T300+ and 340+
Installation Guide & Safety Information

Data Track
Process Instruments

Introduction

The Tracker 300+, together with the 340+ expansion module provides solutions for the following applications:

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

This document shows how to install these instruments. It also provides important safety information. Further documentation is available on the CD provided with the instruments, or from our website: www.datatrackpi.com.

Packing List (300+)

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	This document – a folded A3 Installation Guide detailing safety and connection information.

Declaration of Conformity

We: Data Track Technology plc
Of: 153 Somerford Road, Christchurch, Dorset BH23 3TY, UK
declare that:

Equipment	Tracker 300+ Series
Model name/numbers	30-0001—30-0108 inclusive

in accordance with the following directives:

EMC Directive	2004/108/EC
Low Voltage Directive	73/23/EEC

has been designed an manufactured to the following specifications:

EN 61010-1 : 2001	Safety requirements for electrical equipment for measurement, control and laboratory use.
EN 61326 : 2006	Electrical equipment for measurement, control and laboratory use – EMC Requirements.

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all essential requirements of the Directives.

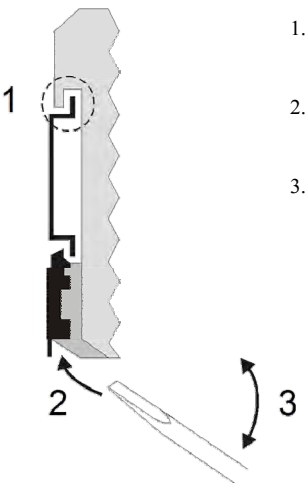
Signed by:

Name: Mr D Johnstone
Position: Technical Director
Done at: 153 Somerford Road, Christchurch, Dorset BH23 3TY, UK
On: 25 November 2009

CE

Physical Installation

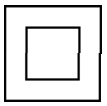
- This instrument should be installed by qualified personnel (technicians) who are familiar with the instrument and with any warnings, hazards and technical terms.
- Connections and mounting of the instrument should be in accordance with any national or local electrical installation regulations.
- The supply to the instrument should be fused individually with a 1A time-delay fuse and be provided with a means of isolation by a switch or other device that is readily accessible.
- Avoid installing the instrument close to strong magnetic fields, e.g. switch gear, contactors or motor starters.
- We recommend that all connections to the terminals are made using ferrules in order 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.
- Ensure that there is adequate air flow through the ventilation slots of the instrument in order to minimise the possibility of overheating.



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.

Explanation of symbols

The following warning symbols are used on the product and in this document:

	This is the international hazard symbol. It appears on the product because there is information relating to safety and EMC (electro-magnetic compatibility) that you need to have before installing and commissioning the instrument. That information appears in this document, alongside this symbol.
	This is the international shock risk symbol. Information about the risk of shock appears in this document alongside this symbol.
	This is the international symbol for double-insulation. Information about insulation appears in this document alongside this symbol.
≈	Alternating Current.
⎓	Alternating or Direct Current.

Safety and EMC information

The instruments comply with the following international standards:

Safety	EN61010-1:2001
Susceptibility & Emissions	EN61326:2006
CE Certification	2009

This Instrument is designed for connection to hazardous voltages, ignoring this warning could result in electric shock or permanent damage. To avoid the risk of electric shock or fire the safety instructions contained in this manual must be observed and all recommendations followed. The specifications must not be exceeded and the instrument must only be used as intended and described in this guide. The instrument should only be installed by qualified personnel. If the instrument is used in a manner specified by the manufacturer, the protection afforded by the unit may be impaired.

- Do not connect hazardous voltages to the instrument until correctly mounted.
- This Instrument is designed to be operated and installed within an enclosure that provides adequate protection against access to hazardous voltages and electric shock. Application of supply or voltages higher than those for which the instrument is rated may compromise safety and result in permanent damage.
- The USB connector is not electrically isolated from the input terminals and should only be used with care as hazardous voltage levels may be present. The USB configuration cable should only be used by qualified personnel or when the instrument is fully disconnected from any hazardous voltages.
- There are no user serviceable parts within the instrument, operations requiring the case to be opened should be performed by the manufacturer or authorised representative.

Note:

Ensure that the power to the instrument is switched off before carrying out any installation or maintenance work, and whilst using the USB port.

Specifications (300+)

Features

	321	322	331	332
Universal + RS485 Interface	•	•	•	•
Sensor Excitation (10/24 DC)	•			•
Analogue Output (option)	•	•	•	•
Auto-tune PID control			•	†
1 x Relay + 1 x SSR Outputs			‡	
2 x relay		•		

• = *Available*

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

‡ = *Optionally 2 x Relay (replaces SSR drive)*

Power requirements

AC Mains supply	90-230V ≈ 50mA 50/60Hz
Low Voltage	24V ⎓ 300mA

Operating conditions

Ambient temperature (operating)	–0°C to 50°C
Ambient temperature (storage)	–10°C to 70°C
Humidity	10% to 95% RH non-condensing

Dimension

Instrument only	22.5w x 99.0h x 112.6d mm
Mounted on DIN rail TS35/TS35D	22.5w x 99.0h x 114.5d mm

Weight

Weight (instrument only)	190g
Weight (packed)	260g

Voltage & Current Inputs

Ranges	±100mV, ±10V DC and ±20mA DC
Input Impedance (Ohms)	>500MΩ, >1MΩ and <5Ω

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.

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 inc. linearisation	
Thermocouple	**Range (°C)**	**Worst case**	**Typical @ 20°C**
Type B (Pt30%Rh/Pt6%Rh)	100 to 1820	±1.0°C	±0.5°C
Type C (W5%Rh/W26%Rh)	0 to 2320	±1.0°C	±0.5°C
Type D (W3%Rh/W26%Rh)	0 to 2320	±1.0°C	±0.5°C
Type E (NiCh/CuNi)	-270 to 1000	±0.5°C	±0.25°C
Type G (W/W26%Rh)	0 to 2320	±1.0°C	±0.5°C
Type J (Fe/NiCu)	-210 to 1200	±1.0°C	±0.5°C
Type K (NiCh/Ni/Al)	-270 to 1372	±1.0°C	±0.5°C
Type L (Fe/Con)	-200 to 900	±0.7°C	±0.35°C
Type N (Nicrosil/Nisil)	-200 to 1300	±1.0°C	±0.5°C
Type R (Pt13%Rh-Pt)	-50 to 1767	±2.0°C	±1.2°C
Type S (Pt10%-Pt)	-50 to 1767	±2.0°C	±1.2°C
Type T (Cu/CuNi)	-270 to 400	±1.0°C	±0.5°C
Type U (Cu/CuNi)	-200 to 400	±0.7°C	±0.5°C
Ni/Ni 18%Moly	0 to 1370	±1.0°C	±0.5°C

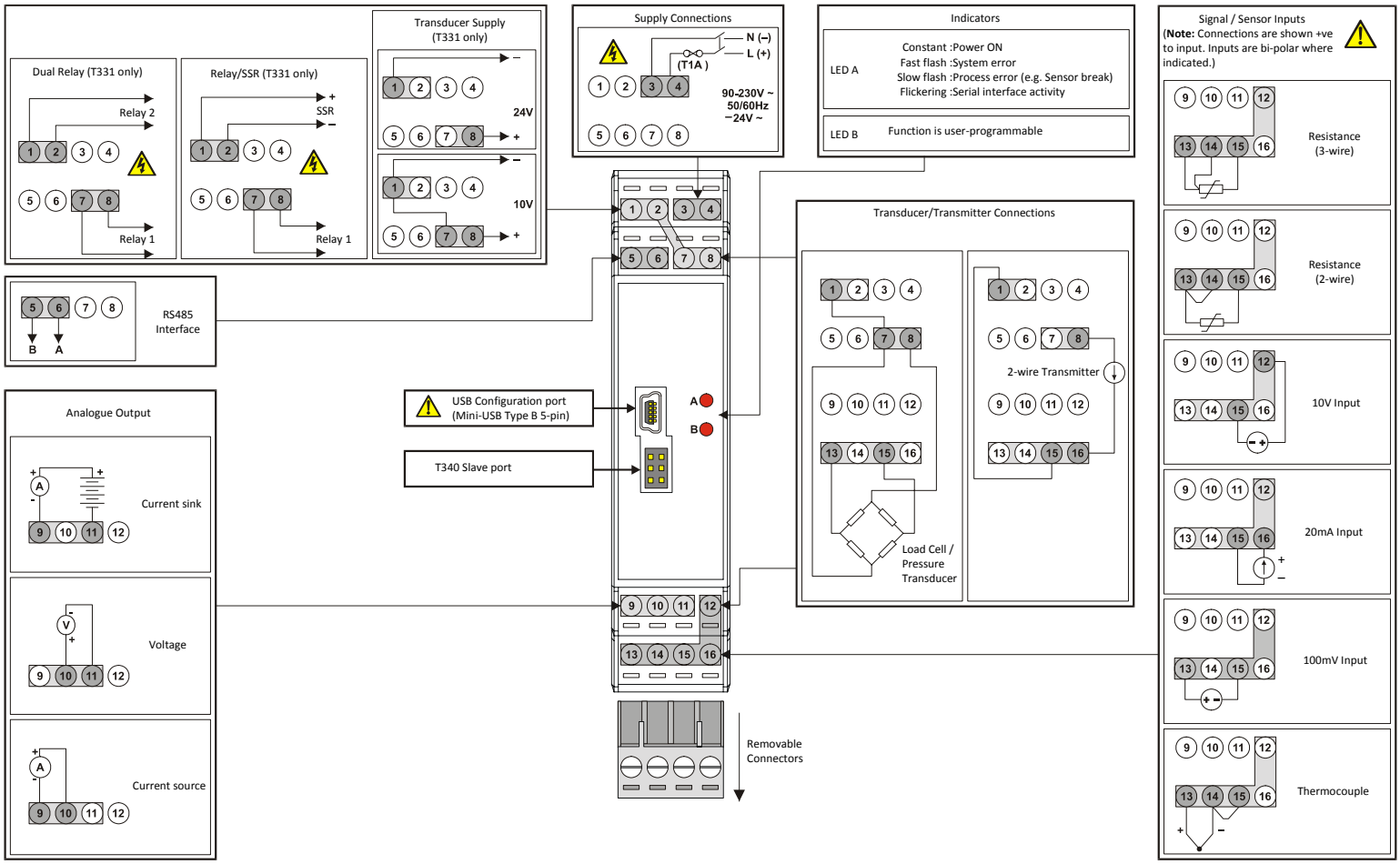
Resistance Thermometers

Configuration	2 or 3 wire

		Accuracy Including Linearisation	
RTD Type	**Range (°C)**	**Worst Case**	**Typical @ 20°C**
Pt100 (alpha = 385)	-200 to 850	±0.8°C	±0.4°C
Pt100 (alpha = 392)	-270 to 457	±0.8°C	±0.4°C
Pt130	-200 to 500	±0.8°C	±0.4°C
D100	-100 to 475	±0.8°C	±0.4°C
Ni100	-270 to 457	±0.8°C	±0.4°C

Continued overleaf...

Connections: T300+



Configuring the T300+

The T300+ is configured using the supplied Windows-compatible software.
Connection to the T300+ can be via either its USB port or RS485 port.
If you intend to use the USB port, you will need to install the T300+ USB driver on the computer that you will be using for configuration.

Note:

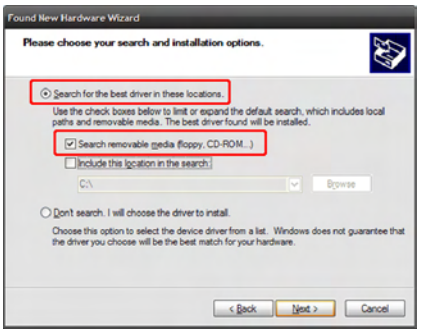
Remove power and any hazardous signals from the unit before connecting the USB port. Use a standard USB-A to 5-pin Mini-USB lead to connect the instrument to the PC. Do not apply power while the USB port is connected. The USB connection provides sufficient power for configuration purposes.

To install the USB driver

Note: These instructions assume that no other USB serial port drivers are installed. Other such drivers may cause conflict – in particular, the ??? driver. In such cases, uninstall other drivers before installing the T300+ USB driver.

1. Insert the supplied CD into the computer
2. Connect the instrument to the computer using the supplied USB lead.
3. When the Found New Hardware Wizard appears, select **Install from a list or specific location**:

4. Click **Next** and in the window that appears, ensure that **Search for the best driver in these locations** is selected, together with Search removable media:



5. Click **Next**. The wizard searches for the appropriate driver and after a short while (up to a minute) a message confirming the installation is displayed. Click **Finish**
6. The *Found New Hardware Wizard* appears, informing you that a USB Serial Port has been found. This time, accept the default selection to **Install the software automatically** and click **Next**.
7. After a short while (up to a minute) a message confirming the installation is displayed. Click **Finish**.
8. Open Windows Device Manager to discover which com port has been assigned – you will need this information in order to open a connection to the instrument from the configuration software.

To install the configuration software

1. Insert the supplied CD into the computer
2. If the T300+ Setup Installation screen does not appear, navigate to, and run, SETUP.EXE in the root directory of the CD.
3. To install the software in the default location, click **Install**.
4. After a short while (up to a minute) a message confirming the installation is displayed. Click **Finish**.
5. From the Windows Start menu, you can now launch the T300+ Setup application. Use of the application is described in the accompanying help file – click **Help** in the menu bar and select **Contents**.

Specifications (300+) (continued)

Communications Interface

Isolation	500V DC/peak AC
Type	RS485 2-wire multidrop; ¼ load
Protocols	MODBUS RTU & ASCII, DTPI (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 Ω

Logic Outputs (Tracker 321 & 331 only)

321: number and type	1 x normally open contacts (optionally 2).
331: number and type	2 x normally open contacts.
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)

Packing List (340+)

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

Installation Guide	This document – a folded A3 Installation Guide detailing safety and connection information.

Tracker 340+ Expansion Module: Specifications

Relay option

Relays	4 change-over relays
Rating	1A @ 230VAC, 1A @ 30VDC
Relay isolation	Isolated from each other and all other inputs and outputs

TTL Logic option

Drivers	4 off, TTL
Rating	±20mA, source or sink
Relay isolation	No isolation

Status inputs (both options)

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

T340+ Connections