DUSTECH
XP SERIES

ENVIRONMENTAL MONITORING STATION

Operation and Maintenance Manual

Please read this manual thoroughly before operating the unit.

CONTENTS

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INFORMATION, CAUTION, AND WARNING

Important information, cautionary statement, or warning are identified using the following symbols throughout this manual:

	**INFORMATION**
	**CAUTION**
	**WARNING**

ABSTRACT

Dustech Pty Ltd design and manufacturer air quality monitoring station.

Dustech XPS is easy to install, maintain, and compact air quality monitoring station. Ideal instrumentation for 24/7 air quality monitoring, with on board datalogging capabilities. Paired with Dustech cloud base portal, data can be accessed anywhere via a web browser.

Enclosed in a IP65 rated polycarbonate protective box, XPS is a solution for both indoor and outdoor applications.

XPS can be configured with Dust sensor (PM1.0, PM2.5, PM10 and TSP), 8 gas sensors, weather conditions, globe temperature, wet bulb, and dry bulb. XPS have internal hygiene function for STEL and TWA for gas measurements.

With an optional on-board alarm, exposure limits can be programmed to activate the beacon and sounder.

Optional touch screen display will enable user to view real measurement readings and configure settings.

INSTALLATION

	Use of XPS outside the designed application may result in risk and/or void warranty.

The XPS is not certified for use in classified hazardous area and not designed to ensure safety of personnel and property.

XPS is recommended to be pole mounted. Optional support bracket can be purchased, adjustable clamps can support poles ranging 40-105 mm.

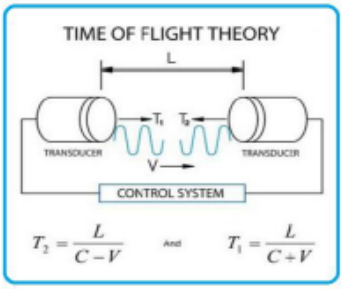
	Make sure that XPS is securely fastened and levelled during installation. **Appropriate tools must be used during installation.**

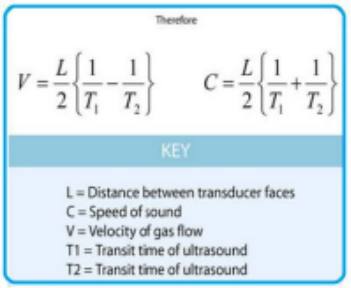
INSTALLATION

Weather Station

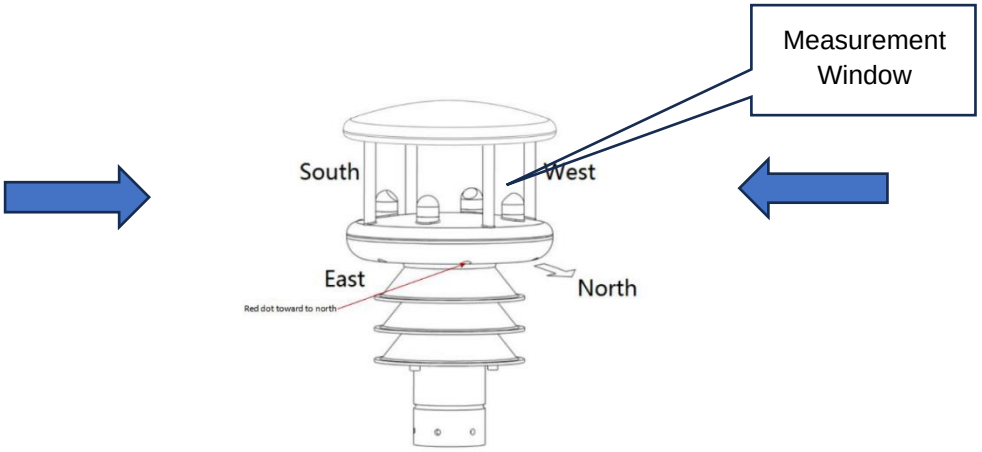
Measure the transmission time of ultrasonic sensors from sensor N to sensor S, and compare with the transmission time of sensor S to sensor N. Similarly, compare the time of W to E and E to W time. (N = north, S = south, E = east, W = west)

For example, if the wind blew from the north, time of ultrasonic from N to S will be shorter than from S to N, and transmission time of it from W to E and E to W is the same. Through calculating the time difference of ultrasonic transmission between two points, the wind speed and direction can be calculated. This calculation method has nothing to do with other factors such as temperature.



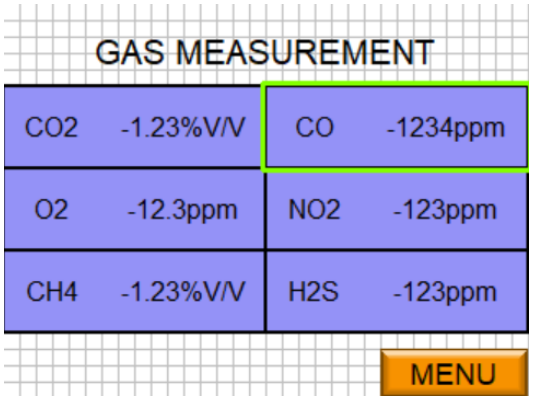


Notes: Weather Station uses single point ultrasonic sensor, to accurately measure the wind velocity, weather station sensor measurement window must be exposed and clear from obstructions from the direction of measurement.

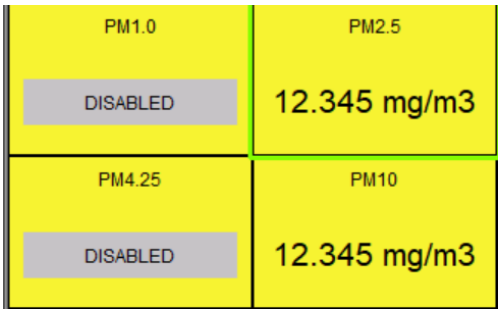


OPERATIONS

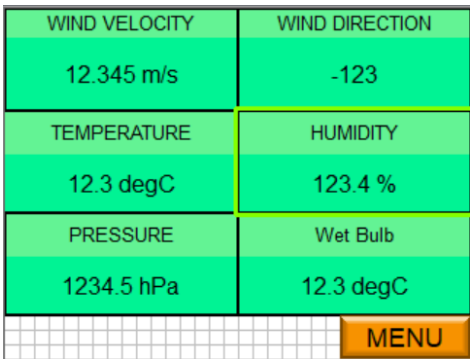
XPS Splash Screen – Manufacturers' company details and logo.



Gas Measurement Screen – Display the current gas concentration in the environment. XPS Supports up to 8 gas sensors.

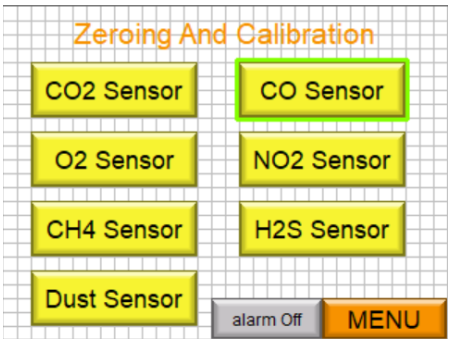


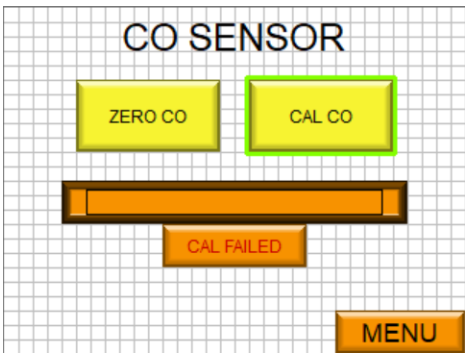
Dust Measurement Screen – Display the current dust concentration in the environment. Simultaneously measures based on particle size.



Ambient Environmental conditions – Multiple parameter weather station measuring wind speed, wind direction, temperature, humidity, and pressure.

For other parameters (e.g. rain fall, UV light) contact your Dustech representative for these parameters.

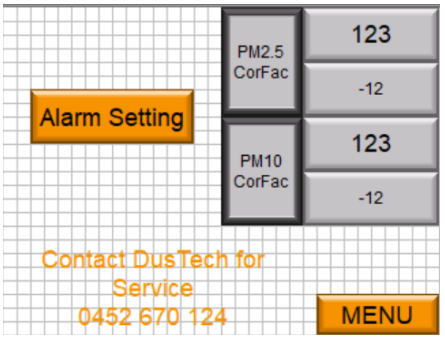




On board calibration menu. No need to plug in a computer to execute field calibration.

Contact your Dustech representative for calibration services or calibration gases and regulator.

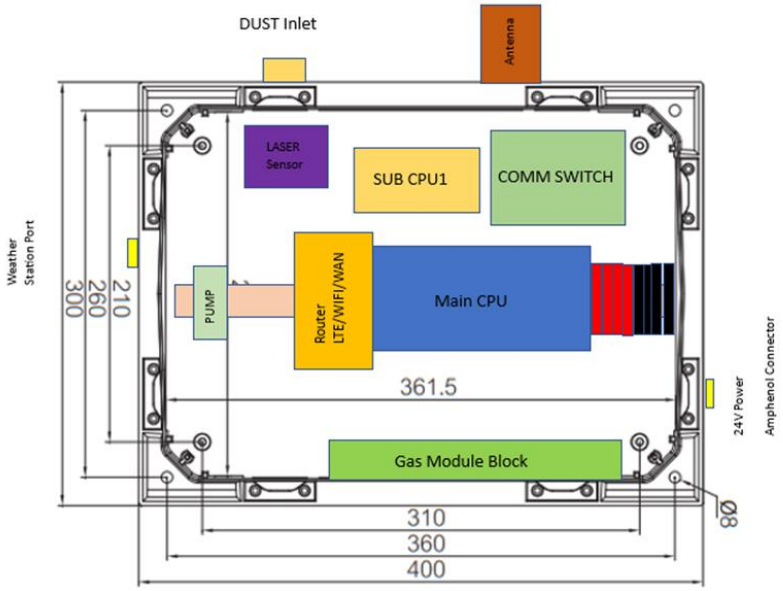
OPERATIONS



Dust correction factor and gas alarm setting.

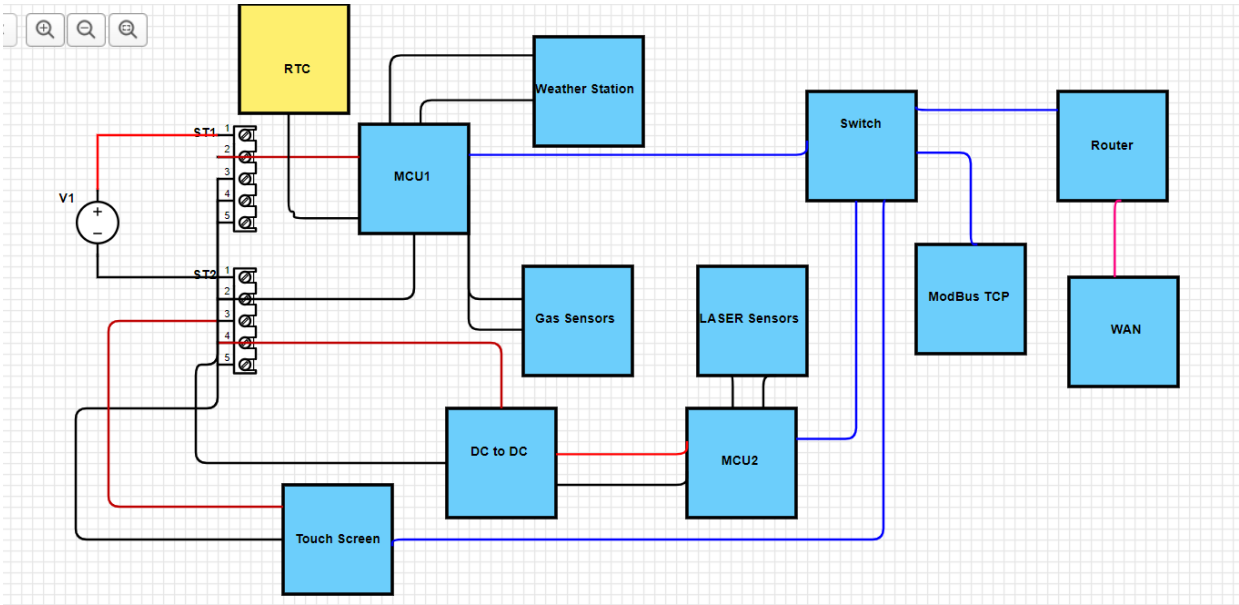
XPS support gravimetric correction factor entry.

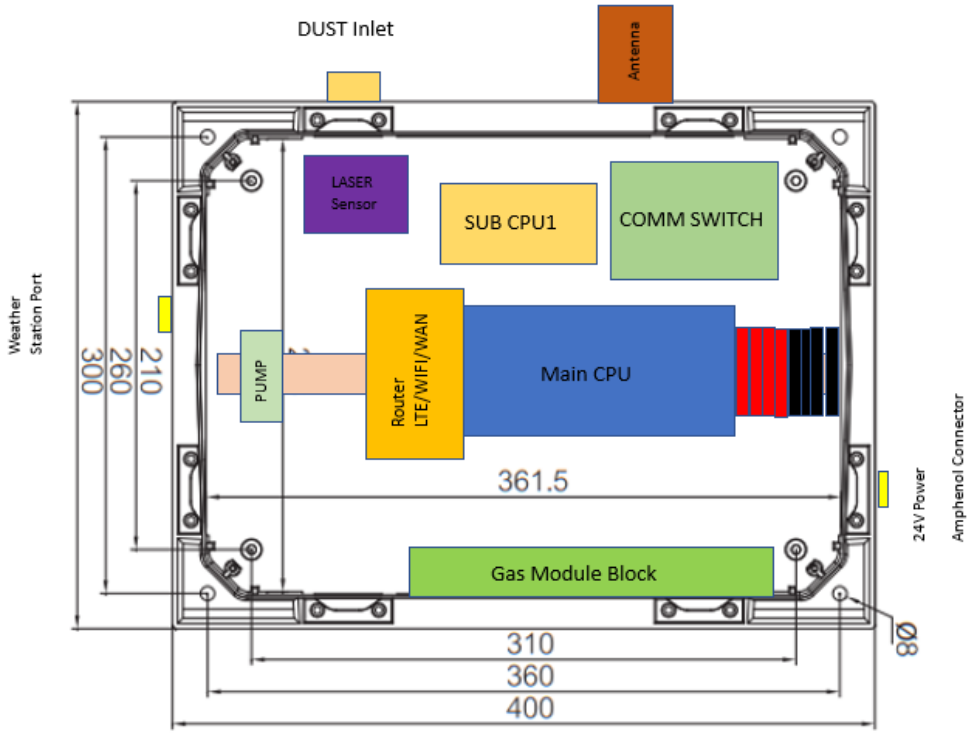
Alarm triggers can also be program using the touch screen.



	Gas Module Block is diffusion mode. Care must be taken to avoid sensor blocking and contamination.

BLOCK DIAGRAM

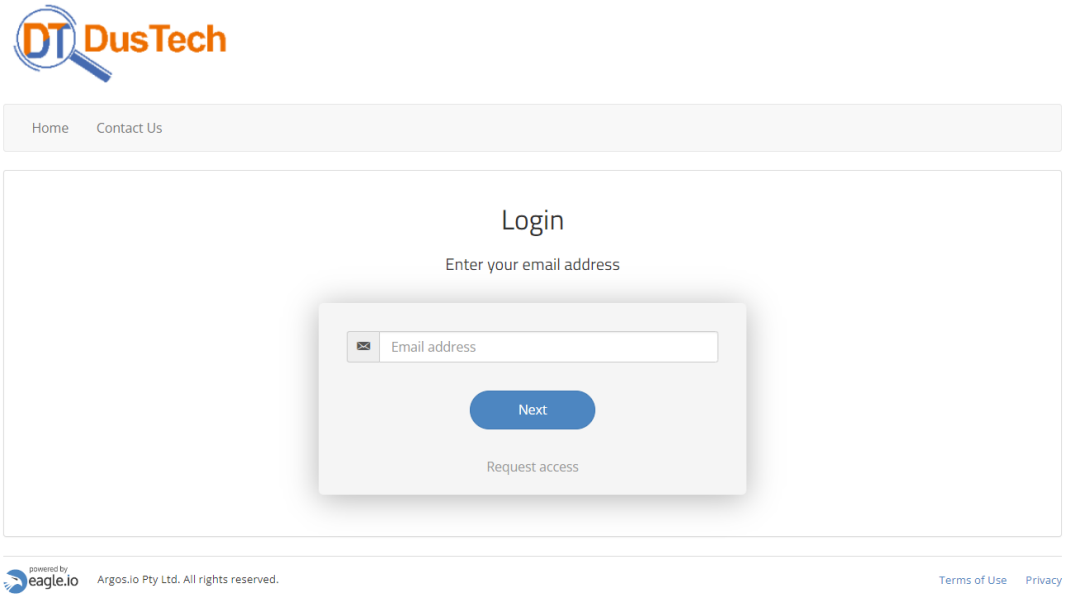




DUSTECH DASHBOARD

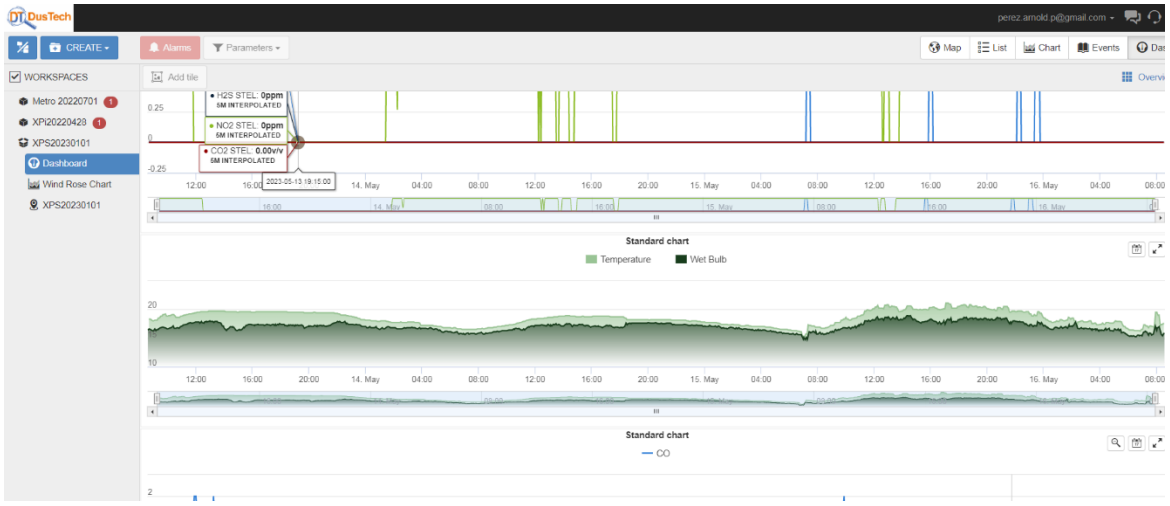
Visit site https://dustechptyltd.eagle.io/login to log on to DUSTECH DASHBOARD.

Enter log on credentials to access the cloud base dashboard.



DUSTECH DASHBOARD

Dustech dashboard supports different type of graphs. For custom configurations contact your Dustech Representative in your area.



MAINTENANCE AND FREQUENCY

Dustech recommends maintenance to follow the maintenance cycle listed below. Service should include full zero and span calibration, filter checks, pump flow checks and alarm function testing.

	**Maintenance and calibration intervals are recommendations only. Dustech and your local representative can assist you in identifying a suitable plan for your maintenance routine. Instrument must be accessible to perform on-site maintenances.**

SENSOR TYPE	CALIBRATION FREQUENCY
Laser Particulate Sensor	Yearly
Sound/Noise Monitor	Yearly
Gas Sensor	6 monthly

FILTER DESCRIPTION	PART NUMBER	REPLACEMENT FREQUENCY
Dust Filter	Dust Filter	Yearly

MODULE DESCRIPTION	PART NUMBER	REPLACEMENT FREQUENCY
Optical Particle Counter	XPS-OPC	4 years
Carbon Monoxide Sensor	XPS-1	4 years
Hydrogen Sulphide Sensor	XPS-2	4 years
Oxygen Sensor	XPS-3	2 years
Nitrogen Dioxide Sensor	XPS-4	3 years
Sulphur Dioxide Sensor	XPS-5	4 years
Carbon Dioxide Sensor	XPS-9	5 years
Photo Ionization Sensor (VOC gases)	XPS-11	5 years
Pump Assembly	PUMP	3 years

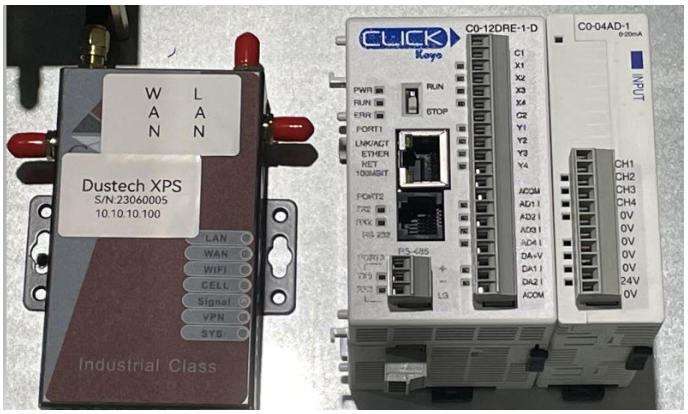
PORTS AND TERMINALS

1) Power Port 4 PIN Amphenol Industrial Circular Connector. 24 Volts +/- 0.5 %

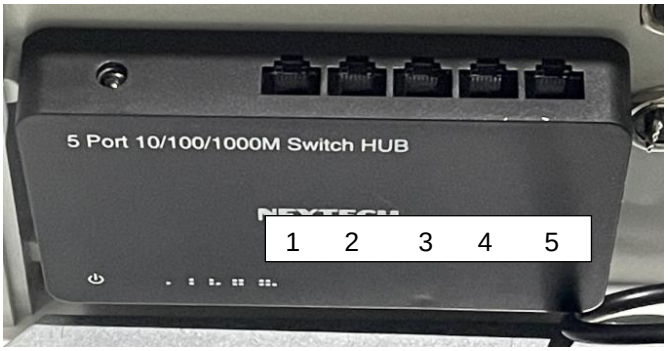
2) Five (5) PIN Quick Connector for Weather Station

3) Four (4) PIN Quick Connector for Globe Temperature Sensor

5) WAN Port for Internet connection
6) LAN Port MCU Bridge to WAN (internet).



4) Switch connection.
Port 1 – Router
Port 2 – MCU1
Port 3 – MCU 2
Port 4 – Touch Screen
Port 5 – External Modbus TCP



SPECIFICATIONS

GENERAL	
Power Requirement	24VDC
Rated Power	65W
Datalogging	5 years of logs onboard with unique file name creation every 24 hours
Alarm Indicator (optional)	Onboard dedicated alarm relay for $PM_{2.5}$, PM_{10} & PM_{100} levels
Operating Temperature	0°C to 50°C
Operating Humidity	0 to 95% non-condensing
Operating Pressure	860 to 1100 hPa

PARTICULATE MEASUREMENTS (SPECIFICATIONS ARE BASED ON 21°C AND 760mmHg CONDITIONS)				
	PM1.0	PM2.5	PM4.25	PM10
Range (µg/m³)	0.0-1000			
Maximum Display (µg/m³)	30,000			
Resolution	1.0			
Relative Error	Max of ±10%	Max of ±10%	Max of ±15%	Max of ±20%

GAS MEASUREMENTS (SPECIFICATIONS ARE BASED ON 20°C AND 760mmHg CONDITIONS)				
Type	**Range**	**Resolution**	**T90 Response (s)**	**Min. Repeatable Detectable Level**
CO (low range)	0-30ppm	1ppb	<30	20ppb
CO (high range)	0-300ppm	1ppm	<25	N/A
CO2	0-2000ppm	1ppm	<40	15ppm
VOC (low range)	0-40ppm	1ppb	<10	15ppb
VOC (high range)	0-200ppm	1ppm	<3	N/A
SO2	0-10ppm	1ppb	<60	20ppb
H2S	0-20ppm	1ppb	<60	20ppb
NO_2 (low range)	0-1000ppb	1ppb	<80	20ppb
NO_2 (high range)	0-20ppm	0.1ppb	<50	N/A
O_2	0-25%VOL	0.1%VOL	<15	N/A
NO	0-5000ppb	1ppb	<45	20ppb

COMMUNICATION	
PLC or SCADA Integration	TCP/IP and RS232
FTP and MQTT	Cellular or Ethernet or WiFi

WARRANTY & SERVICE

	**Dustech assumes no liability for work performed by unauthorised service entities.**

The product specified in this manual is warranted against faulty workmanship for a period of 12 months, from the date of dispatch.

Our warranty is limited to the replacement of parts which, by our assessment, are proved to be defective and have not been misused, abused, or damaged due to improper operation or installation. This warranty is VOID where the unit has been tampered with or if repairs have been attempted or made by anyone except an authorised entity of Dustech Pty Ltd.

Products for attention under the terms of this warranty (unless otherwise agreed) must be returned to the local representative or to Dustech in Melbourne, Australia. Warranty parts are free of charge.

In any event, Dustech has no other obligation or liability beyond replacement or repair of this product. Variations may be made to any existing or future products as it may deem necessary without incurring any obligation to incorporate such modifications in units previously sold or to which this warranty may relate.

CONTACT INFORMATION

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