

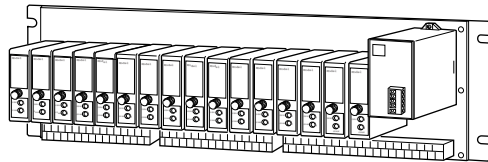
Super-mini Signal Conditioners Mini-M Series

COMMUNICATION CONTROLLER

(DeviceNet)

Functions & Features

- Receiving up to 16 Mini-M modules
- Enabling interfacing analog I/Os to DeviceNet
- Power supplied through printed wiring on the base



MODEL: M2BD-[1][2]-[3][4]

ORDERING INFORMATION

- Code number: M2BD-[1][2]-[3][4]

Specify a code from below for each of [1] through [4].

(e.g. M2BD-161-R/UL)

Power input specification for each I/O modules must be the same as that of the base.

[1] CAPACITY

- 04: 4 positions
- 08: 8 positions
- 16: 16 positions

[2] I/O TYPE

- 1: Input
- 2: Output

[3] POWER INPUT

AC Power

K: 85 - 132 V AC
(Operational voltage range 85 - 132 V, 47 - 66 Hz)
(CE or UL not available)

DC Power

R: 24 V DC
(Operational voltage range 24 V \pm 10 %, ripple 10 %p-p max.)

[4] OPTIONS

Standards & Approvals

blank: Without UL or CE
/UL: UL approval, CE marking

RELATED PRODUCTS

- Programming Unit (model: PU-2x)

GENERAL SPECIFICATIONS

Capacity: 4, 8 or 16 positions

Connection

DeviceNet: Euro type connector terminal (applicable wire size: 0.2 to 2.5 mm², stripped length 7 mm)

I/O: M3 screw terminals (torque 0.8 N·m)

Power input: M3 screw terminals (torque 0.8 N·m)

Screw terminal: Nickel-plated steel

Isolation: I/O to DeviceNet to power to FG1

Power indicator: Green LED turns on with power supplied.

DeviceNet COMMUNICATION

Transmission cable: Approved for DeviceNet

Node address setting: DIP switch; 00 - 63

Baud rate setting: DIP switch

125 kbps (factory default), 250 kbps, 500 kbps

MS (Module Status) indicator: Bi-color (green/red) LED indicates device status.

NS (Network Status) indicator: Bi-color (green/red) LED indicates status of the communication link.

INPUT SPECIFICATIONS

Input modules: Mini-M series; output 1 - 5 V DC;

(Each input must be isolated by signal conditioners. Non-isolated modules such as M2BW is not usable.)

■ Analog Input

Input range: See each I/O module spec.

Voltage at the field I/O terminals limited within 30 V DC for UL.

Isolation: transformer (by Mini-M module)

A/D conversion output: 16-bit binary

Signal range 0 - 100 % is converted into hexadecimal 0000 - 1770 (0 - 6000). -15 to 0 % is represented by 2's complements.

Overall range is represented by hexadecimal FC7C - 1AF4 (-900 - +6900), for -15 - +115 %.

Note: In the firmware version 3.00 or later, analog input range 0 - 100% can be converted into hexadecimal 0000 - 2710 (0 - 10000).

In addition, negative values of analog input range -15 to 0% can be converted into signed absolute values.

Refer to the instruction manual for details.

OUTPUT SPECIFICATIONS

Output modules: Model M2VS; input 1 - 5 V DC

■ Analog Output

Output range: See model M2VS spec.

Isolation: Transformer

D/A conversion output: 16-bit binary

Signal range 0 – 100 % is converted into hexadecimal 0000 – 1770 (0 – 6000). -15 to 0 % is represented by 2's complements.

Overall range is represented by hexadecimal FC7C – 1AF4 (-900 – +6900), for -15 – +115 %.

Note: In the firmware version 3.00 or later, analog output range 0 – 100% can be converted into hexadecimal 0000 – 2710 (0 – 10000).

In addition, negative values of analog output range -15 to 0% can be converted into signed absolute values.

Refer to the instruction manual for details.

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Measurement Category II (input)

Pollution Degree 2

Input or output to power: Reinforced insulation (300 V)

Input to output: Basic insulation (300 V)

RoHS Directive

Approval:

UL/C-UL nonincendive Class I, Division 2,

Groups A, B, C, and D

(ANSI/ISA-12.12.01, CAN/CSA-C22.2 No.213)

UL/C-UL general safety requirements

(UL 3111-1, CAN/CSA-C22.2 No.1010-1)

INSTALLATION

Power Consumption:

•AC:

approx. 6 VA without I/O module

approx. 30 VA with 4 modules (M2DY)

approx. 50 VA with 8 modules (M2DY)

approx. 90 VA with 16 modules (M2DY)

Current consumption:

•DC

approx. 0.25 A without I/O module

approx. 1 A with 4 modules (M2DY)

approx. 1.5 A with 8 modules (M2DY)

approx. 2.5 A with 16 modules (M2DY)

Supply voltage to network: 11 – 25 V DC supplied through the network terminal block

Supply current to network: 60 mA max. @ 24 V

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Atmosphere: No corrosive gas or heavy dust

Mounting: Surface

Weight: Without I/O module

M2BD-04 1.2 kg (2.6 lb)

M2BD-08 1.5 kg (3.3 lb)

M2BD-16 2 kg (4.4 lb)

PERFORMANCE in percentage of span

A/D conversion: Accuracy of input module $\pm 0.1\%$

D/A conversion: Accuracy of M2VS $\pm 0.1\%$

Permissible power failure duration: ≤ 10 msec.

Insulation resistance: ≥ 100 M Ω with 500 V DC

Dielectric strength: 1000 V AC @1 minute (power to I/O module to DeviceNet module to FG1)

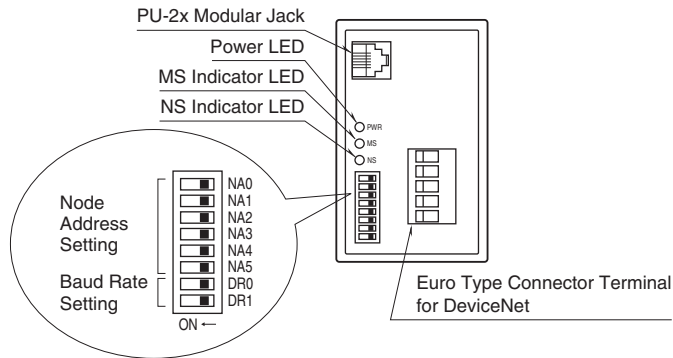
STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

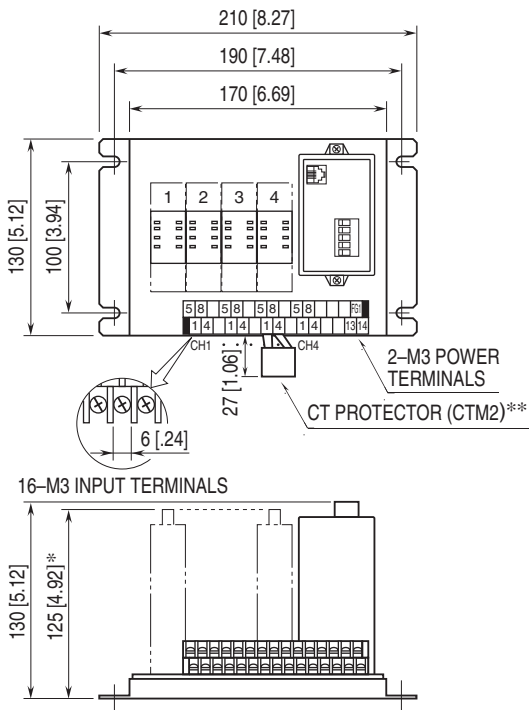
COMM. MODULE FRONT PANEL



Refer to the instruction manual for detailed procedures.

EXTERNAL DIMENSIONS unit: mm [inch]

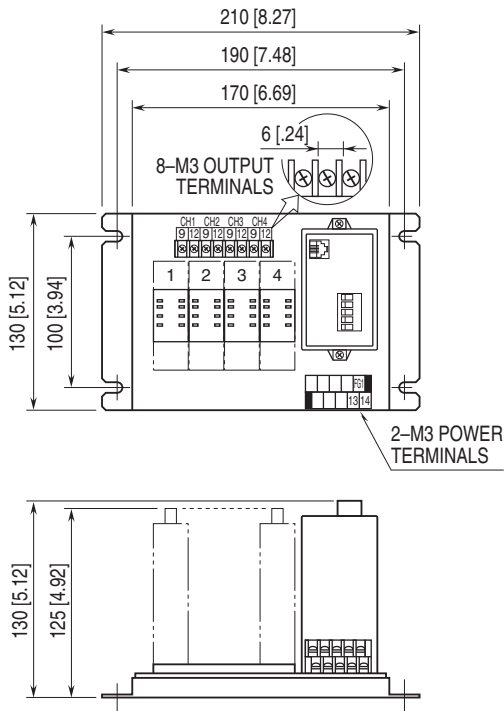
■ M2BD-041 (INPUT BASE)



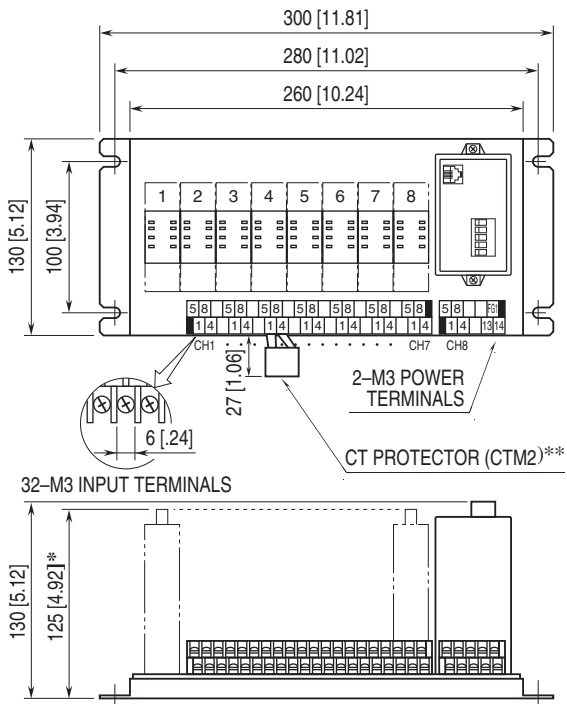
* 165 [6.50] required for pneumatic tubing for M2PV.

** Attached to M2CA and M2CE.

■ M2BD-042 (OUTPUT BASE)



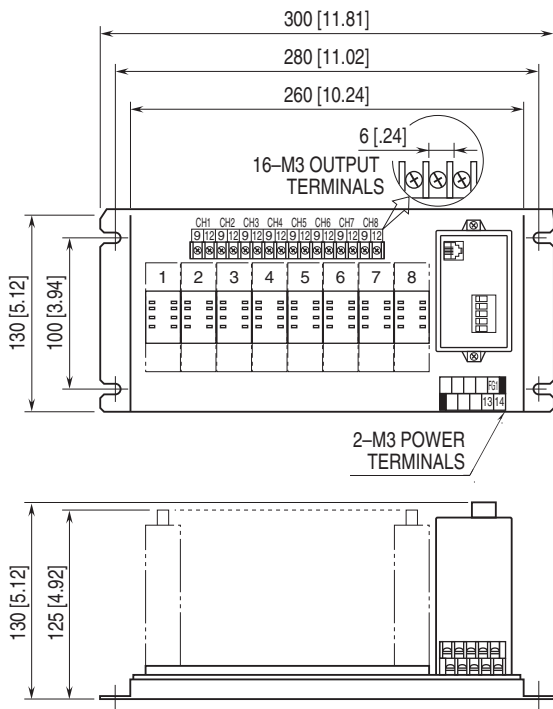
■ M2BD-081 (INPUT BASE)



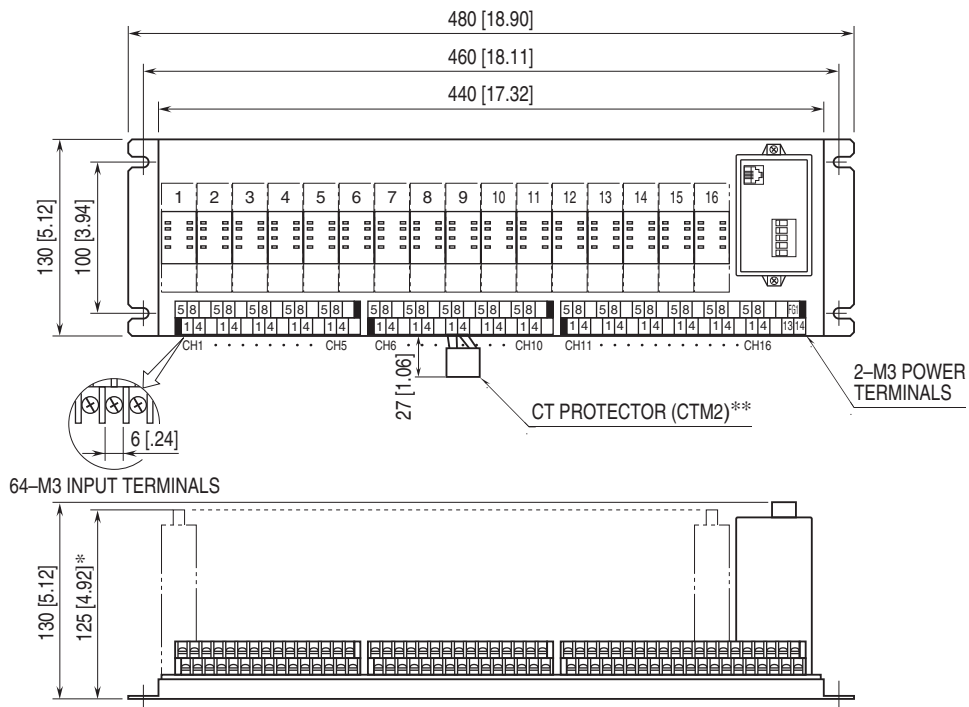
* 165 [6.50] required for pneumatic tubing for M2PV.

** Attached to M2CA and M2CE.

■ M2BD-082 (OUTPUT BASE)



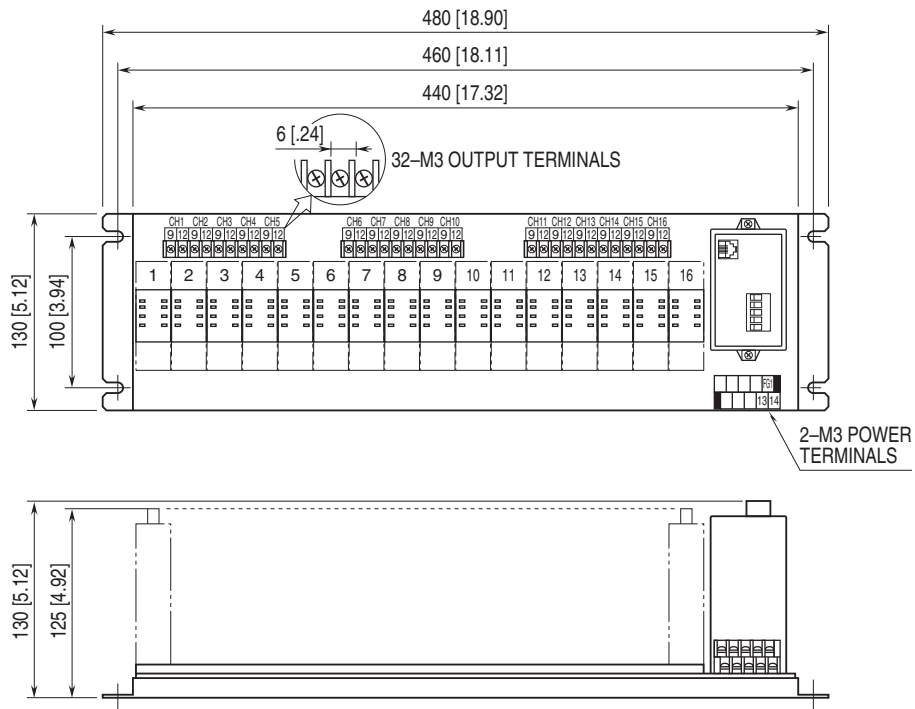
■ M2BD-161 (INPUT BASE)



* 165 [6.50] required for pneumatic tubing for M2PV.

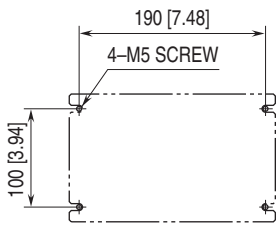
** Attached to M2CA and M2CE.

■ M2BD-162 (OUTPUT BASE)

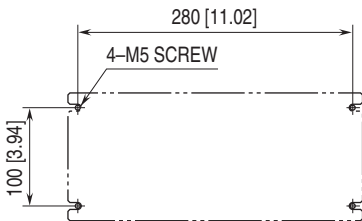


MOUNTING REQUIREMENTS unit: mm [inch]

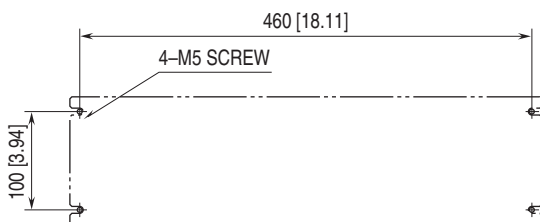
■ M2BD-04



■ M2BD-08



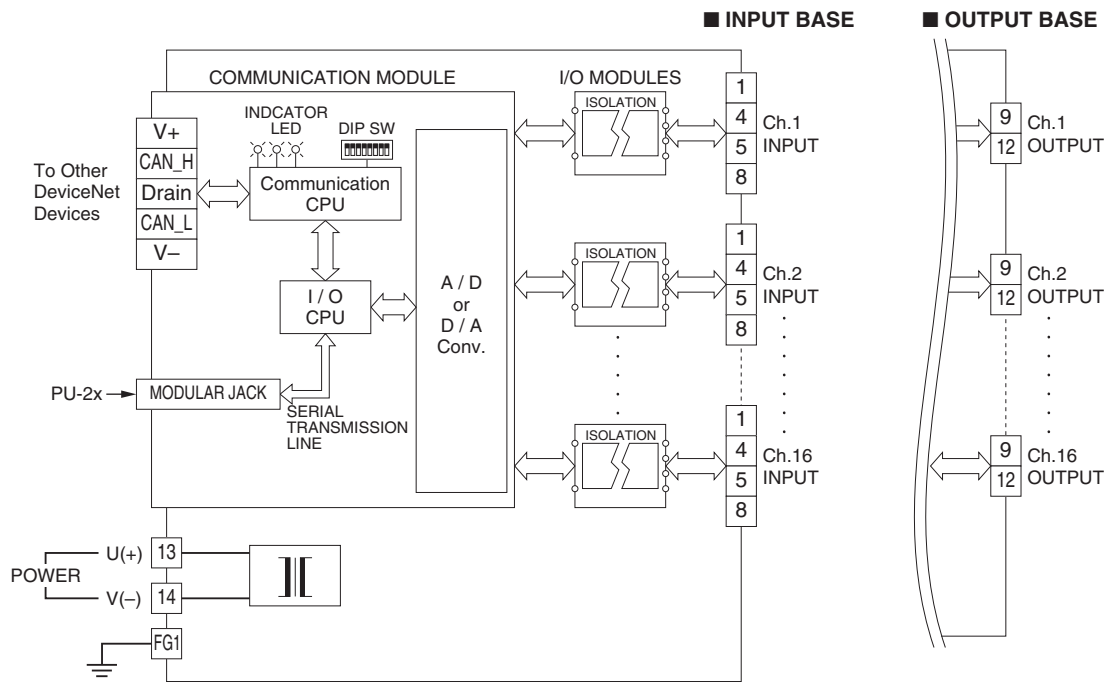
■ M2BD-16



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FG1 terminal to ground.

Caution: FG1 terminal is NOT a protective conductor terminal.



Specifications are subject to change without notice.