

Rack-mounted DCS Signal Conditioners 18-RACK

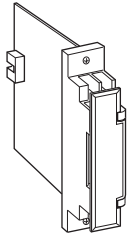
PULSE SCALER

Functions & Features

- Converting pulse rate into convenient engineering unit for display on a totalizing counter or meter

Typical Applications

- Positive displacement flowmeters and turbine flowmeters
- Magnetic tachometers



MODEL: 18PR-[1][2]-R

ORDERING INFORMATION

- Code number: 18PR-[1][2]-R
- Specify a code from below for [1] and [2].
(e.g. 18PR-11-R)
- Input frequency range (e.g. 0 - 356.7 Hz)
 - Output frequency range (e.g. 0 - 1.00 Hz)

[1] INPUT

- 1: Dry contact (max. 100 kHz)
- 2: Voltage pulse (max. 100 kHz)

[2] OUTPUT

- 1: Open collector (max. frequency 20 kHz)
- 2: 5 V pulse (max. frequency 20 kHz)
- 3: Relay contact (max. frequency 2 Hz)
- 4: 24 V pulse (max. frequency 20 Hz)

POWER INPUT

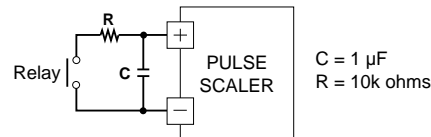
DC Power

R: 24 V DC

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

CAUTION

- 1) This unit's output waveform is not uniform due to its scaling method.
- 2) Use input relays which do not cause chattering (e.g. mercury relays). Other relays could be used only with a CR filter, for 10 Hz at maximum.
- 3) Use M-System's Model M2PRU instead of this unit in conjunction with the pulse output from M-System's power transducers.



GENERAL SPECIFICATIONS

Construction: Rack-mounted; terminal access via screw terminals on the front and connector on the rear; terminal cover provided

Connection

Input: M3.5 screw terminals (torque 0.8 N·m)

Output: M3.5 screw terminals (torque 0.8 N·m) and connector

Power input: Supplied from connector

Screw terminal: Nickel-plated steel

Isolation: Input to output to power

Input pulse sensing: Capacitor coupled; detecting pulse rise

Sensitivity adjustment: Single-turn screwdriver adjustment (front); 25 mVp-p - 5 Vp-p

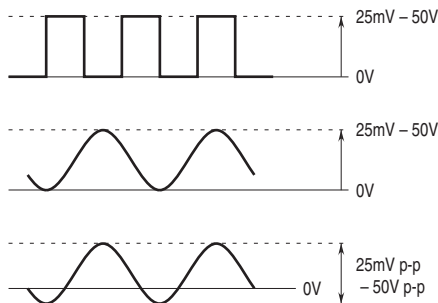
Scaling factor adjustment: 10-position rotary switch; $0.9999 \times 10^0 - 0.0001 \times 10^{-6}$



INPUT SPECIFICATIONS

- **Dry Contact:** Mechanical contact or open collector
- Max. frequency:** 100 kHz
- Pulse width time requirement:** 5 μ sec. min. (20 msec. min. for frequencies \leq 10 Hz)
- Sensing:** Approx. 7.5 V DC @ 1 mA
- ON/OFF level:** \leq 20 k Ω for ON, \geq 100 k Ω for OFF
- **Voltage Pulse:** Square or sine waveforms*
- Max. frequency:** 100 kHz
- Pulse width time requirement:** 5 μ sec. min. (20 msec. min. for frequencies \leq 10 Hz)
- Input amplitude:** 25 mVp-p - 50 Vp-p
- Minimum amplitude requirement**
 - **With duty ratio 50 % \pm 10 %**
(frequency: amplitude)
 - 0 - 2 kHz: 25 mVp-p
 - 0 - 20 kHz: 50 mVp-p
 - 0 - 40 kHz: 1 Vp-p
 - 0 - 100 kHz: 5 Vp-p
 - **With duty ratio other than 50 % \pm 10 %**
(pulse width: amplitude)
 - 5 μ sec.: 5 Vp-p
 - 10 μ sec.: 3.5 Vp-p
 - 50 μ sec.: 2 Vp-p
 - 100 μ sec.: 1 Vp-p
 - 500 μ sec.: 0.5 Vp-p
- Input impedance:** 100 k Ω minimum

*Voltage pulse examples



OUTPUT SPECIFICATIONS

- **Open Collector:** 50 V DC @ 50 mA (resistive load)
- Frequency range:** 0 - 20 kHz
- ON pulse width:** Approx. 30 μ sec.
- Saturation voltage:** 0.6 V DC
- **Relay Contact:** 120 V AC @ 200 mA ($\cos \theta = 1$)
- 240 V AC @ 100 mA ($\cos \theta = 1$)
- 24 V DC @ 200 mA (resistive load)
- Maximum switching voltage:** 240 V AC or 30 V DC
- Maximum switching power:** 24 VA or 4.8 W
- Minimum load:** 5 V DC @ 10 mA
- Frequency range:** 0 - 2 Hz
- ON pulse width:** Approx. 30 msec.
- Relay life:** $\geq 5 \times 10^7$ cycles (mechanical)
- $\geq 10^5$ cycles (electrical)
- **5 V Pulse**
- Frequency range:** 0 - 20 kHz
- Low pulse width:** Approx. 30 μ sec.
- High level:** 5 V \pm 10 %
- Low level:** \leq 0.5 V
- Load resistance:** 600 Ω minimum
- **24 V Pulse**
- Frequency range:** 0 - 20 Hz
- High pulse width:** Approx. 30 msec.
- High level:** 24 V \pm 10 %
- Low level:** \leq 0.5 V
- Load current:** 30 mA max.
- Load resistance:** 800 Ω minimum

INSTALLATION

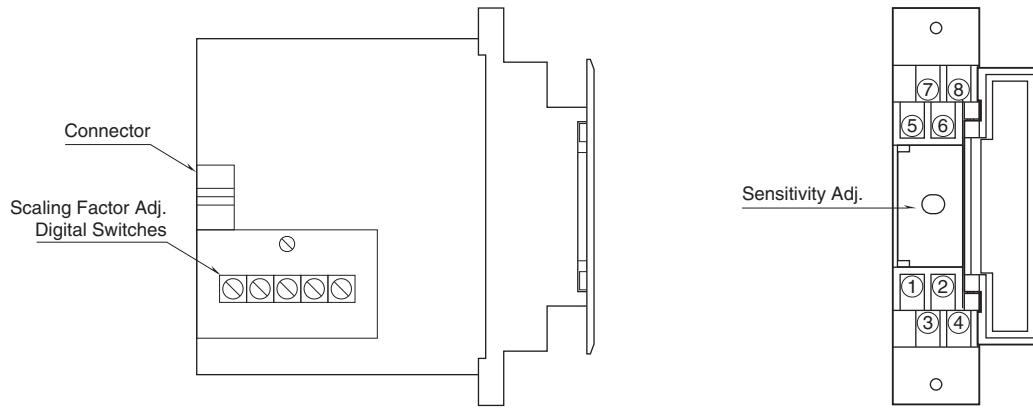
- Power consumption**
 - DC: Approx. 80 mA
- Operating temperature:** -5 to +55 $^{\circ}$ C (23 to 131 $^{\circ}$ F)
- Operating humidity:** 30 to 90 %RH (non-condensing)
- Mounting:** Standard Rack 18BXx or 18KBXx
- Weight:** 150 g (0.33 lbs)

PERFORMANCE

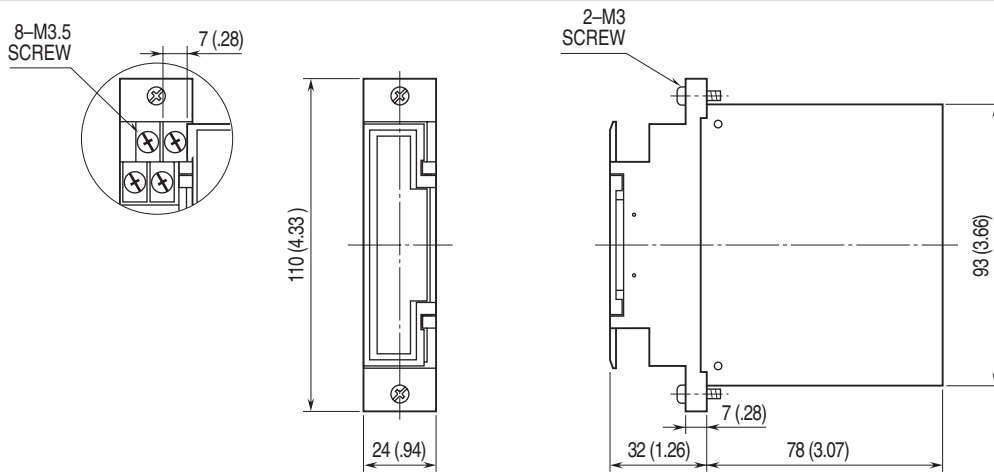
- Insulation resistance:** \geq 100 M Ω with 500 V DC
- Dielectric strength:** 1500 V AC @ 1 minute
(input to output or power)
- 500 V AC @ 1 minute (output to power)
- 1500 V AC @ 1 minute (input or output or power to ground)



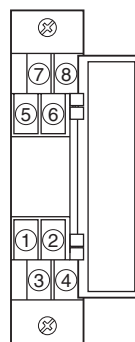
EXTERNAL VIEW



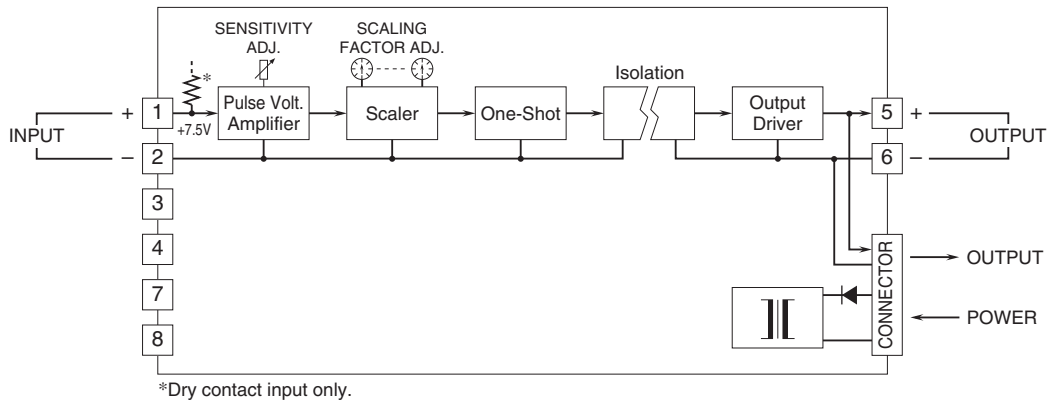
DIMENSIONS unit: mm (inch)



TERMINAL ASSIGNMENTS



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.

