

BOMO

The BOMO unit is a multitasking two-step device designed for the detection and measurement of radioactive contamination, BETA and GAMMA, on potentially exposed personnel. It has been specifically designed for controlled areas.

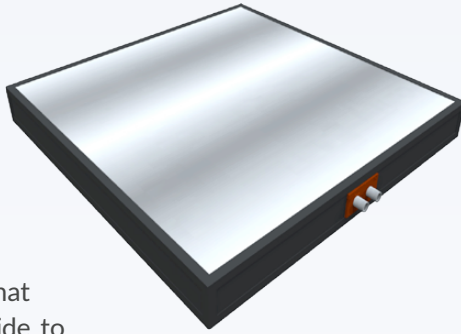


It includes 21 solid detectors (without gas) distributed as: 14 + 1 plastic scintillation detectors designed to measure beta particles and 6 plastic scintillation detectors designed to measure gamma radiation, which work autonomously and independently, allowing to perform simultaneous measurements with different alarm levels.

Its management is fully automated. The equipment has sensors that detect when a person enters the portal, interrupting the background reading and initiating automatically (when it detects that it is correctly positioned) a thorough examination of the subject.

Detectors:

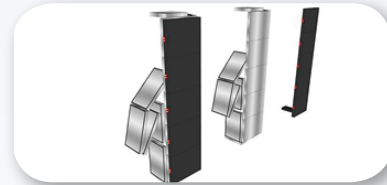
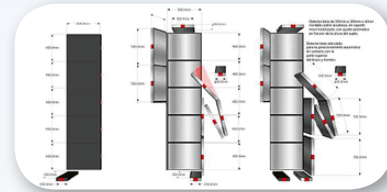
The type of detector that the BOMO incorporates is plastic scintillation for beta and gamma. The beta detector consists of a thin layer (0.5mm / 0.25mm) of transparent material (plastic) doped with a sensitive organic molecule (POPOP: p-bis [2- (5-phenyloxazolyl)] benzene). This layer is attached to a block of PMMA (Polymethylmethacrylate) that serves as a light guide to the photomultiplier (integrated inside). The entry window is aluminized with mylar (0.9mg / cm² or 2.7mg / cm²).



The gamma detector consists of a shell of transparent material (plastic) doped with a sensitive organic molecule (POPOP: p-bis [2- (5-phenyloxazolyl)] benzene). The radiation is absorbed by the shell, mostly through the Compton effect, due to the low density and Z-value of the organic materials.

Characteristics:

Fast, low density and Z-value. High output power.



Applications:

Detection of particles. Gamma detection. Beta detection.

Each detector has its own HV source and electronics in order to separate the performance of each detector. This allows to disconnect a detector if malfunctioning is detected, keeping the rest of the equipment 100% functional. This is one of our competitive advantages that makes HSS stand out over the rest of our competitors.

Voice notifications:

A voice synthesizer module has been incorporated to allow the user to personalize the messages that will be heard by the loudspeaker.

Through this tool user can write a voice message for each of the different events available in the application, and indicate how many times it should be played.

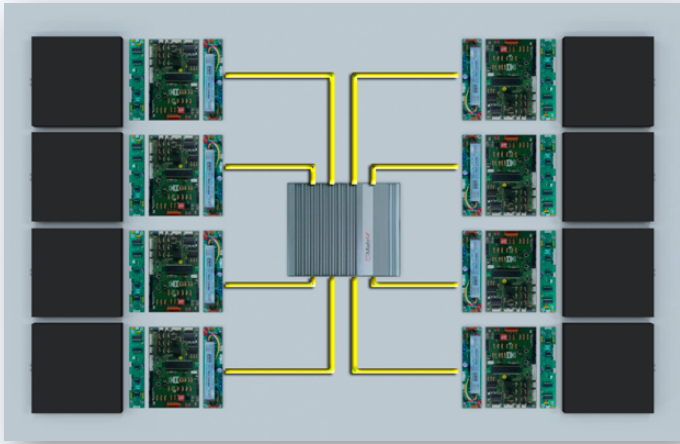
User can also set the dictation speed and choose between different voices available (male and female).

MENSAJES DE VOZ			
PÁGINA 1		PÁGINA 2	
EVENTO	TEXTO	REPETIR	
AL INICIAR LA APLICACIÓN	EQUIPO INICIÁNDOSE	0	ESCUCHAR
DIAGNÓSTICO DE COMUNICACIONES:	REALIZANDO CHEQUEO DE COM	0	ESCUCHAR
CHEQUEO CONTROLADORA	COMPROBANDO CONTROLADOR	0	ESCUCHAR
DIAGNÓSTICO SUPERADO:	TEST EN CONTROLADORA # COR	0	ESCUCHAR
DIAGNÓSTICO NO SUPERADO:	ERROR EN CONTROLADORA #	0	ESCUCHAR
MODO DE OPERACIÓN SELECCIONADO:	MODO # SELECCIONADO	0	ESCUCHAR
PREPARANDO FONDO:	PREPARANDO MEDIDA DE FONDO	0	ESCUCHAR
INICIANDO FONDO:	INICIANDO MEDIDA DE FONDO	0	ESCUCHAR
FONDO COMPLETADO:	FONDO COMPLETO	0	ESCUCHAR
SUJETO APROXIMÁNDOSE DURANTE FONDO:	PASE, POR FAVOR	0	ESCUCHAR
SUJETO EN EL INTERIOR DURANTE FONDO:	ESPERE, POR FAVOR	0	ESCUCHAR
PREPARANDO CONTAJE:	SE VA A INICIAR LA MEDIDA	0	ESCUCHAR
SUJETO APROXIMÁNDOSE DURANTE CONTAJE:	PASE, POR FAVOR	0	ESCUCHAR
CUENTA ATRÁS DURANTE CONTAJE #	#	1	ESCUCHAR
CONTAJE FINALIZADO:	SALGA, POR FAVOR	0	ESCUCHAR

VOZ SELECCIONADA:	VELOCIDAD:
Garmen	VELOCIDAD 3
GUARDAR	RESTAURAR
	CERRAR

The computer centralizes communications with the controller cards associated with each detector. These manage the high voltage modules and pre-amplifiers and are responsible for the data acquisition task.

All the electronic adjustments, corresponding to the acquisition (thresholds, gain, high voltage, etc.), are made through the presence of digital potentiometers controlled from the tools available in the software itself.



AJUSTE ELECTRONICO

	THRESHOLD	GANANCIA	HV	FACTOR HV	SENSOR HV	CPS	CLK
DET#1	2500	500	750	1	828	183	1
DET#2	2500	500	800	1	830	201	1
DET#3	2500	500	800	1	833	141	1
DET#4	2500	500	780	1	792	172	1
DET#5	2500	500	780	1	802	186	1
DET#6	2500	500	890	1	913	254	1
DET#7	2500	500	850	1	898	130	1
DET#8	2500	500	750	0.965	763	191	1

-
+
N° COL.: 100
NORMAL
V MIN.: 100
V MAX.: 400
CPS
HV

MEDIA: 170.22
V. MÁX: 306
V. MIN: 77
σ: 42.17
Δ: 229

D1
D2
D3
D4
D5
D6
D7
D8
TODOS
NINGUNO

GUARDAR
INFORME
RESTAURAR
CERRAR



Calibrations:

The equipment can be calibrated to report activities. For this, a module is available to register patterns (calibration sources), which will be used in the calibration process.

Each zone is calibrated individually, and even different patterns can be used in each of them.

PATRONES

PATRONES EXISTENTES

NOMBRE DEL PATRÓN:

FECHA DE EMISIÓN:

ISÓTOPO: PERÍODO (DÍAS):

ACTIVIDAD A FECHA DE EMISIÓN:

ACTIVIDAD A FECHA DE HOY:

GUARDAR
ELIMINAR

CERRAR

Special Features:

- Detectors totally independent for each type of radiation. 21 detectors (6 for gamma and 15 for beta detection).
- Each detector is configurable via software by the operator to define its operating energy (beta or gamma), zones, alarms, cancellation of a specific detector, etc.
- TCP / IP and / or RS232 / RS485 communication between modules.
- Sensors for the automatic detection of people, both in proximity / access and in the counting position.
- Motorized head detector, with automatic adjustment on the head of the subject.
- Exit door in metallic frame with high impact methacrylate panels.
- Operation / measurement in two steps (front position and back position).
- LED lighting.
- To facilitate any technical intervention, all the equipment's electronics are located on the right side panel (in front of the detectors).
- Digital parameter adjustment. (without potentiometers or mechanical actuators)
- 2 TFT-Color touch screens for information and control. External keyboards are not required.
- Integrated industrial PC (without maintenance), with Windows 10 operating system.
- Includes calibration routines, verification and configuration (alarms, levels, gain, etc).
- Software, HS-RAD, customizable in all its functions and languages.
- Critical routines such as calibration, algorithms, etc., protected by password.
- Allows its remote operation (TCP / IP)
- It has a standard USB port for data and historical dump in any USB external support (memory stick, disk, etc) as well as TCP / IP connector.
- It has signal output for remote alarm indicators.
- Texts, tone and volume of voice messages configurable by the user.
- Record of events, funds, measures, alarms, operation failures, etc.
- Dynamic automatic calculation of measurement duration.
- Different configurable operating modes (beta, gamma, beta-gamma, background accounts, counting, etc ...).
- Indication, exterior and interior, optical and acoustic, status, alarms, etc.
- All software and documentation in English.
- Electronics and software used in multiple equipment installed in the Spanish's NPPs, interchangeable and standardized.

