Bytes, default ""	RW-E
Present_Value	INACTIVE (0) / ACTIVE (1), writable if Out_Of_Service	R RW
Status_Flags	IN_ALARM: 0 FAULT: 0 OVERRIDDEN: 0 OUT_OF_SERVICE: 0 / 1	R
Event_State	NORMAL (0)	R
Out_Of_Service	FALSE (0) / TRUE (1)	RW
Polarity	NORMAL (0) / REVERSE (1)	RW-E
Inactive_Text	max. 20 Bytes, default "Off"	RW-E
Active_Text	max. 20 Bytes, default "On"	RW-E
Notification_Class	Unsubscribed UnconfirmedCOVNotification 0: no COV notification, default, 1: local broadcast, 2: global broadcast	RW-E
R: Read Property, W: Write Property, -E: Storage in EEPROM / Flash		

Function Table for Binary Input

Out_Of_Service	Polarity	Binary Input	Present_Value	OUT_OF_SERVICE
0	0	0	0	0
		1	1	
0	1	0	1	0
		1	0	
1	0	0	x	1
		1	x	
1	1	0	x	1
		1	x	

x: Present_Value is writable and not affected by inputs

Group Object 1...11

Property	Remark / Value	RW
Object_Identifier	group, instance 1 ... 11	R
Object_Type	GROUP (11)	R
Object_Name	max. 42 Bytes, default "Group 1" ... "Group 11"	RW-E
Description	max. 84 Bytes, default ""	RW-E
Present_Value	Present_Value of Binary Inputs, see next Table	R
List_Of_Group_Members	see next Table	R
R: Read Property, W: Write Property, -E: Storage in EEPROM / Flash		

Continuation Software Description

Members of Groups

Group	Binary Input									
	1	2	3	4	5	6	7	8	9	10
1	x	x	x	x	x	x	x	x	x	x
2	x	x	x	x	x	x	x			
3				x	x	x	x	x	x	x
4			x	x	x	x	x	x		
5	x	x	x	x	x					
6						x	x	x	x	x
7				x	x	x	x			
8	x	x	x							
9								x	x	x
10				x	x					
11						x	x			