

RAID AFM^{NC-version}

- Automated Facility Monitor for Nuclear and Chemical Detection

Critical Infrastructure Protection (CIP)



RAID-AFM (NC Version)

Many countries have or are working towards a strategy for the protection of their critical infrastructure. Critical infrastructure includes but is not limited to airports, power plants, banking and finance centers, water supply systems, governmental institutions, transportation, National Health Service.

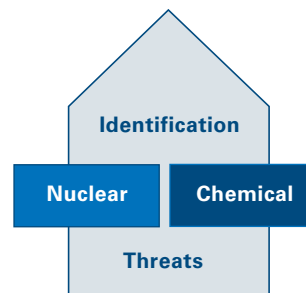
These facilities, services and institutions require an appropriate level of protection. Incidents directed at Critical Infrastructure such as a terrorist attack or a natural disaster, could have a major impact on the civil population, health and safety, the economy and potentially the smooth running of government.

The protection of Critical Infrastructure is key to National Security. Furthermore companies and private organisations have a duty of care to employees. The threat includes potential attacks using dirty bombs (conventional explosives with radioactive material) or chemical hazards. Bruker has developed state-of-the-art detection equipment to support this highly important task.

The RAID-AFM (NC version) meets the challenging requirements for the protection of Critical Infrastructure. Designed to be used in a stationary role it provides long term monitoring of chemical agents threats (chemical warfare agents, CWA as well as toxic industrial chemicals, TIC) and nuclear radiation.

Features RAID-AFM (NC-version)

- Non radioactive XPI™ Photo Ionization source, no special user licenses required
- Embedded web-interface for unlimited interrogation of sensors worldwide, no additional software required
- Integrated doserate meter for measuring of gamma radiation (optional)
- Excellent interference rejection through dopant technology
- Automatic overload control protects the sensor by switching the gas flow from air sampling to back flushing and back to operation
- Concurrent detection of chemical agent threats, toxic industrial chemicals and nuclear radiation by high-speed reversible voltage source
- High performance ion mobility spectrometer tube characterized by excellent analytical reproducibility
- Sophisticated internal data analysis with substance identification capability



Protection areas and facilities

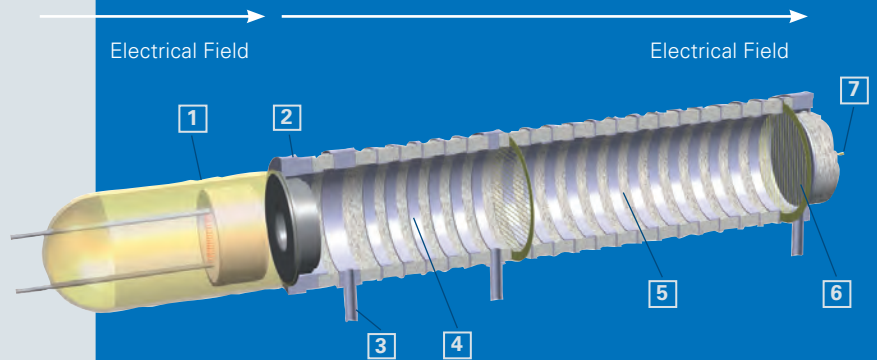
- Early warning tool for civil and industrial applications
- Long term monitoring of ambient air of areas and facilities for the presence of hazardous compounds and nuclear radiation
- Integration into air-conditioning and fire safety systems
- Control of working place pollutants
- Either operation as stand-alone instrument or networked



XPI™ Photo Ionization source:

- 1 Non radioactive ionisation source
- 2 IMS measuring tube
- 3 Gas inlet system
- 4 Reaction Zone
- 5 Drift Zone
- 6 Aperture grid
- 7 Faraday plate

Non radioactive Ionisation



Visualization of instrument status

- Control of instrument operation
- Instrument configuration setting
- Recordable event reader
- Enabled to run on any PC, laptop or pocket computer with web-browser

Remote webservice monitoring

RAID-AFM		
Operation Mode	Status	Alarm
autonomous	measuring	ALARM
Symbol	Substance	Concentration Level
GSI	G-Simulant	██████████
HSI	H-Simulant	██████████
Radiation	Item	Value
DR	DoseRate	2.28 $\mu\text{Sv/h}$
D	Dose	236.24 μSv
History	Timestamp	Agent / Radiation
1.	09:45am 04/11/2007	DR
2.	09:44am 04/11/2007	GSI
3.	09:44am 04/11/2007	HSI
4.	09:40am 04/11/2007	DR
5.	09:06am 04/11/2007	D
Library	Overload Protection	Datalogger
[A] B RM01 CWA05	-	15%

09:46am 60
32 04/11/2007

Technical Specifications

Base Unit

Size

560 mm x 160 mm x 600 mm (LxWxH)
860 mm (Height with radiation probe)

Weight

21 kg

Power requirement

100 – 230 V AC, 150 W,
Optional: 18 – 32 V DC

Data interfaces

Ethernet

Ionisation

Ionisation

XPI™ Photo Ionization
(Low energy source)
Optional: Ni63 source with
100 MBq available

Environmental

Activity outside source assembly

Ambient natural
(application type approval)

Temperature ranges

-5 °C to +60 °C (Storage)
0 °C to +60 °C (Operation)

Humidity

Suitable for any atmospheric humidity

Drying filter lifetime

Approx. 9000 hrs of operation

MTBF

> 1000 hours

MTTR

< 10 minutes (Operator Level)
< 45 minutes (Direct Support)

Training required to operate the instrument

Approx. 2 hrs

C-Detection performance

Compounds with proton or electron affinity, detection limits in the ppb and ppm concentration range
TIC's: Standard compounds: sulfur dioxide, hydrogen cyanide, chlorine, volatile chlorinated hydrocarbons
CWA: GA, GB, GD, VX, HD, HN, L
Other compounds on request.

Gamma-Probe (optional)

Measuring range

150 µSv/h – 200 µSv/h
(further ranges on request)

Energy range

40 keV – 1,3 MeV

● Bruker Detection

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