MIRA - GAMMA DOSE RATE MONITORING SYSTEM

MIRA is a highly versatile and very flexible gamma dose rate monitoring system that measures the ambient equivalent dose rate H*(10). Due to its modular design it can be configured and used in different ways and thus covers manifold applications. It facilitates both a gamma detector and a gamma monitoring station. MIRA can be used either for fixed or temporary installation or mobile applications. A particular feature is its autonomous operation capability due to highly reduced power consumption. Thus, it can be operated for many weeks with its integrated battery or for unlimited operation time with the integrated solar panel. Utilizing the wireless data transmission technologies, MIRA can also be used as an autonomous monitoring station. In this case, data communication between MIRA and the Monitoring Centre (NMC) uses either the GPRS/LTE service of cellular networks, a radio communication link (RF) or the combination of both (cellular networks plus radio) where redundant or highly reliable communication is required.

MIRA can be powered by 5 V DC, supplied for instance from a standard cell phone power unit or it can be operated autonomously with its integrated battery or solar power system. For stationary application, MIRA can be easily fixed on a pole or a wall. In combination with a tripod, MIRA works as a mobile monitoring station and can be quickly deployed in case of an emergency situation. For this use, MIRA is available with an integrated GPS receiver that enables the automatic recognition of a new location after deployment.

The manifold data communication capabilities permit numerous operation possibilities and uses. LAN is the standard interface that can be used for configuration, periodic test and data readout. For wireless remote data access, a version with integrated GPRS/LTE and/or radio modems is available. Further interface options are RS232 or RS485

Another option is the maintenance-free rain sensor integrated on top of the detector housing. It supports differentiation of artificial from natural wash-out peaks.

Two Geiger–Muller (GM) detectors provide a wide detection range from natural background up to >10 Sv/h. The high volume low dose rate detector (LD) enables detection of minor changes in the radiation at background levels within short detection cycles. The second detector (HD) is used for measurement of higher dose rates (>100 µSv/h). The hermetically sealed detector housing protects the electronics and detectors from external conditions.

GENERAL TECHNICAL DATA

Detection range	10 nSv/h to 10 Sv/h
Accuracy	± 15 % (calibrated to Cs-137)
Operating temperature	-40°C to +60°C (-40°F to +140°F)
Power supply	5 V DC, through USB or Solar with battery
Power consumption	1 mW
Data communication	LAN, GPRS/LTE or/and radio
Radio frequency	868 MHz (up to 40 km*)
Electromagnetic	EN 55022 Class B
Interference protection	EN 55024
	EN 61326-1
Diameter	60 mm (2.36 in.)
Height	876 mm (34.49 in.)
Weight	2.3 kg (5.1 lb) (including battery)
Protection class	
Detector unit	IP68
Battery compartment	IP65

*Depend on local conditions

MIRA WITH SOLAR PANEL AND TRIPOD

FUNCTIONS

- Ambient Dose Equivalent Rate H*(10) at three user configurable time intervals*
- Count rate detection at three user configurable time intervals*
- Temperature detection at two user configurable time intervals*
- Battery state of charge detection at two user configurable time intervals*
- Storage of all measured values for an unlimited time (>10 years)
- Data acquisition on real time
- Intrinsic background correction
- Temperature compensation of intrinsic background
- Temperature compensation of LD/HD characteristic
- Local background correction
- Automatic switch-over between LD and HD
- Overload detection of HD detector
- Secured VPN data transmission with external router (option)
- Status supervision of detectors, battery and electronic
- Alarm management with two thresholds
- Notification on threshold exceeding or status change (spontaneous call)

* must be a multiply of the time base interval. Shortest time base interval 1 minute.

GM DETECTOR TYPES

Part Number	Type
MIRA-100-x-x	70031A & 70018A
MIRA-120-x-x	ZP1221/02 & 70018A

EXTENSION MODULS

Part Number	Type
MIRA-500-G	GPS
MIRA-500-R	Rain detector
MIRA-500-B	Battery
MIRA-500-S	Solar

TECHNICAL DATA – LOW DOSE RANGE (LD)

GM type 70031A

Range	10 nSv/h to 1 mSv/h
Sensitivity	823 counts min^{-1} / µSv/h
Detector background	47 nSv/h (38 counts min^{-1})
Energy range	38 keV -1.3 MeV (±25 %)
	35 keV -2.5 MeV (-29 % / +67 %)

GM type ZP1221/02

Range	10 nSv/h to 1 mSv/h
Sensitivity	770 counts min^{-1} / µSv/h
Energy range	55 keV-1.25 MeV (±25 %)

FEATURES

- Unlimited autonomous operation
- Lightweight and extremely mobile
- Easy to install or to deploy
- Rugged design (IP68 / IP65)
- Operation under harsh environmental conditions
- Wireless data communication (GPRS/LTE and/or radio)
- Redundant data communication
- Integrated accuracy test
- Power supply or battery charging with standard cellphone power supply unit or by USB
- Unlimited and nonvolatile storage of all readings
- Wireless service interface Bluetooth
- Ethernet interface included

INTERFACES

Part Number	Type
MIRA-400-C	GPRS
MIRA-400-4	GPRS/LTE
MIRA-400-R	Radio
MIRA-400-S	RS232
MIRA-400-F	RS485
MIRA-400-D	Digital I/O

ACCESSORIES

Part Number	Type
MIRA-800-0010	Tripod (Plastic)
MIRA-800-0011	Tripod (Metal)
MIRA-800-0020	Pole Brackets
MIRA-800-0033	Carrying Case for two MIRAs
MIRA-800-0035	Carrying Case for five MIRAs
MIRA-800-0040	Central Radio Com. Unit
MIRA-800-0051	Plug-In Power Supply Unit, USB
MIRA-800-0100	Test Set Cs-137 (360 kBq)
MIRA-800-0102	Test Set Eu-152 (500 kBq)
MIRA-800-0200	MIRA - Weather Station (mobile)
MIRA-800-0210	MIRA - Weather Station (stationary, solar)
MIRA-800-0215	MIRA - Weather Station (stationary, mains power)
MIRA-800-0220	MIRA – Base Unit S –SOLAR
MIRA-800-2500	Mounting pole set

TECHNICAL DATA – HIGH DOSE RANGE (HD)

GM type 70018A

Range	0.01 mSv/h to 10 Sv/h
Sensitivity	1.03 counts min^{-1} / µSv/h
Energy range	70 keV -1.3 Mev (+15 %)
	70 keV- 4.5 MeV (-29 % / +67 %)

ENVINET GmbH
Hans-Pinsel-Str. 4, 85540 Haar (Munich), Germany
Tel +49 89 456657-0
info@envinet.com, www.envinet.com