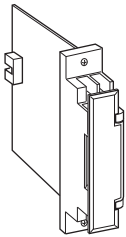


## Rack-mounted DCS Signal Conditioners 18K-RACK

### PULSE SCALER

#### Functions & Features

- Takes pulse measurements from turbine meters or volumetric flowmeters and outputs in convenient engineering unit
- Module can be retracted without removing wiring for an insulation test
- Optional power switch



### MODEL: 18KPR-[1][2]-R[3]

#### ORDERING INFORMATION

- Code number: 18KPR-[1][2]-R[3]
- Specify a code from below for each of [1] through [3].  
(e.g. 18KPR-11-R/S)
- Input Range (e.g. 0 - 356.7 Hz)
  - Output 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

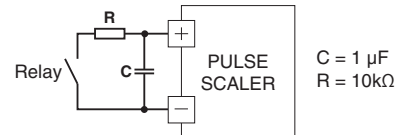
DC Power  
R: 24 V DC  
(Operational voltage range 24 V  $\pm$ 10 %, ripple 10 %p-p max.)

#### [3] OPTIONS

Power Switch  
blank: None  
/S: With power switch

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

**Power:** 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  $\mu$ sec. min. (20 msec. min. for frequencies  $\leq$  10 Hz)
- Sensing:** Approx. 7.5 V DC @ 1 mA
- ON/OFF level:**  $\leq$  20 k $\Omega$  for ON,  $\geq$  100 k $\Omega$  for OFF
- **Voltage Pulse:** Square or sine waveforms\*
- Max. frequency:** 100 kHz
- Pulse width time requirement:** 5  $\mu$ 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 ±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

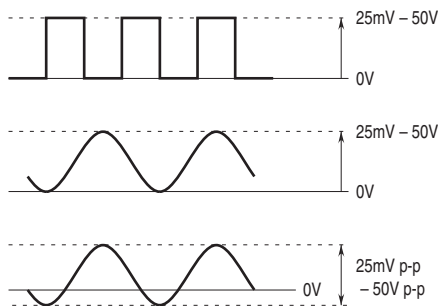
50 μsec.: 2 Vp-p

100 μsec.: 1 Vp-p

500 μsec.: 0.5 Vp-p

**Input impedance:** 100 kΩ minimum

\*Voltage pulse examples



**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 18KBXx

**Weight:** 150 g (0.33 lb)

## PERFORMANCE

**Insulation resistance:** ≥ 100 MΩ with 500 V DC

**Dielectric strength:** 500 V AC @ 1 minute (input to output to power to ground )

## 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 φ = 1)

240 V AC @ 100 mA (cos φ = 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<sup>7</sup> cycles (mechanical)

≥ 10<sup>5</sup> 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**

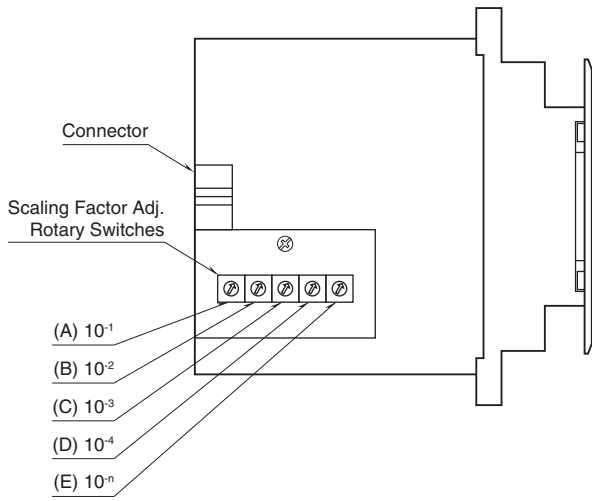
**Frequency range:** 0 – 20 Hz

**High pulse width:** Approx. 30 msec.

**High level:** 24 V ±10 %

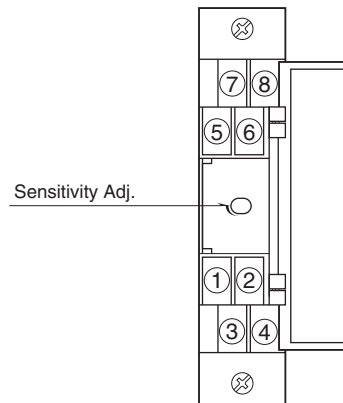
## EXTERNAL VIEW

### ■ SIDE VIEW

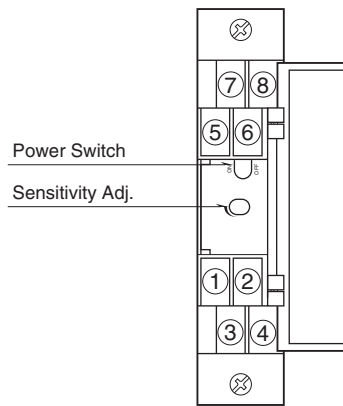


### ■ FRONT VIEW

#### • Without Power Switch

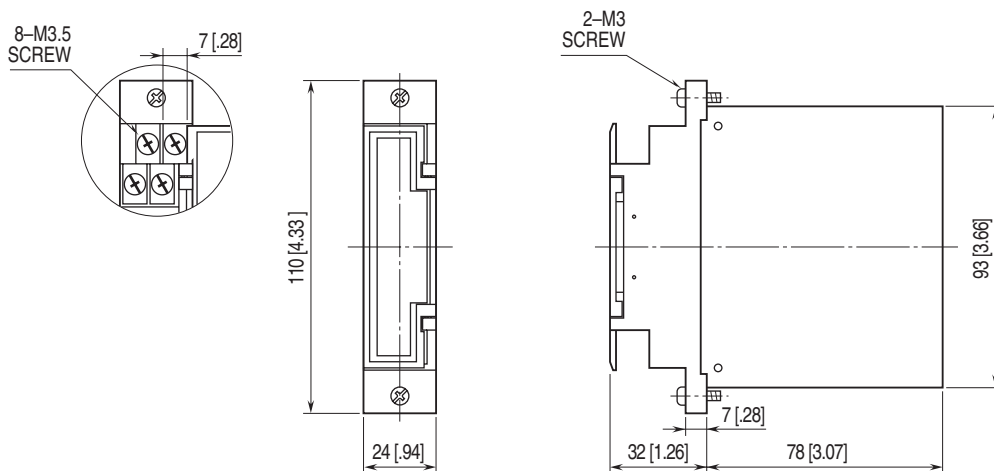


#### • With Power Switch

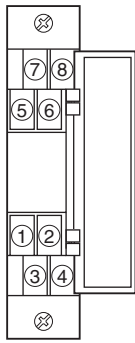


Refer to the instruction manual for detailed procedures.

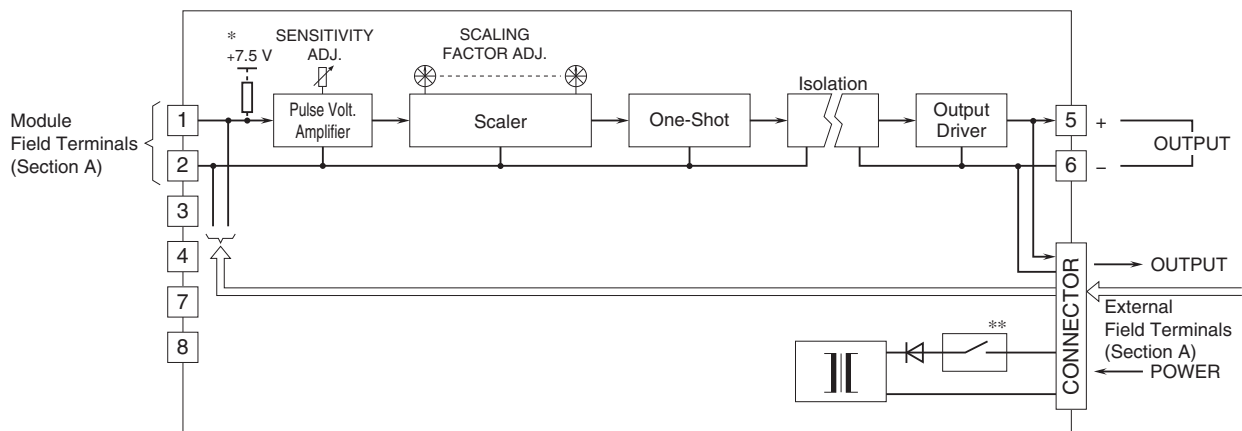
## EXTERNAL DIMENSIONS unit: mm [inch]



**TERMINAL ASSIGNMENTS**

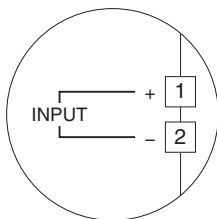


**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



\* Only with dry contact input  
 \*\* With power switch only  
 Use either of module or external field terminals.

Section A. Field Terminals



Specifications are subject to change without notice.