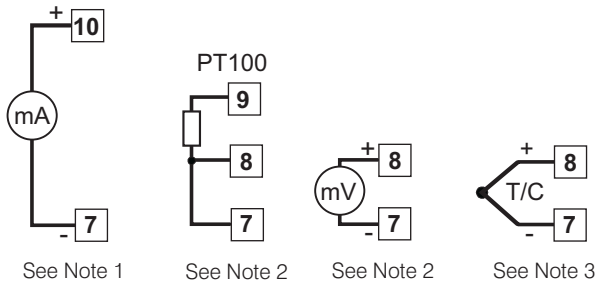# Electrical installation

⚠️ **WARNING:** Ensure that power to the instrument is switched off and signal wiring isolated from harzardous voltages before working on any electrical connection.

+ 10
mA
– 7
See Note 1

PT100
9
8
7
See Note 2

+ 8
mV
– 7
See Note 2

+ 8
T/C
– 7
See Note 3

Universal Input Connection

For cable length less than three metres no screen or twisted pair is required. Thermocouple inputs must use the correct compensation cable. For PT100 inputs all three wires must be of equal length (resistance).

Use recommended types for cable lengths 3 to 30 metres.

NB Where screened cable is used, the screen must be connected at one end only.

Note 1
Twisted pair or screened cable.
Note 2
Screened cable.
Note 3
TC compensation cable.

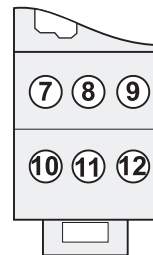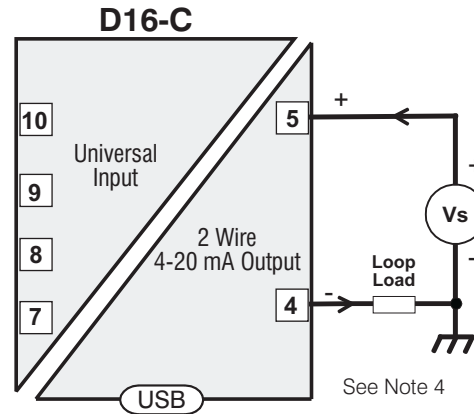## Output Connection
Note 4
Twisted pair cable.
Two-wire 4-20mA, maximum cable length 1000 metres.
Maximum load (Ohms) = (Vs - 11) / 0.021

D16-C

10
9
8
7
Universal Input

5
4
2 Wire 4-20 mA Output

+
Vs
–

Loop Load

+

–

See Note 4

USB

---

① ② ③
④ ⑤ ⑥

▢ ▲ TRIM

⑦ ⑧ ⑨
⑩ ⑪ ⑫

Location of terminals

UNIVERSAL INPUT TRANSMITTER
Type D16-C (4-20mA output)
User Guide

⚠️ **IMPORTANT - Please read this document before installing.**

Every effort has been taken to ensure the accuracy of this document, however we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without notice.

⚠️ **IMPORTANT - CE & SAFETY REQUIREMENTS**

Product must be DIN rail mounted, inside a suitable enclosure providing environmental protection to IP65 or greater.

CE   To maintain CE EMC requirements, input wires must be shorter than 30 metres.

The product contains no serviceable parts, or internal adjustments. no attempt must be made to repair this product. Faulty units must be returned to supplier for repair.

This product must be installed by a qualified person. All electrical wiring must be carried out in accordance with the appropriate regulations for the place of installation.

Before attempting any electrical connection work, please ensure all supplies are switched off.

ABSOLUTE MAXIMUM OPERATING CONDITIONS:-

Supply Voltage:	± 30 V dc (Protected for over voltage and reverse connection)
Current with over voltage:	± 200 mA
Input Voltage:	± 5 V between any terminals
Input Current:	± 100 mA between terminals 7 & 10
Ambient:	Temperature: -30 to 75 °C
	Humidity: 10 to 95 % RH (Non condensing)

Product specification

Please refer to the product data sheet for full specification, available to download at www.sil.co.uk.

Receipt and unpacking

Please inspect the packaging and instrument thoroughly for any signs of transit damage. If the instrument has been damaged, please notify your supplier immediately.

Configuration

Unless otherwise pre-configured to order, the D16-C is supplied set to the following factory defaults:

Input type	= P
Units	= °C
High Range	= 100
Low Range	= 0
Burnout	= Upscale
Trim	= ON

Config. software

USB lead
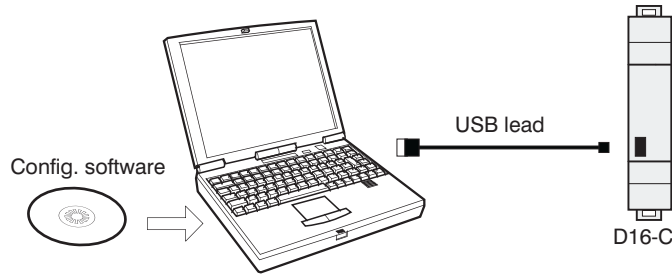
D16-C

Connect the D16-C to a PC via a standard USB cable. The unit does not need to be wired to a power supply during configuration, it is powered by the USB port on your computer.

⚠ **IMPORTANT** The D16-C can be configured whilst connected and powered, but a portable battery powered computer must be used to avoid the effects of ground loops.

The configuration software (*download from www.sil.co.uk*) will download the existing configuration data from the D16-C and guide you through any changes you wish to make. Software installation instructions are provided in the software ZIP file. The following parameters are configurable :-

Input type:	PT 100
	Thermocouple types K, J, E, N, T, R, S
	mV
	mA
Low range:	input required for 4mA output (offset)
High range:	input required for 20mA output (span)
Units:	°F, °C, mV, mA
Burnout:	direction of output current on sensor burnout (U - upscale, D - downscale)
Trim:	Enable (T) or lockout (-) the Quickcal feature

NB Low range and High range may alternatively be set using the QuickCal calibration feature.
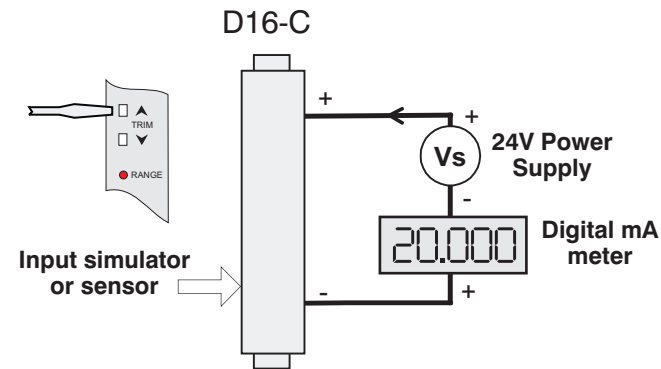
QuickCal calibration

The QuickCal feature enables the Low Range (offset) and High Range (span) calibration to be set by direct sampling of the measured process variable (input signal).
NB Input type, Units, Burnout and Trim parameters must be correctly set beforehand to suit your application using the PC software.

QuickCal utilizes two 'trim' pushbuttons. The ▲ (Span) button sets the High Range and the ▼ (Offset) button sets the Low Range. The pushbuttons are actuated using a screwdriver with a 3mm blade.

Procedure

1. Connect transmitter to a suitable input simulator or sensor.
2. Connect output to a 24V dc supply, connecting a digital mA. meter in series with the output.
3. Turn the supply on.
4. Set the input to either Offset or Span calibration point as required.
5. To enter the QuickCal mode press the Offset or Span button for greater than two seconds. Activation of the QuickCal mode is indicated by the Range LED flashing.
6. Release the pushbutton - *Range LED remains flashing*.
7. Press and release the Offset or Span pushbutton to set the calibration. The Range LED flashes at a slower rate to indicate that the calibration is set.
8. Allow 30 seconds with no button press - the transmitter then times out and returns to normal operation mode.

D16-C

Input simulator or sensor

Vs   24V Power Supply

20.000   Digital mA meter

Reversing signal calibration

Whether during Configuration or QuickCal calibration, the unit can be set for reversing signals e.g. 4-20mA in, 20-4mA out.
Example
Calibration required: 4-20mA in, 20-4mA out

|	
Using software:	Set Low Range to 20.0, Set High Range to 4.0
Using QuickCal:	With input signal at 20mA, press the ▼ (Offset) button, *etc. as per procedure*.
	With input signal at 4mA, press the ▲ (Span) button, *etc. as per procedure*.

Mechanical installation

Dimensions: 90 (H) x 17.5 (W) x 56.4 (D)
For mounting on DIN rail to EN50022

⚠ This unit must be mounted inside a suitable enclosure providing environmental protection to IP65 or greater.

⚠ **NB** Maximum operating temperature range -20°C to +70°C, 10 to 95% RH non-condensing.
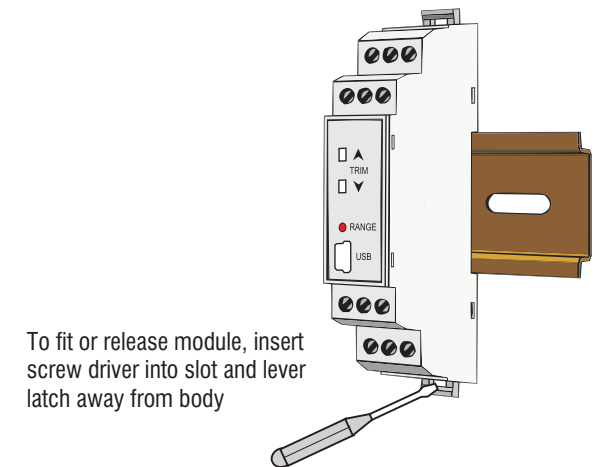
To fit or release module, insert screw driver into slot and lever latch away from body