



AutroGuard®

Technical Handbook

AutroGuard® Multicriteria Protector Series
V-430, V-530, V-100, V-110 and V-120



AUTRONICA

COPYRIGHT ©

This publication, or parts thereof, may not be reproduced in any form, by any method, for any purpose.

Autronica Fire and Security AS and its subsidiaries assume no responsibility for any errors that may appear in the publication, or for damages arising from the information in it. No information in this publication should be regarded as a warranty made by Autronica Fire and Security AS. The information in this publication may be updated without notice.

Product names mentioned in this publication may be trademarks. They are used only for identification.



This product contains static-sensitive devices. Avoid any electrostatic discharge.

The WEEE Directive

When the marking below is shown on the product and/or its literature, it means that the product should not be disposed with other household wastes at the end of its life cycle. During waste treatment, disposal and collection, please separate the product from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. This product should not be mixed with other commercial wastes for disposal.

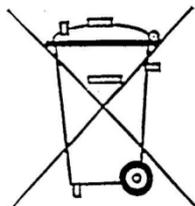


Table of Contents

1. Introduction.....	2
1.1 Scope	2
1.2 The Manual	2
1.3 Target Audience	2
1.4 Reference Documentation.....	2
1.5 Downloading Technical Documents	2
1.6 Technical Terms and Abbreviations	3
1.7 Document Revision Log	4
2. Safety.....	5
2.1 Important Safety Information	5
2.2 Intended Use	6
2.3 Safety Notice	6
2.4 Safety Regulations	6
2.4.1 National Standards and Regulations	6
2.4.2 Mounting, Installation, Commissioning and Maintenance.....	7
2.4.3 Modifications to the products	7
2.4.4 Specific Conditions of Use for Ex Detectors in Hazardous Areas	7
2.5 Compliance with Standards and Directives.....	7
2.6 Recommendations for latest available Firmware and Operating System.....	8
2.7 Environment Compatibility.....	8
2.7.1 Recycling.....	8
2.7.2 Disposal	8
3. Protector Overview.....	9
3.1 Product Description	9
3.2 Details for Ordering	10
3.2.1 Ordering Information V-430	10
3.2.2 Ordering Information V-530	11
3.2.3 Ordering Information V-100	11
3.2.4 Ordering Information V-110/V-120.....	11
3.2.5 Ordering Information Accessories.....	12
3.2.6 Ordering Information AutoGuard Retro Variants	12
3.3 QR code and Data Matrix Code	13
3.3.1 QR and Data Matrix Code Information.....	13
3.3.2 QR Code Placement on Protector	13
3.3.3 Data Matrix Code Placement on Protector Base's Tagholder	14
3.4 Tag Holder for Labels.....	14
3.5 Dimensions and Outlines	15
3.5.1 Protector Base	15
3.5.2 Protector with Visual Alarm Device (VAD).....	15
3.5.3 Protector without Visual Alarm Device (VAD).....	16
3.5.4 Protector for Retrofit Mounting onto BWA-100/BWA-101 (Height)	16
4. Technical Specifications	17

4.1	Protector and Base.....	17
4.2	Integrated Sounder.....	18
4.3	Tones.....	19
4.4	Sound Pressure Levels for Tones.....	20
4.5	Integrated VAD – Current Consumption.....	25
4.6	Integrated VAD and Sounder – Current Consumption.....	26
5.	Functional Description	27
5.1	General.....	27
5.2	Chamber Design.....	27
5.3	DYFI ^{3D}	28
5.3.1	DYFI ^{3D} - Particle/Smoke Signature Analysis.....	28
5.3.2	DYFI ^{3D} - Dynamic Filtering.....	29
5.4	Sensitivity Classes for Environmental Adaptivity.....	30
5.5	Operation Classes.....	30
5.6	EN54 Heat Response Categories.....	31
5.7	SelfVerify® 2.0 Function.....	32
5.8	Cover Detection.....	32
5.9	Protector “Alive Signal”.....	33
5.10	LED Behavior.....	33
6.	Visual Alarm Device (VAD).....	34
6.1	Compliance with EN54-23.....	34
6.2	Coverage Volume.....	34
6.3	Category C – Ceiling Mounted Devices.....	35
6.4	Category O.....	36
6.5	Visual Alarm Device (VAD) Intensity.....	36
6.5.1	Consideration Factors for VAD Sensitivity Settings.....	36
6.5.2	VAD Intensity Settings.....	36
6.5.3	VAD Intensity - White VAD and Red VAD.....	37
6.6	Flash Rate.....	37
7.	Audible Alarm Devices	38
7.1	General.....	38
7.2	Sound Pressure Level.....	38
7.3	Sound and Pulse Patterns.....	38
8.	Planning	39
8.1	Reference to National/Local Regulations.....	39
8.2	Environmental Requirements.....	39
8.2.1	Location / Required Space.....	39
8.3	Area Coverage and Monitoring Distance.....	40
8.3.1	Smoke Detection.....	40
8.3.2	Heat Detection.....	41
8.4	Current Consumption on Detection Loop.....	42
9.	Mounting Instructions	43
9.1	Cable Entries/Exits on the Protector Base.....	43
9.1.1	Cable Entry for Concealed Conduit Wiring.....	43

9.1.2	Cable Entries/Knockout Stampings for Surface-mounted Wiring	44
9.2	Mounting the Protector Base.....	45
9.2.1	Considerations Before Mounting.....	45
9.2.2	Template for Marking and Drilling Holes.....	46
9.2.3	Mounting for Concealed Conduit Wiring	47
9.2.4	Mounting onto a Ceiling Box / Wall Box.....	48
9.2.5	Mounting onto a Conduit Box.....	49
9.2.6	Mounting for Surface-mounted Wiring	51
9.3	Connecting Loop Cables	52
9.3.1	Cable Requirements	52
9.3.2	Wire Routing Arrangement Inside Protector Base.....	53
9.3.3	Wire Insulation Stripping	54
9.3.4	Spring Cage Connection.....	55
9.3.5	Connections - Overview.....	56
9.3.6	Loop Connections	56
9.3.7	LED Connection	57
9.3.8	Branch-offs	57
9.4	Alignment Marks on the Protector	59
9.5	Mounting the Protector onto the base	60
9.6	Locking/Unlocking the Protector to the Base	61
9.7	Removing the Protector from the Base	62
9.8	Retrofit mounting onto Existing AutoSafe Base BWA-100/BWA-101	62
9.9	Labeling the Protector Base / Tag Holder	64
9.10	Protector Cover	64

10. Preparing for Configuration.....65

10.1	Introduction.....	65
10.2	Tools requirements.....	65
10.3	Alternative ways of identifying serial numbers	65
10.3.1	Alternative A - Using QR code reader (recommended)	65
10.3.2	Alternative B - Using the rip off label inside the AutoGuard base	66
10.4	Labeling bases with tag name labels	66
10.4.1	Alternative A - Using a QR code reader.....	67
10.4.2	Alternative B - Using the rip off label.....	67
10.5	Scanning each loop with AS2000	67
10.6	Generating an Excel file	68
10.7	Merging Tag Names, Serial Numbers and LSI	68
10.8	AutoSafe Configuration Tool.....	69
10.9	Troubleshooting.....	69

11. Configuration Recommendations.....70

11.1	Introduction.....	70
11.2	Hotel Rooms.....	71
11.3	Apartments	71
11.4	Freezers and Cold Stores	72
11.5	Clean Rooms and Computer Rooms	72
11.6	Table Overview – Applications/Settings.....	72

12. Configuration for AutoSafe.....76

12.1	Introduction.....	76
------	-------------------	----

12.2	AutoSafe Configuration Tool Requirements	76
12.3	Site Configuration System Settings.....	77
12.3.1	Detector Defaults – LED on Alarm/LED Alive Blink	77
12.3.2	Sound and Pulse Patterns	78
12.4	Adding System Units	79
12.5	AutoGuard Default Settings	81
12.5.1	Set AutoGuard Defaults Menu	81
12.5.2	Multi.....	82
12.5.3	Ex	82
12.5.4	Ex/S.....	83
12.5.5	Sounder.....	83
12.5.6	Visual Alarm Device (VAD)	84
12.5.7	Postfix	84
12.6	AutoGuard Settings for Multiple Protectors.....	85
12.7	AutoGuard Individual Settings	86
12.7.1	Fire Alarm Devices.....	86
12.7.2	Automatic Test Mode	86
12.7.3	Cover Detection Sensitivity	87
12.7.4	Heat Response Categories.....	87
12.7.5	Operation Classes.....	88
12.7.6	Sensitivity Settings for Environmental Adaptivity.....	88
12.7.7	Visual Alarm Device (VAD)	89
12.7.8	Sound Pressure Level - Sounders	91
12.8	Matching Protectors/Bases with AutoSafe Configurations	92
13.	Configuration for Autoprime	93
13.1	Introduction.....	93
13.2	Autoprime Software Requirements	93
13.3	Global Settings	94
13.3.1	Sound Patterns	94
13.3.2	Visual Alarm Device (VAD)	94
13.4	Individual Settings	95
13.4.1	Performance Class Day Mode	95
13.4.2	Operation Class Day Mode.....	95
13.4.3	Performance Class Night	96
13.4.4	Operation Class Night Mode	96
14.	Testing and Maintenance	97
14.1	SelfVerify® 2.0 Function	97
14.2	Visual Inspection	97
14.3	Testing.....	98
14.3.1	Introduction	98
14.3.2	Automatic Test Mode	98
14.3.3	Manual testing.....	99
14.4	Cleaning Procedure.....	99
14.5	Replacing a Protector (Hot Swap).....	100
14.6	Calibrating the Cover Detection Sensor.....	101
14.6.1	Method A: Re-calibrating Using a Protector Cover.....	101
14.6.2	Method B: Re-calibrating Using AS2000 Loop Diagnostic Tool	102
15.	Accessories	104
15.1	Locking Tool for Locking the Protector to the Base	104
15.2	QR Code Reader.....	104

15.3	WAS-2000 and AS2000 Loop Diagnostic Tool	105
15.4	Cover	105
15.5	Air Duct Sampling Unit	106
15.6	Air Duct Sampling Unit – Stainless Steel	107
15.7	Conduit Box	108
15.8	Telescope Removal Tool.....	109
15.9	Ground Device	109
16.	Appendix	110
16.1	Regulatory Information	110
17.	Index	111

1. Introduction

1.1 Scope

This handbook provides all relevant technical information for the AutoGuard® Multicriteria Protector, including a description of all variants, technical specifications, functionality, planning, mounting, configuration, plus testing and maintenance.

1.2 The Manual

Ensure that this Technical Handbook is read and understood before installing/operating/maintaining the equipment. Pay attention to the Safety Instructions. Instructions are listed in chapter 2 and repeated where appropriate in this Technical Handbook.

1.3 Target Audience

The handbook is intended to be used by project engineers and qualified service and technical personnel who are responsible for the installation, commissioning and maintenance of the protector. It is also useful for sales personnel.

1.4 Reference Documentation

The table below shows an overview of the technical documentation for the protector.

Document Name	Part number
AutoGuard-V430-datasheet, English	Doc-1004268
AutoGuard-V530-datasheet, English	Doc-1004269
AutoGuard-V100-datasheet, English	Doc-1004270
AutoGuard-V110-120-datasheet, English	Doc-1004271
AutoGuard-technical-handbook, English	Doc-1004339
AutoGuard-sound-pressure-levels, English	Doc-1004281

1.5 Downloading Technical Documents

All relevant technical documents can be downloaded from the Autronica product web at www.product.autronicafire.com/products

1.6 Technical Terms and Abbreviations

The following technical terms are specifically related to the AutoGuard® Multicriteria Protector.

Term	Explanation
FAD	Fire Alarm Devices include visual or audible alarm devices (sounders)
FPE	Fire Protection Equipment. Fire control or fighting equipment, e.g. extinguishing installation.
VAD	Visual Alarm Device (beacon, flash)
Sounder	An audible alarm device
Coverage Volume	With reference to EN54-23, the AutoGuard® Multicriteria Protector features two categories in respect to Coverage Volume: C, ceiling mounted devices O, open class devices Refer to chapter 6.2 for more detailed information.
VAD Intensity	The AutoGuard® protector's integrated VAD can be configured to have different intensities in order to meet the required illumination at the premises. The AutoGuard® protector's VAD emits a white or red light and different VAD intensities (low, medium, high and open) can be configured (with reference to Coverage Volume).
Flash Rate	Measured in Hz. 1Hz flash rate is equal to one flash every second. 0,5Hz flash rate is equal to one flash every two seconds.
Cover Detection	An add-on feature to the AutoGuard® Multicriteria Protector. If a dust cap or any other object covers the air inlet, a fault message will appear. Refer to chapter 5.8 for more detailed information.
Sensitivity Classes	The AutoGuard® Multicriteria Protector can be programmed to high, medium and low sensitivity classes for use in different environments.
Heat Response Categories	Heat Response Categories (Heat Classes) apply to AutoGuard® Multicriteria Protectors with Operation Classes Multi and Heat only.
Protector head	The protector head for the AutoGuard® Multicriteria Protector contains the housing, the detection chamber, all sensors, audible/visible devices, printed circuit board and the rotatable bajonet ring.
Protector base	The protector base (socket) for the AutoGuard® Multicriteria Protector, containing a connector for detection loop cables, circuit board, microcontroller.
Bajonet ring	Rotatable bajonet ring on the protector head used to easily connect the protector to the base.

1.7 Document Revision Log

Revision	Date	Description/Corrections
Revision 1	2020-06-29	Officially approved by Autronica Fire and Security AS
Revision 2	2021-05-17	<ul style="list-style-type: none"> • Added part numbers for Air Duct Samling Units and Removal tool • Added new ch. 10 “Preparing for Configuration” • Some changes/added information in technical specifications ch. 4 (system compatibility) • Added new ch. 2.6 “Recommendations for latest available Firmware and Operating System” • Changed ordering information ch. 3.3 • Changes in configuration, ch. 11
Revision 3	2021-08-08	<ul style="list-style-type: none"> • Added new ch. 12 for the configuration of Autroprime systems. • Correction, requirement: AutoSafe Configuration Tool, version 4.11 or higher. • Added and corrected technical specifications in ch. 4.1 • Added new ch. 11: “Configuration Recommendations” • Corrections: ch. 4.5: Integrated VAD – Current Consumption • Added new ch. 4.6: Integrated VAD and Sounder – Current Consumption • Added new ch. 14.6: “Calibrating the Cover Detection Sensor” • Added new ch. 16.1: “UL Regulatory Information” • Added UL specific information to “Technical Specifications” according to UL requirements, ch. 4.1 • Ordering information, added UL variant in matrix, ch. 3.2.1 and 3.2.2. • Removed previous ch. 3.2 “Series and Variants” • Revised ch. 3.3 “Labeling” (incl. all subchapters) • Corrections: Ch. 8.4 “Current Consumption on Detection Loop”, Alarm and Fault • Ordering information AutroGuard Retro Variants, ch. 3.2.6 • Added text to ch. 14.3.3 “Automatic Test Mode” • Added textt to ch. 3.1 • Part number 116-WBJ-220 and new picture added to ch. 15.8. • Added rated operating voltage for protector UL variant to technical specifications in ch. 4.1
Revision 4	2021-12-09	<ul style="list-style-type: none"> • Revised due to comments from Intertek regarding UL information. Ch. 3.3.1, 3.3.2, 3.3.3, 3.4.2, 4.1, 15.5 and 16.1.
Revision 5	2021-12-15	<ul style="list-style-type: none"> • Revised due to additional comments from Intertek regarding UL information. Ch. 3.3.1, 3.3.2, 3.3.3, 3.4.2, 4.1, 14.3, 14.3.3, 15.5 and 16.1.
Revision 6	2023-08-31	<ul style="list-style-type: none"> • Removed entire ch. 3.3 “Labeling” • Revised “Configuration Recommendations, ch. 11
Revision 6	2024-08-23	<ul style="list-style-type: none"> • Revised “Configuration for Autroprime”, ch. 13.

2. Safety

2.1 Important Safety Information



IMPORTANT SAFETY INFORMATION. READ ENCLOSED WARNINGS AND SAFETY INFORMATION.

THIS MANUAL CONTAINS PRODUCT SAFETY WARNINGS, WARRANTY DISCLAIMERS, LIMITATIONS OF LIABILITY

PRODUCT WARNINGS

THESE PRODUCTS ARE INTENDED FOR SALE TO, AND INSTALLATION BY, AN EXPERIENCED PROFESSIONAL. AUTRONICA FIRE AND SECURITY CANNOT PROVIDE ANY ASSURANCE THAT ANY PERSON OR ENTITY BUYING ITS PRODUCTS, INCLUDING ANY "AUTHORIZED DEALER", IS PROPERLY TRAINED OR EXPERIENCED TO CORRECTLY INSTALL FIRE RELATED PRODUCTS.

A PROPERLY INSTALLED AND MAINTAINED PRODUCT/SYSTEM MAY ONLY REDUCE THE RISK OF EVENTS SUCH AS FIRE, SMOKE; IT IS NOT INSURANCE OR A GUARANTEE THAT SUCH EVENTS WILL NOT OCCUR, THAT ADEQUATE WARNING OR PROTECTION WILL BE PROVIDED, OR THAT THERE WILL BE NO DEATH, PERSONAL INJURY, AND/OR PROPERTY DAMAGE AS A RESULT.

AUTRONICA FIRE AND SECURITY BATTERY OPERATED SENSORS, DETECTORS AND PANEL ACCESSORIES HAVE A LIMITED BATTERY LIFE. WHILE THESE PRODUCTS ARE DESIGNED TO PROVIDE SOME WARNING OF IMMINENT BATTERY DEPLETION THE ABILITY TO DELIVER SUCH WARNINGS IS LIMITED AND SUCH WARNINGS MAY NOT BE PROVIDED IN ALL CIRCUMSTANCES. PERIODIC TESTING OF THE SYSTEM IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED IN THE USER MANUAL IS THE ONLY WAY TO ENSURE ALL SENSORS, DETECTORS AND PANEL ACCESSORIES ARE FUNCTIONING PROPERLY.

WARRANTY DISCLAIMERS

TO THE MAXIMUM EXTENT PERMITTED BY LAW, AUTRONICA FIRE AND SECURITY HEREBY DISCLAIMS ALL WARRANTIES AND REPRESENTATIONS, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE INCLUDING (BUT NOT LIMITED TO) ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS AND RELATED SOFTWARE. AUTRONICA FIRE AND SECURITY FURTHER DISCLAIMS ANY OTHER IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS.

AUTRONICA FIRE AND SECURITY MAKES NO REPRESENTATION, WARRANTY, COVENANT OR PROMISE THAT ITS PRODUCTS AND/OR RELATED SOFTWARE (I) WILL NOT BE HACKED, COMPROMISED AND/OR CIRCUMVENTED; (II) WILL PREVENT, OR PROVIDE ADEQUATE WARNING OR PROTECTION FROM, FIRE , SMOKE; OR (III) WILL WORK PROPERLY IN ALL ENVIRONMENTS AND APPLICATIONS.

2.2 Intended Use

The protector is intended for use in Autronica fire detection systems and with the environmental conditions described in this handbook.

2.3 Safety Notice



Throughout this handbook you will find safety notices for the purpose of notifying important installation, operation, or maintenance information that is NOT HAZARD RELATED.

2.4 Safety Regulations

2.4.1 National Standards and Regulations

Products from Autronica Fire and Security are developed and manufactured in compliance with international safety standards. Any additional national or local safety standards that apply where the equipment is installed and operated, must also be taken into account together with the safety regulations in the product documentation.

2.4.2 Mounting, Installation, Commissioning and Maintenance



Anyone installing, commissioning, using or maintaining Autronica Fire and Security products must follow the instructions in this handbook and other applicable handbooks or standards in order to ensure safe operation of the products and services.

2.4.3 Modifications to the products



Modifications to the products mentioned in this handbook shall **not** be carried out. If a fault or malfunction occurs, the product in question shall be replaced with a new one. Contact your local Autronica contact or dealer for further information.

Autronica Fire and Security AS disclaims all liability or responsibility for any injuries or death, damage, faults, malfunctioning and safety risks that may occur due to the use of a product that has been modified.

2.4.4 Specific Conditions of Use for Ex Detectors in Hazardous Areas

DANGER	 Explosive atmosphere. Potential electrostatic charging hazard.
WARNING	 Indicates the presence of a hazard that could cause SEVERE personal injury, death, or substantial property damage if ignored.

- Do NOT rub the detector in explosive atmospheres.
- Do NOT clean the detector in explosive atmospheres.

Electrostatic charging may cause risk of explosion.

2.5 Compliance with Standards and Directives

Our product portal <http://product.autronicafire.com/certificates/> provides information about certificates, standards and approval bodies for all variants of the AutroGuard® Multicriteria Protector. Refer also to Technical Specifications, chapter 4.

2.6 Recommendations for latest available Firmware and Operating System

We strongly recommend to always make sure that the systems are operated with the latest available firmware/operating system in order to ensure optimal operation and performance at all times.

2.7 Environment Compatibility

2.7.1 Recycling



The product is manufactured using materials and procedures which comply with current environmental protection standards EMC, RoHS, LVD and WEEE.

2.7.2 Disposal



The WEEE Directive



The product is considered an electronic device for disposal in accordance with the European Guidelines. The device must be disposed through channels provided for this purpose.

The product should not be disposed with other household wastes at the end of its life cycle. During waste treatment, disposal and collection, please separate the product from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. This product should not be mixed with other commercial wastes for disposal.

Make sure to comply with all local and currently applicable laws and regulations.

3. Protector Overview

3.1 Product Description

Protector (mounted on base)



Base



The **AutroGuard® Multicriteria Protector** and its base are designed for use with Autronica's interactive fire detection systems.

The **AutroGuard® Multicriteria Protector** features two heat sensors and a smoke chamber. The type of operation can be configured to fit the application, Heat, Optical or Multi Sensor.

AutroGuard® protectors can be delivered in a combination with integrated sounder, LED indicator and EN54-23 approved visual alarm device (VAD).

The protector range comprises series V-430 and the SIL2-certified series V-530. Specific Ex ia or Ex ic versions of the V-530 series are available for use in intrinsically safe areas EX zone 0, 1 and 2. (See next chapter for information on variants).

The **AutroGuard® bases** are prepared for easy mounting and fastening of the protector. The loop diagnostic tool AS2000 can be used to scan all loops, view the loop topology and type of bases, verify connections and detect possible short-circuits or breaks on the loops *before* protectors are mounted.

Autronica provides also several different variants of protectors specifically intended for retrofit purposes. These protectors can easily be mounted onto an existing AutroSafe base (BWA-100/BWA-101). The replacement is a 1 to 1 replacement. No software upgrade or re-configuration is necessary.

Autrosafe fire panels support configurations of mixed loops consisting of both legacy AutroSafe detectors and AutroGuard® protectors.

3.2 Details for Ordering

For information about part numbers for AutoGuard® variants, please visit the Autronica product portal at <http://product.autronicafire.com>.

Use the type configuration matrixes in the following chapters when ordering a variant of the V-430 or V-530 series.

3.2.1 Ordering Information V-430

Use the following matrix to find the correct part number. The example below shows the type key for a marine certified V-430 including Cover Detection & SelfVerify® 2.0, integrated sounder and integrated white VAD.

* Sounder is not UL certified.

Model	Description	
V-430	AutoGuard® Multicriteria Protector	
	Type	Extra functions / alarm method
	Blank	No extra feature
	S	Sounder (requires AutoSafe system version 4.11.2 or later)*
	VADW	White VAD (requires AutoSafe system version 4.11.2 or later)
	VADR	Red VAD (requires AutoSafe system version 4.11.2 or later)
	S-VADW	Sounder and white VAD (requires AutoSafe system version 4.11.2 or later)*
	S-VADR	Sounder and red VAD (requires AutoSafe system version 4.11.2 or later)*
	Type	Colour
	Blank	White RAL9010
	BK	Black RAL9005 (not available with Cover Detection)
	CC	Custom (not available with Cover Detection)
	Type	Feature
	Blank	No extra features
	CD	Cover detection and SelfVerify® 2.0
	Type	Certification
	Blank	EN54
	M	En54 and MED (Marine certification)



Example

Part no.: 116- V-430-S-VADW/CD/M

3.2.2 Ordering Information V-530

Use the following matrix to find the correct part number. The example below shows the type key for an intrinsically safe V-530 for zones 0, 1 and 2.

Model	Description	
V-530	AutroGuard® multicriteria protector with SIL2 and marine approval, SelfVerify and Cover Detection. Certified to EN54, UL 268, UL 521, ULC S529 and ULC S530.	
	Type	Additional functions / alarm types
	Blank	No additional functions/output
	EXIA	Intrinsically safe for zone 0, 1 and 2. ATEX / IECEx (requires EX Barrier BZ-500)
	EXIC	Intrinsically safe for zone 2. ATEX / IECEx
	S-VADW	Sounder and white VAD*
	Type	Colour
	Blank	White RAL9010
	Type	Extra features
	Blank	No extra features
	HS	Extra high sensitivity**

116-	V-530	—	EXIA	—		/	
------	-------	---	------	---	--	---	--

Example

Part number: 116-V-530-EXIA

*SIL2 approval is for detection only, not for sounder and white VAD functions. Sounder is not UL certified.

** The extra high sensitivity feature is not available with S-VADW variants.

3.2.3 Ordering Information V-100

Part number	Description
116-V-100	V-100 Standard Base, White.
116-V-100-BK	V-100 Standard Base. Black.
116-V-100-CC	V-100 Standard Base. Customized color to be specified.
116-V-100/M	V-100 Standard Base with marine certification. White.
116-V-100-BK/M	V-100 Standard Base with marine certification. Black.
116-V-100-CC/M	V-100 Standard Base with marine certification. Customized color to be specified.

3.2.4 Ordering Information V-110/V-120

Part number	Description
116-V-110	V-110 SIL2 base, with external LED output. White.
116-V-110-BK	V-110 SIL2 base, with external LED output. Black.
116-V-110-CC	V-110 SIL2 base, with external LED output. Customized color to be specified.
116-V-120	V-120 Ex ia/Ex ic SIL2 base, without external LED output. White.
116-V-120-BK	V-120 Ex ia/Ex ic SIL2 base, without external LED output. Black.
116-V-120-CC	V-120 Ex ia/Ex ic SIL2 base, without external LED output. Customized color to be specified.

3.2.5 Ordering Information Accessories

Part number	Description
116-WAS-2000	AS2000 loop diagnostic too
116-BWP-143A/AG	Air duct sampling unit
116-BWP-143A-SS/AG	Air duct sampling unit in stainless steel
116-BWP-100/20/AG	Conduit box 20 mm
116-BWP-100/25/AG	Conduit box 25 mm
116-WBJ-220	AutroGuard removal tool
116-WBJ-5/07	Test gas
116-WBJ-10	Testfire smoke and heat sensor test tool
116-100000927	Detector cover

3.2.6 Ordering Information AutoGuard Retro Variants

Part number	Description
HEAT	
116-BDH-200/SPARE	AutroGuard Retro variant - replaces 116-BDH-200
116-BDH-300/SPARE	AutroGuard Retro variant - replaces 116-BDH-300
116-BDH-500/SPARE	AutroGuard Retro variant - replaces 116-BDH-500
116-BDH-500/EX/SPARE	AutroGuard Retro variant - replaces 116-BDH-500/EX
116-BDH-500/N/SPARE	AutroGuard Retro variant - replaces 116-BDH-500/N
OPTICAL	
116-BHH-200/SPARE	AutroGuard Retro variant - replaces 116-BHH-200
116-BHH-300/SPARE	AutroGuard Retro variant - replaces 116-BHH-300
116-BHH-500/SPARE	AutroGuard Retro variant - replaces 116-BHH-500
116-BHH-500/EX/SPARE	AutroGuard Retro variant - replaces 116-BHH-500/EX
116-BHH-500/N/SPARE	AutroGuard Retro variant - replaces 116-BHH-500/N
116-BHH-500/S/SPARE	AutroGuard Retro variant - replaces 116-BHH-500/S
116-BHH-500/S/EX/SPARE	AutroGuard Retro variant - replaces 116-BHH-500/S/EX
116-BHH-500/S/N/SPARE	AutroGuard Retro variant - replaces 116-BHH-500/S/N
MULTI	
116-BHH-220/SPARE	AutroGuard Retro variant - replaces 116-BHH-220
116-BHH-320/SPARE	AutroGuard Retro variant - replaces 116-BHH-320
116-BHH-520/SPARE	AutroGuard Retro variant - replaces 116-BHH-520
116-BHH-520/EX/SPARE	AutroGuard Retro variant - replaces 116-BHH-520/EX
116-BHH-520/N/SPARE	AutroGuard Retro variant - replaces 116-BHH-520/N

3.3 QR code and Data Matrix Code

3.3.1 QR and Data Matrix Code Information

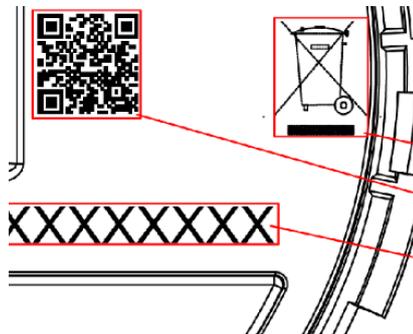
Two different codes are available for the purpose of reading product information.

- One QR code (see ch. 3.3.1) on the protector bottom contains a link to the datasheet for the product
- One datamatrix code on the protector base's tagholder (see ch. 3.3.2) contains information on the part number, version, serial number and type

The codes can be read by any QR/data matrix code readers.

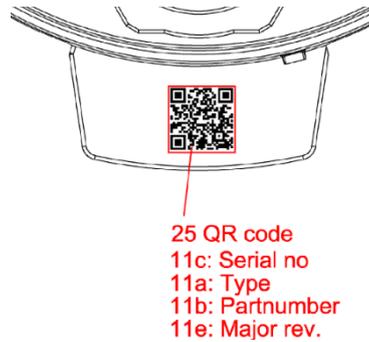
3.3.2 QR Code Placement on Protector

The QR code with a link to the datasheet for the protector in question is placed inside the protector at the bottom as shown below (the QR code shown in the illustration is an example used only for the purpose of indicating the placement of the QR code).



3.3.3 Data Matrix Code Placement on Protector Base's Tagholder

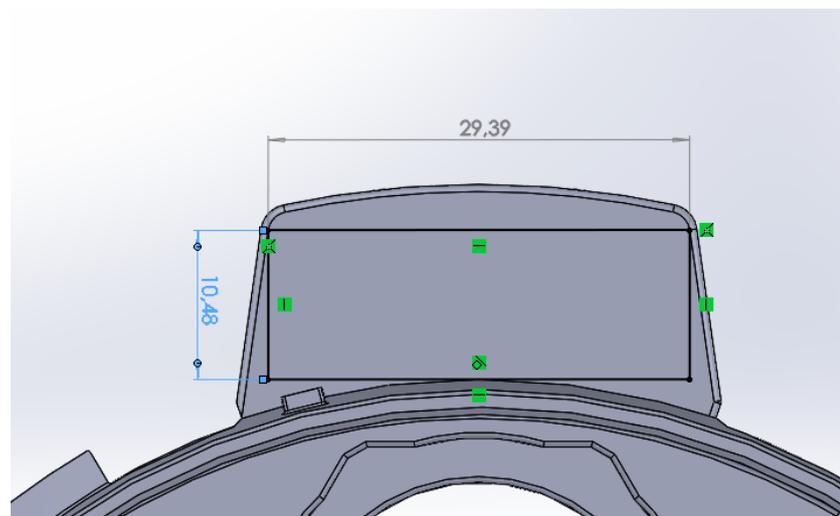
From the factory, a data matrix code is laser engraved on the protector base's tagholder. The code contains information on the part number, version, serial number and type (the data matrix code shown in the illustration is an example used only for the purpose of indicating the placement of the code).



3.4 Tag Holder for Labels

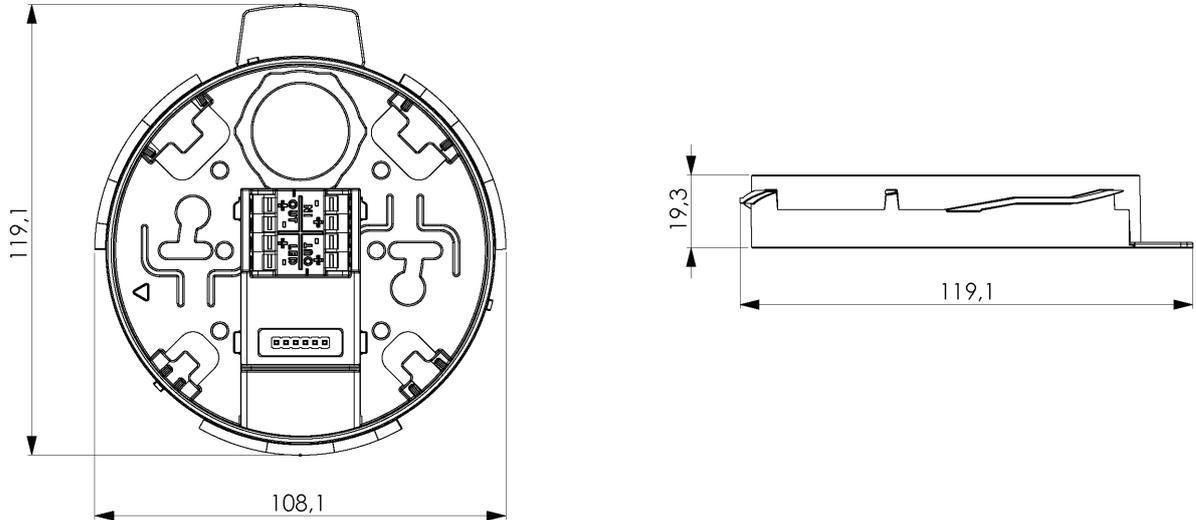
During installation and commissioning, a label containing a tag number (customer specified) is to be placed on the tag holder (covering the data matrix code).

The maximum size of the label is 29 x 10 mm (as shown below).

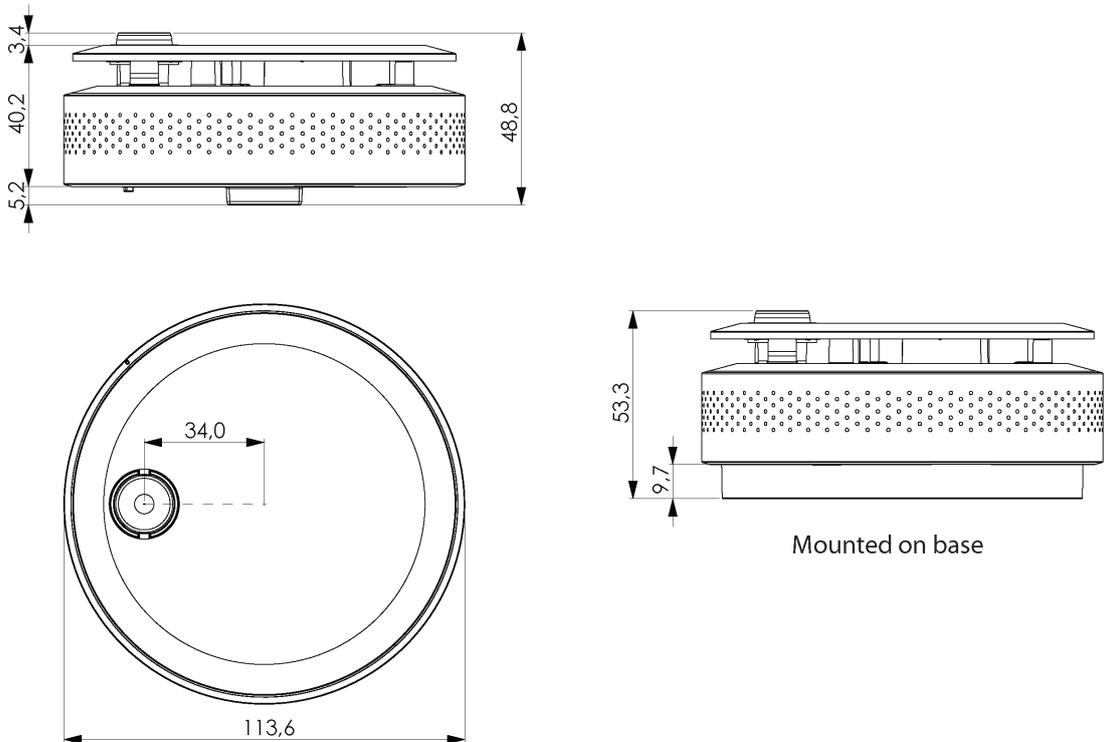


3.5 Dimensions and Outlines

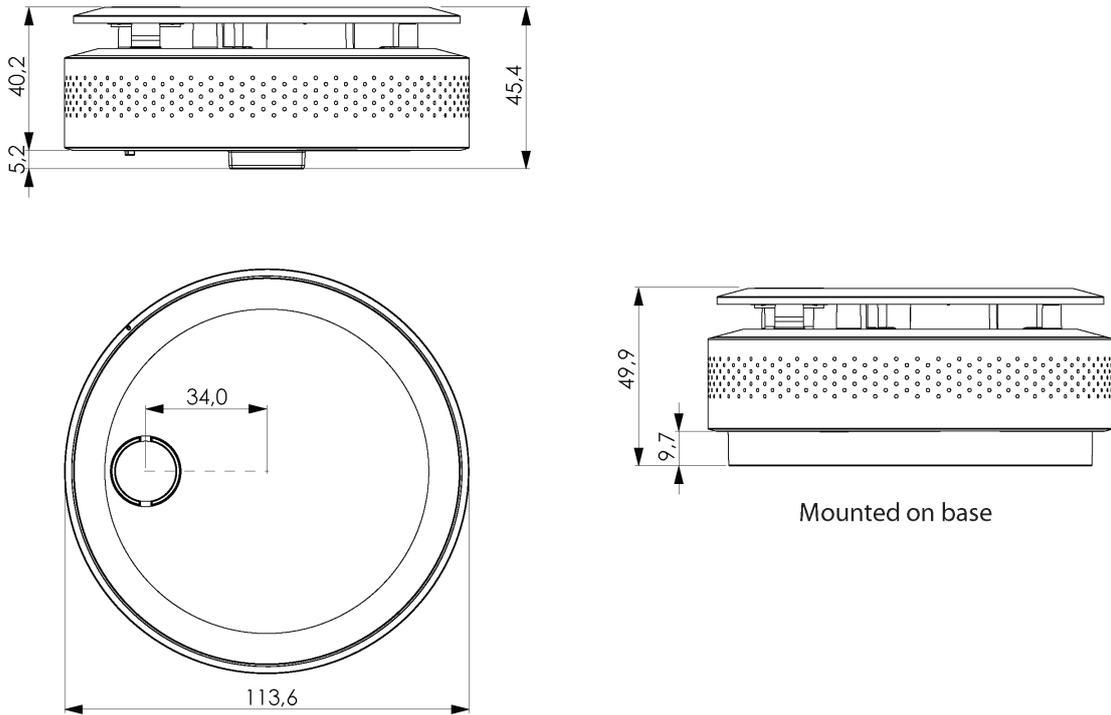
3.5.1 Protector Base



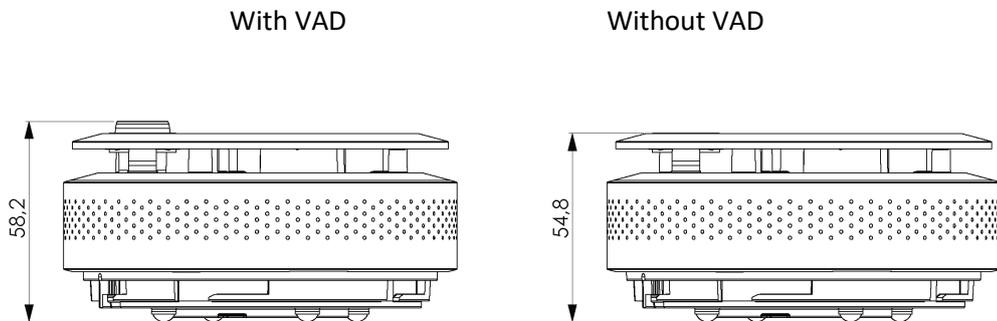
3.5.2 Protector with Visual Alarm Device (VAD)



3.5.3 Protector without Visual Alarm Device (VAD)



3.5.4 Protector for Retrofit Mounting onto BWA-100/BWA-101 (Height)



4. Technical Specifications

4.1 Protector and Base

Technical Specifications	
Dimensions	Height = 45,3mm (49,6mm including base) Diameter = 113,6mm
Weight	127g (172g including base)
Housing material	PC ABS, flammability classification UL94 V-0
Colour	White: RAL9010 Black: RAL9005 (only V-430) Customized colours will be available on request (only V-430)
Ingress protection	IP44D (IP55 when used with conduit box)
Current consumption base - Average	60µA
Current consumption protector - Average	60µA
Current consumption – Normal (base + protector)	120µA
Current consumption – alarm indicator (Red LED indicator ON)	1,8mA
Current consumption – fault indicator (Yellow LED indicator ON)	2,3mA
Quiescent Current Sounder	160µA (+ 120µA for protector and base)
Quiescent Current VAD	320µA (+ 120µA for protector and base)
Quiescent Current Sounder + VAD	360µA (+ 120µA for protector and base)
Minimum and maximum rated operating voltage	10,0V - 26,0V for protector base 18,0V - 26,0V for protector base when add-on boards (VAD/Sounder) are mounted on protector
Average current consumption alarm	1,9mA (the alarm current is the quiescent current + LED indicator current)
Remote LED output (V-110)	5 mA (non-supervised)
Protector Base	<ul style="list-style-type: none"> V-100 standard base for protector series V-430 V-110 standard base for AutoSafe with SIL2 approval, with remote LED output for protector series V-530 V-120 EX base for AutoSafe with SIL2 approval, without remote LED output for protector series V-530 V-120/AP EX base for Autoprime without remote LED output for V-530 EX protectors (pending)
System compatibility	<ul style="list-style-type: none"> AutoSafe system version 4.11 or newer System version 4.11.3 or newer is required for variants with integrated alarm devices AutoGuard Protectors require AutoSafe loop panel: version 1.6 or newer AutoGuard Protectors require Autoprime version 2.1.7 or newer Loop Driver Module BSD-310/BSD-311 revision 7 or newer V-110 and V-120 bases revision 3 or newer
Operating temperature	-30 to +70 °C (+80°C when configured as heat detection only)
Operating temperature for V-530/EXIA	-30 to +70 °C
Storage temperature	Maximum 85°C

Technical Specifications		
Operating humidity	10% - 95% RH (non-condensing)	
Cable requirements	Minimum 0,14mm ² /AWG26 Maximum 2,5mm ² /AWG14	
Country of origin	Norway	
EN54 approved	Heat	EN54-5:2017
	Optical Smoke	EN54-7:2018
	Multi sensor	EN54-29:2015
	Short circuit Isolator (Base)	EN54-17:2005
Maritime approval (M variants)	MED B	
Certification according to UL standards and ETL listing*	Smoke and Multi: UL 268, ULCS529 Heat (only Heat Response Category A1 is certified): UL 521, ULC S530	
*UL variants are not EN54 approved		
UL certified operating temperature	0 to +38 °C	
UL rated operating voltage	24,0V for protector	
UL certified sensitivity range	2.16% ± 0.54% /ft obscuration 6.91% ± 1.76 %/m obscuration	
UL heat detector spacing	30 x 30 ft / 9 x 9 m	
For details on certifications, see Autronica's product web.		

4.2 Integrated Sounder

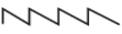
Technical specifications INTEGRATED SOUNDER	
Sound pressure (dB @ 1m)	HIGH VOLUME : Maximum 93 dBA at 1m range
Current consumption	HIGH VOLUME: 6,25mA (incl. 120µA for protector and base)
	LOW VOLUME: 2,63mA (incl. 120µA for protector and base)
Quiescent Current	160µA (+ 120µA for protector and base)
Sound patterns	16 standard tone types/ 16 standard tone types/frequencies and corresponding ringing patterns are available (see next chapters). In addition, ringing patterns for the standard tone types/frequencies can be configured to meet other user requirements.

4.3 Tones

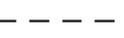
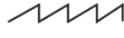
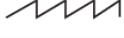
EN54-3 approved tones

The following table provides an overview of the sound pressure levels for EN 54-3-approved tones for AutroGuard® multicriteria protector series with sounders:

- V-430-S
- V-430-S-VADR
- V-430-S-VADW
- V-530-S-VADW

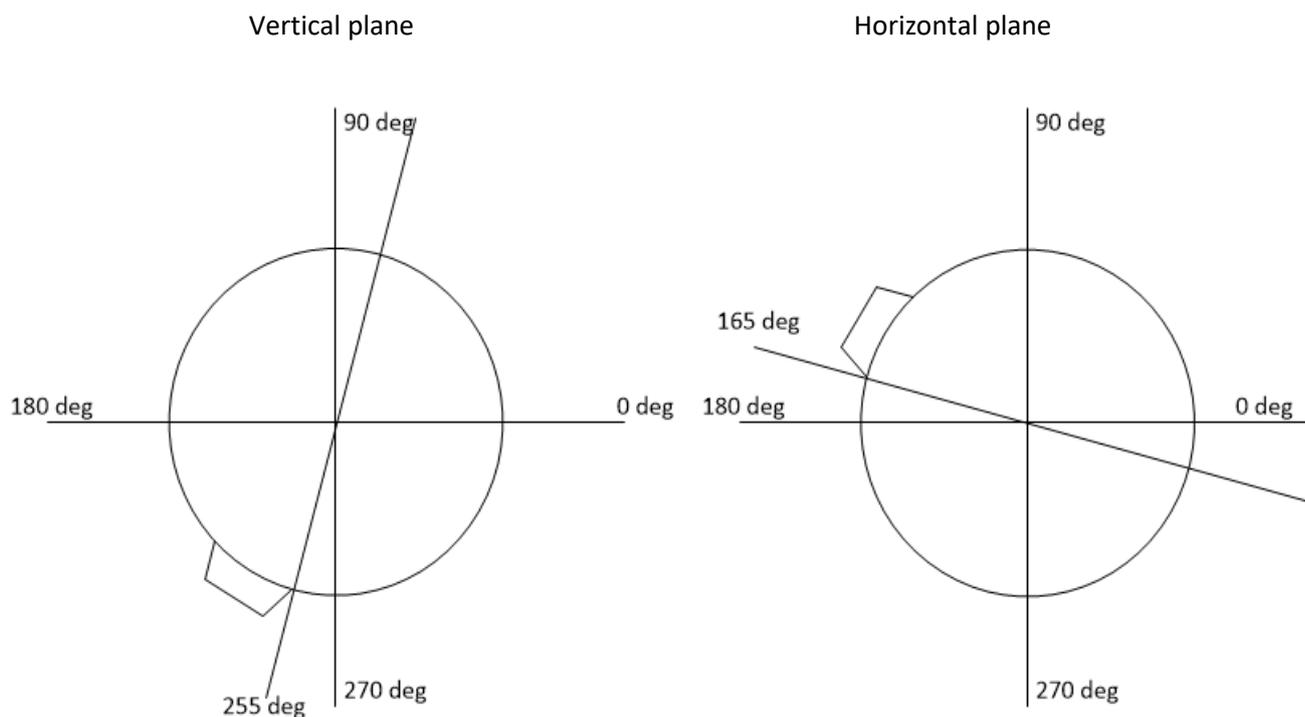
Sound Source	TONE TYPE	Frequencies	Temporal Pattern	Name/Use	Standard	High vol. max. db(A)	High vol. min. db(A)	Low vol. max. db(A)	Low vol. min. db(A)
0		915 Hz	Continuous	Continuous 915		91	73	84	66
1		500-1200 Hz	3.5 s sweep, 0.5 s OFF	Dutch slow whoop 500-1200	NEN2575	93	78	83	70
2		730 Hz & 915 Hz	2Hz	Alternating 730 & 915	BS Fire tone	90	73	82	65
3		3650 Hz	Continuous	Continuous 3650		90	70	90	70
5		800 - 970 Hz	7Hz	Whoop 800-970 7Hz	BS Fire tone	91	77	82	70
7		1200 - 500 Hz	1Hz	DIN tone 1200-500	DIN33404-3	90	77	82	70

Other standard tones

Sound Source	TONE TYPE	Frequencies	Temporal Pattern	Name/Use	Standard
4		800 - 970 Hz	1 Hz	Whoop 800-970 1 Hz	BS Fire tone
6		1830 Hz	Continuous	Continuous 1830	
8		457 Hz	Continuous	Swedish all clear	SS31711
9		457 Hz	0.15 s ON, 0.15 s OFF	Imminent danger 457	SS31711
10		915 Hz	0.15 s ON, 0.15 s OFF	Imminent danger 915	(SS31711)
11		1800 - 3600 Hz	7 Hz	Whoop 1800-3600 7 Hz	
12		2872 & 3600 Hz	1 Hz	Alternating 2872 & 3600	
13		1800 - 3600 Hz	1 Hz	Whoop 1800-3600 1 Hz	
14		800 - 970 Hz	0.67 Hz (1.5 s period)	Whoop 800-970 1.5 s	BS Fire tone
15		3600 - 1800 Hz	1 Hz	DIN tone 3600-1800 Hz	(DIN33404-3)

4.4 Sound Pressure Levels for Tones

Measurement angles



Tone 0 - Continuous 915

High volume: 91.04 dB(A) @ 1 m max. / 73.34 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	78.94	80.04	1.1	79.84	81.04	1.2
45	73.34	73.64	0.3	82.34	83.34	1
75	90.24	91.04	0.8	76.94	78.34	1.4
105	86.84	87.24	0.4	77.04	77.44	0.4
135	78.94	79.64	0.7	80.94	81.94	1
165	81.54	82.14	0.6	81.74	82.44	0.7
Low volume: 84 dB(A) @ 1 m max. / 66 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	72.84	72.84	0	80.64	81.34	0.7
45	66.14	66.24	0.1	82.74	83.44	0.7
75	83.54	83.54	0	78.44	79.44	1
105	80.44	80.44	0	77.34	78.14	0.8
135	72.74	72.74	0	81.44	82.24	0.8
165	74.74	74.84	0.1	81.64	82.54	0.9

Tone 1 - Dutch slow whoop 500-1200

High volume: 93 dB(A) @ 1 m max. / 78 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	79.44	80.94	1.5	84.44	86.14	1.7
45	78.04	79.54	1.5	85.04	86.64	1.6
75	91.44	93.04	1.6	80.34	81.54	1.2
105	86.64	88.14	1.5	82.04	83.74	1.7
135	81.04	82.54	1.5	84.74	86.34	1.6
165	81.64	83.24	1.6	85.94	87.54	1.6
Low volume: 83 dB(A) @ 1 m max. / 70 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	71.24	71.34	0.1	75.64	75.74	0.1
45	69.74	70.14	0.4	76.24	76.24	0
75	83.14	83.14	0	70.94	71.74	0.8
105	78.14	78.44	0.3	73.74	73.44	-0.3
135	72.64	72.64	0	75.64	75.64	0
165	73.34	73.34	0	76.94	77.04	0.1

Tone 2 - Alternating 730 & 915

High volume: 90 dB(A) @ 1 m max. / 73 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	78.44	78.94	0.5	80.14	80.74	0.6
45	72.74	72.74	0	82.24	82.74	0.5
75	89.34	89.84	0.5	75.54	75.64	0.1
105	85.64	86.14	0.5	77.64	78.04	0.4
135	78.24	78.84	0.6	80.74	81.24	0.5
165	80.44	80.94	0.5	81.74	82.24	0.5
Low volume: 82 dB(A) @ 1 m max. / 64 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	70.94	70.94	0	73.54	73.54	0
45	64.64	64.64	0	75.14	74.94	-0.2
75	82.44	82.44	0	68.94	68.94	0
105	78.94	79.04	0.1	71.24	71.04	-0.2
135	72.34	72.24	-0.1	73.94	73.94	0
165	73.14	73.14	0	74.44	74.44	0

Tone 3 - Continuous 3650

High volume: 90 dB(A) @ 1 m max. / 70 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	79.74	80.14	0.4	81.84	81.74	-0.1
45	77.04	77.14	0.1	82.44	82.34	-0.1
75	89.74	90.04	0.3	69.94	70.54	0.6
105	86.44	86.64	0.2	81.04	81.14	0.1
135	76.94	77.04	0.1	81.24	81.14	-0.1
165	80.04	80.34	0.3	82.24	82.04	-0.2
Low volume: 90 dB(A) @ 1 m max. / 70 dB(A) at 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	79.24	79.74	0.5	80.84	81.14	0.3
45	77.04	77.34	0.3	81.64	82.04	0.4
75	89.44	89.64	0.2	70.24	70.24	0
105	85.64	86.24	0.6	80.34	80.74	0.4
135	76.54	77.14	0.6	80.24	80.84	0.6
165	79.64	80.14	0.5	81.64	81.94	0.3

Tone 5 - Whoop 800-970 7 Hz

High volume: 90 dB(A) @ 1 m max. / 77 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	78.64	80.04	1.4	82.74	84.14	1.4
45	79.14	79.64	0.5	82.64	84.04	1.4
75	89.44	90.84	1.4	78.34	79.84	1.5
105	84.64	85.94	1.3	82.04	83.24	1.2
135	77.44	78.84	1.4	81.64	83.04	1.4
165	80.34	81.64	1.3	84.14	85.54	1.4
Low volume: 82 dB(A) @ 1 m max. / 70 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	71.24	71.34	0.1	73.54	74.74	1.2
45	71.64	71.64	0	73.74	74.74	1
75	81.54	81.74	0.2	69.94	70.84	0.9
105	77.44	77.54	0.1	73.14	73.74	0.6
135	69.54	69.84	0.3	72.84	73.54	0.7
165	72.94	73.04	0.1	74.64	75.64	1

Tone 7 - DIN tone 1200-500

High volume: 90 dB(A) @ 1 m max. / 77 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	78.34	79.44	1.1	82.04	83.44	1.4
45	78.94	79.64	0.7	81.84	83.34	1.5
75	89.24	90.44	1.2	78.14	79.64	1.5
105	84.74	85.54	0.8	81.44	82.54	1.1
135	77.04	78.64	1.6	81.04	82.34	1.3
165	79.94	80.94	1	83.34	84.94	1.6
Low volume: 82 dB(A) @ 1 m max. / 70 dB(A) @ 1 m min.						
Position (degrees)	Horizontal plane dB(A) @ 1 m			Vertical plane dB(A) @ 1 m		
	Vmin	Vmax	Diff	Vmin	Vmax	Diff
15	71.04	71.04	0	74.24	74.34	0.1
45	71.24	71.24	0	74.34	74.44	0.1
75	81.64	81.84	0.2	70.74	70.74	0
105	77.74	77.74	0	73.64	73.74	0.1
135	69.84	70.04	0.2	73.14	73.34	0.2
165	72.74	72.74	0	75.14	75.34	0.2

4.5 Integrated VAD – Current Consumption

The following table provides an overview of the VAD intensity and current consumption for white and red LED indicators (Base + Protector + VAD). The values for both 0,5Hz and 1Hz are shown. The quiescent current for a VAD is 320µA (+ 120µA for protector and base).

Technical specifications INTEGRATED VAD				
VAD Color	VAD Intensity	Current Consumption VAD (LED indicator NOT included) 0,5Hz	Current Consumption VAD (LED indicator NOT included) 1Hz	Description
WHITE	High Intensity: C-3-12	21,0mA	-	At a given mounting height, the <i>Coverage Volume</i> of a VAD is defined by the diameter of the coverage, given in meters. <i>Example:</i> C-3-12 corresponds to a ceiling-mounted device giving a coverage cylindrical volume of 12 m at 3 m height. For a white VAD, high intensity is to be configured.
	Medium Intensity: C-3-9	13,8mA	-	
	Low Intensity: C-3-6	10,6mA	20,8mA	
	Open Class: O-2,5-4 (specified at 2,5m height)	4,8mA	8,9mA	
RED*	High Intensity: C-3-8	19,7mA	-	
	Low Intensity: C-3-5	12,8mA	-	
	Open Class: O-2,5-4 (specified at 2,5m height)	8,5mA	16,6mA	

*Available for V-430 only.

4.6 Integrated VAD and Sounder – Current Consumption

The following table provides an overview of the VAD intensity and current consumption for white and red LED indicators (Base + Protector + VAD + Sounder). The table includes values for 0,5Hz and 1Hz, and for low and high volume. The quiescent current for VAD and sounder is 360µA (+ 120µA for protector and base).

Technical specifications INTEGRATED VAD + Sounder						
VAD Color	VAD Intensity	Current Consumption VAD + Sounder (LED indicator NOT included) 0,5Hz		Current Consumption VAD + Sounder (LED indicator NOT included) 1Hz		Description
		Low Volume	High Volume	Low Volume	High Volume	
WHITE	High Intensity: C-3-12	23,3mA	26,9mA	-	-	At a given mounting height, the <i>Coverage Volume</i> of a VAD is defined by the diameter of the coverage, given in meters.
	Medium Intensity: C-3-9	16,1mA	19,7mA	-	-	
	Low Intensity: C-3-6	12,9mA	16,4mA	23,1mA	26,7mA	
	Open Class: O-2,5-4 (specified at 2,5m height)	7,1mA	10,6mA	11,2 mA	14,8 mA	
RED*	High Intensity: C-3-8	22,0mA	25,5mA	-	-	<i>Example:</i> C-3-12 corresponds to a ceiling-mounted device giving a coverage cylindrical volume of 12 m at 3 m height. For a white VAD, high intensity is to be configured.
	Low Intensity: C-3-5	15,1mA	18,6mA	-	-	
	Open Class: O-2,5-4 (specified at 2,5m height)	10,8mA	14,3mA	18,9mA	22,4mA	

*Available for V-430 only.

5. Functional Description

5.1 General

The AutoGuard® Multicriteria Protector features two heat sensors and a smoke detection chamber. The type of operation can be configured to fit the application, Heat, Optical or Multisensor.

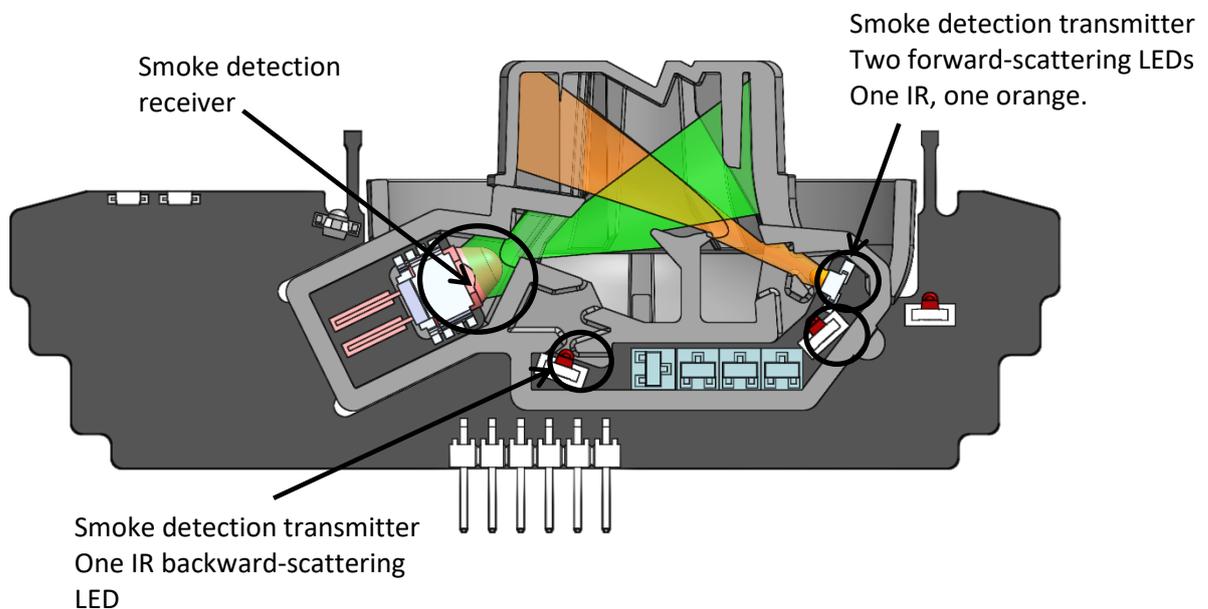
The following chapters describe the functionality and configuration possibilities of the main functions of the protector.

5.2 Chamber Design

The chamber design is shown below, including:

- Smoke detection receiver
- Smoke detection transmitter (two forward-scattering LEDs)
- Smoke detection transmitter (one IR backward-scattering LED)

The chamber allows very fast smoke intrusion, meaning that the smoke concentration inside the chamber is as close as possible to the smoke concentration on the outside. This leads to very fast detection of smouldering fires.



5.3 DYFI^{3D}

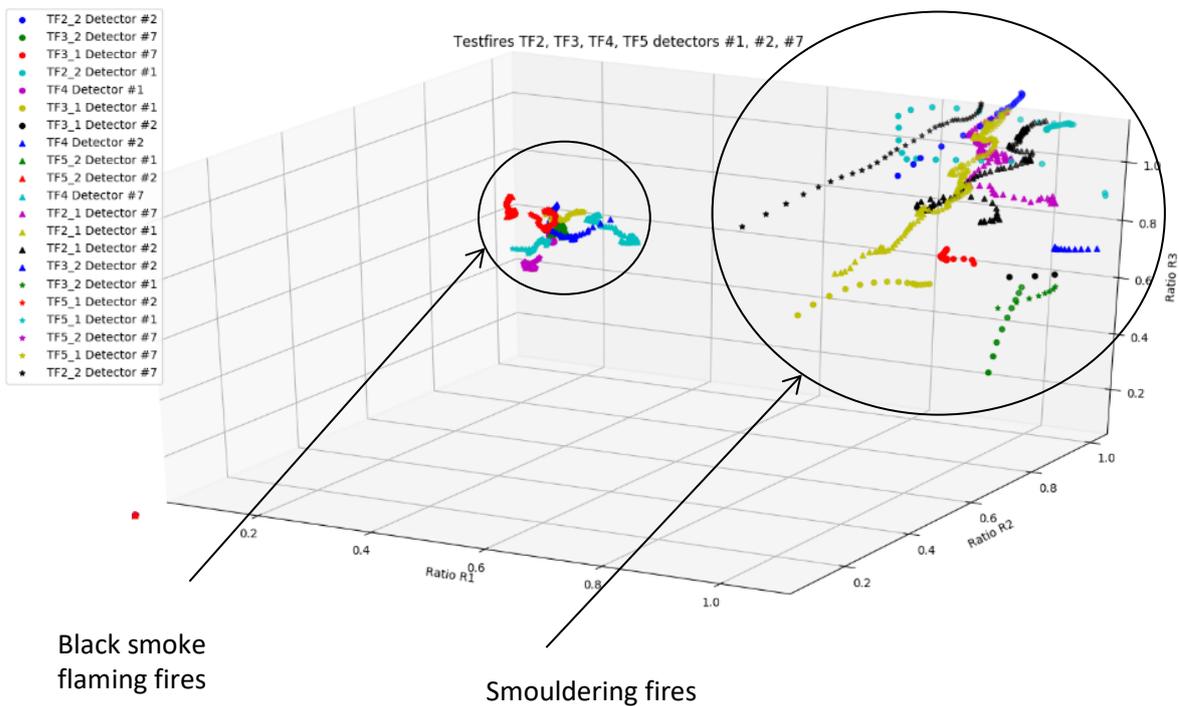
5.3.1 DYFI^{3D} - Particle/Smoke Signature Analysis

The chamber has a multi angle/multi wavelength design (see illustration in the previous chapter), where the angles and wavelengths are used to separate between small and larger particles. Two different wavelengths and two different angles provides a total of three unique signals.

The optical detector uses the wavelengths and angles to measure the different particles. Unique signatures are plotted in a three dimensional space.

Each type of fire and nuisance source has its own unique *signature* which is shown in the three dimensional space given by the ratios (in this example black smoke from a flaming fire and smoke from smouldering fires).

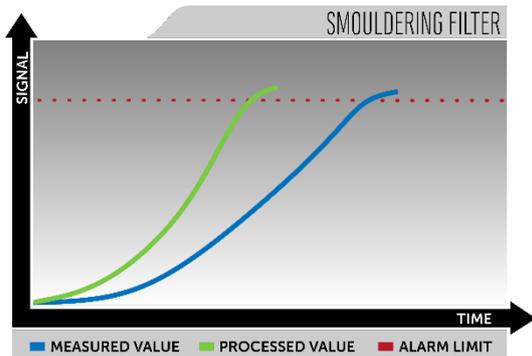
In this way, the optical detector can easily discriminate between different types of fires, black and white smoke, steam and other nuisance alarm sources.



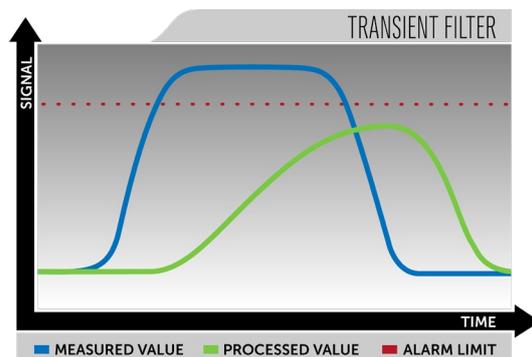
5.3.2 DYFI^{3D} - Dynamic Filtering

The AutoGuard[®] Multicriteria Protector utilizes DYFI^{3D} Dynamic Filtering. Together with the DYFI^{3D} Particle/Smoke Signature Analysis and advanced algorithms, the protector distinguishes accurately between real fires and nuisance alarm sources, thus minimizing potential false alarms. The dynamic filtering is always active.

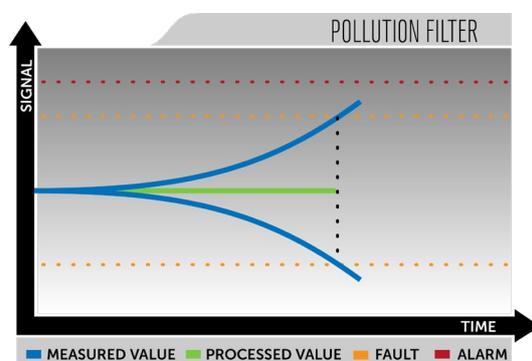
Each protector has three different filter functions:



The *smouldering fire filter* provides accurate and quick detection in the event of a smouldering fire, i.e. in a situation where a potential fire with no flames develops during a longer period.

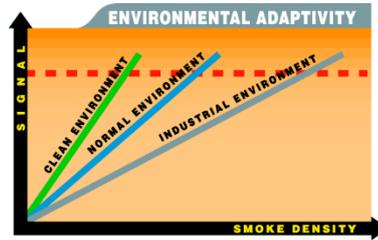


The *transient filter* virtually eliminates false alarms caused by phenomena that are not related to a real fire. Such phenomena can be short pulses caused by, for example, vapour, cigarette smoke etc.



The *pollution filter* maintains the chosen sensitivity throughout the protector's entire lifetime, even with a polluted protector.

5.4 Sensitivity Classes for Environmental Adaptivity



The AutoGuard® Multicriteria Protector can be programmed to different smoke *Sensitivity Classes*, with sensitivity settings covering different environments.

Sensitivity Class	Description
High	Clean environments, for example laboratories, data rooms etc.
Medium	Normal environments, for example offices and hospitals etc.
Low	Industrial environments, for example, factories and warehouses etc.
Extra high (Not EN 54 /UL268 compliant)	Only available for High Sensitivity variants (/HS). Electrical installations, cabinets, server rooms etc. (Available in specific variants)

By choosing a sensitivity class that suits the environment, it is possible to achieve an accurate and reliable system, providing the optimal detection, whilst virtually eliminating false alarms.

High, medium and low sensitivity classes comply with the EN54-7/29.

For information on the configuration of Sensitivity Settings, refer to chapter 12.7.6.

5.5 Operation Classes

The AutoGuard® Multicriteria Protector can be set to three different *Operation Classes*, allowing you to choose the protector’s detection method and calculation. The Operation Classes are as follows;

Operation Class	Description
Multi	Optical and heat detection
Heat only	Heat detection only
Smoke only	Optical detection only

For information on the configuration of Operation Classes, refer to chapter 12.7.5.

5.6 EN54 Heat Response Categories

The AutoGuard® protector should always be configured in accordance with the environmental temperature conditions and compliance with local regulations.

A protector can be configured to have one of the following Heat Response Categories (EN54-5):

Category EN54-5 (configurable)	Typical Application Temperature °C	Maximum Application Temperature °C	Minimum Static Response Temperature °C	Maximum Static Response Temperature °C
	Application temperatures define the environmental temperatures the protector can be expected to experience in non-fire conditions.	Categories should be selected so that the maximum application temperature is not exceeded.	The static response temperature indicates the minimum temperature which the device will produce an alarm signal.	The static response temperature indicates the maximum temperature which the device will produce an alarm signal.
A1	25	50	54	65
A1S**	25	50	54	65
A1R*	25	50	54	65
A2S**	25	50	54	70
B	40	65	69	85
C***	55	80	84	100
DISABLED	No alarm from temperature increase. For Operation Class Multi, Heat sensors are still used in the smoke detection algorithms.			

* Heat response categories indicated with an “R” suffix is suitable for protectors placed in areas such as unheated warehouses in which the ambient temperature may be very low for long periods.

** Heat response categories indicated with an “S” suffix is suitable for protectors placed in areas such as kitchens and boiler rooms, where large rapid temperature changes are considered normal.

*** Applies to Operation Class Heat only.

For information on the configuration of Heat Response Categories, refer to chapter 12.7.4.

5.7 SelfVerify® 2.0 Function



Autronica provides the SelfVerify® 2.0 system function for specific models. The function is performed automatically every 24 hours, and is a calibrated self-test of the sensor elements verifying that the sensitivity of the protector is within the approved range. In addition to the daily system test, SelfVerify® 2.0 includes 100 % of the signal path, and 99 % of all components in the protector, and it is run internally every other second, giving an immediate warning if a discrepancy is detected. The advanced SelfVerify® 2.0 function removes the need of manual testing and inspection.

If the protector has integrated FAD (Sounder or VAD), the SelfVerify® 2.0 test will be performed on these functions as well, ensuring that the sounder/loudspeaker element is able to produce sound and the LED is able to produce light.

A clicking sound occurs while the SelfVerify® 2.0 test of sounder/loudspeaker is being performed. A short light blink will occur during a SelfVerify® 2.0 test of the VAD.

For more information about SelfVerify® 2.0, refer to “Testing”, chapter 14.3.



Note that manual inspections may be required according to local regulations.

5.8 Cover Detection

Autronica provides “Cover Detection” as a standard feature for specific models. The AutoGuard® protector’s top cover has an exposed surface. The Cover Detection functionality will detect if the protector is covered in such a way that smoke is prevented from entering into the detection chamber. A fault message will appear on the system panel after 5 minutes. Short term covering (<30s) will not be reported as a fault, but will increase the sensitivity of the protector and will start flashing the LEDs.

Cover Detection is easy to enable or disable by configuration.

The following settings apply to Cover Detection Sensitivity:

- Off (will never give a fault message)
- Normal (detects all materials that can be unequivocally identified as blocking the air inlet)
- High (detects more challenging materials that might not always completely block the air inlet). Challenging materials may be, for example, a transparent plastic bag, a thin and transparent black clothing/fabric (for example, a thin black sock)

For further details, refer to Configuration, chapter 12.7.3.

5.9 Protector “Alive Signal”

To indicate that the protector is “alive” (during normal operation), a red LED blinks periodically. The blinking is configurable (ON/OFF) and is by default OFF. See configuration, chapter 12.3.1.

When turned ON the LED will give a short blink every time the protector is communicating with the panel (once every 90 seconds).

5.10 LED Behavior

When the protector is in operation, the following LED behavior applies:

Protector State	LED State	Description
Off	Default	By default the LED is OFF when the protector is idle. Alive pulse can be enabled.
Alarm	Steady on	The LED will be steady ON when the protector is in alarm
Alarm	Fast blinking 60ms/40ms (ON/OFF)	Alternative behavior of the alarm LED indicator activated at alarm. Can be configured ON/OFF as a global option in the configuration tool.
Alive	Blink 100ms (ON)	The alarm LED indicator will blink once every time it is directly addressed. Can be configured on/off as a global option in the configuration tool.
Test	Blinking (ON/OFF)	When the protector is in test state, the LED will behave as follows: <ul style="list-style-type: none"> • 1 time every five seconds for a smoke detector • 2 times every five seconds for a heat detector • 3 times every five seconds for a smoke/heat detector • 4 times every five seconds for smoke/heat/CO detector

(Yellow LED is not yet supported).

6. Visual Alarm Device (VAD)

6.1 Compliance with EN54-23

The Visual Alarm Device (VAD) is compliant with EN54-23. EN54-23 specifies the requirements and performance criteria for visual alarm devices (VAD). It specifies the range at which the required illumination is met (*Coverage Volume*). The required illumination is 0.4 lux or 0.4lm/m², which is the minimum level of light likely to attract attention.

Several variants (with the code VADR and VADW) of the AutoGuard® Multicriteria Protector are provided with an integrated VAD compliant with EN54-23.

6.2 Coverage Volume

To meet the required illumination and ensure that all relevant areas at the premises are covered by VADs, the *Coverage Volume* of a VAD must be taken into consideration.



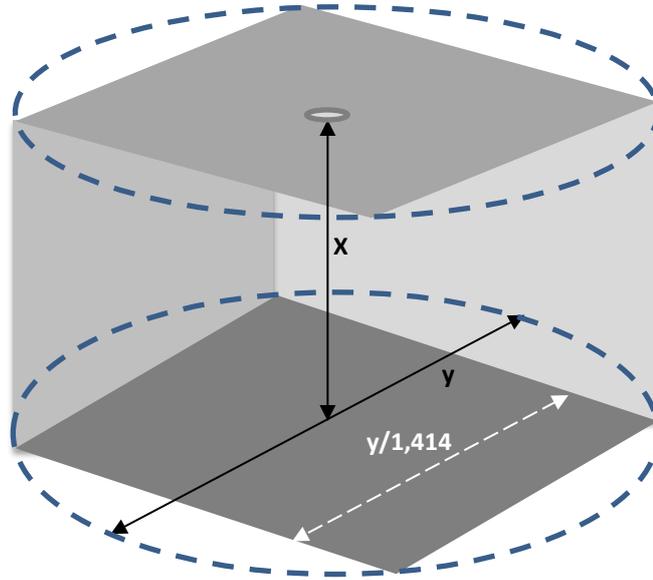
Note that, in addition to EN54-23, national/local standards/requirements may apply.

At a given mounting height, the Coverage Volume of a VAD is defined by the diameter of the coverage, given in metres.

With reference to EN54-23, the following categories apply to the coverage volume for the AutoGuard® protector's VAD:

- **C**, ceiling mounted devices
- **O**, open class devices

6.3 Category C – Ceiling Mounted Devices



x – The maximum height of either 3, 6 or 9 m at which the VAD may be mounted

y – The diameter in metres of the cylindrical volume covered (to a minimum level of 0.4 lux) when the device is mounted to the ceiling at a height of 3, 6 or 9 m

Note:

The protected space is within the cylindrical volume and ensures that all areas meet the required illumination of 0.4 lux.

To convert the coverage diameter **y** to the width of a square room:

Width of square room = **y** / 1.414 m

6.4 Category O

Category O (Open Category) is Autronica's specified coverage volume for 2,5m mounting heights.

Category O has lower power consumption than category C (refer to table in Technical Specifications, chapter 4). The maximum number of VADs depends on the total load on the loop. Selecting Category O enables you to have a larger number of VADs on the loop as an alternative to fewer VADs with higher power consumption.

6.5 Visual Alarm Device (VAD) Intensity

6.5.1 Consideration Factors for VAD Sensitivity Settings



Visual Alarm Devices (VAD) must be installed and configured according to national regulations and installation standards.

In addition to the Coverage Volume of a VAD, representing the minimum level of light likely to attract attention, the VAD intensity settings (high, medium, low or open) should be selected based on the following factors:

- the size of the area
- the existing ambient light conditions (actual light sources, natural light, etc.)
- power consumption (must be calculated and considered for the selected intensity)

6.5.2 VAD Intensity Settings

The AutoGuard® protector's integrated VAD can be configured to have different intensities (providing different Coverage Volumes/EN54-23) in order to meet the required illumination of 0,4 lux at the premises. VAD Intensity refers to Coverage Volume in EN54-23.

The AutoGuard® protector's VAD emits a white or red light, and the following VAD intensities can be configured:

- High
- Medium (white VAD only)
- Low
- Open

For further details, refer to Consideration Factors for VAD Sensitivity Settings, chapter 6.5.1 and Configuration, chapter 12.7.7.

6.5.3 VAD Intensity - White VAD and Red VAD

White VAD	Red VAD
High Intensity : C-3-12	High Intensity : C-3-8
Medium Intensity: C-3-9	(not applicable)
Low Intensity: C-3-6	Low Intensity: C-3-5
Open Class O-2,5-4 (specified at 2,5m height)	Open Class O-2,5-4 (specified at 2,5m height)

6.6 Flash Rate

The flash rate is configurable at 0,5Hz and 1Hz. The flash rate impacts the light intensity and therefore the coverage volume according to EN53-23.

1Hz flash rate is equal to one flash every second. 0,5Hz flash rate is equal to one flash every two seconds.

The table below shows the flash rates (Hz) for different VAD intensity settings for white and red visual alarm devices.

	Provides sufficient illumination/intensity
	Not allowed combination, will not provide sufficient illumination/intensity.

White Visual Alarm Device		
Flash Rate	0.5 Hz	1 Hz
High C-3-12		
Medium C-3-9		
Low C-3-6		
O-2.5-4		

Red Visual Alarm Device		
Flash Rate	0.5 Hz	1 Hz
High C-3-8		
Low C-3-5		
O-2.5-4		

Refer to Configuration, chapter 12.7.7.

7. Audible Alarm Devices

7.1 General

Audible Alarm Devices include buzzer and sounders.

For information on configuration, refer to chapter 12.7.8.

7.2 Sound Pressure Level

The sound pressure level for the sounder can be configured to High level or Low level.

For information on sound pressure level settings, refer to Technical Specifications, chapter 4.4.

7.3 Sound and Pulse Patterns

The sound (tone type and frequency) and the pulse pattern for a buzzer/sounder can be configured.

The sound pattern consist of 16 bits/timeslots, where each bit specifies if the sound should be ON or OFF during that timeslot. A timeslot lasts for 0.5 or 1 second (configurable). In addition, there is a repeat delay where the last bit in the sound pattern is held in its state for the number of seconds specified in the repeat delay bit.

Technical Specifications, chapter 4, provides an overview of the standard tone types/frequencies and corresponding sound patterns that are available.

In addition, several sound patterns for the standard tone types/frequencies can be configured to meet other user requirements (for example, maritime general emergency signal, 7 short, 1 long). Refer to Configuration, chapter 12.3.2.

8. Planning

8.1 Reference to National/Local Regulations



Local regulations apply.
Make sure to meet the requirements of national/local regulations.



Anyone installing, commissioning, using or maintaining Autronica Fire and Security products must follow the instructions in this handbook and other applicable handbooks or standards in order to ensure safe operation of the products and services.

Autronica Fire and Security is **not** responsible for ensuring that the products are installed according to national/local regulations.

8.2 Environmental Requirements

8.2.1 Location / Required Space



Local regulations apply. Autronica Fire and Security guidelines are listed below.

- Refer to Area Coverage and Monitoring Distance in chapter 8.3
- Protector bases must be mounted on a level surface in the ceiling
- Protectors must be mounted minimum 0,5 meters from any wall
- Protectors must be mounted at least 1 meter away from air-conditioning inlets, ventilator other equipment that causes airflow
- Protectors must not be mounted in steady airflow
- Stairwells must always be equipped with protectors on the top floor. Additionally, there must be protectors on at least every third floor
- Avoid mounting on steps, concrete ribs, etc.

8.3 Area Coverage and Monitoring Distance

Requirements for both area of coverage and monitoring distance must be met. Chapter 8.3.1 and 8.3.2 are guidance only (Norwegian standards).

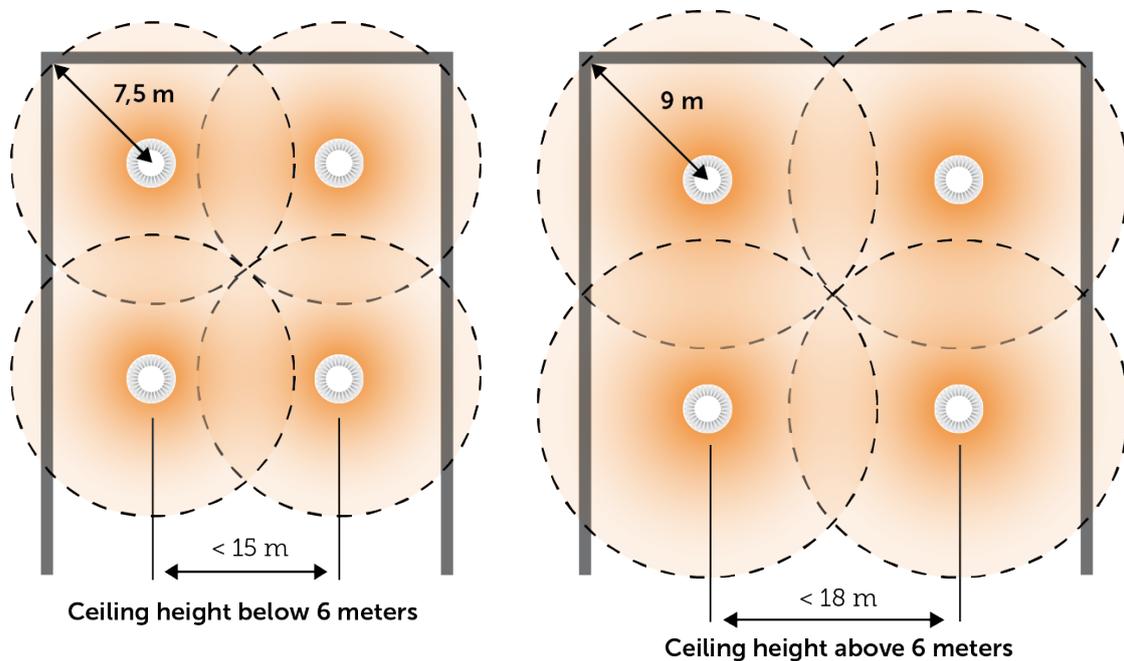


Local requirements, regulations and laws apply.

8.3.1 Smoke Detection

Note that independent of Operation Class (Smoke only or Multi), the guidance for smoke detection will apply.

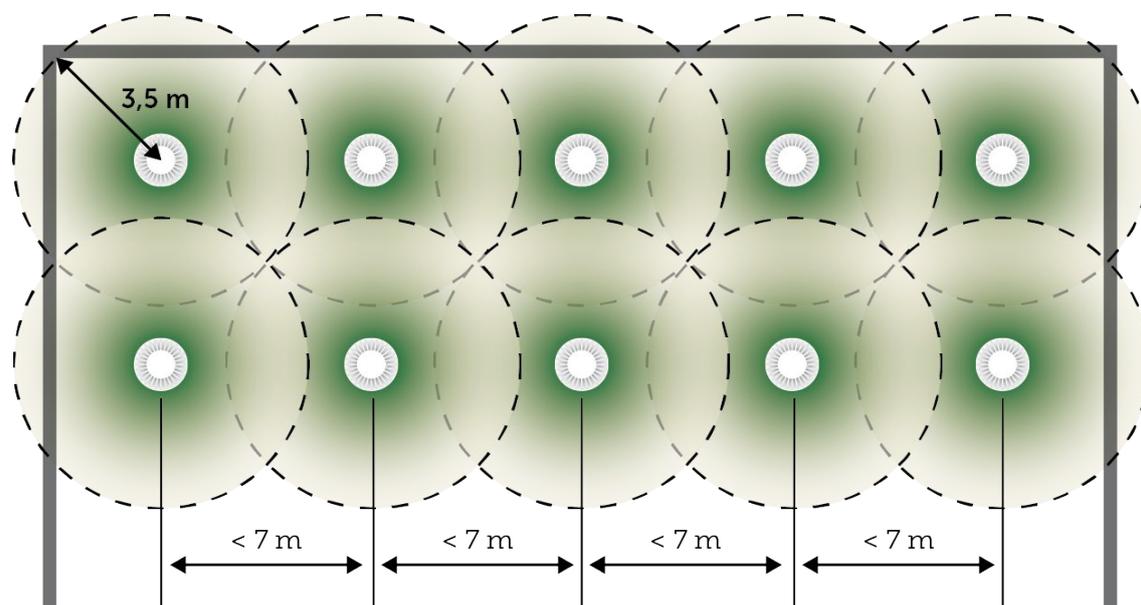
Ceiling height	Area of coverage	Monitoring
Under 6	80 m ²	7,5 meters
+6 – 12	100 m ²	9 meters
Over 12	See NS-3960:2013	



8.3.2 Heat Detection

Note that if Operation Class *Heat only* is used, the guidance for heat detection applies.

Ceiling height	Area of	Monitoring
Under 6	20 m ²	3,5 meters
Over 6	Not permitted	



8.4 Current Consumption on Detection Loop

The current consumption for the base and the protector head must be taken into consideration during planning.

In addition, the following must be taken into consideration:

- the loop driver's maximum current limitation (refer to datasheets for loop drivers)
- the total current consumption on the detection loop
- add-on features as VAD and sounders
- number of active alarm indicators

The table below shows the average current consumption for different units and different states.

Unit	State	Current Consumption (average)
Base	Idle	• 60µA
Protector head	Idle	• 60µA
Base + protector head	Idle	120µA
Base + protector head	Alarm (Red LED indicator ON)	• 1,8mA
Base + protector head	Fault (Yellow LED indicator ON)	• 2,3mA

9. Mounting Instructions

9.1 Cable Entries/Exits on the Protector Base

The protector base features alternative cable entries/exits:

- one $\varnothing 25$ mm cable entry/exit used to feed wiring from inside and through the ceiling (concealed conduit wiring)
- four cable entries/exits for surface-mounted wiring

9.1.1 Cable Entry for Concealed Conduit Wiring

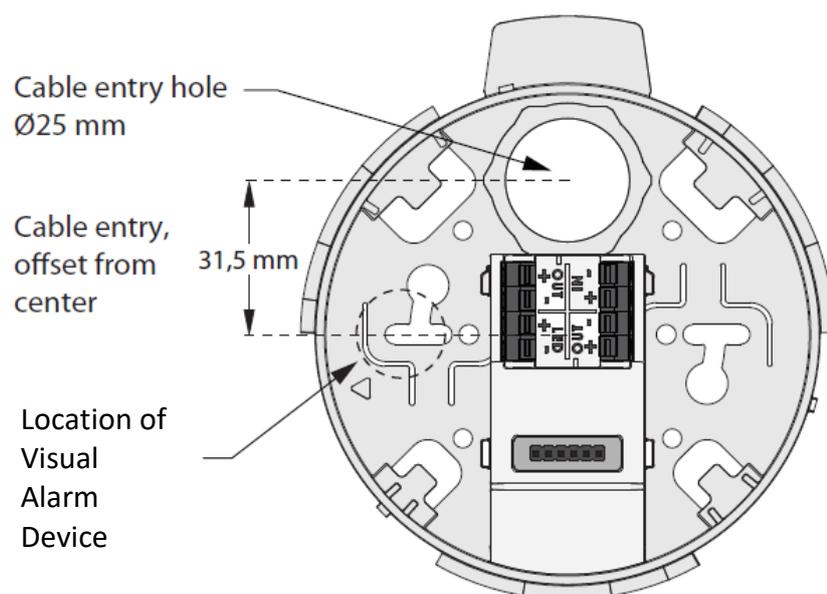
The $\varnothing 25$ mm cable entry (see illustration) is used to feed wiring from inside the ceiling into the protector base. If necessary, a $\varnothing 25$ mm cable gland may be mounted in the cable entry.



A cable gland must always be used if there is a potential of damage to the cable due to sharp edges.

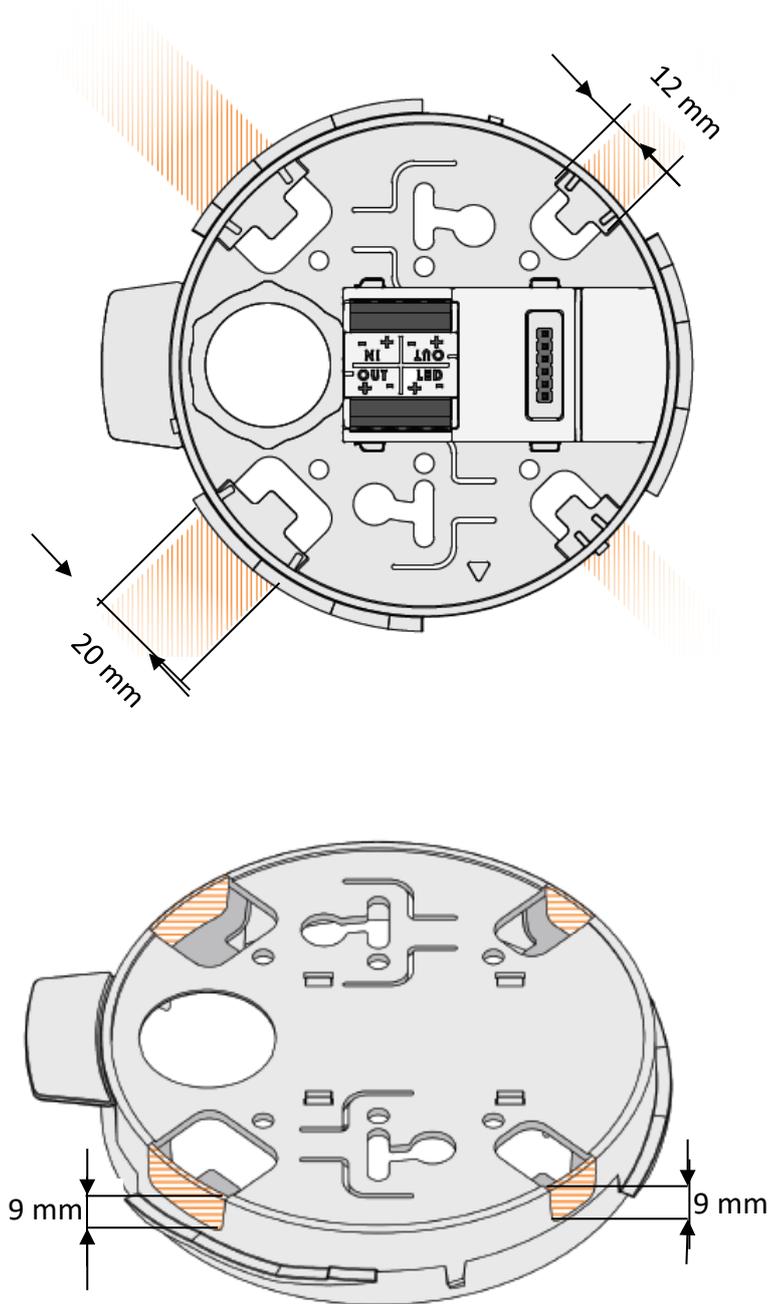


Note that when holes are to be made in the ceiling, take into consideration that the cable entry of the protector base is *not* in the center of the base. (See Template for Marking and Drilling Holes, chapter 9.2.2).



9.1.2 Cable Entries/Knockout Stampings for Surface-mounted Wiring

For surface-mounted wiring there are four optional cable entries (knockouts) on the side of the protector base (see drawing) which allow easy entry of the cables to the interior (two 9x12mm and two 9x20mm entries).



9.2 Mounting the Protector Base

9.2.1 Considerations Before Mounting

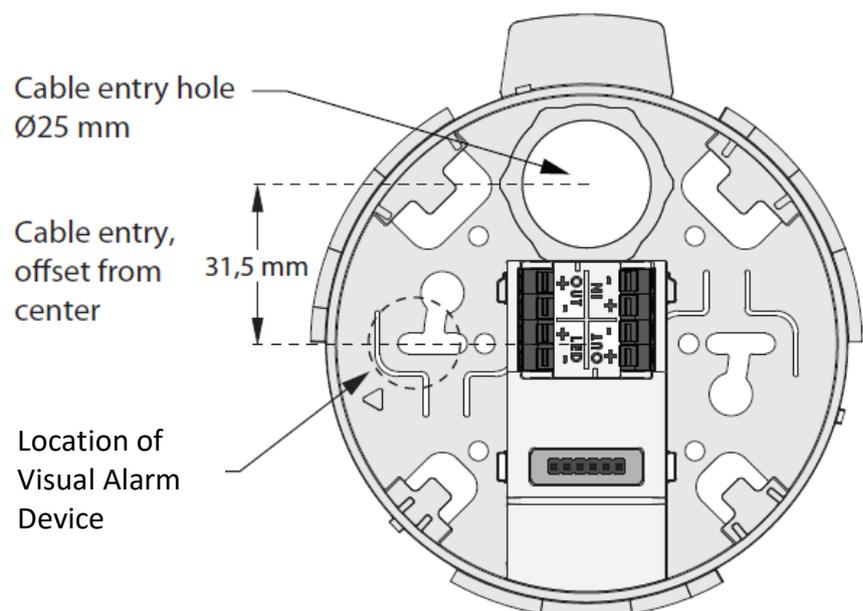
When the location of the protectors is determined according to project specifications and regulations, take the following considerations into account:



- Determine which cable entries that are to be used depending on the actual cable layout and wiring method (surface-mounted or concealed conduit wiring)
- It is recommended that the protector base is mounted with the tagholder and VAD facing towards the nearest door/entrance to the room



Note that when holes are to be made in the ceiling, take into consideration that the cable entry of the protector base is *not* in the center of the base. (See Template for Marking and Drilling Holes, chapter 9.2.2).

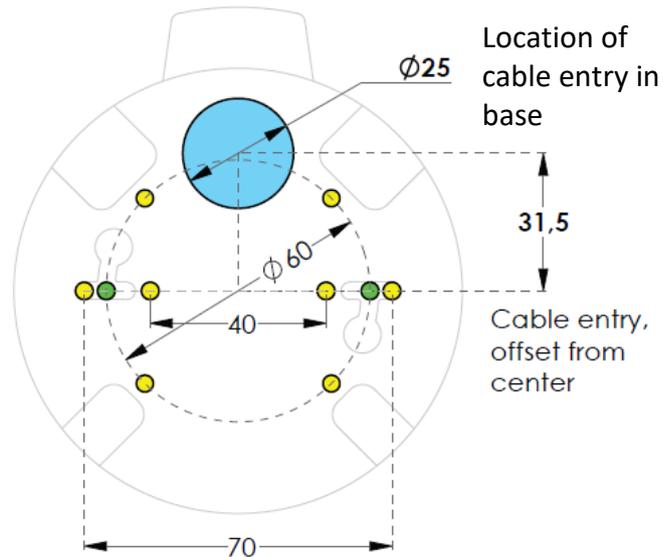


9.2.2 Template for Marking and Drilling Holes

On the bottom of the protector base's packaging box you will find a 1:1 template intended for use when marking and drilling holes for installation of the protector base. (Dimensions shown in mm).

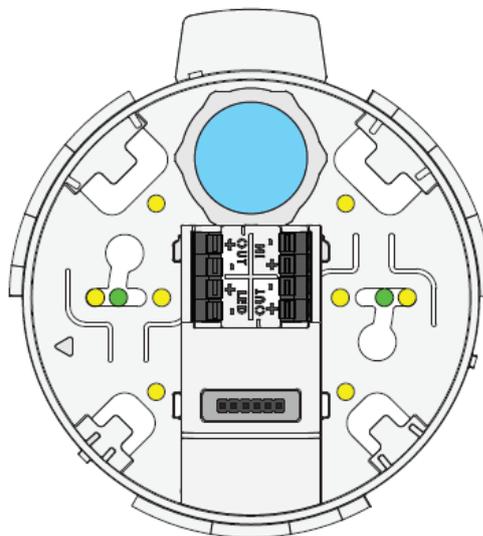


Note that the template shown below is not at a scale of 1 to 1, and is used for reference only. For installation purposes, only use the 1:1 template printed on the protector base's packaging box.



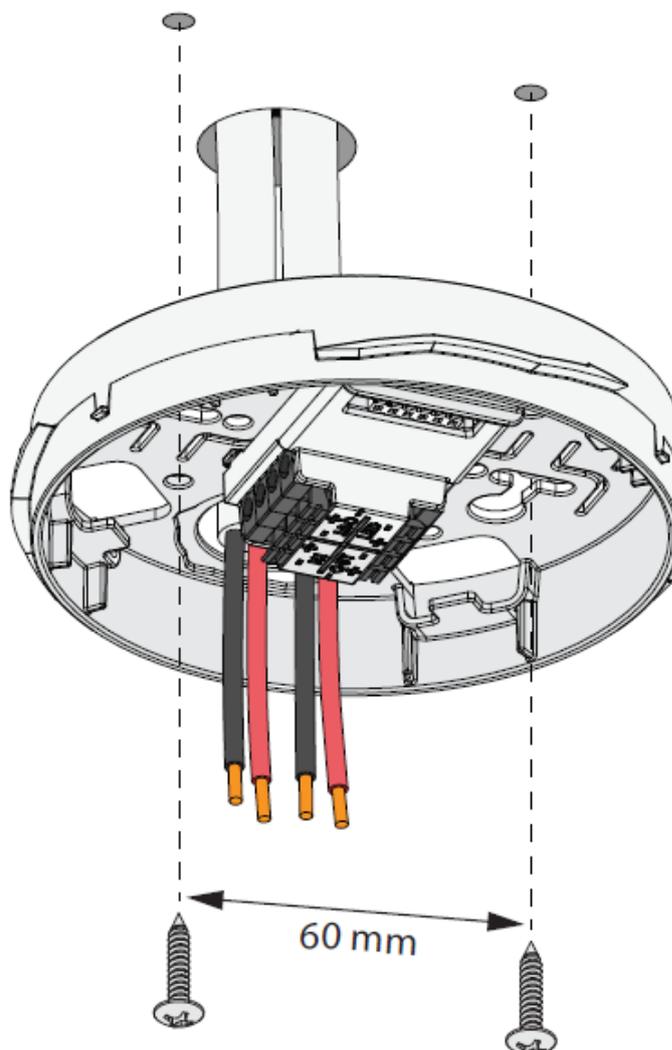
● Recommended mounting holes, Ø4

● Alternative mounting holes, Ø4



9.2.3 Mounting for Concealed Conduit Wiring

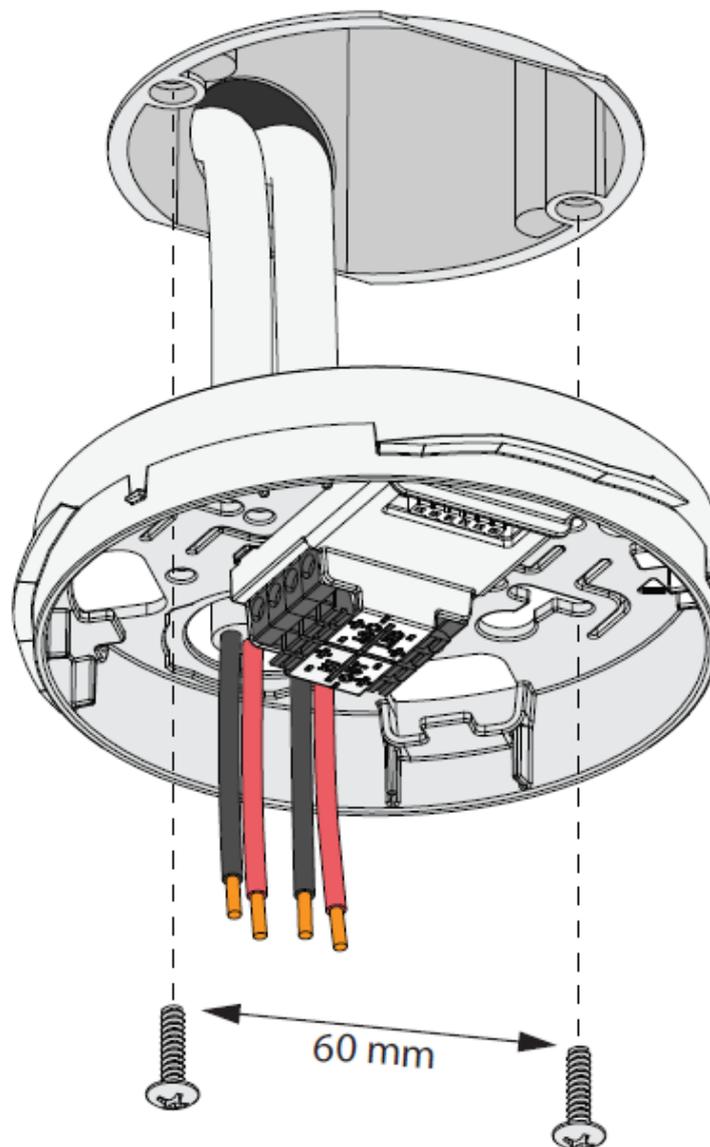
- Mark and drill the necessary holes as described in chapter 9.2.2
- Feed the cables through the $\varnothing 25$ mm cable entry as shown
- Mount the protector base to the ceiling by fastening the screws



9.2.4 Mounting onto a Ceiling Box / Wall Box

Standard 60 mm ceiling or wall boxes can be used when mounting the protector base onto a ceiling or wall box.

- Consult the manufacturer's instructions delivered with the standard ceiling or wall box
- Mount the ceiling or wall box in the ceiling as described in the manufacturer's instructions
- Feed the cables through the $\varnothing 25$ mm cable entry as shown
- Mount the protector base onto the box by fastening the screws

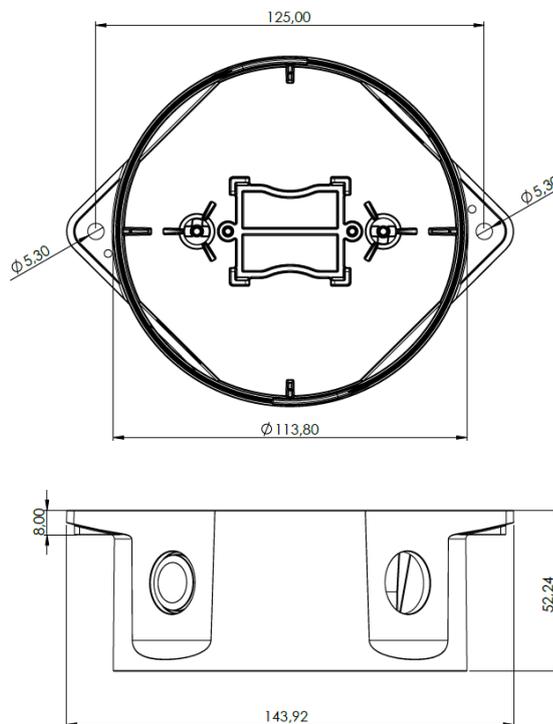


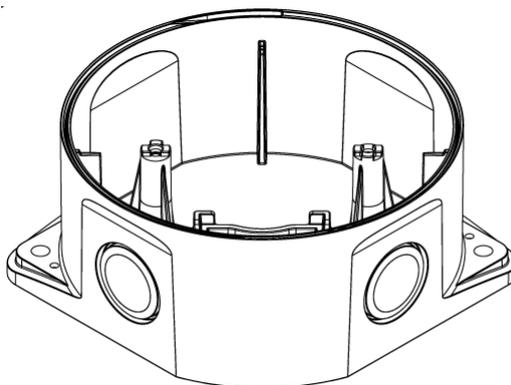
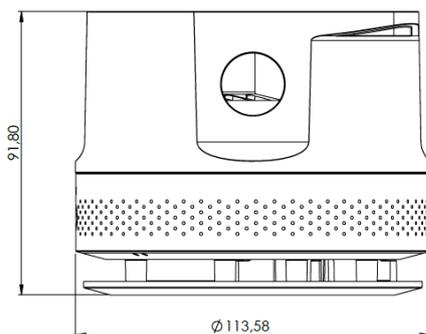
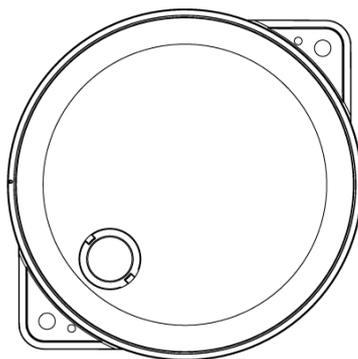
9.2.5 Mounting onto a Conduit Box

The conduit box (see part numbers chapter 15.7) has a total of six 20 or 25 mm knockouts; 2 at the bottom and 4 around the sides located at 90, 180, 270 and 360 degrees. A click-type cable gland is included.

The use of cable glands provides an ingress protection level of IP55.

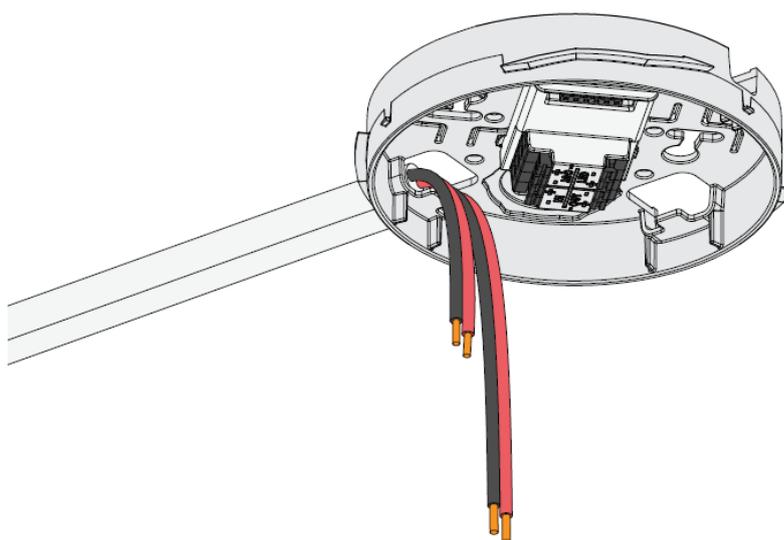
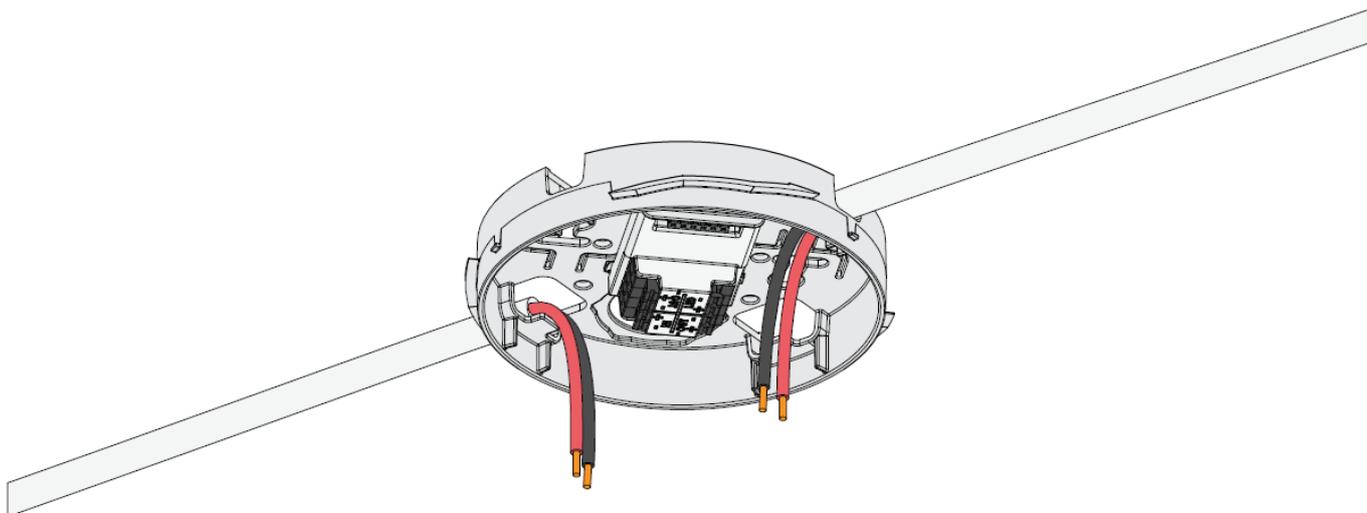
- Mark and drill the necessary holes for the conduit box
- Use a plier to gently remove the knockouts for the chosen cable entries
- Mount the conduit box to the ceiling by fastening the screws
- Feed the cables through the chosen cable entries
- Mount the protector base onto the conduit box by fastening the screws





9.2.6 Mounting for Surface-mounted Wiring

- Locate the knockouts that are sized to fit the desired cable dimension
- Use a plier to gently remove the knockouts for the chosen cable entries
- Mark and drill the necessary holes as described in chapter 9.2.2
- Mount the protector base to the ceiling by fastening the screws
- Feed the cables through the cable entries as shown (the illustrations show two different cable layout alternatives)



9.3 Connecting Loop Cables

9.3.1 Cable Requirements

The following cable requirements apply:

Minimum 0,14mm²/AWG26

Maximum 2,5mm²/AWG14

Connection Capacity	
Conductor cross section, solid	0,14 mm ² to 2,5 mm ²
Conductor cross section, flexible	0,14 mm ² to 2,5 mm ²
Conductor cross section, flexible, with ferrule without plastic sleeve	0,25 mm ² to 1,5 mm ²
Conductor cross section, flexible, with ferrule with plastic sleeve	0,25 mm ² to 1,5 mm ²
Conductor cross section AWG/kcmill	26 to 14



Be aware that the use of ferrules changes the minimum and maximum cable dimensions 0,25 mm² to 1,5 mm².



When connecting and possibly adjusting a solid conductor of 2,5 mm², the mechanical lateral forces, which can affect the terminal block, have to be absorbed by lateral support. Therefore, the wires must be supported by the cable holders as shown in next chapter.

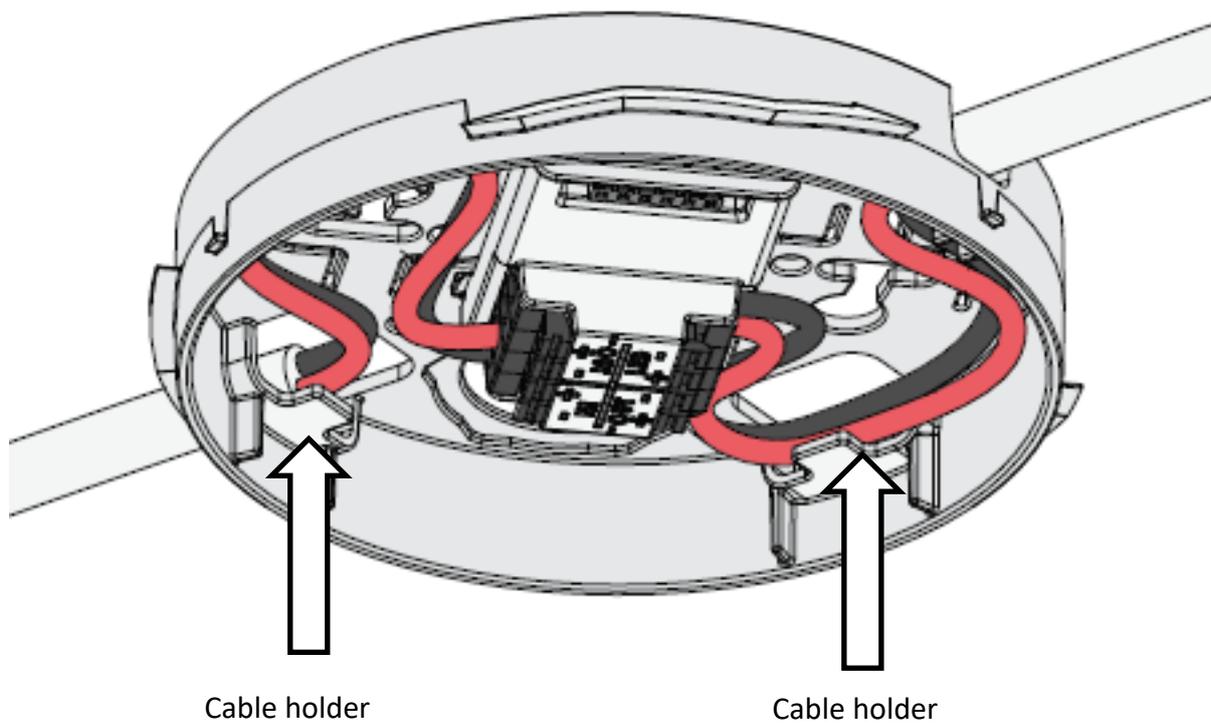


Note that the colors of the cables/wires shown in this handbook (red/black) is used as a reference only. The colors may be different and will vary depending on the installation, applicable standards or local regulations.

9.3.2 Wire Routing Arrangement Inside Protector Base



The wires must be supported by the cable holders. Make sure that the wire routing arrangement shown below is used (the arrows point to the cable holders).



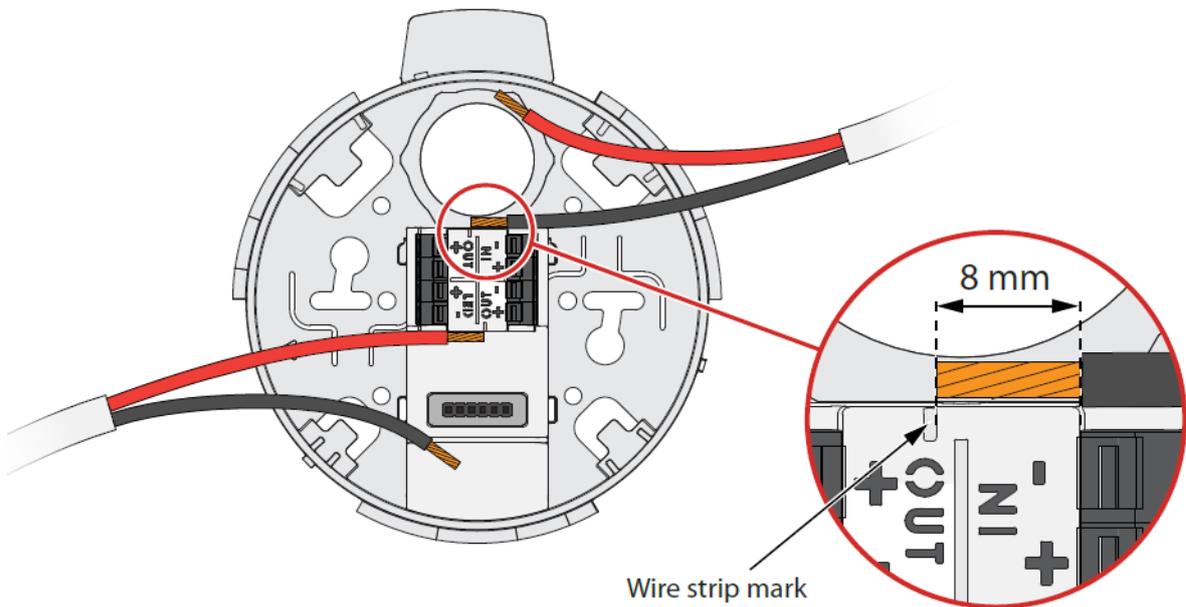
9.3.3 Wire Insulation Stripping



For proper connection, 8mm of wire insulation must be stripped.

When stripping cable insulation from wires, note that as a guidance, a mark on the the connector indicates the wire insulation stripping length.

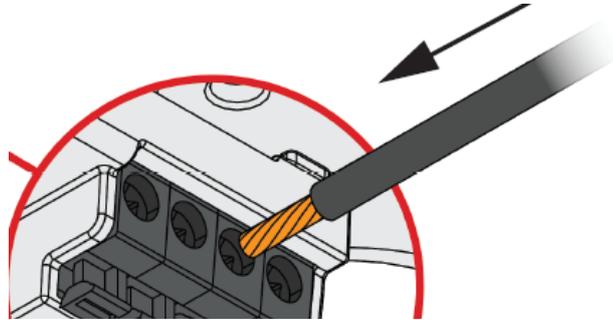
- Measure the length from the edge of the connector to the strip mark indicated on the drawing
- Use a wire stripping tool to strip the cable



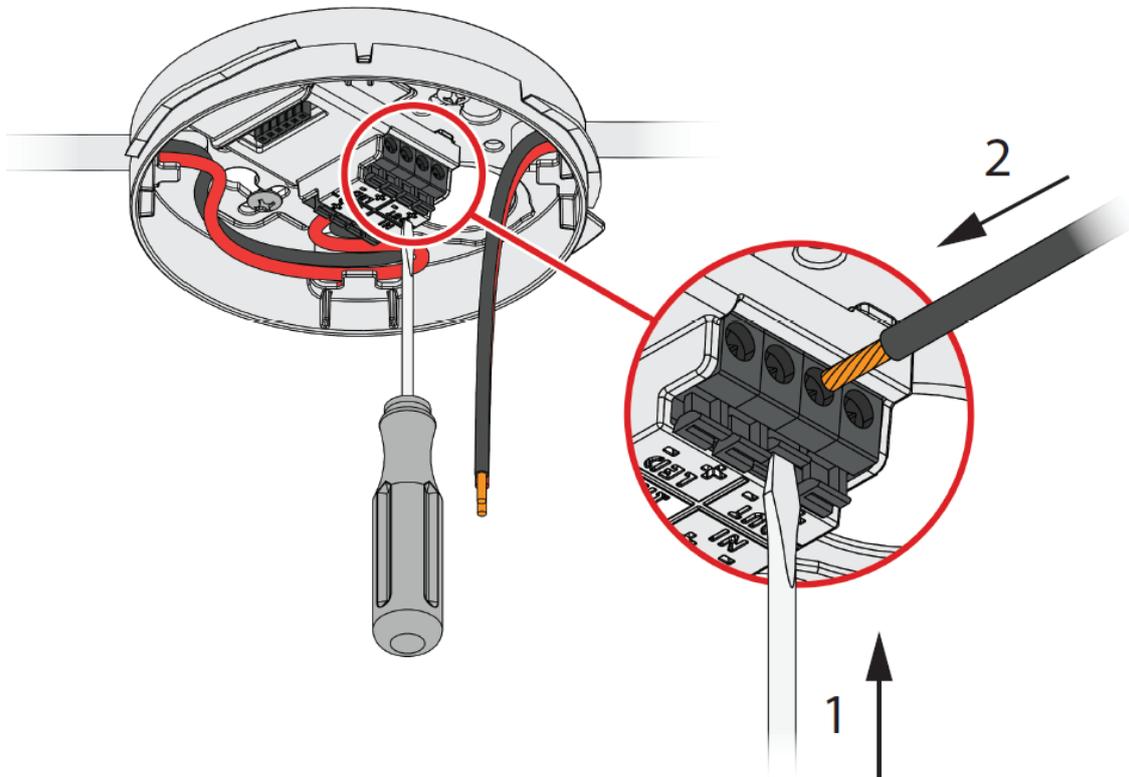
9.3.4 Spring Cage Connection

The connectors are “push-in” type (spring-cage connection), and do not require tools for stiff cables with larger cross section ($> 0,5\text{mm}^2$ and up to a maximum of $2,5\text{mm}^2$).

- Insert the cable **straight** towards and into the connector
- Verify that the cable is properly connected



To ensure proper connection of loop cables that are **$0,5\text{mm}^2$ or less**, make sure to push the connector lever fully down with a small screwdriver before inserting the cable.



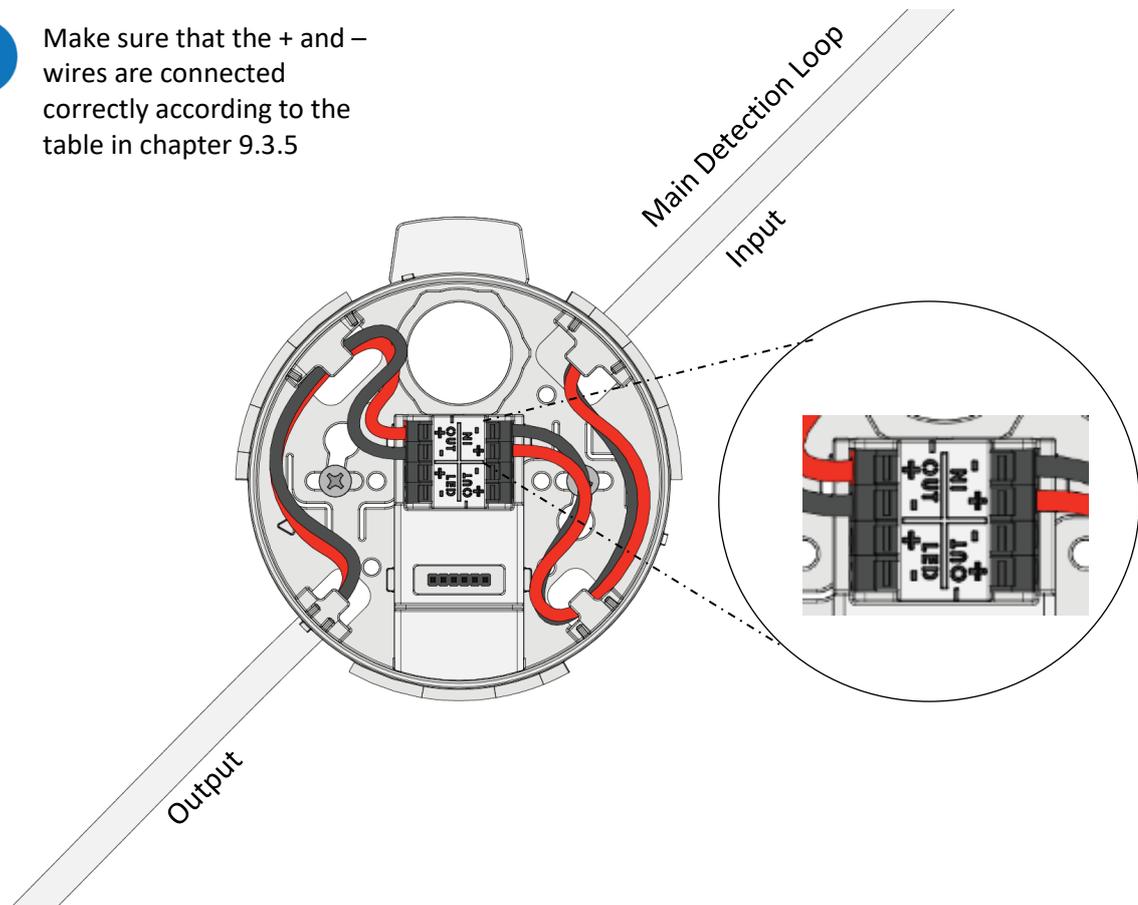
9.3.5 Connections - Overview

Connector	Description	Remarks
IN +	Loop + input	
IN -	Loop - input	
OUT +	Loop + output (Main/Branch)	 <p>Note that either of the outputs on the connector can be used (optional) for the main loop or a branch-off.</p>
OUT -	Loop - output (Main/Branch)	
OUT +	Loop + output (Main/Branch)	
OUT -	Loop - output (Main/Branch)	
LED +	Remote LED + output	LED connection to external LED indicator. Maximum 5 mA.
LED -	Remote LED - output	

9.3.6 Loop Connections

The connection of the loop cables is shown below. In the example below, the cables are fed through cable entries/exits used for surface-mounted cabling.

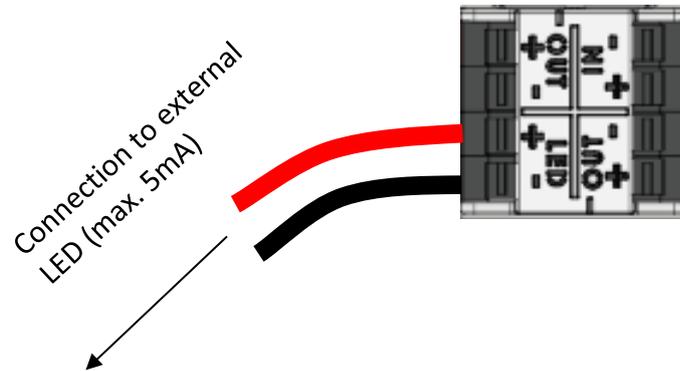
 Make sure that the + and – wires are connected correctly according to the table in chapter 9.3.5



9.3.7 LED Connection

The Protector base connector has an LED output intended for connection of external equipment like LED indicators and Fire Protection Equipment (FPE). See the illustration below.

The LED output activates when the alarm output is active.



9.3.8 Branch-offs

If necessary, a *branch-off* can be connected to a detection loop if the existing cable layout requires this, but this is *not* recommended, as redundancy is lost and safety is reduced.



Limitations

There must not be more than one branch-off per detector. Multiple branch-offs in a single detector will lead to improper loop raise and addressing of the detectors.

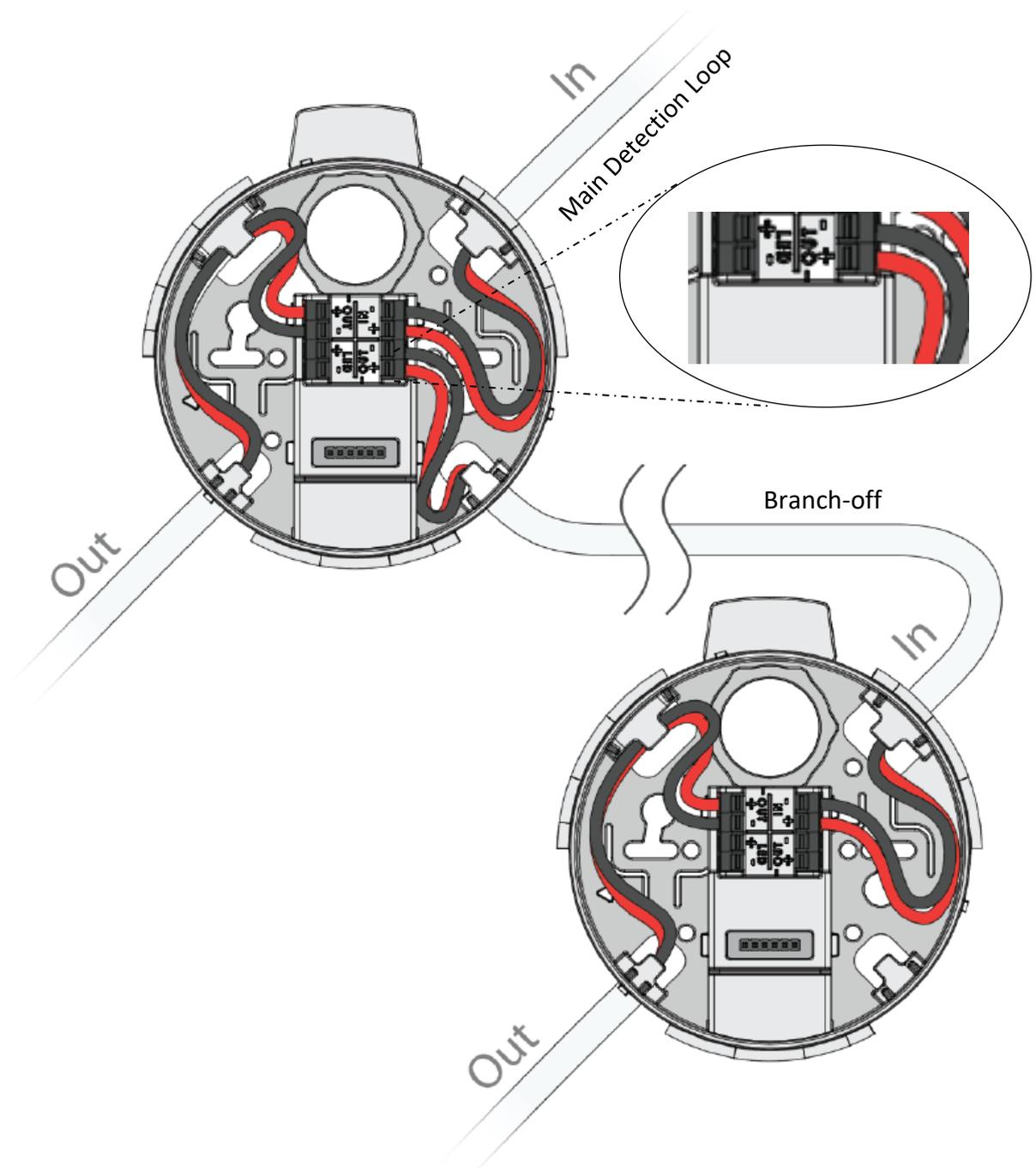


Limitations

For safety reasons, the number of protectors on each branch-off must be kept to a minimum, as the protectors on a branch-off will not operate in case of a break or short-circuit on the branch-off. With reference to EN54, the absolute maximum number of protectors on a branch-off (or an open loop) is 32.



Note that the outputs on the connector can either be used (optional) for the main loop or a branch-off. Therefore, always mark the main loop cables and branch-off cables accordingly to ensure correct connections. Make sure that the + and – wires are connected correctly.

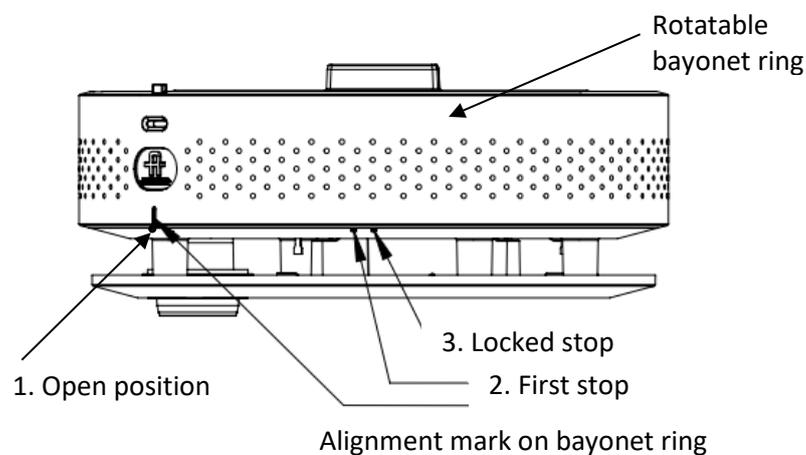


9.4 Alignment Marks on the Protector

Before mounting the protector onto the base, observe the alignment marks on the protector shown in the illustration below (Autronica can provide a video showing the mounting of the protector on the protector base).

The alignment mark on the rotatable bayonet ring is to be aligned with one of the three different alignment marks located on the protector:

- 1) Open (prepared for mounting onto the base)
- 2) First stop (fastened to the base)
- 3) Locked stop (locked to the base)



Doc-1003452

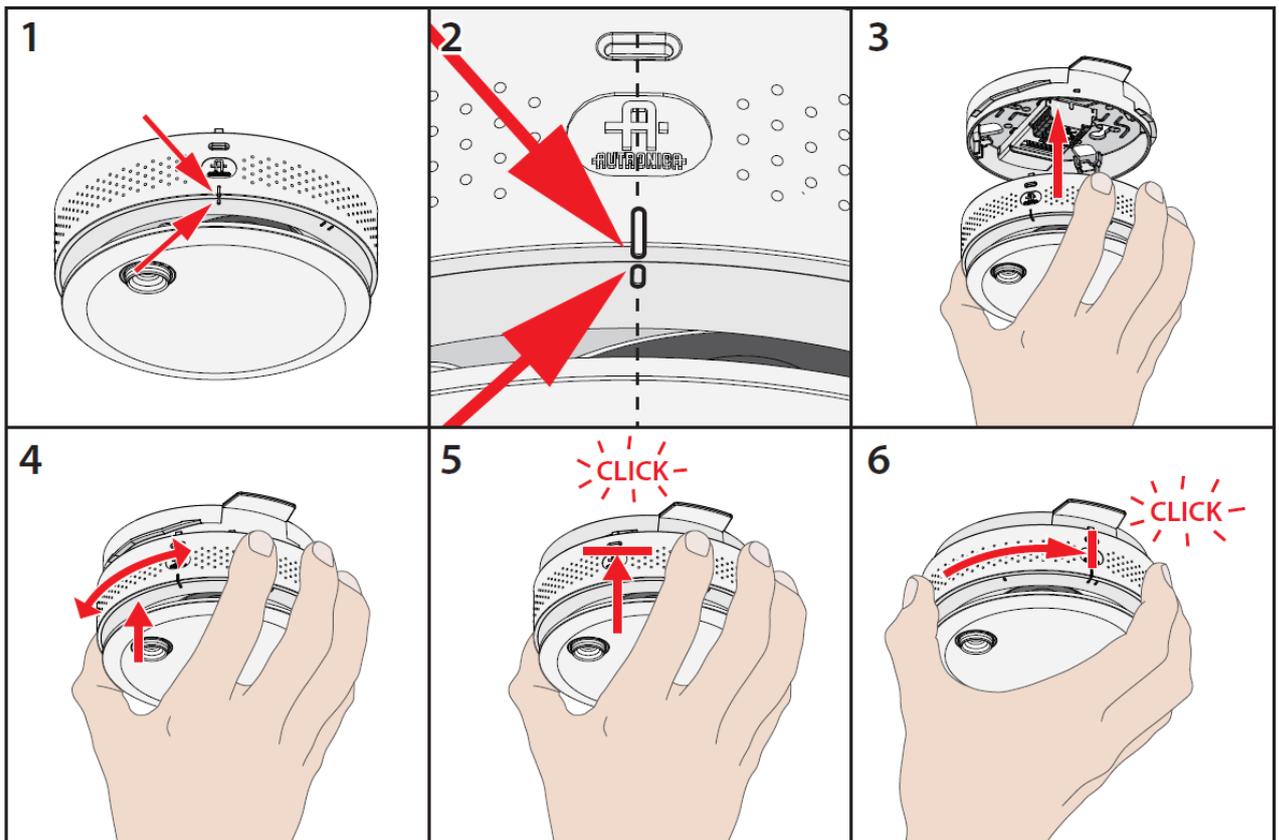
9.5 Mounting the Protector onto the base



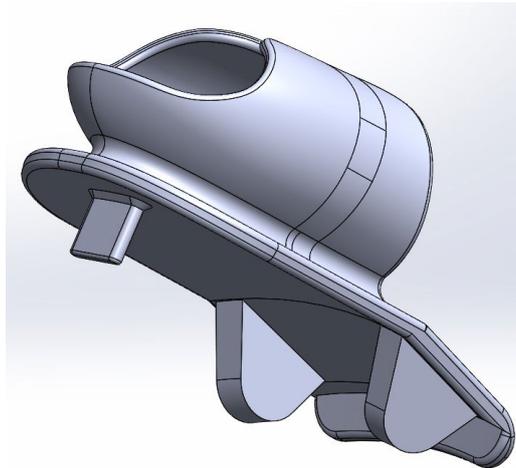
Note that when mounting the protector onto the base, only the bayonet ring is to be turned (not the protector itself).

Consult the pictures (1-6) below and do as follows:

1. Before mounting, the alignment mark on the bayonet ring should be aligned with the alignment mark on the protector
2. See close up picture of the alignment marks
3. Move the protector towards the base
4. Gently press the protector upwards and turn the rotatable bayonet ring in either direction
5. You will hear a click when the protector is in its position to be fastened
6. Turn the protector clockwise until it is properly fastened (a click will be heard), and make sure that the alignment marks are aligned as shown



9.6 Locking/Unlocking the Protector to the Base



To avoid unintentional removal of protectors, a special locking tool shown above can be used to lock the protector to the base, which is a one-hand operation. Alternatively, a small screwdriver may be used.

- Grab the rotatable bayonet ring, insert and press the locking tool into the small slot, then turn the bayonet ring clockwise to lock the protector to the base
- Make sure that the alignment marks are aligned as shown in the illustration in chapter 9.4 (locked position)

The locking tool must also be used to unlock the protector from the base. In this case, the locking tool is inserted into the small slot, and the bayonet ring is turned counter-clockwise until it is unlocked.

9.7 Removing the Protector from the Base



Before removing a protector from a base, observe the alignment marks to determine whether it is locked or not to the base (see chapter 9.4).

To remove a protector that is *not* locked:

- Simply grab the rotatable bayonet ring and turn it counter-clockwise, then remove the protector from the base

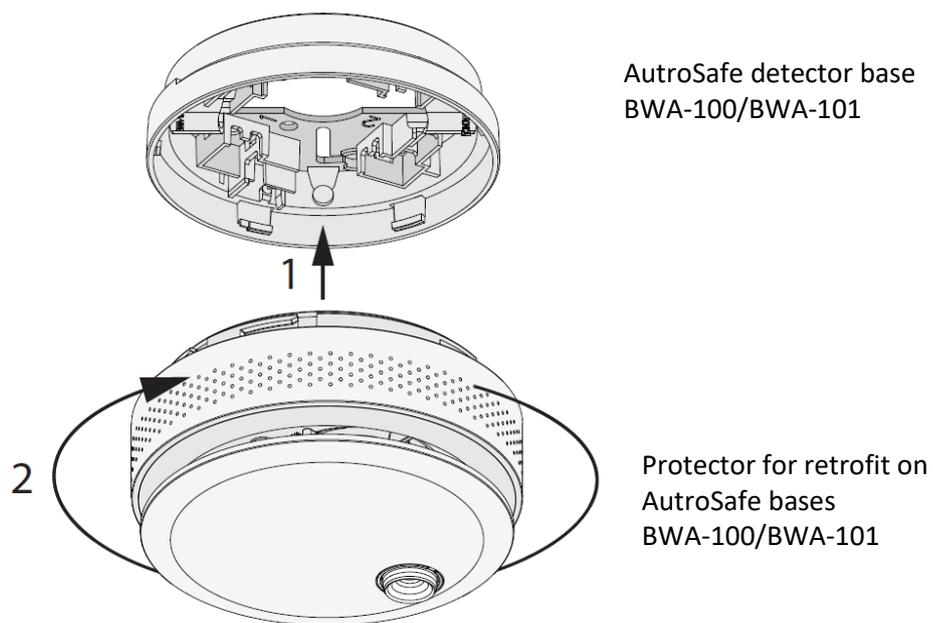
To remove a protector that has been locked with the locking tool:

- Grab the rotatable bayonet ring, insert and press the locking tool into the small slot
- Turn the bayonet ring counter-clockwise, and remove the protector from the base

9.8 Retrofit mounting onto Existing AutoSafe Base BWA-100/BWA-101

Autronica provides several different variants of protectors specifically intended for retrofit purposes (AutoGuard® Retro). These protectors can easily be mounted onto an existing AutoSafe base (BWA-100/BWA-101) similar to chapter 9.5. For dimensions, see chapter 3.5.4.

- Remove the existing detector from the base
- Insert the retrofit protector onto the base, then turn the protector (the bayonet ring is not rotatable on retrofit protectors) clockwise until it is properly fastened



9.9 Labeling the Protector Base / Tag Holder

Each protector base is to be tagged with a unique description (tag name) assigned to the protector's location.

- Place the label with the tag name on the tag holder



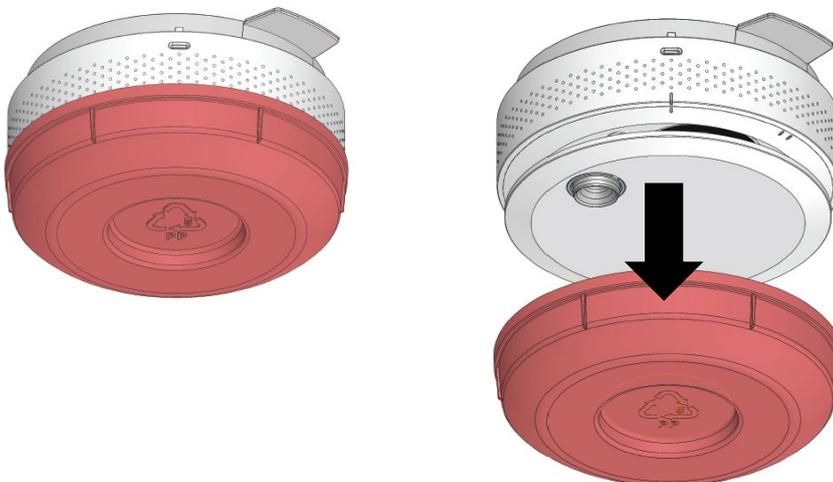
9.10 Protector Cover

AutoGuard® protectors are supplied with a protector cover/dust cap.



To avoid possible contamination of the smoke detection chamber in dirty environments during the installation and construction phase, the protector covers **must** remain in place on the protector until commissioning is started.

- **The protector cover must be removed before use;** as soon as construction work is completed, or before the fire detection loop is in operation.



10. Preparing for Configuration

10.1 Introduction

This chapter describes how to identify and label the AutoGuard MultiCriteria protectors, scan the detection loops and import an Excel file (csv file) into the AutoSafe Configuration Tool, including:

- the correct serial number (SN) for each AutoGuard base
- the detection zone text (DZ)
- the TAG names
- the loop sequence indexes (LSI)

10.2 Tools requirements

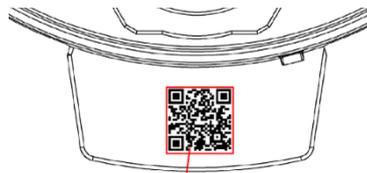
- QR code reader (required for alternative A in ch. 10.3.1)
- Bar code scanner (required for alternative B in ch. 10.3.2)
- Prepared list with tag names and DZ text (Excel file)
- AS2000 Loop Diagnostic Tool (version 7.10.7 required)
- AutoSafe Configuration Tool (version 4.11.3 required)

10.3 Alternative ways of identifying serial numbers

There are two alternative ways to identify serial numbers for AutoGuard bases (alternative A and alternative B).

10.3.1 Alternative A - Using QR code reader (recommended)

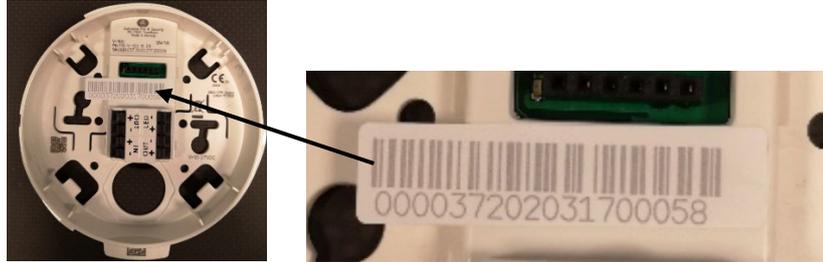
From the factory, a data matrix code is laser engraved on the AutoGuard base's tagholder. The code contains information on the part number, version, the base's serial number and type (the data matrix code shown in the illustration is an example used only for the purpose of indicating the placement of the code).



25 QR code
11c: Serial no
11a: Type
11b: Partnumber
11e: Major rev.

10.3.2 Alternative B - Using the rip off label inside the AutoGuard base

Inside each protector base a *rip off label* is attached. The rip off label for an AutoGuard base shows the base's serial number (SN), consisting of 18 digits, where the three first digits represent the Manufacturer.



10.4 Labeling bases with tag name labels

The AutoGuard bases are to be labeled with tag name labels before or after installation. We recommend that they are labeled *before installation*.

To label the bases with tag name labels, follow alternative A using a QR code reader (see 10.3.1) or alternative B using a rip off label (see 10.3.2). If you don't have a PC and must do this manually, use alternative B described in 10.3.2.



10.4.1 Alternative A - Using a QR code reader

- Prepare a list with all tag names and DZ text on an Excel sheet
- Scan the QR code for each base
- Ensure that the serial number is linked to the correct tag name
- Place the tag name label onto the base's tagholder
- Install all AutoGuard bases

10.4.2 Alternative B - Using the rip off label

- Prepare a list with all tag names and DZ text on an Excel sheet
- Print the list
- Rip off the label from the base (see 10.3.2)
- Insert the rip off label beside the correct tag name (a unique description assigned to the protector's location) on the printout
- Place the correct tag name label onto the base's tagholder
- Install all AutoGuard bases

10.5 Scanning each loop with AS2000

AS-2000 is connected to the detection loop via the BSL-310 module in an AutoSafe panel, or by means of an external interface unit, WAS-2000.

- When connected, press the START button in the Topology window (AS-2000).

AS-2000 will detect all bases connected to the selected loop driver and present them graphically in a correct electrical sequence. If any breaks on the loop's minus wire or short-circuits are detected, see Troubleshooting, chapter 10.9

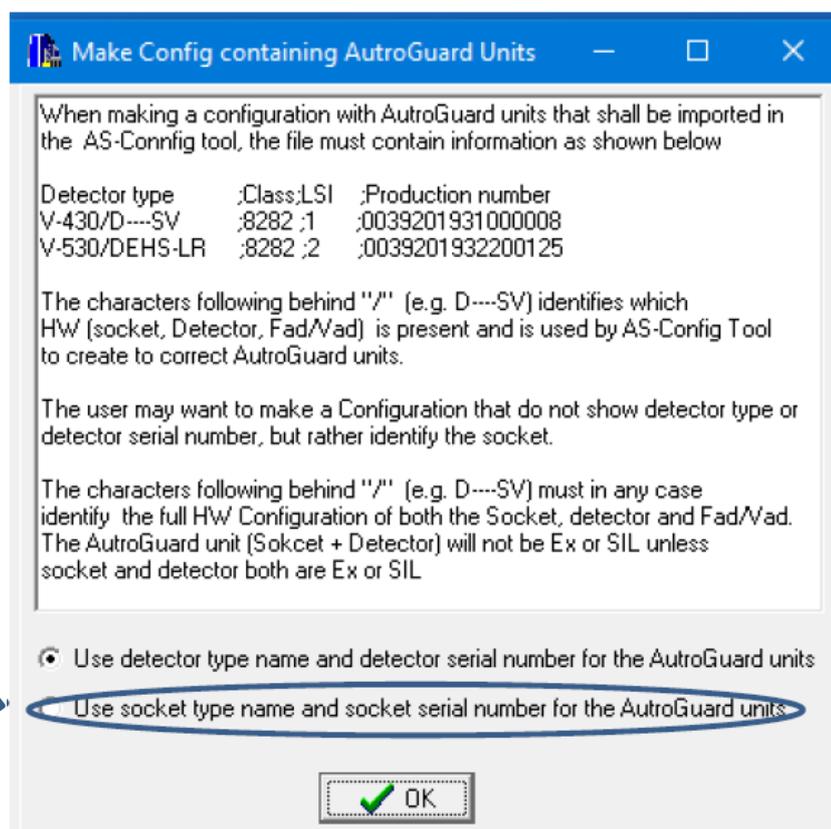
10.6 Generating an Excel file

- Press Report in the menu on the right hand side

Clicking the "Make Configuration" button, allows you to generate an Excel csv file, which the AutoSafe Configuration Tool can convert to AutoConfig format.

When an AutoGuard unit is found on the loop, the next window is shown. The default option is to use the protector type name and serial number if the generated file is to be imported in the AutoSafe configuration tool. We recommend to generate the Excel csv-file using the socket type name and serial number.

NOTE: Choose "Use socket type name and socket serial number" (the bottom option). Note that for this choice all detector information will be included (name, add-on).



10.7 Merging Tag Names, Serial Numbers and LSI

Merge tag names and serial numbers you have identified in chapter 10.3 with Loop Sequence Indexes (LSI) and Serial Numbers (SN) from AS2000.

- Save the Excel file as a csv file.

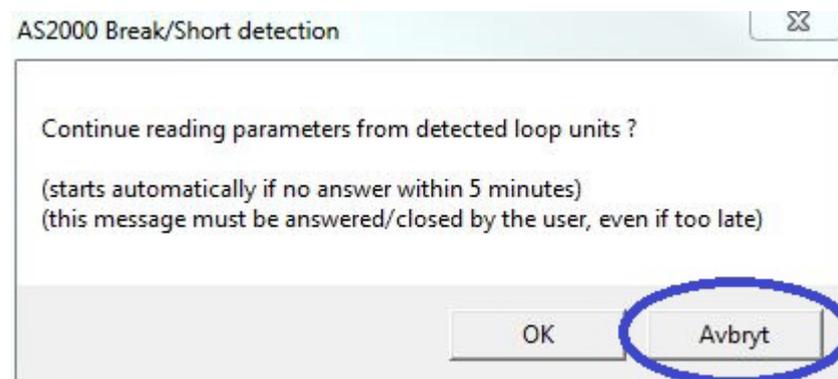
10.8 AutoSafe Configuration Tool

- Import the Excel file (csv file) to AutoSafe Configuration Tool.

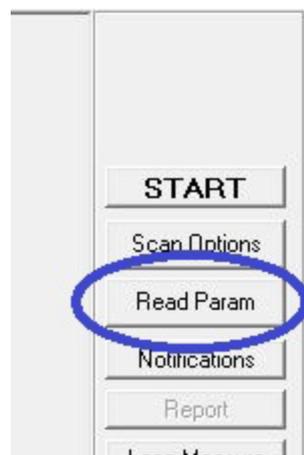
10.9 Troubleshooting

In case a break on the loop's minus wire or a short circuit is detected during the scanning of a loop (see chapter 10.5), a popup window will appear (see below)

- When the loop is complete and without any errors (breaks/short circuits), click Cancel



- Click Read Parameters



11. Configuration Recommendations

11.1 Introduction

The configuration of Sensitivity, Operation Classes and Heat Response Categories is described in chapter 5.4, 5.5 and 5.6, respectively. These settings allow you to fine tune the AutoGuard® protectors to avoid unwanted alarms, and at the same time give the earliest possible detection.

Below you will find the recommended settings suitable for different applications and rooms with the presence of various nuisance sources. Note that the environment in rooms and applications may vary. The below tables describe Autronica's recommendations based on general information only. Local considerations need to be made.

Nuisance source	Operation class	Sensitivity class	Heat response
STEAM from showering, ironing, cleaning etc.	MULTI	LOW	DISABLED
COOKING FUMES without risk of steam	SMOKE	LOW	Not applicable
AIRBORN DUST	SMOKE	LOW	Not applicable
ARTIFICIAL SMOKE / THEATER SMOKE	SMOKE	LOW	Not applicable
CONDENSATION in freezers, tunnels, and in general where hot and cold air meets	HEAT	Not applicable	A2S
Short bursts of nuisance like opening dishwasher, opening bathroom door, opening oven etc.	MULTI	LOW	TBD by application

11.2 Hotel Rooms

High sensitivity – yet resistant to shower steam and cigarette smoke.

Configuration of AutoGuard in hotel rooms with risk of steam and Cigarette smoke:

Operation Class	MULTI
Sensitivity Class	LOW
Heat Response Category	A2S

Configuration of AutoGuard in hotel rooms with risk of Cigarette smoke:

Operation Class	MULTI
Sensitivity Class	MEDIUM
Heat Response Category	A1S

11.3 Apartments

Open kitchen solutions without risk of nuisance alarms.

Ultra-fast detection of smoldering fires in bedrooms.

Configuration of AutoGuard in apartments in the immediate kitchen area:

Operation Class	MULTI
Sensitivity Class	LOW
Heat response Category	DISABLED*

Configuration of AutoGuard in apartments out of immediate kitchen area:

Operation Class	MULTI
Sensitivity Class	MEDIUM
Heat Response Category	DISABLED*

Configuration of AutoGuard in apartment bedrooms:

Operation Class	MULTI
Sensitivity Class	HIGH
Heat Response Category	A1

* If AutoGuard is used in a combination with BN-303/LS, Heat Response Category must be set to A2S.

11.4 Freezers and Cold Stores

In general, smoke detection is not recommended in cold store areas due to risk of condensation.

Configuration of AutoGuard in Freezers and cold stores without temperature fluctuations:

Operation Class	HEAT
Sensitivity Class	Not applicable
Heat response Category	A1R

Configuration of AutoGuard in Freezers and cold stores with temperature fluctuations:

Operation Class	HEAT
Sensitivity Class	Not applicable
Heat response Category	A2S

11.5 Clean Rooms and Computer Rooms

In general, early detection is required in Clean/Computer/Server Rooms.

Configuration of AutoGuard in Clean Rooms and Computer Rooms with early detection of small amounts of smoke:

Operation Class	MULTI
Sensitivity Class	HIGH
Heat response Category	A1

11.6 Table Overview – Applications/Settings

See next pages.

Typical Application	Typical Challenges	Description	Operation Class	Sensitivity Class	Heat Resp. Category
Office Area	No specific challenges, low pollution and stable temperature	Normal clean office areas. If the office area has some air pollution, medium sensitivity may be selected. Where there is risk for higher temperature than 56°C (e.g atriums where sun can heat up), Heat response category B should be selected	Multi	High	A1
Clean Room/Computer Room/Server Room	Applications where there is a need for early detection. Clean air and stable temperature.	Highest sensitivity within EN54	Multi	High	A1
Bakery	Steam, Temperature increase, Cooking fumes	Bakeries usually have ovens releasing very warm air, often with steam, smoke or cooking fumes. With smoke sensitivity set to LOW, the AutoGuard will have a good but a bit reduced sensitivity while the DYFI3D will discriminate unwanted alarms from steam and cooking fumes. If heat detection is required A2S is the preferred heat response category. This requires that ambient temperature is below 58°C.	Multi	Low	Disabled
Kitchen Area, reduced sensitivity	Cooking fumes, steam, heat ramps	Kitchen area in e.g. apartment buildings where the protector is installed near e.g. the stove. The sensitivity is reduced, and heat increase will not trigger alarm.	Multi	Low	Disabled/ A2S in combination with BN-303/LS
Kitchen Area, normal sensitivity	Cooking fumes, steam, heat ramps	Kitchen area in e.g. apartment buildings where the protector is installed out of the immediate kitchen area. The sensitivity is normal, but heat increase will not trigger alarm	Multi	Medium	Disabled/ A2S in combination with BN-303/LS
Apartment Building, bedroom	Need fast response in clean environment	Early detection, no special issues with nuisance alarm sources	Multi	High	A1

Typical Application	Typical Challenges	Description	Operation Class	Sensitivity Class	Heat Resp. Category
Hotel Room with good ventilation, no smoking	Steam from bathroom comes out in the hotel room.	For modern hotels with good ventilation and minimal risk of steam and cigarette smoke. Increased sensitivity and response to fire.	Multi	High	A1S
Hotel Room where shower steam may be present	Steam from bathroom comes out in the hotel room	Reduced sensitivity when there is a risk of steam	Multi	Low	A2S
Hotel Room, smoking allowed	Cigarette smoke	Standard sensitivity when there is no risk of steam.	Multi	Medium	A1S
Freezer and Cold Store without temperature fluctuations		In general, smoke detection is not recommended in cold store areas due to condensation. Mounting the detector far into the cold store makes sure that the detector will not see a temperature increase while opening doors or gates. In this case its recommended to use HEAT response category A1R, giving quick alarm response to a heat increase (rate of rise).	Heat	Not applicable	A1R
Freezer and Cold Store with temperature fluctuations	Warm air coming in through a door or gate that is opened. Condensation	In general, smoke detection is not recommended in cold store areas due to condensation. Heat detection in class A2S makes sure the detector is unaffected by opening doors or gates letting warm air into the cold store. A2S gives slower response time since the heat needs to reach approximately 58 degrees for alarm.	Heat	Not applicable	A2S
Parking Garage	Exhaust, condensation, dust	Point smoke detectors might not always be the best option for parking garage, due to the environmental challenges. If possible, reduced sensitivity in combination with flame	Multi	Low	A2S

Typical Application	Typical Challenges	Description	Operation Class	Sensitivity Class	Heat Resp. Category
		detection is recommended.			
Shopping Center		General installation, roof, hallways etc. For special applications like kitchens etc. see separate application info.	Multi	Medium	A2S
Museum	Fast detection	Usually clean environment. In some cases, it will be necessary to reduce the sensitivity.	Multi	High	A1S
Laboratory		In general, we want AutoGuard to be set to the highest possible sensitivity. In some cases, it will be necessary to reduce the sensitivity.	Multi	High	A1S
Factory/Industrial	Dust, steam, pollution, temperature	Bursts of pollution like dust etc.	Multi/Smoke	Low	A2S
Factory/Industrial	Dust, steam, pollution, temperature	Longer periods of pollution.	Smoke	Low	Not applicable
Theater/Stage	Artificial smoke, Pyro, heat	The standard multicriteria protector will handle some theater smoke in operation class SMOKE with LOW sensitivity. If there is a risk of significant amount of theater smoke reaching the protector, a variant with integrated CO sensor should be used.	Smoke	Low	Not applicable

12. Configuration for AutoSafe

12.1 Introduction

This chapter provides information specifically intended for the configuration of the AutoGuard® Multicriteria Protector only.

The following configuration chapters contain references (where necessary) to the chapters in this handbook where the functionality is described in detail.

For further information on system configuration, refer to the configuration handbook for AutoSafe.



System configuration must be done by trained/certified technical personnel who are familiar with the system and national/local regulations.



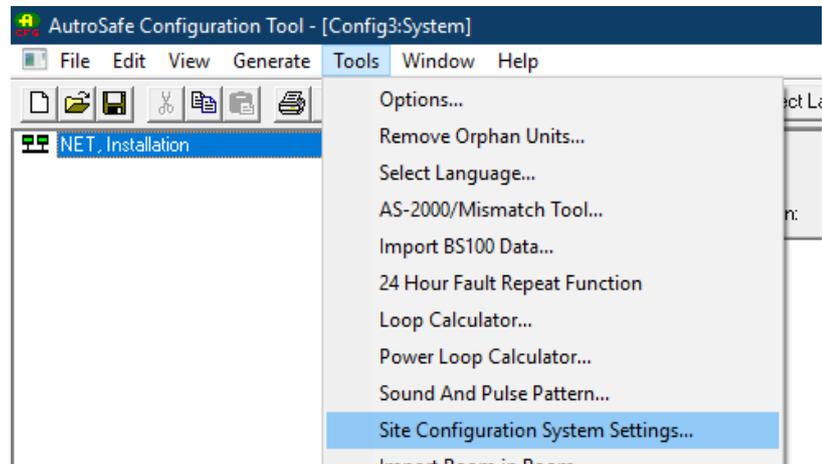
Note that one protector occupies one address only, regardless of the number of add-ons (sounder, visual alarm devices, etc.).

12.2 AutoSafe Configuration Tool Requirements

The configuration requires the use of AutoSafe Configuration Tool, version 4.11 or higher.

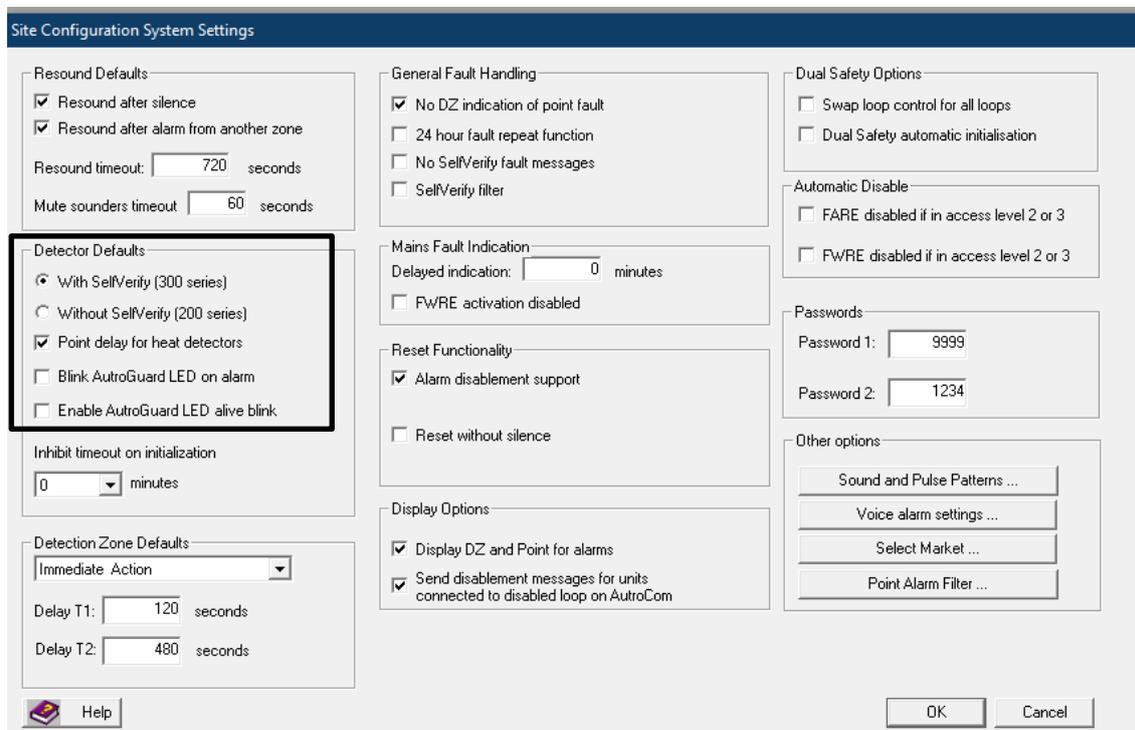
12.3 Site Configuration System Settings

- From the Tools menu, select Site Configuration System Settings

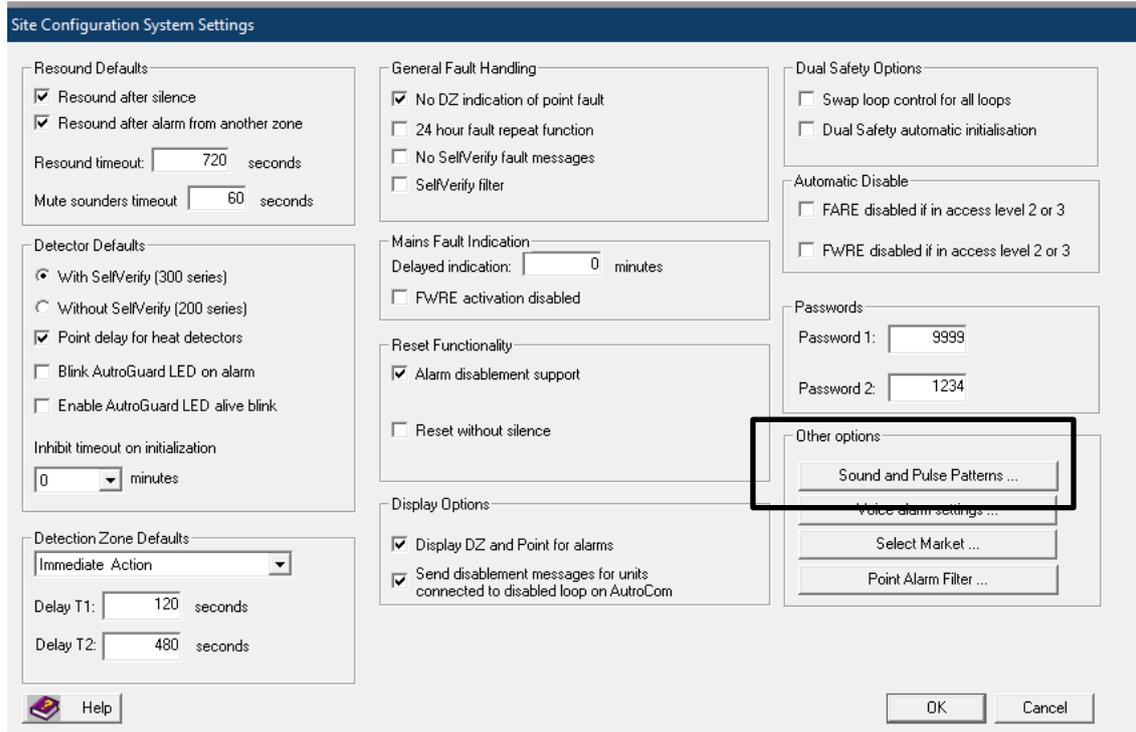


12.3.1 Detector Defaults – LED on Alarm/LED Alive Blink

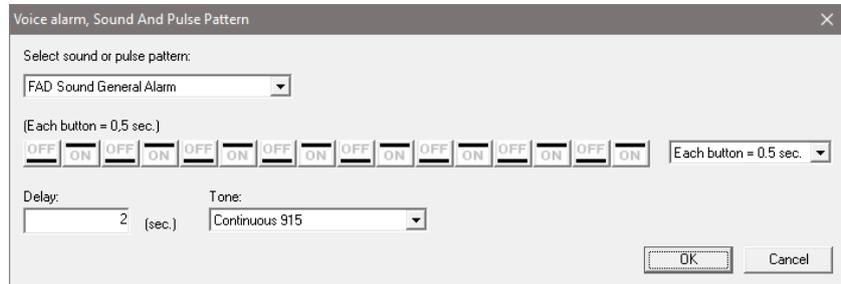
- In the Detector Defaults settings, check the following boxes to enable the functions (optional):
 - Blink AutoGuard V Series Detector on alarm
 - Enable AutoGuard V Series Detector LED alive blink
- Click OK when completed



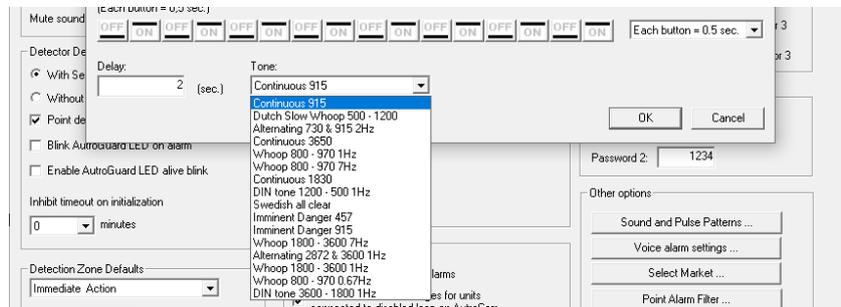
12.3.2 Sound and Pulse Patterns



- From the Other options box (or directly from the Tools menu), click the Sound and Pulse Patterns button



- Select the tone from the list, then click OK

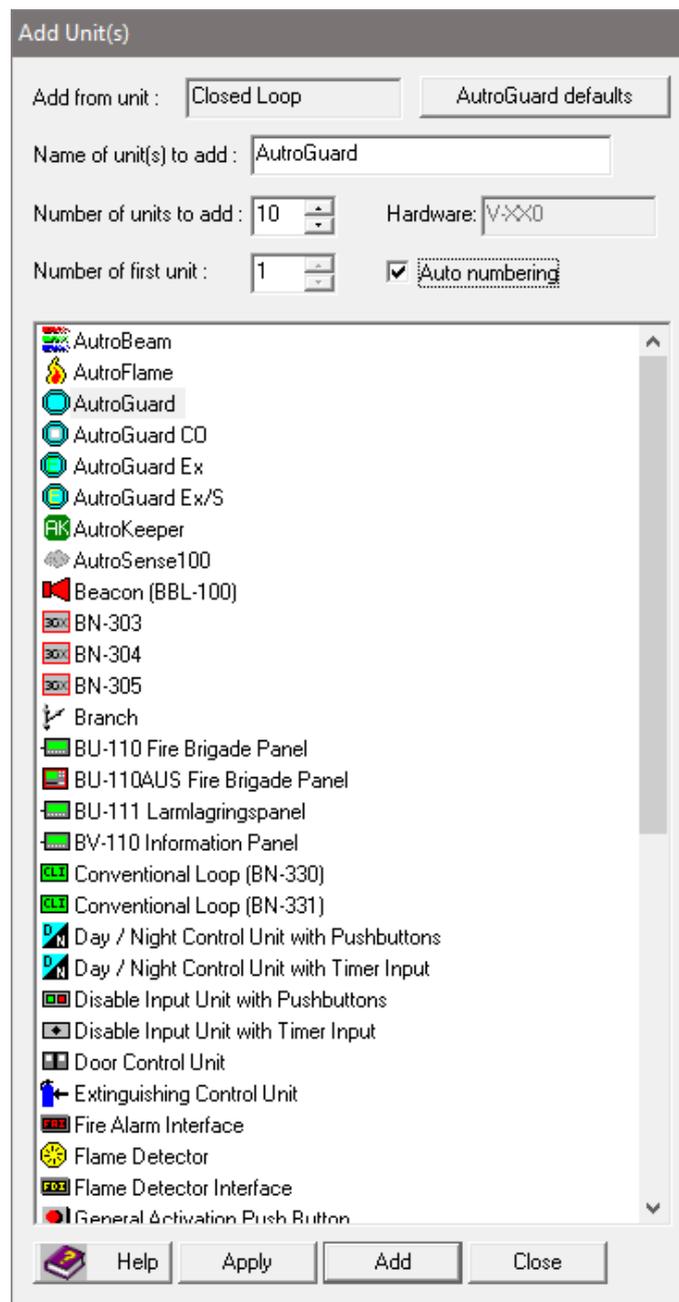


Refer to chapter 7.3 Sound and Pulse Patterns.

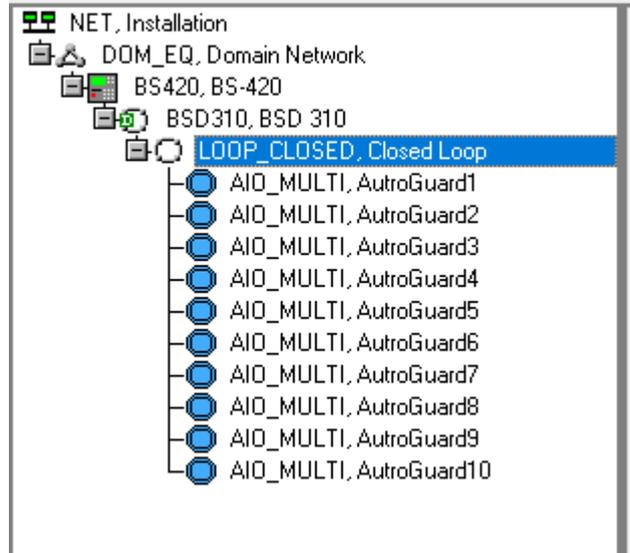
12.4 Adding System Units

Note that the AutoSafe Configuration Tool provides the basic variants of AutoGuard. All other variants are configured for each protector individually or by multi-selecting several protectors and then changing the properties according to specifications.

- From a closed loop in the system view, right-click and select Add
- Select the AutoGuard Protector variant to be added
- Select the number of units to be added (for example, 10 units)
- Check Auto numbering to automatically number each unit

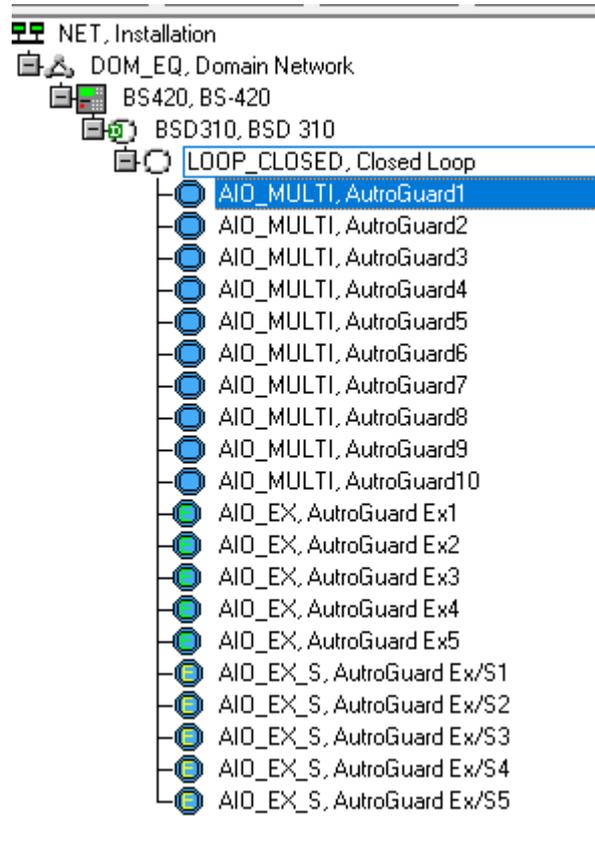


- Click Add



- Continue adding units as described above

The example below shows a configuration with several variants of AutoGuard Protectors.



12.5 AutoGuard Default Settings

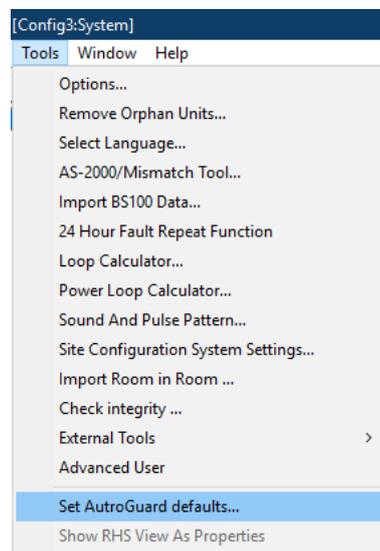
AutoGuard default settings are accessible from either the Tools menu or from the Add Units window (upper right corner).



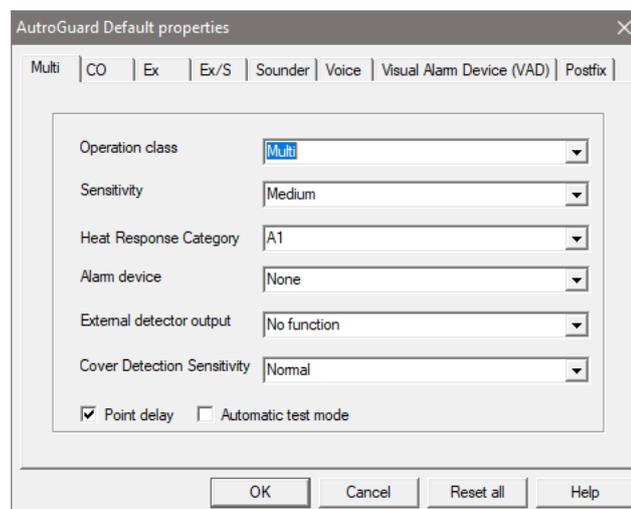
Note that when changing the default properties, all new protectors that are added after a change of the default properties will be affected. Existing protectors added before the change will not be affected.

12.5.1 Set AutoGuard Defaults Menu

- From the Tools menu, select Set AutoGuard defaults



Default settings can be selected for each variant/add-on.



Refer to chapter 5.4 Operation Class, 5.5 Sensitivity, 5.6 Heat Response Categories, 5.8 Cover Detection and 14.3.2 Automatic Test Mode.

12.5.2 Multi

- From the dropdown lists, select the default properties, then click OK

The screenshot shows the 'AutoGuard Default properties' dialog box with the 'Multi' tab selected. The settings are as follows:

Property	Value
Operation class	Multi
Sensitivity	Medium
Heat Response Category	A1
Alarm device	None
External detector output	No function
Cover Detection Sensitivity	Normal

Additional options: Point delay, Automatic test mode.

12.5.3 Ex

- From the dropdown lists, select the default properties, then click OK

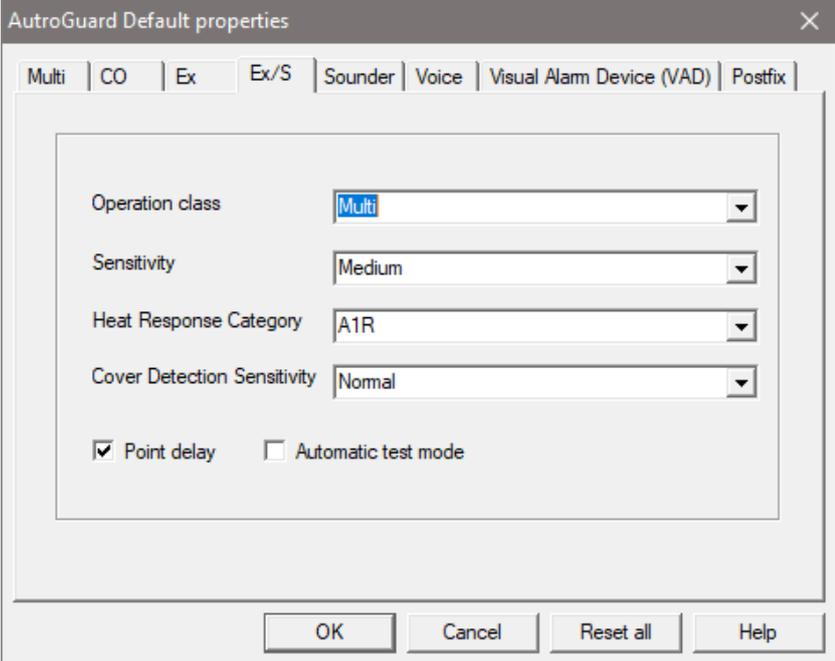
The screenshot shows the 'AutoGuard Default properties' dialog box with the 'Ex' tab selected. The settings are as follows:

Property	Value
Operation class	Multi
Sensitivity	Medium
Heat Response Category	A1
Cover Detection Sensitivity	Normal

Additional options: Point delay, Automatic test mode.

12.5.4 Ex/S

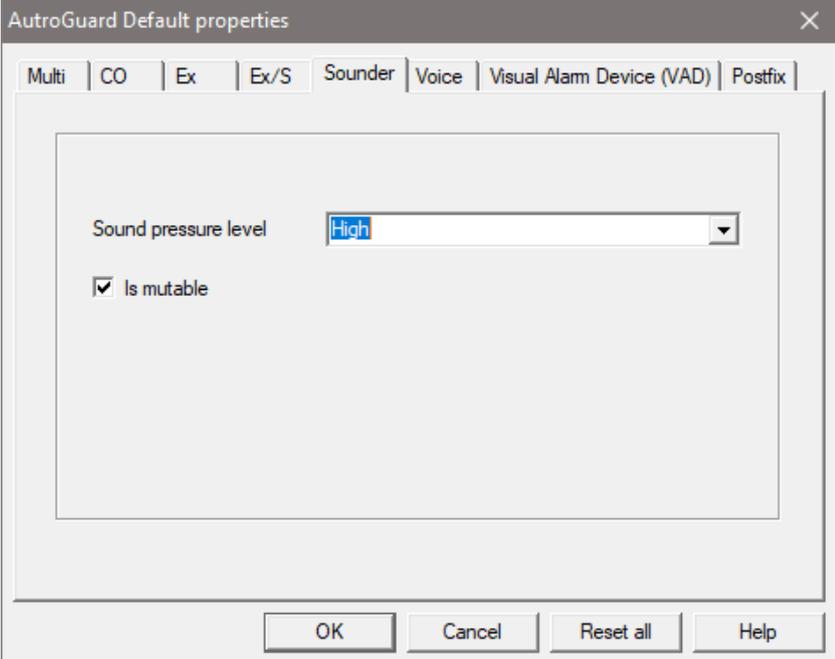
- From the dropdown lists, select the default properties, then click OK



The screenshot shows the 'AutoGuard Default properties' dialog box with the 'Ex/S' tab selected. The dialog has a title bar with a close button (X) and a tabbed interface with tabs for 'Multi', 'CO', 'Ex', 'Ex/S', 'Sounder', 'Voice', 'Visual Alarm Device (VAD)', and 'Postfix'. The 'Ex/S' tab is active. Inside the dialog, there are four dropdown menus: 'Operation class' set to 'Multi', 'Sensitivity' set to 'Medium', 'Heat Response Category' set to 'A1R', and 'Cover Detection Sensitivity' set to 'Normal'. Below these are two checkboxes: 'Point delay' (checked) and 'Automatic test mode' (unchecked). At the bottom, there are four buttons: 'OK', 'Cancel', 'Reset all', and 'Help'.

12.5.5 Sounder

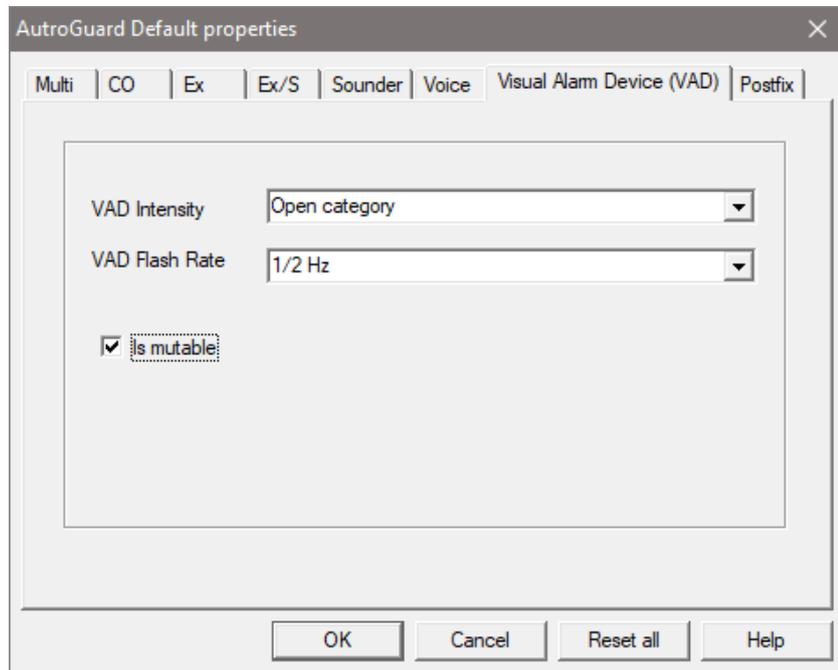
- From the dropdown list, select the default sound pressure level and if the tones are to be mutable



The screenshot shows the 'AutoGuard Default properties' dialog box with the 'Sounder' tab selected. The dialog has a title bar with a close button (X) and a tabbed interface with tabs for 'Multi', 'CO', 'Ex', 'Ex/S', 'Sounder', 'Voice', 'Visual Alarm Device (VAD)', and 'Postfix'. The 'Sounder' tab is active. Inside the dialog, there is one dropdown menu: 'Sound pressure level' set to 'High'. Below it is a checkbox 'Is mutable' which is checked. At the bottom, there are four buttons: 'OK', 'Cancel', 'Reset all', and 'Help'.

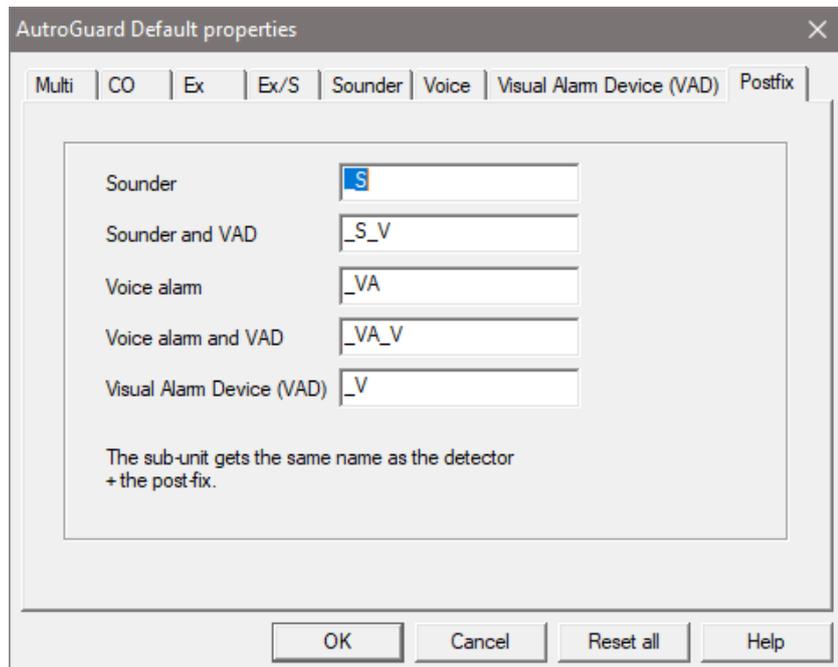
12.5.6 Visual Alarm Device (VAD)

- From the dropdown lists, select the default properties, then click OK



12.5.7 Postfix

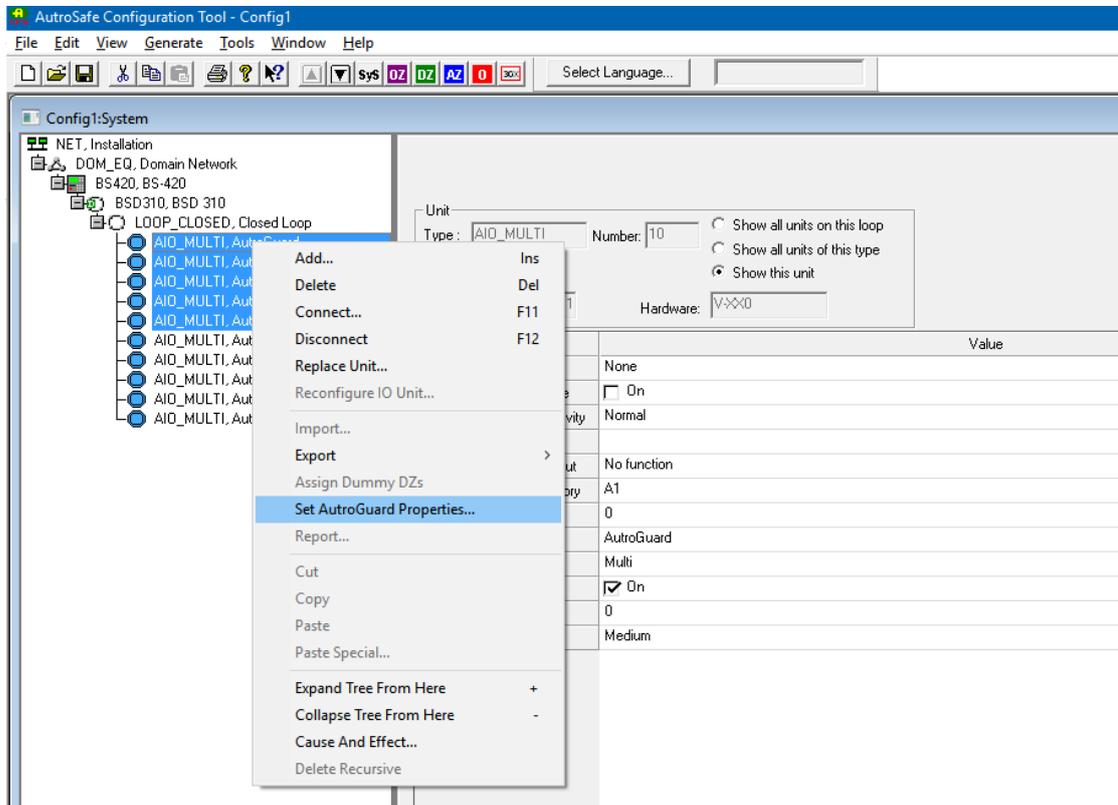
- Type freely selected default postfixes for each sub-unit (these will be added as a postfix to each sub-unit), then click OK



12.6 AutoGuard Settings for Multiple Protectors

It is possible to determine the settings for multiple protectors.

- From the System View, multi-select the protectors in question
- Right-click the mouse, then select “Set AutoGuard Properties”



The “Set AutoGuard Properties” window will appear.

- Change the properties as specified, then click OK.

The changes will affect all selected protectors.

12.7 AutoGuard Individual Settings

12.7.1 Fire Alarm Devices

AutoGuard® protectors with visual and/or audible alarm devices (FADs), may include the following:

- Sounder
- Sounder and visual alarm device
- Voice alarm (not yet available)
- Voice alarm (not yet available) and visual alarm device
- Visual alarm device

- From the system view, select the AutoGuard® Protector
- Click the dropdown button and select the relevant *Alarm Device*

Property	Value
Alarm device	None
Automatic Test Mode	None
Cover Detection Sensitivity	Sounder Sounder and Visual Alarm Device (VAD)
Description	Voice alarm Voice alarm and Visual Alarm Device (VAD)
External detector output	Visual Alarm Device (VAD)
Heat Detector Category	A1

12.7.2 Automatic Test Mode

The Automatic Test Mode is used during testing with a test kit (see chapter 14.3.2).

Automatic Test Mode can be enabled (ON) or disabled (OFF) per protector by means of the Configuration Tool.

- From the system view, select the AutoGuard® Protector

Property	Value
Alarm device	None
Automatic Test Mode	<input type="checkbox"/> On
Cover Detection Sensitivity	Normal

- To enable automatic test mode for a protector, check the checkbox Automatic Test Mode

Refer to chapter 14.3.2 Automatic Test Mode.

12.7.3 Cover Detection Sensitivity

AutoGuard® protectors with Cover Detection provide the following sensitivity classes:

- Off
 - Normal
 - High
- From the system view, select the AutoGuard® Protector
 - Click the dropdown button and select the relevant *Cover Detection Sensitivity*

Property	Value
Alarm device	None
Automatic Test Mode	<input checked="" type="checkbox"/> On
Cover Detection Sensitivity	Normal
Description	OFF
External detector output	Normal High

Refer to chapter 5.8 Cover Detection.

12.7.4 Heat Response Categories

For heat detection, the following Heat Response Categories are available (refer to EN54 and chapter 5.6):

- A1
 - A1S
 - A1R
 - A2S
 - B
 - C (applies to heat only)
 - Heat alarm disabled (applies to Multi only)
- From the system view, select the AutoGuard® Protector
 - Click the dropdown button and select the *Heat Reponse Category*

Heat Response Category	A1
Modbus index	A1
Name	A1S A1R
Operation Class	A2S
Point Delay	B C
Production Number	Heat alarm disabled

Refer to chapter 5.6 Heat Response Categories, 5.8 Cover Detection.

12.7.5 Operation Classes

AutoGuard® protector's provide the following Operation Classes:

- Smoke only
- Heat only
- Multi

- From the system view, select the AutoGuard® Protector
- Click the dropdown button and select the relevant *Operation Class*

Name	V Series Detector
Operation Class	Multi
Point Delay	Smoke only
Production Number	Heat only
Sensitivity	Multi
	High

Refer to chapter 5.4 Operation Class.

12.7.6 Sensitivity Settings for Environmental Adaptivity

AutoGuard® protectors provide the following Sensitivity settings:

- High
- Medium
- Low

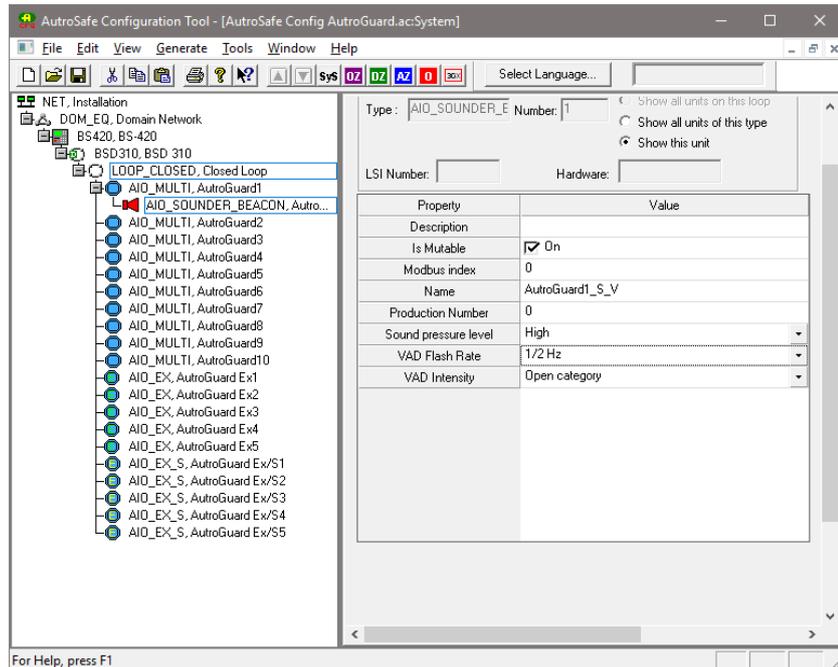
- From the system view, select the AutoGuard® Protector
- Click the dropdown button for *Sensitivity* and select the relevant Sensitivity

Point Delay	<input checked="" type="checkbox"/> Off
Production Number	0
Sensitivity	High
	Medium
	Low

Refer to chapter 5.5 Sensitivity.

12.7.7 Visual Alarm Device (VAD)

- From the system view, select the VAD in question



VAD Flash Rate

- Click the dropdown button for *VAD Flash Rate* to select the relevant flash rate (1/2 Hz or 1Hz).

Property	Value
Description	
Is Mutable	<input checked="" type="checkbox"/> On
Modbus index	0
Name	AutoGuard1_S_V
Production Number	0
Sound pressure level	High
VAD Flash Rate	1/2 Hz
VAD Intensity	<div style="border: 1px dashed gray; padding: 2px;"> 1/2 Hz 1 Hz </div>

Refer to chapter 6.6 Flash Rate.

VAD Intensity

The AutoGuard® Protector’s visual alarm device (VAD) emits a white or red light.

The following intensity settings apply:

- Open category
- Low
- Medium
- High

Note that the different settings have different current consumptions. Always take into consideration that a high intensity will draw more current than a low intensity, and high intensity will lead to fewer units per detection loop.

- Click the dropdown button for *VAD Intensity* to select one of the following intensities:

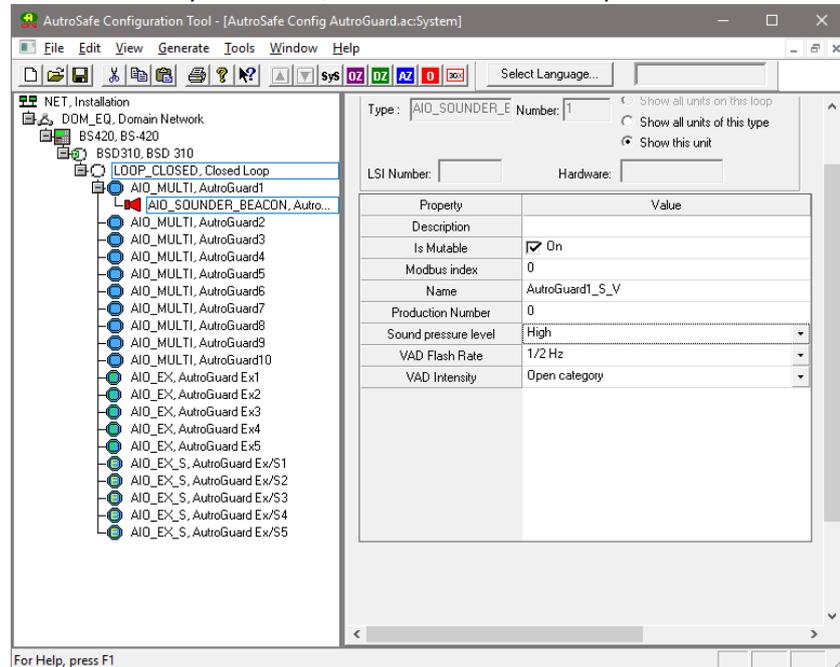
Property	Value
Description	
Is Mutable	<input checked="" type="checkbox"/> On
Modbus index	0
Name	AutoGuard1_S_V
Production Number	0
Sound pressure level	High ▼
VAD Flash Rate	1/2 Hz ▼
VAD Intensity	Open category ▼
	Open category
	Low
	Medium
	High

Refer to chapter 6.5 VAD Intensity.

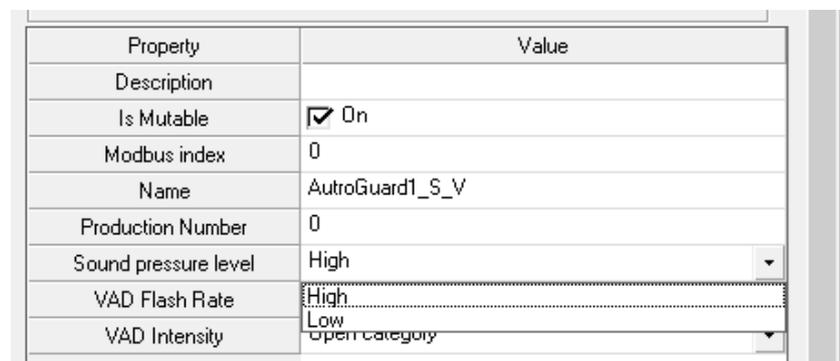
12.7.8 Sound Pressure Level - Sounders

The sound pressure level for sounders can be set to High or Low. See chapter 7.2

- From the system view, select the sounder in question



- Click the dropdown button for Sound Pressure Level and select High or Low



Refer to chapter 4.4 Sound Pressure Levels.

12.8 Matching Protectors/Bases with AutoSafe Configurations



The protector variants/base variants that are installed must always match the configuration.

In case of mismatch between the installed protectors variants/base variants and the configuration, **note that a protector will always give alarm in the event of a potential fire situation.** The basic and critical safety functions will always be maintained.

13. Configuration for Autoprime

13.1 Introduction

This chapter provides information specifically intended for the configuration of the AutoGuard® Multicriteria Protector only.

For further information on system configuration, refer to the configuration handbook for Autoprime.



System configuration must be done by trained/certified technical personnel who are familiar with the system and national/local regulations.



Note that one protector occupies one address only, regardless of the number of add-ons (sounder, visual alarm devices, etc.).

13.2 Autoprime Software Requirements

The use of AutoGuard protectors require Autoprime version 2.1.7 or newer, and AutoGuard® V-100/AP bases for Autoprime systems.

13.3 Global Settings

13.3.1 Sound Patterns

The configuration of sound patterns is a global setting for the entire system. The tones that are available are listed in chapter 0 (Technical Specifications).

- From the Service menu, select System Settings, then scroll down until you find Sound Patterns.

Note that if at least one legacy loop sounder exists on the Autroprime detection loop, it will not be possible to select any of the tones that are otherwise available for the AutroGuard Protector.

The parameters “Delay” and “Sound Pattern” (named “Pulse Pattern” in AutoSafe) are set to predefined default values according to the selected Sound Tone.

The Sound Tones “Dutch Slow Whoop” and “Swedish All Clear” have a predefined “Delay” and “Sound Pattern”, thus the user cannot change these parameters.

13.3.2 Visual Alarm Device (VAD)

The configuration of VAD is a global setting for the entire system.

- From the Service menu, select System Settings, then scroll down until you find VAD Settings.

The settings are:

- VAD Intensity: Low (default) and High
- VAD Flash Rate: Every two seconds (0,5Hz, default) or Every second



Note that the different settings have different current consumptions. Always take into consideration that a high intensity will draw more current than a low intensity, and high intensity will lead to fewer units per detection loop.

13.4 Individual Settings

- From the Service menu, select Unit Configuration, then scroll down until you find Points.

A point representing a Protector (series V-430 or V-530) is indicated, as for example, V-430-S-VADW, V-530-S etc. in the display.

For a selected Protector, you can configure the following:

- (Override Delay and Dependency: Yes/No)*
- Performance Class Day
- Operation Class Day
- Performance Class Night
- Operation Class Night

* Applies to legacy detectors and AutoGuard protectors – not specific for AutoGuard protectors, ref. to AutoPrime Configuration Handbook)

13.4.1 Performance Class Day

- From the Service menu, select Unit Configuration, then scroll down until you find Points.

AutoGuard® protector's provide the following Performance Classes:

- Class 0
 - Clean
 - Normal 1
 - Normal 2
 - Industry
- For the chosen Protector, select the Performance Class for Day Mode

13.4.2 Operation Class Day

- From the Service menu, select Unit Configuration, then scroll down until you find Points.

AutoGuard® protector's provide the following Operation Classes:

- Smoke only
 - Heat only
 - Multi
- For the chosen Protector, select the Operation Class for Day Mode

The Operation Classes that can be chosen depends on the type of point, i.e. MultiSensor with heat, MultiSensor only, Heat only.

13.4.3 Performance Class Night

- From the Service menu, select Unit Configuration, then scroll down until you find Points.

AutroGuard® protector's provide the following Performance Classes:

- Class 0
 - Clean
 - Normal 1
 - Normal 2
 - Industry
-
- For the chosen Protector, select the Performance Class for Night Mode

13.4.4 Operation Class Night

- From the Service menu, select Unit Configuration, then scroll down until you find Points.

AutroGuard® protector's provide the following Operation Classes:

- Smoke only
 - Heat only
 - Multi
-
- For the chosen Protector, select the Operation Class for Night Mode.

The Operation Classes that can be chosen depends on the type of point, i.e. MultiSensor with heat, MultiSensor only, Heat only.

14. Testing and Maintenance

14.1 SelfVerify® 2.0 Function

For information on the SelfVerify® 2.0 function, refer to chapter 5.7.

Due to the fact that the SelfVerify® 2.0 test is using a calibrated test signal, Autronica Fire and Security considers this to be equal or better than a non-calibrated manual physical test with smoke or test gas.

Autronica Fire and Security therefore recommends that functional tests of the protector are done automatically by the system itself using the SelfVerify® 2.0 function.



Note that local regulations and more strict requirements may apply.

The SelfVerify® 2.0 function can also be performed on demand by an authorized technician using the appropriate instrumental tools (WAS-2000/AS-2000).

14.2 Visual Inspection



The SelfVerify® 2.0 function does not identify structural changes in a building or if a protector is physically covered unless the add-on feature “Cover Detection” is active (refer to chapter 5.8).

Autronica Fire and Security recommends an annual visual inspection to identify structural changes in a building that could impact the protectors performance and/or in case Cover detection (see chapter 5.8) is not enabled.

14.3 Testing

14.3.1 Introduction

Autronica Fire and Security recommends that functional tests of the protector are done automatically by the system itself using the SelfVerify® 2.0 function (refer to chapter 14.1).

14.3.2 Automatic Test Mode

When the Automatic Test Mode is enabled in the AutoSafe Configuration Tool (ON), and a test kit is covering the protector, the protector's sensitivity will automatically increase and the protector will react faster to different alarm sources, making it quicker to perform the test.



Note that before testing the AutoGuard protectors, the inner cup must be removed from the test tool (116-WBJ-10).



Note:

An AutoGuard which is set to Operation Class *Multi* (i.e. both optical and heat detection) requires both smoke and heat in order to go into alarm.

When using the test kit during the test, a LED will flash a certain number of times every five seconds depending on the type of detection.

LED behavior	Type of detection
One flash every five seconds	Smoke
Two flashes every five seconds	Heat
Three flashes every five seconds	Smoke and heat
Four flashes every five seconds	Smoke, heat and CO

Automatic Test Mode can be enabled/disabled (turned ON or OFF) per protector in the Configuration Tool.

For further details on configuration, refer to Configuration, chapter 12.7.2.

14.3.3 Manual testing

If the use of test gas is required according to local regulations, Autronica Fire and Security recommends the use of smoke test aerosol. For UL 268 variants UL approved smoke test aerosol is required.

For detailed information on manual testing, see the document “*Functional test procedures for Autronica Smoke, Heat and Multisensor detectors*” found on the test equipment page (see link below) for Testifire smoke/heat detector test kit WBJ-10.

<http://product.autronicafire.com/products/fire-and-gas-detection-systems/detectors/test-equipment>

14.4 Cleaning Procedure

In dusty and polluted environments it may be necessary to clean the outside surface of the protector.

- Wipe down the outside of the protector with a dry, soft cloth. (Does not apply to EX protectors).



Do not clean the inside of the protector.

The SelfVerify® function (optional feature) will test and verify that the sensitivity of the protector is within the approved area and that it functions properly. If a protector is not functioning properly due to contamination, the SelfVerify® 2.0 test will discover this, and a fault message will appear. In this case, the protector must be replaced with a new one.

14.5 Replacing a Protector (Hot Swap)

A protector can be removed and replaced with another protector (hereby called “replacement protector”) during normal operation (hot swap) - *one at a time*. No breaks will occur when a protector is removed and replaced with another one.

In addition, the following applies:

- A replacement protector will automatically inherit the same configuration as the protector that is removed. If the replacement protector is the same type as the one that is removed, no actions need to be taken (i.e. it will function as “plug and play”).
- If a replacement protector is not the same type as the one that is removed (intentionally or unintentionally), a fault message will appear on the system panel display. The configuration of the replacement protector must then be changed in the AutoSafe Configuration Tool in order to match the type of the replacement protector, or the one that is removed must be replaced with a protector of the same type, for example, V-430 with VAD.
- Regardless of the type of replacement protector that is used to replace a protector that is removed, a protector will always function on the principle of “best effort”, meaning that the part of the configuration that matches the protector that is removed will be copied to the replacement protector, thus it will always at least function as a Multisensor. In this way, the basic and critical safety functions will always be maintained, and the system will always give alarm in the event of a potential fire situation.

Note that fault messages may appear (“point not responding” or “add-on not responding”) if a protector is not replaced within a certain time (the time depends on the size of the detection loop and the number of loop units on the detection loop). Such fault messages can simply be accepted without any further actions.

14.6 Calibrating the Cover Detection Sensor

The Cover Detection functionality is described in chapter 5.8.

The Cover Detection Sensor in AutoGuard Protectors is calibrated during manufacturing, ensuring that “Protector covered” fault messages will appear on the system panel only if the air inlet is partially or completely blocked, thus preventing smoke from entering the detection chamber.

If “Protector covered” fault messages occur when the air inlet is *not* partially or completely blocked, and these unintentional faults are permanent, the Cover Detection Sensor must be re-calibrated.



Note that intermittent occurrences of such faults will not be resolved by following this procedure.

There are two methods (Method A and Method B) to re-calibrate the Cover Detection Sensor if it sends unintentional/false indications. Both methods reset the data that was stored in the AutoGuard Protector during manufacturing.

If the Protectors are easily accessible, Method A can be used. If not, use Method B.

14.6.1 Method A: Re-calibrating Using a Protector Cover

For this method you only need the Protector Cover (dust cap) that came with the Autoguard. The procedure can be done during normal operation.

1. Cover the Protector with the Protector Cover for at least 3 minutes
2. Remove the Protector Cover and wait at least 1 minute
3. Use the reset button on the panel and confirm that the fault is gone

If the fault reappears, repeat all steps in the procedure. You can also try to disconnect and reconnect the loop if possible.

14.6.2 Method B: Re-calibrating Using AS2000 Loop Diagnostic Tool

For this method you need to use the AS2000 Loop Diagnostic Tool.



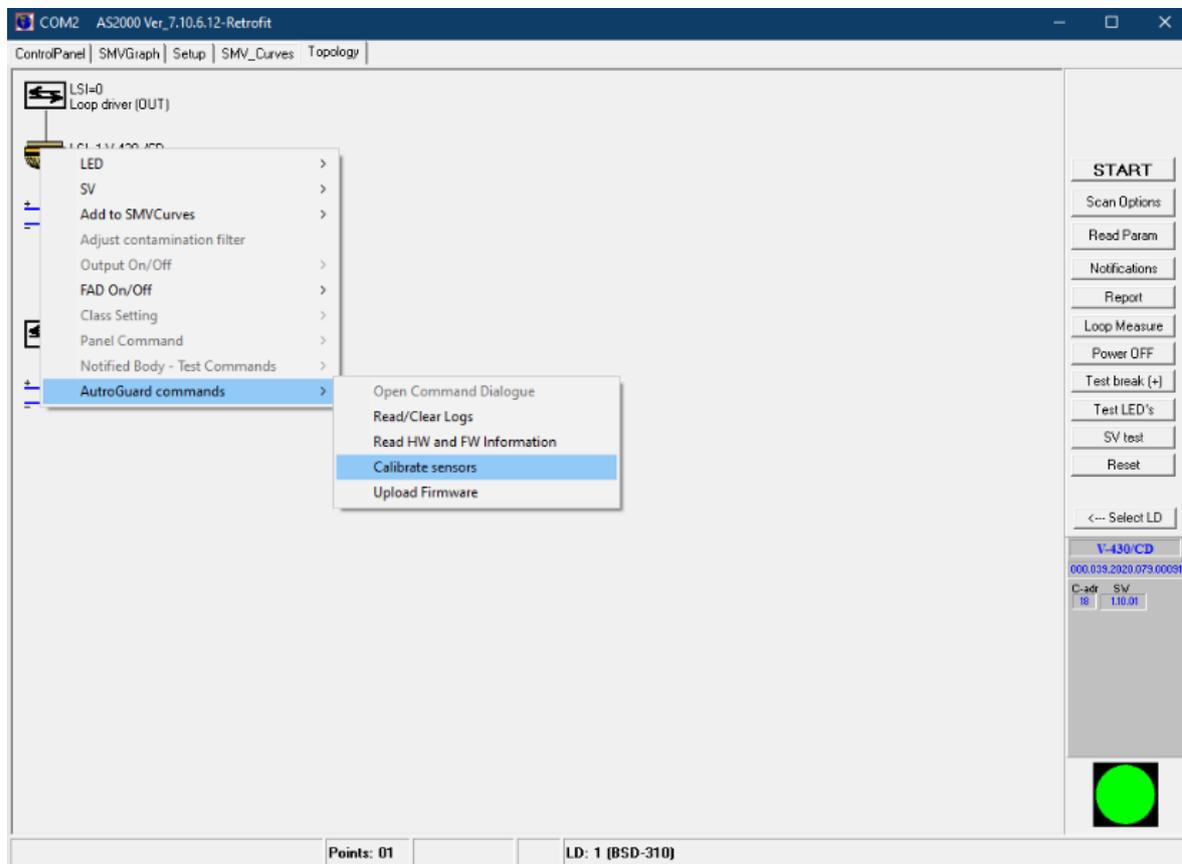
IMPORTANT

Before performing this procedure, always:

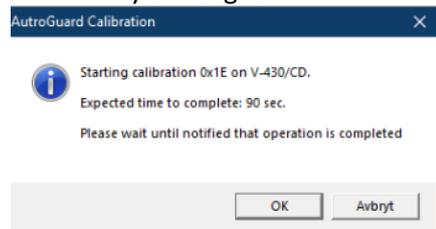
- Visually identify the AutoGuard Protector that sends the fault message (“Detector is covered, remove obstruction”) by, for example, turning on the LED before inspection
- Make sure that this Protector is not completely or partially covered
- Identify which detection loop the AutoGuard Protector is connected to
- Disconnect the detection loop from the panel during calibration

Running this procedure on a Protector that is actually covered will make the Cover Detection Sensor for this Protector less sensitive.

1. Start AS2000 and enter service level access
2. Raise the loop by pressing “START”
3. Right-click on the AutoGuard symbol for the affected unit, then click “AutoGuard commands” and the “Calibrate sensors”:



The below pop-up window will appear
Confirm by clicking 'OK':



4. Wait about 90 seconds until the 'finished' message appears in the notification window:

Time	From	Lsi.Bi,Adr/0x,App	Message received
Oct-12 09:08:32	AS2000		START Topology Scan on LD1 - BSD-310: Default topology - no Autrokeeper on loop
Oct-12 09:08:41	AS2000		STOP Topology Scan: 1 units found, 1 branches, 1 units on branch
Oct-12 09:08:45	LD1		Loop resistance TOO HIGH. Pos=Open Loop, Neg=Open Loop
Oct-12 09:08:46	LD0,BSL-310		Battery and charger Normal
Oct-12 09:08:47	LD0,BSL-310		GND Fault Normal
Oct-12 09:09:57	AS2000	1.00, 18/12,a21	Starting calibration 0x1E on V-430/CD. Expected time to complete: 90 sec.
Oct-12 09:11:33	AS2000	1.00, 18/12,a21	Finished calibration 0x1E - data[lsb msb] (0x): new[8C 04] old[93 04]
Oct-12 09:12:29	LD0,BSL-310		FAULT CONDITION

If the base has higher FW than 1.9.4 you will also see 2 restarts:

Time	From	Lsi.Bi,Adr/0x,App	Message received
Oct-13 10:55:20	AS2000		START Topology Scan on LD1 - BSD-310: Default topology - no Autrokeeper on loop
Oct-13 10:55:28	AS2000		STOP Topology Scan: 1 units found, 1 branches, 1 units on branch
Oct-13 10:55:35	LD1		Loop resistance TOO HIGH. Pos=Open Loop, Neg=Open Loop
Oct-13 10:55:42	LD0,BSL-310		Battery and charger Normal
Oct-13 10:55:43	LD0,BSL-310		GND Fault Normal
Oct-13 10:59:25	LD0,BSL-310		FAULT CONDITION
Oct-13 10:59:41	AS2000	1.00, 15/0F,a21	Starting calibration 0x1E on V-430/CD. Expected time to complete: 90 sec.
Oct-13 11:01:14	AS2000	1.00, 15/0F,a21	Finished calibration 0x1E - data[lsb msb] (0x): new[AB 04] old[AE 04]
Oct-13 11:01:17	V-430/CD	1.00, 15/0F,a0	RESTARTED (cnt=1) - Expected restart if HW/Config change (interface: AIO Triple IF) (:
Oct-13 11:01:19	V-430/CD	1.00, 15/0F,a0	RESTARTED (cnt=1) - HW/Config not changed. Unit removed and reinserted ?

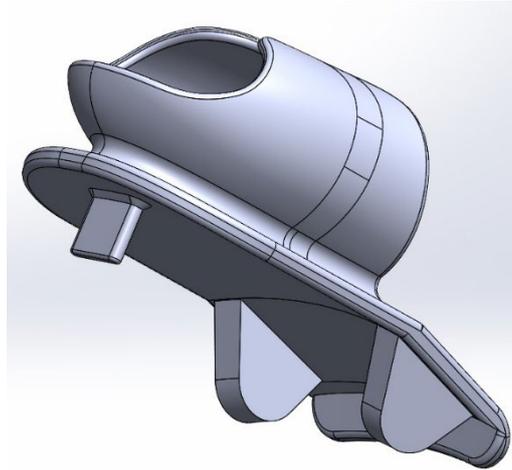
5. Confirm that the fault is gone by clicking 'Reset'. If possible do an Power OFF and then a new loop scan with AS2000. Wait for about 10 minutes to see if there are any covered faults.

If the fault still appear after trying any of these methods several times, the AutoGuard Protector must be replaced. Register the serial number(s) of the protector(s) and copy the AS2000 logs.

15. Accessories

15.1 Locking Tool for Locking the Protector to the Base

A locking tool is used to lock the protector head to the protector base. This is a one hand operation.



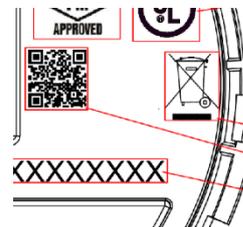
15.2 QR Code Reader

In order to read the QR codes (Quick Response Code) on the protector base and the protector, you need a QR-code app and a smartphone or tablet equipped with a camera. A QR code app can be downloaded for free from the internet.

The illustrations below show the QR codes on the protector base and the protector, respectively.



25 QR code
11c: Serial no
11a: Type
11b: Partnumber
11e: Major rev.



15.3 WAS-2000 and AS2000 Loop Diagnostic Tool

The Loop Diagnostic Tool, AS-2000 can be run on a laptop/PC when connected directly to an operating panel or connected to the loop by means of an external interface unit, WAS-2000.

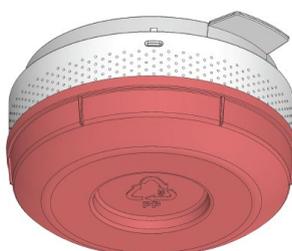
For further information on connections and operation, refer to the User Guide for the Loop Diagnostic Tool on the Autronica product web at www.product.autronicafire.com/products.

Part number 116-WAS-2000.



15.4 Cover

The AutoGuard® protectors are supplied with a protector cover/dust cover. It can also be ordered separately (part number 116-10000927).



15.5 Air Duct Sampling Unit

All AutoGuard® protectors can be mounted in an air duct sampling unit to detect smoke in ventilation ducts.



Part number	Description
116-BWP-143A/AG	Air duct sampling unit for AutoGuard® protectors

Autronica delivers the following pipe kits in different lengths:

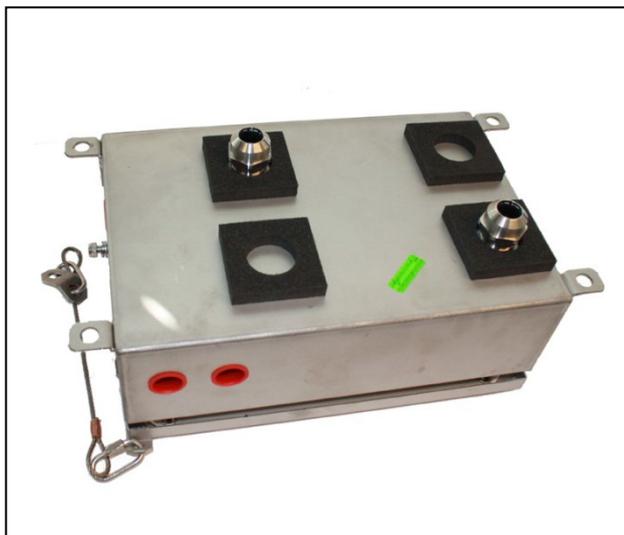
Part number	Description
116-BJ-358/100	Pipekit L=100
116-BJ-358/150	Pipekit L=150
116-BJ-358/300	Pipekit L=300
116-BJ-358/550	Pipekit L=550
116-BJ-358/800	Pipekit L=800

NOTE:

The Air Duct Sampling Unit is not tested or approved according to UL standards and is not included in the ETL listing.

15.6 Air Duct Sampling Unit – Stainless Steel

All AutoGuard® protectors can be mounted in a stainless steel air duct sampling unit to detect smoke in ventilation ducts.

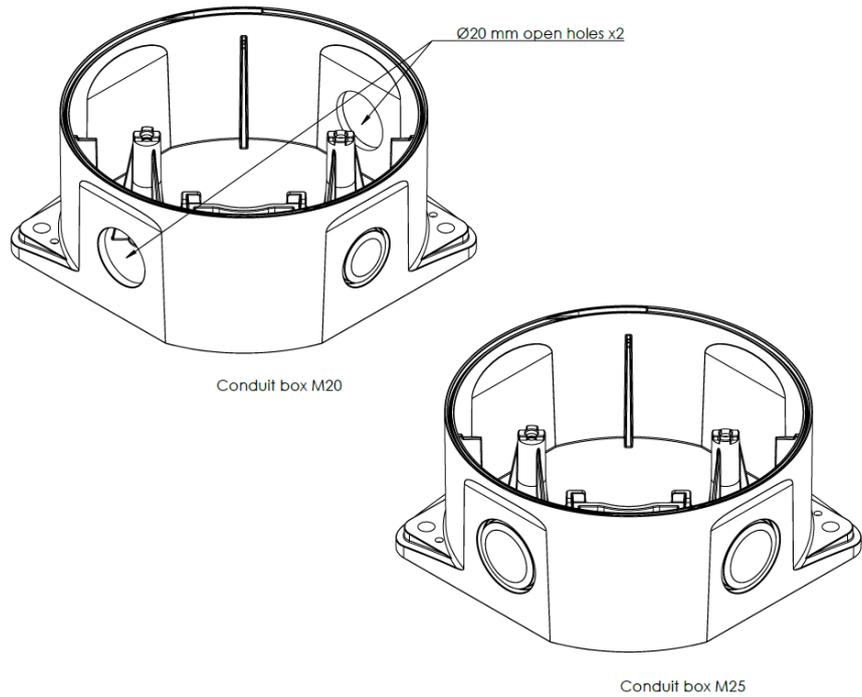


Part number	Description
116-BWP-143A-SS/AG	Air duct sampling unit (stainless steel) for AutoGuard® protectors

Autronica delivers the following pipe kits in different lengths:

Part number	Description
116-BJ-358/100	Pipekit L =100mm
116-BJ-358/150	Pipekit L =150mm
116-BJ-358/300	Pipekit L =300mm
116-BJ-358/550	Pipekit L =550mm
116-BJ-358/800	Pipekit L =800mm
116-BJ-358/1000	Pipekit L =1000mm
116-BJ-358/1500	Pipekit L =1500mm

15.7 Conduit Box



Conduit boxes are available with a total of six 20 or 25 mm knockouts; 2 at the bottom and 4 around the sides located at 90, 180, 270 and 360 degrees. A click-type cable gland is included, providing an ingress protection level of 55.

Part Number	Description
116-BWP-100/20/AG	Conduit Box, 20mm Includes: 2 x 116-6571-011.1929 glands, cable size: 7,0 - 13,0 mm (two pre-drilled holes) If a Terminal Block is needed, it must be ordered separately (see spare parts)
116-BWP-100/25/AG	Conduit Box, 25mm Includes: 2 x 116-100001400 glands, cable size 9,0 - 17,0 mm 1 x 116-100001403 terminal block

Spare Parts	Description
116-100001400	GLAND - SKINTOP CLICK 25, Light grey
116-100001403	Terminal Block

15.8 Telescope Removal Tool

The removal tool for AutoGuard protectors is used together with the 1,26m to 4,5m telescope pole.



Note that in order to use the removal tool, the protector cannot be locked to the base. Make sure that the protector is unlocked before attempting to remove it.

Part number 116-WBJ-220.



15.9 Ground Device

If the loop cable has a screen, a twist wire connector is required in order to connect the in/out screens together in the protector base.



The screen must be connected to earth in one end only. This will normally be at the panel.

16. Appendix

16.1 Regulatory Information

Autronica's variants of the AutoGuard Multicriteria Smoke Detector (named AutoGuard Multicriteria Protector, Series V-430/UL and V-530/UL) certified according to UL 268 and UL 521 standards can only be used together with the AutoSafe Fire Detection System.

The UL 268 and UL 521 certification (ETL listing) comprises the following:

- Smoke and Multi: UL 268, ULC-S529
- Heat (only Heat Response Category A1 is UL approved): UL 521, ULC S530

UL Temperature Ratings

AutoGuard® Heat Response Category A1 is certified according to UL521, fixed alarm temperature 57 °C/135 °F.

The following regulatory information is applicable to the UL 268 and UL 521 certified variants:

- Heat Detector Spacing: is 30x30 ft.
- Operating temperature range: 0 to +38 °C
- Sensitivity: 2.16% - 0.54%/ft obscuration
- Other technical specifications are found in chapter 4 in this handbook.
- Smoke detectors are not to be used with detector guards unless the combination has been evaluated and found suitable for that purpose.
- The UL 268 and UL 521 compliant variants are not EN54 approved

Refer also to "AutoSafe Installation Handbook", Doc-1004796.



Smoke detectors are not to be used with detector guards unless the combination has been evaluated and found suitable for that purpose.

17. Index

A

Accessories · 103
 Adding System Units · 78
 Air Duct Sampling Unit · 105
 Air Duct Sampling Unit – Stainless Steel · 106
 Alarm Devices · 85
 Alignment Marks · 59
 Alignment Marks on the Protector · 59
 Apartments · 70
 Area Coverage · 40
 Audible Alarm Devices · 38
 Automatic Test Mode · 85, 97
 AutoGuard Default Settings · 80

B

Branch-offs · 57

C

Cable Entries/Exits on the Detector Base · 43
 Cable Entries/Knockout Stampings for Surface-mounted Wiring · 44
 Cable Entry for Concealed Conduit Wiring · 43
 Cable Requirements · 52
 Calibrating the Cover Detection Sensor · 100
 Category C · 35
 Category O · 36
 Chamber Design · 27
 Clean Rooms and Computer Rooms · 71
 Cleaning Procedure · 98
 Conduit Boxes · 107
 Configuration · 75, 92
 Configuration - AutoSafe · 92
 Configuration for AutoPrime · 92
 Configuration Recommendations · 69
 Connecting Loop Cables · 52
 Connection of Loop Cables · 56
 Connections · 57
 Cover · 63, 104
 Cover Detection · 32
 Cover Detection Sensitivity · 86
 Current Consumption · 42

D

Data Matrix Code Placement on Protector Base's Tagholder · 14, 15, 16
 DYFI^{3D} · 28
 DYFI^{3D} - Dynamic Filtering · 29
 DYFI^{3D} - Particle/Smoke Signature Analysis · 28
 Dynamic Filtering (DYFI^{3D}) · 29

E

EN54-3 approved tones · 19
 Environmental Requirements · 39
 Environment Compatibility · 8

F

Flash Rate · 37
 Freezers and Cold Stores · 71
 Functional Description · 27

G

Ground device · 108

H

Heat Response Categories · 31, 86
 Hotel Rooms · 70

I

Important Safety Information · 5
 Integrated Sounder · 18
 Integrated VAD · 25, 26

L

LED Behavior · 33
 LED Connection · 57
 LED on Alarm/LED Alive Blink · 76
 Locking the Detector to the Base · 61
 Locking Tool · 103

M

Manual Testing · 97
Matching Protectors/Bases with
 AutoSafe Configurations · 91
Measurement angles · 20
Monitoring Distance · 40
Mounting for Concealed Conduit
 Wiring · 47
Mounting for Surface-mounted
 Wiring · 51
Mounting Instructions · 43
Mounting onto a Ceiling Box · 48
Mounting onto a Conduit Box · 49
Mounting the Detector Base · 45
Mounting the Detector on the base ·
 60

O

Operation Classes · 30, 87, 94, 95

P

Planning · 39
Product Description · 9
Protector “Alive Signal” · 33
Protector Dust Cap · 63
Protector for Retrofit Mounting onto
 BWA-100/BWA-101 (Height) · 16

Q

QR and Data Matrix Code
 Information · 13
QR code and Data Matrix Code · 13
QR Code Placement on Protector · 13
QR code reader · 103

R

Regulatory Information · 109
Removing the Protector from the
 Base · 62
Replacing a Protector (Hot Swap) · 99
Retrofit mounting onto Existing
 AutoSafe Base · 62
Ringing Pattern · 38

S

Safety · 5
Safety Notice · 6
Safety Regulations · 6
SelfVerify® · 32
SelfVerify® 2.0 Function · 96
Sensitivity Classes · 30
Sensitivity Settings for Environmental
 Adaptivity · 87
Site Configuration System Settings ·
 76
Sound and Pulse Patterns · 77, 93
Sound Pressure Level · 38
Sound Pressure Level - Sounders · 90
Spring Cage Connection · 55

T

Table Overview –
 Applications/Settings · 71
Tag Holder for Labels · 14
Technical Specifications · 17
Telescope removal tool · 108
Telescope Removal Tool · 108
Template for Marking and Drilling
 Holes · 46
Testing and Maintenance · 96
tones · 20
Tones · 19

V

VAD · 34
VAD Flash Rate · 88
VAD Intensity · 89
Visual Alarm Device · 34
Visual Alarm Device (VAD) · 34
Visual Alarm Device (VAD) Intensity ·
 88
Visual Inspection · 96

W

WAS-2000 and AS2000 Loop
 Diagnostic Tool · 104
Wire Insulation Stripping · 54
Wire Routing Arrangement Inside
 Detector Base · 53



Our vision

Z e r o l o s s o f l i v e s
no injuries or damages caused by fire and gas

www.autronicafire.com

Carrier

Autronica Fire and Security AS

A C a r r i e r C o m p a n y