

# PYCKO SCIENTIFIC LIMITED

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Your Alternative  
To The Obvious

## Portable Tritium Monitor - $\beta$ ionix

**SMALLER, LIGHTER,  
MORE SENSITIVE**



The portable monitor,  $\beta$  ionix is intended for real-time Tritium activity monitoring and other Beta emitters in ambient air.

Due to its very high sensitivity, its ergonomics and its reliability, the  $\beta$  ionix portable monitor provides the radiation levels to your teams on dismantling, construction, process controls, surveillance of premises etc.

Ready for use, the portable monitor offers the most advanced features, such as: graphical presentation, archiving of data, the postponement of the alarms, etc.

The  $\beta$  ionix portable monitor is made in 2 versions :

- A simple measurement with a single ionization chamber of 660cc
- A real time gamma compensated version with 2 ionization chambers of 300 cc

**TRITIUM DETECTION  
FROM  
15 KBQ/M3**

### Applications

- Radioprotection
- Environmental survey
- Laboratory
- Decommissioning

#### ✓ HIGH PERFORMANCE

sensitivity – limit of detection from 15 kBq/m<sup>3</sup>

response time under 60 seconds

real time measurement

#### ✓ SIMPLE

intuitive user interface

easy and quick to set up

simple maintenance

#### ✓ RELIABLE

performance validated by the CTHIR Laboratory

precise and stable

#### ✓ EASY to USE

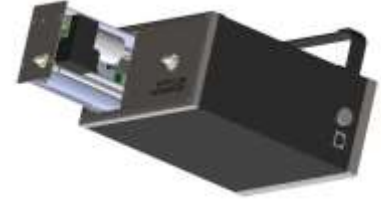
colour touch screen, graphical display

light and robust

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## Functions

- manual gamma compensation or automatic compensation of gamma,
- choice and ability to personalize units used (Bq/m<sup>3</sup>, Ci, RCA, LPCA, DAC...),
- programmable pre alarm and alarm levels,
- network communication by ModBus/TCP-IP
- autonomy : 6 hours ; to recharge its batteries : 2 hours
- weight: 6 kgs
- dimensions: 210 x 111 x 235mm (W x H x L)
- USB output - 32 days archive of all data with the ability to download to a spreadsheet package.
- graphical presentation giving historical data from the last 8 minutes up to the last 8 days.



## Performances (for tritium)

	<b>β ionix 3 – MES</b> Portable tritium monitor with manual gamma compensation	<b>β ionix 3 – CMP</b> Portable tritium monitor with automatic gamma compensation
<ul style="list-style-type: none"> <li>• Measurement range</li> <li>• Limit of detection</li> <li>• Precision</li> <li>• Stability</li> <li>• Zero offset</li> <li>• Noise</li> <li>• Response time</li> <li>• Influence of temperature</li> <li>• Influence of atmospheric pressure</li> <li>• Influence of humidity</li> </ul>	2.5 kBq/m <sup>3</sup> to 2.5 GBq/m <sup>3</sup> 15 kBq/m <sup>3</sup> 5 % of the reading ± 15 kBq/m <sup>3</sup> 25 kBq/m <sup>3</sup> / year ± 15 kBq/m <sup>3</sup> ± 12.5 kBq/m <sup>3</sup> < 60 sec à 90 % of full scale 0.3 %/°C of the reading from 8 to 38 °C 0.1 %/mBar, hence ± 5 % of the reading from 930 to 1030 mbar ± 1 % of the reading from 10 to 90 % relative humidity	7 kBq/m <sup>3</sup> to 7 TBq/m <sup>3</sup> 25 kBq/m <sup>3</sup> 5 % of the reading ± 35 kBq/m <sup>3</sup> 50 kBq/m <sup>3</sup> / year ± 35 kBq/m <sup>3</sup> ± 25 kBq/m <sup>3</sup> < 75 sec to 90 % of full scale 0.3 %/°C of the reading from 8 to 38 °C 0.1 %/mBar, hence ± 5 % of the reading from 930 to 1030 mbar ± 1 % of the reading from 10 to 90 % relative humidity
<b>General Characteristics</b> <ul style="list-style-type: none"> <li>• Operation temperature</li> <li>• Humidity</li> </ul>	5 to 40 °C from 5 to 95 % rel	5 to 40 °C from 5 to 95 % rel
<b>Ionization Chambers</b> <ul style="list-style-type: none"> <li>• Volume</li> <li>• Nominal flow rate</li> <li>• Standard coefficient of response</li> <li>• Ionization voltage</li> </ul>	660 cc from 2 to 4 l/m 72 540 (Bq/m <sup>3</sup> )/fA 160 VDC	2x 300 cc from 1.5 to 3 l/m 151 560 (Bq/m <sup>3</sup> )/fA 160 VDC

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## Calibration and response to tritium

The tests are performed in our calibration laboratory based on the **standard NF EN 60761-1 and -5**

We can perform the following tests :

- An estimation of the limit of detection of the measurement chamber which is determined from the statistical fluctuation of the background noise level in a known environment
- The determination of the conversion coefficient (calibration factor) for tritium (Bq/m<sup>3</sup>)/fA using a standardized tritium gas source.
- Verification of the response with a source of standardized tritium gas.
- Verification of linearity at 3 points
- Extended linearity test at 7 points
- Verification of the limit of detection at 8 points
- Estimation of the measurement response time.
- If necessary, a measure of the response to a 133Ba source used as a reference for the conformity tests performed at the end of fabrication.

example of the response  
 $\beta$  ionix 3 - MES  
Volume activity measured  
100 kBq/m<sup>3</sup>



example of the response  
 $\beta$  ionix 3 - CMP  
Volume activity measured  
100 kBq/m<sup>3</sup>



We are available for consultation on your calibration requirements.



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## References

### Portable monitor without automatic compensation

With a single ionization chamber of 660 cc

### Portable monitor with automatic $\gamma$ compensation

With 2 ionization chambers of 300 cc

BIONIX 3 - b b c

BIONIX 3 - M E S

BIONIX 3 - C M P

### Accessories

External alarm beacon

Transport case

Shoulder Strap

BIS ACC - BAL - P

BT3 ACC - CASE

BT3 ACC - STRAP

### Spares

Pump 12V for pump rack

Pump rack

Table charger for Bionix

USB key for data recording

Battery 10.8 V - 8.7Ah

SP - BT3 - PPE

SEP - BT3 - PPE

BT3 ACC - CHT

BT3 ACC - USB

BT3 ACC - BAT

### Consumables

Epoxy filter - 0.9  $\mu$  (lot of 5)

Epoxy Filter - 0.9  $\mu$  (lot of 100)

BTI ACC - FLT1

BTI ACC - FLT100

### Services

BETA IONIX - User training

BETA IONIX - Annual Maintenance

BETA IONIX - Electronic calibration

BETA IONIX - Tritium Gas Calibration

B IONIX - FORMATION

BT3 - MNT ANN

BIONIX - CAL

Please ask