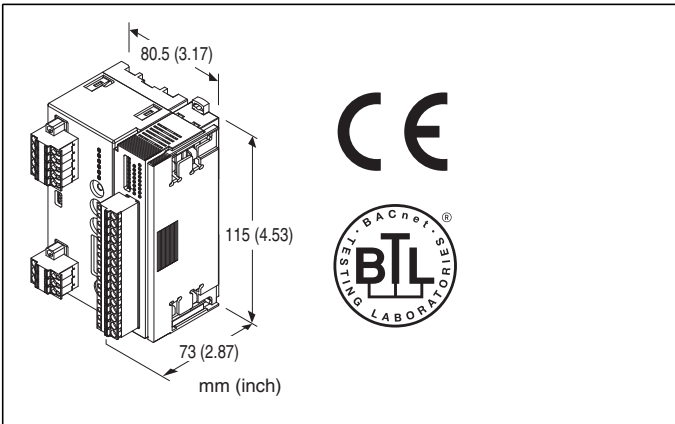


## Remote Control / Supervisory System BA8 Series

**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 $\Omega$   
**Common:** 1 common per 4 points (4 terminals)  
**Contact detecting:** 24 V DC  $\pm$ 10%  
**ON voltage/ON current:**  $\leq$  12 V,  $\geq$  2.5 mA  
**OFF voltage/OFF current:**  $\geq$  17 V,  $\leq$  1.5 mA  
**ON delay time:**  $\leq$  2.0 msec.  
**OFF delay time:**  $\leq$  2.0 msec.  
**ON detecting time:** Approx. 5.0 msec.

### ■ PULSE INPUT SPECIFICATION

**Maximum frequency:** 100 Hz  
(ON/OFF time  $\geq$  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:**  $2 \times 10^7$  cycles (180 cycles per min.)  
When driving an inductive load, external contact protection and noise quenching recommended.  
**ON delay time:**  $\leq$  10 msec.  
**OFF delay time:**  $\leq$  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:**  $\geq$  100 M $\Omega$  with 500 V DC  
**Dielectric strength:** 1500 V AC @ 1 minute (BACnet MS/TP to contact input to contact output to power to FE)

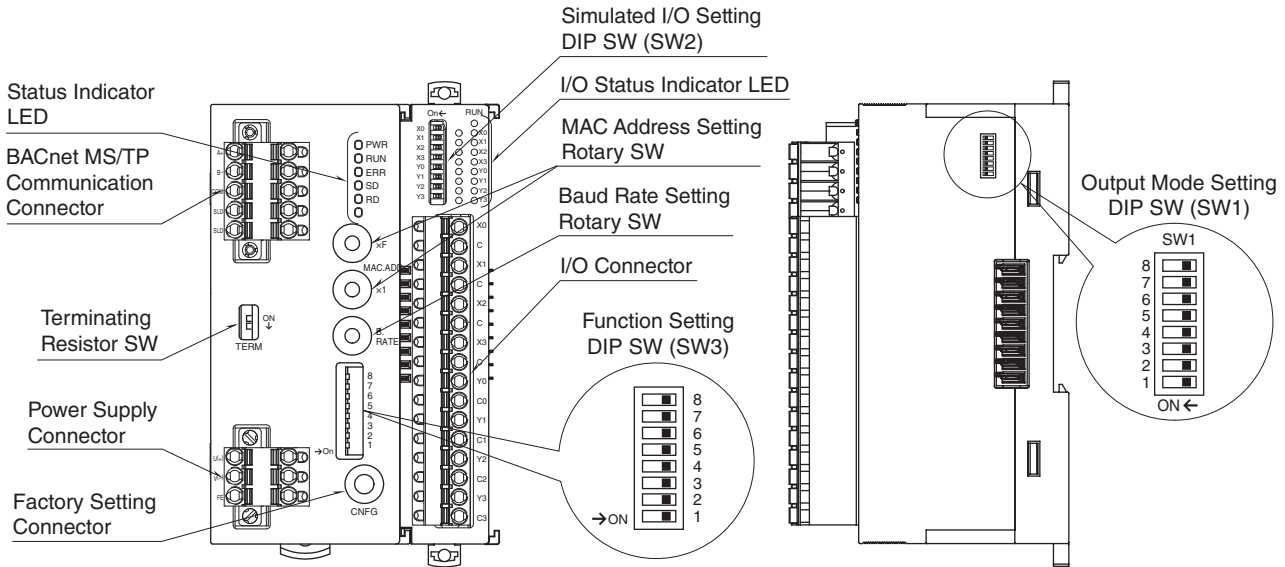
## STANDARDS & APPROVALS

**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

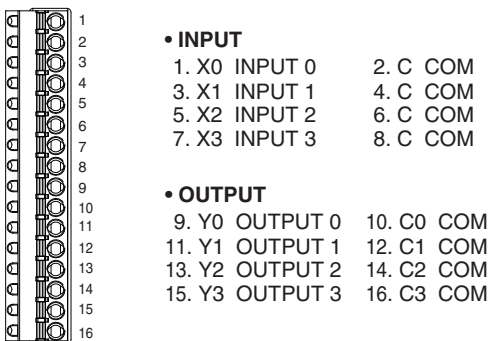
Applicable wire size: 0.2 – 1.5 mm<sup>2</sup>; stripped length 10 mm

#### Recommended solderless terminal

- AI0,25-10BU 0.25 mm<sup>2</sup> (Phoenix Contact)
- AI0,34-10TQ 0.34 mm<sup>2</sup> (Phoenix Contact)
- AI0,5-10WH 0.5 mm<sup>2</sup> (Phoenix Contact)
- AI0,75-10GY 0.75 mm<sup>2</sup> (Phoenix Contact)
- A1-10 1.0 mm<sup>2</sup> (Phoenix Contact)
- A1,5-10 1.5 mm<sup>2</sup> (Phoenix Contact)

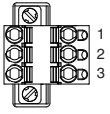
### I/O

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



## ■ POWER INPUT

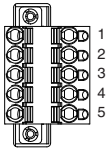
Applicable connector: MSTB2,5/3-GF-5,08 (Phoenix Contact) attached to the module



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

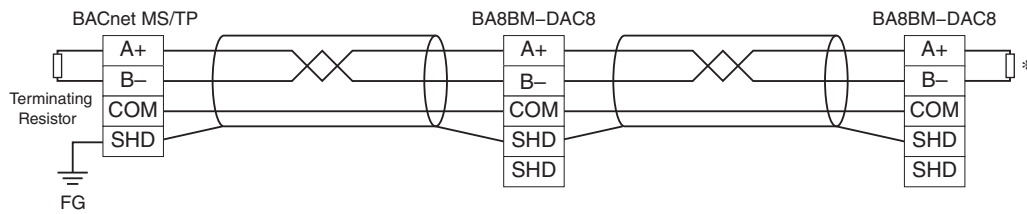
## ■ COMMUNICATION

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

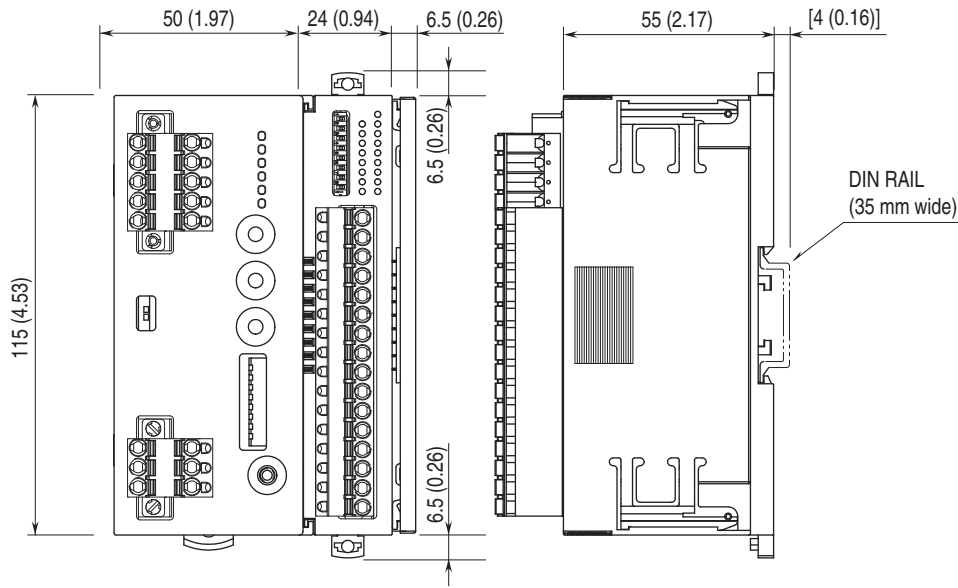
### ■ CONTACT OUTPUT

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

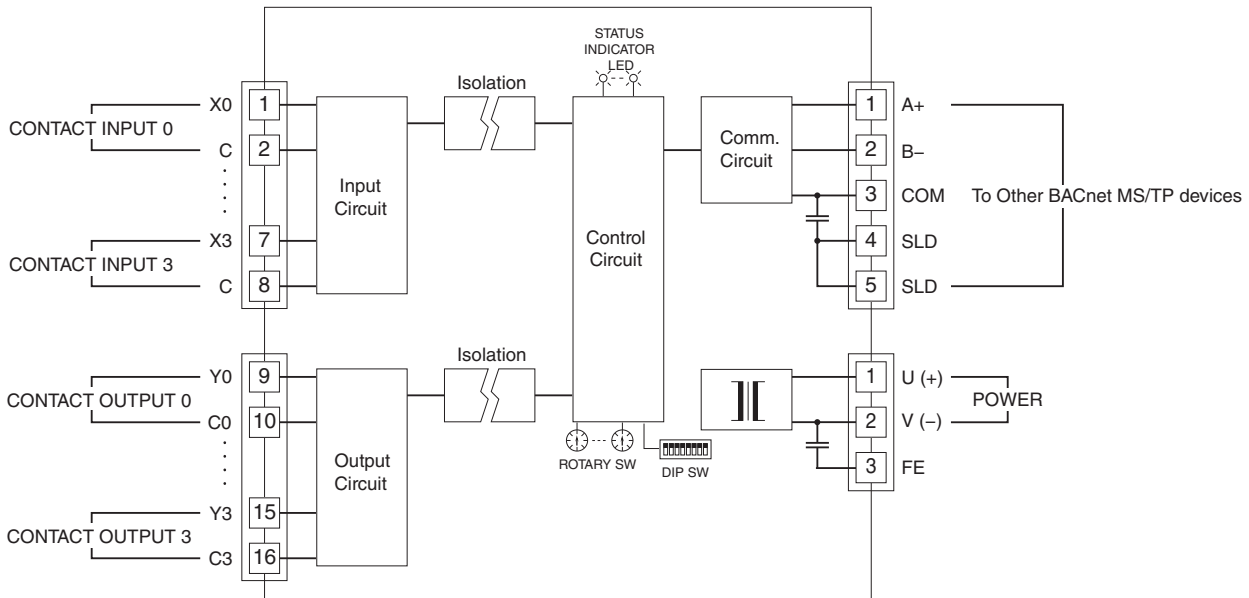
## EXTERNAL DIMENSIONS unit: mm [inch]



## 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.