Rack-mounted DCS Signal Conditioners 18-RACK

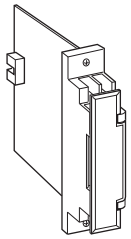
PULSE SCALER

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 each of [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

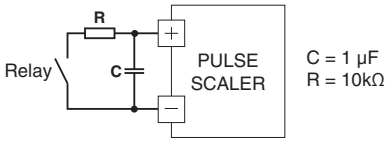
1: Open collector (max. frequency 20 kHz)
2: 5 V pulse (max. frequency 20 kHz)
3: Relay contact (max. frequency 2 Hz)
4: 24 V pulse (max. frequency 20 Hz)

POWER INPUT

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

CAUTION

1) This unit's output waveform is not uniform due to its scaling method. The user must be aware that it may be inconvenient for certain types of application.
2) This unit is designed to accept at the maximum of 100 kHz, which may cause errors due to chattering in the input pulses.
Use input relays which do not cause chattering. Other relays could be used only with a CR filter, for 10 Hz at maximum.
3) Use the Model M2PRU instead of this unit in conjunction with the pulse output from our 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 × 10^{0} – 0.0001 × 10^{-6}

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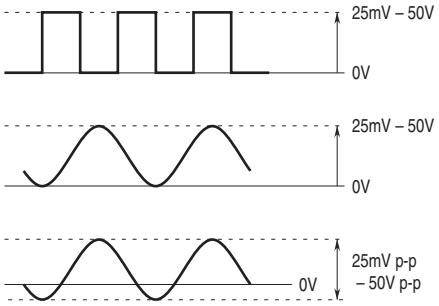
INPUT SPECIFICATIONS

■ **Dry Contact**: Mechanical contact or open collector
Max. frequency: 100 kHz
Pulse width time requirement: 5 µsec. min. (20 msec. min. for frequencies ≤ 10 Hz)
Sensing: Approx. 7.5 V DC @ 1 mA
ON/OFF level: ≤ 20 kΩ for ON, ≥ 100 kΩ for OFF
■ **Voltage Pulse**: Square or sine waveforms*
Max. frequency: 100 kHz
Pulse width time requirement: 5 µsec. min. (20 msec. min. for frequencies ≤ 10 Hz)
Input amplitude: 25 mVp-p – 50 Vp-p
Minimum amplitude requirement
•**With duty ratio 50 ±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 ±10 %**
(pulse width: amplitude)
5 µsec.: 5 Vp-p
10 µsec.: 3.5 Vp-p
50 µsec.: 2 Vp-p
100 µsec.: 1 Vp-p
500 µsec.: 0.5 Vp-p
Input impedance: 100 kΩ 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 µsec.
Saturation voltage: 0.6 V DC
■ **Relay Contact**: 120 V AC @ 200 mA (cos ø = 1)
240 V AC @ 100 mA (cos ø = 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: ≥ 5×10^7 cycles (mechanical)
≥ 10^5 cycles (electrical)
■ **5 V Pulse**
Frequency range: 0 – 20 kHz
Low pulse width: Approx. 30 µsec.
High level: 5 V ±10 %
Low level: ≤ 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 ±10 %
Low level: ≤ 0.5 V
Load current: 30 mA max.
Load resistance: 800 Ω minimum

INSTALLATION

Current consumption: Approx. 80 mA
Operating temperature: -5 to +55°C (23 to 131°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Mounting: Standard Rack 18BXx or 18KBXx
Weight: 150 g (0.33 lb)

PERFORMANCE

Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 1500 V AC @ 1 minute
(input to output or power)
500 V AC @ 1 minute (outut to power)
1500 V AC @ 1 minute (input or output or power to ground)

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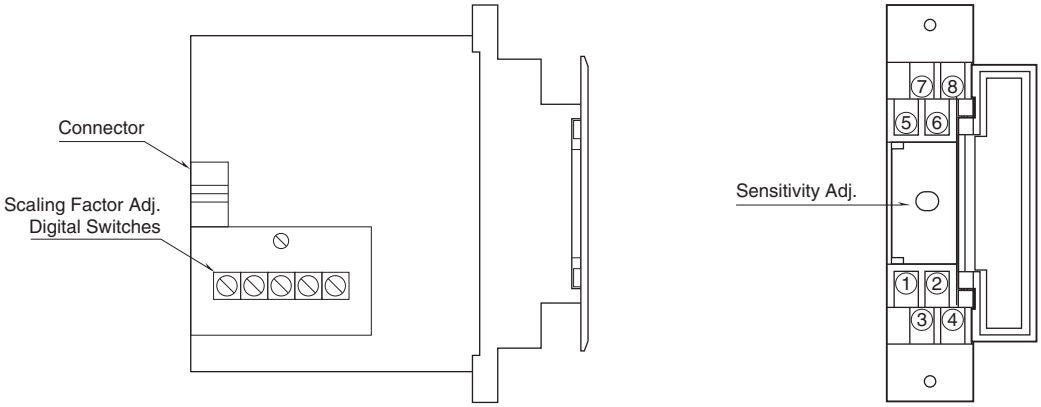
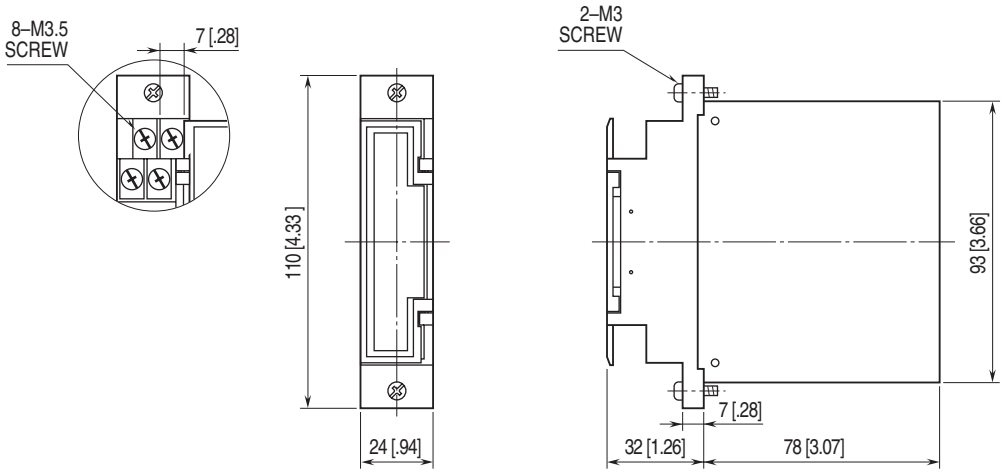
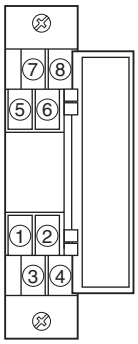
EXTERNAL VIEW



EXTERNAL DIMENSIONS unit: mm [inch]



TERMINAL ASSIGNMENTS



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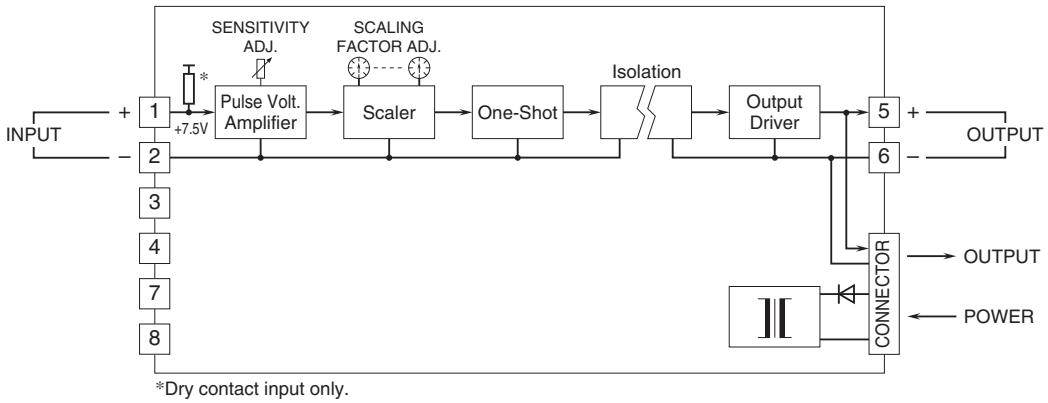
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



*Dry contact input only.

⚠ Specifications are subject to change without notice.

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