

1. Introduction

The Tracker 300 provides solutions for the following applications:

- Data acquisition.
- Signal conditioning.
- Condition monitoring.
- Alarm trip.
- PID control.

2. Safety and EMC Information

Safety	EN61010-1:2001
Susceptibility	EN61326:1998
Emissions	EN61326:1998
CE certified	2004

Warning: This instrument is marked with the international hazard symbol. It is important to read this Installation Guide before installing or commissioning the instrument as it contains important information relating to safety and Electromagnetic Compatibility EMC.



Warning: This instrument must be fitted within an enclosure that provides adequate protection against electric shocks.



Warning: The mains terminals must use ferrules.



The unit is double insulated.

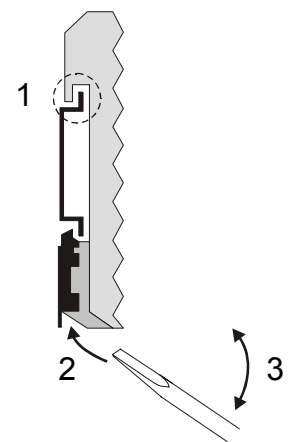


Note: Ensure that the power to the instrument is switched off before carrying out any installation or maintenance work.

3. Installation

To install the instrument, you will need to carry out the following steps:

Make connections to the instrument as shown in Section 4 Connections.



1. Attach the instrument on a DIN rail. To do this, latch the DIN rail recess on the back of the instrument on the DIN rail top runner.
2. Insert a screwdriver into the aperture on the spring-loaded securing clip located on the back of the instrument.
3. Lever the screwdriver upward to slide the clip away from the instrument (take care not to exert too much pressure on the instrument casing). Ensure the recess is located around both the top and bottom DIN rail runners then release the clip to securely lock the instrument on the DIN rail.

Note: • Avoid installing the instrument close to strong magnetic fields, e.g. switch gear, contactors or motor starters.

• It is recommended that all connections to the terminals are made using ferrules to provide greater reliability and to prevent short circuits between adjacent terminals.

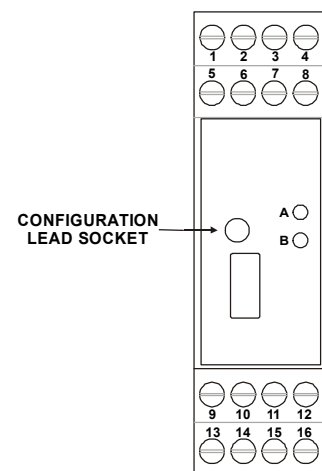
• Do not place signal and power supply wiring in the same loom.

• Use screened cables or wires for all signal/sensor leads with the screen earthed at one end only.

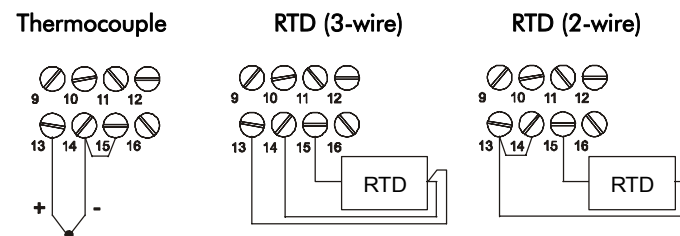
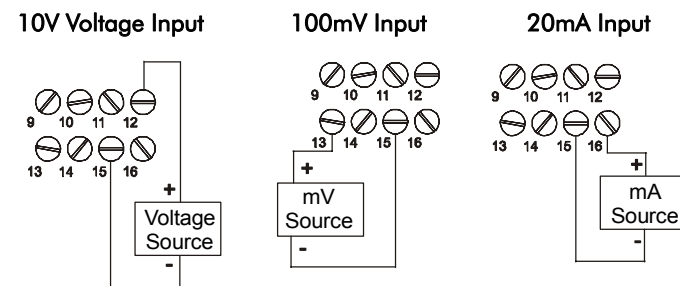
• The DIN rail should be earthed to ensure the best performance of the instrument.

4. Connections

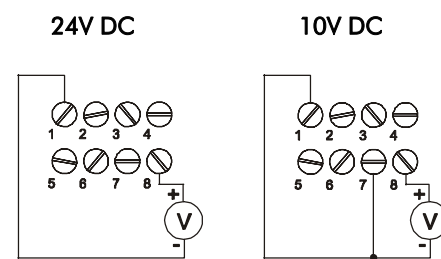
The diagram below shows the terminal connection arrangement.



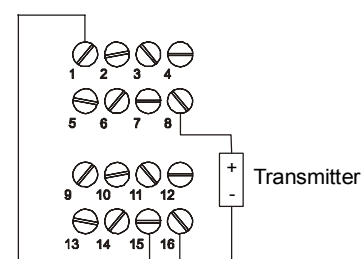
Analogue Input Connections



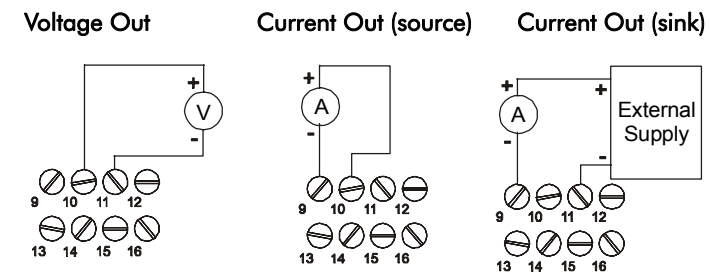
TPSU Connections (Transducer Power Supply) T321 & T332 only



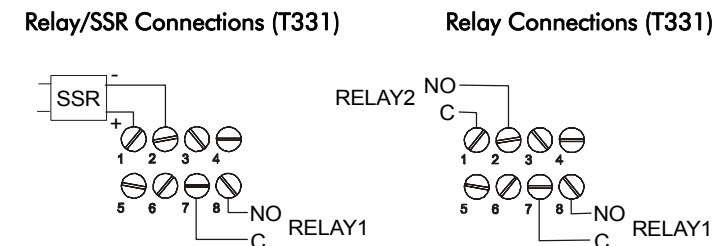
Two Wire Transmitter Connections (T321 & T332 only) (24V, 4-20mA input)



Analogue Output Connections (optional)



T331 Logic Outputs



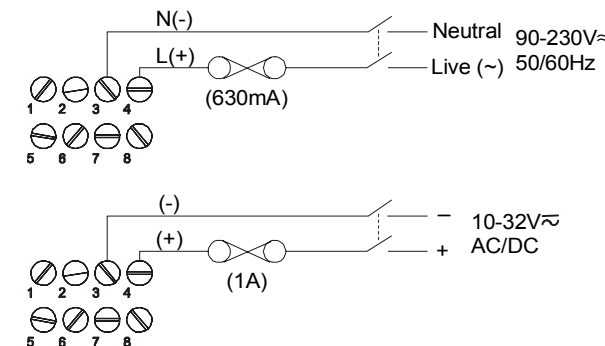
C - Common
NO - Normally Open

A two relay version of the T331 is available where the second relay replaces the SSR drive.

5. Powering the Instrument

The AC mains supply version operates with voltages in the range 90-230V \approx @ 50/60Hz. The low voltage version operates from an AC/DC supply in the range 10-32V \approx .

The diagram shows how the instrument should be connected to the appropriate supply. Isolation should be provided by a double pole switch and a 630mA or 1A time-delay fuse as appropriate (see diagram below). The isolation switch must be readily accessible.



Warning: This instrument is designed for installation in an enclosure that provides adequate protection against electric shocks. Access to power terminals should be restricted to authorised, skilled personnel only. Application of supply voltages higher than those for which the instrument is intended may compromise safety and cause permanent damage.

Warning: Ensure the power supply is connected to the terminals marked 3 & 4 as shown in the diagram above.

6. Indicators

There are two LEDs located on the front panel of the instrument, identified as A and B as shown in the terminal connection arrangement diagram.

LED A – can represent four different functions:

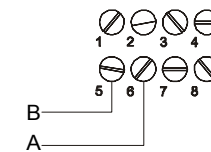
1. When lit, it confirms that the instrument is receiving mains power.
2. When flashing fast (approx. 4Hz), it indicates that there is a system error.
3. When flashing slowly (approximately 1 second per cycle), it indicates that there is a process error, e.g. sensor break.
4. When flickering, it indicates that the serial communication interface is transmitting.

LED B – functions are user programmable

7. Serial Communications

The instrument can be configured using either of its serial interfaces:

1. Connection to the RS485 interface is as shown below.



2. Connection to the front panel configuration socket is via a special cable. The main RS485 interface is disconnected when the configuration socket is in use.

There are no internal links or potentiometers. There is no reason to open the instrument.

The Windows compatible software supplied provides access to all configuration parameters and allows all setup files to be named and stored for future use. Full context-sensitive help and an online User Guide are available at all times when using the configuration software. The RS485 interface can also be used to access real time values, i.e. measurements, values, alarm setpoints.

8. Specification

	MODEL NUMBER		
	Tracker 321	Tracker 331	Tracker 332
Universal Input + RS485 Interface	✓	✓	✓
Sensor Excitation (10/24V DC)	✓		✓
Analogue Output (Option)	✓	✓	✓
Auto-tune PID Control		✓	✓*
1 x Relay + 1 x SSR Outputs		✓†	

*Requires an analogue output or Tracker 340 module for PID control.

†Optionally 2x relay (replaces SSR drive).

Power Requirements

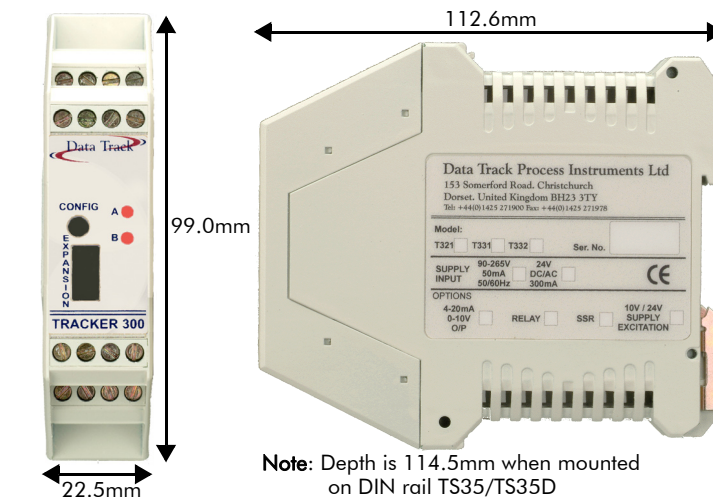
AC mains supply	90-230V \approx 50mA 50/60Hz
Low Voltage	10-32V \approx 300mA

Operating Conditions

Ambient temperature	Storage -10°C to 70°C. Operating 0°C to 60°C.
Humidity	10% to 95% RH non-condensing.

Physical/Mechanical

T330 module Dimensions	Weight 167g (max) packed weight 223g.
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Note: Depth is 114.5mm when mounted on DIN rail TS35/TS35D

Voltage & Current Inputs

Ranges $\pm 100\text{mV}$, $\pm 10\text{V DC}$ and $\pm 20\text{mA DC}$.
 Input Impedance (Ohms) $> 500\text{M}\Omega$, $> 1\text{M}\Omega$ and $< 5\Omega$

Sensor Excitation Supply (Tracker 321 and 332 only)

2-wire loop supply 24V DC nominally @ 35mA max.
 Bridge supply 10V DC regulated @ 35mA max.
 Isolation functional isolation only.

Thermocouple Measurement

Accuracy Including Linearisation			
Thermocouple	Range (°C)	Worst Case	Typical @ 20°C
Type B, Pt30%Rh/Pt6%Rh	0 to 1820	$\pm 1.0^\circ\text{C}$	$\pm 0.5^\circ\text{C}$
Type J, Fe/NiCu	-210 to 1200	$\pm 1.0^\circ\text{C}$	$\pm 0.5^\circ\text{C}$
Type K, NiCh/Ni/Al	-270 to 1372	$\pm 1.0^\circ\text{C}$	$\pm 0.5^\circ\text{C}$
Type T, Cu/CuNi	-270 to 400	$\pm 1.0^\circ\text{C}$	$\pm 0.5^\circ\text{C}$
Type N, Nicrosil-Nisil	-200 to 1300	$\pm 1.0^\circ\text{C}$	$\pm 0.5^\circ\text{C}$
Type R, Pt13%Rh-Pt	-50 to 1767	$\pm 2.0^\circ\text{C}$	$\pm 1.2^\circ\text{C}$
Type S, Pt10%Rh-Pt	-50 to 1767	$\pm 2.0^\circ\text{C}$	$\pm 1.2^\circ\text{C}$

Resistance Thermometers

Configuration 2 or 3 wire.

Accuracy Including Linearisation			
RTD Type	Range (°C)	Worst Case	Typical @ 20°C
Pt100 (alpha = 385)	-200 to 850	$\pm 0.8^\circ\text{C}$	$\pm 0.4^\circ\text{C}$
Pt100 (alpha = 392)	-270 to 457	$\pm 0.8^\circ\text{C}$	$\pm 0.4^\circ\text{C}$

Communications Interface

Isolation 500V DC/peak AC.
 Type RS485 2-wire multidrop.
 Protocols MODBUS RTU & ASCII, DTP1 (ASCII)

Analogue Output

Isolation 500V DC/peak AC.
 Output Selectable 0 to 10V, 0 to 20mA or 4 to 20mA.
 Maximum current output 22mA @ 18V.
 Maximum voltage output 11V @ 22mA.
 Maximum load (mA output) 900 Ohms.

Logic Outputs (Tracker 331 only)

Relay type 1 x normally open contacts. (Optionally 2.)
 Rating 1A @ 230V AC, 1A @ 30V DC.
 Relay isolation Isolated from each other and all other inputs and outputs.
 SSR drive output 18V DC 20mA nominal (see also Tracker 340 Logic Module).

Partial Load Failure Feedback

4 to 20mA or 0 to 10V DC input from an external current transmitter. The CT signal must be a different signal type from the PV signal.

Packing List

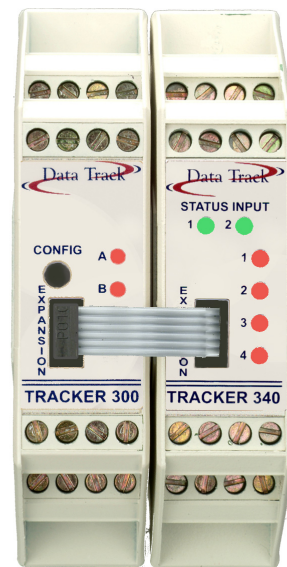
The following items are included in the package with the instrument.

Mini CD (80 mm diameter) The CD contains the Reference Manual in PDF format, foreign language Installation Guides in PDF format, the instrument configuration software and additional freeware utilities.
 Installation Guide Folded A3 Installation Guide detailing safety and connection information.

Tracker 340 Expansion Module

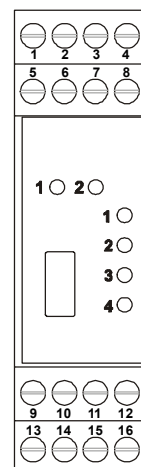
1. Introduction

The Tracker 340 expansion module is connected to a Tracker 300 series instrument via the expansion port. The Tracker 340 is powered by and configured via the Tracker 300.

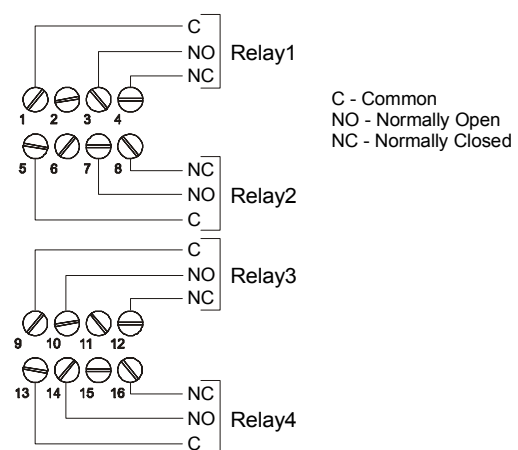


2. Connections

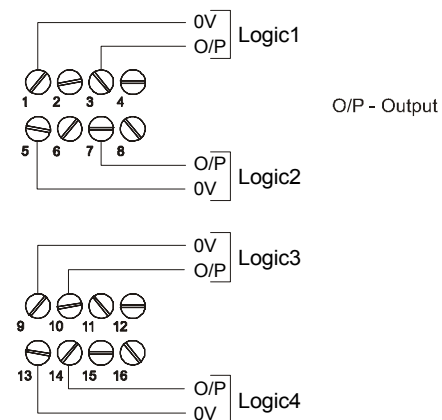
The diagram below shows the terminal connection arrangement.



Relay Connections

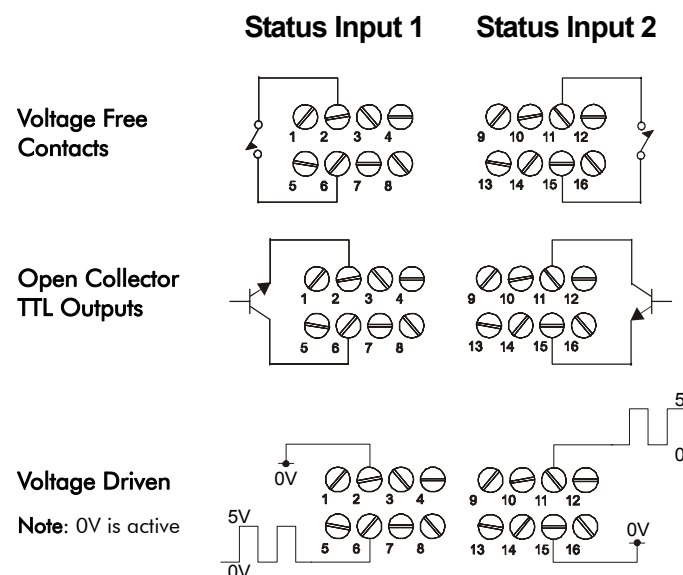


Logic Connections



3. Connecting the Status Inputs

There are two status (logic) inputs provided on the Tracker 340 expansion module. The inputs can be used with either voltage free contacts, such as relay contacts, switches, open collector transistor outputs, or voltage driven. The inputs are active low, i.e. apply a short circuit between the status input and status common. The following diagrams illustrate typical applications.



4. Indicators

There are six LEDs on the front panel of the instrument, two green (input) and four red (output).

Green LED Status Inputs 1 & 2 – lit when the respective status input is active.
 Red LED 1, 2, 3 and 4 – programmable LEDs.

5. Specification

Relay Option

Relays 4 off, change over
 Rating 1A @ 230V AC, 1A @ 30V DC
 Relay isolation Isolated from each other and all other inputs and outputs

TTL Logic Option

Drivers 4 off, TTL
 Rating $\pm 20\text{mA}$, source or sink
 Isolation No isolation

Status Inputs (both options)

Logic inputs 2 off, voltage free or TTL
 Protection Reverse diode protected

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TRACKER 300 SERIES

INSTALLATION GUIDE



DATA TRACK
 PROCESS INSTRUMENTS