



WELD PURGE MONITOR®

PurgeEye® 1500 Site

with optional dewpoint measurement

Part of the Argweld® Family Range of Products



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INTRODUCTION & FEATURES

Thank you for purchasing this PurgeEye® 1500 Site Weld Purge Monitor®. This model has been specifically designed for the welding industry and provides a high accuracy instrument for weld purging needs at oxygen levels down to 10 parts per million (ppm).

Features

The PurgeEye® 1500 Site Weld Purge Monitor® features include;

- Easy-fit 'leak tight' connections for purge hoses.
- Long life sensor with less than 60 seconds warm up.
- Measured oxygen displayed in ppm or percent.
- Large display (16 mm tall digits).
- Tough outer housing with aluminium chassis.
- Light weight & portable.
- IP68 when lid is closed, IP65 when open.
- Optional integrated dew-point measurement.
- Display of Total O₂.²
- Internal sampling pump.
- PurgNet enabled.
- Internal data logging.
- Integrated audible alarm.
- Digital linearisation of sensor output, for improved accuracy at lower concentration levels.¹

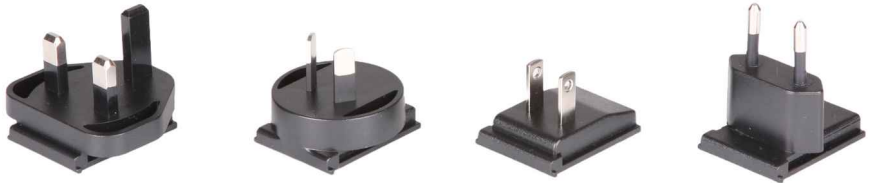
Note 1: The longer the purge time and the higher the purity of gas, the better the low level accuracy.

Note 2: Only with optional dew-point sensor.

GETTING STARTED

Connection to a Power Supply / Charging

Your PurgeEye® 1500 Site should have been delivered with a multi region mains electricity power adaptor, with PurgNet connector.



Unpack the Power Supply Unit (PSU) and fit the correct adaptor for your local area. Slide it in until the clips have locked. To remove an adaptor, press/hold the small release button above the pins to release and slide off.



Plug the power supply into a wall outlet and connect to the PurgNet port on your PurgeEye® 1500 Site to charge the battery. Your PurgeEye® 1500 Site can be turned on and off by holding the "STANDBY" button.

GETTING STARTED

Connecting the Purge Gas Hoses

The PurgeEye® 1500 Site Weld Purge Monitor® has two 6mm quick-fit leak-tight connectors on the main chassis panel under the lid of the unit, for the purge gas hoses.

Connect input (larger fitting with green indicator) to your purging system, using the green pipe and probe supplied with your PurgeEye® 1500 Site Weld Purge Monitor®.

The other pipe connection is to connect an exhaust pipe to allow the exhaust purge gas to be safely exhausted elsewhere.



For the most accurate results, please ensure you have a sample gas flow rate of approximately 4 Lt/min

Note: To remove pipe, press the collar in and hold, whilst removing the pipe, as shown above.

WARNING: The PurgeEye® 1500 Site Weld Purge Monitor® may be damaged if an appropriate filter is not used.

GETTING STARTED

Warming Up

Once powered on, the PurgeEye® 1500 Site Weld Purge Monitor® will need to warm up the sensor before it is ready to use. The display will show the progress of this via a graphical progress bar on the display.

Once the warm-up is complete, the unit will display “ - - - - ”. This indicates that the current reading is 1000ppm or above.

The monitor will register results immediately at this point, but please allow a further five minutes for the sensor to stabilise fully for best accuracy.

PurgNet

The PurgNet interface allows for both charging of your PurgeEye® 1500 Site Weld Purge Monitor® and the connection of a range of smart accessories. When accessories are connected they will be automatically detected and extra menus may appear in the user interface, where applicable.

Example smart interfaces available;

- Personal computer USB interface
- 4-20mA outputs
- Relay outputs
- Sampling Pump control input
- Alarm Visual indicator / sounder
- External sensors

USER INTERFACE

Your purge monitor and any connected PurgNet accessories can be configured and controlled via the on screen menus and four buttons on the front of your monitor.

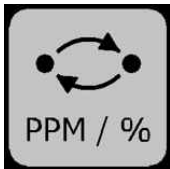
Buttons

Each of the four buttons has multiple functions, determined by either holding or clicking (press then release) the button



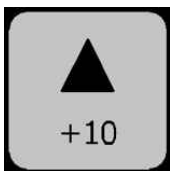
Press: If the alarm is active and sounding then it will be muted, otherwise this will control the sampling pump on or off.

Hold: Power the monitor on and off.



Press: Select the next display page or menu.

Hold: Change display units.



Press: Increase displayed setting by 1.

Hold: Increase displayed setting by 10.






Press: Reduce displayed setting by 1.

Hold: Reduce displayed setting by 10.

USER INTERFACE

Screen – Pages

The high contrast OLED screen is used to display the current reading and control menus for internal or external PurgNet features. You can press  to scroll through the display and menu options available to you and then use  and  to change parameters, as required.

As well as the menu options, the current measurements can also be displayed, as follows;

- Gaseous Oxygen
- Water content.¹
- Total Oxygen.^{1&2}

Note 1: Only available with optional dew-point sensor.

Note 2: Please refer to the section 'Total Oxygen' for more information on how this is calculated.

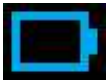
USER INTERFACE

Screen – Icons

The following status icons may also be displayed on the right hand side of all pages.



Running on battery – Battery OK.



Running on battery – Battery Low.¹



Running from mains power – Battery is Charging.



Running from mains power – Battery is Fully charged.



Alarm is active and sounding.



Alarm is active but muted.




Pump is active.



Note 1: When flashing monitor will auto-off very soon.

MENUS, OPTIONS & FEATURES

Language

The displayed language can be changed by pressing  to scroll through the menus until you see the 'Language' menu icon (shown here) displayed on the left hand side of the screen.



You can then use the  and  buttons to set the required language, the following are included;


- ENGLISH
- DEUTSCHE
- NORSK
- ESPANOL
- NEDERLANDS

Note 1: Other languages can be included, please contact your local HFT representative regarding other languages.



Note 2: The hardware and firmware revision numbers are also displayed on this page.

MENUS, OPTIONS & FEATURES

Alarm


The alarm can be controlled by pressing  to scroll through the menus until you see the 'Alarm' menu icon (shown here) displayed on the left hand side of the screen.



You can then use the  and  buttons to set the required threshold value, this will be displayed on the screen. The alarm will become active and sound when the measured value exceeds the threshold value.

To disable the alarm completely, set the threshold value to zero.


Mute

Press the  to mute the alarm if it is sounding.¹


Note 1: If the alarm becomes inactive (the measured value drops below the threshold value) then the mute will be reset/disabled such that the alarm will sound again when the threshold is exceeded.

MENUS, OPTIONS & FEATURES

Data Logging

The data logging can be controlled by pressing  to scroll through the menus until you see the 'Data Logging' menu icon (shown here) displayed on the left hand side of the screen.



You can then use the  and  buttons to set the required mode, the following modes are supported;

DEACTIVATED: No data is logged.

AUTOMATIC: A new log file is created each time the sampling pump is activated and data is logged until the sampling pump is stopped.

MANUAL: Data logging is controlled by a dedicated accessory.

Data can be downloaded from your monitor to a personal computer with the HFT PurgLog software.

WELD PURGING

Once your purge system exhaust oxygen level falls below 1000ppm the monitor will register the current reading in ppm on the screen. This number should reduce as your purge progresses.

In the event that your oxygen level does not reach the required value, you need to check for leaks in your system somewhere, faulty purge gas or contamination that evaporates during the welding process (see the 'Troubleshooting' section for more information).

Please also be aware that any water or moisture present in the weld environment will contribute oxygen to the process, please see the section 'Total Oxygen' for more information on this.

TOTAL OXYGEN

Understanding oxygen monitor readouts of “Total O₂” or “Equivalent O₂” when combined with dew-point sensing.

For many years the welding industry has monitored oxygen levels pre, during and post welding to minimise oxidation of the weld. This is generally measured and displayed in ppm(v) of oxygen as O₂. More recently, as the requirement for better weld quality grows, other sources of oxygen atoms have also become important to monitor. The purging and monitoring of water vapour within the weld environment has become increasingly important. This is due to the presence of oxygen atoms within the water molecule and high levels of water vapour within the ambient atmosphere.

Within the plasma of the arc, the source of oxygen is not important but its presence is. As molecules are broken down to their constituent atoms within the plasma, any oxygen ions pose a risk of oxidation. The amount of water within the purge environment is measured as absolute humidity (g/m³) or dew-point (°C). To make these readings more user friendly they are displayed as ppm(v) of water molecules. However, each molecule of oxygen (O₂) has the potential to contribute two oxygen ions. Each molecule of water (H₂O) has the potential to contribute a single oxygen ion. Therefore water is potentially half as oxidising as oxygen molecules for each ppm(v).

An easier way to represent the “oxidising power” of the welding atmosphere is to display a total equivalent O₂. If all of the oxygen atoms from the O₂ and the water were converted to O₂. Each O₂ contributes one O₂ and each water molecule contributes ½ O₂ (or two water molecules contribute one O₂). It follows that;

$$'Total\ O_2' \text{ or } 'Equivalent\ O_2' \text{ ppm}(v) = O_2 \text{ ppm}(v) + \frac{H_2O \text{ ppm}(v)}{2}$$

Example: 20 ppm(v) oxygen + 90 ppm(v) water = “Total” 65 ppm(v).

CARE & MAINTENANCE

Zirconium Oxide Sensor Care

Damage to the sensor and false readings can arise due to incorrect operation, leaks, corrosion, condensation, etc. Regular servicing of all external components is essential. The gases to be measured should be free from dust, organic vapours, condensation and products capable of condensing. These can be deposited in the gas conduits of the sensor and either affect the measurements or damage the sensor. These components should be identified and removed before taking a measurement.

Permanent damage to the sensor can occur due to the following circumstances;

- Physical shock.
- Water vapour, condensation etc. Use a water filter to prevent this.
- Sensor is in the unheated state in gas which contains hydrogen sulfide (H₂S) or sulfur dioxide (SO₂).
- Contact with gases which contain halogens like fluorine (F), chlorine (Cl) or bromine (Br). For example: CFC's (chlorofluorocarbon).
- Contact with organic vapours for example: solvents, oil mist, petrol vapour, contact sprays, cleaning sprays, corrosion protection sprays.
- Also damaging are volatile organic substances, for example silicone vapours from sealing compounds, adhesives and greases.
- Use silicone free tubing.

Note: HFT® recommend the unit to be used in conjunction with a suitable filtering method to preserve sensor life.

WARNING: Damage to the sensor due to contamination or condensation is not covered by any warranty.

TROUBLESHOOTING & FAULT FINDING

A Quick Guide in the Event of Problems

If the reading does not fall below 1000ppm after a reasonable purge time, or in the event that your reading does not pass your expected level of oxygen, please try the following;

- 1) Check that the correct 6 mm O.D. purge hoses are used for the quick fit 'leak tight' connections in case air is leaking into the instrument.
- 2) Check the purge gas quality at the source by taking your PurgeEye® 1500 Site directly to the source (i.e. gas bottle with regulator) to verify your purge gas quality as well as ensuring that the connections are not leaking.
- 3) Check the cleanliness of the components being welded. Could there be excessive cleaning material or dirt that might be outgassing?
- 4) Note that oil and grease will outgas and may produce copious quantities of oxygen until all contamination has been purged.
- 5) Check to see whether there is any material in the volume being purged that could be outgassing air or water vapour. If this instrument is being used with a Purging Chamber or Enclosure, check all components inside for cleanliness. For example, a manipulator may have oil or grease filled bearings that will outgas. Such bearings should be thoroughly cleaned and lubricated with graphite.

CUSTOMER SUPPORT & WORLDWIDE CARE

For further information and support, please contact us at;

Internet: www.huntingdonfusion.com

e-mail: hft@huntingdonfusion.com

Telephone: +44 (0) 1554 836 836

Worldwide Offices, Partners and Distributors are listed on our website or contact us and we will direct you to the correct location.



WARRANTY

All products are thoroughly tested to our Quality Control Procedures prior to leaving our manufacturing facility. Should you encounter a problem with your product, please notify us immediately upon receipt.

Huntingdon Fusion Techniques HFT® warrants this product to be free of defects in workmanship and material, with exceptions stated below.

Warranty applies for normal and intended use of the product.

Huntingdon Fusion Techniques HFT® will not be held responsible for any incorrect use of the product.

For further warranty information, please refer to our terms and conditions.

All warranties shall not apply to any product or component which has been repaired or altered by anyone other than Huntingdon Fusion Techniques HFT®.

Huntingdon Fusion Techniques HFT® shall not be liable for indirect, special, incidental or consequential damage or penalties and does not assume any liability of Purchaser, or to others, for injury to persons or property.

This warranty is in lieu of all other warranties, expressed and implied.

E&OE



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'Manufacturer of the Year'
&
Welsh Business Awards
'Exporter of the Year'**



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User Instructions