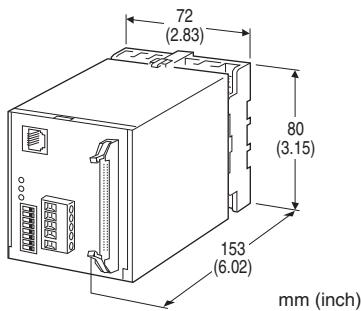## Field Network Modules 60-UNIT Series

ANALOG I/O MODULE
(DeviceNet)

Functions & Features
• Interfacing analog I/O signals from/to 10-RACK or 18-RACK modules with DeviceNet
• Saving power and I/O wiring inside an instrumentation panel

72 (2.83)
80 (3.15)
153 (6.02)

mm (inch)

MODEL: 60D-[1][2]-[3][4]

ORDERING INFORMATION
• Code number: 60D-[1][2]-[3][4]
Specify a code from below for each of [1] through [4].
  (e.g. 60D-161-K/Q)
• Specify the specification for option code /Q
  (e.g. /C01/S01)

[1] NO. OF CHANNELS
04: 4 points
08: 8 points
16: 16 points

[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 not available)
DC Power
R: 24 V DC
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

[4] OPTIONS
blank: none
/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)
COATING (For the detail, refer to M-System's web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating
TERMINAL SCREW MATERIAL
/S01: Stainless steel

RELATED PRODUCTS
• Special cable (model: MCN34)
• Programming Unit (model: PU-2x)

GENERAL SPECIFICATIONS
Construction: Plug-in
Connection
  DeviceNet: Euro type connector terminal (applicable wire size: 0.2 to 2.5 mm^2, stripped length 7 mm)
  I/O: 34-pin connector (OMRON XG4A-3434)
  Power input: M3.5 screw terminal
Screw terminal: Chromated steel (standard) or stainless steel
Housing material: Flame-resistant resin (black)
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
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
■ Analog Input
Input range: 1 – 5 V DC
Input resistance: ≥ 1 MΩ
10-RACK and 18-RACK I/O modules must be isolated types. Non-isolated modules such as 10BW and 18BW are not usable.
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.

• Input Connector Pin Assignment

PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	Input 1	2	COM
3	Input 2	4	COM
5	Input 3	6	COM
7	Input 4	8	COM
9	Input 5	10	COM
11	Input 6	12	COM
13	Input 7	14	COM
15	Input 8	16	COM
17	Input 9	18	COM
19	Input 10	20	COM
21	Input 11	22	COM
23	Input 12	24	COM
25	Input 13	26	COM
27	Input 14	28	COM
29	Input 15	30	COM
31	Input 16	32	COM
33	No connection	34	No connection

Input 1 – 4 for 4 points, 1 – 8 for 8 points.

OUTPUT SPECIFICATIONS

■ Analog Output

Output must be isolated with signal conditioners.

When the transmission line is open, the last value sampled before failure is held.

Output range: 1 – 5 V DC

Load resistance: 20 kΩ minimum

10-RACK and 18-RACK I/O modules must be isolated types. Non-isolated modules such as 10BW and 18BW are not usable.

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.

• Output Connector Pin Assignment

PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	Output 1	2	COM
3	Output 2	4	COM
5	Output 3	6	COM
7	Output 4	8	COM
9	Output 5	10	COM
11	Output 6	12	COM
13	Output 7	14	COM
15	Output 8	16	COM
17	Output 9	18	COM
19	Output 10	20	COM
21	Output 11	22	COM
23	Output 12	24	COM
25	Output 13	26	COM
27	Output 14	28	COM
29	Output 15	30	COM
31	Output 16	32	COM
33	No connection	34	No connection

Output 1 – 4 for 4 points, 1 – 8 for 8 points.

INSTALLATION

Power consumption

•**AC**: Approx. 4 VA

•**DC**: Approx. 4 W (160 mA)

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 or DIN rail

Weight: 450 g (0.99 lb)

PERFORMANCE in percentage of span

A/D conversion: ±0.1 %

D/A conversion: ±0.1 %

Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)

Permissible power failure duration: ≤ 10 msec.

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 1500 V AC @ 1 minute (input or output to DeviceNet to power)

2000 V AC @ 1 minute (input or output or DeviceNet or power to FG1)
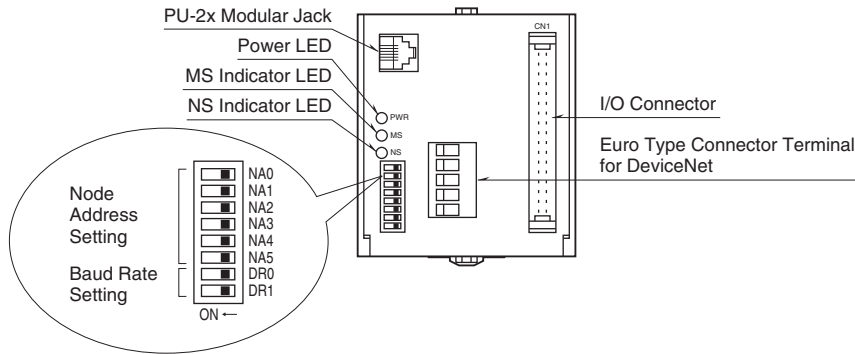
STANDARDS & APPROVALS
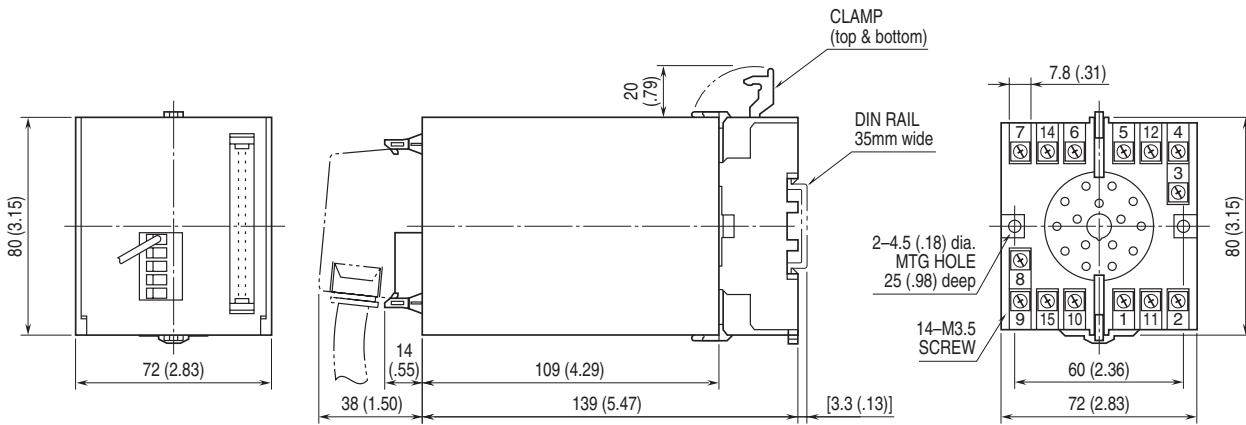
EU conformity:

EMC Directive

  EMI EN 61000-6-4

  EMS EN 61000-6-2

RoHS Directive

EXTERNAL VIEW

PU-2x Modular Jack
Power LED
MS Indicator LED
NS Indicator LED

CN1

PWR
MS
NS

I/O Connector

Euro Type Connector Terminal
for DeviceNet

Node Address Setting
NA0
NA1
NA2
NA3
NA4
NA5

Baud Rate Setting
DR0
DR1

ON ←

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

CLAMP
(top & bottom)

20 (.79)

DIN RAIL
35mm wide

7.8 (.31)

80 (3.15)

72 (2.83)

14 (.55)

109 (4.29)

38 (1.50)

139 (5.47)

[3.3 (.13)]

2–4.5 (.18) dia.
MTG HOLE
25 (.98) deep

14–M3.5
SCREW

7 14 6   5 12 4
               3
8
9 15 10 1 11 2

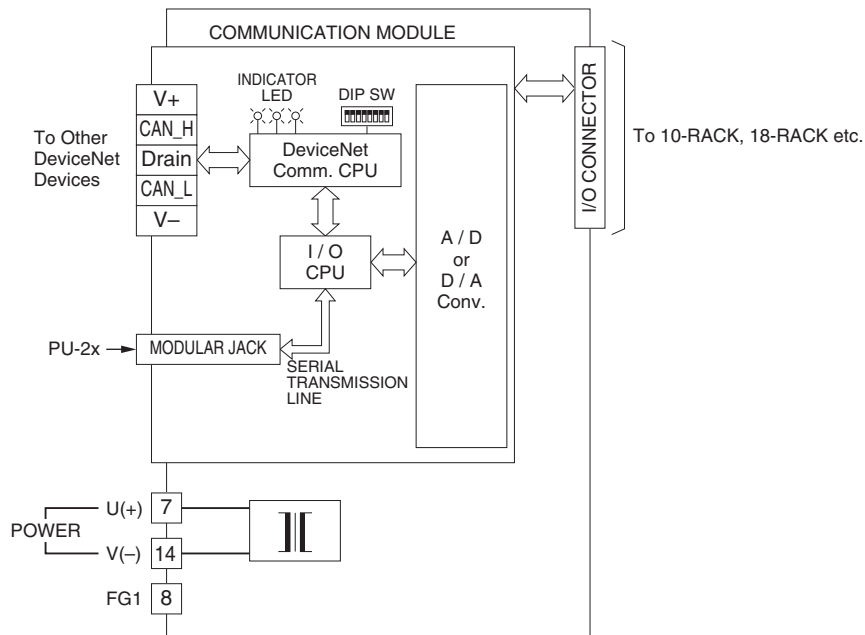80 (3.15)

60 (2.36)

72 (2.83)

•When mounting, no extra space is needed between units.

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.

■ CABLE IDENTIFICATION

The following table defines wire insulation colors and designations. The terminal block is labeled also in the same colors so that the correct assignment can be confirmed.

COLOR	DESIG.	DESCRIPTION
black	V –	Power (–)
blue	CAN_L	Signal Low
bare	Drain	Shield
white	CAN_H	Signal High
red	V +	Power (+)

⚠ Specifications are subject to change without notice.