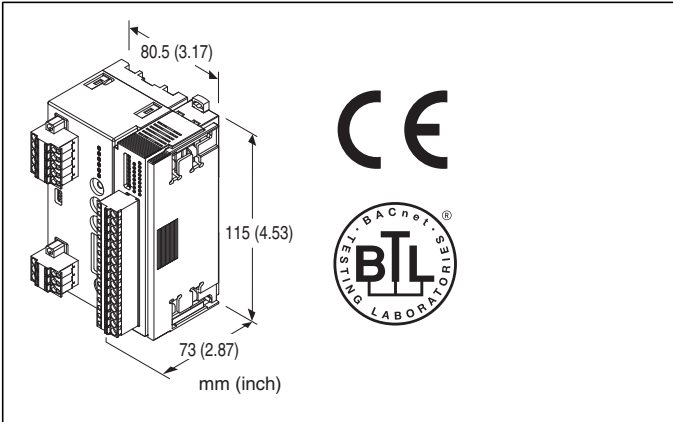


Remote Control / Supervisory System BA8 Series

DISCRETE INPUT & RELAY OUTPUT MODULE, 4 points each
(BACnet MS/TP)



MODEL: BA8BM-DAC8-M2

ORDERING INFORMATION

- Code number: BA8BM-DAC8-M2

COMMUNICATION TYPE

BM: BACnet MS/TP

I/O TYPE

DAC8: 4-point dry contact inputs, 4-point relay contact outputs

POWER INPUT

AC Power

M2: 100 – 240 V AC (Operational voltage range 85 – 264 V, 47 – 66 Hz)

GENERAL SPECIFICATIONS

Connection

BACnet MS/TP: Tension clamp terminal block

I/O: Tension clamp terminal block

Power input: Tension clamp terminal block

Housing material: Flame-resistant resin (gray)

Isolation: BACnet MS/TP to contact input to contact output to power to FE

Output Mode: Settable with side DIP switch

Simulated I/O: Settable with front DIP switch

Output: Settable with front DIP switch

Status indicator LEDs: PWR, RUN, ERR, SD, RD (Refer to the instruction manual)

I/O status indicator LEDs: Green LED with I/O ON

BACnet COMMUNICATION

Applicable standard:

ANSI/ASHRAE Standard 135-2010

BACnet standard device profile:

BACnet Application Specific Controller (B-ASC)

Number of supported object: 9 max.

Supported object type:

Binary Input, Binary Output, Device, Accumulator

Supported BIBBs:

Data Sharing

Read Property-B (DS-RP-B)

Read Property Multiple-B (DS-RPM-B)

Write Property-B (DS-WP-B)

Write Property Multiple-B (DS-WPM-B)

COV-B (DS-COV-B)

Device Management

Dynamic Device Binding-B (DM-DDB-B)

Dynamic Object Binding-B (DM-DOB-B)

Device Communication Control-B (DM-DCC-B)

Time Synchronization-B (DM-TS-B)

UTC Time Synchronization-B (DM-UTC-B)

Supported data link layer:

MS/TP master (Clause9)

Supported character code:

ISO 10646 (UTF-8)

■ BACnet MS/TP

MAC address: 00 to 7F with rotary switch

Baud rate: 9600/19.2 k/38.4 k/76.8 kbps
(with rotary switch)

Standard: Conforms to TIA/EIA-485-A

Transmission distance: 1500 meters max.

Transmission media: AWG22 (two shielded twist pair cables)

Character: 8 data bits, no parity, 1 stop bit

Terminating resistor: Built-in (ON/OFF setting with DIP switch, factory setting: OFF)

INPUT SPECIFICATIONS

Number of input: 4
Isolation: Optical isolator
Input resistance: Approx. 4.4 k Ω
Common: 1 common per 4 points (4 terminals)
Contact detecting: 24 V DC $\pm 10\%$
ON voltage/ON current: ≤ 12 V, ≥ 2.5 mA
OFF voltage/OFF current: ≥ 17 V, ≤ 1.5 mA
ON delay time: ≤ 2.0 msec.
OFF delay time: ≤ 2.0 msec.
ON detecting time: Approx. 5.0 msec.

■ PULSE INPUT SPECIFICATION

Maximum frequency: 100 Hz
(ON/OFF time ≥ 5 msec.)
Totalized pulse range: 0 - 4,294,967,295
Max. totalized pulse range: 1,000 - 4,294,967,295
(Factory setting: 9,999,999)
Count at overflow: Reset and restart at '0'.

OUTPUT SPECIFICATIONS

Number of output: 4 points
Common: 1 common per 1 point
Rated load: 250 V AC @ 2A, 30 V DC @ 2A
Maximum switching voltage: 250 V AC, 30 V DC
Maximum switching power: 500 VA (AC), 60 W (DC)
Minimum applicable load: 24 V DC @ 5 mA
Relay life
Mechanical: 2×10^7 cycles (180 cycles per min.)
When driving an inductive load, external contact protection and noise quenching recommended.
ON delay time: ≤ 10 msec.
OFF delay time: ≤ 10 msec.
Output data update time: Approx. 300 msec.

INSTALLATION

Power consumption
•AC:
Approx. 5 VA at 100 V
Approx. 7 VA at 200 V
Approx. 8 VA at 240 V
Operating temperature: 0 to 50°C (32 to 122°F)
Operating humidity: 10 to 90 %RH (non-condensing)
Atmosphere: No corrosive gas or heavy dust
Mounting: DIN rail
Weight: 350 g (0.77 lb)

PERFORMANCE

Battery backup: RTC (for 7 days max.)
Calendar clock accuracy: Monthly deviation 2 minutes at 25°C

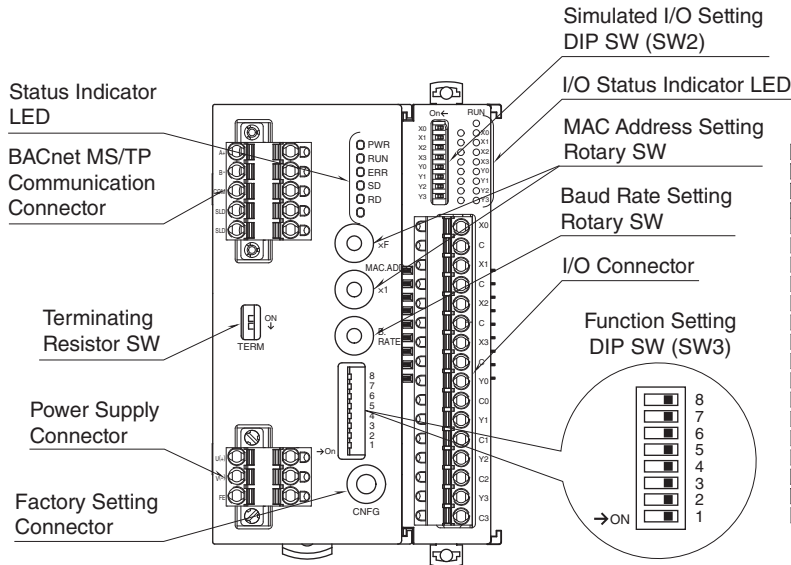
Insulation resistance: ≥ 100 M Ω with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute (BACnet MS/TP to contact input to contact output to power to FE)

STANDARDS & APPROVALS

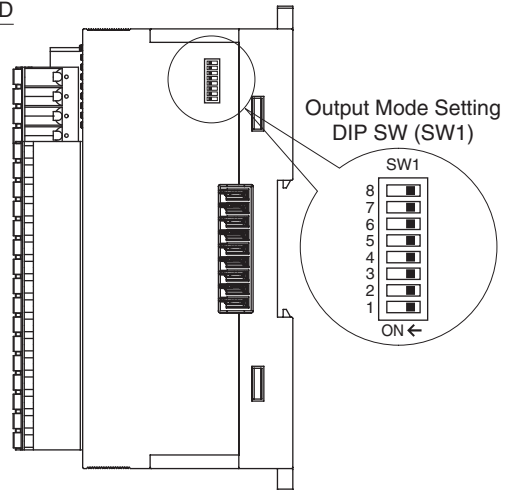
EU conformity:
EMC Directive
EMI EN 61000-6-4
EMS EN 61000-6-2
Low Voltage Directive
EN 61010-1, EN 61010-2-201
Measurement Category II (contact output)
Installation Category II (power input)
Pollution Degree 2
BACnet MS/TP to contact input to contact output to power:
Reinforced insulation (300 V)
RoHS Directive

EXTERNAL VIEW

FRONT VIEW



SIDE VIEW



CONNECTION DIAGRAMS

Tension clamp terminal blocks are used for I/O, power input and connection.

COMMON SPECIFICATION

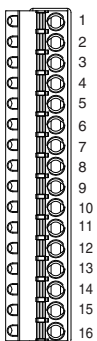
Applicable wire size: 0.2 – 1.5 mm²; stripped length 10 mm

Recommended solderless terminal

- AI0,25-10BU 0.25 mm² (Phoenix Contact)
- AI0,34-10TQ 0.34 mm² (Phoenix Contact)
- AI0,5-10WH 0.5 mm² (Phoenix Contact)
- AI0,75-10GY 0.75 mm² (Phoenix Contact)
- A1-10 1.0 mm² (Phoenix Contact)
- A1,5-10 1.5 mm² (Phoenix Contact)

I/O

Applicable connector: MSTB2,5/16-G (Phoenix Contact) attached to the module



INPUT

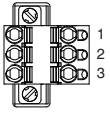
- | | |
|---------------|----------|
| 1. X0 INPUT 0 | 2. C COM |
| 3. X1 INPUT 1 | 4. C COM |
| 5. X2 INPUT 2 | 6. C COM |
| 7. X3 INPUT 3 | 8. C COM |

OUTPUT

- | | |
|-----------------|------------|
| 9. Y0 OUTPUT 0 | 10. C0 COM |
| 11. Y1 OUTPUT 1 | 12. C1 COM |
| 13. Y2 OUTPUT 2 | 14. C2 COM |
| 15. Y3 OUTPUT 3 | 16. C3 COM |

■ POWER INPUT

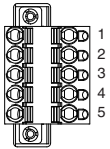
Applicable connector: MSTB2,5/3-GF-5,08 (Phoenix Contact) attached to the module



- 1. U (+)
- 2. V (-)
- 3. FE Functional Earth

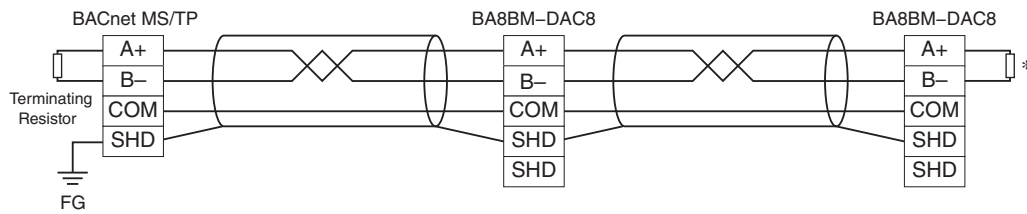
■ COMMUNICATION

Applicable connector: MSTB2,5/5-GF-5,08 (Phoenix Contact) attached to the module



- 1. A+ BACnet MS/TP Communication
- 2. B- BACnet MS/TP Communication
- 3. COM Common
- 4. SLD Shield
- 5. SLD Shield

■ MASTER CONNECTION



* To activate the built-in terminating resistor, set the terminating resistor SW to ON.

SUPPORTED BACnet PROPERTY**■ CONTACT INPUT**

PROPERTY NAME	WRITING
Object_Identifier	Unwritable
Object_Name	Writable
Object_Type	Unwritable
Present_Value	Unwritable
Description	Writable
Device_Type	Writable
Status_Flag	Unwritable
Event_State	Unwritable
Reliability	Unwritable
Out_Of_Service	Writable
Polarity	Writable
Inactive_Text	Writable
Active_Text	Writable
Change_Of_State_Time	Unwritable
Change_Of_State_Count	Writable
Time_Of_State_Count_Reset	Unwritable
Elapsed_Active_Time	Writable
Time_Of_Active_Time_Reset	Unwritable

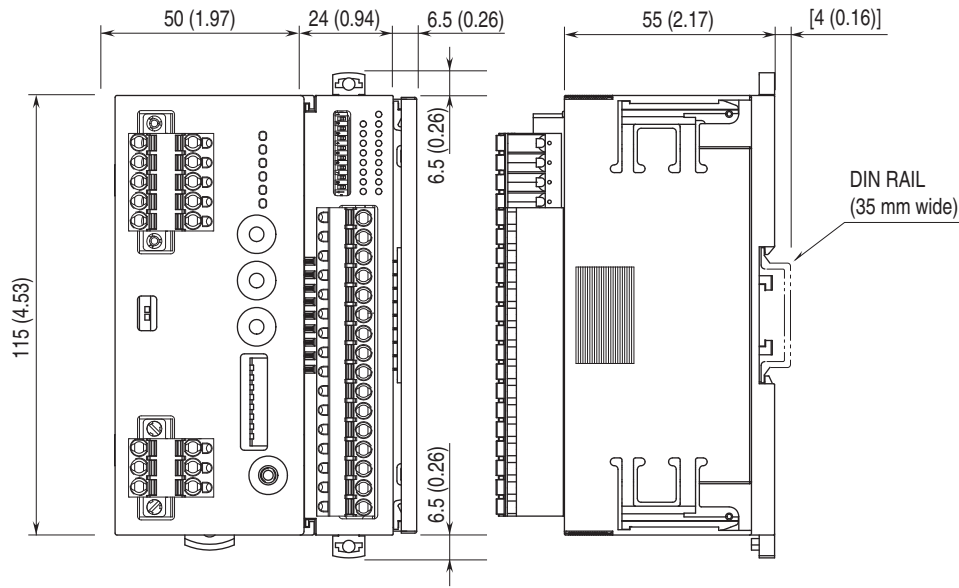
■ CONTACT OUTPUT

PROPERTY NAME	WRITING
Object_Identifier	Unwritable
Object_Name	Writable
Object_Type	Unwritable
Present_Value	Writable
Description	Writable
Device_Type	Writable
Status_Flag	Unwritable
Event_State	Unwritable
Reliability	Unwritable
Out_Of_Service	Writable
Polarity	Writable
Inactive_Text	Writable
Active_Text	Writable
Change_Of_State_Time	Unwritable
Change_Of_State_Count	Writable
Time_Of_State_Count_Reset	Unwritable
Elapsed_Active_Time	Writable
Time_Of_Active_Time_Reset	Unwritable
Minimum_Off_Time	Writable
Minimum_On_time	Writable
Priority_Array	Unwritable
Relinquish_Default	Writable

■ PULSE INPUT

PROPERTY NAME	WRITING
Object_Identifier	Unwritable
Object_Name	Writable
Object_Type	Unwritable
Present_Value	Unwritable
Description	Writable
Device_Type	Writable
Status_Flag	Unwritable
Event_State	Unwritable
Reliability	Unwritable
Out_Of_Service	Writable
Scale	Writable
Units	Writable
PreScale	Writable
Max_Pres_Value	Writable
Value_Change_Time	Unwritable
Value_Before_Change	Unwritable
Value_Set	Writable

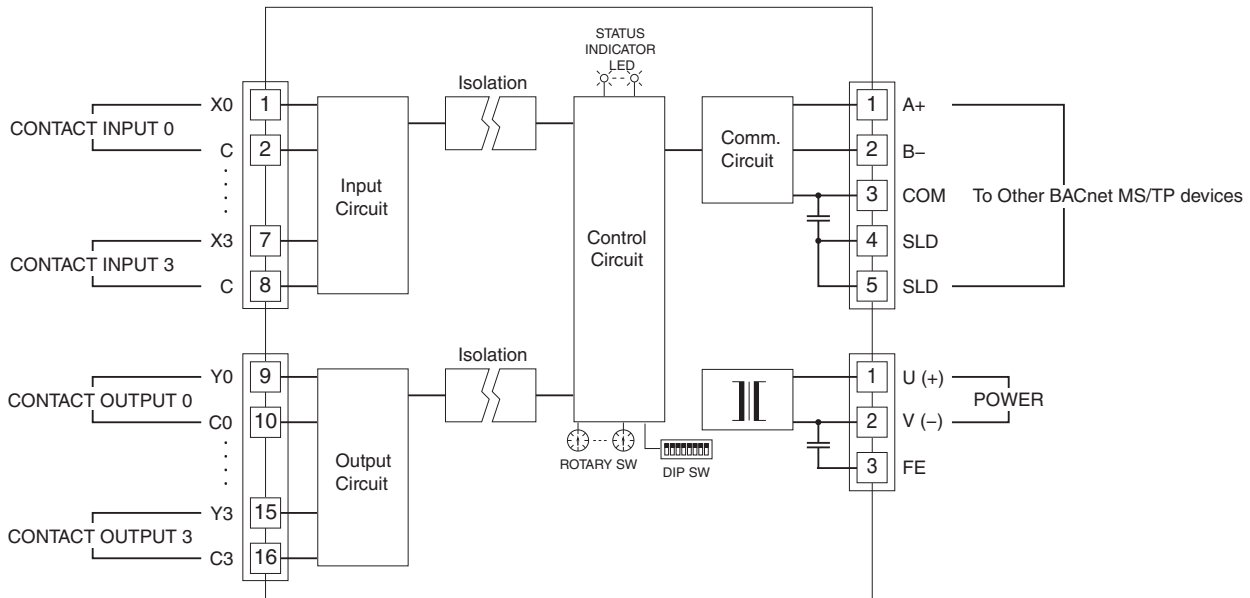
EXTERNAL DIMENSIONS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FE terminal to ground.

Caution: FE terminal is NOT a protective conductor terminal.



Specifications are subject to change without notice.