AirRef

Installation Guide

HA033552 Issue 2

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Legal Information

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Eurotherm Limited, Schneider Electric or any of its affiliates or subsidiaries shall not be responsible or liable for misuse of the information contained herein.

If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

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 the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to observe this information can result in injury or equipment damage.

Safety Notes

⚠ DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See applicable national standards e.g. NFPA70E, CSA Z462, BS 7671, NFC 18-510.

Electrical equipment must be installed, operated and maintained by suitably qualified personnel only

Refer to manual for installation and servicing.

Power down all equipment before starting the installation, removal, wiring, maintenance or inspection of the product.

If on receipt, the unit or any part within is damaged, do not install but contact your supplier.

Do not disassemble, repair or modify the equipment, except as directed in Eurotherm Literature. Contact your supplier for repair.

This product must be installed, connected and used in compliance with prevailing standards and/or installation regulations.

Do not exceed the device's ratings.

Ensure all cables and wiring harnesses are secured using a relevant strain relief mechanism.

Use appropriate safety interlocks where personnel and/or equipment hazards exist.

Always use a properly rated voltage sensing device to confirm power is off.

Failure to follow these instructions will result in death or serious injury.

⚠ CAUTION

UNINTENDED EQUIPMENT OPERATION

If on receipt, the unit or any part within is damaged, do not install but contact your supplier.

If being stored before use, store the AirRef within the specified environmental conditions.

Failure to follow these instructions can result in injury or equipment damage.

China RoHS

China RoHS 2.0

部件名称 Part Name	有害物质 - Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
金属部件 Metal parts	X	O	O	O	O	O
塑料部件 Plastic parts	O	O	O	O	O	O
电子件 Electronic	X	O	O	O	O	O
触点 Contacts	O	O	O	O	O	O
线缆和线缆附件 Cables & cabling accessories	O	O	O	O	O	O

本表格依据SJ/T11364的规定编制。
O: 表示该有害物质在该部件所有均质材料中的含量均在**GB/T 26572**规定的限量要求以下。
X: 表示该有害物质至少在该部件的某一均质材料中的含量超出**GB/T 26572**规定的限量要求。

This table is made according to SJ/T 11364.
O: indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.
X: indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572

Signed (Kevin Shaw, R&D Director): Date:

Hazardous Substances

This product conforms to European **R**estriction **o**f **H**azardous **S**ubstances (RoHS) (using exemptions) and **R**egistration, **E**valuation, **A**uthorisation and Restriction of **Ch**emicals (REACH) Legislation.

RoHS Exemptions used in this product involve the use of lead. China RoHS legislation does not include exemptions and so lead is declared as present in the China RoHS Declaration.

Californian law requires the following notice:

⚠WARNING: This product can expose you to chemicals including lead and lead compounds which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to: http://www.P65Warnings.ca.gov

AirRef Installation Guide

Overview

The AirRef AR100 and the AirRef AR200 units both provide:

- A continuous Reference Air supply to the AP1 Carbon Probe.
- A Burn Off Air (purge) supply to enable the cleaning and / or maintenance of AP1 Carbon Probes, when required.

Note: The activation of the burn off air pump requires an external Burn Off Control switch and external wiring (not supplied).

Both the AirRef AR100 unit and the AirRef AR200 units consist of:

- A wall mounted steel unit with a hinged cover
- Reference Air and Burn Off Air dual scale adjustable flow-meters
- Two diaphragm pumps, one for the Reference Air and one for the Burn Off Air
- Access holes (with vent plugs) for wiring
- Adjustable cable entry glands
- A 2A single pole Miniature Circuit Breaker (MCB)
- External air tube connections for the Reference Air and the Burn Off Air
- A particle filter (connected after the Air Reference Pump)
- A check valve (connected after the Burn Off Air flow-meter), to avoid the furnace atmosphere from contaminating the unit
- A 25 ft / 7.6 m length of air tube (1/8 in / 3.75 mm): for connection of the Reference Air and the Burn Off Air supplies to a probe
- External Burn Off control switch connections, which operate at mains voltage

Installation

The AirRef AR100 unit and the AirRef AR200 unit are both wall mounted.

Installation Requirements

Before installation:

- Make sure that there is a minimum of 200 mm (8 in) of air gap between the unit and the furnace wall
- Locate the AirRef unit as far away from the furnace wall and other heat sources as practically possible without putting the air tube under strain, which can restrict airflow
- Consider operator accessibility when positioning the unit to allow unrestricted viewing of the flow-meters and access to the hose fittings

- The unit must be installed against the wall in the upright orientation

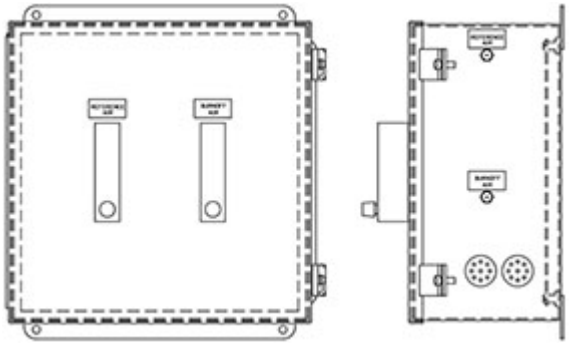

Figure 1 AirRef Mounting Orientation

1. Install the unit to a suitable location / wall.

Note: Use four M6 (1/4 in) screws, or threaded bars, to attach the unit.

2. Open the access door. Use a screwdriver to unscrew the two side clips.
3. Ensure that the mains supply is fully isolated during the installation process.
4. Remove one of the vented plastic bungs closest to the internal mains terminals and fit one of the adjustable cable entry glands provided.
5. Pass the mains supply cable through the gland, allowing sufficient length for connection to the terminals.
6. Ensure the wires to the terminals are not under tension, then firmly secure the cable by tightening the cable gland nut.

Note: The mains power input wires and Protective Earth must never be under tension. Use the supplied cable entry gland to provide sufficient strain relief.

7. Connect the incoming mains supply wires to their corresponding terminal block connections. Torque the screws to 14.2 lb/in (1.6 Nm):

   Live: Terminal 1000
   Neutral: Terminal 1002

   Earth: Terminal GND ⏚

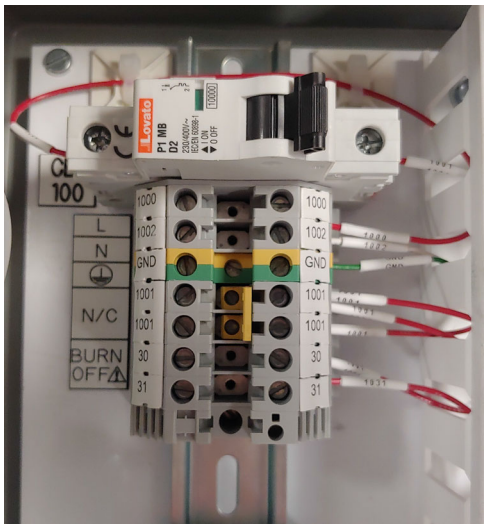

Figure 2 Incoming Mains Supply Wiring

8. Remove the remaining vent plug adjacent to the terminal blocks and fit the second adjustable cable entry gland.

Note: The Burn Off Control wires operate at mains voltage. A suitable Single Pole Single Throw (SPST) switch must be connected (Not supplied / see Specifications).

9. Feed the external Burn off Control switch cable through the gland and connect to terminals 30 and 31 marked “BURN OFF”.
10. Torque the terminal screws to 1.6 Nm (14.2 lb/in).
11. Ensure the wires to the terminals are not under tension, then firmly secure the cable by tightening the cable gland nut.

Note: The Burn Off Control switch cable must never be under tension. Use the supplied cable entry gland to provide sufficient strain relief.

12. Make sure that wires and / or hoses in the unit cannot be trapped by the cover when the cover is closed.
13. Ensure that the 2 A miniature circuit breaker (MCB) is set to ON.
14. Close the front cover and tighten the two side clips. Make sure that the screws are tightened sufficiently so that they cannot be un-tightened by hand.
15. Connect the probe reference air tube to the Reference Air connection on the right side of the unit. Push until the tube touches the connector shoulder.
16. Connect the probe burn off air tube to the Burn Off Air connection on the right side of the unit. Push until the tube touches the connector shoulder.
17. Feed the reference air tube and the burn off air tube to the AP1 Carbon Probe.

Notes:

1. Make sure that the reference air tube and the burn off air tube are correctly secured along their route until they reach the AP1 Carbon Probe.
2. Make sure that the tubes have not collapsed, been kinked or have excessive bends.

18. Connect the reference air tube and the burn off air tube to their connections on the AP1 Carbon Probe.

Note: Please refer to the AP1 Carbon Probe Guide HA031157.

The unit has now been installed to its location / wall, and the reference air and the burn off air tubes have been connected to a probe. Now the air flows must be setup / adjusted.

Filter Replacement

Dependent upon the application, the particle filter (Eurotherm Part Number MA033584) will require replacement if it becomes too dirty, or clogged. If you are using the AirRef within an environment with a lot of airborne contamination, such as a sintering process, it will be necessary to replace the filter more often. When the filter is due to be replaced, you will notice a reduction in available airflow. To double-check if the filter needs replacement, briefly disconnect it to see if the full airflow resumes.

Please contact Eurotherm Limited to order your replacement AirRef particle filter.

Set-up

Reference Air

We recommend a constant flow of Reference Air between 0.2 and 1.0 LPM (0.42 – 2.12 SCFH) is used to maintain the accuracy of the probe. Reference Air should be clean and free from airborne contamination. Compressed air must not be used. If combustion air is used this should be filtered. CHECK AND ADJUST as necessary, at least ONCE PER DAY.

Probe Cleaning

Over 80% of probe issues are due to excessive carbon build up on the probe, which is more commonly described as sooting. This can, however, be reduced by regular probe cleaning using the Burn-Off Air.

Please refer to the AP1 Carbon Probe User Guide HA031157 for more detailed information.

Specifications

Item	AR100	AR200
Power Rating	110 Vac / 60 Hz, 21 W	230 Vac / 50 Hz, 21 W
External Burn Off Switch Minimum Rating	SPST 132 Vac 1 A continuous rating capable of dealing with up to 100 A turn-off spike, due to an inductive load.	SPST 276 Vac 1 A continuous rating capable of dealing with up to 100 A turn-off spike, due to an inductive load.
Weight	9.7 kg (21.4 lb)	
Dimensions	350 mm H x 360 mm W x 213 mm D (13.8 in H x 14.2 in W x 8.4 in D)	
External Fuse Considerations	21 W - If using an external Mini Circuit Breaker (MCB), a D curve type must be used, to avoid any unintentional tripping due to the inductive load	
Reference Air flow	0 to 1.0 LPM (0-2.1 SCFH) at 0.17 to 0.07 Bar (2.5 to 1 PSI)	0 to 0.85 LPM (0-1.8 SCFH) at 0.17 to 0.07 Bar (2.5 to 1 PSI)
Burn Off Air flow	0 to 5.4 LPM (0-11.6 SCFH) at 0.34 to 0.07 Bar (5 to 1 PSI)	0 to 4.59 LPM (0-9.73 SCFH) at 0.34 to 0.07 Bar (5 to 1 PSI)
Protective Earth Wire	Minimum size: 1.3 mm² / 16 AWG	
IP Rating	20	
Maximum Altitude	2000 m (6562 ft)	
Operating Temperature	0 – 50°C (32 – 122°F)	
Operating Humidity	10-95% non-condensing	
Storage Temperature	-10 – 60°C (14 – 140°F)	
Storage Humidity	10-95%, non-condensing	

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As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.

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