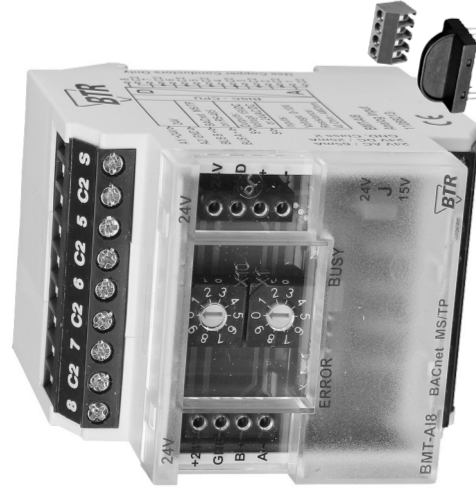


Analog Input Module

BMT-A18

11088213

899299-03



1. Description
The BACnet MS/TP module with 8 individually configurable resistance or voltage inputs is designed for local switching operations. It is suitable to record resistance or voltage values of sensors, switches, etc. The inputs are configured by DIP switches or mixing valves, valve positions etc. The inputs are universally configurable by standard object via a BACnet-Client. Addressing of the module and baud rate setting are done with DIP switches. The module is available in two versions: The versions are addresses 00 to 09 and baud rates 9600 Bd, 19200 Bd, 38400 Bd, 57600, 76800 Bd and 115200 Bd.

2. Declaration of Conformity
The device was tested according to the applicable standards. Conformity was proofed. The declaration of conformity is available at the manufacturer BTR NETCOM GmbH.

Notes Regarding Device Description
These instructions include indications for use and mounting of the device. The user must read the instructions carefully. 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 read the national regulations.

Safety instructions
The device is intended for use in 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 device.
Only qualified personnel shall do mounting and installation work. The user must read the instructions carefully. 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. previous bodily harm or heavy material damage.

Qualified Personnel
The person who is responsible for the installation, maintenance 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 work with AC or DC voltage, to put the device 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 Baud
RS485 two wire bus with voltage equalizing cable in bus/line topology

Supply
Operating voltage range 20 ... 28 V AC/DC (SELV)
Current consumption 65 mA (AC) / 25 mA (DC)
Relative duty cycle 100 %
Input 40 Ω to 4 MΩ
Resistance range 0.1 V DC
Resolution 10 mV
Error about ±100 mV

Housing
Dimensions WHxHD 2,0 x 2,8 x 2,6 in. (50 x 70 x 65 mm)
Weight 104 g
Mounting position any
Mounting in series without space
to a maximum power consumption of 2 Amps (AC or DC) per connection to the power supply. For any similar connections a separate connection to the power supply is mandatory.

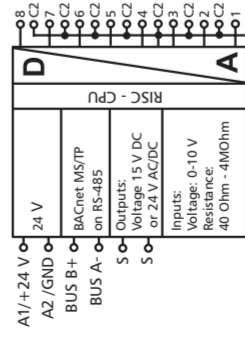
Material Polyamide 6.6 V0
Housing Polycarbonate
Terminal blocks Polycarbonate
Cover plate Polycarbonate

Terminal blocks
5-pole terminal block
Wire diameter max. AWG 16 (1,5 mm) solid wire
min. AWG 18 (1,0 mm) stranded wire
max. 0,3 mm up to max. 1,4 mm terminal block and jumper plug are included to each packing unit)

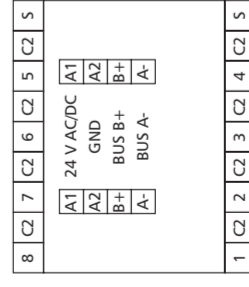
Module connection max. AWG 12 (4,0 mm) solid wire
Input/Output min. AWG 14 (2,5 mm) stranded wire
max. 0,3 mm up to max. 2,7 mm
protective circuitry polarity reversal protection of polarity reversal protection of supply and bus

Temperature range
Operation -5 °C ... +55 °C
Storage -20 °C ... +70 °C
Display
Operating and bus activity green LED
Error indication red LED

4. Wiring Diagram



5. Connection Diagram



10. Software Description

Property	Remark/Value	RW
Object_Identifier	device, default instance: 421000 + Network-Address	RW-E
Object_Name	max. 50 bytes, default "BMT-A18" + Network-Address (hexadecimal)	RW-E
Object_Type	DEVICE (6)	RW-E
System_Status	OPERATIONAL (0)	R
Vendor_Name	"BTR NETCOM GmbH"	R
Vendor_Identifier	"BMT-A18"	R
Model_Name	"1.0"	R
Firmware_Revision	"1.0"	R
Application_Software_Version	"1.0"	R
Protocol_Version	12	R
Protocol_Property	writeProperty, device-communication-control, reinitialize-device, who-has-who-is	R
Protocol_Object_Types_Supported	DEVICE, ANALOG_INPUT, ANALOG_VALUE, MULTISTATE_VALUE, GROUP	R
Object_List [41]	device, analog-input 1...8, analog-value 1...20, multistate-value 1...9, group 1...3	R
Max_Apdu_Length_Accepted	250	R
Segmentation_Supported	NO_SEGMENTATION (3)	R
APDU_Timeout	10000	R
Number_Of_APDU_Retries	0	R
Device_Address_Binding	0	R
Database_Revision	0	R
Description	"BMT_A18"	R
Max_Master	127	R
Max_Info_Frames	1	R
R: Read Property, W: Write Property, -E: Storage in EEPROM		RW-E

Analog Input Object 1...8

Property	Remark/Value	RW
Object_Identifier	analog-input, instance 1...8	R
Object_Name	"Input 1" ... "Input 8"	R
Object_Type	ANALOG_INPUT (0)	R
Present_Value	Measured value (RW if Out_Of_Service), Measurement Range defined in Multistate Value 1...8	(RW)
Status_Flags	FAULT: 0 OVERDRIPPEN: 0 OUT_OF_SERVICE: 0/1	R
Event_State	NORMAL (0)	R
Out_Of_Service	FALSE (0) / TRUE (1)	R
Units	Defined in Multistate Value 1...8	R
COV_Increment	Minimum change of Present_Value for COV notification, default 0.0	RW-E
Notification_Class	Unsubscribed UnconfirmedCOVNotification 0: no COV notification (default) 1: local broadcast, 2: global broadcast, 3: Storage in EEPROM	RW-E
R: Read Property, W: Write Property, -E: Storage in EEPROM		RW-E

Multistate Value Object 1...8

Property	Remark/Value	RW
Object_Identifier	multistate-value, instance 1...8	R
Object_Name	"Measurement Range 1" ... "Measurement Range 8"	R
Object_Type	MULTISTATE_VALUE (19)	R
Present_Value	Measurement Range of Analog Input 1...8 - Voltage (% Volt) - Resistance (Ohm) - User defined Sensor	RW-E
Status_Flags	IN_ALARM: 0 FAULT: 0 OVERDRIPPEN: 0 OUT_OF_SERVICE: 0	R
Event_State	NORMAL (0)	R
Out_Of_Service	FALSE (0)	R
Number_of_States	19	R
State_Text	see next table	R
R: Read Property, W: Write Property, -E: Storage in EEPROM		R

State	State Text	Units of Analog Input	Measurement Ranges
1	,0-100 %"	percent (69)	.N1000-TC5180"
2	,0-100 % P"	percent (69)	.BILCO500"
3	,0-10 Volt"	volts (5)	.K1Y81_110"
4	,0-10 Volt P"	volts (5)	.K1Y81_210"
5	,0 Ohm"	ohms (4)	.NTCSk-1"
6	,User Defined"	set in Analog Value Object Xi...X10	.NTCSk-1"
7	,PT1000"	degrees-Celsius (62)	.NTC10k-1"
8	,PT500"	degrees-Celsius (62)	.NTC20k-1"
9	,PT1000"	degrees-Celsius (62)	.LM23Z"
10	,N11000-TC5000"	degrees-Celsius (62)	

* Pullup Resistor

Analog Value Object 1...20

Property	Remark/Value	RW
Object_Identifier	analog-value, instance 1...20	R
Object_Name	"X 1" ... "X 10" ... "X 10" ... "Y 10"	R
Object_Type	ANALOG_VALUE (2)	R
Present_Value	Interpolation Table in User Defined Measurement Range	RW-E
Status_Flags	IN_ALARM: 0 FAULT: 0 OVERDRIPPEN: 0 OUT_OF_SERVICE: 0	R
Event_State	NORMAL (0)	R
Out_Of_Service	FALSE (0)	R
Units	X1...X10: Units of Analog Input Object (default "C") Y1...Y10: Defined in Multistate Value 9	RW-E
R: Read Property, W: Write Property, -E: Storage in EEPROM		R

Instance	Name	Default Value	Instance	Name	Default Value
1	"X 1"	-10.0	2	"Y 1"	960.86
3	"X 2"	10.0	4	"Y 2"	1039.03
5	"X 3"	30.0	6	"Y 3"	1116.73
7	"X 4"	50.0	8	"Y 4"	1193.97
9	"X 5"	70.0	10	"Y 5"	1270.75
11	"X 6"	0.0	12	"Y 6"	0.0
13	"X 7"	0.0	14	"Y 7"	0.0
15	"X 8"	0.0	16	"Y 8"	0.0
17	"X 9"	0.0	18	"Y 9"	0.0
19	"X 10"	0.0	20	"Y 10"	0.0

The interpolation table by default provides an example for PT1000 Temperature Sensors. X values are Temperature in °C, Y values are Resistance in Ohms. The table ends where both values are 0.0.

Multistate Value Object 9

Property	Remark/Value	RW
Object_Identifier	multistate-value, instance 9	R
Object_Name	"User Defined Range"	R
Object_Type	MULTISTATE_VALUE (19)	R
Present_Value	Selection of Measurement Range at Input - Voltage (Volt) - Resistance (Ohm) - approximately linear sensor (e.g. PT1000) - Resistance (Ohm) - approximately linear sensor (e.g. PT1000) - Resistance (Ohm) - User defined sensor (e.g. NTC) default 3 for PT1000 example	RW-E
Status_Flags	IN_ALARM: 0 FAULT: 0 OVERDRIPPEN: 0 OUT_OF_SERVICE: 0	R
Event_State	NORMAL (0)	R
Out_Of_Service	FALSE (0)	R
Number_of_States	6	R
State_Text	see next table	R
R: Read Property, W: Write Property, -E: Storage in EEPROM		R

State	State Text	Units of Analog Value Y
1	,Volt lin"	volts (5)
2	,Volt P lin"	volts (5)
3	,Ohm lin"	ohms (4)
4	,Volt exp"	volts (5)
5	,Volt P exp"	volts (5)
6	,Ohm NTC exp"	ohms (4)

* Pullup Resistor

Group Object 1...3

Property	Remark/Value	RW
Object_Identifier	group, instance 1...3	R
Object_Name	"Group 1" ... "Group 3"	R
Object_Type	GROUP (11)	R
Present_Value	Present_Value of Analog Inputs, see next table	R
List_Of_Group_Members	see next table	R
R: Read Property, W: Write Property, -E: Storage in EEPROM		R

Members of Groups

Group	Analog Input						
1	2	3	4	5	6	7	8
1	x	x	x	x	x	x	x
2	x	x	x	x	x	x	x
3							