

Super-mini Signal Conditioners Mini-M Series

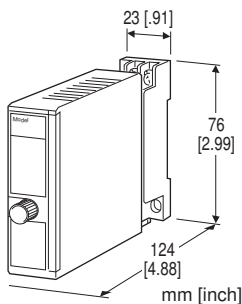
PULSE DIVIDER

Functions & Features

- Galvanically isolates and divides pulse rate signals
- Pulse division ratio is adjustable with the front switch, duty of the output pulse is 50%
- Various outputs (open collector, and voltage pulses)
- High-density mounting

Typical Applications

- Positive displacement flowmeters and turbine meters
- Dry contact signal produced at rotating machine



MODEL: M2PDU-[1][2][3]-[4][5]

ORDERING INFORMATION

- Code number: M2PDU-[1][2][3]-[4][5]
- Specify a code from below for each of [1] through [5].
(e.g. M2PDU-33N-M2/N/Q)
- Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT

- 1: Mechanical contact (max. 30 Hz)
- 2: Open collector (max. 100 kHz)
- 3: Voltage pulse (max. 100 kHz)
- 9: Clamp-on pulse sensor CLSP

[2] OUTPUT

- 1: Low frequency open collector (max. 30 Hz)
- 2: High frequency open collector (max. 100 kHz)
- 3: 5 V pulse (max. 100 kHz)
- 4: 12 V pulse (max. 100 kHz)
- 5: 24 V pulse (max. 100 kHz)

[3] OUTPUT LOGIC

- N:** The same as the input
R: Inverted

[4] POWER INPUT

AC Power

M: 85 - 264 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

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

DC Power

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

R2: 11 - 27 V DC
(Operational voltage range 11 - 27 V, ripple 10 %p-p max.)

P: 110 V DC
(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)

[5] OPTIONS (multiple selections)

Standards & Approvals (must be specified)

/N: Without CE or UKCA

blank: none

/Q: Options other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

/C04: Polyolefin coating

TERMINAL SCREW MATERIAL

/S01: Stainless steel

RELATED PRODUCTS

- Clamp-on pulse sensor (model: CLSP)

GENERAL SPECIFICATIONS

Construction: Plug-in

Connection: M3 screw terminals (torque 0.8 N·m)

Screw terminal: Chromated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Input to output to power

Chattering protection: Filter provided for mechanical contact input

Input pulse sensing: DC coupled

■ Frequency Division

Duty ratio: 50%

(Duty of the output pulse is 50%)

When division is set, the duty ratio of the output signal is 50%.

However, if the division ratio is 1/1 (no division), the M2PDU outputs a signal equivalent to the input signal, so the duty of the output pulse may not be 50%.

(Example: When the duty of the input signal is 40% and the division ratio is set to 1/1 (no division), the duty of the output signal is approximately 40%.)

Setting division ratio: rotary switch (front)

In the range of 1/1 to 1/6400, division ratio can be set arbitrarily with the combinations of the switches.

INPUT SPECIFICATIONS

Excitation: 12 V DC @30 mA; shortcircuit protection

Duty ratio: 40 - 60 %

■ Open Collector

Maximum frequency: 100 kHz

Pulse width time requirement: 5 μsec. min. for ON and OFF

Sensing: Approx. 12 V DC @3 mA

ON/OFF level: ≤ 600 Ω / 1.8 V for ON, ≥ 100 kΩ / 3.5 V for OFF

■ Mechanical Contact

Maximum frequency: 30 Hz

Pulse width time requirement: 10 msec. min. for ON and OFF

Sensing: Approx. 12 V DC @3 mA

ON/OFF level: ≤ 200 Ω / 0.6 V for ON, ≥ 100 kΩ / 2.5 V for OFF

■ Voltage Pulse

Maximum frequency: 100 kHz

Pulse width time requirement: 5 μsec. min. for high and low levels

Waveforms: Square or sine

Hi/Lo level: 2 - 50 V for high level; ≤1 V for low level

Input impedance: 10 kΩ min.

■ Clamp-on Pulse Sensor CLSP

Maximum frequency: 50 000 pulses/hour

ON/OFF level: ≤ 400 Ω / 1.3 V for ON, ≥ 200 kΩ / 12 V for OFF

OUTPUT SPECIFICATIONS

■ Low Frequency Open Collector:

50 V DC @100 mA (resistive load)

Maximum frequency: 30 Hz

Saturation voltage: 0.5 V DC

■ High Frequency Open Collector:

50 V DC @100 mA (resistive load)

Maximum frequency: 100 kHz

Saturation voltage: 0.5 V DC

■ Voltage Pulse

Maximum frequency: 100 kHz

High level: Rating (5, 12 or 24 V) ±10 %

Low level: ≤ 0.5V

Load resistance:

≥ 250 Ω for 5 V

≥ 600 Ω for 12 V

≥ 1200 Ω for 24 V

INSTALLATION

Power Consumption

•AC:

Approx. 4 VA at 100 V

Approx. 5 VA at 200 V

Approx. 6 VA at 264 V

•DC: Approx. 2 W

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

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

Mounting: Surface or DIN rail

Weight: 150 g (0.33 lb)

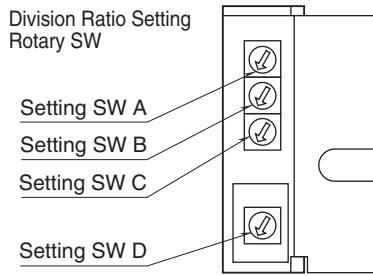
PERFORMANCE

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

EXTERNAL VIEW

FRONT VIEW



Division Ratio

In the range of 1/1 to 1/6400, division ratio can be set arbitrarily with the following combinations of the switches.

Switch No.	Switch A	Switch B	Switch C	Switch D
1	No division	No division	No division	No division
2	1/2	1/16	1/128	1/5
3	1/4	1/32	1/256	1/25
4	1/8	1/64	-	-

Note1) Set two switches out of A through C to "no division".

(Settings such as 1/2 for switch A and 1/16 for switch B are disabled.)

Note2) 1/5 and 1/25 are not settable.

Be sure to set Switch A through C when setting Switch D to 1/5 or 1/25.

Division setting list

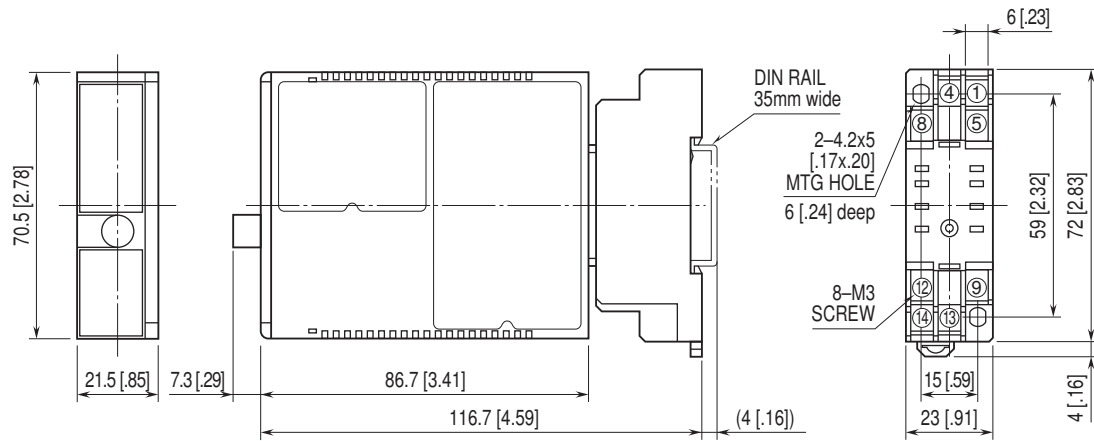
(*) factory default setting

Division ratio	Switch A	Switch B	Switch C	Switch D
No division (*)	1	1	1	1
1/2	2	1	1	1
1/4	3	1	1	1
1/8	4	1	1	1
1/10	2	1	1	2
1/16	1	2	1	1
1/20	3	1	1	2
1/32	1	3	1	1
1/40	4	1	1	2
1/50	2	1	1	3
1/64	1	4	1	1
1/80	1	2	1	2
1/100	3	1	1	3
1/128	1	1	2	1
1/160	1	3	1	2
1/200	4	1	1	3
1/256	1	1	3	1
1/320	1	4	1	2
1/400	1	2	1	3
1/640	1	1	2	2
1/800	1	3	1	3
1/1280	1	1	3	2
1/1600	1	4	1	3
1/3200	1	1	2	3
1/6400	1	1	3	3

OUTPUT LOGIC

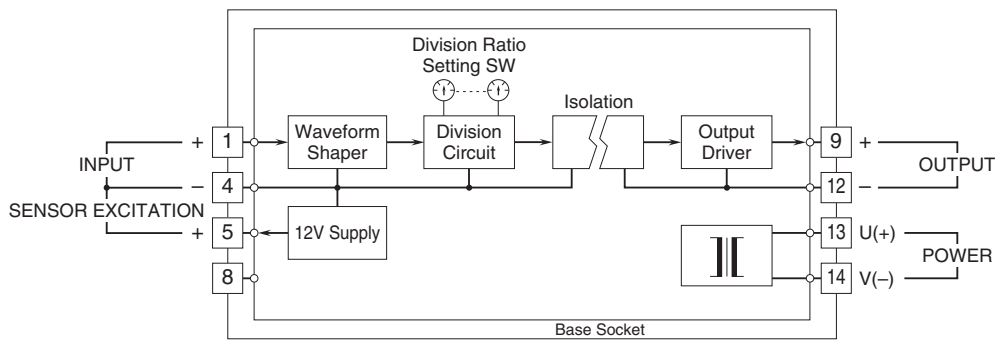
INPUT TYPE	PULSE LOGIC	INPUT	VOLTAGE PULSE OUTPUT	OPEN COLLECTOR
Voltage Pulse	Non Inverted	H L	H L	OFF ON
	Inverted	H L	H L	OFF ON
Mechanical Contact Open Collector Clamp-on Pulse Sensor CLSP	Non Inverted	OFF ON	H L	OFF ON
	Inverted	OFF ON	H L	OFF ON

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



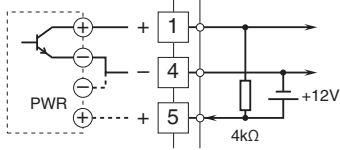
• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

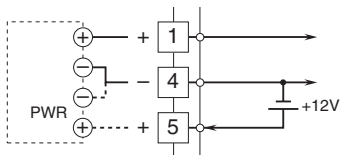


Input Connection Examples

■ Mechanical Contact, Open Collector or Clamp-on Pulse Sensor CLSP

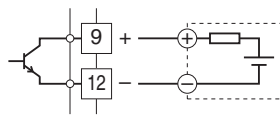


■ Voltage Pulse

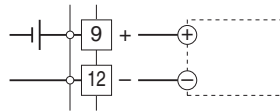


Output Connection Examples

■ Open Collector



■ Voltage Pulse



Specifications are subject to change without notice.