

XPS TITAN-DPM

Operation Manual



Please read this manual thoroughly before operating the unit.

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

	INFORMATION
	CAUTION
	WARNING

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ABSTRACT

Dustech Pty Ltd design and manufacture air quality monitoring station.

Dustech XPS TITAN-DPM 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 IP66 NEMA4X rated stainless steel protective box, XPS is a solution for both indoor and outdoor applications.

XPS TITAN-DPM comes with default Diesel Particulate Matter (DPM), Elemental Carbon (EC) and Dust sensor (PM1.0, PM2.5, PM10 and TSP). It can be configured with 8 gas sensors, weather conditions, globe temperature, wet bulb, and dry bulb. XPS TITAN-DPM have internal hygiene function for STEL and TWA for gas measurements.

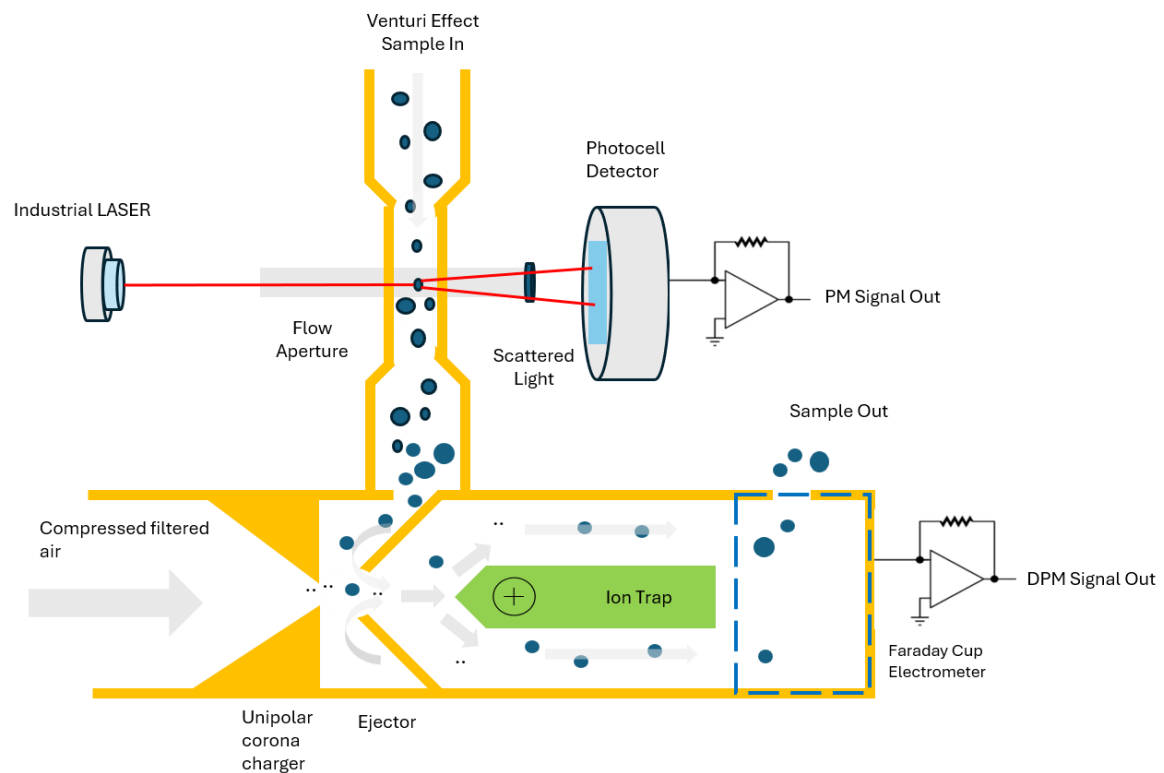
With an optional on-board alarm, exposure limits can be programmed to activate the beacon and sounder.

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

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WORKING PRINCIPLE – DPM and Laser



Using dual technology, combining faraday cup electrometer unipolar diffusion charger and optical particle counter, we can detect particulate in a wide range from 10 nm to 40 μm .

Optical particle counter will detect fine particle, and diffusion charger will detect nanoparticle.

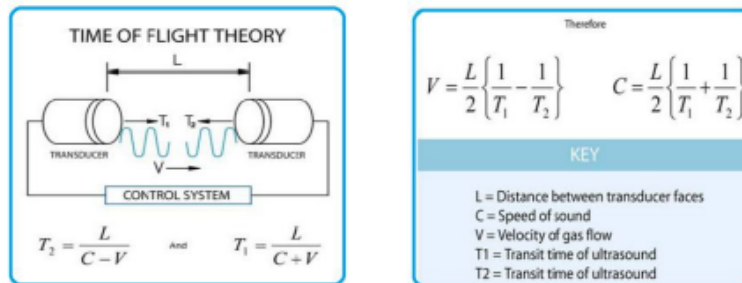
Using venturi effect to collect sample from the surrounding area. The corona charger will charge nanoparticle (only) and will be measured by the electrometer.

WORKING PRINCIPLE – Time of flight

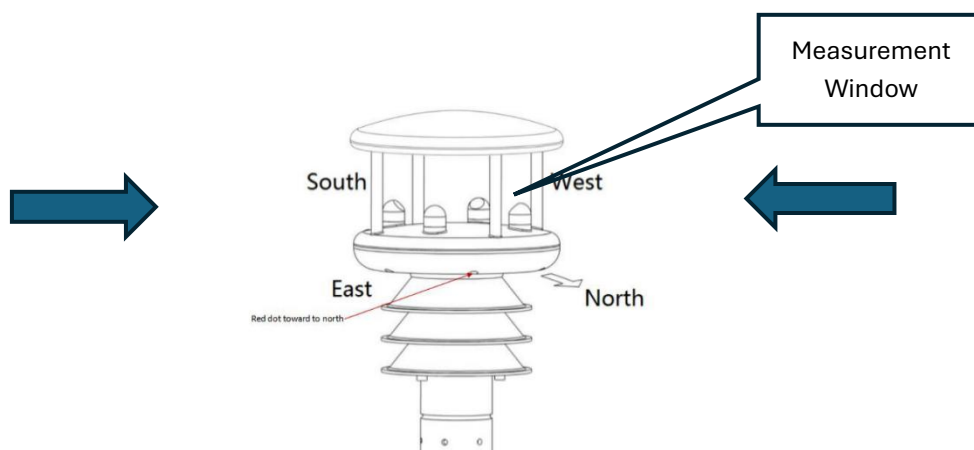
Weather Station

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.



SPECIFICATIONS

Power Supply	24 VDC
Rated Power	22 Watts
Operating Temperature	0°C to 50°C
Operating Humidity	0-95% non-condensing

Unipolar Diffusion Charger	10nm - 1um
mDPM (mass concentration)	0-80,000 ug/m3
PN (Particle Count)	0-100,000,000 #/cm3
LDSA (Lung Deposited Surface Area)	0-100,000 um2/cm3
Response time	0.2 s

Particle Size Range	PM1.0, PM2.5, PM4.25, PM10 & TSP
Size categorisation (Standard)	0.35 to 40 um (RI of 1.5 +io) at 24 software bins
Sample flow rate	1.2L/min nominal
Max particle count rate	10,000 count/sec
Detection Limit	1 ug/m3
Detection range	0 - 30000 ug/m3
Sampling frequency	1 seconds
Particle density value	1.65 g/ml

Gas	Range	Resolution	T90 (s)
CO	0-1000 ppm	1	<25
H2S	0-200 ppm	1	<55
O2	0-25% Vol	0.1	<13
CO2	0 - 5% Vol	10	<40
NO2	0 20 ppm	0.1	<60
NO	0-20 ppm	1	<25
SO2	0-100 ppm	1	<60
LEL	0-100% LEL	1	<12
VOC	0-1000 ppm	1	<30

Parameter	Range	Resolution	Accuracy
Wind Speed	0-60 m/s	0.01 m/s	±0.3m/s
Direction	0-360°	0.1 °	±2°
Temperature	-40 to 60 °C	0.01 °C	±0.3 °C
Humidity	0-100% RH	0.01%	±3% RH
Pressure	300 - 1100 hPa	0.1 hPa	±0.5 hPa
Globe Temperature	0 - 60 °C	0.1 °	±2°

Range	30-130 dB (A)
Resolution	0.1 dB
Sensitivity	12.6mV/Pa
Microphone	1/2 Inch
Directivity	Omnibearing

INSTALLATION

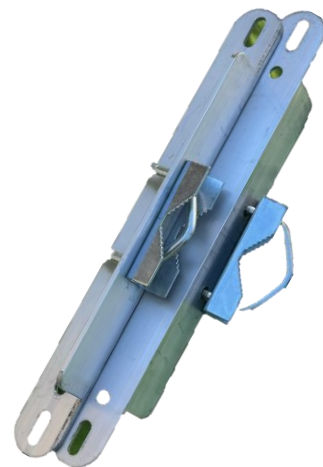
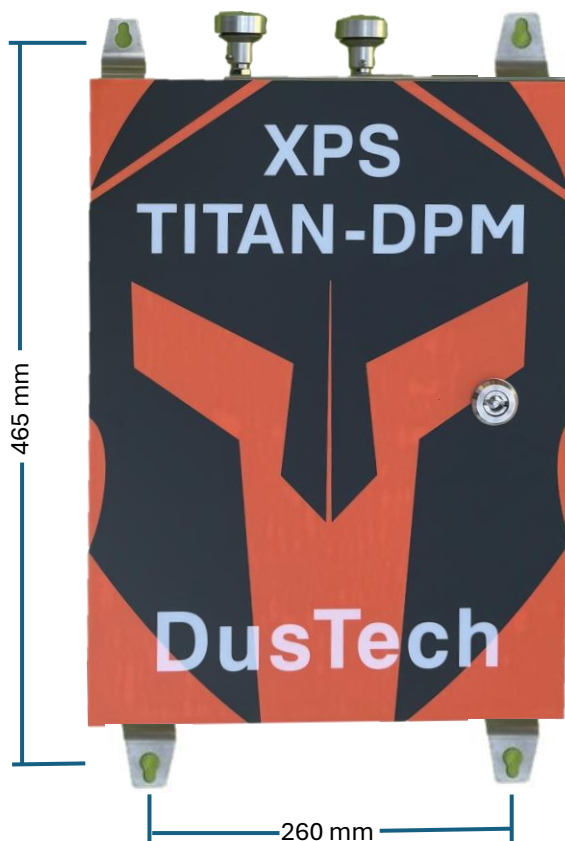


Use of XPS outside the designed application may result in risk and/or void warranty. Always use PPE during installation.

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

TITAN can be wall or pole mounted. For pole mounting support bracket can be purchased, adjustable clamps can support poles ranging 30 to 60 mm as standard.

*** For bespoke mounting requirements please contact distributor.

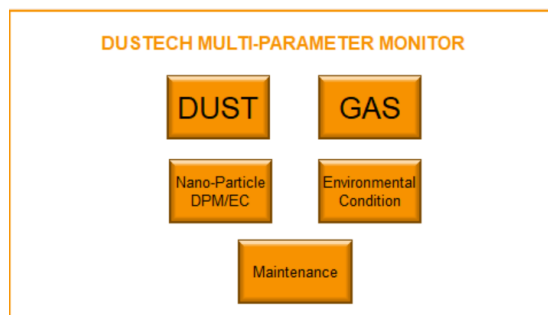


Ensure that XPS is securely fastened and levelled during installation.
Always wear appropriate PPE during installation.

OPERATIONS



Dustech Splash Screen



Menu Screen

PM1.0 0.000 mg/m3	PM2.5 0.000 mg/m3
PM4.25 0.000 mg/m3	PM10 0.000 mg/m3
MENU	

Dust Reading Screen

GAS MEASUREMENT	
CO 0 ppm	CH4 0.00 %V
O2 0.0 %V	NO2 0.0 ppm
H2S 0ppm	CO2 0.00 %V
G6 DISABLED	G8 DISABLED
MENU	

Gas Reading Screen

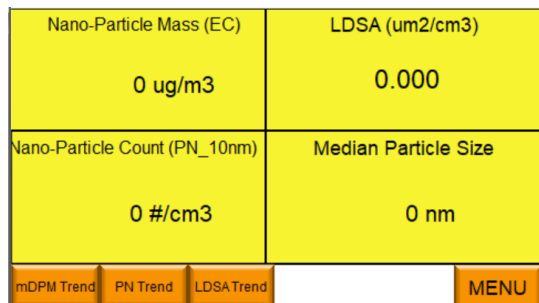
WIND VELOCITY 0.000 m/s	Wind Direction 0 deg
HUMIDITY 0.0 %	TEMPERATURE 0.0 degC
PRESSURE 0.0hPa	Globe Temperature 0.0degC
MENU	

Environmental Condition
Reading Screen

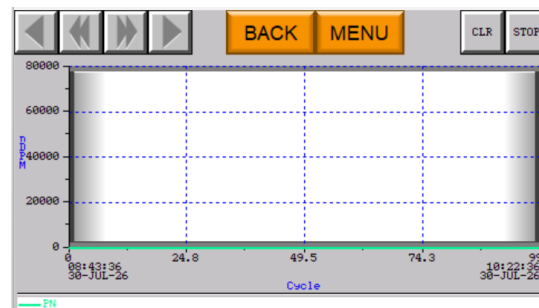
mDPM
0 ug/m3
Details
MENU

Mass -Ultrafine particle
Reading Screen

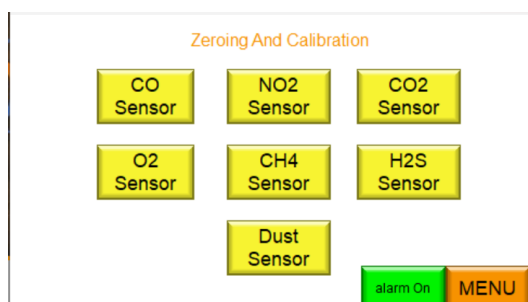
OPERATIONS and CALIBRATION



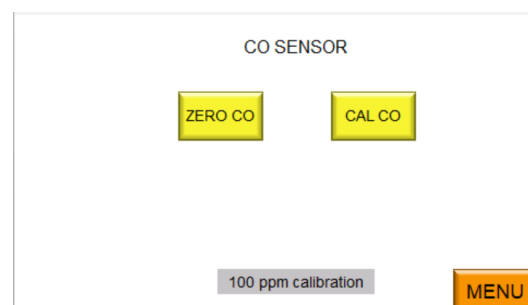
Details Ultrafine particle
Reading Screen



Ultrafine measurement
trend Screen



Main Calibration and
Maintenance Screen



Calibration Screen

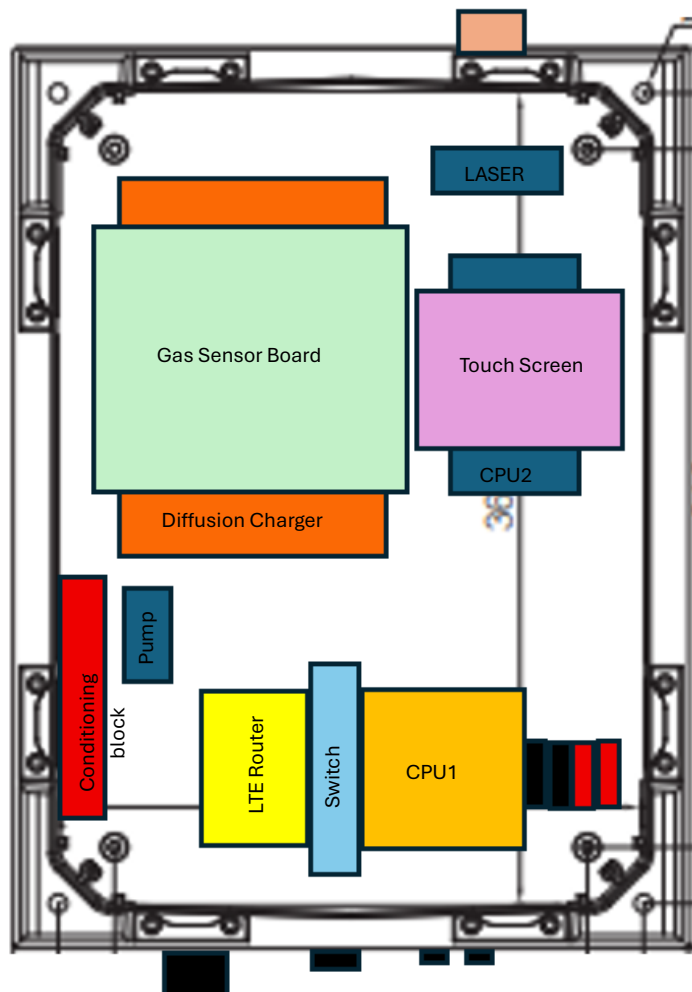
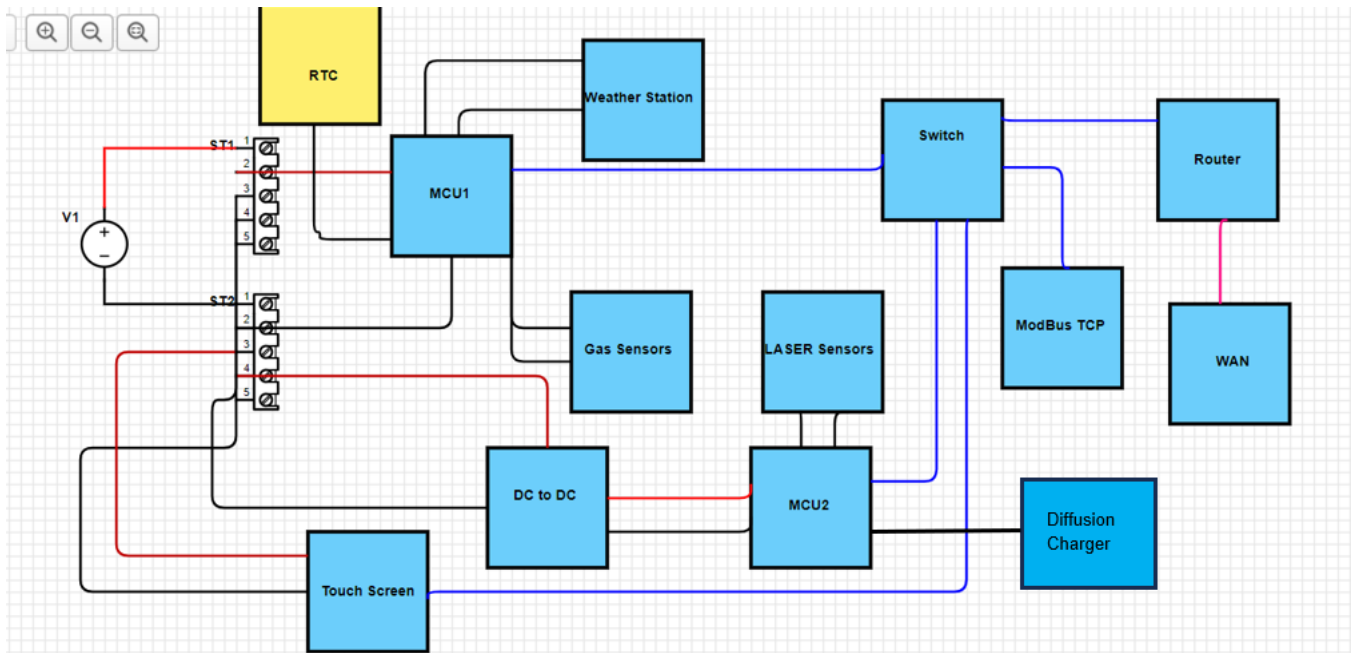
Sensor Name	Alarm Level	STEL (15)	TWA 12 Hrs	Unit
CO	0	0	0	ppm
O2	0.0	N/A	N/A	% Vol
NO2	0.0	0.0	0.0	ppm
CH4	0.00	N/A	N/A	% Vol
CO2	0.00	0.00	0.00	% Vol
H2S	0	0	0	ppm

MENU

Alarm Setting Screen

If there is an onboard sounder/beacon, if the limits are exceeded sounder/beacon will activates.

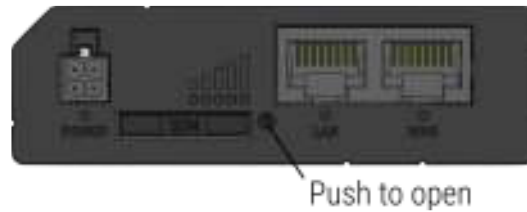
BLOCK DIAGRAM



NETWORK AND INTERNET CONNECTION

Router setup: SIM card and network settings

TITAN uses Teltonika RUT241 LTE modem to connect to the internet. Connecting to the internet require a local DATA SIM card.



Do not change any IP configuration on the device. The device is running multiple Modbus tcp configuration.

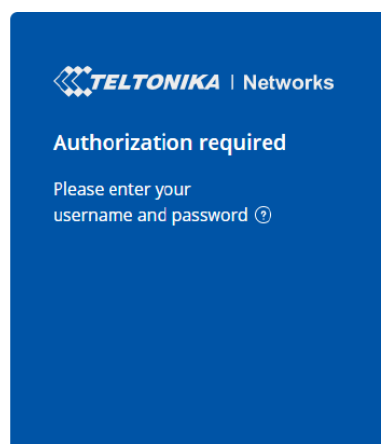
APN Setting and SIM profile:

Make sure your computer is set to DHCP and connect the computer to the switch.

On the browser type the address 10.10.10.100 and enter the following credentials.

Username: admin

Password: TITAN-DPM



Dustech.live DASHBOARD – Log in

TITAN is configured and already uploaded data to the cloud prior shipping.

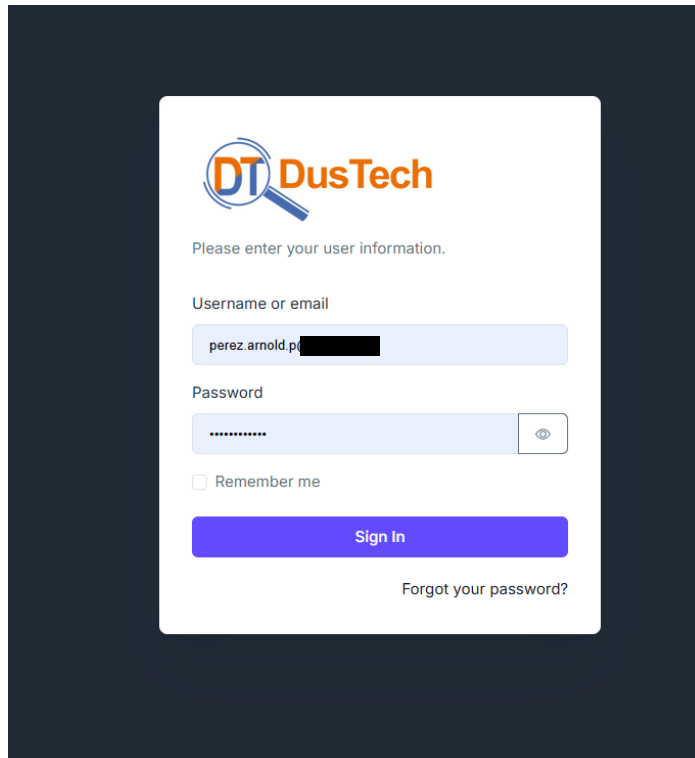
Log-on credentials are already created as well.

Visit site <https://dustech/live> to log on to DUSTECH DASHBOARD.

Enter log on credentials to access the cloud base dashboard.



On your phone add the following contact: phone number 0427 249 575 and rename it as Dustech.live, this number is for SMS notification.

The screenshot shows a login interface for the Dustech system. At the top is the Dustech logo. Below it, the text "Please enter your user information." is displayed. There are two input fields: "Username or email" containing the text "perez.arnold.p" and "Password" containing a masked password "*****". To the right of the password field is an eye icon for toggling visibility. Below the password field is a checkbox labeled "Remember me". A blue "Sign In" button is positioned below the inputs. At the bottom right, there is a link that says "Forgot your password?". The entire login form is centered on a dark blue background.

Dustech.live DASHBOARD

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



MAINTENANCE

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
Diffusion Charger		2 years
MODULE DESCRIPTION	PART NUMBER	REPLACEMENT FREQUENCY
Diffusion Charger Sensoe	XPS-DCS	4 years
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
FILTER DESCRIPTION	PART NUMBER	REPLACEMENT FREQUENCY
Dust Filter	Dust Filter	Yearly

***For other sensor integration requirements please contact distributor

PORTS AND TERMINALS



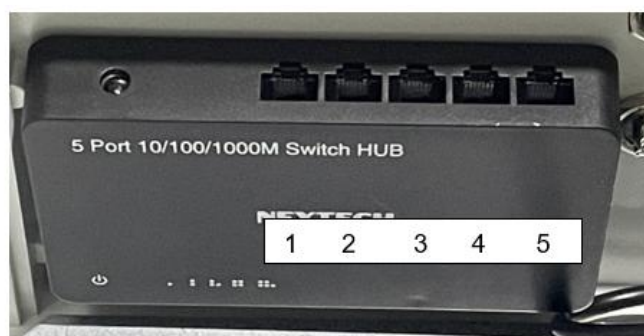
- 1) Power Port 4 PIN Amphenol Industrial Circular Connector.
24 Volts +/- 0.5 %



- 2) Five (5) PIN Quick Connector for Weather Station
- 3) Four (4) PIN Quick Connector for Globe Temperature Sensor



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



WARRANTY AND SERVICE

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

DUSTECH PTY LTD

Victoria Office

45/2 Thomson Road

Keilor VIC 3036

Australia

Visit our Website www.dustech.com.au for the nearest distributor near you.

Dustech Pty Ltd

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