Monmouth Scientific

Operating & Maintenance Manual

Circulaire® ATEX Zone 1 / T4 Type **Fume Cupboard**

CT1100EX/CT1400EX

THE MARKET LEADER IN *CLEAN AIR SOLUTIONS*

www.monmouthscientific.co.uk

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For permission requests, please write to:-
Monmouth Scientific Limited,
Units 5 & 5 Kilnside, East Quay, Bridgwater, Somerset, TA6 4DB.
Email: info@monmouthscientific.co.uk
Tel: +44(0)1278 458090

Warning

This cabinet must be used in compliance with these instructions and any repairs or maintenance carried out by qualified personnel.

For parts or service information please contact Monmouth Scientific.

SECTION 1

DESCRIPTION OF THE CABINET

The Circulaire 1100Ex and Circulaire 1400Ex are Atex Zone 1 / T4 type filtration fume cabinets. The cabinets are designed to provide operator and environmental protection.

The cabinets provides an inflow air velocity of >0.5m/sec through the working aperture to provide operator protection. The contaminated air is passed through pre-filters to remove gross particulate and then through deep bed activated carbon main filters to remove chemical contaminates. Finally, the air passes through a HEPA exhaust filter for fine particulate removal before being discharged back to the laboratory.

The airflow is continuously monitored with a vane anemometer attached to the right side of the cabinet to provide a visual indication of safe face velocity.

Separate switches are provided for the fan and integral lighting.

All electrical components are rated for zone 1/ T4 use.

When installed correctly the cabinet complies fully with international standards including BS7989:2001 for filtration fume cupboards.

	***Circulaire* 1100Ex**	***Circulaire* 1400Ex**
External Dimensions	1100mm Wide 825mm Deep 2175mm High	1400mm Wide 825mm Deep 2175mm High
Internal Dimensions	1095mm Wide 650mm Deep 840mm High	1395mm Wide 650mm Deep 840mm High

SECTION 2

INSTALLATION

- The cabinet should be sited in a draught free position
- The cabinet is recirculating and requires no connection to ductwork
- Open the front cover using the key provided, and check that the main Carbon Filters are in place. If filters are not fitted see section 4 for instructions.
- Check the pre-filters are in place by rotating the small plastic catch located inside the enclosure, which will allow the pre-filter retaining frame to be lowered.
- Connect the cabinet to a 230v 50Hz supply. The cabinet is supplied with a 2m mains cable terminated with a standard 13A plug. This can be replaced by an Atex rated plug if required

TESTING / COMMISSIONING

The airflow should be checked using a vane anemometer and the results recorded.

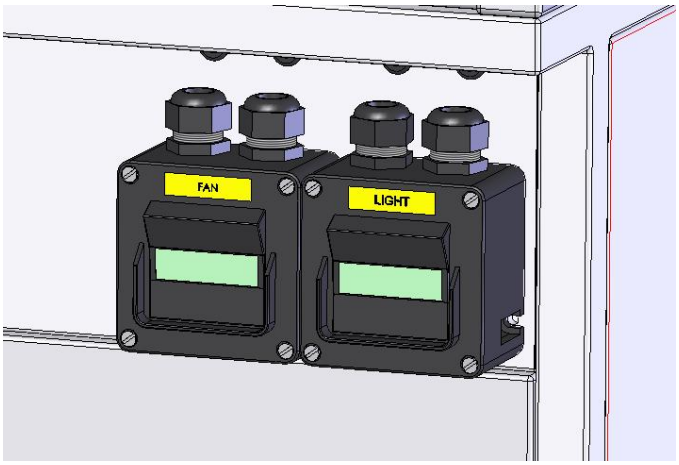
The carbon filters and seals should be checked using a solvent challenge and suitable monitor.

THE CABINET MUST BE TESTED EVERY 14 MONTHS TO COMPLY WITH C.O.S.H.H REGULATIONS.

SECTION 3

OPERATION

The fan and light are controlled by the switches on the front of the cabinet:



The airflow in monitored by the Vaneometer mounted on the side of the cabinet

SECTION 4

FILTERS

Filters concentrate dust, pollutants etc. and care must be taken when changing filters.

IMPORTANT: Personal Protective Equipment must be worn when changing filters including gloves and particulate face mask.

PRE-FILTERS – CHANGING

This may be carried out with the cabinet running to provide additional protection to the operator.

- Rotate the small plastic catch inside the enclosure which will allow the pre-filter retaining frame to be lowered and the filter replaced.

MAIN CARBON FILTERS – CHANGING

IMPORTANT - Check filters to be fitted are the correct grade for intended use. Contact Monmouth Scientific for information if required.

- The cabinet should be turned off whilst changing the main Carbon Filters.
- Open the front panel with the key provided.
- Rotate each filter clamp handles 180° to raise filters.
- Slide filters out and seal in a marked bag for disposal.
- Fit new filters ensuring they are pushed fully in before rotating filter clamp handles to clamp the filter in place.
- Close and lock the front panel.

EXHAUST HEPA FILTER – CHANGING

- The exhaust HEPA filter is mounted on top of the cabinet.
- Remove the 4 screws securing the rear duct to the filter retaining housing
- Remove the 4 screws securing the filter retaining housing.
- The filter can be lifted out and placed in a polythene bag for disposal.
- Apply silicone grease to new filter seals and place in position. Replace the retaining housing and bolt down evenly.
- Replace the screws securing the rear duct

FILTER SELECTION

The main filter can either be HEPA for particulates or activated carbon for gaseous fumes. It is most important that filters fitted are correct for the particular application.

A guide to filter selection is as follows:-
Gaseous fumes – Activated Carbon filters. Different grades are available to improve efficiency and extend filter life.
Particulates – HEPA filters. Circulaire HEPA filters are 99.997% efficient for particulates greater than 0.3 microns. For maximum protection, the safety exhaust HEPA filter should be selected. The exhaust HEPA filter has seals under ambient room pressure to eliminate possible filter bypass from within the cabinet.

Activated Carbon Filters
Standard activated carbon is suitable for a wide range of pollutants including hydrocarbons. Activated carbon can be impregnated with chemicals to neutralise types of chemicals. The list below indicates the types available.

Filter Type	Application	Typical Chemicals
HEPA	Particulates	Asbestos / powders
ACTIVATED CARBON – A/C	Hydrocarbons	Alcohols, Hydrocarbons, General use
ACID	Acid gasses	So_2, HCL, H_2So_4
FORM	Aldehydes	Formalin Glutaraldehyde
SUL	Sulphur compounds	H_2S, mercaptans
AMM	Ammonia	NH_3, NH_4
ETHER	Ethers	
SCHOOLS	Educational, Animal odours	SO_2, H_2SO_4, BR_2, H_2S, NH_3, CCL_4, hydrocarbons

- All grades of activated carbon have general use capability for hydrocarbons.
- Other grades are available for applications not listed above.
- Filters can be manufactured in layers suitable for more than one application.

To determine correct filter type please contact Monmouth Scientific with details of application, volumes, concentrations, temperatures etc.

MAXIMISING FILTER LIFE

Handle minimum volumes of chemicals
Minimise surface area of exposed chemicals to reduce evaporation rates
Cover containers as far as practical
Do not boil off large volumes of chemicals
Minimise use of heat
Acids should be at room temperature and covered as far as practical

CARBON FILTER EFFICIENCIES

Typical filter efficiencies are >99% and this efficiency is maintained for most of the filter life. Filters should be changed when efficiency has reduced to below 90%.

ABSORBTION CAPACITIES

Circulaire cabinets have very large filter capacities, with a typical value of >30% for hydrocarbons.
The cabinets have the following nominal absorption capacities:

Model	Carbon Weight	Hydrocarbon capacity at 30% absorption
Circulaire 1100Ex	2 X 14Kg	8.4Kg
Circulaire 1400Ex	2 X 16Kg	9.6Kg

The weight is approximate to standard activated carbon. Impregnated carbons have higher densities and will increase filter weight and filter capacities.

Contact Monmouth Scientific for absorbtion capacities for different applications.

FILTER PART NUMBERS		
FILTER TYPE / GRADE	**Circulaire 1100Ex**	**Circulaire 1400Ex**
	Pre-filters	
G4 SYNTHETIC	**K-PF0093**	**K-PF0108**
	Carbon Main filters (2 per unit)	
AC	**K-CF0227**	**K-CF0332**
ACID	**K-CF0228**	**K-CF0333**
AMM	**K-CF0231**	**K-CF0336**
CYN	**K-CF0232**	**K-CF0337**
ETHER	**K-CF0233**	**K-CF0338**
FORM	**K-CF0234**	**K-CF0339**
MCH (special blend)	**K-CF0235**	**K-CF0340**
SCHOOLS	**K-CF0236**	**K-CF0341**
SUL	**K-CF0237**	**K-CF0342**
	HEPA Main filters (2 per unit)	
HEPA	**K-HF0201**	**K-HF0202**
	HEPA exhaust filter	
HEPA	**K-HF0156**	**K-HF0200**

SECTION 5

MAINTENANCE

The cabinet should be isolated from the electricity supply before carrying out any maintenance procedures.

CIRCUIT BREAKERS

The fan and the light are protected by Miniature Circuit Breakers mounted inside an Atex rated enclosure inside the lower cabinet.

LIGHTING

An Atex rated fluorescent light is fitted to the inside of the cabinet.
Remove the diffuser to gain access to the fluorescent tube and starter.

FAN

An Atex rated fan is located inside the lower cabinet.
The fan requires no maintenance.

SECTION 6

SERVICING

An annual service is recommended and testing is mandatory under C.O.S.H.H regulations and will include the following points:

- Check / replace pre-filter
- Check and record face velocity readings
- Check airflow monitor
- Check condition of glazing, hinges etc.
- Inspect electrical components, lighting, cables etc.
- Issue test report and airflow certificate.

For parts or service information please contact Monmouth Scientific on: +44 (0) 1278 458090

ExVeritas

1. **ATEX Conformity Certificate**

2. **Equipment intended for use in potentially explosive atmospheres**

3. **Certificate Number** : ExVeritas14ATEX0357-1X

4. **Equipment** : Circulaire 1100Ex Filtration Fume Cabinet

5. **Manufacturer** : Monmouth Scientific Ltd

6. **Address** : Units 5 & 6, Kilnside, East Quay, Bridgwater, Somerset TA6 4DB

7. **This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to. The examination and test results are recorded in confidential report no:** EVL0357

9. **Compliance with the ATEX Essential Health and Safety Requirements, with the exception of those listed in section 18 of the schedule to this certificate has been assured by compliance with:**

EN13463-1: 2009

10. **ExVeritas takes no responsibility for the validity of any information or data supplied by the manufacturer on which parts of the ATEX assessment may be based upon.**

11. **The marking of this equipment or protective system shall include the following:**

Ex II 2 IIB G T4

ASCB(E)

On behalf of ExVeritas

Date: 02.05.14

Sean L Clarke CEng MSc MIET
Certification Manager

ExVeritas

12. **Schedule**

13. **Certificate Number**

ExVeritas14ATEX0357-1X

14. **Equipment Description**

The Circulaire 1100Ex is an ATEX Zone 1/T4 Rated filtration fume cabinet. The cabinet is designed to provide operator and environmental protection. The cabinet provides an inflow of air >0.5m/sec through the working aperture to provide operator protection. The contaminated air is passed through pre-filters to remove gross particulate and then through carbon main filters to remove chemical contaminates. Finally, the air passes through a HEPA exhaust filter for fine particulate removal before being discharged back to the laboratory. All electrical components are rated for Zone 1/T4 use.

The airflow is continuously monitored with a vane anemometer attached to the right side of the cabinet to provide a visual indication of face velocity.

15. **Descriptive Documents**

15.1 **Report No**

EVL0357/1

15.2 **Technical File number**

DIF133

16. **Special conditions of Certification**

All electrical equipment must be suitably certified for its intended hazardous location and installed/inspected in accordance with the latest edition of EN60079-14 and EN60079-17 following installation.
Steps must be taken to ensure equipotential bonding is maintained.
Electrostatically charged pre-filters are not to be installed in the equipment unless appropriate ATEX certification is in place

17. **Essential health and safety requirements**

Covered by application of the standards listed in section 9 of this certificate and the assessment conducted in the test report listed in section 15.1 of this certificate.

ExVeritas

1. **ATEX Conformity Certificate**

2. **Equipment intended for use in potentially explosive atmospheres**

3. **Certificate Number** : ExVeritas14ATEX0357-2X

4. **Equipment** : Circulaire 1400Ex Filtration Fume Cabinet

5. **Manufacturer** : Monmouth Scientific Ltd

6. **Address** : Units 5 & 6, Kilnside, East Quay, Bridgwater, Somerset TA6 4DB

7. **This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to. The examination and test results are recorded in confidential report no:** EVL0357

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12. **Schedule**

13. **Certificate Number**

ExVeritas14ATEX0357-2X

14. **Equipment Description**

The Circulaire 1400Ex is an ATEX Zone 1/T4 Rated filtration fume cabinet. The cabinet is designed to provide operator and environmental protection. The cabinet provides an inflow of air >0.5m/sec through the working aperture to provide operator protection. The contaminated air is passed through pre-filters to remove gross particulate and then through carbon main filters to remove chemical contaminates. Finally, the air passes through a HEPA exhaust filter for fine particulate removal before being discharged back to the laboratory. All electrical components are rated for Zone 1/T4 use.

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Monmouth Scientific Limited
UK Headquarters
Monmouth House,
Peninsula Business Park,
Bridgwater,
Somerset,
TA6 4QB.
+44(0)1278 458090

www.monmouthscientific.co.uk
info@monmouthscientific.co.uk

5 year warranty* *Terms & Conditions Apply

British Design & Manufacture

nqa ISO 9001 QUALITY MANAGEMENT

UKAS MANAGEMENT SYSTEMS 015