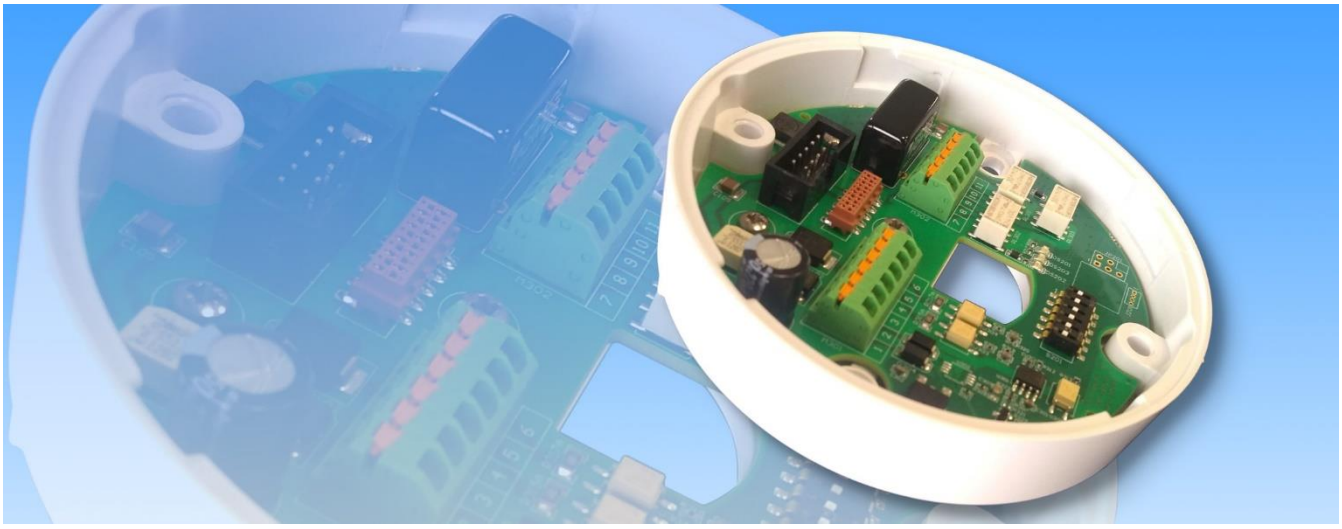


STAND ALONE BASE CM 30158

Product Info

MICRODATA DUE s.r.l.
Part of Consilium Safety

Via Greti del Vara, 9 – 19020 Follo (SP) Italy
Tel. +39/0187/599101 Fax. +39/0187/558983
www.microdatadue.it E-mail: info@microdatasrl.it

Release History

Rev.	Description	Date	Pages	Author
x	Draft	2022-02-22		Renzo Righini
0	4.2.1 – cable interface 4.2.2 Connections to CU (Control Unit) 4.2.3 Typical wiring configuration Fig. 5.1 (drawing updated) Fig. 5.2 (drawing updated) Fig. 5.3 (drawing updated) Fig. 5.4 (drawing updated) Fig. 5.5 (drawing updated) Fig. 5.6 (drawing updated) Ch. 6.4 – Interface – Analog output changes from NOT ISOLATED to ISOLATED	2022-05-02	11, 12, 14, 15, 16, 18	Renzo Righini
A	General review of the document Additions: • waterproof baseplate MD9900-SAB-W info and drawings • pre-assembled cable AM38338 – info and drawings • Ch.6 – Ordering information • Ch.7 – Detector datasheet/instrucions Updates /revisions: • Heading – added the name of the product MD9900-SAB • Ch. 4 – Installation • Ch. 9 – Technical specification (approvals update)	2022-11-11	All	Renzo Righini
B	Additions: • Ch 3.1 - Buzzer enable setup (MD9910) • Ch 3.1 - Explanation on DIP-SW usage • Ch 3.4 - Manual test and Alive: duration of Test command	2023-01-04	9 9-10 12	Renzo Righini
C	• Ch 9.5 – Approval update	2023-04-27	30	Renzo Righini
D	• Ch 10.3 – MD9902 Flame detector MTBF changes	2023-07-07	31	Renzo Righini
E	• Ch 4.2.3 – Added contact configuration of terminal block SRV1-2, ALL, FLT	2023-09-08	14	Renzo Righini
F	• Ch 3.1.2 – Added Alarm auto reset mode (according to the status of the detector)	2024-07-09	11	Renzo Righini

Via Greti del Vara, 9 – 19020 Follo (SP) Italy
Tel. +39/0187/599101 Fax. +39/0187/558983
www.microdatadue.it E-mail: info@microdatasrl.it

Summary

Release History 2
Abbreviations and Acronyms 6
1 Abstract 7
2 Features 7
2.1 Description 7
2.2 Diagnostics 8
2.2.1 Diagnostic of MD9910 9
3 Operation 10
3.1 Configuring the SAB 10
3.1.1 DIP-SW [1] - [2] - Alarm mode 10
3.1.2 DIP-SW [3] – Reset 11
3.1.3 DIP-SW [4] – [5] – Alarm delay 11
3.1.4 DIP-SW [6] – Buzzer enable 11
3.2 Operating status 12
3.3 Continuous Diagnostic 12
3.4 Manual Test 13
3.5 Manual Reset 13
3.6 Get Alive notification 13
4 Installation 14
4.1 Base installation 14
4.2 Connections 14
4.2.1 Cable Interface 14
4.2.2 Pre-assembled cable AM30338 14
4.2.3 Connections to CU (CoAntrol Unit) 15
4.2.4 Wiring for 4 wire controllers 15
4.2.5 Grounding 15
4.2.6 Required Tools 16
4.3 Plugging the detector 16
4.3.1 Configuring the Detector 16
4.3.2 Connecting the Detector to the SAB 16
4.3.3 Locking the Detector 16
4.4 Testing Procedures 16
5 Maintenance 18
5.1 General Procedures 18
5.2 Cleaning 18
5.2.1 Enclosure cleaning 18
5.2.2 Smoke detectors cleaning 18
5.2.3 Flame detector claning 19
5.3 Troubleshooting 19
6 Ordering information 20
6.1 SAB – Stand Alone Base 20
6.2 Detectors 20
6.3 Accessories 20
6.4 Testing Tools 20

7 Detectors Datasheet / Instructions 20
8 Mechanical interface 21
8.1 Dimensions of MD9900-SAB baseplate 21
8.2 Clearance and cut-out of MD9900-SAB baseplate 21
8.3 Dimensions with MD9910 detector 22
8.4 Dimensions with MD9900 detector 22
8.5 Dimensions with MD9901 detector 23
8.6 Dimensions with MD9902 detector 23
8.7 Dimensions MD9900-SAB-W baseplate 24
8.8 Clearance and cut-out of MD9900-SAB-W baseplate 24
8.9 Dimensions with MD9910 detector 25
8.11 Dimensions with MD9900 detector 26
8.12 Dimensions with MD9901 detector 27
8.13 Dimensions with MD9902 detector 28
8.14 Dimensions with cable AM38338 29
9 Technical specification of SAB 30
9.1 Mechanical features 30
9.2 Environmental features 31
9.3 Electrical features 31
9.4 Interface 31
9.5 Approvals 31
10 Technical specification of Fire detectors 32
10.1 MD9900 – Smoke detector 32
10.2 MD9901 – Smoke & Heat detector 32
10.3 MD9902 – Flame detector 32
10.4 MD9910 – Smoke & Heat detector w.TOD 34

List of Figures

Fig. 2-1 - Block diagram 8
Fig. 4-1 - Pre-assembled cable AM30338 14
Fig. 4-2 - SAB terminal block 15
Fig. 4-3 - Typical wiring for 4 Wire Controllers 15
Fig. 5-1 - Cleaning the smoke chamber 19
Fig. 8-1 – Dimensions of MD9800-SAB baseplate 21
Fig. 8-2 - Clearance and cut-out of MD9800-SAB baseplate 21
Fig. 8-3 - Dimensions with MD9910 22
Fig. 8-4 - Dimensions with MD9900 22
Fig. 8-5 - Dimensions with MD9901 23
Fig. 8-6 - Dimensions with MD9902 23
Fig. 8-7 - Dimensions of MD9900-SAB-W baseplate 24
Fig. 8-8 - Clearance and cut-out of MD9900-SAB-W baseplate 24
Fig. 8-9 - Dimensions with MD9910 detector 25
Fig. 8-10 - Dimensions with MD9900 detector 26
Fig. 8-11 - Dimensions with MD9901 detector 27
Fig. 8-12 - Dimensions with MD9902 detector 28

List of Tables

Tab. 3-1 – Operational setup 10
Tab. 3-2 – Operating status 12
Tab. 4-1 – SAB terminal block 14
Tab. 4-2 - Required tools list 16
Tab. 4-3 – Testing Procedure 17
Tab. 5-1 - Troubleshooting 19

Abbreviations and Acronyms

Acronyms /Abbreviation	Description
MD2	Microdata Due
SAB	Stand Alone Base
SIB	Stand Alone Interface Board (located inside the SAB)
TBD	To Be Defined
TBC	To be Confirmed
TST	Test
RST	Reset
IP	Ingress Protection
TOD	Test On Demand
PCB	Printed Circuit Board
CU	Control Unit

1 Abstract

The Stand Alone Base (SAB) - pn 30158, is an electronic interface controlled by a microprocessor that transforms any addressable detectors of the series MD99xx into a standalone detector.
It is made up of a microprocessor electronic board housed in a plastic base.
The SAB communicates with the detector fitted through a serial protocol and notifies its status by 3 digital and 1 analogue 4-20 mA outputs.
In addition, it can run the execution of test routines on the target detector and reset by external commands given through two digital inputs.

2 Features

- Multiple outputs for maximum flexibility
- Relays (3) for Alarm, Fault and Service
- 4-20 mA (stepped)
- Two digital input for Test and Reset
- Auto detection of the fitted sensor
- Easy configuration by dip-switch
- Status Led indicators
- Continuous diagnostic of the detector (depending on the detector type)
- Low power consumption
- Surge protection
- Reverse polarity protection
- Fits all detectors of the MD99xx series
- 2 available enclosures
- Vandal proof
- Easy and quick installation
- Customizable color on request

The SAB can fit the following detectors:

- MD9900-smoke detector
- MD9901-smoke and heat detector
- MD9902-flame detector
- MD9910-smoke and heat detector with TOD (Test On Demand)

2.1 Description

The SAB is made up of an electronic board with microprocessor housed in a baseplate made of plastic, equipped with a bayonet latch that allows the sensor to be permanently fixed. The base is equipped with an anti-vandal system which prevents the removal of the sensor without a suitable tool.

The spring terminals ensure a reliable connection of the cables even in the presence of vibrations.

The base automatically recognizes the type of sensor connected to it and configures itself to correctly decode the messages received. This feature makes it very versatile allowing the use of any sensor of the MD99xx family without having to perform special configurations.

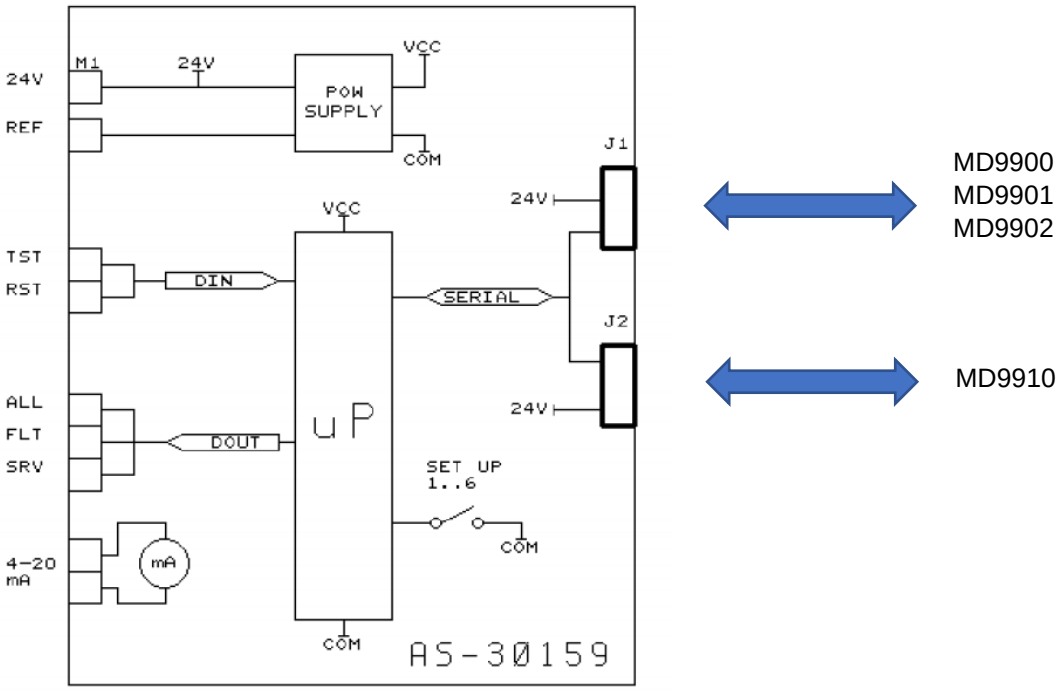


Fig. 2-1 - Block diagram

The fig.2.1 shows the block diagram of the SAB

.

The microprocessor communicates with the sensor connected to ports J1 or J2 through a serial protocol and it receives information on its status – normal, alarm, fault - and other information regarding its operating status. According to this, the polluted status of a smoke sensor or the degraded operation of a flame sensor can be detected.

Any alarm, anomaly or failure detected is notified externally by means of two potential-free contacts ALL (Alarm) and FLT (Fault).

In addition, a third contact free from potential named SRV (service) is available to notify the result of the Test procedure.

The operating status of the SAB is signalled by three LEDs placed on the PCB.

The SAB is also equipped with a 4-20 mA sink analogue output that notifies operational status of the base plus detector with stepped current output.

Two digital inputs, TST and SRV are used to perform the diagnostic routines (TST) and the Reset (RST) of the alarm.

By the DIP-SW on the board it is possible to set up some operating characteristics.

2.2 Diagnostics

The Base is equipped with its own diagnostics which is always active during normal operation. Thus any failure or deviation that is detected as, for example but not only, the lack of communication with the sensor is externally notified.

All the MD99xx detectors have built-in diagnostic and can signal the failure when some uncertain behaviour is detected.

2.2.1 Diagnostic of MD9910

When the MD9910 sensor is connected to the base, it is possible to obtain complete information on its operational status through the TOD (Test On Demand) feature of this sensor.

This "*test procedure provides diagnostic results comparable with the ones obtained by manual test simulation performed locally by the operator*" (Type Approval RINA n ° ELE279818CS).

This result is due to electronic circuits dedicated to diagnostics that are activated when the TOD is performed.

Each operational circuit of the detector is thus verified, and the result notified to the base by means of the serial communication:

- smoke detection: the presence of smoke is simulated by checking the response of the optical detection system.
- temperature detection: the correct functioning of the measuring circuit is checked.
- LED: the operation of the LEDs that signal the alarm is verified. Any fault condition is detected.
- Sounder: the operation of the internal sounder is verified by measuring that the sound pressure emitted is within the set limits

The interpretation of the results is transformed in signals that are notified externally by the available outputs.

In addition to the above, the MD9910 sensor is equipped with a proximity sensor, always active, which generates a warning signal as soon as an obstacle compromises air circulation and therefore smoke detection. Thus, any malicious action is countered.

All these features make the detector extremely safe, reliable, and easy to test at any time. In fact, it is sufficient to send a TOD command and wait for the result at the end of the test. This can be scheduled to run at fixed intervals, giving the certainty of full operation and thus contributing to increasing total safety.

When the MD9910 is fitted to the SAB the TOD is started through the TST input there and the outcome of the procedure is available through the SRV output.

When the MD9900 / MD9901 / MD9902 detectors are fitted, the TST command will notify only the status of the internal diagnostics through the SRV output.

3 Operation

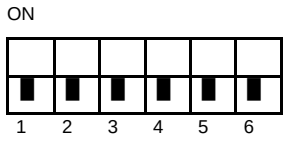
3.1 Configuring the SAB

After the SAB is powered, it checks for the presence of any sensor connected to it and, once detected, it configures itself automatically.

The operational mode of the SAB can be set by operating the 6 position DIP-SW available on the board as indicated in Table 2.3

Note:

after any modification of the setup, the SAB must be reset by interrupting the power supply



1	2	Alarm mode
OFF	OFF	Alarm smoke and heat
ON	OFF	Alarm smoke only
OFF	ON	Alarm heat only
ON	ON	Not used

3	Reset
OFF	Automatic Reset
ON	Reset by RST command

4	5	Alarm delay
OFF	OFF	Alarm Delay = 0 sec.
ON	OFF	Alarm Delay = 3 sec.
OFF	ON	Alarm Delay = 10 sec.
ON	ON	Alarm Delay = 15 sec.

6	Buzzer enable (MD9910)
OFF	Buzzer disabled
ON	Buzzer enabled

Tab. 3-1 – Operational setup

3.1.1 DIP-SW [1] - [2] – Alarm mode

This adjustment is only effective if combined Smoke and Temperature detectors model MD9901 and MD9910 are used.
For these ones it is possible to decide through the SW 1-2 which alarm should be notified from the base, selecting among:

- Smoke and Temperature: the alarm is notified when Smoke and /or Heat.
- Smoke only: only the Smoke alarm is notified (temperature is not considered)
- Heat only: only the Heat alarm is (smoke is not considered)

3.1.2 DIP-SW [3] – Reset

By means of this switch it is possible to decide whether the Reset of an event can be performed through a given command on the RST input or power disconnection or automatically when the detector returns to its normal state.

3.1.3 DIP-SW [4] – [5] – Alarm delay

By means of SW 4-5 it is possible to adjust the delay in notification of the alarm.

When the Alarm condition is set, the SAB delays the activation of the Alarm relay for the set delay. The SAB will then evaluate the condition for 3 seconds. If the Alarm level is still present, the Alarm outputs will be activated.

If this condition no longer exists, the detector returns to its standby state.
The Alarm delay will affect the alarm relay and the 4-20mA output.

3.1.4 DIP-SW [6] – Buzzer enable

Applies to MD9910 sensors.
By means of the SW 6 it is possible to decide whether the buzzer of the sensor will be activated or not in case of alarm.
Note: this adjustment does not affect the activation of the buzzer during the execution of the Test On Demand which emits 3 rapid sounds in succession to verify the correct functioning of the buzzer.

3.2 Operating status

The base can be in one of the following operating status, visualized by three different coloured LEDs located on the PCB and externally notified by commutating the outputs as indicated in the following table:

Detector State	LED		Output			
			ALARM (ALL)	FAULT (FLT)	SERVICE (SRV)	4-20 mA
Normal		Steady on	Open (-)	Close (+)	Open (-)	5 mA
Test (successful)		OFF for 3 seconds	Open (-)	Close (+)	Close for 3 sec. (+)	15mA for 3 sec
Alarm (2)		Steady on	Close (+)	Close (+)	Open (-)	15 mA
Fault (1)		Steady on	Open (-)	Open (-)	Open (-)	0 mA
Warning (3)		Steady on Steady on	Open (-)	Close (+)	Close (+)	10 mA

Tab. 3-2 – Operating status

Notes:
(+) means relay **energized**
(-) means relay **de-energized**

(1) The FAULT relay will normally be energized during normal operation and the output will be closed during normal operation. The output will be open at Fault condition or low voltage.
(2) The Alarm contact will be close as long as the manual RST is activated. No automatic reset is foreseen.
(3) The Warning is set in case of anomalies of the fire detector (pollution for a smoke detector, drift of analogue values for the Flame detector…). The Warning state does not stop Fire detection.

The detection of the ALARM status is always performed by the sensor (complying to the EN54 standard) and notified externally by commutating the ALL output according to table 3.2

Depending on the type of sensor, the fire alarm will be due to

- flame: .....if the sensor is MD9902
- smoke / temperature: ...if the sensor is MD9901 or MD9910
- smoke:.....if the sensor is MD9900

The base can delay the activation of the alarm depending on the delays set by the DIP-SW.

3.3 Continuous Diagnostic

The SIB continually checks the functionality of its electronic circuits and receives the status of the detector as result of the internal diagnostic. The information is processed by the microprocessor of the SAB and a Fault signal is generated when anomalies are detected.

If an anomalous value is detected – not compromising the fire detection – generated by the detector or by the SAB itself – the SAB enters a FAULT state by deactivating the FAULT relay and setting the Current output to 10mA.

Note: In these circumstances the SAB+detector continues to detect a fire.

3.4 Manual Test

The Manual Test is used to initiate the test routines. It is started by connecting the terminal M1-5 (TST) to terminal M1-3 (24V) for a time T_{test} of**: 5 < T_{test} <8 seconds**. The test is cumulative of the SAB and the detector connected to it.

If successful, the SERVICE relay is activated for 3 sec., the green led turns off for 3 seconds and the 4-20 mA emits 15 mA for 3 sec.

If the test fails, the SERVICE relay is not activated, and the 4-20 mA does not change.

The maximum latency after receiving the command depends on the type of detector connected and varies from a minimum of 2 to a maximum of 5 seconds (in the case of TOD)

3.5 Manual Reset

The Manual Reset is initiated by connecting the terminal M1-6 (RST) to terminal M1-3 (24V) for at least 2 seconds. This resets the alarm and returns the detector to the normal condition.

3.6 Get Alive notification

The “Alive” signal is generated by the SAB by connecting the terminal M1-5 (TST) to terminal M1-3 (24V) for T_{alive} of: **2 < T_{alive} < 4 seconds**.

The “Alive” status of the SAB is notified in the same way as the Manual test

4 Installation

4.1 Base installation

Correct installation of the base must consider the type of sensor connected to it. In fact, the installation of a flame sensor is different from that of a smoke sensor or a temperature sensor.
Refer to the mounting instructions of the individual sensors for the correct information. See Ch. 7

4.2 Connections

4.2.1 Cable Interface

The SAB board provides 11 terminal blocks for cable connections.
The terminal blocks are spring cage type, suitable for connecting from 0,75 sqmm (with optional ferrule) to 1,5 sqmm max (without ferrule) – model Phoenix Contact series SPTAF.

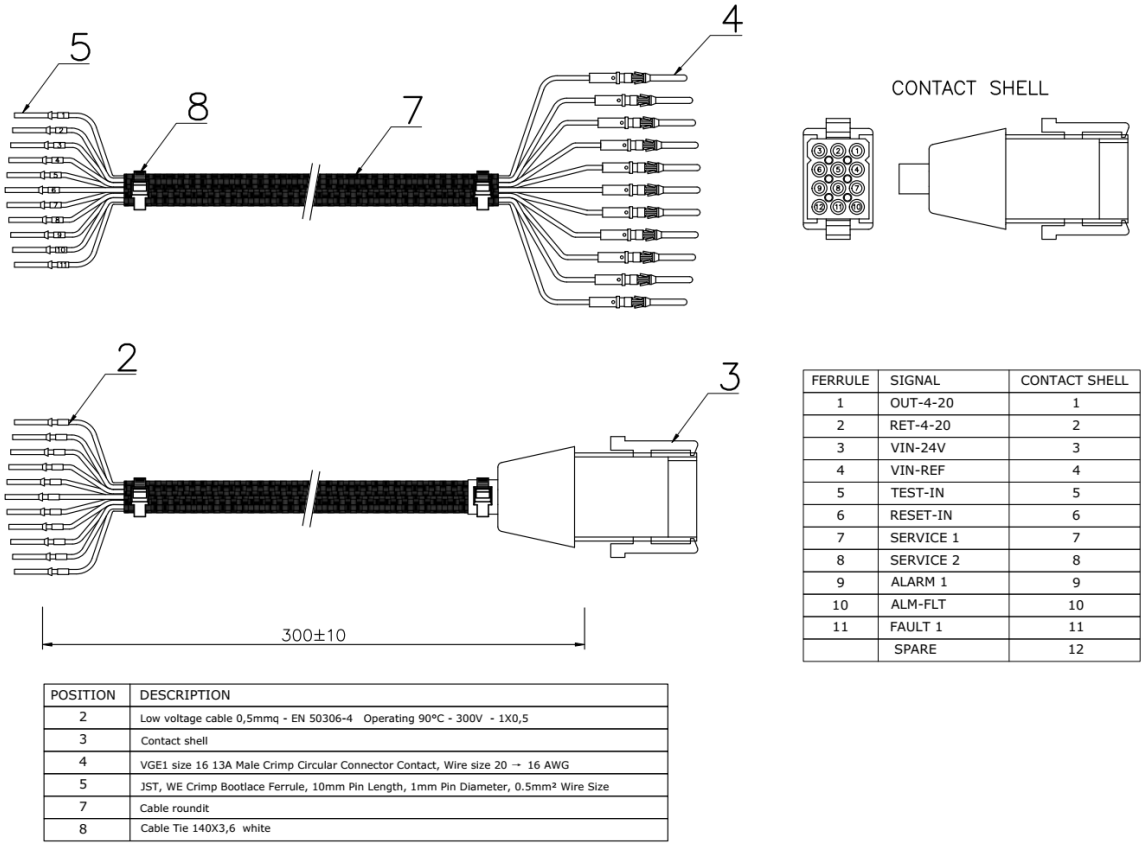
Terminal	Name	Function
1	4-20_(+)	4-20 mA analogue IN
2	4-20_(-)	4-20 mA analogue OUT
3	24V	Power supply input
4	REF	Power supply common
5	TST	Test input
6	RST	Reset input

Terminal	Name	Function
7	SRV1	Service output
8	SRV2	
9	ALL	Alarm output
10	COM	All/Flt Common
11	FLT	Fault output

Tab. 4-1 – SAB terminal block

4.2.2 Pre-assembled cable AM30338

The SAB can be supplied on request with the preassembled cable AM30338



FERRULE	SIGNAL	CONTACT SHELL
1	OUT-4-20	1
2	RET-4-20	2
3	VIN-24V	3
4	VIN-REF	4
5	TEST-IN	5
6	RESET-IN	6
7	SERVICE 1	7
8	SERVICE 2	8
9	ALARM 1	9
10	ALM-FLT	10
11	FAULT 1	11
	SPARE	12

POSITION	DESCRIPTION
2	Low voltage cable 0,5mmq - EN 50306-4 Operating 90°C - 300V - 1X0,5
3	Contact shell
4	VGE1 size 16 13A Male Crimp Circular Connector Contact, Wire size 20 → 16 AWG
5	JST, WE Crimp Bootlace Ferrule, 10mm Pin Length, 1mm Pin Diameter, 0.5mm² Wire Size
7	Cable roundit
8	Cable Tie 140X3,6 white

Fig. 4-1 - Pre-assembled cable AM30338

4.2.3 Connections to CU (Control Unit)

The following fig. 4.2 shows the connections of the SAB to a CU

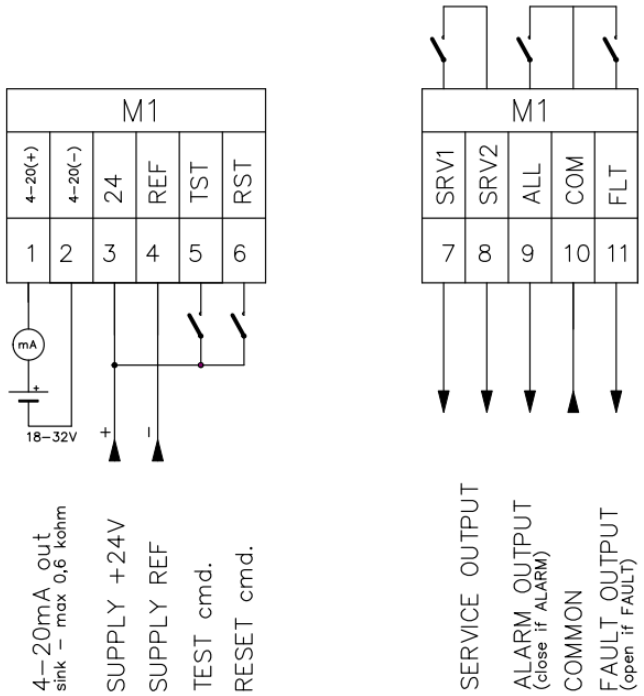


Fig. 4-2 - SAB terminal block

4.2.4 Wiring for 4 wire controllers

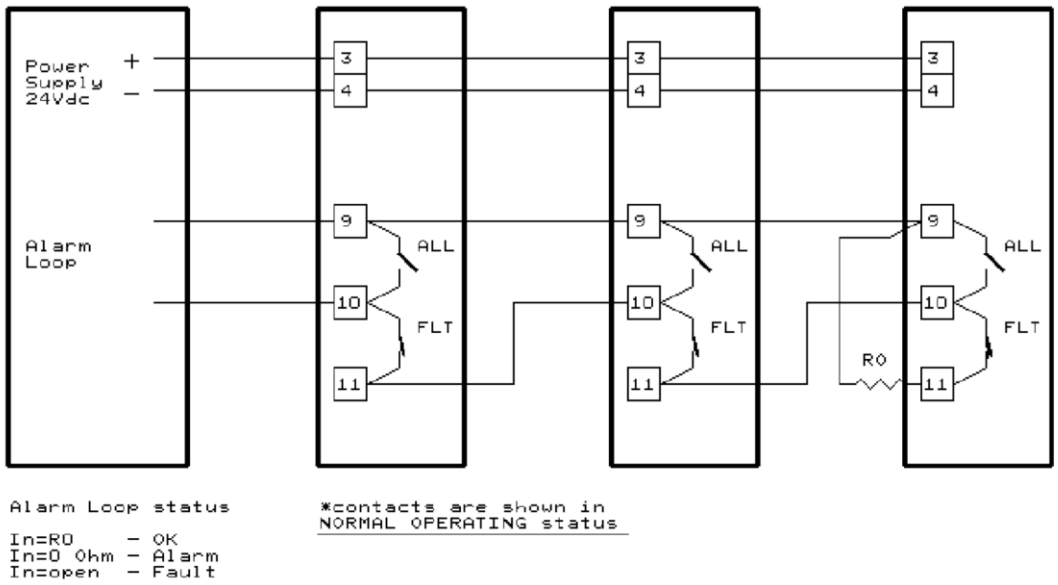


Fig. 4-3 - Typical wiring for 4 Wire Controllers

4.2.5 Grounding

The SAB is NOT connected to ground.

4.2.6 Required Tools

The SAB coan be installed using general-purpose tools and equipment. Table 4.2 lists the specific tools required to install the Base

Tool	Function	Comments
T8 TORK key – right angle	Antivandal lock screwing	Standard tool
Flat screwdirver 0,6x3,5	Connect wires to the terminal blocks	Standard tool (Phoenix Contact SZF 1 – 1204517)
Spanner 27 mm	Installation of cable glands PG16 (only if MD9900-SAB-W base is used)	Standard tool
Flat screwdriver 1,6x12	Installation of entry plug PG16 (only if MD9900-SAB-W base is used)	Standard tool

Tab. 4-2 - Required tools list

4.3 Plugging the detector

4.3.1 Configuring the Detector

The smoke / smoke & heat detectors MD9900 / MD9901 / MD9910 do not need any preliminary configuration.
The Flame detector MD9902 need to be setup according to the desired sensitivity.
See the specifc instructions referred in Ch. 7 to correctly setup the detector.

4.3.2 Connecting the Detector to the SAB

Note: this operation can be performed without disconnecting the power if no change in the setup of the SAB is needed.

- Plug the connector of the detector in the receptacles available on the electronic board of the SAB.
- Wait up to 5 seconds for the detector to finish the start-ip procedure.
- If successful, the green LED turnes ON and the yellow turns OFF to indicate the restoration of the normal mode operation

4.3.3 Locking the Detector

The detector is secured to the base by a special screw placed on the external side to avoid unwanted removal.

This screw acts like anti vamdal protection to avoid unwanted renoval of the detectto

4.4 Testing Procedures

This section describes the proof testing procedure for proper operation of the detector. Refer to the datasheet of the detector for details (see Ch.7)

Before carrying out the test, check that alarm mode for smoke and temperature (see para 3.1) has been enabled.

The detector can be tested according to the following Tab 4.3

Caution:
as result of a test the SAB will enter in an alarm state. External device such as automatic extinguishing systems must be disconnected or disabled before carrying out any test on the SAB + Detector.

Detector	Type	Tool	Procedure	Results
MD9900	Smoke detector	SOLO™ Smoke Detector Aerosols mod. A10 (non flammable)	Test by sprying a small qty of SOLO aerosol	Alarm activation
MD9901	Smoke and Heat detector	SOLO™ Smoke Detector Aerosols mod. A10 (non flammable)	Smoke test: Test by sprying a small qty of SOLO aerosol	Alarm activation
		SOLO™ Heat Detector Tester	Heat test: Follow the intructions of the Heat Tester manufacurer	Alarm activation
MD9902	3IR Flame Detector	MD9902 Flame Detector Test Box – CM-27089	Test by CM-27098 Flame Detector Test	Alarm activation
MD9910	Smoke and Heat Detector with TOD	TOD (Test on Demand)	Test by TOD (Test On Demand) connecting the Test input to 24V	Service output ON for 3 sec and output current 15Ma for 3 sec.
			Alternative test: Proceed as indicated for MD9901 detector	Alarm activation
ALL			Disconnect the detector (any) from the base	Fault activation

Tab. 4-3 – Testing Procedure

5 Maintenance

5.1 General Procedures

Maintenance should be performed by suitably qualified personnel, who are familiar with local codes and practice. Maintenance requires ordinary tools.

Caution:
External device such as automatic extinguishing systems must be disconnected or disabled before carryiing out any maintenance.

- The SAB and the detectors do not require any preventive maintenance.
- Any fault condition is notified through the FLT output and the repair consists in replacing the faulty component, that is the SIB board or the detector. There are no serviceable parts.
- In case of failure of the SIB board (located in the SAB), it is required to replace it, by previously setting the DIP-SW in the same position of the faulty one.
- In the event of a detector failure, it is sufficient to replace it without performing any setup if a smoke sensor, or by restoring the sensitivity of the flame sensor using the DIP-SW on the sensor itself.

5.2 Cleaning

5.2.1 Enclosure cleaning

- Cleaning of the SAB and of the detector can be done by using water and mild neutral detergent.
- Never use solvents such as toluene, acetone or aggressive detergents to clean these parts.
- Do not paint as this could irreversibly damage the material.
- The enclosure is made by LEXAN™ 923. Before using any product for cleaning, check if it is compatible with this material

5.2.2 Smoke detectors cleaning

- Smoke detectors (MD9900 / MD9901 / MD9910) may require periodic cleaning of the smoke chamber as corrective maintenance.
- The “polluted” smoke chamber is signalled by the built-in diagnostics by notifying the FLT status.
- Cleaning is performed very easily by extracting the smoke chamber from the enclosure and removing the accumulated dust and dirt by blowing air (see Fig. 5-1).
- The frequency of cleaning operations depends upon the local environmental conditions and specific applications.
- Refer to the datasheet of the detector for specific instrucions (see Ch. 7)

- Remove the smoke chamber (black), clean it by a strong air blow.
- Blow on the mesh to remove dust.
- Reassemble the detector.

Fig. 5-1 - Cleaning the smoke chamber

5.2.3 Flame detector cleaning

- Flame detector MD9902 viewing window must be kept as clean as possible.
- The frequency of cleaning operations depends upon the local environmental conditions and specific applications. The fire detection system designer will give his recommendations.
- Use water and mild neutral detergent, and then rinse the viewing window with clean water.
- Refer to the Datasheet of the specific detector for more details

5.3 Troubleshooting

This section is a guide to correct problems which may happen during normal operation.

Problem	Cause	Corrective action
LEDs Off Fault Relay at N.O. 4–20mA at 0mA	No power to the Unit Fault deetctor short circuits power supply	• Check that the correct power is sent to the detector. • Check power polarity. • Disconnect the detector and check if the SAB operates signalling a Fault. • Send the SIB back for repairs.
Yellow LED constantly ON Fault Relay at N.O. 4–20mA at 0 mA	Missing or disconnected detector Fault detector	• Check connections • Replace the detector
Yellow and Green LED constantly ON Fault Relay at N.O. 4-20 mA at 10 mA	Smoke, Flame detector warning	• Clean the smoke chamber of the detector • Replace the detector
Red and Green LED constantly on 4-20 mA at 15 mA	If no fire exists, then detector alarm latched	• Perform a Reset.
	Alarm condition	• Check cause of alarm. • If no alarm, re-power the detector. • Send the detector back for repairs.

Tab. 5-1 - Troubleshooting

6 Ordering information

6.1 SAB – Stand Alone Base

Model	Part number / Order code	Description
MD9900-SAB	30158	Stand Alone Base for false ceiling installation
MD9900-SAB-W	30158-W	Stand Alone Base Waterproof

6.2 Detectors

Model	Part number / Order code	Description
MD9900		Smoke Detector
MD9901-A1	26654-A1	Smoke & Heat Detector – A1 Class
MD9901-B	26654-B	Smoke & Heat Detector – B Class
MD9901-C	26654-C	Smoke & Heat Detector – C Class
MD9910	29655	Smoke & Heat Detector – A1 Class + TOD (Test on Demand)
MD9902	26718	3IR Flame Detector

6.3 Accessories

Model	Part number / Order code	Description
MD9900-PR	26639	Dust protection for smoke detector
AM38338	38338	Cable with connector
	CEM1910.16	Maxiblock Cable Gland PG16 reduced entry - for MD9900-SAB-W
	CEM105216	Entry Plug PG16 - for MD9900-SAB-W

6.4 Testing Tools

Model	Part number	Description
Solo™ A10 S		Smoke Detector Tester – by Solo™ Detectortester
Solo™ 424		Heat Detector tester – by Solo™ Detectortester
MD9902-TB	27098	Flame Detector Test Box – by Microdata Due

7 Detectors Datasheet / Instructions

Model	Description	Ref. Document – Instructions
MD9900	Smoke Detector	D24728 – Datasheet
MD9901	Smoke & Heat Detector	D24731 – Datasheet
MD9902	3IR Flame Detector	D25795 – Datasheet
MD9910	Smoke & Heat Detector – TOD	D38823 – Datasheet

8 Mechanical interface

8.1 Dimensions of MD9900-SAB baseplate

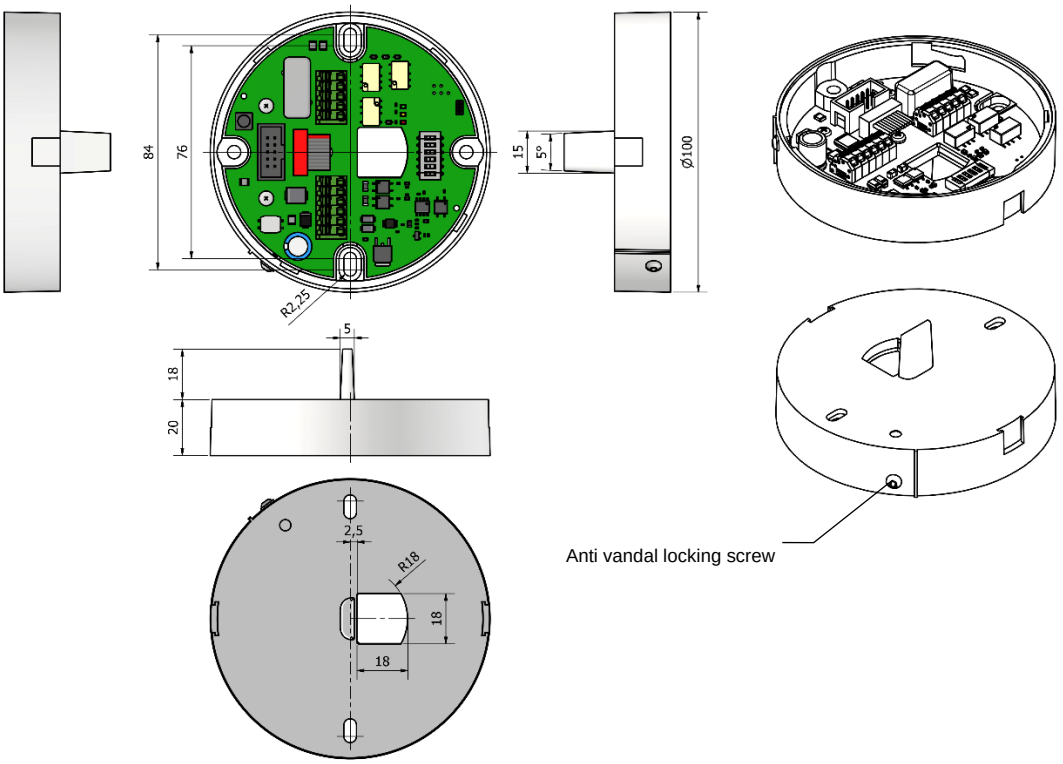
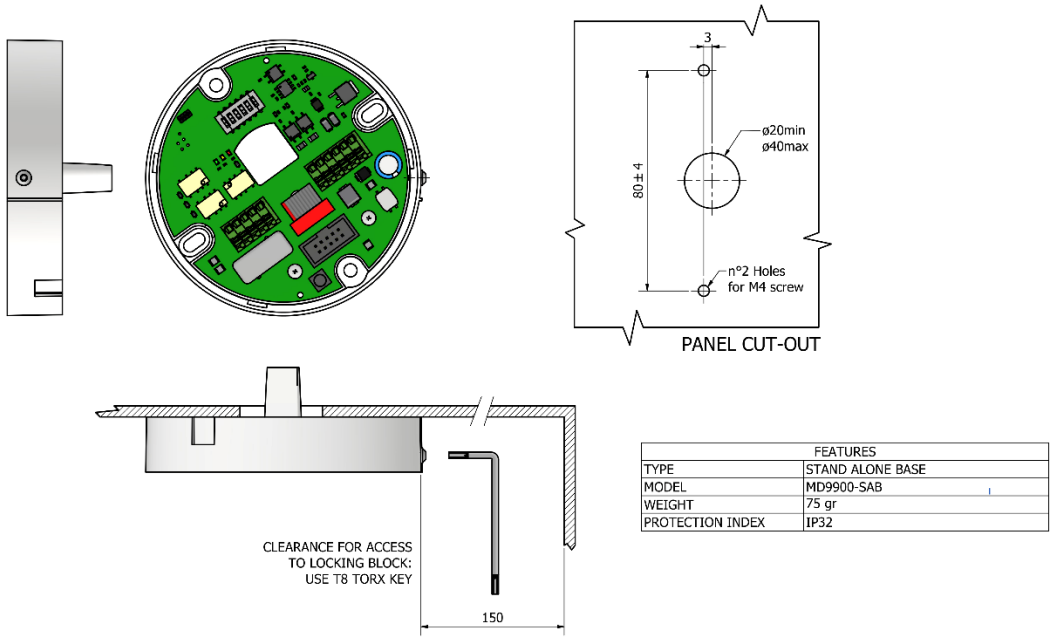


Fig. 8-1 – Dimensions of MD9800-SAB baseplate

8.2 Clearance and cut-out of MD9900-SAB baseplate



FEATURES	
TYPE	STAND ALONE BASE
MODEL	MD9900-SAB
WEIGHT	75 gr
PROTECTION INDEX	IP32

Fig. 8-2 - Clearance and cut-out of MD9800-SAB baseplate

8.3 Dimensions with MD9910 detector

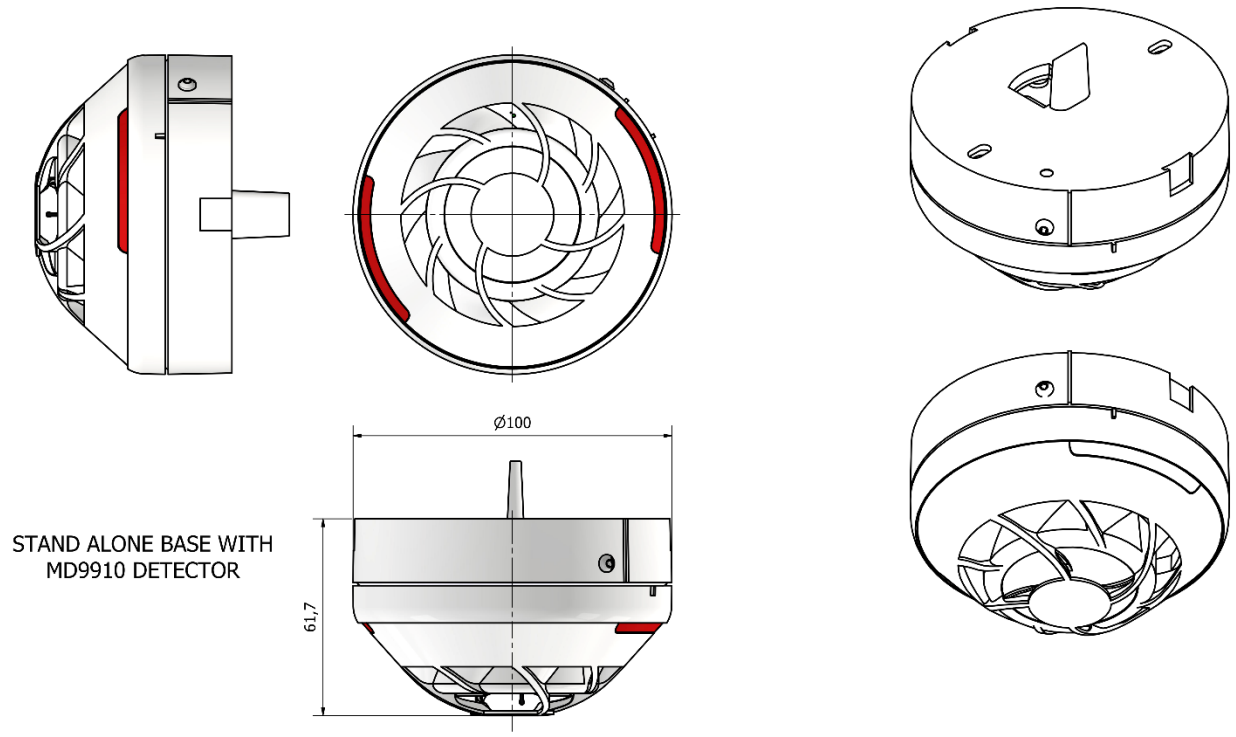


Fig. 8-3 - Dimensions with MD9910

8.4 Dimensions with MD9900 detector

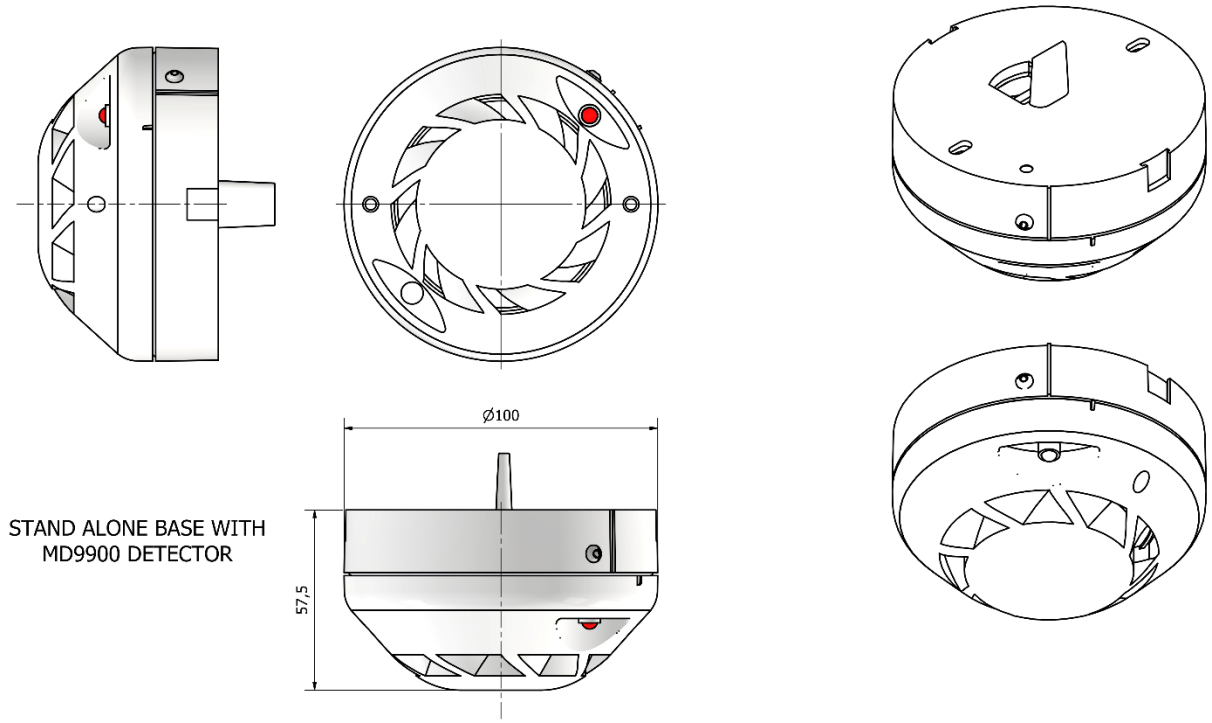


Fig. 8-4 - Dimensions with MD9900

8.5 Dimensions with MD9901 detector

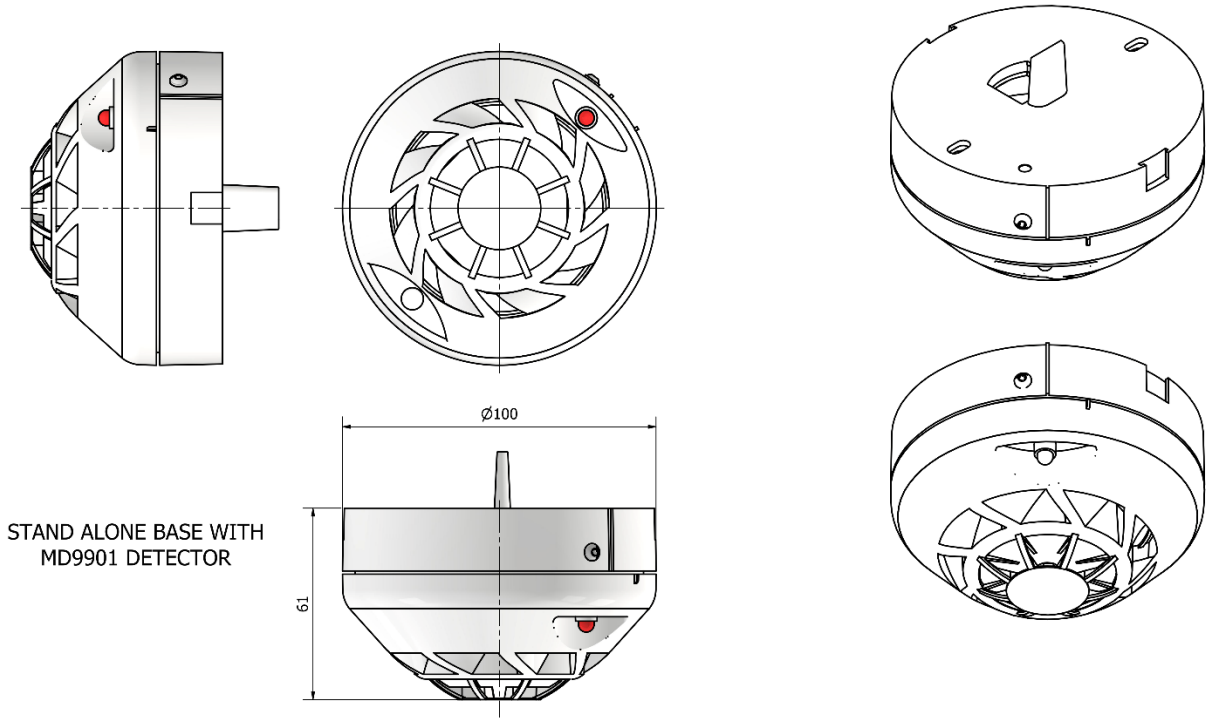


Fig. 8-5 - Dimensions with MD9901

8.6 Dimensions with MD9902 detector

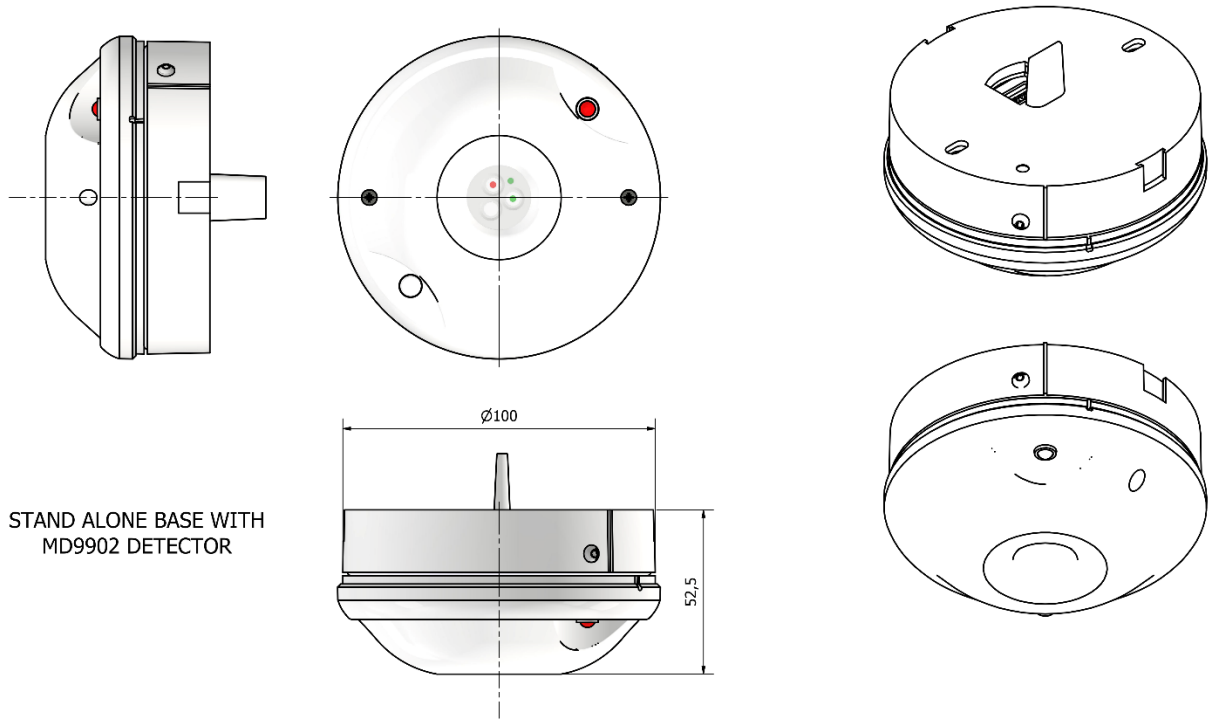


Fig. 8-6 - Dimensions with MD9902

8.7 Dimensions MD9900-SAB-W baseplate

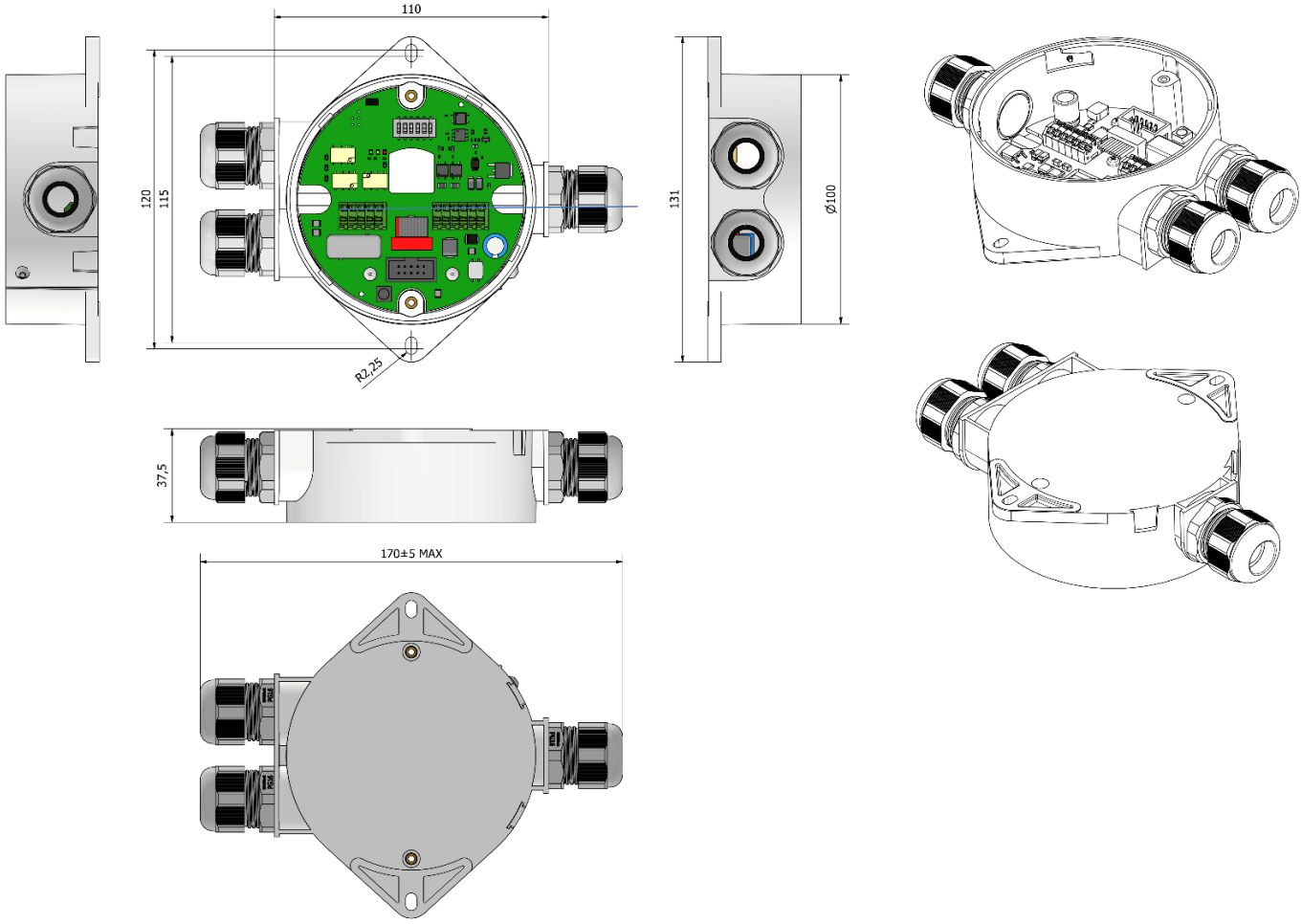
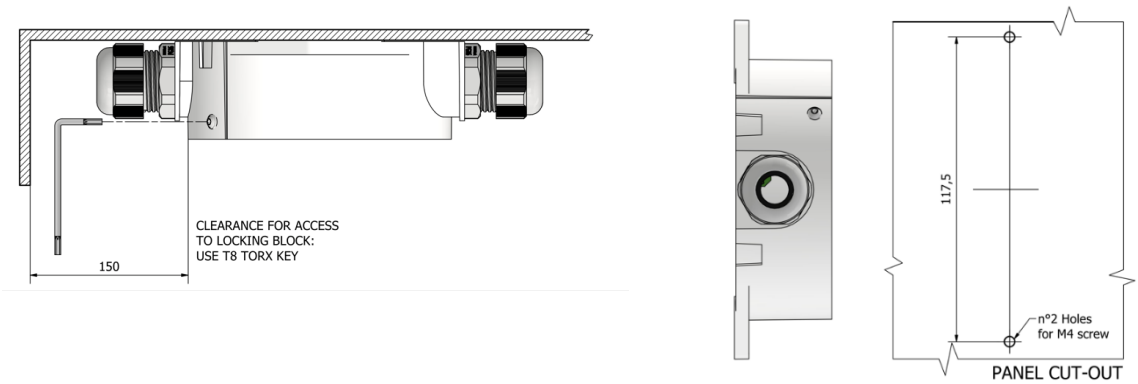


Fig. 8-7 - Dimensions of MD9900-SAB-W baseplate

8.8 Clearance and cut-out of MD9900-SAB-W baseplate



	FEATURES
TYPE	STAND ALONE BASE
MODEL	MD9900-SAB
WEIGHT	130 gr
PROTECTION INDEX	IP65

Fig. 8-8 - Clearance and cut-out of MD9900-SAB-W baseplate

8.9 Dimensions with MD9910 detector

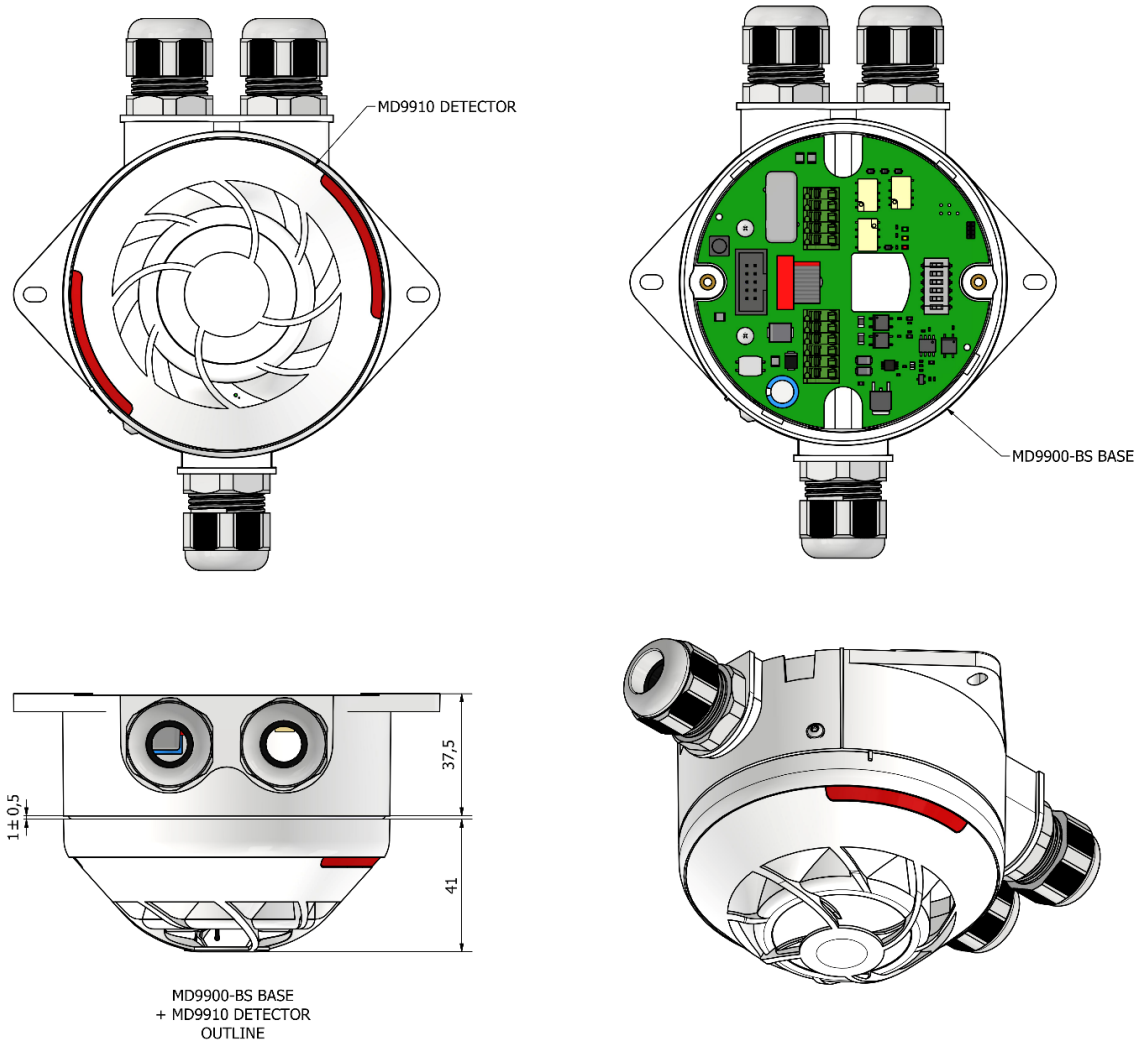


Fig. 8-9 - Dimensions with MD9910 detector

8.11 Dimensions with MD9900 detector

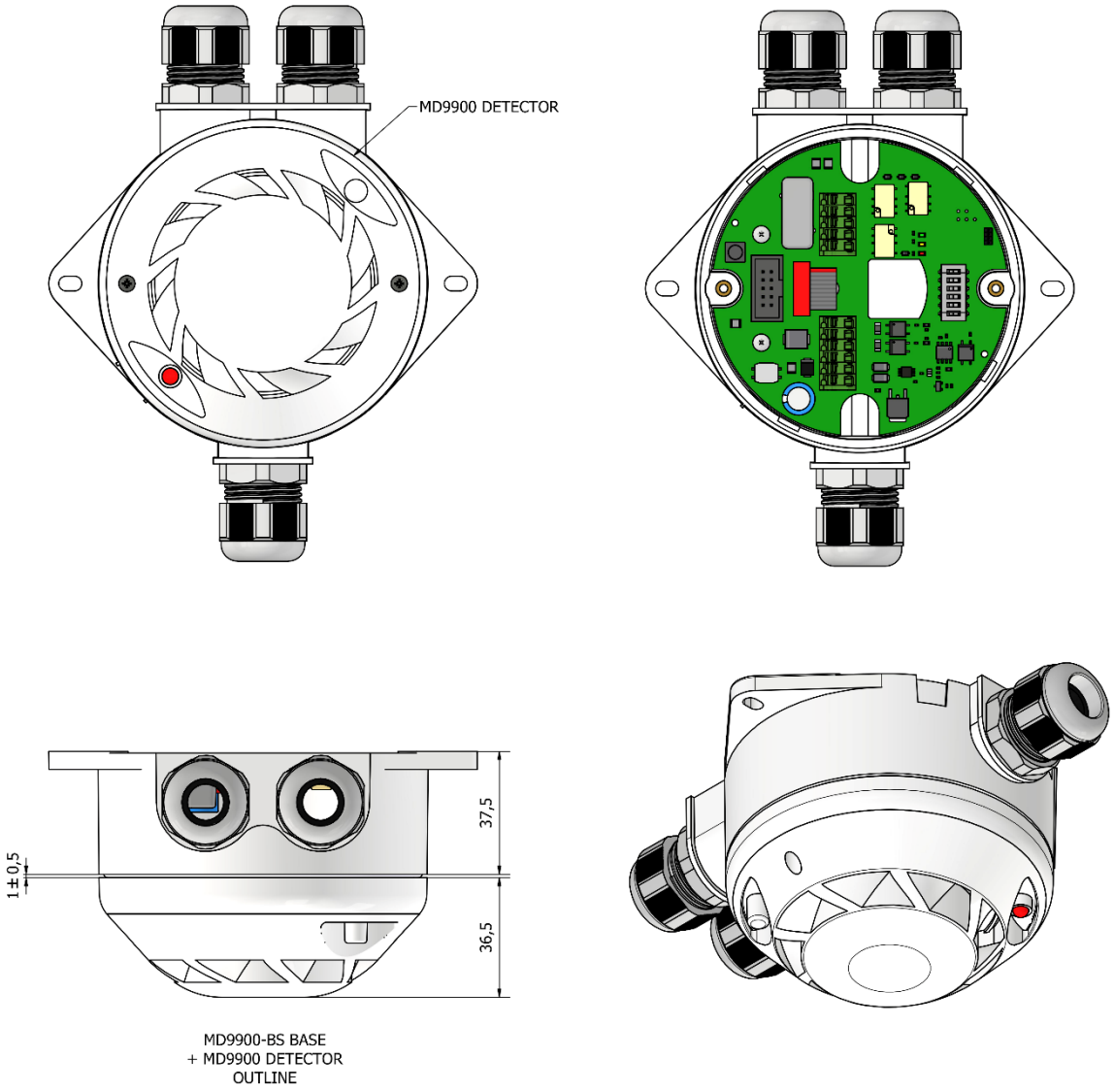


Fig. 8-10 - Dimensions with MD9900 detector

8.12 Dimensions with MD9901 detector

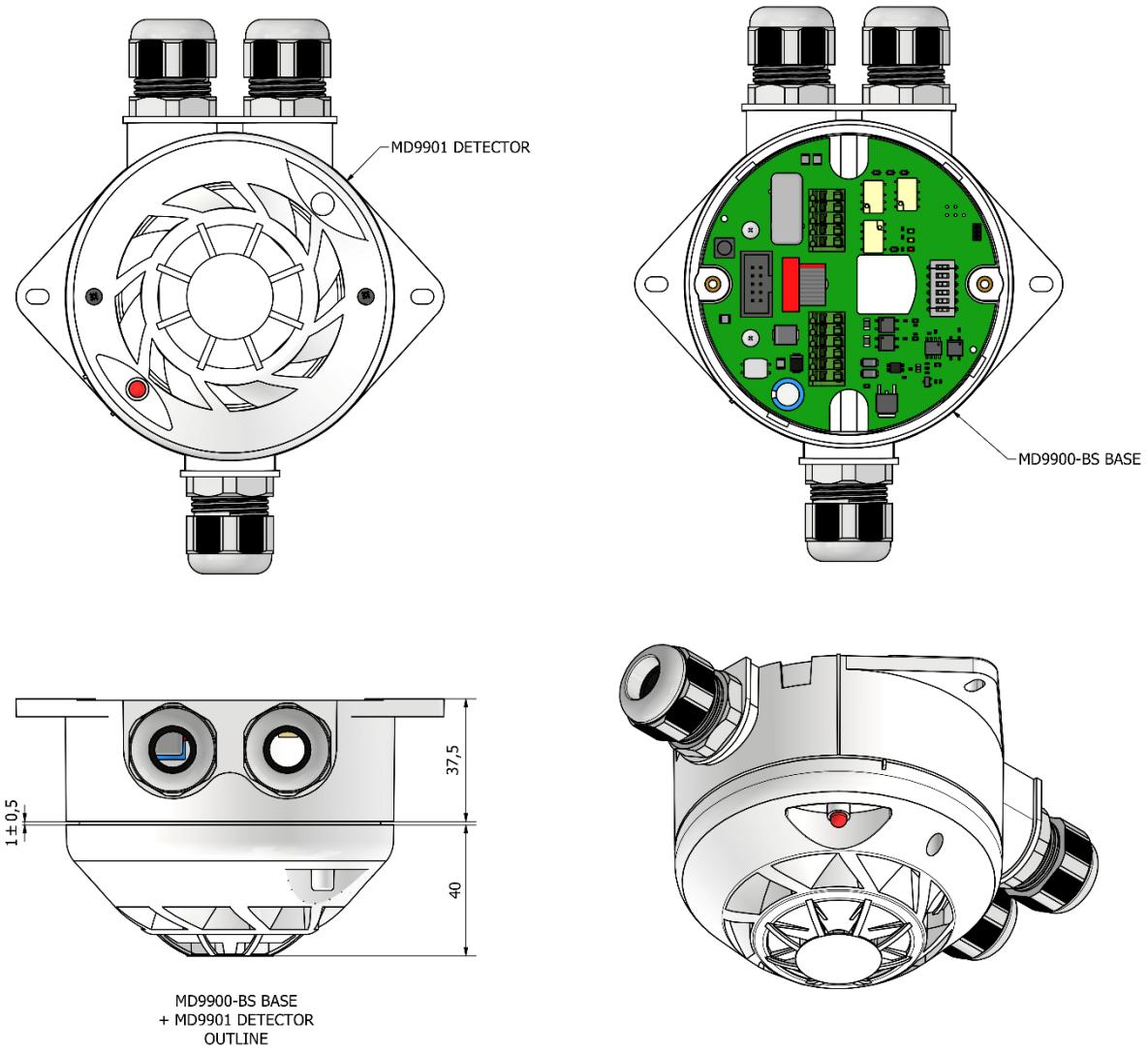


Fig. 8-11 - Dimensions with MD9901 detector

8.13 Dimensions with MD9902 detector

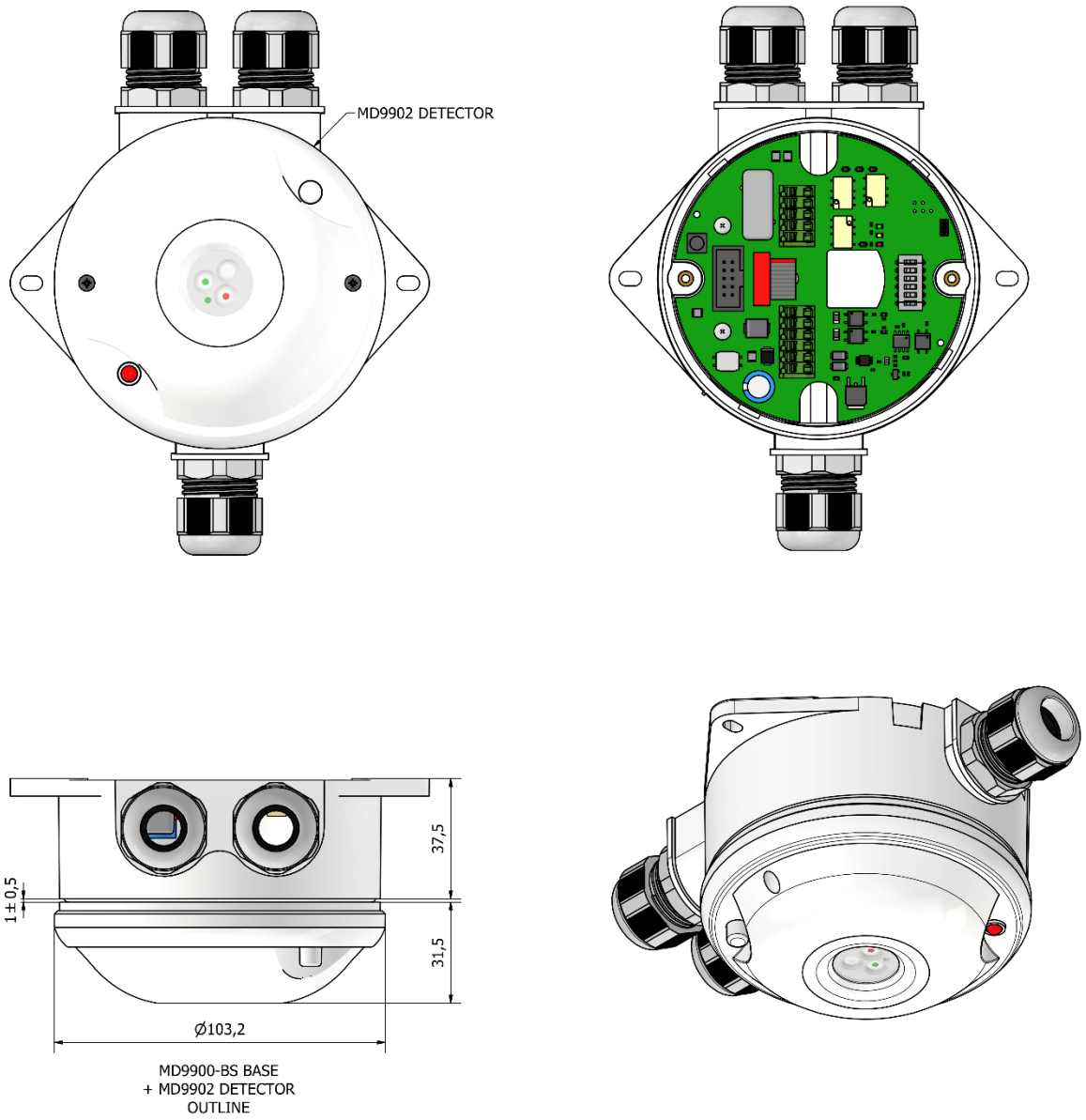
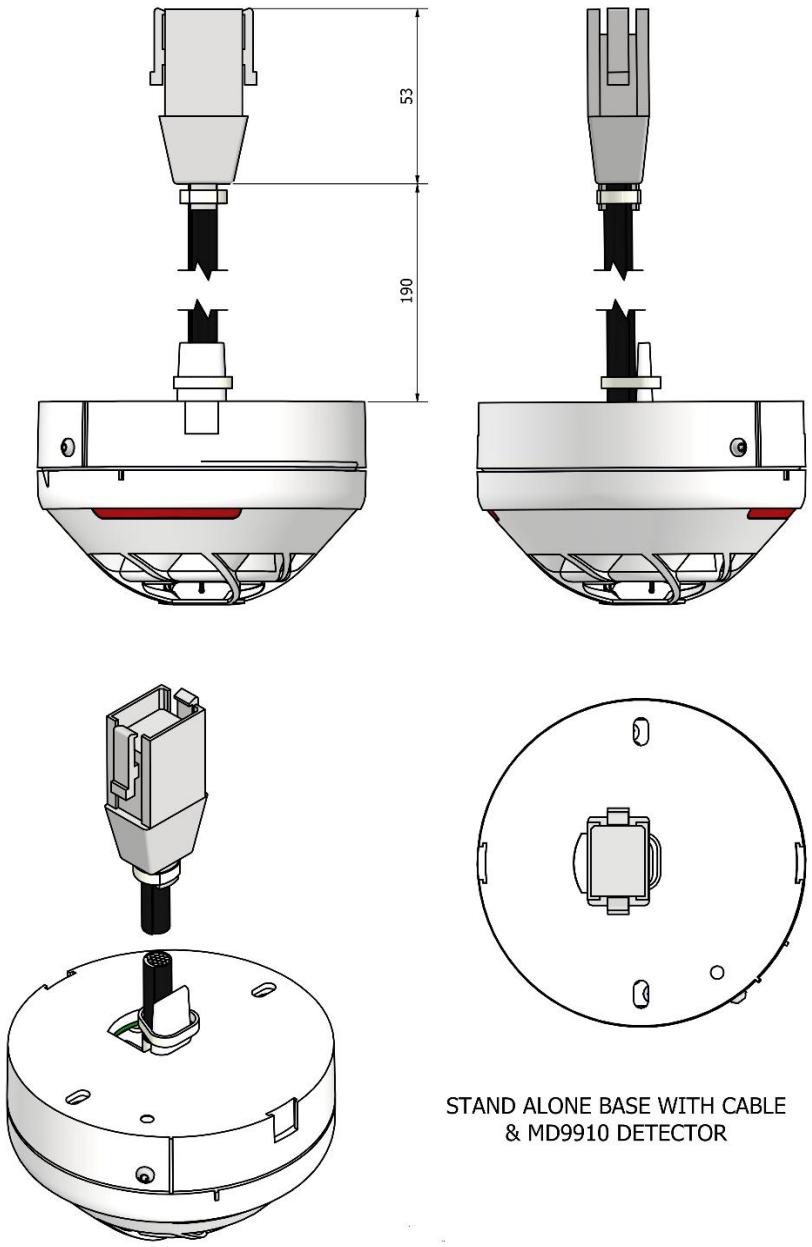


Fig. 8-12 - Dimensions with MD9902 detector

8.14 Dimensions with cable AM38338



STAND ALONE BASE WITH CABLE
& MD9910 DETECTOR

9 Technical specification of SAB

9.1 Mechanical features

Title		*Value*		
Dimensions	HxL (Max)	**SAB +Detector**	**Baseplate**	**Dim.**
		MD9900	MD9900-SAB	57x100
		MD9901		62x100
		MD9902		52x103
		MD9910		62x100
		MD9900	MD9900-SAB-W	74x130
		MD9901		79x130
		MD9902		69x130
		MD9910		79x130
Weight		**SAB+ Detector**	**Baseplate**	**Weight**
		MD9900	MD9900-SAB	245 g.
		MD9901		242 g.
		MD9902		373 g.
		MD9910		203 g.
		MD9900	MD9900-SAB-W	284 g.
		MD9901		281 g.
		MD9902		412 g.
		MD9910		242 g.
Weight of PCBA (SIB)				412 g.
IP Protection Grade	[EN60529]	**Detector**	**Baseplate**	**IP**
		MD9900	MD9900-SAB	IP32
		MD9901		IP32
		MD9902		IP32
		MD9910		IP32
		MD9900	MD9900-SAB-W (2)	IP65
		MD9901		IP65
		MD9902 (IP67) (1)		IP65
		MD9910		IP44
Material of enclosure		Polycarbonate Lexan 923 –Flame Retardant Cl. UL94V0 – Colour white RAL 9010 - UV protected		

(1) IP67 with locking screws
(2) IP grade is achieved with PG16 cable gland

9.2 Environmental features

Altitude		Up to 1400 mt (EN50125-1 – class 1)
Operating Temp.	Min ÷ Max	-25 ↔ +70 °C (EN50155 class T3)
Storage temperature	Min ÷ Max	-40 ↔ +70 °C
External Relative Humidity	Min ÷ Max	5% ↔ 95%
Cooling		Natural
Flammability		UL-94 V-0
Terminals	Type	Spring cage terminal – Max cable section 1.5 sqmm (without ferrule)
Printed Circuit Board		Glass epoxy FR-4; thickness 0.063 inches minimum; copper 0.002 inches minimum. Up to four layers. Surface mount technology.
PCB protection		Protective epoxy transparent fluorescent pigment coating
PCB identification		QR code on label reproducing serial number and revision
RoHS		Compliant to European Directive 2011/65/EU
REACH		Compliant to European Regulation No 1907/2006+1688/2016
Shock and Vibration		Category 1 – Class B [IEC 61373]
MTBF	hours	1.359.803 (HDBK-217 Plus 40°C) – ground mobile Heavy wheeled

9.3 Electrical features

Power Consumption	Typical	1,4 W
Power supply	Nom.	24 Vdc
	Min-Max	16.8 ↔ 30.0 Vdc [EN50155]
	Low-pulse 0.1 s	14.4 Vdc [EN50155]
	High-pulse 1 s	33.6 Vdc [EN50155]
	Transient	2kV 1/50 µs
	Absolute max	36 Vdc
Inrush current		TBD
Polarity reversal		Auto protected
Hold-up capability	Min	10 ms @ 24 Vdc [Class S2 EN 50155]
Isolation		[EN50155]
Dielectric test		[EN50155]
Electrostatic discharge test		Compliant with EN50155

9.4 Interface

Grounding		Not grounded
Status LED local indicators	3	Operating status ALARM, FAULT, SERVICE
Push-Button Inputs	2	Input Port for TST and RST Sourcing Contacts rated at 24Vdc – Input current 5 mA
Relay Outputs	3	Max switching voltage 220VDC,/ 250VAC Rated current 2A Limiting continuous current 2A Switching power 60W, 62.5VA
Analog Output 4-20 mA	1	Stepped 4-20 mA sink analog output –isolated Max load 600 ohm

9.5 Approvals

Standard	Description	Approval
EN50155 :2017	Raylway applications – Rolling Stock – Electronic equipment	TESLAB n° 226183F-a/b/c/d
EN 45545-2:2020	Requirements for fire behaviour of materials and components	LAPI compliance document n° 111/VIT/22 & n° 045/VIT/14 Rev 3
EN 50657:2017	Railways Applications - Rolling stock applications - Software on Board Rolling Stock – SIL0	CERTIFER n° EC6215_0002_01_AR

10 Technical specification of Fire detectors

10.1 MD9900 – Smoke detector

Name		MD9900
Part Number		25626
Type		Smoke detector
Datasheet		Doc. n° D24728
Protection Index		IP 32 / IP65 (according to the baseplate)
Enclosure		Polycarbonate Flame Retardant Cl. UL94V0 White RAL9010
Operating temperature	min ÷ max	25°C ÷ +75°C
Power supply		24Vdc (moduled)
Current	max	350 µA
Refence standard		EN54-7:2000
		IEC 60092-504
Approval		Marine Equipment Directive MED 2014/90/EU Tested according to EN50155 :2017 Tested according to EN 45545-2:2020
MTBF	hours	5.438.026 (HDBK-217 Plus 40°C) – Naval sheltered

10.2 MD9901 – Smoke & Heat detector

Name		MD9901
Part Number	Temperature class A1 Temperature class B Temperature class C	26654-A1 26654-B 26654-C
Type		Smoke & Heat detector – temperature class A1-B-C
Temperature class		A1 – alarm threshold 54°C ÷ 65°C
		B – alarm threshold 69°C ÷ 85°C
		C – alarm threshold 84°C ÷ 100°C
Datasheet		Doc. n. D24731
Protection Index		IP 32 / IP65 (according to the baseplate used)
Enclosure		Polycarbonate Flame Retardant Cl. UL94V0 White RAL9010
Operating temperature	min ÷ max	25°C ÷ +75°C
Power supply		24Vdc (modulated)
Current	max	350 µA
Reference standard		EN54-5:2000
		EN54-7:2000
		CEA 4021
		IEC 60092-504
Approval		Marine Equipment Directive MED 2014/90/EU Tested according to EN50155 :2017 Tested according to EN 45545-2:2020
MTBF	hours	5.418.229 (HDBK-217 Plus 40°C) – Naval sheltered

10.3 MD9902 – Flame detector

Name		MD9902
Part number		26718
Type		Flame detector
Datasheet		Doc. n. D25795
Protection Index		IP 32 / IP65 / IP67 (according to the baseplate used)
Enclosure		Polycarbonate Flame Retardant Cl. UL94V0 White RAL9010
Operating temperature	min ÷ max	25°C ÷ +75°C
Power supply		24Vdc (modulated)
Current	operating max (alarm)	450 µA 700 µA
Angle of view		± 42°
Sensitivity (selectable)	Class 1 Class 2 Class 3	up to 25 mt. up to 17 mt. up to 12 mt
Reference standard		EN54-10:2000 IEC 60092-504
Approval		Marine Equipment Directive MED 2014/90/EU Tested according to EN50155 :2017 Tested according to EN 45545-2:2020
MTBF	hours	4.588.122 (HDBK-217 Plus 25°C) – Naval sheltered
		2.771.725 (HDBK-217 Plus 40°C) – Naval sheltered

Via Greti del Vara, 9 – 19020 Follo (SP) Italy
Tel. +39/0187/599101 Fax. +39/0187/558983
www.microdatadue.it E-mail: info@microdatasrl.it

10.4 MD9910 – Smoke & Heat detector w.TOD

Name		MD9910
Part number		29655
Type		Smoke & Heat detector
Temperature class		A1 – alarm threshold 54°C ÷ 65°C
Sounder		75dB(A)@1m Type A
TOD		Test On Demand diagnostic
Datasheet		Doc. n. D38823
Protection Index		IP 22 / IP44 (according to the baseplate used)
Enclosure		Polycarbonate Flame Retardant Cl. UL94V0 White RAL9010
Operating temperature	min ÷ max	25°C ÷ +75°C
Power supply		24Vdc (modulated)
Current	operating sounder on (alarm)	350 µA 550 µA
Reference standard		EN54-3:2015 – Acoustic signalling device EN54-7:2018 – Smoke detectors EN54-5:2017 – Heat detectors - Class A1 EN54-29:2015 – Multi sensors fire detector (only for open wood fire (TF1), Low temperature black smoke (decalene) liquid fire (TF8)) IEC 60092-504:2016
Approval		Marine Equipment Directive MED 2014/90/EU Tested according to EN50155 :2017 Tested according to EN 45545-2:2020
MTBF	hours	2.871.984 (HDBK-217 Plus 40°C) – ground mobile Heavy wheeled