

Product Specification



Part No.: 1851000 (traffic yellow)

Drawing No.: RM 0100 A 501

NSN: none

Part No.: 1840000 (yellow olive)

Drawing No.: RM 0100 A 501

NSN: 6665-12-418-9623

Part No.: 1906600 (squirrel grey)

Drawing No.: RM 0100 A 501

NSN: 6665-12-423-8496

Category: Basic Equipment

Description

RAID-M NR (**R**apid **A**larm and **I**dentification **D**evice - **M**onitor **N**on-**R**adioactive) is a new generation instrument with improved detection performance and features the management of up to 5 on-board libraries, a graduated display of reactant ions and a determination of substance toxicity with sequencing according to the degree of risk. The device is designed to monitor and detect a wide range of Chemical Warfare Agents (CWAs) and Toxic Industrial Chemicals (TICs) in ambient air whilst static or when mobile. The Basic Equipment Set includes everything required for immediate handheld operation.

Sampling

An integrated air sampling system allows maximum sensitivity whilst minimising false alarms and interference.

Technology

The RAID-M NR operates on the principle of Ion Mobility Spectrometry (IMS).

Key Features

The RAID-M NR detects and monitors CWAs and TICs in ambient air. Identified substances are displayed by name when a visual and acoustic alarm is given. Concentration is displayed either in bars or as a numeric range relative to the identified substance, as chosen by the operator. The reactant ions are organised on a constant graduated display. A wide range of libraries are available and up to 5 of these libraries can be programmed into the instrument. The RAID-M NR is suitable for both military and civil applications. The integrated event logger provides additional system and alarm data when the instrument is connected to a computer using the event reader software that is supplied with each instrument.

Consumables and Maintenance

The replacement of consumables (e.g. Drying Filter, Dopant) can easily be performed by the operator at any time.

No preventive maintenance is required.

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Size and Weight (Storage Container)

Size (approx.)	L x W x H: 440mm x 380mm x 174mm
Weight (approx.)	8.2kg (fully equipped Storage Container)
Colour Code	See specifications below

Size and Weight (Basic Device)

Size (approx.)	L x W x H: 410 mm x 115 mm x 166 mm
Weight (approx.)	2.9 kg (without Rechargeable Battery) 3.5 kg (including Rechargeable Battery)
Colour Code	See specifications below

General Specifications

Ionisation Source	Non-radioactive ionization source (Photoionization)
Dopant	Ammonium Carbamate (NH ₄ COONH ₂)

Electrical Interfaces

Battery	Rechargeable Battery Li-Ion, 15V, 4.9Ah, 4.0A max. 74Wh
Power Supply	12V DC to 32V DC, ~35Wmax, average ~20W
Data Interface	RS232 serial data interface
(Mains power supply - optional)	Input: 100V AC to 240V AC, 50Hz to 60Hz, 40W

Mechanical Interfaces

Air inlet	At the front of the instrument
Air outlet	At the rear of the instrument
Battery compartment	Closed by a flap, on the mid-rear side of the instrument

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User Interfaces

Displays	A background illuminated display shows measured results, instrument states and alarms (the background illumination can be enabled or disabled).
Sounder	Acoustic alarm and fault indication (can be enabled or disabled)
Alarm LED	Optical alarm indication
Controls	2 keys are used to control the instrument 1 button is used to turn the instrument on and off

Modes of Operation

Self-test	When switched on, the RAID-M NR carries out a self-test (BIT) and warm up automatically. On completion of the self-test the instrument switches directly to Operation mode.
Operation Mode	RAID-M NR automatically starts sampling and measuring on completion of a successful self-test.
Stand-by (Backflush)	The Backflush mode puts the system in standby. This mode can be used by the operator for: - protection from known pollutant sources, - cleaning the internal pneumatic components. Backflush is also engaged and disengaged automatically during alarms in order to prevent flooding of the RAID-M NR.
Alarm	An acoustic and optical alarm (switchable) is generated. Detailed substance information is shown on the instrument's display (substance class, name, concentration bar graph).
(Error indication)	In the unlikely event that an error occurs, the RAID-M NR automatically disables damaged components and displays an appropriate message and / or error code.

Performance Data

Air flow rates	Flow rate: ~ 35l/h
Continuous operation	1EA Battery, Li-Ion Rechargeable PN 8205277 Runtime @ +20°C: ~6,15h

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Substance Libraries

Library 1 Standard CWA PN: 1846748	Displayed Symbol	Substance Name
	GA	Tabun
	GB	Sarin
	GD	Soman
	GF	Cyclosarin
	VX	VX
	VXR	VX Russian
	HD	Sulphur Mustard
	HN3	Nitrogen Mustard
	L	Lewisite
	AC	Hydrogen Cyanide
Library 2 Extended CWA PN: 1859521	Displayed Symbol	Substance Name
	ACK	Hydrogen Cyanide (AC); Cyanogene chloride (CK)
	HK	Bis(2-chloroethylthio)methane
	HDP	1,3-Bis(2-chloroethylthio)-n-propane
	HDB	1,4-Bis(2-chloroethylthio)-n-butane; O-Mustard
	HNX	Nitrogen Mustard 1; Nitrogen Mustard 2
	HN3	Nitrogen Mustard 3
	CLX	Chloropicrin (PS); Phosgene (CG)
	CL2	Chlorine
Library 3 ITF 25 agent list PN: 1803133	Displayed Symbol	Substance Name
	AC	Hydrogen Cyanide
	CL2	Chlorine
	CLX	Phosgene
	CS2	Carbon disulfide
	ETO	Ethylene oxide
	FAH	Formaldehyde
	HNO	Nitric acid
	PCL	Phosphorus trichloride
	SO2	Sulfur dioxide
	TX1	Fluorine; Hydrogen chloride; Hydrogen fluoride; Hydrogen sulfide

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Library 4 Conflagration gases PN: 1803135	Displayed Symbol	Substance Name
	AC	Hydrogen Cyanide
	BR2	Bromine
	CL2	Chlorine
	CLB	Chloroprene
	CLX	Phosgene
	CSX	Carbon disulfide; Carbonyl sulfide
	DCP	2,4-Dichlorophenol
	FAH	Formaldehyde
	HDZ	Hydrazine
	MCP	2-Chlorophenol
	MMH	Monomethylhydrazine
	NHX	Aniline; 1,1-Dimethylhydrazine
	NO2	Nitrogen dioxide
	PH	Phenol
	PIC	Phenylisocyanate
	SO2	Sulfur dioxide
	TDI	Toluene diisocyanate
	TMA	Trimethylamine
	TX1	Fluorine; Hydrogen chloride; Hydrogen fluoride; Hydrogen sulfide; 1,1,2,2-Tetrachloroethane
Library 5	optional	

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Environmental Parameter and Measurements

Storage Temperature	-33 (±3) to 71 (±2)
Operating Temperature	-20 (±3) to 53 (±2)
Operating Humidity	Up to 95% RH, non-condensing
Pressure range	570mBar to 1430mBar
Environment Measurement Procedures – Passed	
MIL-STD 810G / M501.5	High temperature
MIL-STD 810G / M502.5	Low temperature
MIL-STD 810G / M503.5	Temperature shock
MIL-STD 810G / M507.5	Humidity
MIL-STD 810G / M510.5	Sand and dust
MIL-STD 810G / M500.5	Low pressure (altitude)
MIL-STD 810G / M514.6	Operational vibration (1) Survival vibration (4)
MIL-STD 810G / M516.6	Operational shock (1) Survival shock (4)
IEC 60529 – IP 65, IP 67	Degree of protection (2)
Electromagnetic Compatibility - Passed	
MIL-STD F 461F (RE 102, CE 102, RS 101/103, CS 101/114/115/116)	Electromagnetic compatibility (1) (3)
EN 61326-1 • EN 55011 • EN 61000 (3-2/3-3/4.2/4-3/4-4/4-5/4-6/4-8/4-11)	Electromagnetic compatibility (5)
Product Safety and CE - Passed	
IEC 61010-1 CE in accordance to • EMC Directive 2014/30/EU • RoHS Directive 2011/65/EU	Product Safety Test CE

1 Tested with accessory Shock Mount RAID-M (P/N 8250900) 2 With applied protective caps
3 Tested with accessory EMC-Unit (P/N 8210794) 4 Tested in Storage Container 1, RAID-M (P/N 8210062)
5 Tested with Power Supply, 12VDC, RS232 (P/N 8701660)

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System Configuration, Accessories, Consumables, Training

PN	NSN	Configuration Set 1 - traffic yellow	Picture
1851000	None	Basic Device RAID-M NR RAL 1023 (traffic yellow)	
1849983	None	Set for RAID-M (traffic yellow) Basic Device RAID-M NR is not included	
Set for RAID-M consisting of:			
8231785	None	1EA Storage Container 1, RAID-M (yellow)	
8210043	6665-12-361-6494	1EA Protective Bag	
1845969	None	1EA Battery Charger, Li-Ion EU/US/UK/AUS	
8207971	6130-12-361-6139	1EA Charging Station, single	
8205277	6140-12-361-6295	2EA Battery Li-Ion 15V/4,9Ah/4A max.74Wh, rechargeable	
8210851	1365-12-361-8788	1EA Confidence Sample H	
8210852	1365-12-361-8787	1EA Confidence Sample G	
8281723	None	1EA Carrying strap, complete (black)	
8251056	None	1EA Cable, Data, RS232, RAID-M, 2m	

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PN	NSN	Configuration Set 2 – yellow olive	Picture
1840000	6665-12-418-9623	Basic Device RAID-M NR RAL 6014 (yellow olive)	
1849982	6665-12-418-9672	Set for RAID-M (yellow olive) Basic Device RAID-M NR is not included	
Set for RAID-M consisting of:			
8210062	6665-12-361-6414	1EA Storage Container 1, RAID-M (yellow olive)	
8210043	6665-12-361-6494	1EA Protective Bag	
1845969	None	1EA Battery Charger, Li-Ion EU/US/UK/AUS	
8207971	6130-12-361-6139	1EA Charging Station, single	
8205277	6140-12-361-6295	2EA Battery Li-Ion 15V/4,9Ah/4A max.74Wh, rechargeable	
8210851	1365-12-361-8788	1EA Confidence Sample H	
8210852	1365-12-361-8787	1EA Confidence Sample G	
8210875	8465-12-361-6294	1EA Carrying strap, complete (yellow olive)	
8251056	None	1EA Cable, Data, RS232, RAID-M, 2m	

PN	NSN	Basic Device – squirrel grey	Picture
1906600	6665-12-423-8496	Basic Device RAID-M NR RAL 7000 (squirrel grey)	

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PN	NSN	Transportation and storage	Picture
8231785	none	Storage Container 1, RAID-M RAL 1021 – yellow	
8210062	6665-12-361-6414	Storage Container 1, RAID-M RAL 6014 – yellow olive	
8274697	none	Storage Container 1, RAID-M RAL 7016 – anthracite gray	
8210043	6665-12-361-6494	Protective Bag The charcoal coated bag guarantees optimal storage conditions.	
8281723	none	Carrying strap, complete (black)	
8210875	8465-12-361-6294	Carrying strap, complete (yellow olive)	

PN	NSN	Power Supply and Cables	Picture
8205277	6140-12-361-6295	Battery Li-Ion 15V/4,9Ah/4A max.74Wh, rechargeable Wight: approx. 0,6kg	
1845969	None	Battery Charger, Li-Ion EU/US/UK/AUS 100V AC to 240V AC, 50Hz to 60Hz, 20W Exchangeable AC mains plugs for European Union, United States, United Kingdom, Australia	
1869054	none	Battery Charger, Li-Ion, Vehicle Input: 10-30 VDC/4A connection cable with open ends (ferrules)	
8207971	6130-12-361-6139	Charging Station, single	
8701660	6130-12-361-6140	Power Supply, 12VDC, RS232 100V AC to 240V AC, 50Hz to 60Hz, 40W It is supplied with a fixed 9 pin D-Sub cable for RS232 data connection.	
8251056	None	Cable, Data, RS232, RAID-M, 2m 9 pin D-Sub cable for RS232 data connection.	
8276743	None	Converter, serial RS232-USB2.0, packed	

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PN	NSN	Consumables	Picture
8205361	4440-12-361-7497	Drying Filter, packed	
8205125	4240-12-361-7498	Backflush Filter, packed	
8205720	4240-12-361-7499	Dust Filter, packed	
8205343	6665-12-361-6660	Dopant RAID-M, packed	
8210851	1365-12-361-8788	Confidence Sample H	
8210852	1365-12-361-8787	Confidence Sample G	

PN	NSN	Software	Picture
8704728	None	Software NC monitoring System 2.1 The Software is used for visualisation and remote control of Bruker devices e.g. RAID-M NR.	
8266114	None	Software XIMS Plus 1.0 The software is a tool which allows the RAID-M NR to be used as a spectrometer. Manuals and one Licence Key are included.	
1842087	None	Software IMS Library Tool 1.0 Software tool for loading, exchanging and saving of Bruker IMS libraries.	
	None	Software CD RAID Event Reader The software is a tool to view and save the RAID-M NR event logs. Saved files can be converted and edited by external programs (e.g. MS Excel). The Operator Manual includes the CD.	

PN	NSN	Manuals and documentation	Picture
1840891	None	Manual-eng Operator RAID-M NR Document language: English	
1848121	None	Interface Ctrl Doc RAID-M The ICD details the configuration and functionality of the RAID-M data interface. Document language: English	

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PN	Training
DAL099588	Operator training RAID-M at manufacturer premises. (1 day) Maximum number of participants per device: 3 Maximum 12 persons in total
DAL099595	Operator training RAID-M at customer site. (1 day) Maximum number of participants per device: 3 Maximum 12 persons in total
DAL09054	Maintenance training RAID-M Level 3 at manufacturer premises. (3 days) Maximum number of participants: 4
DAL099596	Maintenance training RAID-M Level 3 at customer site. (3 days) Maximum number of participants: 3

PN	Warranty extension
DAL099607	CBRNE warranty extension RAID-M Warranty extension for 12 months