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Analog Output Module
BMT-AO4

1108851302

1. Description

The BACnet MS/TP module with 4 analog outputs is designed for local switching operations. It is suitable as variable encoder, for example ventilation or mixing valves, valve positions etc. The outputs can be issued by standard object via a BACnet-Client. Addressing of the module and baud rate setting are done with the two address switches (x1 / x10) on the front. Possible settings are addresses 00 to F9 and baud rates 9600 Bd, 19200 Bd, 38400 Bd, 57600 Bd, 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. 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

Protocoll	BACnet MS/TP
Transmission rate	9600 ... 115200 Bd (factory setting 9600 Bd)
Cabling	RS485 two wire bus with voltage equalizing cable in bus / line topology

Supply

Operating voltage range	20 ... 28 V AC/DC (SELV)
Current consumption	50 mA (AC) / 20 mA (DC)
Relative duty cycle	100 %

Output

Output voltage	4 x 0 ... 10 V DC
Output current	5 mA at 10 V DC
Resolution	10 mV / Digit

Housing

Dimensions WxHxD	1.4 x 2.8 x 2.6 in. (35 x 70 x 65 mm)
Weight	72 g
Mounting position	any
Mounting	standard rail TH35 per IEC 60715
Mounting in series without space	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.
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

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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 Input/Output	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 ... +55 °C
Storage	-20 °C ... +70 °C

Display

Operating / bus activity	green LED
Error indication	red LED

4. Wiring Diagram
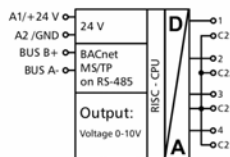
5. Connection Diagram
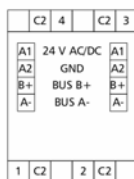
6. Mounting

Power down the equipment

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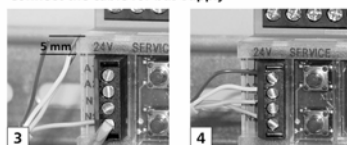
Installation

Electric installation and device termination shall be done by qualified persons only, by respecting all applicable specifications and regulations.
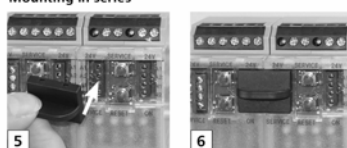
Plug in the terminal block for bus connection

Connect the cable for bus supply

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 adress and Bit rate setting

Configuration Switches
Hexadecimal Switches x10, x1 define the Network-Address (00 - F9; e.g. F9h = 15x16+9 = 249d) and Baudrate (FA – FF).
• Turn Switch x10 to E (Device is temporarily configured as Slave)
• Turn Switch x1 to A – F to select Baudrate
• Turn Switch x10 to F, wait 1 Second
• Red and green LEDs are blinking when Baudrate ist stored in EEPROM
• Turn Switch x10 to select Network-Address
• Turn Switch x1 to select Network-Address

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

Factory setting: 9600 Bit/s

8. Softwarebeschreibung

Device Object

Property	Remark / Value	RW
Object_Identifier	device, default instance: 421000 + Network-Address	RW-E
Object_Name	max. 50 Bytes, default "BMT-AO4_" + 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-AO4"	R
Firmware_Revision	"1.0"	R
Application_Software_Version	"1.0"	R
Protocol_Version	1	R
Protocol_Revision	12	R
Protocol_Services_Supported	readProperty, writeProperty, device-communication-control, reinitialize-device, unconfirmed-cov-event-notification, who-has, who-is	R
Protocol_Object_Types_Supported	DEVICE, ANALOG_OUTPUT	R
Object_List [5]	device, analog-output 1...4	R
Max_APDU_Length_Accepted	206	R
Segmentation_Supported	NO_SEGMENTATION (3)	R
APDU_Timeout	10000	R
Number_Of_APDU_Retries	0	R
Device_Address_Binding	-	R
Database_Revision	0	R
Description	"BMT_AO4"	R
Max_Master	127	RW-E
Max_Info_Frames	1	RW-E

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

Analog Output Objects 1 ... 4

Property	Remark / Value	RW
Object_Identifier	analog-output, instance 1 ... 4	R
Object_Name	"Output 1" ... "Output 4"	R
Object_Type	ANALOG_OUTPUT (1)	R
Present_Value	0.0 ... 102.4 (0 V ... 10.24 V)	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
Units	Percent (98)	R
Priority_Array [16]	NULL / 0.0 ... 102.4 (0 V ... 10.24 V)	R
Relinquish_Default	0.0 ... 102.4 (0 V ... 10.24 V)	RW-E
Resolution	0.00625 (0.625 mV)	-

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