

# SIEMENS

## **Cerberus® AlgoRex Fire detection system**

Engineer specifications

**Fire & Security Products**

Siemens Building Technologies Group

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This document contains all the „Engineer Specification” sheets published in 1995. These individual sheets can no longer be obtained from our document stock.

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- e1122a, Wide spectrum smoke detector, collective, DO1101
- e1123a, Wide spectrum smoke detector, interactive, DO1151
- e1124a, Wide spectrum smoke detector, interactive, DO1152
- e1125a, Neural smoke detector, interactive, DOT1151
- e1126a, Neural smoke detector, interactive, DOT1152
- e1127a, Heat detector, collective, DT1101 / DT1102
- e1128a, Heat detector, interactive, DT1152
- e1129a, Manual call point, collective, DM1101 / DM1103 / DM1104
- e1130a, Manual call point, interactive, DM1151 / DM1153 / DM1154
- e1131b, Input module, interactive, DC1151
- e1132b, Output module, interactive, DC1154
- e1134a, Fire alarm control unit CS1140
- e1371, Wide spectrum smoke detector, AnalogPLUS, DO1131
- e1372, Multisensor smoke detector, AnalogPLUS, DOT1131
- e1373, Heat detector, AnalogPLUS, DT1131
- e1374, Heat Detector, AnalogPLUS, DT1132
- e1375, Manual call point, AnalogPLUS, DM1131 / DM1133 / DM1134
- e1376, Input module, AnalogPLUS, DC1131
- e1377, Output module, AnalogPLUS, DC1134
- e1378, Input module, interactive, DC1157
- e1379, Linear smoke detector, interactive, DLO1191
- e1380, Fire alarm control unit CS1110
- e1381, Fire alarm control unit CS1115

The collection of sheets is still available in electronic form in the following file formats:

- Interleaf
- RTF/MS-Word
- PDF Adobe Acrobat

# Wide spectrum smoke detector, collective, DO1101

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## **Physical and electronic characteristics**

The smoke detector shall have a uniform response behaviour to all combustion products of smoke-forming flaming and smouldering fires. The detection principle shall employ a multiple light pulse coincidence circuit.

The detection principle shall be designed for a high degree of immunity against deceptive phenomena e.g. dust, humidity, pressure, air flow.

The smoke detector shall conform to EN 54-7/9.

The detection principle shall employ a multiple light pulse coincidence circuit, preventing false alarms.

The electronic circuit shall be state-of-the-art SMD technology, with custom designed integrated circuitry for high reliability, and specifically protected against electromagnetic interference.

The detector shall be equipped with the possibility to drive a remote alarm indicator.

All electronic circuits shall be in the detector head, thus not requiring any electronics in the base.

Reversed polarity or faulty wiring shall not damage the detector.

The detector shall connect to the local control unit via a fully supervised two-wire circuit class B or class A wiring. Wiring shall be unshielded twisted or untwisted pair type.

## **Mechanical characteristics**

The optical chamber shall be designed for detection of every type of visible smoke (including dark smoke) and therefore have a scattering angle superior of 70°).

The optical chamber shall be designed in such a way that depositions of dust or fibre cannot influence the sensitivity of the detector.

A built-in barrier shall prevent the entry of insects into the sensor.

The detector shall be designed for easy disassembling for multiple factory cleaning.

The detector shall be inserted into or removed from the base by a simple push-twist mechanism with an appropriate tool up to 7m above floor level.

When installed, the base shall be completely hidden by the body of the detector.

It shall be possible to protect the detector against unauthorized removal from the base.

The manufacturer shall produce and provide test equipment which allows a full functional test (including smoke entry openings) of the smoke detectors up to 7m above floor level without smoke or other aerosol producing devices.

A comprehensive range of accessories shall be available to fulfill requirements for special applications.

All parts, including plastic material, shall clearly be marked according to DIN 54840 / ISO/DIS 11469 or DIN 7728 / ISO 1043 for environment friendly disposal at the end of their life cycle.

## Technical specifications

Characteristic	Classification / Test Procedure	Value
Operating Voltage		16 V to 24 V <sub>DC</sub>
Operating current		≤ 100μA
Alarm current		to be limited externally to max. 60mA
Current for external response indicator		15mA
Operating temperature		– 25 to + 60°C
Storage temperature		– 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 95%
Test Category	IEC 68-1	25/060/42
Protection Category	EN 60529 / IEC529	IP 43
EMI Protection	PR EN 54/7 and in addition: IEC 801-3 (1MHz to 1GHz)	50 V/m
Colour white		≈ RAL 9010
Dimensions		Ø 115mm x 51mm
Labeled for CE conformity		yes
Standards / Approvals	EN 54/7-9	VdS, VKF, LPCB

# Heat detector, collective, DT1101 / DT1102

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## **Physical and electronic characteristics**

The heat detector shall come in two versions for different application temperatures  
The detection system shall be a combination of rate of rise and fixed temperature principle with two independent NTC thermistor and automatic compensation for changes of ambient conditions.

The detector shall be compatible with a two wire, 24Vdc fire detection line

The detector shall be a fully electronic device, self resetting, and shall have no moving parts or components subject to wear and tear.

All electronic circuits must be solid state, using SMD technology and must be completely coated to prevent influence from dust, humidity or dirt.

The detectors must be compatible with the same bases used by the optical detectors.

Reversed polarity or faulty zone wiring shall not damage the detector.

## **Mechanical characteristics**

For environmental protection purposes, the detector shall:

- have no disposable parts like caps or packing
- have recyclable packing
- be easy to maintain
- be easy to dismantle and to separate different material types
- have markings on plastic by ingraining (not ink)

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		16 to 24Vdc
Operating current		≤ 100μA
Alarm current		to be limited externally to max. 60mA
Current for external response indicator		15mA
Response sensitivity		10K/min.
– rate-of-rise		
– fixed temperature		
DT1101		54 to 62°C
DT1102		74 to 85°C
Operating temperature		
– DT1101		– 25 to + 50°C
– DT1102		– 25 to + 70°C
Storage temperature		– 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 100%
Protection category	EN 60529 / IEC 529	IP53
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		Ø 115mm x 54,5mm
Labeled for CE conformity		yes
Standards / Approvals	DT1101: EN 54-5 class 1 DT1102: EN 54-8 range 1	VdS, VKF, LPCB



# Manual call point, collective, DM1101 / DM1103 / DM1104

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## **Physical and electronic characteristics**

The alarm shall be activated by breaking the glass without the need of an additional instrument (e.g. hammer).

The glass window shall be designed in a way to prevent injuries when struck by the operator.

The manual call point shall be electrically compatible with an associated range of smoke detectors so that they may use a common control unit. It shall be possible to connect manual call points to the same supervised two-wire zone as automatic smoke detectors.

The call point shall have a built-in LED which will be illuminated upon actuation of the manual call point.

It shall be possible to test the manual call point without destroying the covering glass.

The manual call point shall comply with standard prEN 54-11 or BS 5839-2.

## **Mechanical characteristics**

The call point shall be fixed to a surface mounting box which contains at least three terminals for the connection of the field wiring.

It shall be possible to mount the part containing the sensitive electronic circuit separately just before commissioning, thus preventing any possible damage due to inappropriate installation work.

## Technical Specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		16 to 26Vdc
Alarm current		to be limited externally to max. 60mA
Operating temperature		- 25 to + 70°C
Storage temperature		- 30 to + 75°C
Relative humidity		
- DM1101		≤ 95%
- DM1103, DM1104		≤ 100%
Test category	IEC 68-1	25/070/42
Protection category	EN 60529 / IEC 529	
- DM1101		IP24D
- DM1103, DM1104		IP54
EMI Protection	prEN54-11 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour red		≈ RAL 3000
Dimensions		W x H x D
- DM1101		87mm x 87mm x 52mm
- DM1103, DM1104		130mm x 130mm x 43mm
Terminals		0.2 to 1.5mm <sup>2</sup>
Labeled for CE conformity		yes
Standards / Approvals		VKF, LPCB
- DM1101	BS 5839-2, prEN54-11	
- DM1103, DM1104	prEN54-11	

# Wide spectrum smoke detector, AnalogPLUS, DO1131

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## **Physical and electronic characteristics of the detector**

The design of the smoke sensitive system shall guarantee a uniform response behaviour to all combustion products of smoke-forming flaming and smouldering fires.

The detection principle shall employ a multiple light pulse coincidence circuit.

The smoke detector shall be conform to EN 54-7/9.

The detector shall be controlled by a custom designed application specific integrated circuit (custom-ASIC) in order to guarantee a maximum reliability of the electronic circuit.

The detector shall be able to transmit up to two (2) alarm-level information to the control unit for evaluation according to the customer specific programming of the control unit.

The electronic circuit of the detector shall be internally supervised and be able to signal at least two (2) different status information to the control unit.

The detector shall be able signal deviations from the standard sensitivity to the control unit.

The detector shall be equipped with a response indicator and shall have the possibility to drive up to two (2) remote indicators in order to signal alarm conditions.

The detector shall be able to isolate short circuits on the detector-line bus in order not to disrupt the proper function of the rest of the detectors connected on the detection-line bus.

Reversed polarity or faulty wiring shall not damage the detector.

## **Physical and electronic characteristics of the system**

The detector shall be individually identifiable from the control unit by geographical location in the system.

The system shall not use any switch to be set to define the address of the detector.

All electronic circuits shall be in the detector head, thus not requiring any active electronic circuits in the base.

The detector shall connect to the local control unit via a fully supervised two-wire circuit (class B wiring) or a four-wire circuit (class A wiring). Wiring may be unshielded pair type.

The system shall allow T-Tap wiring without degrading the information exchange between detectors connected via T-Tap wiring and the control unit.

The detector shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The system shall be able to signal a priority alarm message no less then two (2) seconds after the detector has recognized this situation.

## **Mechanical characteristics**

The optical chamber shall be designed for detection of every type of visible smoke (including dark smoke) and therefore have a scattering angle superior of 70°

A built-in barrier shall prevent the entry of insects into the sensor.

The detector shall be designed for easy disassembling for multiple factory cleaning.

The detector shall be inserted into a base without the need of tools.

When installed, the base shall be completely hidden by the body of the detector.

The base shall include all necessary terminals to connect installation wiring and provide space for up to seven (7) additional terminal connectors.

The base shall allow the removal of the detector without disconnecting the installation wiring.

The detector shall be inserted into or removed from the base by a simple push-twist mechanism with an appropriate tool up to 7m above floor level.

It shall be possible to protect the detector against unauthorized removal from the base.

The manufacturer shall produce and provide test equipment which allows a full functional test, including smoke entry openings, of the smoke detectors up to 7m above floor level without smoke or other aerosol producing devices.

A comprehensive range of accessories shall be available to fulfill requirements for special applications (e.g. protective cage).

All parts, including plastic material, shall clearly be marked according to DIN 54840 / ISO/DIS 11469 or DIN 7728 / ISO 1043 for environment friendly disposal at the end of their life cycle.

### Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		16 to 28V, modulated
Operating current		≤ 200μA
Data transmission speed		167 Baud
Current for external response indicator		15mA
Operating temperature		– 25 to + 60°C
Storage temperature		– 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 95%
Protection category	EN 60529 / IEC 529	IP43
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		Ø 115mm x 51mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-7/9	VdS, LPCB (pending)

# Multisensor smoke detector, AnalogPLUS, DOT1131

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## **Physical and electronic characteristics of the detector**

The detector shall use at least two typical characteristics (e.g. smoke and temperature) of a fire to evaluate a possible dangerous condition in the supervised area.

The evaluation shall not be performed only by simple AND and/or OR logic.

The design of the smoke sensitive system shall guarantee a uniform response behaviour to all combustion products of smoke-forming flaming and smouldering fires.

The detection principle shall employ a multiple light pulse coincidence circuit.

The smoke detector shall conform to EN 54-7/9.

The detector, dependent upon its sensitivity setting, shall have a superior performance than the requirements specified in European Standards for smoke detectors.

The detector shall be controlled by a custom designed application specific integrated circuit (custom-ASIC) in order to guarantee a maximum reliability of the electronic circuit.

The detector shall be able to transmit up to two (2) alarm-level information to the control unit for evaluation according to the customer specific programming of the control unit.

The electronic circuits of the detector shall be internally supervised and be able to signal up to two (2) different status information to the control unit.

The detector shall be able signal deviations from the standard sensitivity to the control unit.

The detector shall be equipped with a response indicator and shall have the possibility to drive up to two (2) remote indicators in order to signal alarm conditions.

The detector shall be able to isolate short circuits on the detector-line bus in order not to disrupt the proper function of the rest of the detectors connected on the detection-line bus.

Reversed polarity or faulty wiring shall not damage the detector.

## **Physical and electronic characteristics of the system**

The detector shall be individually identifiable from the control unit by geographical location in the system.

The system shall not use any switch to set the address of the detector.

All electronic circuits shall be in the detector head, thus not requiring any active electronic circuits in the base.

The detector shall connect to the local control unit via a fully supervised two-wire circuit (class B wiring) or a four-wire circuit (class A wiring). Wiring may be unshielded pair type.

The system shall allow T-Tap wiring without degrading the information exchange between detectors connected via T-Tap wiring and the control unit.

The detector shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The system shall be able to signal a priority alarm message no less than two (2) seconds after the detector has recognized this situation.

## **Mechanical characteristics**

The optical chamber shall be designed for detection of every type of visible smoke (including dark smoke) and therefore have a scattering angle superior of 70°

A built-in barrier shall prevent the entry of insects into the sensor.

The detector shall be designed for easy dismantling for factory cleaning.

The detector shall be inserted into a base without the need of tools.

When installed, the base shall be completely hidden by the body of the detector.

The base shall include all necessary terminals to connect installation wiring.

The base shall allow the removal of the detector without disconnecting the installation wiring.

The detector shall be inserted into or removed from the base by a simple push-twist mechanism with an appropriate tool up to 7m above floor level.

It shall be possible to protect the detector against unauthorized removal from the base. The manufacturer shall produce and provide test equipment which allows a full functional test, including smoke entry openings, of the smoke detectors up to 7m above floor level without smoke or other aerosol producing devices.

A comprehensive range of accessories shall be available to fulfill requirements for special applications (e.g. protective cage).

All parts, including plastic material, shall clearly be marked according to DIN 54840 / ISO/DIS 11469 or DIN 7728 / ISO 1043 for environment friendly disposal at the end of their life cycle.

### Technical Specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		16 to 28V, modulated
Operating current		≤ 200μA
Data transmission speed		167 Baud
Current for external response indicator		15mA
Operating temperature		– 25 to + 60°C
Storage temperature		– 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 95%
Protection category	EN 60529 / IEC 529	IP43
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		Ø 115mm x 63mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-7/9	VdS, LPCB (pending)

# Heat detector, AnalogPLUS, DT1131

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## **Physical and electronic characteristics**

The detection system shall be a combination of rate-of-rise and fixed temperature principle with two independent NTC thermistors and automatic compensation for changes of ambient conditions. The temperatures shall be according to EN54-5, class 1.

The detector shall communicate with the panel and report 2 different danger levels ("quiescent", "ALARM").

All electronic circuits must be solid state, using SMD technology and must be completely coated to prevent influence from dust, humidity or dirt.

The detector shall have a fail-safe operation mode. If the CPU of the panel fails, the detector shall work as a conventional detector and create an alarm on the line.

A common detector base design shall be utilized for the heat detector and all other detectors in the system range.

If the detector is installed, it shall completely cover the base.

Reversed polarity or faulty zone wiring shall not damage the detector.

The detector must have a built-in response indicator. In addition to that it shall have the possibility to connect a remote indicator.

The detector must have a built-in line isolator, to isolate the lines between two points, in case of line short-circuits.

The detector shall have automatic self test functions.

## **Mechanical characteristics**

For environmental protection purposes, the detector shall:

- have no disposable parts like caps or packing
- have recyclable packing
- be easy to maintain
- be easy to dismantle and to separate different material types
- have markings on plastic by engraving (not ink)

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		16 to 28V, modulated
Operating current		≤ 200μA
Data transmission speed		167 Baud
Current for external response indicator		15mA
Response sensitivity		
– rate-of-rise		10K/min
– fixed temperature		54 to 62°C
Operating temperature		– 25 to + 50°C
Storage temperature		– 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 100%
Protection category	EN 60529 / IEC 529	IP53
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		∅ 115mm x 54,5mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-5 class 1	VdS, LPCB (pending)



# Heat Detector, AnalogPLUS, DT1132

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## Physical and electronic characteristics

The detection system shall be a fixed temperature detector with two independent NTC thermistor. The nominal response temperature shall be 80°C.

The detector shall communicate with the panel and report 2 different danger levels ("quiescent", "ALARM").

All electronic circuits must be solid state, using SMD technology and must be completely coated to prevent influence from dust, humidity or dirt.

The detector shall have a fail-safe operation mode. If the CPU of the panel fails, the detector shall work as a conventional detector and create an alarm on the line.

A common detector base design shall be utilized for the heat detector and all other detectors in the system range.

If the detector is installed, it shall completely cover the base.

Reversed polarity or faulty zone wiring shall not damage the detector.

The detector must have a built-in response indicator. In addition to that it shall have the possibility to connect a remote indicator.

The detector must have a built in line isolator, to isolate the lines between two points, in case of line short circuits.

The detector shall have automatic self test functions.

## Mechanical characteristics

For environmental protection purposes, the detector shall:

- have no disposable parts like caps or packing
- have recyclable packing
- be easy to maintain
- be easy to dismantle and to separate different material types
- have markings on plastic by ingraining (not ink)

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		16 to 28V, modulated
Operating current		≤ 200μA
Data transmission speed		167 Baud
Current for external response indicator		15mA
Response sensitivity – fixed temperature		74 to 85°C
Operating temperature		– 25 to + 70°C
Storage temperature		– 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 100%
Protection category	EN 60529 / IEC 529	IP53
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		Ø 115mm x 54,5mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-8, range 1	VdS, LPCB (pending)

# Manual call point, AnalogPLUS, DM1131 / DM1133 / DM1134

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## **Physical and electronic characteristics**

The alarm shall be activated by breaking the glass without the need of an additional instrument (e.g. hammer).

The glass plate shall be designed in a way to prevent injuries when struck by the operator. The manual call point shall be capable of being connected along with other interactive devices, such as smoke detectors, to a common fire detector loop.

The manual call point shall be able to isolate short circuits on the detection-line bus in order not to disrupt the proper function of the rest of the detectors connected on the detection-line bus. The isolating function shall be restored upon request by the control unit, when the short circuit condition is removed.

The manual call point shall be controlled by a custom designed application specific integrated circuit (custom-ASIC) in order to guarantee a maximum reliability of the electronic circuit.

The call point shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The call point shall have a built in LED which will be illuminated upon actuation of the manual call point.

It shall be possible to test the manual call point without destroying the covering window. Unauthorized removal of the call points cover must release an alarm.

The manual call point shall comply with standard prEN 54-11 or BS 5839-2.

## **Mechanical characteristics**

The call point shall fit on a surface mounting box which contains at least three terminals for the connection of the field wiring.

It shall be possible to mount the part containing the sensitive electronic circuit separately just before commissioning, thus preventing any possible damage due to inappropriate installation work.

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		16 to 28V, modulated
Operating current		typ. 150µA
Data transmission speed		167 Baud
Operating temperature		- 25 to + 60°C
Storage temperature		- 30 to + 75°C
Relative humidity		
- DM1131		≤ 95%
- DM1133, DM1134		≤ 100%
Test category	IEC 68-1	25/060/42
Protection category	EN 60529 / IEC 529	
- DM1131		IP24D
- DM1133, DM1134		IP54
EMI Protection	prEN54-11 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour red		≈ RAL 3000
Dimensions		W x H x D
- DM1131		87mm x 87mm x 62mm
- DM1133, DM1134		130mm x 130mm x 43mm
Terminals		0.2 to 1.5mm <sup>2</sup>
Labeled for CE conformity		yes
Standards/Approvals		VdS, LPCB (pending)
- DM1131	BS 5839-2, prEN54-11	
- DM1133, DM1134	prEN54-11	

# Input module, AnalogPLUS, DC1131

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## Physical and electronic characteristics

The analogue addressable input module shall be designed to be capable of being connected along with other analogue addressable elements on a loop. The devices shall interface a stub line for simple dry contacts (switch) to the analogue addressable loop.

The stub line shall be supervised with an end-of-line resistor.

Programmable normally open or normally closed contacts shall be usable.

The analogue addressable input module shall receive all its power requirements through the analogue addressable detection loop.

The analogue addressable input module shall be equipped with a line separator / isolator function, the operation of which shall not impair the function of the device when connected in loop mode.

The built-in LED shall indicate an alarm when the connected contact is in alarm condition.

The analogue addressable input module shall be equipped with a built-in push button for assigning its address during commissioning. An additional built-in LED shall indicate the functionality of the device. Both, LED and button shall only be accessible with open case.

## Mechanical characteristics

It shall be possible to exchange the electronic parts without removing the housing or the wiring.

The analogue addressable input module shall be capable of operating in both dry and wet rooms according to IP56 protection category.

The housing shall be able to be equipped with 6 PG16 cable glands.

The analogue addressable input module shall be equipped with screw less terminals with built-in strain relief mechanism.

The box with wiring terminals and the electronic parts shall be available separately in order to carry out the wiring before inserting the electronic device and/or to fit the electronics into any other standard installation box of suitable size.

For environmental protection purposes, the detector shall:

- have no disposable parts like caps or packing
- have recyclable packing
- be easy to maintain
- be easy to dismantle and to separate different material types
- have markings on plastic by ingraining (not ink)

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		
– analogue addressable		16 to 28V, modulated
– contact		≤ 7V
Operating current		
– analogue addressable		≤ 200μA
– contact		≤ 1mA
Data transmission speed		167 Baud
Operating temperature		– 25 to + 60°C
Storage temperature		– 30 to + 75°C
Relative humidity	IEC 721-3: 3K6	≤ 100%
Protection category	EN 60529 / IEC 529	IP56
Colour white		≈ RAL 9010
Dimensions		W x H x D 135mm x 135mm x 65mm
Terminals		0.2 to 2.5mm <sup>2</sup>
Labeled for CE conformity		yes
Approvals		VdS, LPCB (pending)

# Output module, AnalogPLUS, DC1134

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## Physical and electronic characteristics

The analogue addressable output module shall be designed to be placed somewhere along the other analogue addressable devices on a detector loop. The device shall provide an interface as a control output of the fire alarm panel to equipment such as fire doors, smoke vents, smoke curtains etc.

The output contact of the analogue addressable output module shall be rated to 240V<sub>AC</sub>/2A.

The output control device should be controllable by any detector connected to the same fire detection control unit.

The analogue addressable output module shall be disconnectable also by key code from the fire control unit / terminal.

No additional power supply shall be required to activate the relay output.

The analogue addressable output module shall be connected to the control unit via the normal 2-wire analogue addressable loop.

The analogue addressable output module shall be microprocessor based and have its own factory set identification number.

The analogue addressable output module shall be equipped with line separator / isolator function without losing its control and confirmation function. The analogue addressable output control device shall resume its normal status automatically after a short circuit.

The analogue addressable output module shall be equipped with a built-in push button to activate the device for testing and for assigning its address during commissioning. An internal LED shall indicate the functionality of the device. Both, LED and button shall only be accessible with open case.

## Mechanical characteristics

The analogue addressable output module shall be capable of operating in both dry and wet rooms according to IP56 protection category.

It shall be possible to exchange the electronic parts without removing the housing or the wiring.

The housing shall be able to be equipped with 6 PG16 cable glands.

The analogue addressable output module shall be equipped with screw less terminals with built-in strain limits to prevent permanent deformation of the terminal and weakening of the contact pressure.

The wiring terminals and the electronic parts shall be available separately in order to carry out the wiring before inserting the electronic device and/or to fit the electronics into any other standard installation box of suitable size.

For environmental protection purposes, the detector shall:

- have no disposable parts like caps or packing
- have recyclable packing
- be easy to maintain
- be easy to dismantle and to separate different material types
- have markings on plastic by engraving (not ink)

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		16 to 28V, modulated
Operating current		≤ 200μA
Data transmission speed		167 Baud
Relay: each 1 NO, 1 NC		240V <sub>AC</sub> /max. 2A 125V <sub>DC</sub> /max. 2A (max. 150W)
Operating temperature		– 25 to + 60°C
Storage temperature		– 30 to + 75°C
Relative humidity	IEC 721-3: 3K6	≤ 100%
Protection category	EN 60529 / IEC 529	IP56
Colour white		≈ RAL 9010
Dimensions		W x H x D 135mm x 135mm x 65mm
Terminals		0.2 to 2.5mm <sup>2</sup>
Labeled for CE conformity		yes
Approvals		VdS, LPCB (pending) Contact: VDE, SEV



# Wide spectrum smoke detector, interactive, DO1151

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## **Physical and electronic characteristics of the detector**

The design of the smoke sensitive system shall guarantee a uniform response behaviour to all combustion products of smoke-forming flaming and smouldering fires.

The detection principle shall employ a multiple light pulse coincidence circuit, and be temperature compensated.

The detector shall have the computing power to determine the seriousness of an alarm condition, without the need to communicate to the control unit, based on the evaluation of the signals sensed.

The smoke detector shall conform to EN 54-7/9. The detector shall be able to detect in addition to the European Standards requirements for optical smoke detectors the test fire TF1 (open wood fire).

The detector shall be microprocessor controlled and have the capability to store in a non volatile memory up to 255 Bytes of information among them several pre-defined application specific response characteristics driven by application-specific parameters.

The response characteristic of the detector shall be determined by a set of algorithms stored in each detector head.

The detection algorithms shall be designed to suppress transient interference and other deceptive phenomena's without impairing the capability of detecting real fires.

The algorithms shall be remotely selectable to at least eight (8) pre-defined and any number of future characteristics at any point in time and throughout the lifetime of the detector. The selection of algorithms shall be accessible only for authorized personnel via password on the associated control unit or from a remote location.

The detector shall be able to transmit up to four (4) danger levels to the control unit for evaluation according to the customer specific programming of the control unit.

The detector shall be able to execute a self-test and signal up to four (4) different status functions to the control unit.

The detector shall be able to send additional information of up to 3 Bytes to the control unit. This information shall contain all relevant data on the status of the detector and allow continuous information about the actual environmental conditions surrounding the detector at the control unit.

The detector shall be equipped with a response indicator and shall have the possibility to drive a remote indicator in order to signal alarm conditions and service information.

The detector shall be individually identifiable, with all relevant data, throughout its lifetime by a specific serial number and other corresponding information, readable with appropriate equipment or at the control unit with the proper authorization (password). The data shall be stored in a non volatile memory inside the detector.

Reversed polarity or faulty wiring shall not damage the detector.

## **Physical and electronic characteristics of the system**

The system shall have the capability of signaling inappropriate application settings to the control unit thus avoiding unwanted alarms.

The detector shall be individually identifiable from the control unit by type of detector, parameter settings and geographical location in the system.

The system shall not use any switch to be set to define the address of the detector.

The system shall be able to re-configure automatically to the required parameter settings when one or multiple detectors have been removed permanently, re-inserted or replaced even when at that time the power of the system was switched off completely.

The system shall have the capability by simple, customer defined programming of software functions to actuate any remote response indicator in case of alarm of any detector even if

the response indicator is not directly hard-wired to the detector signaling an alarm condition.

All electronic circuits shall be in the detector head, thus not requiring any active electronic circuits in the base.

The detector shall connect to the local control unit via a fully supervised two-wire circuit (class B wiring) or a four-wire circuit (class A wiring). Wiring may be unshielded twisted pair type.

The system shall allow T-Tap wiring without degrading the information exchange between detectors connected via T-Tap wiring and the control unit.

The detector shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The system shall be able to signal a priority alarm message no less than two (4) seconds after the detector has recognized this situation.

### Mechanical characteristics

The optical chamber shall be designed for detection of every type of visible smoke (including dark smoke) and therefore have a scattering angle superior of 70°.

A built in barrier shall prevent the entry of insects into the sensor.

The detector shall be designed for easy disassembling for multiple factory cleaning.

The detector shall be inserted into a base without the need of tools.

When installed, the base shall be completely hidden by the body of the detector.

The base shall contain a device which contains a unique number for each base. This number shall be readable from the every associated control unit.

The base shall include all necessary terminals to connect installation wiring. The base shall allow the removal of the detector without disconnecting the installation wiring.

The detector shall be inserted into or removed from the base by a simple push-twist mechanism with an appropriate tool up to 7 m above floor level.

It shall be possible to protect the detector against unauthorized removal from the base.

The manufacturer shall produce and provide test equipment which allows a full functional test, including smoke entry openings, of the smoke detectors up to 7m above floor level without smoke or other aerosol producing devices.

A comprehensive range of accessories shall be available to fulfill requirements for special applications (e.g. protective cage).

All parts, including plastic material, shall clearly be marked according to DIN 54840 / ISO/DIS 11469 or DIN 7728/ISO 1043 for environment friendly disposal at the end of their life cycle.

### Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		21.2 to 31.2V, modulated
Operating current		typ. 250µA
Self test interval		15 min.
Data transmission speed		4800 Baud
Current for external response indicator		15mA
Operating temperature		- 25 to + 70°C
Storage temperature		- 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 95%
Test category	IEC68-1	25/070/42
Protection category	EN 60529 / IEC 529	IP43
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		∅ 115mm x 51mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-7/9	VdS, VKF, LPCB, AFNOR

# Wide spectrum smoke detector, interactive, DO1152

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## **Physical and electronic characteristics of the detector**

The design of the smoke sensitive system shall guarantee a uniform response behaviour to all combustion products of smoke-forming flaming and smouldering fires. The detection principle shall employ a multiple light pulse coincidence circuit, and be temperature compensated.

The detector shall have the computing power to determine the seriousness of an alarm condition, without the need to communicate to the control unit, based on the evaluation of the signals sensed.

The smoke detector shall conform to EN 54-7/9. The detector shall be able to detect in addition to the European Standards requirements for optical smoke detectors the test fire TF1 (open wood fire).

The detector shall be microprocessor controlled and have the capability to store in a non volatile memory up to 255 Bytes of information among them several pre-defined application specific response characteristics driven by application-specific parameters.

The response characteristic of the detector shall be determined by a set of algorithms stored in each detector head.

The detection algorithms shall be designed to suppress transient interference and other deceptive phenomena's without impairing the capability of detecting real fires.

The algorithms shall be remotely selectable to at least eight (8) pre-defined and any number of future characteristics at any point in time and throughout the lifetime of the detector. The selection of algorithms shall be accessible only for authorized personnel via password on the associated control unit or from a remote location.

The detector shall be able to transmit up to four (4) danger levels to the control unit for evaluation according to the customer specific programming of the control unit.

The detector shall be able to execute a self-test and signal up to four (4) different status functions to the control unit.

The detector shall be able to send additional information of up to 3 Bytes to the control unit. This information shall contain all relevant data on the status of the detector and allow continuous information about the actual environmental conditions surrounding the detector at the control unit.

The detector shall be equipped with a response indicator and shall have the possibility to drive a remote indicator in order to signal alarm conditions and service information.

The detector shall be individually identifiable, with all relevant data, throughout its lifetime by a specific serial number and other corresponding information, readable with appropriate equipment or at the control unit with the proper authorization (password). The data shall be stored in a non volatile memory inside the detector.

The detector shall be able to isolate short circuits on the detector-line bus in order not to disrupt the proper function of the rest of the detectors connected on the detection-line bus. Reversed polarity or faulty wiring shall not damage the detector.

## **Physical and electronic characteristics of the system**

The system shall have the capability of signaling inappropriate application settings to the control unit thus avoiding unwanted alarms.

The detector shall be individually identifiable from the control unit by type of detector, parameter settings and geographical location in the system.

The system shall not use any switch to be set to define the address of the detector.

The system shall be able to re-configure automatically to the required parameter settings when one or multiple detectors have been removed permanently, re-inserted or replaced even when at that time the power of the system was switched off completely.

The system shall have the capability by simple, customer defined programming of software functions to actuate any remote response indicator in case of alarm of any detector even if the response indicator is not directly hard-wired to the detector signaling an alarm condition. All electronic circuits shall be in the detector head, thus not requiring any active electronic circuits in the base.

The detector shall connect to the local control unit via a fully supervised two-wire circuit (class B wiring) or a four-wire circuit (class A wiring). Wiring may be unshielded twisted pair type. The system shall allow T-Tap wiring without degrading the information exchange between detectors connected via T-Tap wiring and the control unit.

The detector shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The system shall be able to signal a priority alarm message no less than two (4) seconds after the detector has recognized this situation.

### **Mechanical characteristics**

The optical chamber shall be designed for detection of every type of visible smoke (including dark smoke) and therefore have a scattering angle superior of 70

A built in barrier shall prevent the entry of insects into the sensor.

The detector shall be designed for easy disassembling for multiple factory cleaning.

The detector shall be inserted into a base without the need of tools.

When installed, the base shall be completely hidden by the body of the detector.

The base shall contain an device which contains a unique number for each base. This number shall be readable from the every associated control unit.

The base shall include all necessary terminals to connect installation wiring. The base shall allow the removal of the detector without disconnecting the installation wiring.

The detector shall be inserted into or removed from the base by a simple push-twist mechanism with an appropriate tool up to 7 m above floor level.

It shall be possible to protect the detector against unauthorized removal from the base.

The manufacturer shall produce and provide test equipment which allows a full functional test, including smoke entry openings, of the smoke detectors up to 7m above floor level without smoke or other aerosol producing devices.

A comprehensive range of accessories shall be available to fulfill requirements for special applications (e.g. protective cage).

All parts, including plastic material, shall clearly be marked according to DIN 54840 / ISO/DIS 11469 or DIN 7728/ISO 1043 for environment friendly disposal at the end of their life cycle.

### **Technical specifications**

<b>Characteristics</b>	<b>Classification / Test Procedure</b>	<b>Value</b>
Operating voltage		21.2 to 31.2V, modulated
Operating current		typ. 250µA
Self test interval		15 min.
Data transmission speed		4800 Baud
Current for external response indicator		15mA
Operating temperature		- 25 to + 70°C
Storage temperature		- 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 95%
Test category	IEC68-1	25/070/42
Protection category	EN 60529 / IEC 529	IP43
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		∅ 115mm x 51mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-7/9	VdS, VKF, LPCB, AFNOR

# Neural smoke detector, interactive, DOT1151

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## **Physical and electronic characteristics of the detector**

The detector shall be of the multi-criteria type whereof the following criteria's shall be evaluated as a minimum: smoke density, variation of the smoke density during time, temperature rate of rise and maximum temperature.

The detector shall have the computing power to determine the seriousness of an alarm condition, without the need to communicate to the control unit, based on the evaluation of the signals sensed.

The detector shall be able to alter the interdependence of the criteria according to the evolution in time of the signals received by each sensor channel and the pre-defined response characteristics.

The smoke detector shall conform to EN 54-7/9. The detector shall be able to detect in addition to the European Standards requirements for optical smoke detectors the test fire TF1 (open wood fire) and TF 6 (alcohol fire).

The detector shall still be able to function as a smoke detector according to EN54-7/9 even with a failure of the temperature sensing element. If this is the case a fault signal shall be transmitted to the control unit and the detector shall adjust its response characteristics to that of a single channel smoke detector.

As an alternative to completely switching off the detector in case of temporary presence of work related smoke (e.g. soldering, cooking) it shall be possible to operate the detector as a rate of rise detector in order to guarantee a limited fire protection level.

The detector shall be microprocessor controlled and have the capability to store in a non volatile memory up to 255 Bytes of information among them several pre-defined application specific response characteristics driven by application-specific parameters.

The response characteristic of the detector shall be determined by a set of algorithms stored in each detector head.

The detection algorithms shall be designed to suppress transient interference and other deceptive phenomena's without impairing the capability of detecting real fires.

The algorithms shall be remotely selectable to at least eight (8) pre-defined and any number of future characteristics at any point in time and throughout the lifetime of the detector.

The selection of algorithms shall be accessible only for authorized personnel via password at the associated control unit or from a remote location.

The detector shall be able to transmit up to four (4) danger levels to the control unit for evaluation according to the customer specific programming of the control unit.

The signal evaluation in the detector shall be performed by a neural net with parameter driven algorithms, which has the characteristic of a fuzzy logic in order to guarantee a rapid and accurate response to the environmental phenomena's and send the appropriate signals to the control unit.

The detector shall be able to execute a self-test and signal up to four (4) different status functions to the control unit.

The detector shall be able to send additional information of up to 3 Bytes to the control unit. This information shall contain all relevant data on the status of the detector and allow continuous information about the actual environmental conditions surrounding the detector at the control unit.

The detector shall be equipped with a response indicator and shall have the possibility to drive a remote indicator in order to signal alarm conditions and service information.

The detector shall be individually identifiable, with all relevant data, throughout its lifetime by a specific serial number and other corresponding information, readable with an appropriate equipment or at the control unit with the proper authorization (password). The data shall be stored in a non volatile memory inside the detector.

Reversed polarity or faulty wiring shall not damage the detector.

### **Physical and electronic characteristics of the system**

The system shall have the capability of signaling inappropriate application settings to the control unit thus avoiding unwanted alarms.

The detector shall be individually identifiable from the control unit by type of detector, parameter settings and geographical location in the system.

The system shall not use any switch to be set to define the address of the detector.

The system shall be able to re-configure automatically to the required parameter settings when one or multiple detectors have been removed permanently, re-inserted or replaced even when at that time the power of the system was switched off completely.

The system shall have the capability by simple, customer defined programming of software functions to actuate any remote response indicator in case of alarm of any detector even if the response indicator is not directly hard-wired to the detector signaling an alarm condition.

All electronic circuits shall be in the detector head, thus not requiring any active electronic circuits in the base.

The detector shall connect to the local control unit via a fully supervised two-wire circuit (class B wiring) or a four-wire circuit (class A wiring). Wiring may be unshielded twisted pair type.

The system shall allow T-Tap wiring without degrading the information exchange between detectors connected via T-Tap wiring and the control unit.

The detector shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The system shall be able to signal a priority alarm message no less than two (2) seconds after the detector has recognized this situation.

### **Mechanical characteristics**

The optical chamber shall be designed for detection of every type of visible smoke (including dark smoke) and therefore have a scattering angle superior of 70°

A built in barrier shall prevent the entry of insects into the sensor.

The detector shall be designed for easy disassembling for multiple factory cleaning.

The detector shall be inserted into a base without the need of tools.

When installed, the base shall be completely hidden by the body of the detector.

The base shall contain an device which contains a unique number for each base. This number shall be readable from the every associated control unit.

The base shall include all necessary terminals to connect installation wiring. The base shall allow the removal of the detector without disconnecting the installation wiring.

The detector shall be inserted into or removed from the base by a simple push-twist mechanism with an appropriate tool up to 7m above floor level.

The manufacturer shall produce and provide test equipment which allows a full functional test, including smoke entry openings, of the smoke detectors up to 7m above floor level without smoke or other aerosol producing devices.

It shall be possible to protect the detector against unauthorized removal from the base.

A comprehensive range of accessories shall be available to fulfill requirements for special applications.

All parts, including plastic material, shall clearly be marked according to DIN 54840 / ISO/DIS 11469 or DIN 7728/ISO 1043 for environment friendly disposal at the end of their life cycle.

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		21.2 to 31.2V, modulated
Operating current		typ. 300µA
Self test interval		15 min.
Data transmission speed		4800 Baud
Current for external response indicator		15mA
Operating temperature		- 25 to + 70°C
Storage temperature		- 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 95%
Test category	IEC68-1	25/070/42
Protection category	EN 60529 / IEC 529	IP43
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		Ø 115mm x 63mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-7/9	VdS, VKF, LPCB, AFNOR





# Neural smoke detector, interactive, DOT1152

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## **Physical and electronic characteristics of the detector**

The detector shall be of the multi-criteria type whereof the following criteria's shall be evaluated as a minimum: smoke density, variation of the smoke density during time, temperature rate of rise and maximum temperature.

The detector shall have the computing power to determine the seriousness of an alarm condition, without the need to communicate to the control unit, based on the evaluation of the signals sensed.

The detector shall be able to alter the interdependence of the criteria according to the evolution in time of the signals received by each sensor channel and the pre-defined response characteristics.

The detector shall be microprocessor controlled and have the capability to store in a non volatile memory up to 255 Bytes of information including several pre-defined application specific response characteristics driven by application-specific parameters.

The response characteristic of the detector shall be determined by a set of algorithms stored in each detector head.

The detection algorithms shall be designed to suppress transient interference and other deceptive phenomena's without impairing the capability of detecting real fires.

The algorithms shall be remotely selectable to at least eight (8) pre-defined and any number of future characteristics at any point in time and throughout the lifetime of the detector. The selection of algorithms shall be accessible only for authorized personnel via password at the associated control unit or from a remote location.

The smoke detector shall conform to EN 54-7/9. The detector shall be able to detect in addition to the European Standards requirements for optical smoke detectors the test fire TF1 (open wood fire) and TF 6 (alcohol fire).

The detector shall still be able to function as a smoke detector according to EN54-7/9 even with a failure of the temperature sensing element. If this is the case a fault signal shall be transmitted to the control unit and the detector shall adjust its response characteristics to that of a single channel smoke detector.

As an alternative to completely switching off the detector in case of temporary presence of work related smoke (e.g. soldering, cooking) it shall be possible to operate the detector as a rate of rise detector in order to guarantee a limited fire protection level.

The detector shall be able to transmit up to four (4) danger levels to the control unit for evaluation according to the customer specific programming of the control unit.

The signal evaluation in the detector shall be performed by a neural net with parameter driven algorithms, which has the characteristic of a fuzzy logic in order to guarantee a rapid and accurate response to the environmental phenomena's and send the appropriate signals to the control unit.

The detector shall be able to execute a self-test and signal up to four (4) different status functions to the control unit.

The detector shall be able to send additional information of up to 3 Bytes to the control unit. This information shall contain all relevant data on the status of the detector and allow continuous information about the actual environmental conditions surrounding the detector at the control unit.

The detector shall be equipped with a response indicator and shall have the possibility to drive a remote indicator in order to signal alarm conditions and service information.

The detector shall be individually identifiable, with all relevant data, throughout its lifetime by a specific serial number and other corresponding information, readable with an appropriate equipment or at the control unit with the proper authorization (password). The data shall be stored in a non volatile memory inside the detector.

The detector shall be able to isolate short circuits on the detector-line bus in order not to disrupt the proper function of the rest of the detectors connected on the detector-line bus. Reversed polarity or faulty wiring shall not damage the detector.

### **Physical and electronic characteristics of the system**

The system shall have the capability of signaling inappropriate application settings to the control unit thus avoiding unwanted alarms.

The detector shall be individually identifiable from the control unit by type of detector, parameter settings and geographical location in the system.

The system shall not use any switch to be set to define the address of the detector.

The system shall be able to re-configure automatically to the required parameter settings when one or multiple detectors have been removed permanently, re-inserted or replaced, even when at that time the power of the system was switched off completely.

The system shall have the capability by simple, customer defined programming of software functions to actuate any remote response indicator in case of alarm of any detector even if the response indicator is not directly hard-wired to the detector signaling an alarm condition.

All electronic circuits shall be in the detector head, thus not requiring any active electronic circuits in the base.

The detector shall connect to the local control unit via a fully supervised two-wire circuit (class B wiring) or a four-wire circuit (class A wiring). Wiring may be unshielded twisted pair type.

The system shall allow T-Tap wiring without degrading the information exchange between detectors connected via T-Tap wiring and the control unit.

The detector shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The system shall be able to signal a priority alarm message no less than four (4) seconds after the detector has recognized this situation.

### **Mechanical characteristics**

The optical chamber shall be designed for detection of every type of visible smoke (including dark smoke) and therefore have a scattering angle superior of 70°

A built in barrier shall prevent the entry of insects into the sensor.

The detector shall be designed for easy disassembling for multiple factory cleaning.

The detector shall be inserted into a base without the need of tools.

When installed, the base shall be completely hidden by the body of the detector.

The base shall contain an device which contains a unique number for each base. This number shall be readable from the every associated control unit.

The base shall include all necessary terminals to connect installation wiring. The base shall allow the removal of the detector without disconnecting the installation wiring.

The detector shall be inserted into or removed from the base by a simple push-twist mechanism with an appropriate tool up to 7 m above floor level.

It shall be possible to protect the detector against unauthorized removal from the base.

The manufacturer shall produce and provide test equipment which allows a full functional test, including smoke entry openings, of the smoke detectors up to 7m above floor level without smoke or other aerosol producing devices.

A comprehensive range of accessories shall be available to fulfill requirements for special applications (e.g. protective cage).

All parts, including plastic material, shall clearly be marked according to DIN 54840 / ISO/DIS 11469 or DIN 7728/ISO 1043 for environment friendly disposal at the end of their life cycle.

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		21.2 to 31.2V, modulated
Operating current		typ. 300µA
Self test interval		15 min.
Data transmission speed		4800 Baud
Current for external response indicator		15mA
Operating temperature		- 25 to + 70°C
Storage temperature		- 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 95%
Test category	IEC68-1	25/070/42
Protection category	EN 60529 / IEC 529	IP43
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		Ø 115mm x 63mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-7/9	VdS, VKF, LPCB, AFNOR



# Heat detector, interactive, DT1152

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## Physical and electronic characteristics

The heat detector shall come in one version only. The different application temperatures shall be programmed or downloaded from the panel.

The detection system shall be a combination of rate of rise and fixed temperature principle with two independent NTC thermistor and automatic compensation for changes of ambient conditions.

The detector shall have a built-in microprocessor with flash EEPROM to accept commands and settings from the control panel.

The memory of the detector shall be large enough to accommodate 4 sets of parameter, representing 4 different response classes.

The detector shall communicate with the panel and report 4 different danger levels ("quiescent", "potential danger", "probable danger" and "danger highly probable") and 4 different function status ("normal", "notice", "impairments" and "faults") and shall report upon request of the panel, the analogue value of the sensor.

All electronic circuits must be solid state, using SMD technology and must be completely coated to prevent influence from dust, humidity or dirt.

The detector shall have a fail-safe operation mode. If the CPU of the panel fails, the detector shall work with its latest parameter set as a conventional detector and create an alarm on the line.

A common detector base design shall be utilized for the heat detector and all other detectors in the system range.

If the detector is installed, it shall completely cover the base.

Reversed polarity or faulty zone wiring shall not damage the detector.

The detector must have a built-in response indicator. In addition to that it shall have the possibility to connect a programmable remote indicator to indicate also other detectors/zones.

The detector must have a built in line isolator, to isolate the lines between two points, in case of line short circuits.

The detector shall have complete and automatic self test functions.

## Mechanical characteristics

For environmental protection purposes, the detector shall:

- have no disposable parts like caps or packing
- have recyclable packing
- be easy to maintain
- be easy to dismantle and to separate different material types
- have markings on plastic by engraving (not ink)

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		21.2 to 31.2V, modulated
Operating current		typ. 300µA
Self test interval		15 min.
Data transmission speed		4800 Baud
Current for external response indicator		15mA
Response sensitivity		
– rate-of-rise		10K/min.
– fixed temperature		+ 54 to + 62°C or + 74 to + 85°C
Operating temperature		– 25 to + 70°C
Storage temperature		– 30 to + 75°C
Relative humidity		≤ 34°C: ≤ 100%
Test category	IEC68-1	25/050/42 25/070/42
Protection category	EN 60529 / IEC 529	IP53
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		Ø 115mm x 54,5mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-5, EN54-8 (and prEN54-5, ed2, draft 4, 1992)	VdS, VKF, LPCB, AFNOR

# Linear smoke detector, interactive, DLO1191

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## **Physical and electronic characteristics of the detector**

The detector shall be based on the light attenuation principle only and be equally sensitive to all types of visible smoke specifically as produced by EN-54 test fires TF1, TF2, TF3, TF4 and TF5.

The detector shall be microprocessor controlled and have the capability to store in a non volatile memory up to 255 Bytes of information among them several pre-defined application specific response characteristics driven by application-specific parameters.

The evaluation of the alarm condition shall be driven by custom designed fuzzy-logic algorithm for linear beam detectors.

The response characteristic of the detector shall be determined by a set of algorithms stored in each detector.

The detection algorithms shall be designed to suppress transient interference and other deceptive phenomena without impairing the capability of detecting real fires.

It shall be possible to select three (3) different types of algorithm corresponding to three (3) different application sensitivities.

With a special procedure it shall be possible to set the detector in an initialization mode without having to open the cover of the installed detector. During the initialization period, which shall not be longer than 20 seconds, the detector shall adjust himself automatically to the default settings required for the specific application.

The detector shall be able to transmit up to four (4) danger levels to the control unit for evaluation according to the customer specific programming of the control unit.

The detector shall be able to execute a self-test and signal up to four (4) different status functions to the control unit.

The detector shall be able to compensate slow signal changes caused by pollution of cover, filters or reflectors in order not to alter the sensitivity of the detector over time. The unit shall transmit an appropriate signal to the control unit, when pollution exceeds the range of possible compensation.

It shall be possible to program the detector that a complete blockage of the beam of more than 30 seconds shall not cause an alarm but a fault condition at the control unit (according to BS 5839 Part 5)

It shall be possible to down-load all relevant data of the detector including the actual environmental conditions measured by the detector in a PC for further evaluation.

The detector shall be equipped with a response indicator and shall have the possibility to drive a remote indicator in order to signal alarm conditions and service information.

With simple setting of a switch inside the detector it shall be possible to use the same detector either on a collective or on an interactive detection line.

Reversed polarity or faulty wiring shall not damage the detector.

## **Physical and electronic characteristics of the system**

The system shall have the capability of signaling inappropriate application settings to the control unit thus avoiding unwanted alarms.

If connected to an interactive detection line, the detector shall be individually identifiable from the control unit by type of detector and geographical location in the system.

The system shall not use any switch to be set to define the address of the detector.

The system shall be able to re-configure automatically to the required parameter settings when one or multiple detectors have been removed permanently, re-inserted or replaced even when at that time the power of the system was switched off completely.

The system shall have the capability by simple, customer defined programming of software functions to actuate any remote response indicator in case of alarm of any detector even if the response indicator is not directly hard-wired to the detector signaling an alarm condition.

All electronic circuits shall be in the detector head, thus not requiring any active electronic circuits in the base.

The detector shall connect to the local control unit via a fully supervised two-wire circuit (class B wiring) or a four-wire circuit (class A wiring). Wiring may be unshielded twisted pair type. The detector shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The system shall be able to signal a priority alarm message no less than two (2) seconds after the detector has recognized this situation.

### Mechanical characteristics

The detector shall be of the combined design having transmitter and receiver in the same housing. A suitable reflector shall be used at the remote end of the detection range to reflect the detection beam.

The reflector shall not require any wiring.

The application range shall be between 5 meter and 100 meter using the appropriate accessories.

The reflector shall be designed in such way that vibrations and distortions of up to 20\* from the perpendicular axis will not cause any impairment of the function of the detector.

The detector shall be mounted on a base, which shall include all necessary terminals to connect installation wiring.

The base shall allow the removal of the detector without disconnecting the installation wiring.

All terminals shall be of the screwless type.

The manufacturer shall produce and provide test equipment which allows "one-man" commissioning and a full functional test without having to remove the detector from its mounting location.

The manufacturer shall provide adequate accessories to operate the detector on outside walls or in other ambient with rapid changes of temperature or high humidity.

All parts, including plastic material, shall clearly be marked according to DIN 54840 / ISO/DIS 11469 or DIN 7728 / ISO 1043 for environment friendly disposal at the end of their life cycle.

### Technical Specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		
– interactive		21.2 to 31.2V modulated
– collective		18 to 28Vdc
Operating current		1.5mA
Self test interval		15 min.
Data transmission speed (interactive)		4800 Baud
Alarm voltage (collective)		5 to 11V
Alarm current (collective)		40 to 75mA (at 24V)
Operating temperature		– 25 to + 70°C
Storage temperature		– 30 to + 75°C
Relative humidity		≤ 30°C: ≤ 95%
Test category	IEC68-1	25/070/42
Protection category	EN 60529 / IEC 529	IP56
EMI Protection	prEN54-7 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour white		≈ RAL 9010
Dimensions		W x H x D 135mm x 135mm x 125mm
Terminals		0.2 to 1.5mm <sup>2</sup>
Labeled for CE conformity		yes
Standards / Approvals	EN54-7/9 BS 5939 Part 5	VdS (expected) LPCB (pending)



# Manual call point, interactive, DM1151 / DM1153 / DM1154

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## **Physical and electronic characteristics**

The alarm shall be activated by breaking the glass without the need of an additional instrument (e.g. hammer).

The glass plate shall be designed in a way to prevent injuries when struck by the operator. The manual call point shall be capable to be connected along with other interactive devices, such as smoke detectors, to a common fire detector loop.

The manual call point shall be able to isolate short circuits on the detection-line bus in order not to disrupt the proper function of the rest of the detectors connected on the detection-line bus. The isolating function shall be restored upon request by the control unit, when the short circuit condition is removed.

The call point shall be microprocessor based and have a unique identification number contained within its electronic circuit, which can be accessed through the control unit.

The call point shall have a digital communication with the control unit on the basis of error recognizing protocol with multiple transmission of information.

The call point shall be supervised and signal any abnormal condition (e.g. increasing resistance of the alarm actuating contacts) to the control unit as a fault condition.

The call point shall have a built in LED which will be illuminated upon actuation of the manual call point.

It shall be possible to test the manual call point without destroying the covering window. Unauthorized removal of the call points cover must release an alarm.

The manual call point shall comply with standard prEN 54-11 or BS 5839-2.

## **Mechanical characteristics**

The call point shall fit on a surface mounting box which contains at least three terminals for the connection of the field wiring.

It shall be possible to mount the part containing the sensitive electronic circuit separately just before commissioning, thus preventing any possible damage due to inappropriate installation work.

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		21.2 to 31.2V, modulated
Operating current		typ. 250µA
Data transmission speed		4800 Baud
Operating temperature		- 25 to + 70°C
Storage temperature		- 30 to + 75°C
Relative humidity		
- DM1151		≤ 95%
- DM1153, DM1154		≤ 100%
Test category	IEC 68-1	25/070/42
Protection category	EN 60529 / IEC 529	
- DM1151		IP24D
- DM1153, DM1154		IP54
EMI Protection	prEN54-11 and in addition: IEC801-3 (1MHz to 1GHz)	50V/m
Colour red		≈ RAL 3000
Dimensions		W x H x D
- DM1151		87mm x 87mm x 62mm
- DM1153, DM1154		130mm x 130mm x 43mm
Terminals		0.2 to 1.5mm <sup>2</sup>
Labeled for CE conformity		yes
Standards / Approvals		VKF, LPCB
- DM1151	BS 5839-2, prEN54-11	
- DM1153, DM1154	prEN54-11	

# Input module, interactive, DC1151

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## **Physical and electronic characteristics**

The input module shall be designed to be capable of being connected along with other interactive elements on a loop. The modules shall interface collective/conventional detector lines or simple dry contacts (switch) to the interactive loop.

The input module shall be compatible to most 24V<sub>DC</sub> conventional fire detectors and be supported by a certificate of compatibility if device and connected detector are from different manufacturer.

The input module shall be capable of powering and accepting inputs from at least 5 detectors, each not exceeding the power requirement of 100 $\mu$ A.

The input module shall receive all its power requirements through the interactive detection loop.

The input module shall be capable of operating in both dry and wet rooms according to IP56 protection category.

The input module shall be microprocessor based.

The input module shall be equipped with a line separator/isolator function, the operation of which shall not impair the function of the device when connected in loop mode.

The input module shall be equipped with a built-in push button for assigning its address during commissioning. The built-in LED shall also light up to confirm addressing. Both, LED and button shall only be accessible with open case.

It shall be possible to exchange the electronics unit without removing the housing or the wiring.

## **Mechanical characteristics**

The box with wiring terminals and the electronics unit shall be available separately in order to carry out the wiring before inserting the electronics unit.

The housing shall be able to be equipped with 6 PG16 cable glands.

The input module shall be equipped with screw less terminals with built-in strain relief mechanism, suitable for solid and stranded wire.

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		
– interactive		21.2 to 31.2V modulated
– collective		17.7 to 28V <sub>bc</sub>
Operating current		
– interactive		3.5mA
– collective		1.1 to 1.3mA
Data transmission speed		4800 Baud
Operating temperature		– 25 to + 70°C
Storage temperature		– 30 to + 75°C
Relative humidity	IEC 721-3: 3K6	≤ 34°C: ≤ 100%
Protection category	EN 60529 / IEC 529	IP56
Colour white		≈ RAL 9010
Dimensions		W x H x D 135mm x 135mm x 65mm
Terminals		0.2 to 2.5mm <sup>2</sup>
Labeled for CE conformity		yes
Approvals		VdS, LPCB (pending)

# Output module, interactive, DC1154

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## Physical and electronic characteristics

The output module shall be designed to be placed somewhere with the other interactive devices on a detector loop. The module shall provide an interface as a control output of the fire alarm panel to equipment such as fire doors, smoke vents, smoke curtains etc.

The output contact of the output module shall be rated to 240V<sub>AC</sub>/2A.

The output module shall have a separate, fully supervised, control input to enable the device to transmit a confirmation signal back to the fire detection control unit, allowing confirming that the function assigned to the control output has physically been carried out.

The output module should be controllable by any detector connected to the same fire detection control unit.

The output module shall be disconnectable also by key code from the fire control unit / terminal.

No additional power supply shall be required to activate the relay output.

The output module shall be connected to the control unit via the normal 2-wire interactive loop.

The output module shall be capable of operating in both dry and wet rooms according to IP56 protection category.

The output module shall be microprocessor based and have its own factory set identification number.

The output module shall be equipped with line separator/isolator function without losing its control and confirmation function.

The output module shall be equipped with a built-in push button to activate the module for testing and for assigning its address during commissioning.

An internal LED shall indicate the addressing during commissioning and the relay position during test when activated by the push button. Both, LED and button shall only be accessible with open case.

It shall be possible to exchange the electronics unit without removing the housing or the wiring.

## Mechanical characteristics

The wiring terminals and the electronics unit shall be available separately in order to carry out the wiring before inserting the electronics unit.

The housing shall be able to be equipped with 6 PG16 cable glands.

The output module shall be equipped with screw-less terminals with built-in strain relief mechanism, suitable for solid and stranded wire.

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		21.2 to 31.2V modulated
Operating current		≤ 520μA
Data transmission speed		4800 Baud
Relay: each 1 NO, 1 NC		240V <sub>AC</sub> /max. 2A 125V <sub>DC</sub> /max. 2A (max. 150W)
Operating temperature		– 25 to + 70°C
Storage temperature		– 30 to + 75°C
Relative humidity	IEC 721-3: 3K6	≤ 34°C: ≤ 100%
Protection category	EN 60529 / IEC 529	IP56
Colour white		≈ RAL 9010
Dimensions		W x H x D 135mm x 135mm x 65mm
Terminals		0.2 to 2.5mm <sup>2</sup>
Labeled for CE conformity		yes
Approvals		VdS, VKF LPCB (pending) Contact: VDE, SEV

# Input module, interactive, DC1157

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## Physical and electronic characteristics

The interactive input module shall be designed to be placed among the other interactive elements on a loop. The modules shall interface dry contacts to the interactive loop.

The interactive input module shall have at least 3 separate contact inputs, each one individually addressed and fully supervised.

The interactive input module shall not require an additional power source other than the two-wire interactive loop.

The interactive input module shall be connected to the control unit via the normal 2-wire interactive loop.

The interactive input module shall be microprocessor controlled.

The interactive input module shall be equipped with line separator / isolator function without losing its control and confirmation function. The Interactive Input Module shall resume its normal status automatically after a short circuit.

The interactive input module shall be equipped with a built-in push button to activate the module for testing and for assigning its address during commissioning. The built-in LED shall indicate the proper functioning of the module. Both, LED and Button shall only be accessible with open case.

It shall be possible to exchange the electronic parts without removing the housing or the wiring.

The wiring terminals and the electronic parts shall be available separately in order to carry out the wiring before inserting the electronic module and/or to fit into any other standard installation box of suitable size.

## Mechanical characteristics

The interactive input module shall be designed to be used in both dry and wet rooms according to IP55 protection category.

The housing shall be able to be equipped with 6 PG16 cable glands

The housing shall be designed to accommodate additional Micro Terminals to facilitate easy and safe termination of T-Tap lines

The interactive input module shall be equipped with screwless terminals with built-in strain limits to prevent permanent deformation of the terminal and weakening of the contact pressure.

For environmental protection purposes, the detector shall:

- have no disposable parts like caps or packing
- have recyclable packing
- be easy to maintain
- be easy to dismantle and to separate different material types
- have markings on plastic by ingraining (not ink)

## Technical specifications

Characteristics	Classification / Test Procedure	Value
Operating voltage		21.2 to 31.2V modulated
Operating current		3.5mA
– interactive		1.1 to 1.3mA
– detectors		
Data transmission speed		4800 Baud
Operating temperature		– 25 to + 70°C
Storage temperature		– 30 to + 75°C
Relative humidity	IEC 721-3: 3K6	≤ 100%
Protection category	EN 60529 / IEC 529	IP56
Colour white		≈ RAL 9010
Dimensions		W x H x D 135mm x 135mm x 65mm
Terminals		0.2 to 2.5mm <sup>2</sup>
Labeled for CE conformity		yes
Approvals		VdS, LPCB (pending)



# Fire alarm control unit CS1110

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## Basic features

The control unit shall be manufactured in a ISO9001 certified factory and fully comply with the requirements of the standard EN 54 part 2.

The control unit shall be able to process and evaluate conventional/collective signals from compatible automatic detectors (e.g. smoke, heat, etc.), manual call points and input devices via a two-wire detection line. The maximum line capacity shall allow the handling of 32 detection devices.

The basic capacity of the control panel module shall be equipped with 4 lines. It may be expanded to handle 8 lines.

It shall be possible to freely locate and group detectors according to the geographical and architectural requirements of the users premises. The control unit shall provide this feature, in order to achieve an user friendly system operation for any event being displayed. The text for this geographical description shall be user-defined.

It shall be possible through programming to define that a short circuit condition is evaluated and indicated as a trouble or an alarm condition.

- Hardware configuration / Mechanical design

The control unit shall entirely consist of standard modular printed circuit board assemblies to facilitate removal, easy installation and maintenance.

The basic configuration of a control unit shall consist of :

- a microprocessor (CPU) based module providing the interface to LC-display, keyboard, four collective lines, fixed and programmable outputs, and interface to extension module. The CPU module shall also provide two RS232-interfaces for driving peripheral devices such as a printer unit etc.
- a power supply with battery charging unit

The following outputs shall be on the CPU module:

- 2 fixed outputs for remote transmission Alarm and Fault (fail-safe)
- 2 programmable supervised bell circuits (rating 24V<sub>DC</sub>/0.5A)
- 2 programmable changeover contacts (30V/1A)
- 4 programmable drivers (24V<sub>DC</sub>/40mA)
- 4 programmable inputs
- 4 inputs for LED indications

It shall be possible to optionally expand the basic assembly of a control unit by modules for:

- 4 conventional / collective detection lines
- 2 programmable supervised bell circuits (24V<sub>DC</sub>/2A)
- 2 programmable changeover contacts (30V/6A)
- 4 programmable drivers (24V<sub>DC</sub>/40mA)
- 8 relay units each with a changeover contact (250V<sub>AC</sub>/6A)

- Power supply unit

The power supply shall comply with EN 54, part 4.

The power supply unit shall contain suitable over-voltage protection to prevent any malfunction or damage which might occur from line power surges.

The control unit shall be equipped with a built-in standby battery, rated to maintain operation for 12 to 72 hours after mains failure. An alarm condition must be maintained for at least 15 minutes after the above lapse of time expired.

The battery loading characteristics shall be programmable to the charging curves as indicated by the battery manufacturer.

It shall be possible for a pre-defined period to suppress an audible and visible mains failure alarm indication at the operators terminal for any mains supply interruptions, that do not exceed this time period.

### Key Software Functions

- Alarm processing

Processing of an alarm, and the operation of the acknowledge and reset functions shall function in accordance with the specified alarm organization principle:

- In the manned mode of the control unit, a response from automatic detectors (e.g. smoke, heat, etc.) shall remain as a local alarm for a pre-programmed period, referred to as T1.
- During this delay time (T1) an internal alarm shall be given, to bring attention to the local staff. If the alarm is not acknowledged before T1 runs out, a full alarm condition shall automatically be initiated. This shall sound the local alarm horns and send a remote alarm signal to the fire brigade.
- If the alarm is acknowledged during the delay time (T1), it shall be reset and a pre-programmed time T2 shall be started, in order to provide time for human investigation for the cause of the raised alarm.
- If the raised alarm is not reset during the delay time (T2), a full alarm condition shall automatically be initiated. This shall sound local alarm horns and send a remote alarm signal to the fire brigade.
- The initiation of a manual call point shall at all times immediately sound local alarm horns and send a remote alarm signal to the fire brigade.
- The remaining time for the mentioned time periods T1 and T2 shall continuously be displayed at the operating terminal.
- In the unmanned mode of the control unit, a response from any automatic detector (e.g. smoke, heat, etc.) or from a manual call point shall at all times immediately sound local alarm horns and send a remote alarm signal to the fire brigade.

- Access levels and passwords

Operator access shall be granted to four different levels and it shall be possible to configure at least 20 concurrent passwords in the control unit. Optionally, access shall also be granted via a key switch.

The control unit shall automatically log out, if the system is not operated for a pre-defined period. The operation of the control unit shall be blocked for 15 minutes after 3 false passwords are entered.

- History file

The control unit shall save at least the last 200 system operating events.

- It shall be possible to display any historical data at the operating terminal, in chronological order:
  - test alarms
  - faults
  - isolated zones, detectors

- Alarm counter  
The control unit shall indicate on the operating terminal all active alarms in the system by way of an alarm counter.  
It shall be possible to display local and remote alarms on different alarm counters.
  
- Real time clock  
The actual real time shall be available for display on the operating terminal. The change from summer to winter time and back to summer time shall be performed automatically.  
The clock shall have the option, that it performs the day/night and night/day switching automatically.

### **Person-Machine interface**

The control unit shall be designed, that the operating terminal, which serves as a person-machine interface, forms an integral part of the control unit.

In order to guide the operator through the operating functions, the operating procedure at the terminal unit shall be fully menu driven.

The layout of the front plate for the operating terminal shall guarantee, that the incoming event messages are clearly distinguished by the operator. For this purpose, these shall be categorized as follows:

- alarm conditions
- fault conditions
- isolated / disabled conditions
- status information

The layout of the operating terminal shall incorporate a Liquid Crystal Display (4 lines with 40 characters) with background illumination for the customized text of any event. The panel shall also include acknowledge and reset buttons, a numeric key pad for code entry and a common area for keys and display-LED's for four different message categories as defined above.

## Technical Specifications

Characteristic	Classification/Test procedure	Value
Mains power		nom. 115V <sub>AC</sub> or 230V <sub>AC</sub> , -15%/+10%, 50/60Hz
Power consumption		40 to 220VA
Operating temperature range		0 to +50°C
Storage temperature range		-20 to +60°C
Relative humidity		≤ 95%
Emergency power supply		12 to 72h
Protection category	EN 60529 / IEC 529	
- control unit		IP 52 with operating terminal
Colour		
- control unit		RAL 7035
- housing		RAL 9002
Dimensions		W x H x D 522mm x 414mm x 105mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-2, EN54-4	VdS (expected) LPCB (pending)

# Fire alarm control unit CS1115

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## Performance data

- Basic features

The control unit shall be manufactured in a ISO 9001 certified factory and fully comply with the requirements of the standard EN 54 part 2.

Maximum system availability shall be realized by decentralizing the intelligence of the system whereby the detection and evaluation task is performed by the detector. The control unit shall verify and process the detectors' output signals in conjunction with the pre-defined user data. The control unit shall display the information gathered, perform pre-defined control, signal tasks and respond to manual commands entered by the system operator.

The control unit shall be capable of operating conventional/collective, AnalogPLUS and interactive detector lines. A combination of these circuits in the same control unit, for the initial installation or for any future system expansions, shall be possible.

It shall be possible to freely locate and group detectors (min. one zone per detecting device) according to the geographical and architectural requirements of the users premises. This shall allow maximum user orientation in case of an alarm event.

Address allocations shall be displayed on the operating terminal as a geographical description of the physical location of the detecting device.

To optimize the response characteristics of automatic detectors, it shall be possible to monitor these and to set different sensitivity levels.

The control unit shall provide two RS232 type interfaces for the connection of peripheral devices such as a printer unit etc.

- Detector line communication (Conventional / Collective)

The control unit shall be able to process and evaluate conventional/collective signals from compatible automatic detectors (e.g. smoke, heat, etc.), manual call points and input devices via a two-wire detection line.

The collective detector line module shall be equipped with 4 lines. The maximum line capacity shall allow the handling of 25 detection devices.

Via suitable intrinsically safe interfacing devices, it shall be possible to connect conventional/collective detection devices, which are located in hazardous areas (class 1, 2).

- Detector line communication (AnalogPLUS)

The control unit shall be able to process incoming signals from addressable devices such as automatic detectors, manual call points, monitoring input devices etc. via a two wire line (untwisted and unshielded, including MICC). T-Tap connections shall allow for optimization of the field wiring.

The loop capacity shall allow the handling of up to 128 addressable devices, with the operating power for these devices being supplied through the same line. Instead of one loop the system shall alternatively support two stub lines. The stub line capacity shall allow the handling of 64 addresses. The control panel shall be equipped with up to 2 loops or 4 stub lines with a total of 256 addresses.

Full functionality during a detected short circuit or open loop condition shall be guaranteed by the operation of a short circuit isolator/separator. Short circuit isolator/separator shall be an integral part of each detection device.

A drift indication shall permit, automatically or upon request, status information of an automatic smoke detector.

The performance of the IRED for the smoke detector shall be fully supervised, with the status information being displayed upon request at the control unit.

The AnalogPLUS detector line shall at least process the following verified signal conditions between the detection device and the control unit:

- adjusting the detectors sensitivity level
- changing the detectors response characteristics
- multi zone evaluation

The system shall be able to identify the type of detector installed in each base and consequently, verify this information during normal operation and service.

- **Hardware configuration / Mechanical design**

The control unit shall entirely consist of standard modular, printed circuit board assemblies to facilitate removal, easy maintenance and system expansion.

The basic configuration of a control unit shall consist of

- a microprocessor (CPU) based module providing the interface to LC-display, keyboard, two AnalogPLUS detector lines in loop configuration (Class A, 2 x 128 detectors) or four AnalogPLUS stub lines (Class B), fixed and programmable outputs, and interface to extension module. The CPU module shall also provide two RS232-interfaces for driving peripheral devices such as a printer unit etc.
- a power supply with battery charging unit
- battery capacity for 12 – 72 hours emergency supply

The following outputs shall be part of the CPU module:

- 2 fixed outputs for remote transmission Alarm and Fault (fail-safe)
- 2 programmable supervised bell circuits (rating 24V<sub>DC</sub>/2A)
- 2 programmable changeover contacts (30V/6A)
- 8 programmable drivers (24V<sub>DC</sub>/40mA)

It shall be possible to optionally expand the basic assembly of a control unit by modules for:

- 4 conventional/collective detector lines
- 2 programmable supervised bell circuits (24V<sub>DC</sub>/2A)
- 2 programmable changeover contacts (30V/6A)
- 4 programmable drivers (24V<sub>DC</sub>/40mA)
- 8 relay units each with a changeover contact (250V<sub>AC</sub>/6A)

- **Power supply unit**

The power supply shall comply with EN 54, part 4.

The power supply unit shall contain suitable over-voltage protection to prevent any malfunction or damage which might occur from line power surges.

The control unit shall be equipped with a built-in standby battery, rated to maintain operation for 12 – 72 hours after main failure. An alarm condition should then be maintained for a period to be determined by National or other codes.

The battery loading characteristics shall be programmable to the charging curves as indicated by the battery manufacturer.

It shall be possible for a pre-defined period to suppress an audible and visible mains failure alarm indication at the operators terminal for any mains supply interruptions, that do not exceed this time period.

### **Key Software Functions**

- **Alarm processing**

Processing of an alarm, and the operation of the acknowledge and reset functions shall function in accordance with the specified alarm organization principle:

- In the *manned mode* of the control unit, a response from automatic detectors (e.g. smoke, heat, etc.) shall remain as a local alarm for a pre-programmed period, referred to as T1.

- During this delay time (T1) an internal alarm shall be given, to bring attention to the local staff. If the alarm is not acknowledged before T1 runs out, a full alarm condition shall automatically be initiated. This shall sound the local alarm horns and send a remote alarm signal to the fire brigade.
- If the alarm is acknowledged during the delay time (T1), it shall be reset and a pre-programmed time T2 shall be started, in order to provide time for human investigation for the cause of the raised alarm.
- If the raised alarm is not reset during the delay time (T2), a full alarm condition shall automatically be initiated. This shall sound local alarm horns and send a remote alarm signal to the fire brigade.
- The initiation of a manual call point shall at all times immediately sound local alarm horns and actuate the remote alarm signal output.
- The remaining time for the mentioned time periods T1 and T2 shall continuously be displayed at the operating terminal.
- In the *unmanned mode* of the control unit, a response from any automatic detector (e.g. smoke, heat, etc.) or from a manual call point shall at all times immediately sound the local alarm horns and actuate the remote alarm signal output.

- Access levels and passwords

Operator access shall be granted to four different levels and it shall be possible to configure at least 20 concurrent passwords in the control unit. Optionally, access shall also be granted via a key switch.

The control unit shall automatically log out, if the system is not operated for a pre-defined period. The operation of the control unit shall be blocked for 15 minutes after 3 false passwords are entered.

- History file

The control unit shall save at least the last 200 system operating events.

It shall be possible to display any historical data at the operating terminal, in chronological order:

- alarms
- test alarms
- faults
- isolated zones, detectors

- Alarm counter

The control unit shall indicate on the operating terminal all active alarms in the system by way of an alarm counter.

It shall be possible to display local and remote alarms on different alarm counters.

- Real time clock

The actual real time shall be available for display on the operating terminal. The change from summer to winter time and back to summer time shall be performed automatically. The clock shall have the option, that it performs the day/night and night/day switching automatically.

- Turning “on” and switching “off” of system devices

It shall be possible to “switch on” and “switch off” the following “devices” with the set state being indicated at the operating terminal:

- any automatic detector
- any monitoring and control devices from the “zone” level
- the remote alarm and fault indications transmitted to the alarm receiving centre
- a bell circuit
- a printer unit
- any physical control outputs

### Person-Machine Interface

The control unit shall be designed, that the operating terminal, which serves as a person-machine interface, forms an integral part of the control unit.

In order to guide the operator through the operating functions, the operating procedure at the terminal unit shall be fully menu driven.

The layout of the front plate for the operating terminal shall guarantee, that the incoming event messages are clearly distinguished by the operator. For this purpose, these shall be categorized as follows:

- alarm conditions
- fault conditions
- isolated / disabled conditions
- status information

The layout of the operating terminal shall incorporate a Liquid Crystal Display (4 lines with 40 characters) with background illumination for the customized text for any event. The panel shall also include acknowledge and reset buttons, a numeric key pad for code entry and a common area for keys and display-LED's for four different message categories as defined above.

### Commissioning features

When the control unit is first switched-on it shall be fully functional with AnalogPLUS type detector lines operating as conventional/collective detection lines.

To provide maximum ease and flexibility for the commissioning process, the following pre-defined commissioning modes shall be possible:

- by the order of device insertion
- by locally activating the detection device with a portable detector tester, the control unit shall simultaneously assign a physical address to, and carry out a functional test for this detection device.

It shall be possible to set all parameters for the control unit, as defined by the user's application, directly at the operating terminal of the control unit.

### Technical specifications

Characteristic	Classification / Test procedure	Value
Mains power		nom. 115V <sub>AC</sub> or 230V <sub>AC</sub> , –15%/+10%, 50/60Hz
Power consumption		40 to 220VA
Operating temperature range		0 to +50°C
Storage temperature range		–20 to +60°C
Relative humidity		≤ 95%
Emergency power supply		12 to 72h
Protection category	EN 60529 / IEC 529	
– control unit		IP 52 with operating terminal
Colour		
– control unit		RAL 7035
– housing		RAL 9002
Dimensions		W x H x D 522mm x 414mm x 105mm
Labeled for CE conformity		yes
Standards / Approvals	EN54-2, EN54-4	



# Fire alarm control unit CS1140

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## Terminology

- Stand-alone control unit  
A fully self-contained control unit with an integrated emergency supply.
- Satellite control unit (networking capability)  
A self-contained control unit with an integrated emergency supply and networking capability, a link to a higher hierarchical system level in a communication network type system.

## Performance data

- Basic features

Maximum system availability shall be realized by decentralizing the system intelligence whereby the detection and evaluation task on a fire phenomena is performed by the detector. The control unit shall verify and process the detectors' output signals in conjunction with the pre-defined user data, e.g. display the event, perform pre-defined control, signal tasks and respond to manual commands entered by the system operator.

The control unit shall fully comply with the requirements of the standard EN 54 part 2.

A modular assembly concept shall allow the control unit to be split into a maximum of four sub units. In order to economize on the field wiring installation for detection and control devices, these sub units shall be installed at the most suitable locations, with a data link connection to a common operating terminal.

The control unit shall be capable of operating conventional/collective, AnalogPLUS and interactive detector lines. A combination of these circuits in the same control unit, for the initial installation or for any future system expansions, shall be possible.

The control unit shall allow easy system expandability up to 4'000 addressable detecting points.

The control unit shall be capable of communicating with up to 12 remote operating terminals. Each terminal shall be pre-programmable to operate on the whole of the detection system or only a certain section of it.

In addition to fire detection devices, it shall be possible for the control unit to evaluate and operate signals from:

- Sprinkler flow switches
- Stand-alone automatic extinguishing systems
- Stand-alone gas detection systems
- Information from technical plant equipment

It shall be possible to freely locate and group detectors (min. one zone per detecting device) according to the geographical and architectural requirements of the users premises. This shall allow maximum user orientation in case of an alarm event.

To optimize the response characteristics of automatic detectors, it shall be possible to monitor these and to download different algorithms sets.

An audible and visual application warning signal shall automatically be activated per detector, if the response characteristic of the detector does not correspond with the environmental conditions it is operating in.

For easy maintenance the control unit shall be installed in a cabinet with a fixed installed mounting base and detachable cover, the removal of which shall provide easy access for maintenance purposes.

The charging characteristics of the integrated emergency power supply shall be adjustable to suit the charging characteristics of the battery manufacturers specification.

- **Detection line communication (Conventional / Collective)**

The control unit shall be able to process and evaluate conventional / collective signals from compatible automatic detectors (e.g. smoke, heat, etc.), manual call points and input devices via a two-wire detection line.

The maximum line capacity shall allow the handling of 25 detection devices.

Up to 8 conventional / collective lines shall be interfaced to one detector line module and the control unit shall have the capacity to handle up to 24 such modules.

It shall be possible to process a short circuit condition on the detector line as an alarm or optionally as a fault condition.

Via suitable intrinsically safe interfacing devices, it shall be possible to connect conventional / collective detection devices, which are located in hazardous areas (class 1, 2).
  
- **Detection line communication (AnalogPLUS)**

The control unit shall be able to process incoming signals from AnalogPLUS devices, such as automatic detectors (e.g. smoke, heat, etc.), manual call points, monitoring input devices etc. via a two wire line (untwisted and unshielded).

The line capacity shall allow the handling of up to 128 AnalogPLUS devices.

Up to 4 AnalogPLUS lines shall be interfaced to one detector line module and the control unit shall have the capacity to handle up to 24 such modules.

A drift indication shall permit, automatically or upon request, status information of an automatic smoke detector.

To optimize the field wiring installation, the detector bus shall allow T-Tap connections (type star), for connecting to the same type of detection devices as connected to the main loop.

An address shall be freely assigned to all the detection devices that have been connected to an AnalogPLUS detector line. Any future extensions , i.e. the connection of additional detection devices between existing devices, or at the end of the detection line, shall not interfere with any of the initially assigned addresses or user data for the existing detection devices.

The AnalogPLUS detector line shall at least process the following verified signal conditions between the detection device and the control unit:

  - adjusting the detectors sensitivity level
  - changing the detectors response characteristics
  - multi zone evaluation

Address allocations shall be displayed on the operating terminal as a geographical description of the physical location of the detecting device.

The system shall be able to identify the type of detector installed in each base and consequently, verify this information during normal operation and service.
  
- **Detector bus communication (Interactive)**

By using the principle of interactive data exchange, the control unit shall be able to process, signals from and send data to interactive detection devices via a twisted two wire line.

The interactive detector bus shall be capable to interfacing with interactive devices such as automatic detectors (e.g. smoke, heat, etc.), manual call points, input and output devices.

To optimize the field wiring installation, the detector bus shall allow T-Tap connections (type star), for connecting to the same type of detection devices as connected to the main loop.

The line capacity shall handle up to 128 interactive automatic detectors (e.g. smoke, heat, etc.) and the operating power for these devices shall be supplied through the same two-wire detection line. The control unit shall be capable of handling interactive devices of the following types:

- automatic detectors (e.g. smoke, heat, etc.) and manual call points
- input device interfacing from 1 to 5 conventional detector lines
- input device interfacing up to 3 supervised circuits
- output device for 1 control output with a confirmation signal if in the active state
- output device for 1 fully supervised control output circuit

Each interactive detector line shall interface with its own dedicated detector line module. The control unit shall have the capacity to handle up to 32 such modules.

It shall be possible to assign to each automatic detector (e.g. smoke, heat, etc.) a different algorithm set, that can, whenever required, be manually or automatically exchanged with another one.

The verified danger signals, released per detection device, shall be processed on different danger levels in order to increase the qualitative verification process of these signals at the control unit. In addition shall it be possible to transmit per detecting device:

- an application warning signal
- the change in detection characteristics

It shall be possible, to poll via the detector line the detector type, its serial number and its production data by using a PC based Maintenance tool.

The operation of a short circuit isolator / separator, an integral part of a line detection device, shall guarantee full loop functionality of an interactive detector line during a detected short or open circuit condition on the detection line.

An address shall be freely assigned to all the detection devices that have been connected to an interactive detector line. Any future extensions, i.e. the connection of additional detection devices between existing devices, or at the end of the detection line, shall not interfere with any of the initially assigned addresses or user data for the existing detection devices.

Address allocations shall be displayed on the operating terminal as a geographical description of the physical location of the detecting device.

The system shall be able to identify the type of detector installed in each base and consequently, verify this information during normal operation and service.

- **Hardware configuration / Mechanical design**

The control unit shall consist entirely of standard modular, printed circuit board assemblies to facilitate removal, easy maintenance and modular system expansion.

- a central CPU module controlling an operating terminal and an internal bus onto which detection lines, various input/output modules, bell and remote alarm circuits can be connected
- a remote microprocessor based operating terminal
- various or a combination of line modules to operate conventional/collective, Analog-PLUS or interactive detectors
- an ac/dc converter module, with charging unit
- battery capacity for 12 to 72 hours emergency supply

The basic configuration for a control unit shall consist of :

It shall be possible to optionally expand the basic assembly of a control unit by modules for:

- conventional/collective, AnalogPLUS or interactive detector lines
- programmable outputs, driver type (24V<sub>DC</sub>/40mA)
- programmable outputs, contact type (30V<sub>DC</sub>/1A)
- outputs, relay contact type (250V<sub>AC</sub>/10A)
- supervised programmable control outputs, for example to drive bell or sounder circuits (30V/2A)
- additional rated battery charging module

The control unit assembly shall be designed to fit into standard 19 inch cabinets. Small systems (up to 250 monitoring devices) shall be designed to fit into a compact housing, integrating both the control unit and its operating terminal.

It shall be possible to locate the fire brigade intervention plans at the location of the control unit or at the operating terminal itself, if this is remotely installed .

Optionally it shall be possible to use the following accessories with the operating terminals:

- a front frame for 19 inch mounting
- a mechanical key to enable system operation
- a swivel door with glass window providing keyed access
- parallel indicating modules to provide LED indication of events on a programmable basis
- flush mounting adapter

- **Power supply unit**

The power supply shall comply with EN 54. part 4.

The power supply unit shall contain suitable over-voltage protection to prevent any malfunction or damage which might occur from line power surges.

The control unit shall be equipped with a built-in standby battery, rated to maintain operation for 12 – 72 hr's after mains failure. An alarm condition must be maintained for at least 15 minutes after the above lapse of time expired.

The battery loading characteristics shall be programmable to the charging curves as indicated by the battery manufacturer.

It shall be possible for a pre-defined period to suppress an audible and visible mains failure alarm indication at the operators terminal for any mains supply interruptions, that do not exceed this time period.

**Software functions**

- **Basic user functions**

The operating terminal shall either process and display events spontaneously or at the request of the operator

The operating terminal shall distinguish between alarm, fault, information and isolation conditions

The operating terminal shall provide, apart from acknowledge, reset and event scrolling functions, at least the following controls:

- the ability to set the system to manned or unmanned mode
- a key pad to enter user passwords
- means of overriding alarm delays
- means to sound or resound alarms

- **Processing capacity**

The control unit shall be able to handle the capacities

- 4.000 data points (detection devices)
- 200 conventional/collective type detecting circuits, or
- 40 AnalogPLUS type detecting circuits or

- 40 interactive type detecting circuits, or
- 300 programmable control outputs via control unit, or
- 500 programmable control outputs via detector circuits, or
- 100 programmable supervised control outputs via the control unit, or
- 500 programmable supervised control outputs via control devices on the detecting circuits, or
- 16 integrated extinguishing sections, or
- any combination of the above mentioned function units within the limits of the control unit.
- 12 operating terminals
- 8 RS232 type interfaces for printer units and central management terminals

- Important functions

- Application warning

The control unit shall be capable of monitoring the frequent occurrence of warning signals released by an automatic detector. This shall occur if the detection response behaviour of the detector does not correspond to the environmental conditions the detector is operating in. An application warning shall then be displayed by means of an audible and visual indication at the operating terminal.

- Multi detector logic

It shall be possible to indicate an alarm signal at the operating terminal if two or more automatic detectors, monitoring the same area, activate a warning signal.

- Renovation mode

It shall be possible to switch an interactive detection device from the control unit into renovation mode, for any time periods during which building repair or special maintenance works are performed. In this mode, the detection device shall still be capable to evaluate the development of a thermal fire phenomena.

- Device not ready yet

It shall not be possible to switch any “device” (automatic detector, manual call point, control and monitoring device etc.) back into operation, if the device, at the moment of switching, is not in the normal state yet. For these devices shall the control unit indicate a “not ready” message on the operating terminal.

- Common remote indicator

Within a group (zone) of automatic detectors, it shall, for any automatic detector (e.g. smoke, heat, etc.), be possible to operate a remote alarm indicator that has been assigned to this group.

- Alarm processing concept

Processing of an alarm, and the operation of the acknowledge and reset functions shall function in accordance with the specified alarm organization principle:

- In the *manned mode* of the control unit, a response from automatic detectors (e.g. smoke, heat, etc.) shall remain as a local alarm for a pre-programmed period, referred to as T1.
- During this delay time (T1) an internal alarm shall be given, to bring attention to the local staff. If the alarm is not acknowledged before T1 runs out, a full alarm condition shall automatically be initiated. This shall sound the local alarm horns and send a remote alarm signal to the fire brigade.
- If the alarm is acknowledged during the delay time (T1), it shall be reset and a pre-programmed time T2 shall be started, in order to provide time for human investigation for the cause of the raised alarm.
- If the raised alarm is not reset during the delay time (T2), a full alarm condition shall automatically be initiated. This shall sound local alarm horns and send a remote alarm signal to the fire brigade.
- The initiation of a manual call point shall at all times immediately sound local alarm horns and send a remote alarm signal to the fire brigade.

- The remaining time for the mentioned time periods T1 and T2 shall continuously be displayed at the operating terminal.
- In the *unmanned mode* of the control unit, a response from any automatic detector (e.g. smoke, heat, etc.) or from a manual call point shall at all times immediately sound the local alarm horns and send a remote alarm signal to the fire brigade.
- Programmable control functions
 

Upon receipt of an event (alarm, warning, fault), or the release of a manual operating command, the control functions shall activate the assigned physical control device. A control device shall be either a bell circuit function or an output relay device connected to either a detection line or directly the control unit.

To perform flexible pre-programmed automatic control functions, it shall be possible to assign time dependent AND and OR function gates, or a combination of those, to different detection devices within a group (zone).
  - Access levels and passwords
 

Operator access shall be granted via three different access levels.

The password shall consist of an identification code and a mental code. The identification code shall at least consist of two digits and the mental code shall at least contain a three digit code defined and entered into the system by the operator.

It shall be possible to configure at least 20 concurrent passwords at the control unit. The control unit shall automatically log out the signed-on operator, if he did not operate any system functions for a pre-defined period.
  - History file
 

The control unit shall save and display the data of at least 1.000 system operating events

The historical data shall be displayed at the operating terminal as follows:

    - all messages listed in a chronological order
    - all test alarms
    - all test alarms from the same date
    - all faults listed in chronological order
    - all isolate-, off-, connect-, and normal conditions in chronological order
    - all information
    - all active control functions

For processing additional parameters of the historical data, the control unit shall provide an interface to a PC, normally used as a maintenance tool:

    - transfer of all system events
    - store information about all different type of danger signals that have been initiated by the detection devices
    - transfer, and save the detector fault codes
    - clear the history file by instruction

It shall not be possible to delete the data in the history file from the operating terminal of the control unit.
  - Real time clock
 

The actual real time shall be displayed on the operating terminal, and the change from summer to winter time and back to summer time shall be effected automatically.
  - Turning “on” and switching “off” system devices
 

It shall be possible to “switch on” and to “switch off” the following “devices” from the operating terminal:

    - any automatic detector (e.g. smoke, heat, etc.) or group (zone) of detection devices
    - the remote alarm and fault indications transmitted to the fire brigade
    - any alarm devices
    - a printer unit
    - any control outputs, or group (zone) of control outputs
    - any monitoring inputs, or group (zone) of monitoring inputs
  - Printer interface

The control unit shall interface, either directly or from the remotely installed operating terminal, via a RS232 type data link, with a standard off-the-shelf printer unit.

The character-set which the control unit supports, shall be the "ISO-Latin 1" type,.

- Alarm counter

By making use of an alarm counter shall, upon manual request, all active alarms be indicated on the operating terminal.

### **Person-Machine Interface**

The control unit shall be designed such, that the operating terminal serving as a person-machine interface, be either an integrated part of the control unit, or a separate unit suited to be installed at a remote location.

The control unit shall communicate with the operating terminal via a communication bus, that operates in a loop configuration and includes an emergency operation concept as per EN54.

It shall be possible to operate the entire system from one operating terminal. Additionally up to 12 operating terminal can be used to perform dedicated display and control operations for pre-defined sections of the system.

To guide the operator through the operating process, the operating procedure at the operating terminal shall be fully menu driven.

The layout of the front plate for the operating terminal shall guarantee, that the incoming event messages are clearly distinguished by the operator. For this purpose, these shall be categorized as follows:

- alarm conditions
- fault conditions
- isolated / disabled conditions
- status information

A library of up to 16 different intervention orders shall be available, for allocation to individual groups (zones).

It shall be possible to optionally connect an indicator panel (type LED) to the operating terminal, expandable in steps of 2

### **Commissioning features**

To provide maximum ease and flexibility for the commissioning process, the following pre-defined commissioning modes shall be possible:

- Upon insertion of a detection device into its base, the control unit shall automatically assign an address to this device.
- By locally activating the detection device with a portable detector tester, the control unit shall simultaneously assign an address to, and shall carry out a functional test for this detection device.

It shall be possible to program all user application data for the control unit, off-line with a maintenance PC. For up-loading purposes the maintenance PC shall be interfaced to the control unit.

It shall be possible to reprogram the detection devices with another algorithm set.

In order to save all the system data, it shall be possible to generate a back-up disc.

It shall be possible to locally monitor the system behaviour and if necessary set any parameters from a remote location.

## Technical specifications

Characteristic	Classification / Test procedure	Value
Mains power		115 V <sub>AC</sub> /230V <sub>AC</sub> ; ±15%; 50/60Hz
Power consumption		40 to 220VA
Operating temperature range		0 to +50°C
Storage temperature range		-20 to +60°C
Humidity		≤ 95%, according to IEC 721-3-3, class 3K5
Emergency power supply		
– standard		12 to 24 h
– optional		up to 72 h
Protection category	EN 60529 / IEC 529	
– control unit		IP 40 with or without operating terminal
– remote operating terminal, depending on housing type		IP 52 with plastic type housing IP 40 with metal type housing
Colour		
– control unit		
– operating terminal		
– housing		
Labeled for CE conformity		yes
Standards / Approvals		VdS, AFNOR LPCB (expected)





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