DUSTTRAK™
ENVIRONMENTAL MONITOR
MCERTS VERSIONS

ASSEMBLY GUIDE

mCERTS
THE ENVIRONMENT AGENCY'S
MONITORING CERTIFICATION SCHEME
Sira MC160316/XX
Sira MC160317/XX
Sira MC160318/XX

TSI

Contents

Product Overview

The DustTrak™ Environmental Monitor is a data-logging, light-scattering laser photometer that provides real-time mass concentration readings for aerosol contaminants such as dust, smoke, fumes and mist. This instrument use a sheath air system that isolates the aerosol in the optics chamber to keep the optics clean for improved reliability and low maintenance.

The below models are designed and set up to meet MCERTS (Monitoring Certification Scheme) certification for indicative instruments. **All of the following items are required to meet the MCERTS Indicative Certification:**

MCERTS PM10 Indicative Certification

- 854201-M1 DustTrak™ Environmental Monitor

- 854020 PM10 Impactor (must be installed)

- 854041 Heated Inlet with Omni-directional Inlet and water trap (must be installed)

- PCF set at 0.53 (preset at the factory). It is recommended that the instrument is run with a Photometric Correction Factor (PCF) of 0.53. However, the application of a site specific correction factor may be used if a significant decrease in the expanded uncertainty can be demonstrated.

MCERTS PM2.5 Indicative Certification

- 854001-M1 DustTrak™ Environmental Monitor

- 854021 PM2.5 Impactor (must be installed)

- 854041 Heated Inlet with Omni-directional Inlet and water trap (must be installed)

- PCF set at 0.33 (preset at the factory). It is recommended that the instrument is run with a Photometric Correction Factor (PCF) of 0.33. However, the application of a site specific correction factor may be used if a significant decrease in the expanded uncertainty can be demonstrated.

MCERTS PM10 and PM2.5 Indicative Certification

- 854301-M1 DustTrak™ Environmental Monitor

- 854041 Heated Inlet with Omni-directional Inlet and water trap

- PCF PM2.5 set at 0.47, PM10 set at 0.53 (preset at the factory). It is recommended that the instrument is run with these Photometric Correction Factors. However, the application of site specific correction factors may be used if a significant decrease in the expanded uncertainty can be demonstrated.

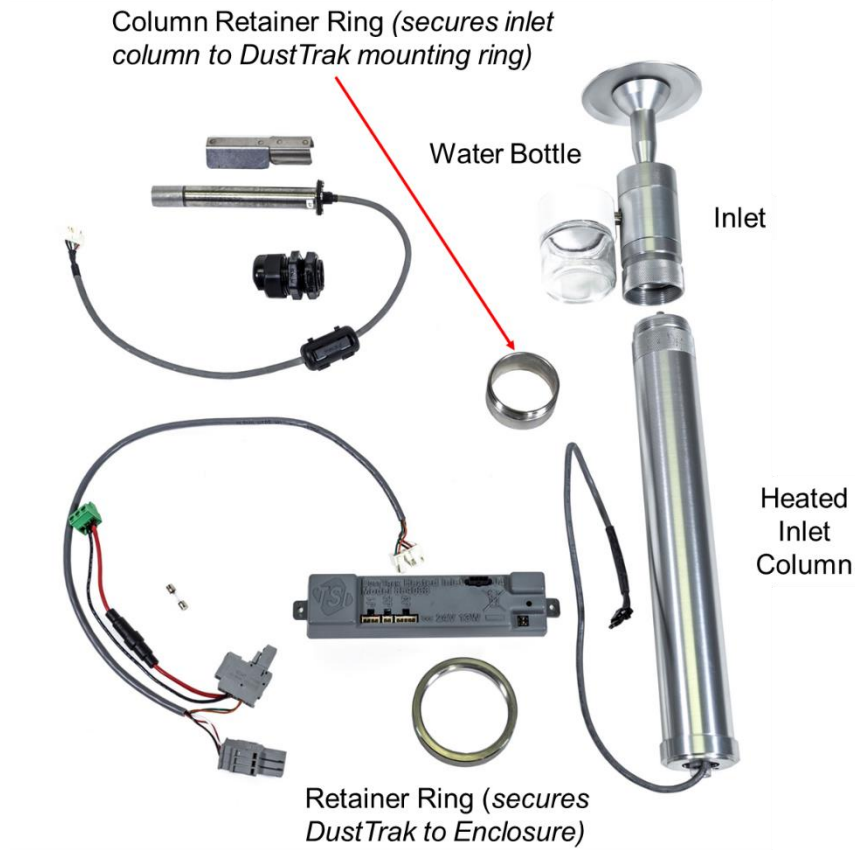# Installation and Set Up

Overview

This manual follows an order of assembly steps listed below, with reference to applicable accessories needed for MCERTS certification. For further information, refer to the manuals for the photometer itself and the DustTrak™ Environmental Monitor.

1. Refer to Chapter 3 of the DustTrak™ Environmental Monitor operation and maintenance manual (P/N 6012056) for the initial setup of the instrument. Complete steps 1 through 5.

2. Assemble the heated inlet column from parts contained within the Heated Inlet (854041), and PM10 and PM2.5 Impactor Kits (854020/854021).

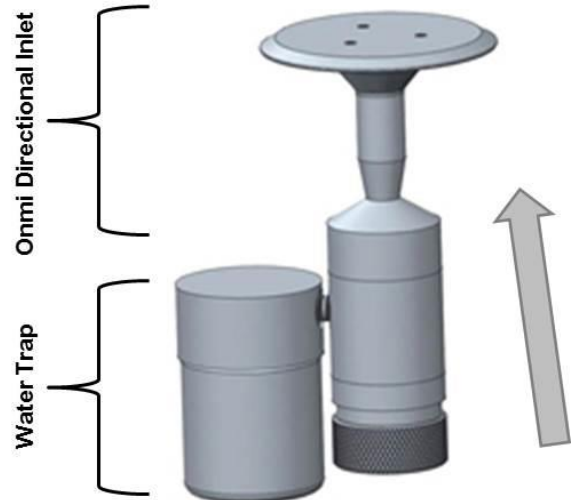| NOTE |
|------|
| The Impactor Kits are only needed for PM2.5 and PM10 models. They should not be used/installed on to the DRX version instruments. |

Assembly and Installation of Inlet Column

Column Retainer Ring *(secures inlet column to DustTrak mounting ring)*

Water Bottle

Inlet

Heated Inlet Column

Retainer Ring *(secures DustTrak to Enclosure)*

Installing the PM10 and PM2.5 Impactors (854020/854021)

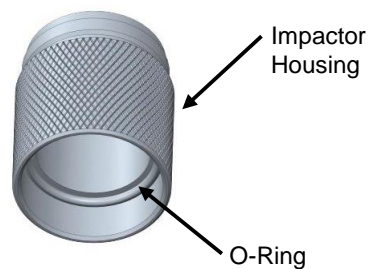|	
1. Install the water trap bottle onto the side of the Omni Directional Inlet as shown. **NOTE** For best results, use PTFE Thread Sealant Tape on the water bottle threads.	Onmi Directional Inlet Water Trap
2. Unscrew the PM2.5 or PM10 impactor to access the impactor plate as it comes pre-assembled from the factory. 3. Apply two drops of oil (included) to the impactor plate. **DO NOT** over-fill impactor plate. 4. Screw (hand-tighten) impactor back together.	Apply 2 Drops of Oil
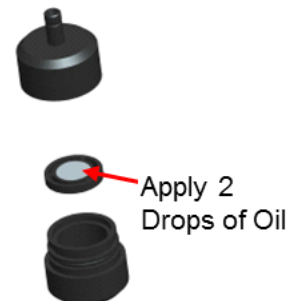
5. Install the Impactor onto the top of the Heated Inlet Sample Conditioner column, by pushing it down.	
6. Ensure the O-ring included with the Impactor Kit is installed into the bottom of the Impactor housing.	Impactor Housing O-Ring
7. Thread (hand-tighten) the impactor housing with O-ring onto the heated inlet column.	

8. Attach the inlet to the top of the impactor housing. Ensure the O-ring included with the inlet kit is installed into the bottom of the inlet.

NOTE
Be sure to install column retainer ring onto heated inlet column (refer to steps 9 and 10 for visual of retainer ring).

O-ring

Installing Heated Inlet (854041) into Environmental Enclosure

1. Attach heated inlet control module to the front of the Photometer. This can be done using the 2x 6-32 x 5/16 Socket Head Cap Screws and 2x flat washers. Use a 7/64" ball driver.	
2. Push out elastic plug and install RH/Temp Sensor sealing gland. Removable nut should be installed on the inside of the enclosure.	Gland Nut

⚠	**WARNING**
	Water gasket on gland must form a good seal with the exterior of the enclosure to ensure a waterproof seal.

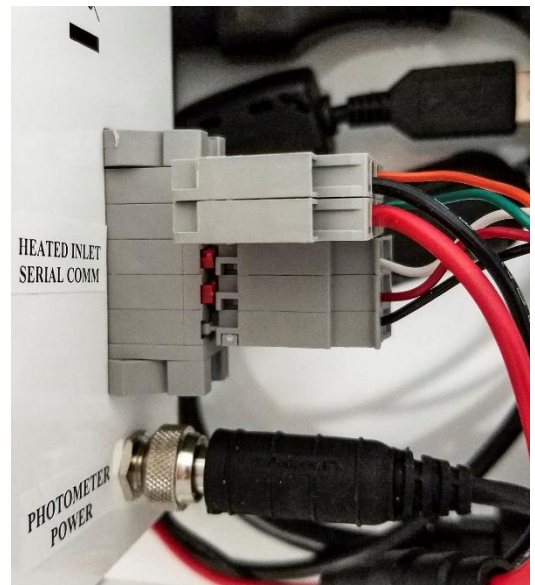|	
3. Insert RH/Temp Sensor through gland and tighten gland nut. Extend probe ~2.75" (7 cm) beyond nut.	
4. Attach the sun shield to the top of the RH/Temp Sensor as shown. Sun Shield should not touch sintered cap of RH/Temp Probe.	
5. Attach RH/Temp Sensor cable to heated inlet control module (J3).	
6. Attach the two larger (gray) connectors to side of the photometer.	
7. Attach the two smaller (white) connectors to the Power/Communication inputs (J1 and J2) of the heated inlet control module (*RH/Temp Sensor Cable J3 is not shown for clarity*).	

8. Install O-ring and route cable through the mounting ring. Pull excess cable through to prevent pinching of cable when inlet column is installed.	 O-ring
9. Set inlet column on top of photometer mounting ring, rotate slowly until alignment pin mates with the hole in the bottom of heated inlet column. 10. Slide column retainer ring down heated inlet column. 11. Hand-tighten column retainer ring to secure inlet column to photometer mounting ring.	
12. Attach ferrite to cable with one wrap of the cable and snap the ferrite together.	
13. Attach heated inlet cable to heated inlet control module (J4).	

| 14. If using a Thiamis 1000 Node, route the other side of the cable to the power input on the Thiamis node (green connector).	

Heated Inlet Operating Instructions

1. When powered and attached to the DustTrak™ monitor, the Heated Inlet will automatically function.

2. Select RH set point that will be controlled at the entrance to DustTrak™ monitor to be 30, 40 or 50% RH via the DIP switches. Heated inlet will then power the heater to heat incoming air and thereby decrease RH to the targeted level.

NOTE
By default, TSI® Incorporated (TSI®) sets the RH set point to 30% RH at the factory. If needed, this can be adjusted to meet other application needs/requirements.
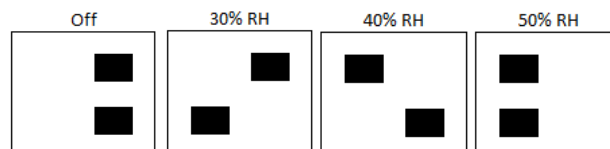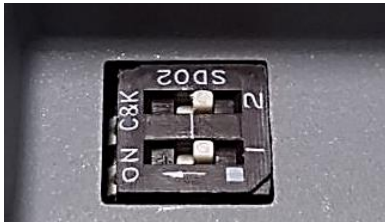
The **LED** describes the status of the heated inlet:

Solid Green	Inlet temp. is < 1°C below set point and controlling to maintain set point.
Blinking Green	Inlet temp. is between 1 to 5°C below set point and controlling to improve.
Blinking Red	Inlet temp. is more than 5°C below set point and controlling to improve. This will occur when unit is first turned on and coming to temperature.
Solid Red	Sensor unplugged or has issue.

Heated Inlet Specifications

Power.. 12-24 Volts DC; 13 Watts

Dimensions... Heated inlet
13 in. x 2 in. dia
(33 cm x 5 cm) dia

Control module
7 in. x 1.5 in. x 0.75 in.
(17.8 cm) x (3.8 cm) x (1.9 cm)

Temp Range... 0 to 50°C (32° to 122°F)

RH Range .... 0 to 95%

RH Set Points... 30% RH, 40%RH, 50% RH

Warm-up Time .... 17 minutes

CE .... IEC 61326 & IEC 61010-1

Instrument Setup

Please refer to Model 8540-M, 8542-M, and 8543-M Operation and Service Manual (TSI® P/N 6008408) for Set-Up Procedures.

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