



## GAMMA IMAGING

# iPIX™

*Ultra Portable Gamma-Ray Imaging System*

iPIX is a unique gamma imager that quickly locates and identifies low level radioactive sources from a distance while estimating the dose rate at the measurement point in real time.



## FEATURES

- Complete tool for in situ gamma imaging, saving time, cost and dose
- Real-time acquisition and immediate display
- Very light weight 2.5 kg
- Excellent spatial resolution for localization of gamma-ray emitters
- High detection sensitivity even at low energies
- IP65 rated, fully decontaminable
- Battery, POE or AC powered
- Remote control and operation
- Single Ethernet cable between tablet PC and camera (up to 80 m long)

## RELATED PRODUCTS

- Flashlight and Handle
- iPIX-NID (Nuclide Identification)
- Automatic Laser Meter
- Motorized tripod including New Pan & Tilt, tripod cable and case for remote operations and panoramic automatic mode

## DESCRIPTION

It is the ideal tool to map a radioactive area before entering the zone, thus reducing the dose exposure (ALARA) during standard operation or decommissioning.

iPIX is also the appropriate instrument to detect any suspicious radioactivity in security and safeguard applications, as well as for emergency situations such as Fukushima.

iPIX can be complemented with options that connect directly on its back panel requiring no additional cable to the remote computer.



## PHYSICAL CHARACTERISTICS

### Energy range – 30 keV to 1332 keV

- Pixelized CdTe detector with 256x256 acquisition matrix

### Detector sensitivity

- Less than 30 seconds to detect Am-241 generating 25 nSv/h incremental dose-rate above background at iPIX position.
- Less than 30 seconds to detect Cs-137 generating 2 μSv/h incremental dose-rate above background at iPIX position.

### Field of view

- 48.8° with rank 13 / 2 mm thickness blue mask
- 46.4° with rank 7 / 4 mm thickness yellow mask
- 41.4° with rank 7 / 8 mm thickness red mask

### Spatial resolution\*

- 2.5° with rank 13 / 2 mm thickness blue mask
- 6.0° with rank 7 / 4 mm thickness yellow mask
- 5.0° with rank 7 / 8 mm thickness red mask

### Maximum dose rate (Cs-137)

- Performance linear up to 10 Sv/h (1000 R/h)
- Battery life – up to 4 hours per replacable batteries

## ENVIRONMENTAL CHARACTERISTICS

### Shocks

- Resist to 60 cm / 2 ft vertical drop

### Vibrations

- 2 g between 10 Hz and 33 Hz during 15 minutes

### Operating temperature

- -10 °C to 45 °C (14 °F to 113 °F)

### Humidity

- 0 to 93% at 35 °C

### IP65



## Dimensions and weight

- 2.5 kg (6.2 lb) with battery
- length – 188.5 mm (7.4 in.)
- height – 90 mm (3.5 in.)
- width – 90 mm (3.5 in.)

## Power supply – choice of:

- direct power supply 90-260 v, 47-63 Hz
- rechargeable battery
- power over ethernet (POE)

## Communication 10 /100 Mbps Ethernet

## FUNCTIONAL CHARACTERISTICS

### Functional system Includes:

- Real-time portable Gamma-ray imaging system
- Mask #2 yellow (rank 7 / 4 mm thick) for medium-low energies and background < 10μSv/h
- 2 m (6 ft) and 10 m (32 ft) Ethernet cables
- Software
- Fully rugged convertible notebook
- Manual Tripod
- Dedicated transport case
- POE injector
- USB key
- Bumpers and handle
- User Manual
- Power cables



### Computer

- Processing Unit – Intel® Core™ i5 vPro™ Technology
- Standard Software – Based on Windows® 7 / 64-bit operating
- Data Recording – Gamma /video images may be stored on disk, printed or transferred via a network
- AC Adapter (90 W, 100-240 V ac, 50 / 60 Hz)
- Li-Ion smart battery (8700 mAh) (up to 5 hours of battery life)

# IPIX | ULTRA PORTABLE GAMMA-RAY IMAGING SYSTEM

## DESCRIPTION

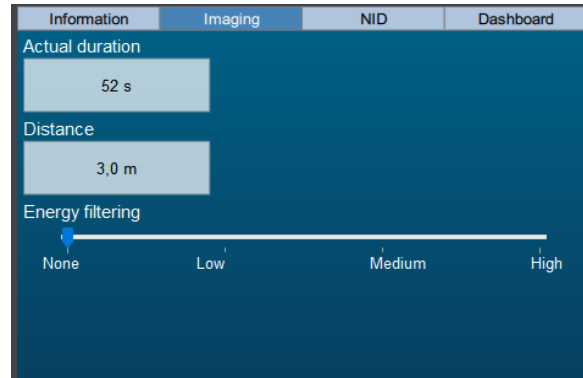
iPIX is a real-time ultra-portable gamma-ray imaging system mostly designed for in situ gamma measurements to locate radioactivity at nuclear sites. When planning for maintenance or decommissioning operations, it can be used to provide radiation intensity maps of the area.

During radiological accidents, reactor outages or even routine area surveys where radiological conditions are subject to change (e.g., near piping), iPIX can help find radiological hot spot locations and quickly determine the boundaries of contaminated areas.

iPIX requires very little shielding while maintaining an excellent signal to noise ratio, thanks to the rotating coded mask able to subtract background in the field of view. This translates into a lightweight device with a compact design that can easily be deployed and transported in the field. The camera can be installed on a standard or motorized tripod that allows remote positioning of iPIX to focus on the area of interest.

iPIX software includes a 3-Band energy discriminator that can be used in re-processing mode to generate focussed imaging and differentiate energies related to multiple hot spots.

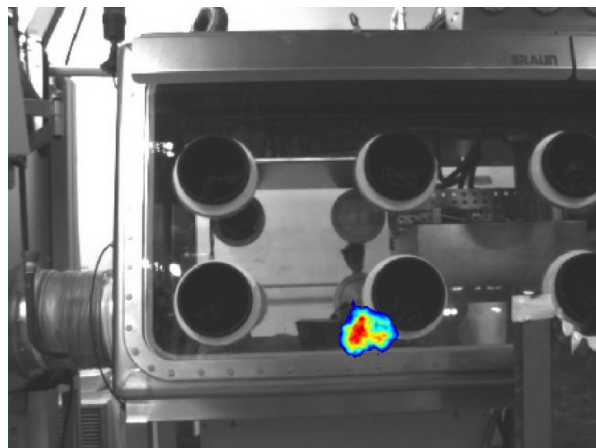
This greatly helps to position adequately bio protection with just the necessary quantity and where it is really needed minimizing the overall preparation workload.



## EXAMPLES OF REAL LIFE APPLICATIONS WITH IPIX



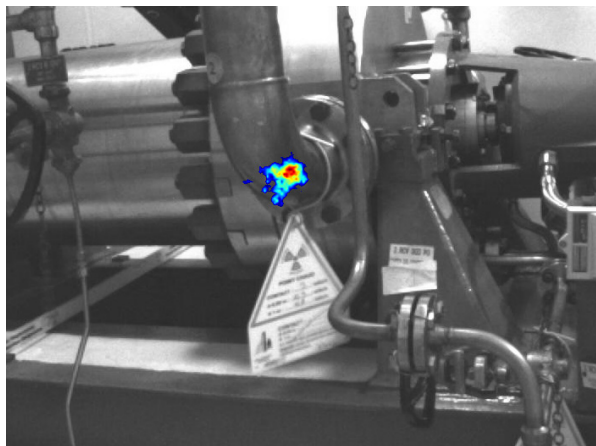
Container contamination check



Contamination check on glove box



Hot spot localization on drums



Hotspot detected while surveying piping

OPTIONS AND ACCESSORIES

Additional masks

• Mask #1 - Blue, rank 13 / 2 mm thick for very low energies and low background < 500 nSv/h



• Mask #3 - Red, rank 7 / 8 mm thick for high energies and background > 10 µSv/h



Additional cables

• Ethernet cable: 50 m (160 ft) or 80 m (256 ft) on a reel



Additional rechargeable battery for iPIX imager

• Provides additional 4 hours battery life per battery



Automatic Laser Meter

Add-on industrial meter that measures distances from 0.5 to 10 meters with 0.1 meter accuracy. It automatically feeds the software with distance between measured object and camera. It is either permanently attached to side of iPIX or temporarily clipped via accessories plate with iPIX-NID.

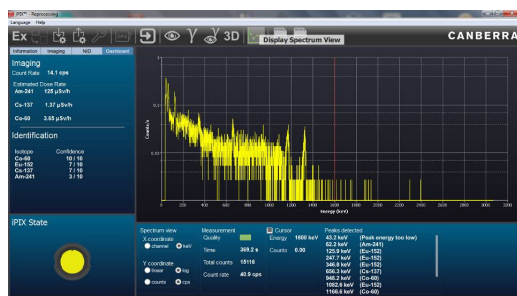
- Operating temperature: -10°C to +50°C
- IP65
- Weight: 400 g or 510g depending on mounting system



iPIX-NID (Nuclide Identification)

It consists of a 1 cc CZT with DENAL open collimator that mimics iPIX Field of View. iPIX-NID is fixed and secured to iPIX via accessories plate without the need of any tool. Thus, it can be used only when necessary and it facilitates transport to location of use.

It communicates via iPIX back panel and provides the user with a comprehensive list of identified radio-nuclides with confidence level. Software integrates a dedicated window that displays the spectrum for users who require a bit more than a simple NID list. Radionuclides libraries can be edited to define appropriate list toward application to serve.



## iPIX-NID (Nuclide Identification)

- Detector:
  - CZT 10x10x10 mm with 30 keV to 3.0 MeV energy range
  - Resolution: < 2.5% FWHM at 662 keV
  - Maximum throughput: 30,000 c/s
  - Channel number: 4096
  - Differential non linearity: < +/-1%
- Operating temperature: 0°C to +40°C with slightly degraded performances in -10°C to 0°C range.
- IP54
- Weight: 2.5 kg

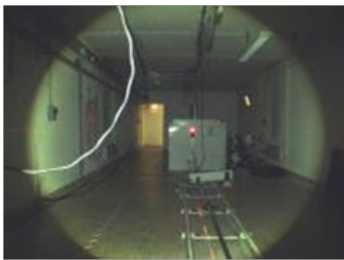
## Flashlight & Handle

Handle is mounted on accessories plate and helps to carry iPIX with iPIX-NID and accessories.

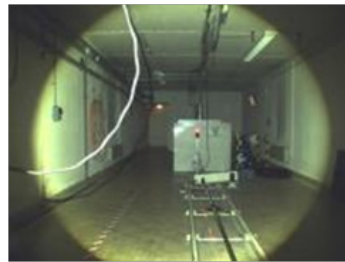
Flashlight is mounted on Handle. It is self-powered with 4 AAA alkaline batteries or NiMH rechargeable batteries.

It supports acquisitions in dark areas with 2 modes: ECO (250 lm – 220 meters) and POWER (450 lm – 300 meters)

- Operating temperature: -20°C to +40°C with slightly degraded performances in -10°C to 0°C range.
- IPX4
- Weight: 175 g with batteries



*ECO Mode*



*Full Power*



*Flashlight & handle*

## New Pan & Tilt

Able to support additional iPIX-NID weight

Mandatory for Panoramic mode in which user simply selects the range of angle he needs imaging coverage and iPIX software automatically define acquisition steps to ensure good enough overlap between each measurement



## ORDERING REREFENCES

### Base Models

- EM106849: iPIX KIT (French)
- EM106850: iPIX KIT (Europe)
- EM106851: iPIX KIT (USA)
- EM106852: iPIX KIT UK

### Includes

- Real-time portable Gamma-ray imaging system
- Mask #2 (rank 7 / 4 mm thick)
- 2 m (6 ft) and 10 m (32 ft) Ethernet cables
- Software
- Fully rugged convertible notebook
- Manual Tripod
- Dedicated transport case
- POE injector
- USB key
- Bumpers and handle
- User Manual
- Power cables



*iPIX-NID full option*

### Options and Accessories

- EM96796: Mask #1, rank 13 / 2 mm thick for low energies
- EM96798: Mask #3, rank 7 / 8 mm thick for high energies
- EM96797: Mask #2, rank 7 / 4 mm thick for low-medium energies
- EM107723: iPIX-POE Injector for Europe
- EM107724: iPIX-POE Injector for UK
- EM107725: iPIX-POE Injector for US
- EM98505: 50 m (160 ft) Ethernet cable
- EM98504: 80 m (256 ft) Ethernet cable
- EM106383: Motorized tripod including Pan & Tilt, tripod, cable and case for Europe.
- EM107810: Motorized tripod including Pan & Tilt, tripod, cable and case for UK.
- EM107809: Motorized tripod including Pan & Tilt, tripod, cable and case for US
- EM106384: iPIX-NID including Collimated CZT detector, iPIX-Rugged-Handle, accessories plate, cables and case
- EM106385: iPIX-Rugged-Handle
- EM106386: iPIX-Flashlight
- EM106387: iPIX-Laser meter including iPIX adaptor jig
- EM106848: iPIX-Laser meter-NID including iPIX-NID adaptor jig
- EM95555: Additional battery for iPIX imager

**CANBERRA**