**WARNING!**

It is important that this guide is read and fully understood before attempting installation or commissioning of the instrument. Instructions appearing in this document, and current safety legislation, must be observed to ensure personal safety and to prevent damage to the instrument or equipment connected to it.

The instrument should be installed, commissioned and operated only by suitably qualified and authorised personnel.

The specifications for the instrument must not be exceeded. If the instrument is used in a manner not specified, the protection provided by the instrument may be compromised.

The instrument must be installed in an enclosure that provides adequate protection against electric shock.

Ensure that power to the instrument is switched off and signal wiring isolated from hazardous voltages before carrying out installation or maintenance.

The instrument is designed for installation in a clean, dry environment (Pollution degree 1).

Stroud Instruments Ltd strongly recommends that repairs and re-calibration work are done on a return to factory basis in order that our quality standards, product specifications and safety precautions are not compromised.

The instrument is double insulated

Note: Clean only with a dry soft cloth.

**Safety and EMC information**

Safety: EN61010-1

Immunity: EN50082-1

Emissions: EN50081-1

CE certified

**Installation**

**Location**

- The instrument is designed for installation in a clean, dry environment
- Do not install near to switch gear, motor controllers or other sources of strong magnetic fields.
- Avoid exposure to direct sunlight and ensure the ambient temperature inside the enclosure that the unit is mounted in will not exceed our specification.

**DIN rail mounting**

1. Hook the top DIN rail recess over the DIN rail, and press the bottom edge against the DIN rail until the spring-loaded latch clicks home.
2. To remove the instrument from the DIN rail, insert a small bladed screwdriver into the slot in the spring-loaded latch and gently lever the screwdriver up until the latch releases from the DIN rail.

**Wiring and connections**

- Segregate power supply and signal wiring.
- Use screened cable for all signal wiring with the screen earthed at one end only.
- All connections should be made using ferrules to avoid short-circuits between adjacent terminals.
- This instrument is equipped with a universal power supply and may be operated from either of the following supply ranges:
  - DC supplies: 24 VDC to 200 VDC or AC supplies: 85 VAC to 260VAC
- Power supply wiring to the instrument should be protected by a 1A time-delay fuse fuse and double pole switch - see below. The switch should be clearly marked as the isolating switch for the instrument.

**Typical connections**

- 3-wire PNP Sensor
- 3-wire NPN Sensor
- Transducer power supply (1) - on terminal 2 is either 12V (supplied as default), or otherwise as specified when ordered. See connection label on side of unit.

- Note: Disconnecting terminal connectors are removeable.

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Level control sensitivity adjustment
The C16-10 is designed to accept voltage levels from 10 mV p.t.p. up to 250 V R.M.S. To cater for this wide range, link J5 is provided to set the trigger level sensitivity for (i) input signals ≤ 6 Volts and (ii) input signals > 6 Volts (default setting).

1. Refer to ‘JS Voltage inputs’ in the ‘Configuration link settings’ diagram and set the link to suit.
2. Reassemble the case as follows: Insert the front panel / PCB assembly into the casing ensuring that the two leading edges of the side panels are correctly located into the front panel section (the sides of case must fit flush with the sides of the front section).
3. Reconnect / reinsert the removable terminals ensuring wiring / removable terminals are returned to their correct locations.

Output signal configuration
NOTE: Without trimming the side accessible ‘Span’ and ‘Zero’ controls the range change may introduce an error of typically 1%.
To maintain specified accuracy, a timer-counter, digital voltmeter (and standard resistor for current outputs) of sufficient accuracy are required for this procedure.

1. Refer to the ‘Output select’ links below and set the output signal as required.

WARNING - Electric shock hazard
Do not attempt to adjust ‘Span’ and ‘Zero’ controls with the unit out of its case.

1. After a warm-up time of 30 minutes
   (i) Set the input frequency to Zero value and adjust the ‘Zero’ trim to achieve the required output zero.
   (ii) Set the input frequency to Fullscale value and adjust the ‘Span’ trim to the required output full scale.
   (iii) repeat steps (i) and (ii) as required.

Configuration of frequency range and digital filtering
These parameters are user configurable using the optional Programming Kit. Full details are provided in the programming guide on the software CD.

Specifications
Notes:
1. Input and output types, other than those shown are possible, e.g. 3-wire NPN or PNP sensors, 2-wire NPN sensors, etc.
   - Our sales team will be pleased to advise.
2. 3-wire NPN
3. 2-wire NPN

Input Types - user selectable
- Voltage: ±10mV p.t.p. to a 100V p.t.p. sine, square or triangular waveforms
- Open collector: (non), Current input: 1—3 mA (NAMUR) or proximity switch, Volt-free contact.

Input Range: See programmable options

Transducer Power Supplies
(1) 12VDC @ 10mA max (default setting) or customer specified voltage in the range 5V to 15V.
(2) 24VDC @ 20mA max.

Outputs - user selectable
0-10mA (35000), 0-20 mA (10000), 4-20 mA (10000)
Maximum output impedance in ohms shown in brackets.
0.5V, 1.5V, 0.1V, 0.2V (50R minimum)
Current sink 4-20mA @ 50 volt max.

Response Time
Varies between 1 sec. and 1 period of input signal.

Isolation
The input and output are isolated from each other and from the power supply.
Maximum voltage 250V RMS or 400V DC. Resistance ≥ 50 x 106 ohms measured at 1000V DC.

Programmable Options
Parameter | Min. | Max. | Default
--- | --- | --- | ---
Zero scale frequency (Hz) | 0 | 5000 | 0
Full scale frequency (Hz) | 0.1 | 5000 | 100
Minimum threshold (% of FS) | 0 | 100 | 100
Change threshold (% of FS) | 0 | 100 | 10
Static state timeout (s) | 0.25 | 4000 | 2
Averaging count | 0.02 | 20 | 5

Calibrated Accuracy
Error (± 0.2% FSD) at 100% when factory calibrated.
NB Error introduced by User output range changes, typically 1% but may be corrected by span control.

Linearity Error
≤ ± 0.1% FSD (from 1 to 100% FSD)

Output Ripple
≤ 0.1% (peak to peak) of FSD

Load Resistance Effect
≤ 0.001% of span / 100 ohm change

Stability
Over 24 hours ± 0.1% FSD, Over 1 year ± 0.25% FSD

Temperature Coefficients
Zero: ± 0.02% span / °C, Span: ± 0.02% span / °C

Environmental
Temperature: operating -10 to +60°C, storage 0 to +70°C
Humidity: 0 – 95% RH non-condensing

Power Supply
85 - 260 VAC 50/60Hz; 24 - 200 VDC (3W nominal)

Supply Voltage Rejection
Span change: ±0.02% span / % supply change.

Opening the case
1. Turn off all power to the unit and isolate all potentially hazardous signals. NB the terminals are removable to facilitate a quick disconnect. see ‘Wiring and connections’.
2. To open the unit release the top and bottom catches by pressing down with a small screwdriver as shown and withdraw the front panel and PCB assembly out of the case.