TX8015 Air XD

Real-Time Dust Monitor

User Manual

TROLEX

Leading Safety Technology

P5628.1602 Rev C

TX8015.00 AIR XD

Contents

1. General Description

The Trolex Air XD particulate monitor is designed to provide detailed, accurate, real-time data on airborne particulates so that users can take appropriate actions to stay safe and ensure personnel are fully protected from particulate-related health hazards. The Air XD allows users to simultaneously monitor multiple Particulate Matter (PM) sizes (PM1.0, PM2.5, PM4.25, PM10, as well as custom) and can report on Total Suspended Particulates (TSP). Precise data is collected for measurable particulates, enabling detailed size profiling and analysis using the application software.

The Air XD uses an innovative Optical Particle Counter (OPC) that combines adaptive particle flowrate with advanced sensing technology to ensure a high level of measurement accuracy. The size of each particle is instantaneously measured and classified at up to 10,000 samples a second to allow detailed real-time reporting in high dust environments.

As the Air XD records data on all particulates between 0.35µm and 40µm, users can easily access and view detailed information about a wide range of PM sizes. Measurement information can be viewed via the instrument display or as a live or historical reading using the application software.

TX8015.00 Air XD

1.1 Main features

- Real-time continuous measurement of atmospheric dust concentration
- High-reliability, low-maintenance for high-dust environments
- High capacity Optical Particulate Counter
- Industry standard sizing PM1.0, PM2.5, PM4.25 and PM10
- Low-end resolution, measuring down to 0.35µm with 99.9% capture
- Ability to measure Total Suspended Particles (TSP) reading
- Quantification of particle size categories to customer requirements
- Operational stability in varying environmental and atmospheric conditions
- 5-minute readout average
- Remote RS485 MODBUS RTU Serial I/O interface
- Ethernet (Supports REST API)
- Plug and play installation

1.2 Performance Data

Using current advancements in light scattering techniques combined with patented data processing algorithms, the Air XD is able to achieve levels of accuracy (+/-5%) normally only found in high-end lab equipment.

1.3 Intended Use

The Air XD is a particulate monitor designed for use in range of applications and environments. The instrument is suitable for monitoring in either indoor or outdoor ambient air conditions and can cope with both high and low particulate concentration levels (up to 1500 mg/m3). The instrument is designed to be low maintenance and does not use pumps or filters. The sensing element has an adaptive flowrate to increase accuracy in environments with varying airflow.

1.4 Limits of Use

To ensure the optimum performance and safe operation, the Air XD unit must be operated as per the limits detailed in the technical data section of this user manual. Operation outside these limits may result in damage to the equipment or failure to achieve the performance specification.

Operating the Air XD at extremes of the specified temperature limits will reduce the operating lifetime of the product.

Note: The General-Purpose Air XD is not suitable for use in industrial environment with explosive atmospheres.

Trolex will not be liable for any injury or damage caused by incorrect installation, setup, operation or maintenance resulting in a failure to follow the procedures and safety instructions provided in this user manual.

2. Product Safety

The following symbols are used in this manual or on the equipment to indicate procedures that, if not followed correctly, may result in personal injury or damage to equipment.

WARNING!

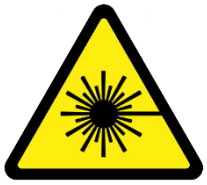
Alerts the user to a potentially hazardous procedure or practice which, if not followed correctly can result in serious personal injury or injury of others.

CAUTION!

Alerts the user to a procedure or practice which, if not followed correctly, can result in damage to the system or ancillary equipment.

In addition, the following symbols are used on the product:

WARNING! – ELECTRIC SHOCK RISK



WARNING! – LASER RADIATION

The use of controls, adjustments or procedures other than those specified in this user manual may result in exposure to hazardous optical radiation.

3. Danger from Process

It is possible that the Air XD could be installed in environments that contain process particulates which can be hazardous to health.

Unless process conditions are known to be entirely safe, suitable precautions such as the use of breathing apparatus or environmental purging/detoxifying should be employed before entry is made into the installation or maintenance environment.

Note: This product variant is not designed for use with Flammable or Explosive dust.

4. Safety Procedures

Always observe the safety precautions detailed in this user manual. Personnel installing, operating or maintaining the equipment are responsible for their personal safety and correct handling of the equipment in accordance with all safety instructions detailed.

Follow all warnings and instructions marked on the instrument. Warning labels are situated on the instrument, indicating a hazard at or near the location of the warning label.

Retain these instructions in a safe and known place for future use.

The Air XD has been designed to be as simple to install and commission as possible. Nevertheless, installation in working environments can be challenging and correct set up is critical to the function of the instrument. It is important that you carefully read the entire User Manual before using and installing the Air XD for the first time and keep it in a safe place for future reference.

Peripheral components such as the power supply and communications module/peripheral or interface must be installed according to the manufacturer's instructions and the installation location's prevailing statutory regulations.

The installation of the instrument must only be carried out by competent personnel. Each installation needs to be considered with reference to the local safety regulations and authorities.

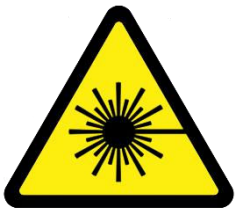
Refer to the Certification and Conformity section of this User Manual and to the relevant certificates for any installation parameters and special conditions of safe use.

Observe the national safety regulations issued, for example, by the employers' liability insurance association, social security institutions, occupational safety and health authorities or other safety organisations.

4.1 Laser Safety Precautions

The Air XD unit is rated via the Class 1 Laser safety guideline under all conditions of normal use.

Class 1 laser products may contain laser systems of a higher class but there are adequate engineering control measures to ensure that access to the beam is not permitted during normal use.



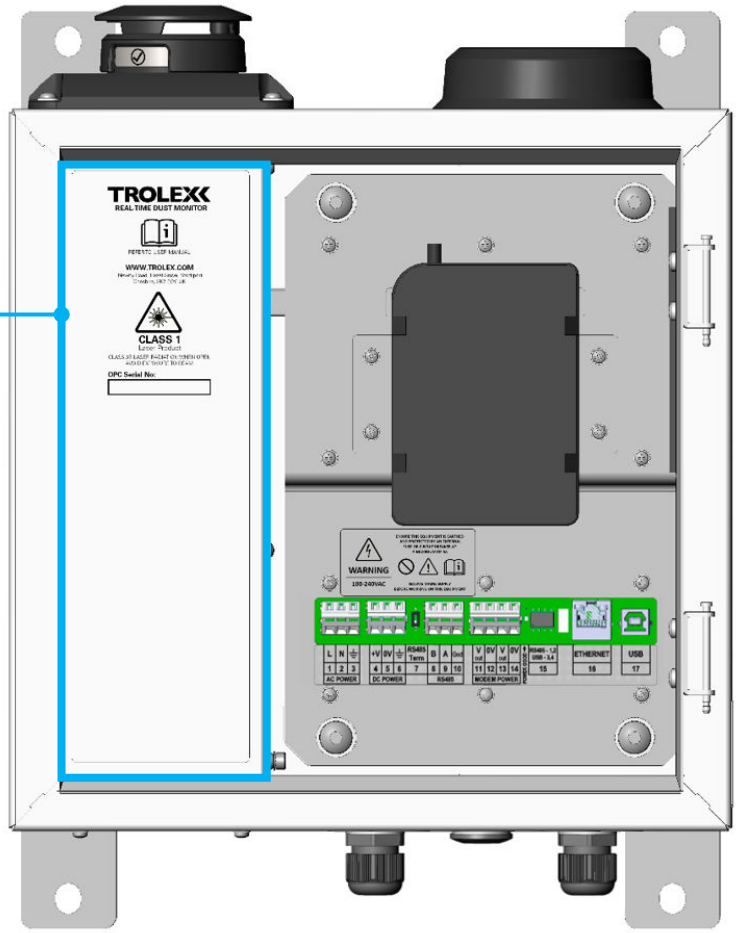
WARNING - Class 3B laser radiation when the laser housing is open, do not open the laser housing. Eye damage may result from the direct viewing of the laser beam.

The Air XD complies with:

- IEC 60825-1 2014

- 21 CFR-1040.10 and 1040.11

Sensor Housing

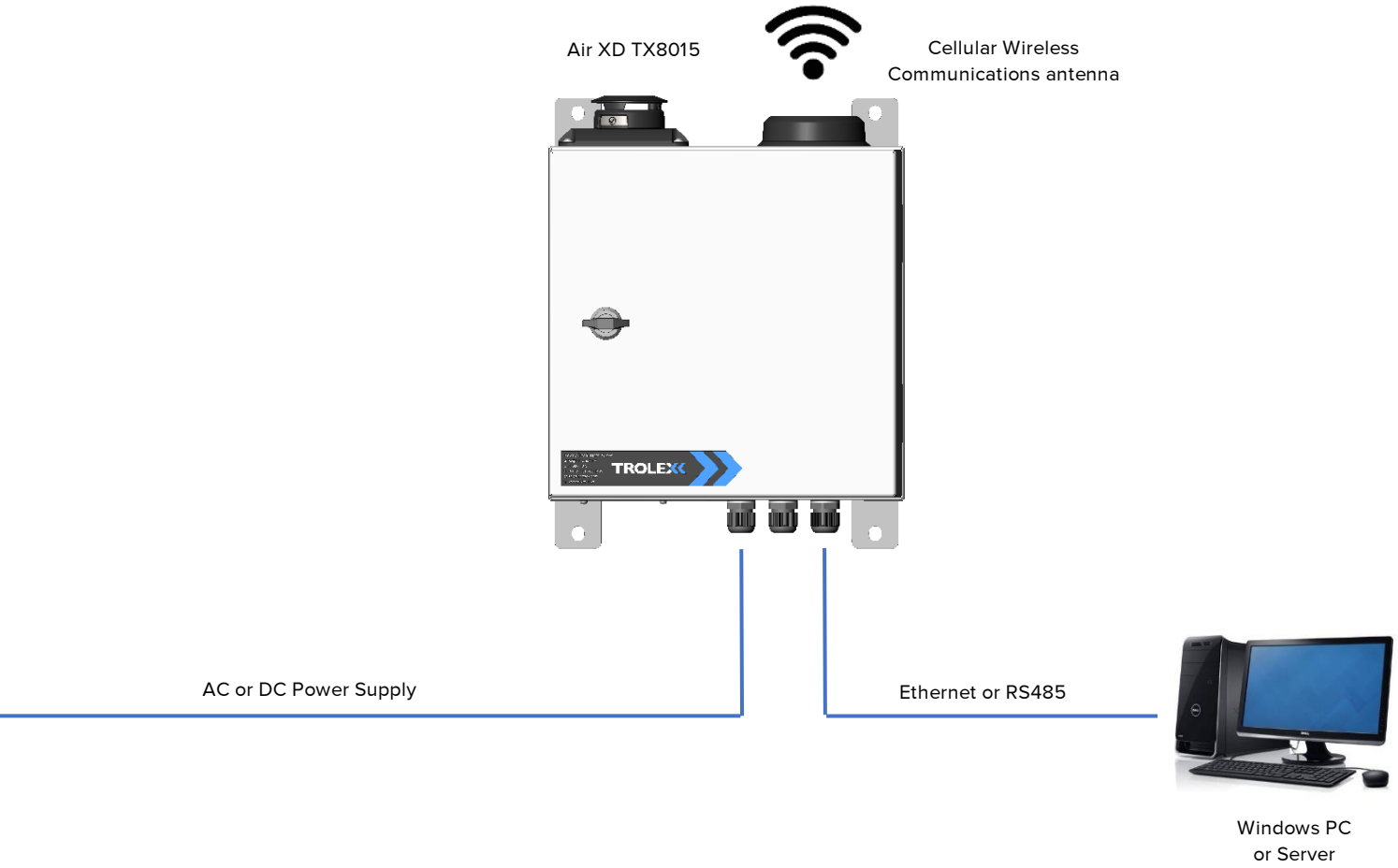


WARNING: There are no user serviceable parts inside the Air XD sensor housing. Servicing should only be carried out by Trolex or an approved service technician.

5. System Components

The Air XD is typically installed as a stand-alone unit for general-purpose industrial applications. The device is supplied with peripherals fitted to allow for the plug and play installation to universal mains power supplies and data outputs.

The Air XD unit has been designed to support 3rd party power supplies.



Example installation configuration

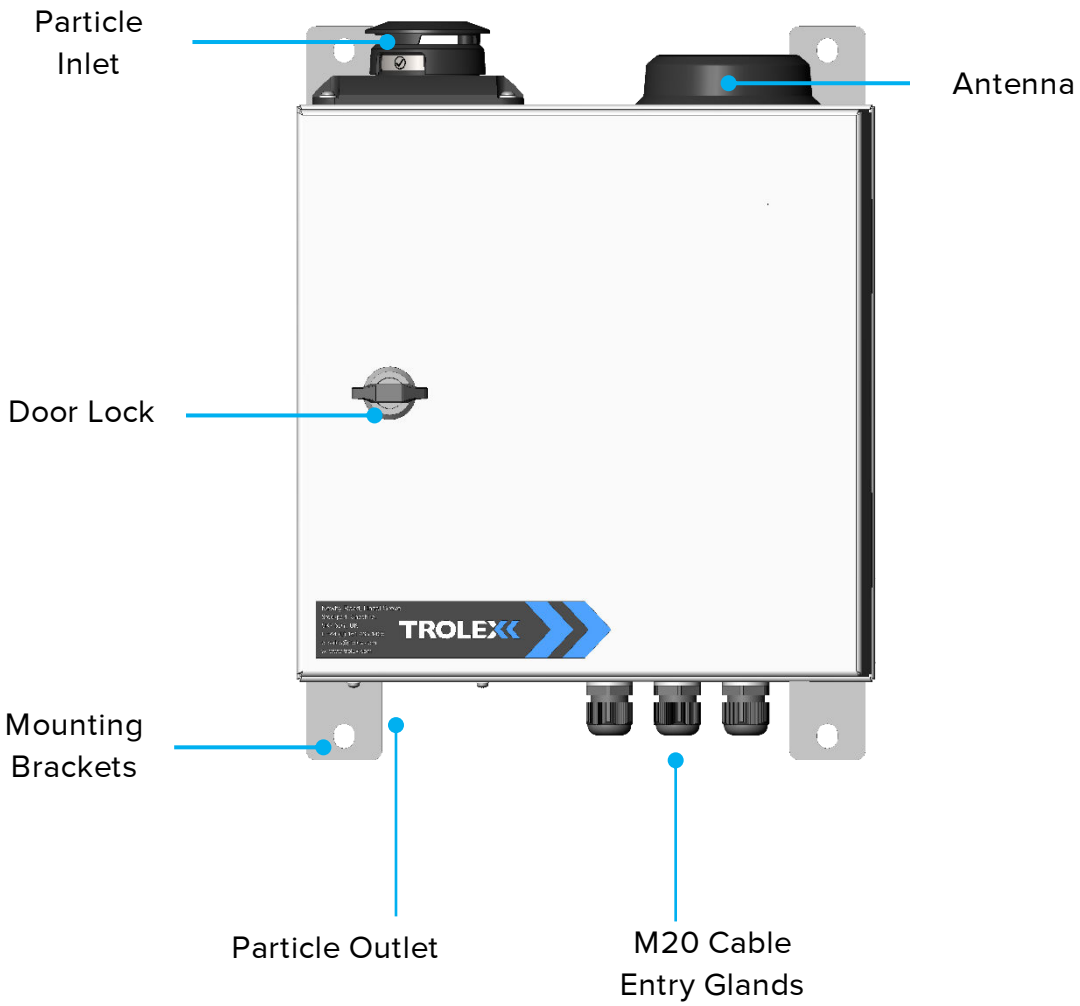
Note: M20 gland entries are provided for custom installation requirements. Gland entries may be blanked, and installations may vary from diagram shown.

5.1 TX8015 Air XD Particulate Monitor

The Air XD Particulate Monitor uses an Optical Particle Counter (OPC) that is located inside a robust stainless-steel housing. This provides isolation and ingress protection between the particle flow path and the main control circuits. Control circuits are housed in a lockable, IP66 rated coated steel enclosure. Information and settings can be accessed via MODBUS RTU connection.

The Air XD can be configured to report on PM size concentrations or TSP based on user requirement, via MODBUS RTU connection.

Power and network connections enter the main housing via cable entry glands located on the bottom of the instrument. The Air XD can be wall or stand mounted via mounting brackets.



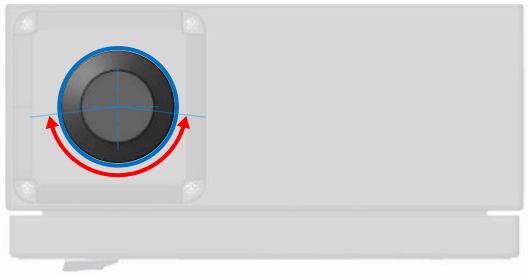
5.2 Particulate Flow Path

The Air XD has been designed with the ability to restrict ingress through the particulate flow path during routine maintenance and cleaning periods. A rotational top cap is used to open or close the particle flow path to provide increased ingress protection during cleaning.

It is recommended that the top cap is set to the closed position during instrument maintenance and cleaning to ensure the dust sensor is not exposed to unnecessary ingress. When the top cap is rotated into the closed position, the Air XD conforms to IPX6.

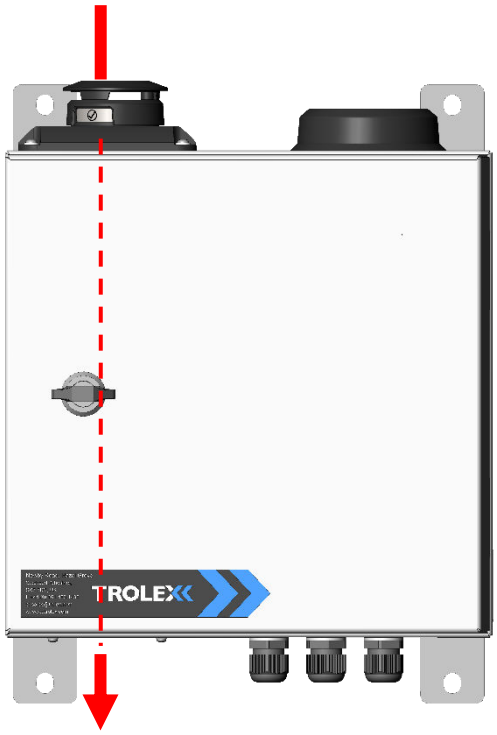
The Air XD can detect whether the flow path is open or closed and will record top cap positions to aid with instrument maintenance schedules.

Top Cap Open

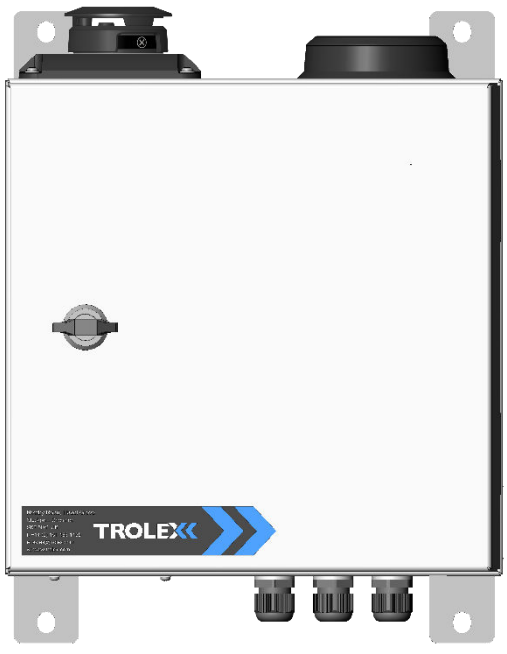


Rotate Dust Cap to Open and Close particulate flow path

Top Cap Closed



Open Flow Path

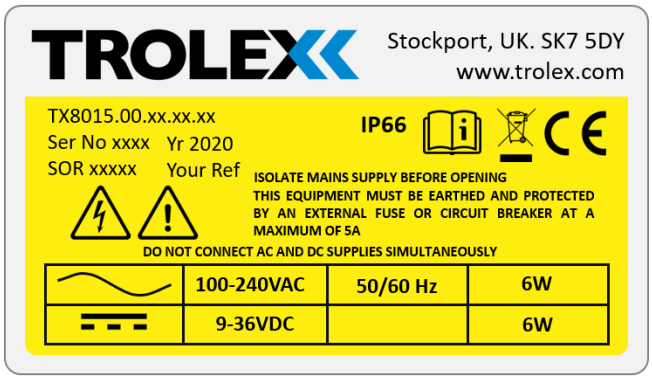


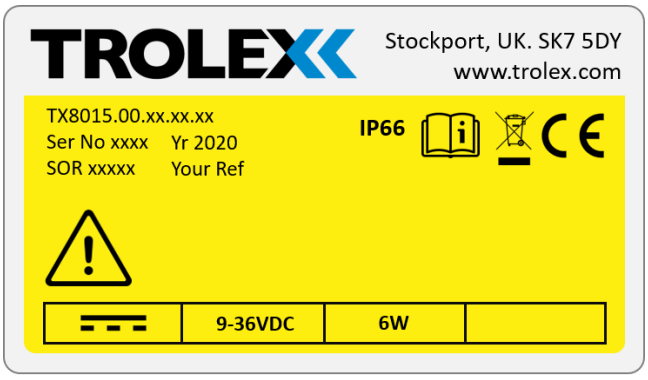
Closed Flow Path

5.3 Peripherals and Accessories

Power supply

The Air XD can be ordered and configured to allow connection to a standard 100V - 240V ac power supply OR a 9 – 36V dc power supply. Before connecting a power supply to the instrument, ensure that the supply source is compatible with the instrument and information outlined on the appropriate rating plate. See below for rating plate details:





6. Certification and Conformity

6.1 Compliance

The Air XD complies with the following European Union Directives:

Electromagnetic Compatibility (EMC) Directive 2014/30/EU
-EN 61326-1:2013

Low Voltage Directive (LVD) 2014/35/EU
-EN 61010-1:2010+A1:2019

The Air XD complies with the following RoHS Directives:

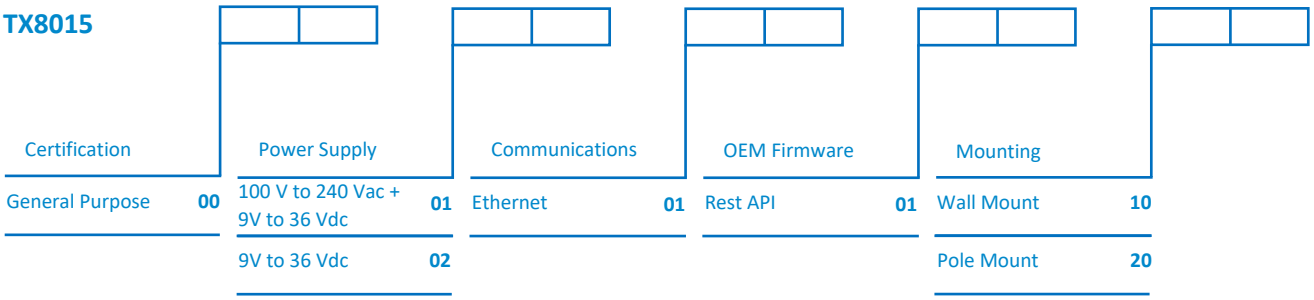
-RoHS Directive 2002/95/EC
-RoHS 2 Directive 2011/65/EU

7. Technical information

7.1 Product Options

Air XD

Product options:



7.2 Product Specification

Particulate Sensing Parameters

PM size range	PM1.0, PM2.5, PM4.25, PM10 and TSP
TSP range	Up to 40µm displayed in mg/m^3 or µg/m^3
PM measurement range	0.35 - 40µm over 24 bins
PM measurement capability*	Up to 1500 mg/m^3
PM continuous operating range**	Up to 25 mg/m^3
PM density	0.8 g/ml – 8.0 g/ml (default: 1.65 g/ml)
PM measurement units	mg/m^3 or µg/m^3
Averaging period	Aligned to 5mins
Averaging channels	One (default: 5mins)
Sampling interval	1s
Particle count	Up to 10,000 (particles/second)
Flow rate	Dynamic (1.2 L/min nominal)
Total flow rate	5.5 L/min (typical)
Accuracy	+/- 5%

*The instrument can define particulate measurement peak trends up to the quantity specified.

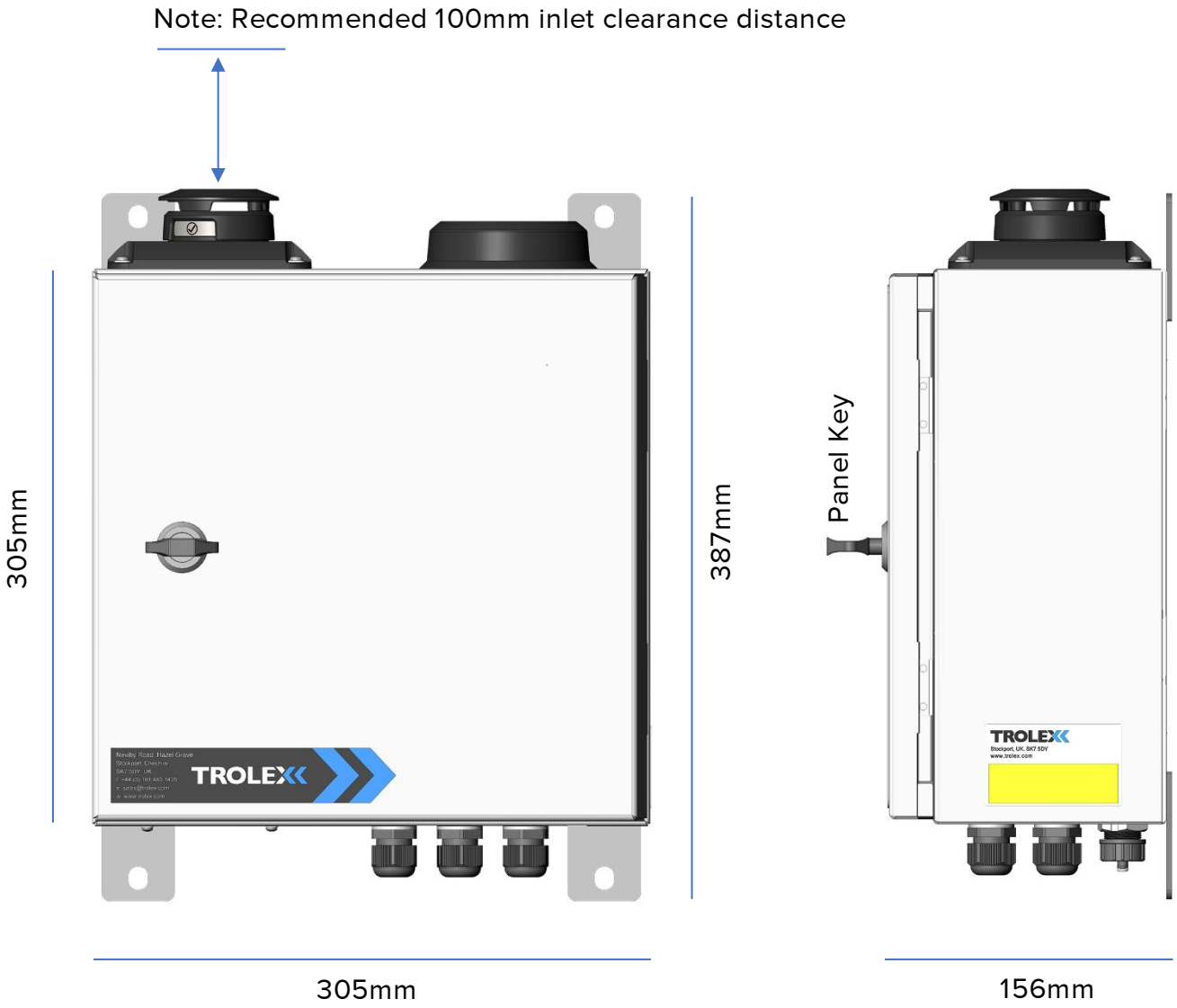
**During sustained high dust loading periods, the instrument will report on PM data up to the quantity specified.

Note: Sustained exposure to PM quantities above 25 mg/m^3 will be logged, however, may affect the operating life of the particulate sensor (OPC).

Technical Specification

Ambient temperature limits	-10°C to +45°C
Storage temperature	-30°C to +45°C
Humidity	0-95% RH (non-condensing)
Protection classification:	Main Enclosure, Dust and Waterproof: IP66 Particulate Flow Path, Cap Open: IP22 Particulate Flow Path, Cap Closed: IPX6
Housing material	Polymer coated stainless steel
Net weight:	8.2 kg – without pole bracket mount
Cable entries	3 x M20 with removable blanks 1 x M20 breather gland (where specified)
Power	100V to 240V ac 50/60 Hz 9V to 36V dc
Supply current	100mA nominal ac variant 660mA nominal dc variant
Power consumption	6W
Inrush current	350mA Peak
Communications	RS485 data output with MODBUS RTU protocol, or Ethernet (Communicates data to a REST API endpoint via HTTPS. Supports basic authentication).
Data storage	8GB >10 years Note: The Air XD only caches data packages when communication is lost.

7.3 Product Dimensions



8. Hardware Installation

8.1 Safety Precautions

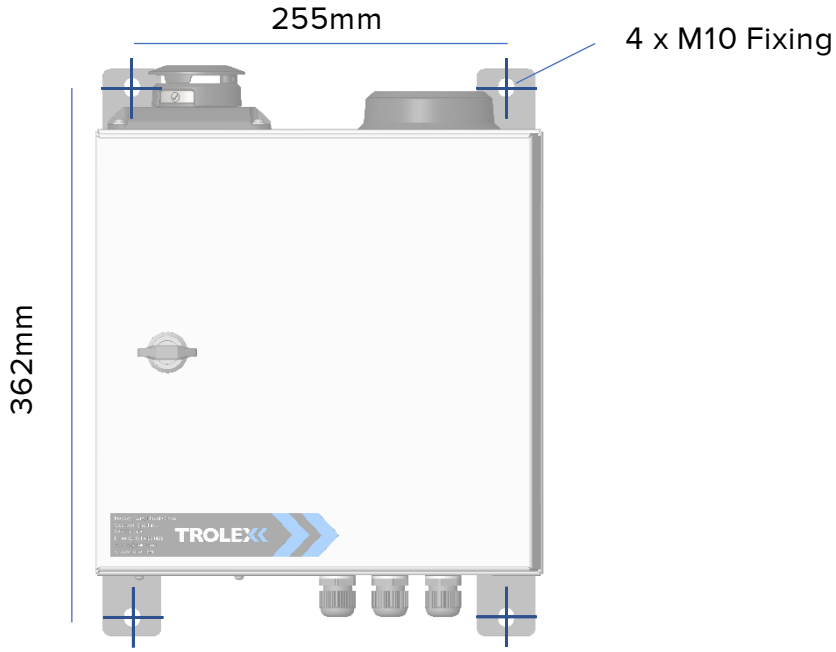
Refer to Section 4 of this user manual before undertaking the installation of the Air XD instrument. The installation location of the Air XD instrument is the prerogative of the installer and care should be taken to ensure an appropriate position has been selected. Consider the location of a suitable power supply and external fuses, access to a communications network and the protection of cabling from damage.

1. Secure the Air XD to a suitable mounting surface using the integrated mounting brackets.
2. Fit Pole Bracket mount where required (supplied separately).
3. Ensure that the Air XD is mounted in an upright position.
4. Unlock and open the enclosure door to access the internals of the enclosure.
5. Ensure power is isolated before making electrical connections to the instrument.
6. Fit communications modem where required (not supplied).
7. Power supply voltage and frequency must match the instrument (refer to rating plate).
8. Ensure external switches or fuses are installed where applicable
9. Run the required cables through the cable glands provided in the bottom of the enclosure.
10. Wire the cables into the relevant terminals on the internal plate (refer to section 8.4).
11. Tighten the cable gland against the cable to ensure an IP seal.
12. Close and lock the door after use to maintain IP rating of the enclosure.
13. Ensure that the particulate entry and exit ports are not restricted or covered.

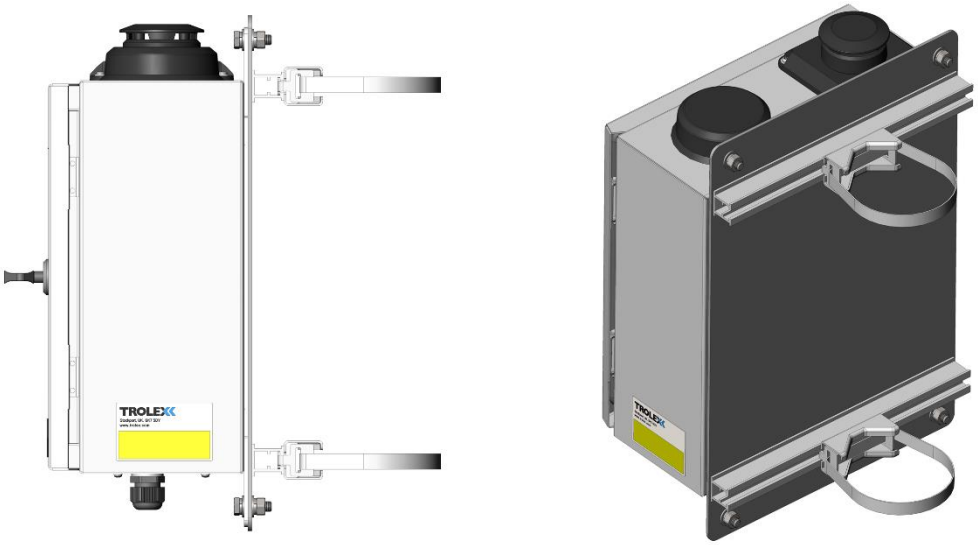
Note: When the door is open, the instrument is susceptible to ingress so care must be taken to ensure the location is clean during installation.

8.2 Mounting Details

The TX8015 is supplied with mounting features as standard. Ensure the Air XD housing is mounted vertically during installation.

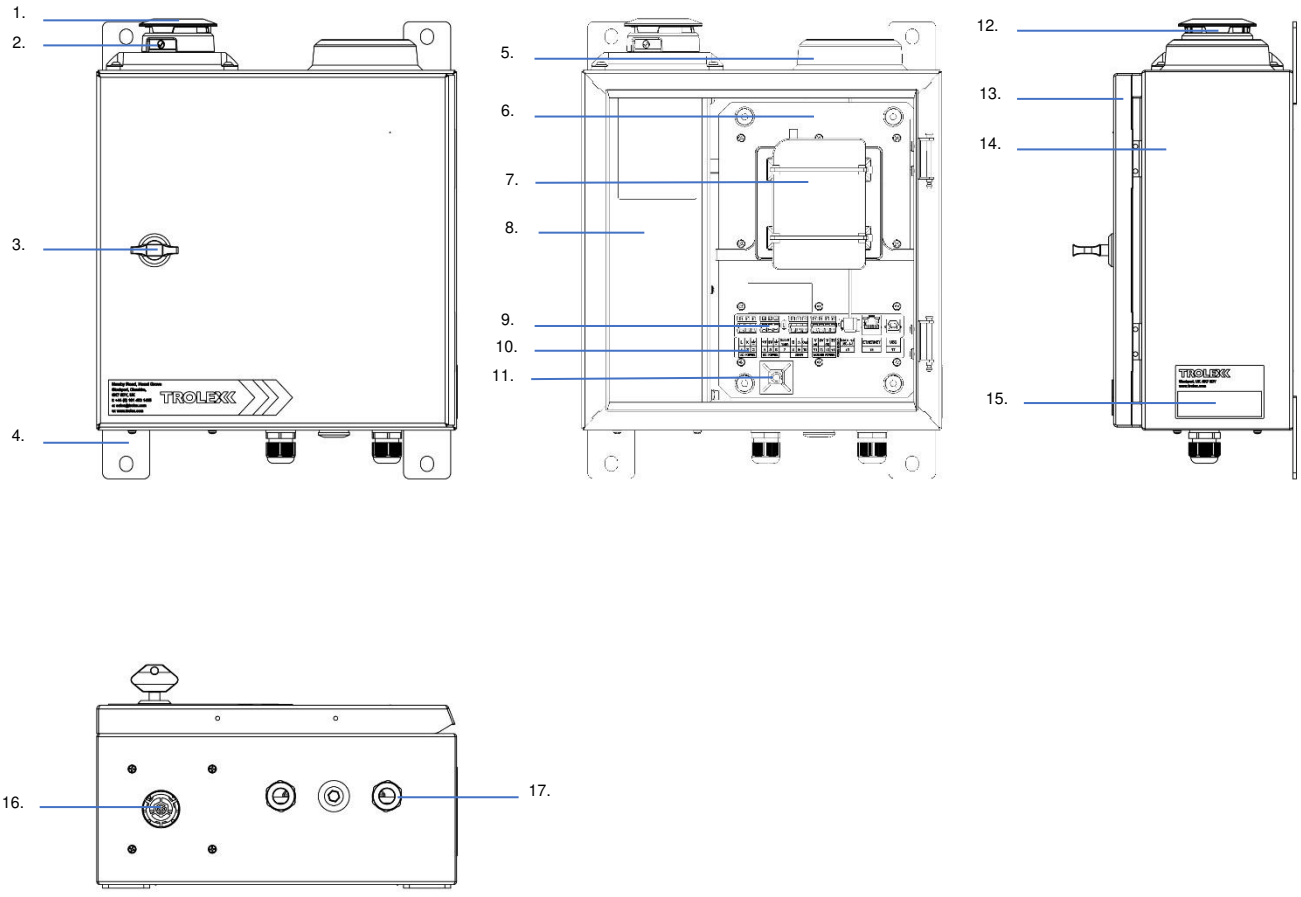


The TX8015 is compatible with a Pole Bracket Mounting kit, where required. The kit is supplied with the componentry to allow the mounting of the Air XD unit on to pole sizes ranging from 50mm – 165mm.



Pole Mount Bracket

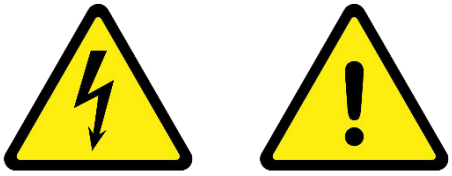
8.3 Main Parts

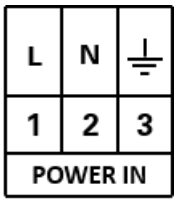


1. Ingress cap	10. Input/Output labels
2. Inlet flow On/Off label	11. Mains fixing mount
3. Door Lock	12. Particulate inlet aperture
4. Mounting brackets	13. Enclosure door
5. Antenna	14. Main enclosure
6. PCB mounting plate	15. Rating Plate
7. Modem (when fitted)	16. Particulate outlet grille
8. Particulate sensor housing	17. M20 cable glands
9. Input/Output terminals	

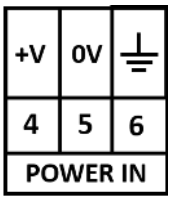
8.4 Electrical Connections

The figure and tables below detail the connections available internally in the Air XD instrument. The connections can be accessed by opening the front housing of the instrument using the supplied key. The connections are clearly labelled on the internal metal plate. Wires are inserted into the connector terminals by first using a small flat-head screwdriver or dedicated tool inserted into the small recess above the appropriate terminal. Pushing the screwdriver down into the mechanism opens the connector terminal allowing the wire to be inserted into the opening. Before placing the wire into the connector, ensure that the wire has been stripped back sufficiently and crimp attached, where required, to enable a good electrical connection. Once the wire has been sufficiently pushed into the terminal, remove the screwdriver to allow the mechanism to clamp the bare wire or crimped end. Give a gentle tug on the wire to make sure it has been clamped sufficiently by the connector. Ensure mains cables are fixed in place using the mounting points provided. Details of the connections are given in Tables 1 and 2 below.

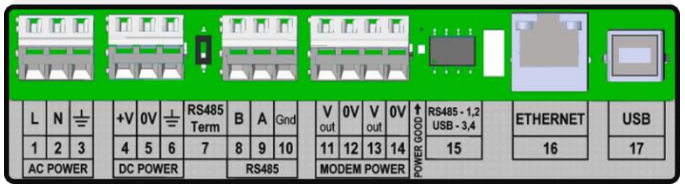




AC Power Input



DC Power Input



AC Power In		DC Power In		RS485 Comms		Modem Power (Out)	
1	Supply voltage	4	Supply Voltage	7	RS485 On/Off	11	Supply Voltage Out
2	0V return	5	0V return	8	RS485 B	12	0V
3	Earth	6	Earth	9	RS485 A	13	Supply Voltage Out
				10	RS485 GND	14	0V

Table 1: Power, RS485 and Modem Power terminal connections

The pin connections listed in Table 2 for the Ethernet connector are not labelled in the figure but relate to the internal connections of the RJ45 connector with Pin 1 on the left up to Pin 8 on the right.

Ethernet	USB
Pin 1: TX+	Standard USB Type B connection.
Pin 2: TX-	
Pin 3: RX+	
Pin 4: No connection	
Pin 5: No connection	
Pin 6: RX-	
Pin 7: No connection	
Pin 8: No connection	

Table 2: Ethernet and USB connections

8.5 I/O Terminals

Power, RS485 and Modem Power connection terminal data is highlighted below.

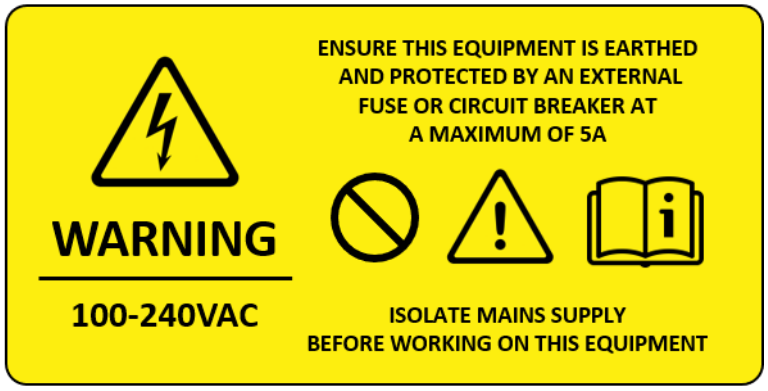
Actuation type	Operating tool
Solid/Stranded conductor	0.08 - 2.5mm^2 / 28 - 12 AWG
Conductor with Ferrule	0.25 - 1.5mm^2
Strip length	5 - 6mm / 0.2 - 0.24 inch

8.6 Power Connections

For units connected to an AC power supply, it is the responsibility of the installer to ensure that the equipment is installed with the following protection:

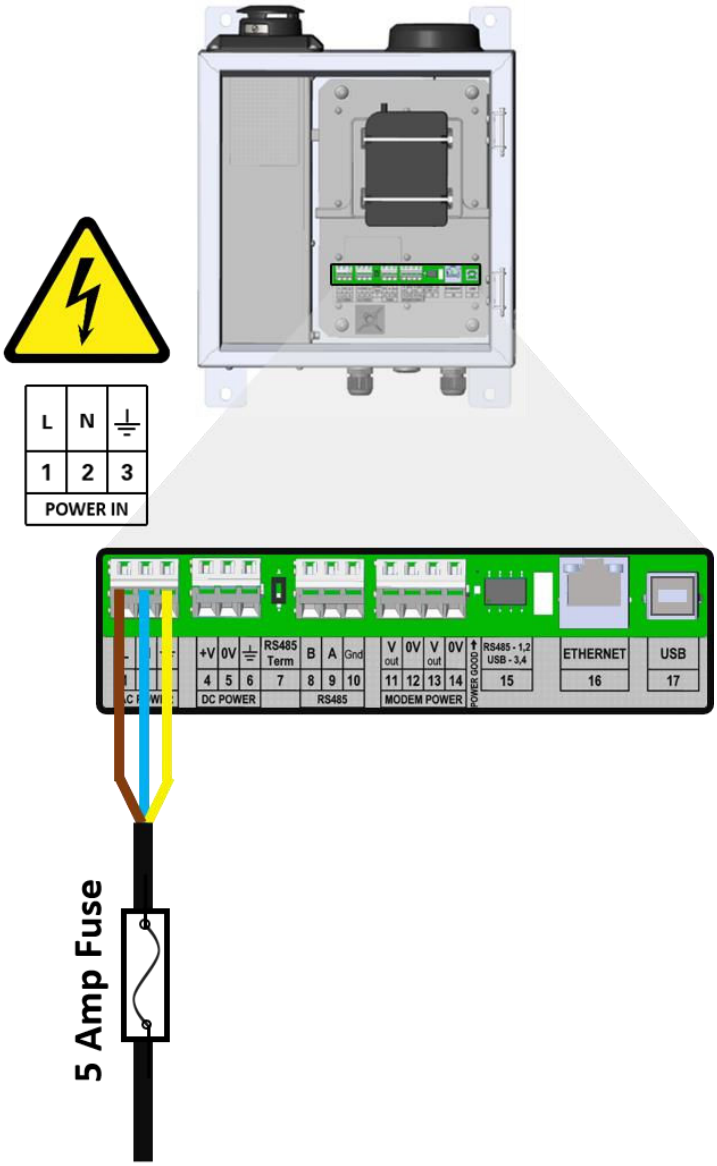
- An external fuse or circuit breaker at a maximum of 5A.
- Externally earthed.

See label below for details.



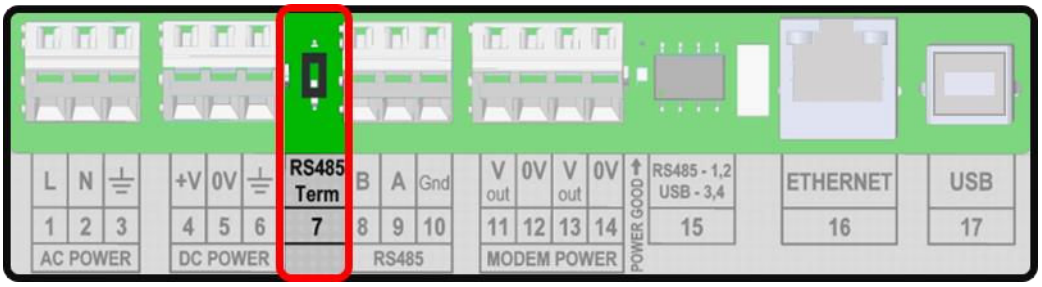
For units connected to a DC power supply, it is the responsibility of the installer to ensure that the equipment is installed with a DC supply, meeting re-enforced insulation requirements of EN61010-1 or equivalent.

For instruments connected to an AC power supply, ensure that the equipment is protected by an external fuse or circuit breaker at a maximum of 5A.



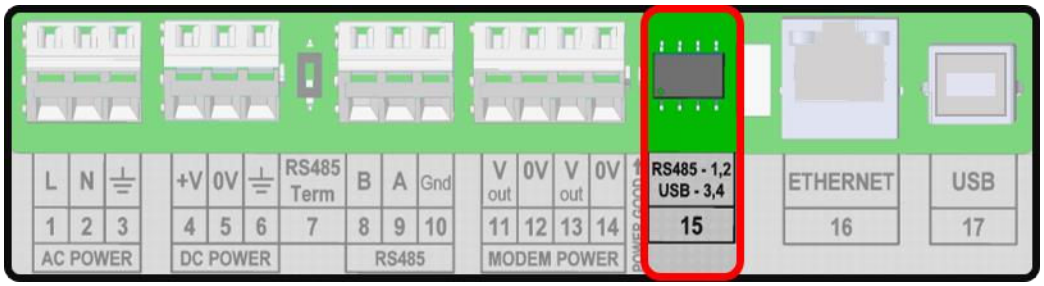
8.7 RS485 – Line Terminations

Some network installations may require a line termination resistor to be connected across RS485 lines A and B. A 120R resistor is available with SW4 set to off as standard.

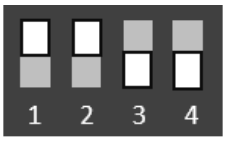


8.8 Serial Comms Configuration

The Air XD offers a MODBUS connection over RS485 or via a USB virtual serial port. To select between the communications methods, 4 dip switches are provided at terminal 15.



To configure the Air XD for RS485 mode switches 1 and 2 must be raised high, with 3 and 4 positioned low.



RS485 Dip Switch Setting

To configure the Air XD for USB virtual serial port switches 3 and 4 must be raised high, with 1 and 2 positioned low.

USB Dip Switch Setting

9. Commissioning

Once installed and powered for first time use, the Air XD requires some initial parameter set-up via the RS485 or USB terminals (See section 10). On connection of the device to the communications network, the instrument will begin to push data to the REST API specified in the device configuration.

Note: Before the Air XD is installed for Particulate Monitoring functionality, units require network configuration information to be applied via the Trolex Air XD Cloud configuration software.

During initial configuration, it is important that the Ethernet cable is not connected to ensure any device miss communication is prevented.

9.1 First Power On

Prior to commissioning and first use, the instrument should be inspected for any visible damages and integrity of the enclosure.

1. Ensure that the electrical connections are correctly installed, as describe in section 8.4, and the Air XD is connected to a communications network if required.
2. Ensure that the door is closed and secured.
3. Apply power to the Air XD.
4. The unit will boot and begin the communications procedure.
5. Once configuration is complete, the Air XD will automatically push Particulate Measurement data (*5 min averages*) to the REST API end point.

10. General Operation

10.1 Communications

The Air XD offers two communications protocols, RS485 MODBUS and Ethernet REST API via HTTPS. Each communication protocol requires the network and connection parameters to be correctly configured on the instrument and network where applicable.

Note: The Air XD can ONLY be configured and networked using the RS485 MODBUS terminal connection.

10.2 Ethernet Communications

The Air XD supports communications over Ethernet REST API via HTTPS to allow the transfer of Particulate Monitoring data to an established network or server. Ethernet communications require the following parameters to be configured to establish the successful communication with the designated server. Ethernet communication requires a DNS and DHCP Server as standard. Firewall settings must allow outgoing traffic on selected port numbers.

10.3 Server Connection Settings

Server connection setting are configured remotely via RS485 MODBUS only using the Trolex Air XD Cloud configuration software. The following information is required to establish a successful connection:

- Target server host name

Input the allocated server host name

- Server port number

Input the allocated server port number

- Server Post URL

Input the address of where the Air XD logged data will be sent to

- Device specific username and password

Input the device's unique username and password (Username and password must be registered on the server).

10.4 Device Connection Settings

When connected to a network, the Air XD automatically attains the required network information from the DHCP server and begins operation.

10.5 RS485 MODBUS Communications

The Air XD has configurable MODBUS baud rates and a user configurable address. It is possible to configure the MODBUS device address and baud rate using the MODBUS 'Holding Register', listed 22 and 23.

10.6 Set Baud Rate

The Air XD instrument baud rate can be selected and assigned from a pre-configured list of options.

- 4800
- 9600
- 14400
- 19200
- 38400
- 57600
- 115200 (Default)

11. Device Configuration

11.1 Default Settings

The Air XD unit has been programmed with factory default settings prior to delivery which have been detailed in the table below.

Number of channels:	5
PM values:	PM1.0, PM2.5, PM4.25, PM10, TSP
Data averaging:	5mins
Units:	µg/m3
RS485 baud rate:	115200
RS485/Modbus:	Enabled
Ethernet:	Enabled

Note: Data averaging will automatically align itself to post at synchronised 5min periods – because of this the Air XD will post data at the example times of 09:00, 09:05, 09:10 etc.

11.2 Instrument Self-Test

On initial power on, the Air XD is programmed to perform a set of initialisation tests which are listed and described below. Throughout general function, the Air XD will periodically perform these tests to ensure correct operation.

- OPC sensor comms check

Ensures communications and correct functionality of the OPC sensor.

- OPC temp sensor test

Ensures the OPC sensor is operating within the specified safe temperature limits.

- Data logging comms test

Ensures communications and correct functionality of the Air XD memory module.

- EEPROM memory test

Ensures communications and functionality of the EEPROM is correct and that custom defined user settings are not lost.

12. Maintenance

The maintenance of the Air XD must only be carried out by competent personnel. Maintenance shall be considered with reference to the local safety regulations and authorities.

12.1 Visual Checks

Periodic visual checks should be carried out to assess if there are any issues arising with the Air XD instrument. Check for:

1. External damage to the instrument. Plastic parts should not be cracked or broken which could affect the IP rating of the instrument.

2. Internal or external damage to wiring that is connected to the Air XD instrument.

3. Labels on the instrument are still in place and are not peeling or discolouring.

12.2 Particulate Entry/Exit apertures

The Air XD has been designed to allow for infrequent pressure washing during maintenance schedules.

Note: Ensure inlet cap is closed before pressure washing the Air XD instrument.

It is important that an appropriate distance is kept between a pressure washer and all Air XD surfaces when cleaning to avoid any damage to the surface being cleaned. Care should also be taken to ensure that the underside of the instrument is not subject to the direct water jet to ensure that water does not enter the particulate flow path.

The particulate exit aperture is protected by a stainless-steel grille to minimise the ingress of flora and fauna into the Air XD instrument. It is recommended that the grille it is checked and cleaned during maintenance periods to ensure that it has not become clogged with ingress that may obscure the particulate sensing airflow.

13. Troubleshooting

The following sections detail and contain information to assist with the troubleshooting of instrument functionality if required. If an issue is non-resolvable based on the information below, please contact the Trolex product support team.

13.1 High Temperature operating

The Air XD operates a protective thermal cut-out sequence when the temperature inside the instrument exceeds the maximum operating temperature specification, detailed in section 7. This protective measure is in place to maintain the lifespan and operating functionality of the optical sensor assembly when the Air XD is installed in environments with high ambient temperatures.

Note: The operating lifespan and performance of the optical sensor assembly may be reduced when the Air XD is operational at maximum temperature limits for extended periods of time.

13.2 Low Temperature Start-up

If the internal temperature of the instrument is suspected to be below -10°C, for example if it has been left powered off for a period of time in a very cold environment, damage to the optical assembly may occur when power is applied. Allow the instrument to reach safe operating temperature before applying power.

13.3 Device Fault Codes

The following codes relate to on-screen warnings that the Air XD will display when a fault is encountered during normal operations.

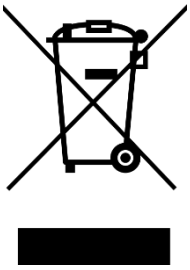
Code	Fault Name	Fault Description	Fault Check
0x0009	Failed to Load Settings	Failed to load and apply user configured settings. As standard the Air XD default settings will be applied.	Re-apply custom settings and check if unit saves and restores files. Contact Trolex or approved distributor if this fails.
0x0301	No Sensor Comms	Communications with the particulate sensor assembly has been lost.	Check 'D' type connector to sensor housing and power cycle unit.
0x0304	Fan Current Too High	Particulate sampling fan may have malfunctioned.	Check instrument is operating within rated temperature range.
0x0305	No Fan Current	Particulate sampling fan may have malfunctioned.	Check instrument is operating within rated temperature range.
0x0306	Sensor Laser Current High	Particulate sensor may have failed or operating at excessive temperatures.	Check instrument is operating within rated temperature range.
0x0307	Sensor Laser Current Low	Particulate sensor may have failed.	Contact Trolex or approved distributor.
0x0308	Sensor Temp Too High	Instrument is operating above specified temperature limits. Unit has gone into safe mode.	Reduce operating temperature below 50°C
0x030C	Sensor Temp Too Low	Instrument is operating below specified temperature limits. Unit has gone into safe mode.	Increase operating temperature above -10°C
0x0402	Lost Memory Module Comms	Communications to memory module has failed. Data logging functionality is lost.	Power cycle to reset instrument processor and retry. Contact Trolex or approved distributor if this fails.

14. Glossary and definitions

Flow rate	The volume of fluid which passes per unit time
IP	Ingress Protection
µg/m3	Microgram per meter cubed. The concentration of an air pollutant given in micrograms (one-millionth of a gram) per cubic meter of air
mg/m3	Milligram per meter cubed. The concentration of an air pollutant given in milligrams (one-thousandth of a gram) per cubic meter of air
OPC	Optical particulate counter
PPM	Parts per million
Particulate Matter (PM)	General term for a mixture of solids and liquid droplets suspended in the air from typical processes including combustion, industrial activities or natural sources.
TSP	Total Suspended Particulate

15. Disposal

15.1 Waste of Electrical and Electronic Equipment (WEEE) Directive (2012/19/EU)



This symbol, if marked on the product of its packaging, indicates that this product must not be disposed of with general household waste.

In the European Union and many other countries, separate collection systems have been set up to handle the recycling of electrical and electronic waste.

At the end of the product's life, do not dispose of any electronic sensor, component or instrument in the domestic waste. Contact Trolex or the distributor for disposal instructions.

16. Technical Support

Our technical services team are available to provide expert ongoing technical assistance and we can provide technical support packages tailored to your specific requirements.

Please contact our technical services team:

Tel: (0)161 483 1435

Email: Service@trolex.com

17. Disclaimers

The information provided in this document contains general descriptions and technical characteristics of the performance of the product. It is not intended as a substitute for and is not to be used for determining suitability or reliability of this product for specific user applications. It is the duty of any user or installer to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use. Trolex shall not be responsible or liable for misuse of the information contained herein. When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only Trolex or its affiliates should perform repairs to components.

Trolex Ltd. reserves the right to revise and update this documentation from time to time without obligation to provide notification of such revision or change. Revised documentation may be obtainable from Trolex.

Trolex Ltd. reserves the right, without notice, to make changes in equipment design or performance as progress in engineering, manufacturing or technology may warrant.

18. Revisions

Description	ECR	Date	Initials
Initial Draft Release	-	12/11/2019	KH
Revision A Release	-	19/12/2019	KH
Revision B Release	5028	18/02/2020	KH
Revision C Release	5043	10/03/2020	KH

19. Feedback

If you have any suggestions for improvements or amendments, or find errors in this publication, please notify us at marketing@trolex.com.

20. Trademarks

Trolex Ltd, Newby Road, Hazel Grove, Stockport, Cheshire, SK7 5DY, UK

+44 (0) 161 483 1435 sales@trolex.com

Trolex Ltd. Newby Road, Hazel Grove, Stockport, Cheshire SK7 5DY, UK
t: +44 (0)161 483 1435 e: sales@trolex.com www.trolex.com