MIRION TECHNOLOGIES

PREMIUM ANALYSE

C ionix™

Installed Tritium Monitor

Installed tritium monitor for workplace monitoring, decomissioning, stack release or other applications.

CHARACTERISTICS

- **Performance**
  - Self-checking
  - Continuous measurement
  - Integrated sound and light alarms
  - Response time below 75 seconds
  - Detection of tritium from 10 kBq/m³
  - Possibility for automatic γ compensation
- **Simple**
  - Ready to install
  - Intuitive interface
  - Transmission and alarms possible by dry contacts, Modbus Ethernet,...
- **Easy maintenance**
  - Minimal intervention
  - Quick change components
  - Simple γ source verification of system

DESCRIPTION

The monitor C ionix is used to measure continuous activity of tritium and other β emitters in a gas for all applications of workplace monitoring, decomissioning, stack release or other applications.

Wall mounter, the C ionix monitors contain, in a small package, a complete tritium monitoring channel that can be combined to a compensation channel.

As an option, the monitor can be used to measure separately and continuously the HTO activity of gases containing other β emitters such as noble gases.

It completes our range of monitors from the portable β ionix through the mobile M ionix by offerind an installed solution ready to be connected in your plant.

TECHNICAL CHARACTERISTICS

The C ionix monitors are available in several versions:

The versions below have been developped for continuous measurement of tritium activity and other β emitters in gases.

Measurement characteristics in laboratory conditions (for tritium)	C ionix 3 - BLC Measurement with automatic gamma compensation	C ionix 3 - BMM Measurement without automatic gamma compensation	C ionix 3 - BMC Measurement with automatic gamma compensation
Measurement range	10 kBq/m³ to 10 TBq/m³ 0.27 µCi/m³ to 270 Ci/m³	3.2 kBq/m³ to 3.2 TBq/m³ 86 nCi/m³ to 86 Ci/m³	3.2 kBq/m³ to 3.2 TBq/m³ 86 nCi/m³ to 86 Ci/m³
Limit of detection (2σ) = decision threshold **Limit of detection (4σ)**	45 kBq/m³ 90 kBq/m³	10 kBq/m³ 20 kBq/m³	15 kBq/m³ 30 kBq/m³
Precision	5% of the reading ± 45 kBq/m³	5% of the reading ± 10 kBq/m³	5% of the reading ± 15 kBq/m³
Variation max	45 kBq/m³ / year	10 kBq/m³ / year	15 kBq/m³ / year
Noise (2σ)	± 45 kBq/m³	± 10 kBq/m³	± 15 kBq/m³
Response time	< 90 sec at 90% of scale	< 75 sec at 90% of scale	
Ionization chamber			
Volume	2 x 195 cc	1 x 665 cc	2 x 665 cc
Nominal flow	1 L/m	4 L/m	
Ionization voltage	160 VDC		

The versions below can be used to measure separately and continuously the HTO activity of gases containing other β emitters such as noble gases.

Measurement characteristics in laboratory conditions (for tritium)	C ionix 3 - BLH HTO measurement with automatic gamma compensation	C ionix 3 - BMH HTO measurement with automatic gamma compensation
Measurement range	10 kBq/m³ to 10 TBq/m³ 0.27 µCi/m³ to 270 Ci/m³	3.2 kBq/m³ to 3.2 TBq/m³ 86 nCi/m³ to 86 Ci/m³
Limit of detection (2σ) = decision threshold **Limit of detection (4σ)**	60 kBq/m³ 120 kBq/m³	20 kBq/m³ 40 kBq/m³
Precision	5% of the reading ± 60 kBq/m³	5% of the reading ± 20 kBq/m³
Variation max	60 kBq/m³ / year	20 kBq/m³ / year
Noise (2σ)	± 60 kBq/m³	± 20 kBq/m³
Response time	< 90 sec at 90% of scale	
Ionization chamber		
Volume	2 x 195 cc	2 x 665 cc
Nominal flow	2 L/m	8 L/m
Ionization voltage	160 VDC	

Operating conditions

- Operating temperature: 0 to 40°C (32 to 104°F)
- Influence of temperature: 0.3% /°C for a variation of the ambiant temperature <3°C / hour
- Humidity: 5 to 95% rel.
- Influence of humidity: ± 1 % of the measurement from 10 to 90% of relative humidity
- Influence of atmospheric pressure: 0.1 %/mbar, hence ± 5 % of the measurement from 930 to 1030 mbar
- Protection index: IP 54

COMMON CHARACTERISTICS

Each unit integrates a DT IONIX digital touch interface allowing local viewing of data through an intuitive menu:

- Digital display of volume activity
- Archiving of 32 days of measurements
- Data extraction and system update via USB stick
- Configuration of 4 programmable alarm thresholds
- Graphical plot of measurements and alarms from 8 minutes to 8 days
- Adjustment and monitoring of the flow rate with low flow detection possible
- Choice of volumetric activity among 15 units, with 4 customizable ones (Bq/m³, RCA, LPCA, Sv/m³,...)
- Visual and audible signalling of the exceeding of the pre-alarm (orange) and alarm (red) thresholds and of the malfunctioning fault

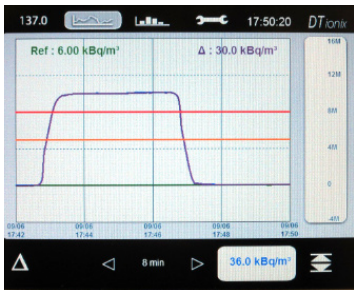
- Overall dimensions (with indicators): W 475 x h 780 x d 330 mm
- Weight (max.): 36 kg (79 lb)
- Power supply:
  - Option “2”: 24 VDC
  - Option “V”: 85–264 VAC, 50/60 Hz
- Max. power:
  - Option “2”: 60W
  - Option “V”: 80W
- Electrical protection
  - Option “2”: 6A fuse
  - Option “V”: differential circuit breaker 6A curve C

- Possible options:
  - Remote signalling beacon
  - Wall mounting on quick mounting plate
  - Measurement transmission via Modbus Ethernet (x2)
  - Gas I.O via self-sealing STAUBLI or Swagelok fittings
  - Signalling of alarms and faults in light and sound status
  - Process output with dry contact outputs, 4/20mA outputs,...
  - High leak tightness (measurement characteristics equivalent to BMM version)

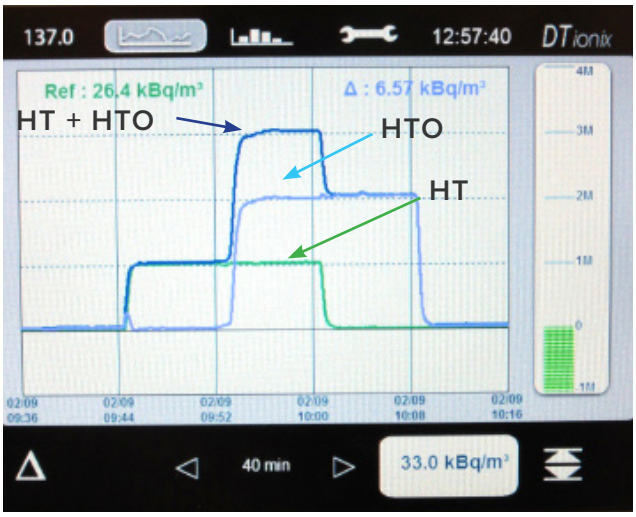
TRITIUM RESPONSE EXAMPLES

- Measured volumetric activity: 100 kBq/m³ on a C ionix 3 - BMM

- Measured volumetric activity: 10 MBq/m³ on aC ionix 3 - BLC



- Measured volumetric activity: 3 MBq/m³ on a C ionix 3 - BMH



UNIT CONFIGURATION AND PART NUMBERS

	Options choice	
Measurement monitor		C IONIX 3 - BLC - 0 - 00 - 00 - FA - F C IONIX 3 - BLH - 0 - 00 - 00 - FA - F C IONIX 3 - BMM - 0 - 00 - 00 - FA - F C IONIX 3 - BMC - 0 - 00 - 00 - FA - F C IONIX 3 - BMH - 0 - 00 - 00 - FA - F C IONIX 3 - BME - 0 - 00 - 00 - FA - F
Power distribution	24V power supply AC power supply	C IONIX 3 - BXX - 2 - XX - XX - FA - F C IONIX 3 - BXX - V - XX - XX - FA - F
Alarms	Without light and sound Local alarms (G / R / O + sound) External beacon connector	C IONIX 3 - BXX - X - 0X - XX - FA - F C IONIX 3 - BXX - X - YX - XX - FA - F C IONIX 3 - BXX - X - XB - XX - FA - F
Connexions	Process outputs (dry-contacts, 4-20mA, flow input) Modbus TCP-IP	C IONIX 3 - BXX - X - XX - PX - FA - F C IONIX 3 - BXX - X - XX - XM - FA - F
Wall fixing	Fixed system with STAUBLI connectors Fixed system with SWAGELOK INCH connectors Mobile system without wall plate (with handles & clip fixing) Lock	C IONIX 3 - BXX - X - XX - XX - FA - F C IONIX 3 - BXX - X - XX - XX - IA - F C IONIX 3 - BXX - X - XX - XX - AA - F C IONIX 3 - BXX - X - XX - XX - FA - F
Version	English French	C IONIX 3 - BXX - X - XX - XX - FA - E C IONIX 3 - BXX - X - XX - XX - FA - F
Reference example	C ionix monitor full option with automatic gamma compensation	C IONIX 3 - BMC - V - YB - PM - FA - F

Accessories	
Wall plate	ACC PLM
Fixed alarm beacon	CX3 ACC BAL F
Gas exhaust with silencer	ACC ARG SIL
RAC SWA 1/4RT gas exhaust + filter	ACC ARG S4F
Gas exhaust for 8 mm hose	ACC ARG S08
Gas exhaust for 6 mm hose	ACC ARG S06
Mobile frame for 1 C ionix - BXX	CX3 ACC CHM 01
Mobile frame for 2 C ionix - BXX	CX3 ACC CHM 02
Table frame for 1 C ionix - BXX	CX3 ACC CHM TAB

Spare parts	
High leak tightness pump assembly	CX3 SP BTR P6000

Consumables	
24V pumps 5,5 Lpm (x1*)	CX3 SP PPE
IP 54 foam filter (x2*)	SP 60715 182
70m³/h axial fan (x1*)	SP 8414N
8 m³/h axial fan (x1*)	SP 412F
8 m³/h axial fan mounted on support (x1*)	SP 412F P
2µm PTFE filter (x1*)	CX3 SP FE 4

* quantity needed for annual maintenance of monitor

CONTACT US

Mirion Technologies (Premium Analyse)
Phone: +33 (0)3 87 51 31 75
Email: contact@premium-analyse.fr

PREMIUM Analyse
always one idea ahead

DOC14351EN-B

MIRION TECHNOLOGIES
www.mirion.com