RAID-S2 MV NR (Basic Device)

Product Specification

Part No.:	**1839900**
Drawing No.:	**RN 0100 G 501**
NSN:	**6665-12-407-5164**
Category:	**Basic Device**

Description

The RAID-S2 MV NR (**R**apid **A**larm and **I**dentification **D**evice-**S2 MV N**on-**R**adioactive) has been designed for detection and monitoring of Chemical Warfare Agents (CWAs) and Toxic Industrial Chemicals (TICs) in the air.

Sampling

RAID-S2 MV NR contains an integrated sampling system that draws an air sample into the instrument to give response speed in the order of just a few seconds.

Technology

RAID-S2 MV NR uses a Bruker-developed state-of-the-art sensor for chemical detection. The sensor operates on the principle of Ion Mobility Spectrometry (IMS) and gives fast substance detection at concentrations down to the low parts per billion range.
Detected substances can be identified with their specific substance name and can be quantified by a concentration bar line (Remote and Display Unit is required for displaying measuring results).

Features

RAID-S2 MV NR is equipped with connectors for 2 sampling points and automatic switching unit. In protected areas, the release of hazardous gas into the protected area can be prevented using NBC filter systems. A RAID-S2 MV NR which is installed close to the NBC filter continuously monitors the outside air for contamination. In case a hazardous gas is detected, the RAID-S2 MV NR automatically switches to the second sampling point and monitors the quality of the filtered air.
The instrument can either be operated stand-alone, or several instruments can be connected in networks.

Applications

RAID-S2 MV NR is designed and tested for operation in harsh environments.

Consumables and Maintenance

Designed for 24/7 operation, maintenance checks may only be required after 18 months of operation. When it is necessary to replace consumables, this can be done without calling for the Manufacturer's Service Engineer. No preventive maintenance is required.

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Size and Weight

Size (approx.)	L x W x H: 462 mm x 450 mm x 110 mm
Weight (approx.)	15 kg
Colour Code	RAL7000 (squirrel grey)

General Specifications

Ionisation Source	Non-radioactive ionization source (Photoionization)
Dopant	Ammonium Hydroxide (NH4OH)

Electrical Interfaces

Power 24V DC	Input 18 to 30V DC, max. 4.0A
Data RS422	Standard serial interface RS422
Data Ethernet	Ethernet 10/100 Base-T (Connector type: IEEE 802.3 Standard / RJ45)
Floating Contacts	Indication of Operation Modes: - Measurement - Stand-by (Backflush) - Alarm 1 - Alarm 2 - Error (Imax = 2 A @ 30 VDC / Imax = 0,5 A @ 60 VDC)

Mechanical Interfaces

Air inlet	Two air inlets on right instrument side / upper position (Standard Swagelok® Quick Connector for tubes and hoses)
Air outlet	On left instrument side / lower position (Standard Swagelok® Quick Connector for tubes and hoses)
Mounting	4 threaded hols on rear instrument side

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User Interfaces

Status LEDs	Indicates the instrument status Located in front of the RAID-S2 MV NR
Control Unit	Remote and Display Unit for RAID-S2 instruments (RDU)
Floating Contacts	See Electrical Interface
ICD (Interface Control Document)	The purpose of this ICD is to maintain configuration control of the RAID-S2 MV NR. Throughout this document the remote computer controlling the RAID-S2 MV NR is referred to as the Instrument Control Centre.

Modes of Operation

Selftest	When switched on RAID-S2 MV NR carries out a start-up and instrument self-test automatically. This procedure continues until the instrument successfully passes it´s built in analytical test.
Measurement	RAID-S2 MV NR 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: - air pollution protection or, - surface cleaning of all internal pneumatic components.
Alarm	RAID-S2 MV NR displays all alarm information using the Remote and Display Unit as well as Status LEDs and Floating Contacts
(Error)	In the unlikely event that an error occurs, the unit automatically disables damaged components and displays an appropriate message on the RDU.

Performance Data

Air flow rates	~ 40 l/h (in all operation modes)
Substance Library	Nerve Agents: GA, GB, GD, GF, VX, VXR Blister & Blood Agents: HD, HN3, L Toxic Industrial Chemicals: ACK, CG, CL2, SO2, TDI Simulants: GSI, HSI, MAL

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Environmental Parameters and Measurements

Storage Temperature	-33 (±3) to 71 (±2)
Operating Temperature	-20 (±3) to 53 (±2)
Operating Humidity	Up to 95% relative Humidity, non-condensing
Ambient 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)
MIL-STD 810G / M516.6	Operational shock (1)
IEC 60529 – IP 65	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
EN 61326-1 • **EN 55011** (conducted and radiated emission) • **EN 55022** (conducted emission – Ethernet cable) • **EN 61000** (4-2/4-3/4-4/4-5/4-6/4-8)	Electromagnetic compatibility
Product Safety and CE - in process	
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, complete (P/N 8250250)
2 With protective caps

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System Configuration, Probe System, Consumables, Training

PN	NSN	System Configuration	Picture
1839900	6665-12-407-5164	**Basic Device RAID-S2 MV NR**	
8250250	6665-12-388-4674	**Shock mount** (standard RAID-S shock frame)	
8268500	5340-12-404-0019	**Shock Mount RAID-S2, Ship** (scope of supply includes two pieces)	
8054030	5975-12-394-9222	**Mounting Bar** (two pieces are needed for one RAID-S2)	
8269300	5895-12-394-9779	**Remote and Display Unit RS2*plus***	
8266651	5995-12-385-5684	**Cable, Ethernet, X, RDU RAID-S2, 2m**	
8252140	5995-12-392-2640	**Cable, Ethernet, X, RDU RAID-S2, 5m**	
8259708	6150-12-412-0149	**Cable, Power, DC, RAID-S2, 2m** (cable for RAID-S2 and RDU)	
1840896	None	**Manual-eng Operator RAID-S2 MV NR** (Document language: English)	
1840898	None	**Manual-eng Maint. Level2 RAID-S2 MV NR** (Document language: English)	
1840897	None	**Manual-eng Spare Part Cat. RS2MV NR ML2** (Document language: English)	
8272029	None	**Interface Ctrl Doc RAID-S2plus** The ICD details the configuration and functionality of the data interface. Document language: English	

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PN	NSN	Sampling Probe System	Picture
8052951	4720-12-343-7112	**Tube with Coupling, yellow, L=1525mm**	
8222747	4720-12-364-9833	**Tube with Coupling, green, L=915mm**	
8052488	4720-12-343-7114	**Tube with Coupling, orange, L=915mm**	
8203706	4730-12-365-2391	**Exhaust gas probe, complete, yellow**	
8250710	4240-12-403-6456	**Air Inlet Filter Assy, green**	
8267950	4240-12-395-2986	**Air Inlet Filter Assy, orange**	
8251634	5975-12-385-5751	**Bulkhead lead-through**	
8268225	5340-12-395-3696	**Protective cap**	

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-S2plus.	
1818618	None	**Manual NC Monitoring System 2.1** (Document language: English)	
8266114	None	**Software XIMS Plus 1.0** The software is a tool which allows the RAID-S2plus to be used as a spectrometer. Manuals and one Licence Key are included.	

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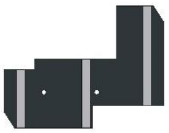
PN	NSN	Equipment for service tasks	Picture
8266251	7030-12-395-0344	**Software Bruker IMS Toolbox 1.0** Needed for replacement of Drying Filters and Dopant, Maintenance manual required	
8243008	6130-12-392-2646	**Power Supply, 24V DC, RAPID/RAID-S2**	
8270032	6150-12-394-8905	**Cable, Data, RS422, RAID-S2, 2.5m**	
8276744	7025-12-395-0345	**Converter, serial RS422 USB2.0, packed**	
8064082	6630-12-409-8977	**Particle filter, green**	
8269598	4330-12-395-5037	**Particle filter, orange**	
8228050	6665-12-395-0165	**Particle filter, yellow**	

PN	NSN	Consumables	Picture
1841700	None	**Activated Carbon Mat**	
8246600	4240-12-389-2976	**Backflush Filter**	
8237530	6665-12-389-1630	**Drying Filter** 2EA needed for replacement	
8239200	6665-12-389-1628	**Dopant RAID-S2**	
8205720	4240-12-361-7499	**Dust Filter**	
8210851	1365-12-361-8788	**Confidence Sample H**	
8210852	1365-12-361-8787	**Confidence Sample G**	
8247400	6665-12-392-8622	**Test Kit RAID**	

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PN	Training
DAL099590	**Operator training RAID-S2 at manufacturer premises. (1 day)** Maximum number of participants: 6
DAL099600	**Operator training RAID-S2 at customer site. (1 day)** Maximum number of participants: 4
DAL09057	**Maintenance training RAID-S2 Level 2 at manufacturer premises. (2 days)** Maximum number of participants: 4
DAL099601	**Maintenance training RAID-S2 Level 2 at customer site. (2 days)** Maximum number of participants: 3
DAL09058	**Maintenance training RAID-S2 Level 2+ at manufacturer premises. (3 days)** Maximum number of participants: 4
DAL099602	**Maintenance training RAID-S2 Level 2+ at customer site. (3 days)** Maximum number of participants: 3

PN	Warranty extension
DAL099609	**CBRNE warranty extension RAID-S2** Warranty extension for 12 months

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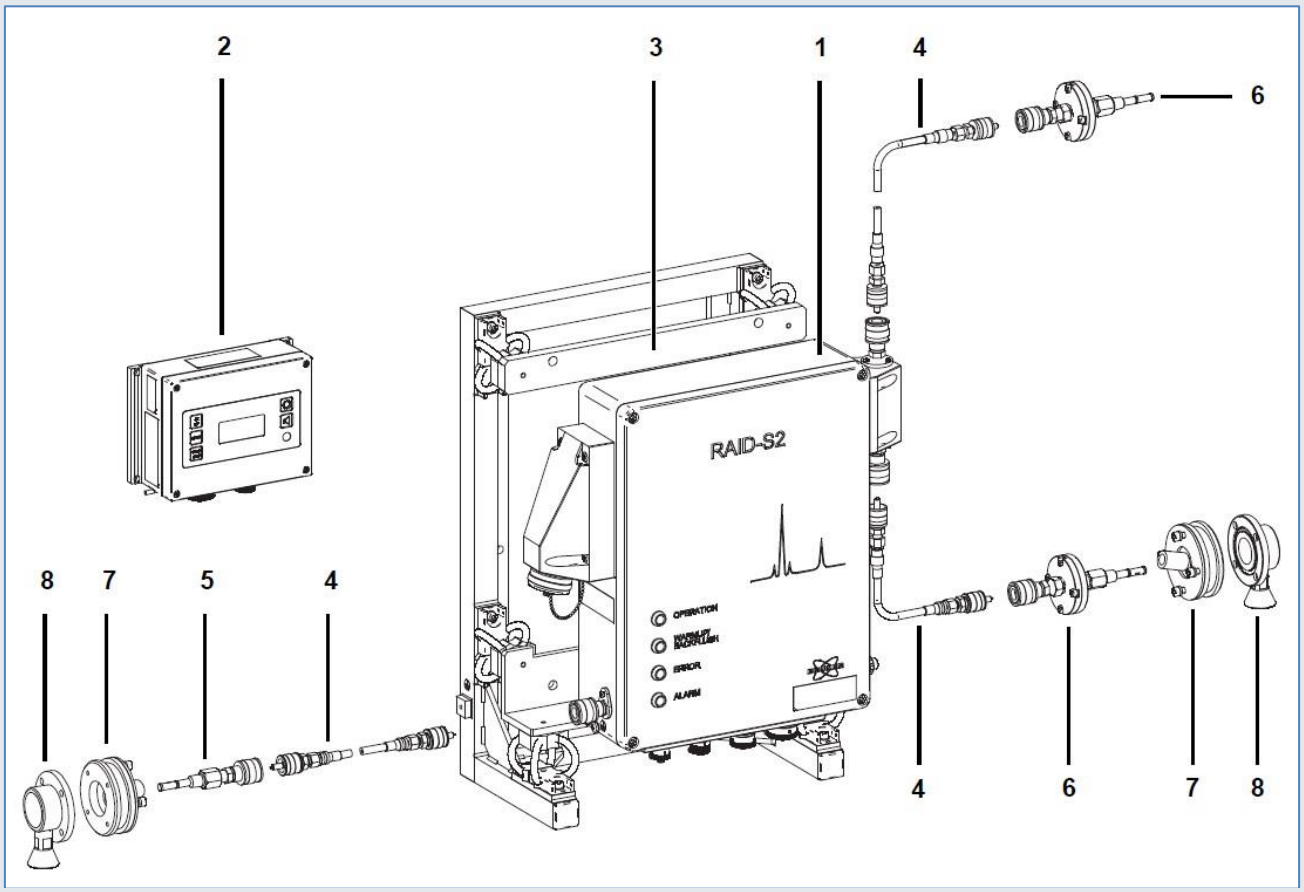
Application



1 Basic Device RAID-S2 MV NR, 2 Remote and Display Unit, 3 Shock Mount, 4 Connection Hose, 5 Sampling and Exhaust Probe
6 Filter Assemblies, 7 Bulkhead lead-through, 8 Protective Cap

Dimensions