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Version 2/W.HR

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Functional description No
4.14329.1-1

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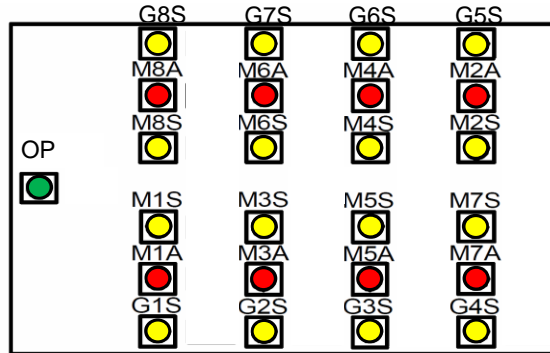
Central Unit (Control Unit) for Fire Detection and Extinguishing Systems Type: BMLZ 1012-A

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1. General information

The central unit described in detail below is used for the detection and extinguishing of fires. This functional description presents the connections described and the correct way to connect them as well a function overview.

2. Overview of LEDs with descriptions



LED	Color	Function and description
OP	green	<p><u>Signaling the current operational state:</u> (behaves synchronously to the actuation of the output "Operation" on terminal X5:1)*</p> <ul style="list-style-type: none"> - <u>Continuously on</u> if the function "Automatic Release ON" is enabled, indicating <u>full operational readiness</u> if there are no faults pending. - Depending on the Version*: <u>Flashes or does not light</u> if there are faults pending, indicating <u>restricted operational readiness</u>. - Depending on the Version*: <u>Flashes or does not light</u> as long as the input "Automatic Release OFF" is actuated on terminal X1:12, indicating <u>restricted operational readiness</u>. - <u>Does not light</u> if <u>not operationally ready</u> because, for example, the power supply voltage is inverted or because the voltage is too low.
G1S	yellow	<p><u>Signaling a "Fault"-message on release circuit G...:</u></p> <ul style="list-style-type: none"> - The yellow LED G...S <u>lights up</u> in a case of a wire breakage on the affected release circuit G... After the recovery of the connection(s) on the relevant release circuit G... the associated yellow LED G...S goes out. - The yellow LED G...S <u>flashes</u> throughout the time that the fire extinguishing generators are supplied with release current at a level sufficient for the release. (This is only visible during a functional test of the central unit, because under real conditions the fire extinguishing generator(s) are released immediately and the case described below will apply.) - The yellow LED G...S <u>lights</u> continuously after the release of fire extinguishing generator(s), because each released fire extinguishing generator causes a wire breakage. After the replacement of all fire extinguishing generators on the relevant release circuit and after re-commissioning with a functional check, the yellow LED G...S will no longer lights up.
G2S	yellow	
G3S	yellow	
G4S	yellow	
G5S	yellow	
G6S	yellow	
G7S	yellow	
G8S	yellow	
M1A	red	<p><u>Signaling an "Alarm"-message on detector input M...:</u></p> <ul style="list-style-type: none"> - The red LED M...A of the relevant detector input M... lights up after the condition for an alarm signal on this detection input is met. - The red LED M...A only goes out after a reset of the central unit, if the condition for an alarm signal on the detector input M... is no longer met (temperature-dependent fire detectors, for example, must first cool off sufficiently). <p>A temporary interruption of the power supply voltage to the central unit also causes a reset.</p>
M2A	red	
M3A	red	
M4A	red	
M5A	red	
M6A	red	
M7A	red	
M8A	red	
M1S	yellow	<p><u>Signaling a "Fault"-message on detector input M...:</u></p> <ul style="list-style-type: none"> - The yellow LED M...S of the relevant detector input M... lights up in a case of a wire breakage or another fault in a fire detector (depending on the specific wiring). - After elimination of all wire breakages and/or faults that led to indication of a fault on the relevant detector input M..., the yellow LED M...S on the relevant detector input M... goes out again.
M2S	yellow	
M3S	yellow	
M4S	yellow	
M5S	yellow	
M6S	yellow	
M7S	yellow	
M8S	yellow	

* see Version Key (section 10) and the Version on the type label

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3. Interface overview

Interface	connection options and functions
X1	1. Supply of external power for the BMLZ 1012-A 2. Power supply for controls and indicators 3. Power supply for coupling relays and other external control units 4. Inputs for controls: 1 x "Manual Release" with or without wire breakage monitoring (depending on Version*) 1 x "External Manual Release" with or without wire breakage monitoring (depending on Vers.*) 1 x "Reset" with or without wire breakage monitoring (depending on Version*) 1 x "Automatic Release OFF" with or without wire breakage monitoring (depending on Vers.*)
X2	<u>Potential-free detection contacts:</u> 1 x "Alarm" NC contact 1 x "Shutoff 1": Combination of "Alarm" NC contact and "Fault" NO contact (quiesc. current prin.) <u>or</u> (depending on the Version*) "Alarm" NC contact, 1 x "Shutoff 2": Combination of "Alarm" NC contact and "Fault" NO contact (quiesc. current prin.) <u>or</u> (depending on the Version*) "Alarm" NC contact, 1 x "Fault" NO contact (quiescent current principle)
X3	<u>Release circuits:</u> G5, G6, G7, G8 for fire extinguishing generators of types: Dymameco ...-E0... Connection of 1 or 2 extinguishing generators or one junction box supported per release circuit.
X4	<u>Release circuits:</u> G1, G2, G3, G4 for fire extinguishing generators of types: Dymameco ...-E0... Connection of 1 or 2 extinguishing generators or one junction box supported per release circuit.
X5	1. Open-collector outputs for indication element(s) with series resistor, <u>or</u> coupling relays with freewheeling diodes): 1 x "Operation" Through-circuit to internal ground potential (0 V or GND). 1 x "Alarm 1": Through-circuit to internal ground potential (0 V or GND). 1 x "Alarm 2": Through-circuit to internal ground potential (0 V or GND). 1 x "Fault 2": Through-circuit to internal ground potential (0 V or GND). 1 x "Fault 1": Through-circuit to internal ground potential (0 V or GND). 1 x "General Alarm": Through-circuit to internal ground potential (0 V or GND). 1 x "Release initiated": Through-circuit to internal ground potential (0 V or GND). 2. Indicator output: 1 x "Released" (*depending on Version) - as potential-free electronic NO contact, <u>or</u> - as electronic NO contact with internal ground potential for an indicator element: an indication light with series resistor <u>or</u> a coupling relay with a freewheeling diode.
X6	1. <u>Power supply:</u> for active fire detector(s) on <u>one</u> of the detector inputs of X6 2. <u>Detector inputs:</u> M2, M4, M6, M8 for the connection of (depending on Version*): - a Heat Detector, <u>or</u> - fire detector(s) with potential-free NO "Alarm" contact(s) and a suitable line termination resistor.
X7	1. <u>Power supply:</u> for active fire detector(s) on <u>one</u> of the detector inputs of X7 2. <u>Detector inputs:</u> M1, M3, M5, M7 for the connection of (depending on Version*): - a Heat Detector, <u>or</u> - fire detector(s) with potential-free NO "Alarm" contact(s) and a suitable line termination resistor.

* see Version Key (section 10) and the Version on the type label

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4. Detailed descriptions of interfaces

4.1 Interface X1: Power supply voltages and inputs for controls

Plug: Terminal	Detailed description		Voltage values	Current values
X1:1 and X1:2	+ pole Power supply voltage	Connection for the power supply of the central unit. The connection line must be externally fused with a $T4A \leq F \leq T5A$ fuse.	+24 VDC $\pm 20\%$	max. 4 A
	- pole Power supply voltage	The central unit is protected internally against polarity inversion.	0 V (GND)	
X1:5 and X1:6	+ pole Power supply	Power supply for controls and indicators of a control panel of types: BED 1012 ...	+24 VDC $\pm 20\%$	max. 200 mA at 24 VDC
X1:7	+ pole Power supply	Power supply for coupling relays *** or for other external devices or other indicator elements.	+24 VDC $\pm 20\%$	max. 600 mA at 24 VDC
X1:8	- pole Power supply	GND connection for external devices that require a GND connection.	0 V (GND)	
X1:9	"Manual Release" input	The input is activated by 24 VDC $\pm 20\%$ for $t \geq 100$ ms. optional wire breakage monitoring * **	max. +28 VDC	max. 10 mA
X1:10	"External Manual Release" input	The input is activated by 24 VDC $\pm 20\%$ for $t \geq 100$ ms. optional wire breakage monitoring * **	max. +28 VDC	max. 10 mA
X1:11	"Reset" input	The input is activated by 24 VDC $\pm 20\%$ for $t \geq 100$ ms. optional wire breakage monitoring * **	max. +28 VDC	max. 10 mA
X1:12	"Automatic Release OFF" input	The input is activated with 24 VDC $\pm 20\%$ for $t \geq 100$ ms, then the "Automatic Release" function is turned off for the remaining time the input is activated. optional wire breakage monitoring * **	max. +28 VDC	max. 10 mA

* see Version Key (section 10) and the Version on the type label

** Monitoring of a NO contact with a line termination resistor $R_e=4K7/0.6W$
 If an input with built-in wire breakage monitoring is not used, then between the unused X:... input and for example X1:7 (+24VDC) a line termination resistor $R_e=4K7/0.6W$ must be connected (this applies to the inputs: X1:9, X1:10, X1:11, X1:12), since otherwise a "Fault" will be detected.

Example: If input X1:10 with a factory-installed wire breakage monitoring is not used, then a line termination resistor $R_e=4K7/0.6W$ must be connected between terminals X1:7 and X7:10.

*** The use of external voltages can lead to the damage of the central unit.
 If solutions are required with external voltages, coupling relays must be used.
 External voltages must be galvanically isolated from the internal power supply voltage.
All connected inductances must be equipped with freewheeling diodes!

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4.2 Interface X2: potential-free contacts

Plug: Terminal	Detailed description		Voltage values	Current values
X2:1-2	potential-free NC contact "Alarm"	<ul style="list-style-type: none"> - The contact is <i>closed</i> when <i>no</i> "Alarm"-message is pending. - The contact is <i>opened</i> when <i>an</i> "Alarm"-message is pending. 	max. 30 VDC	max. 5 A
X2:3-4	when configured as potential-free contact combination "Shutoff 1" *	<ul style="list-style-type: none"> - The contact is <i>closed</i> when <ul style="list-style-type: none"> - <i>no</i> "Fault"-message is pending <u>and</u> - the function "Automatic Release OFF" is <i>not activated and</i> - <i>no</i> "Alarm"-Message is pending. - The contact is <i>opened</i> when <ul style="list-style-type: none"> - there is <i>no power supply</i> connected to the central unit, <u>or</u> - <i>too low a power supply voltage</i> is applied to the central unit, <u>or</u> - a "Fault"-message is pending, <u>or</u> - The function "Automatic Release OFF" is <i>activated or</i> - an "Alarm"-message is pending. 	max. 30 VDC	max. 5 A
	when configured as potential-free NC contact "Alarm" *	<ul style="list-style-type: none"> - The contact is <i>closed</i> when <i>no</i> "Alarm"-message is pending. - The contact is <i>opened</i> when <i>an</i> "Alarm"-message is pending. 		
X2:7-8	when configured as potential-free contact combination "Shutoff 2" *	<ul style="list-style-type: none"> - The contact is <i>closed</i> when <ul style="list-style-type: none"> - <i>no</i> "Fault"-message is pending <u>and</u> - the function "Automatic Release OFF" is <i>not activated and</i> - <i>no</i> "Alarm"-Message is pending. - The contact is <i>opened</i> when <ul style="list-style-type: none"> - there is <i>no power supply</i> connected to the central unit, <u>or</u> - <i>too low a power supply voltage</i> is applied to the central unit, <u>or</u> - a "Fault"-message is pending, <u>or</u> - The function "Automatic Release OFF" is <i>activated or</i> - an "Alarm"-message is pending. 	max. 30 VDC	max. 5 A
	when configured as potential-free NC contact "Alarm" *	<ul style="list-style-type: none"> - The contact is <i>closed</i> when <i>no</i> "Alarm"-message is pending. - The contact is <i>opened</i> when <i>an</i> "Alarm"-message is pending. 		
X2:9-10	potential-free NO contact "Fault" (quiescent current principle)	<ul style="list-style-type: none"> - The contact is <i>closed</i> when <ul style="list-style-type: none"> - <i>no</i> "Fault"-message is pending <u>and</u> - the function "Automatic Release OFF" is <i>not activated.</i> - The contact is <i>opened</i> when <ul style="list-style-type: none"> - there is <i>no power supply voltage</i> connected to the central unit, <u>or</u> - <i>too low a power supply voltage</i> is applied to the central unit, <u>or</u> - a "Fault"-message is pending, <u>or</u> - the function "Automatic Release OFF" is <i>activated.</i> 	max. 30 VDC	max. 5 A

* see Version Key (section 10) and the Version on the type label

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4.3 Interface X3: Release circuits for fire extinguishing generators of types: *Dynameco ...-E0..*

Plug: Terminal	Detailed description
X3:1 and X3:4 X3:1-2;3-4	Release circuit G5 Connection for one fire extinguishing generator or one junction box of type: VTK1 Connections for two fire extinguishing generators <i>Wire breakage monitoring and release*</i>
X3:5 and X3:8 X3:5-6;7-8	Release circuit G6 Connection for one fire extinguishing generator or one junction box of type: VTK1 Connections for two fire extinguishing generators <i>Wire breakage monitoring and release*</i>
X3:9 and X3:12 X3:9-10;11-12	Release circuit G7 Connection for one fire extinguishing generator or one junction box of type: VTK1 Connections for two fire extinguishing generators <i>Wire breakage monitoring and release*</i>
X3:13 and X3:16 X3:13-14;15-16	Release circuit G8 Connection for one fire extinguishing generator or one junction box of type: VTK1 Connections for two fire extinguishing generators <i>Wire breakage monitoring and release*</i>

4.4 Interface X4: Release circuits for fire extinguishing generators of types: *Dynameco ...-E0..*

Plug: Terminal	Detailed description
X4:1 and X4:4 X4:1-2;3-4	Release circuit G1 Connection for one fire extinguishing generator or one junction box of type: VTK1 Connections for two fire extinguishing generators <i>Wire breakage monitoring and release*</i>
X4:5 and X4:8 X4:5-6;7-8	Release circuit G2 Connection for one fire extinguishing generator or one junction box of type: VTK1 Connections for two fire extinguishing generators <i>Wire breakage monitoring and release*</i>
X4:9 and X4:12 X4:9-10;11-12	Release circuit G3 Connection for one fire extinguishing generator or one junction box of type: VTK1 Connections for two fire extinguishing generators <i>Wire breakage monitoring and release*</i>
X4:13 and X4:16 X4:13-14;15-16	Release circuit G4 Connection for one fire extinguishing generator or one junction box of type: VTK1 Connections for two fire extinguishing generators <i>Wire breakage monitoring and release*</i>

* Each unused release circuit G..., on interfaces X3 and X4 must be terminated with one line termination resistor $R_e=10k\Omega/1W$, otherwise a fault will be detected. A combination of one fire extinguishing generator and one line termination resistor on one release circuit, however, is not possible, since this combination would not permit the release of the fire extinguishing generator on that release circuit.

Example: If release circuit G4 is not used, then a line termination resistor $R_e=10k\Omega/1W$ must be connected between terminals X4:13 and X4:16.

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4.5 Interface X5: Outputs for indicators

Plug: Terminal	Detailed description	Voltage values	Current values
X5:1	Open-collector output "Operation"*	This output is: - <u>permanently connected**</u> at full operational readiness, or - <u>not connected**</u> if the central unit is not operationally ready, or - <u>not connected**</u> for restricted operational readiness if this output is preconfigured in this manner at the factory*, or - <u>connected and disconnected periodically**</u> for restricted operational readiness if this output is preconfigured in this manner at the factory*.	max. 28 VDC max. 80 mA
X5:2	Open-collector output "Alarm 1"	After an "Alarm"-message from one of the detector inputs: M2, M4, M6, M8 on interface X6, this output is connected <u>with a permanent connection**</u> , until the reset of the central unit.	max. 28 VDC max. 80 mA
X5:3	Open-collector output "Alarm 2"	After an "Alarm"-message from one of the detector inputs: M1, M3, M5, M7 on interface X7, this output is connected <u>with a permanent connection**</u> , until the reset of the central unit.	max. 28 VDC max. 80 mA
X5:4	Open-collector output "Fault 2"	This output is <u>permanently connected**</u> as long as a "Fault"-message is pending on one of the detector inputs: M1, M3, M5, M7 on interface X7.	max. 28 VDC max. 80 mA
X5:5	Open-collector output "Fault 1"	This output is <u>permanently connected**</u> as long as a "Fault"-message is pending on one of the detector inputs: M2, M4, M6, M8 on interface X6.	max. 28 VDC max. 80 mA
X5:6	Semiconductor relay output (NO contact) "Released"*	After the release of the fire extinguishing generators on each of the release circuits G1 - G8 is complete, this output is: - <u>permanently connected**</u> , if this output is preconfigured in this manner at the factory* or - <u>permanently directly connected</u> to terminal X5:7 if this output is preconfigured in this manner at the factory*.	max. 28 VDC max. 80 mA
X5:8	Open-collector output "General Alarm"	After an "Alarm"-message from one of the Detector inputs: M1- M8 on interfaces X6 and X7 or from one of the inputs for manual release buttons, until the reset of the central unit, this output is <u>permanent connected**</u> , if this output is preconfigured in this manner at the factory*.	max. 28 VDC max. 80 mA
X5:9	Open-collector output "Release initiated"	Until the reset of the central unit, this output is: - <u>permanently connected**</u> after the condition* for automatic release of the fire extinguishing generators is met, but only if the "Automatic Release ON" function is activated, or - <u>permanently connected**</u> after the actuation of a manual release button.	max. 28 VDC max. 80 mA

* see Version Key (section 10) and the Version on the type label
 ** Through-circuit to internal ground potential (0V or GND).

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4.6 Interface X6: Connections for fire detectors

Connector / terminal	Detailed description of function	
X6:1	+24 VDC	Power supply: for active fire detector(s) on <u>one</u> detector input: max. supply voltage = supply voltage of the power supply of the central unit.
X6:2	0V (GND)	
X6:3-4	Detector input M2	Connection (depending on the Version*) for: - a Heat Detector, <u>or</u> - fire detector** with potential-free NO "Alarm" contact(s) and a suitable*** line termination resistor. <i>Wire breakage monitoring and alarming****</i>
X6:5-6	Detector input M4	Connection (depending on the Version*) for: - a Heat Detector, <u>or</u> - fire detector** with potential-free NO "Alarm" contact(s) and a suitable*** line termination resistor. <i>Wire breakage monitoring and alarming****</i>
X6:7-8	Detector input M6	Connection (depending on the Version*) for: - a Heat Detector, <u>or</u> - fire detector** with potential-free NO "Alarm" contact(s) and a suitable*** line termination resistor. <i>Wire breakage monitoring and alarming****</i>
X6:9-10	Detector input M8	Connection (depending on the Version*) for: - a Heat Detector, <u>or</u> - fire detector** with potential-free NO "Alarm" contact(s) and a suitable*** line termination resistor. <i>Wire breakage monitoring and alarming****</i>

* The type of fire detector to be connected, as well as the alarm switching point for Heat Detectors, are permanently preconfigured in the central unit at the factory, for example: 120°C.
Other alarm switching points can also be defined. (see Version Key)

** Possible modes of the fire detector(s) with NO contact(s):

1. line detector with one end-detector (with suitable*** line termination resistor), or
2. single detector (with suitable*** line termination resistor)

*** A suitable line termination resistor for an originally defined detector input for a Heat Detector of type: TF 180-... is $R_e=100k\Omega/1W$.

On an originally determined detector input for fire detectors with NO contacts and a line termination resistor of $R_e=4K7//1W$, the line termination resistor stays the same!

**** Each unused detector input M... on interface X6 must be terminated with a suitable line termination resistor, otherwise a wire breakage will be detected.

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Functional description No

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Central Unit (Control Unit)
for Fire Detection and Extinguishing Systems
Type: BMLZ 1012-A

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4.7 Interface X7: Connections for fire detectors

Connector / terminal	Detailed description of function	
X7:1	+24 VDC	Power supply: for active fire detector(s) on <u>one</u> detector input: max. supply voltage = supply voltage of the power supply of the central unit.
X7:2	0V (GND)	
X7:3-4	Detector input M1	Connection (depending on the Version*) for: - a Heat Detector, <u>or</u> - fire detector** with potential-free NO "Alarm" contact(s) and a suitable*** line termination resistor. <i>Wire breakage monitoring and alarming****</i>
X7:5-6	Detector input M3	Connection (depending on the Version*) for: - a Heat Detector, <u>or</u> - fire detector** with potential-free NO "Alarm" contact(s) and a suitable*** line termination resistor. <i>Wire breakage monitoring and alarming****</i>
X7:7-8	Detector input M5	Connection (depending on the Version*) for: - a Heat Detector, <u>or</u> - fire detector** with potential-free NO "Alarm" contact(s) and a suitable*** line termination resistor. <i>Wire breakage monitoring and alarming****</i>
X7:9-10	Detector input M7	Connection (depending on the Version*) for: - a Heat Detector, <u>or</u> - fire detector** with potential-free NO "Alarm" contact(s) and a suitable*** line termination resistor. <i>Wire breakage monitoring and alarming****</i>

* The type of fire detector to be connected, as well as the alarm switching point for Heat Detectors, are permanently preconfigured in the central unit at the factory, for example: 60°C. Other alarm switching points can also be defined. (see Version Key)

** Possible modes of the fire detector(s) with NO contact(s):

1. line detector with one end-detector (with suitable*** line termination resistor), or
2. single detector (with suitable*** line termination resistor)

*** A suitable line termination resistor for an originally defined detector input for a Heat Detector of type: TF 180-... is $R_e=100k\Omega/1W$.

On an originally determined detector input for fire detectors with NO contacts and a line termination resistor of $R_e=4K7//1W$, the line termination resistor stays the same!

**** Each unused detector input M... on interface X7 must be terminated with a suitable line termination resistor, otherwise a wire breakage will be detected.

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5. Operating states

See also sections 2 and 4

5.1 Full operational readiness

Full operational readiness is achieved when:

- the power supply voltage between terminals X1:1 and X1:3 is within the tolerance range and
- there are no short circuits, and
- the function "Automatic Release" is activated, that is:
the "Automatic Release OFF" input on terminal X1:12 is not activated and
- all inputs with built-in wire breakage monitoring for control elements are occupied or terminated and
- all connected fire detectors are correctly connected and able to function and
- there is no wire breakage to one of the fire detectors and
- all unused detector inputs for fire detectors are terminated and
- all fire extinguishing generators are able to function,
- there is no wire breakage in used release circuits and
- all unused release circuits are terminated and
- the "Reset" input on terminal X1:11 is not activated.

In this operating state ("Fault"-free and without alarms):

- the open-collector "Operation" output on terminal X5:1 is permanently connected and
- the "OP" LED lights up continuously in the view window of the central unit and
- all other open-collector outputs for indicator elements on terminals X5:2 to X5:9 are not connected and
- all potential-free contacts on interface X2 are closed and
- automatic release is possible if extinguishing generators are connected (the BMLZ 1012-A can also be operated purely as a central unit for fire detection if extinguishing generators are not connected) and
- manual release is possible only if the manual release button(s) is/are connected and is/are able to function.

Only at full operational readiness of the entire fire detection and extinguishing system, the release of connected fire extinguishing generators and therefore the extinguishing of fires is guaranteed.

Only under the assumption that:

- **the usage periods of all connected fire extinguishing generators have not been exceeded and**
- **the number of fire extinguishing generators needed for extinguishing and their volumes have been correctly dimensioned and**
- **the fire extinguishing generators are correctly mounted and aligned and**
- **the fire extinguishing generators have not been damaged and**
- **the minimum number of fire detectors needed for release have been correctly dimensioned, mounted, and aligned and**
- **the minimum number of manual release push buttons are available and**
- **the dust-sensitive components of the fire detection and extinguishing system are regularly cleaned and**
- **the required and by law prescribed inspection- and servicing intervals have been observed.**

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5.2 Restricted operational readiness

Restricted operational readiness is achieved when:

- the power supply voltage between terminals X1:1 and X1:3 is within the tolerance range and
- there are no short circuits, and
- the function "Automatic Release" is deactivated, that is:
the "Automatic Release OFF" input on terminal X1:12 is activated and/or
- one of the inputs with built-in wire breakage monitoring for control elements is not occupied or terminated and/or
- one of the connected fire detectors is not correctly connected or no able to function or
- there is a wire breakage to one of the fire detectors and/or
- one of the unused detector inputs is not occupied or not terminated and/or
- one of the connected fire extinguishing generators is not able to function or there is a wire breakage to one of this, or one of the unused release circuits is not terminated and
- the "Reset" input on terminal X1:11 is not activated.

In this operating state (without alarms):

- the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically and
- the "OP" LED does not light up or* flashes in the view window of the central unit and
- the open-collector "Fault 2" output on terminal X5:4 is permanently connected if a fault is detected on one of the detector inputs of interface X7 and
- the open-collector "Fault 1" output on terminal X5:5 is permanently connected if a fault is detected on one of the detector inputs of interface X6 and
- all potential-free contacts on interface X2 are opened with a NO "Fault"-contact ("Shutoff 1", "Shutoff 2", "Fault") and
- automatic release is not possible
if the "Automatic Release OFF" input is activated and
- manual release is only possible if the manual release button(s) are connected and working and fire extinguishing generators are connected (the BMLZ1012-A can also be operated purely as a central unit for fire detection if fire extinguishing generators are not connected).

In restricted operational readiness, the fire detection and extinguishing system continues to be operable, but release of fire extinguishing generators and thus also extinguishing itself can no longer be guaranteed, since it cannot be assured that the fire extinguishing generators are connected and have not yet released, or that the illuminated "Manual Release" push button is connected.

5.3 No operational readiness

There is no operational readiness when:

- the power supply voltage not within the tolerance range or
- the power supply voltage is inverted, or
- the power supply voltage is switched off, or
- there are short circuits, or
- the "Reset" input on terminal X1:11 is activated.

In this state:

- the open-collector "Operation" output on terminal X5:1 is not connected and
- the "OP" LED does not light up and does not flash in the view window of the central unit and
- no release of the fire extinguishing generators is possible.

The fire detection and extinguishing system is not operational!

* see Version Key (section 10) and the Version on the type label

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6. Wire breakage monitorings

6.1 In operating mode „Automatic Release ON“

The connections to the fire detectors and fire extinguishing generators are separately monitored for wire breakages. Optionally* the connections to control elements can also be monitored for wire breakages.

In case of a wire breakage to a fire detector on a detector input:

- the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically and
- the "OP" LED does not light up or* flashes in the view window of the central unit and/or
- the open-collector "Fault 2" output on terminal X5:4 is permanently connected if a fault is detected on one of the detector inputs of interface X7, and/or
- the open-collector "Fault 1" output on terminal X5:5 is permanently connected if a fault is detected on one of the detector inputs of interface X6, and/or
- the corresponding yellow M...S LED on the relevant detector input lights up and
- all* potential-free contacts with a "Fault" contacts are opened.

In case of a wire breakage to a fire extinguishing generator on a release circuit:

- the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically and
- the "OP" LED does not light up or* flashes in the view window of the central unit and
- the corresponding yellow G...S LED on the relevant release circuit lights up and
- all potential-free contacts with a "Fault" contacts are opened.

In case of a wire breakage to a control element with optional* wire breakage monitoring:

- the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically and
- the "OP" LED does not light up or* flashes in the view window of the central unit and
- all* potential-free contacts with a "Fault" contacts are opened.

6.2 In operating mode „Automatic Release OFF“

The connections to the fire detectors and fire extinguishing generators are also monitored separately for wire breakages in this mode. In this mode, the following always applies:

- the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically and
- the "OP" LED does not light up or* flashes in the view window of the central unit and
- all* potential-free contacts with a "Fault" contact are opened.

In case of a wire breakage to a fire detector on a detector input:

- the open-collector "Fault 2" output on terminal X5:4 is permanently connected if a fault is detected on one of the detector inputs of interface X7 and/or
- the open-collector "Fault 1" output on terminal X5:5 is permanently connected if a fault is detected on one of the detector inputs of interface X6, and
- the corresponding yellow M...S LED on the relevant detector input lights up.

In case of a wire breakage to a fire extinguishing generator on a release circuit:

- the corresponding yellow G...S LED on the relevant release circuit lights up.

In case of a wire breakage to a control element with optional* wire breakage monitoring:

- a wire breakage cannot be detected in this mode.

* see Version Key (section 10) and the Version on the type label

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7. Detection and extinguishing

7.1 Detection and extinguishing in operating mode „Automatic Release ON“

The procedures described below assume fault-free operation!

7.1.1 Detection and automatic release of fire extinguishing generators by fire detectors (depending on variant*):

For basic variant 1*:

If an "Alarm"-message is raised on one of the detector inputs, the open-collector "General Alarm" output on terminal X5:8 is connected.

The red LED M...A of the of the detector input on which the "Alarm"-message is pending lights up.

Depending on the interface on which the alarm was raised, the corresponding open-collector "Alarm ..." output is also connected on terminal X5:2 or X5:3.

All potential-free contacts with an "Alarm" contact open.

The open-collector output "Release initiated" is also connected on terminal X5:9 and the preconfigured time lag* until release of the fire extinguishing generators starts to elapse.

After the preconfigured time lag* elapses, each release circuit of the fire extinguishing generators is activated with ignition pulse one after another G5, G6, G7, G8, G1, G2, G3, G4 for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

After activation of all release circuits with an ignition pulse, the "Released" output is connected .

Note 1:

When real fire extinguishing generators are connected, the yellow G...S LEDs light up on the central unit.

The G...S LEDs of the release circuits terminated with line termination resistors flash during activation.

All potential-free "Fault" contacts open and the open-collector "Operation" output on terminal X5:1 is either not connected or is connected periodically.*

During a functional check with test connectors of type PSDY06, the release circuits are periodically activated one after the other. The G...S LEDs flash one after the other. No "Fault"-messages are raised.

For basic variant 2 (with automatic reactivation)*:

If an "Alarm"-message is raised on one of the detector inputs, the open-collector "General Alarm" output on terminal X5:8 is connected.

The red LED M...A of the of the detector input on which the "Alarm"-message is pending lights up.

Depending on the interface on which the alarm was raised, the corresponding open-collector "Alarm ..." output is also connected on terminal X5:2 or X5:3.

All potential-free contacts with an "Alarm" contact open.

The first release circuits G5, G6, G7, and G8 are activated one after the other with ignition pulses for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

See note 1:

The open-collector output "Release initiated" is also connected on terminal X5:9 and the preconfigured time lag* until release of the rest of the fire extinguishing generators on release circuits G1, G2, G3, and G4 starts to elapse.

After the preconfigured time lag* elapses, the release circuits G1, G2, G3, G4 are activated one after the other with ignition pulses for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

After activation of all release circuits with an ignition pulse, the "Released" output is connected.

See note 1:

* see Version Key (section 10) and the Version on the type label

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For basic variant 3 (2-line dependency)*:

If an "Alarm"-message is raised on one of the detector inputs of only one of the interfaces X6 or X7, the open-collector "General Alarm" output on terminal X5:8 is connected.

The red LED M...A of the of the detector input on which the "Alarm"-message is pending lights up.

Depending on the interface on which the alarm was raised, the corresponding open-collector "Alarm ..." output is also connected on terminal X5:2 or X5:3.

All potential-free contacts with an "Alarm" contact open.

However, there no release of the fire extinguishing generators is initiated yet.

Only when a detector input is raised on both interfaces X6 and X7 is the open-collector output "Release initiated" connected on terminal X5:9 and the preconfigured time lag* until release of the fire extinguishing generators start to elapse.

After the preconfigured time lag* elapses, each release circuit of the fire extinguishing generators is activated with ignition pulse one after another G5, G6, G7, G8, G1, G2, G3, G4 for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

After activation of all release circuits with an ignition pulse, the "Released" output is connected.

Note 2:

When real extinguishing generators are connected, the yellow G...S LEDs light up on the central unit.

The G...S LEDs of the release circuits terminated with line termination resistors flash during activation.

All potential-free "Fault" contacts open and the open-collector "Operation" output on terminal X5:1 is either not connected or is connected periodically.*

During a functional check with test connectors of type PSDY06, the release circuits are periodically activated one after the other. The G...S LEDs flash one after the other. No "Fault"-messages are raised.

For basic variant 4 (with manual reactivation)*:

If an "Alarm"-message is raised on one of the detector inputs, the open-collector "General Alarm" output on terminal X5:8 is connected.

The red LED M...A of the of the detector input on which the "Alarm"-message is pending lights up.

Depending on the interface on which the alarm was raised, the corresponding open-collector "Alarm ..." output is also connected on terminal X5:2 or X5:3.

All potential-free contacts with an "Alarm" contact open.

The first release circuits G5, G6, G7, and G8 are activated one after the other with ignition pulses for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

See note 2:

Only after activation of a "Manual release" input on terminal X1:9 or "External manual release" on terminal X1:10, each release circuit G1, G2, G3, G4 is activated one after the other with ignition pulse for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

After activation of all release circuits with an ignition pulse, the "Released" output is connected.

See note 2:

* see Version Key (section 10) and the Version on the type label

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7.1.2 Manual release of fire extinguishing generators (depending on basic variant*):

For basic variants 1 and 3*:

After activation of either "Manual release" inputs on terminal X1:9 or "External manual release" on terminal X1:10 the open-collector "General Alarm" output on terminal X5:8 is connected.
All potential-free contacts with an "Alarm" contact open.
The open-collector output "Release initiated" is also connected on terminal X5:9 and the preconfigured time lag* until release of the extinguishing generators starts to elapse.
After the preconfigured time lag* elapses, each release circuit of the fire extinguishing generators is activated with ignition pulse one after another G5, G6, G7, G8, G1, G2, G3, G4 for about 100 ms.
During activation of each release circuit, the corresponding LED G...S lights up during the activation.
After activation of all release circuits with an ignition pulse, the "Released" output is connected.

Note 3:

When real fire extinguishing generators are connected, the yellow G...S LEDs light up on the central unit. The G...S LEDs of the release circuits terminated with line termination resistors flash during activation. All potential-free "Fault" contacts open and the open-collector "Operation" output on terminal X5:1 is connected periodically or not connected.*

During a functional check with test connectors of type PSDY06, the release circuits are periodically activated one after the other. The G...S LEDs flash one after the other. No "Fault"-messages are raised.

For basic variant 2*:

After activation of either "Manual release" inputs on terminal X1:9 or "External manual release" on terminal X1:10 the open-collector "General Alarm" output on terminal X5:8 is connected.
All potential-free contacts with an "Alarm" contact open.
The first release circuits G5, G6, G7, and G8 are activated one after the other with ignition pulses for about 100 ms.
During activation of each release circuit, the corresponding LED G...S lights up during the activation.

See note 3:

The open-collector output "Release initiated" is also connected on terminal X5:9 and the preconfigured time lag* until release of the rest of the fire extinguishing generators on release circuits G1, G2, G3, and G4 starts to elapse.
After the preconfigured time lag* elapses, each release circuit G1, G2, G3, G4 is activated one after the other with ignition pulses for about 100 ms.
During activation of each release circuit, the corresponding LED G...S lights up during the activation.
See note 3:
After activation of all release circuits with an ignition pulse, the "Released" output is connected.

For basic variant 4*:

After activation of either "Manual release" inputs on terminal X1:9 or "External manual release" on terminal X1:10 the open-collector "General Alarm" output on terminal X5:8 is connected.
All potential-free contacts with an "Alarm" contact open.
The release circuits G1, G2, G3, and G4 are activated one after the other with ignition pulses for about 100 ms.
During activation of each release circuit, the corresponding LED G...S lights up during the activation.
See note 3:

* see Version Key (section 10) and the Version on the type label

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7.2 Detection and extinguishing in operating mode „Automatic Release OFF“

The procedures described below assume fault-free operation!

7.2.1 Detection by fire detectors (without release) (depending on basic variant*):

For basic variant 1*:

All potential-free "Fault" contacts are open and the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically.

If an "Alarm"-message is raised on one of the detector inputs, the open-collector "General Alarm" output on terminal X5:8 is connected.

The red LED M...A of the of the detector input on which the "Alarm"-message is pending lights up.

Depending on the interface on which the alarm was raised, the corresponding open-collector "Alarm ..." output is also connected on terminal X5:2 or X5:3.

All potential-free contacts with an "Alarm" contact open.

The open-collector output "Release initiated" on terminal X5:9 is not connected, and the preconfigured time lag* until release of the fire extinguishing generators does not start.

For basic variant 2*:

All potential-free "Fault" contacts are open and the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically.

If an "Alarm"-message is raised on one of the detector inputs, the open-collector "General Alarm" output on terminal X5:8 is connected.

The red LED M...A of the of the detector input on which the "Alarm"-message is pending lights up.

Depending on the interface on which the alarm was raised, the corresponding open-collector "Alarm ..." output is also connected on terminal X5:2 or X5:3.

All potential-free contacts with an "Alarm" contact open.

The open-collector output "Release initiated" on terminal X5:9 is not connected, and the preconfigured time lag* until release of the fire extinguishing generators does not start.

For basic variant 3*:

All potential-free "Fault" contacts are open and the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically.

If an "Alarm"-message is raised on one of the detector inputs of only one of the interfaces X6 or X7, the open-collector "General Alarm" output on terminal X5:8 is connected.

The red LED M...A of the of the detector input on which the "Alarm"-message is pending lights up.

Depending on the interface on which the alarm was raised, the corresponding open-collector "Alarm ..." output is also connected on terminal X5:2 or X5:3.

All potential-free contacts with an "Alarm" contact open.

Even if a detector input is raised on both interfaces X6 and X7, the open-collector output "Release initiated" is not connected on terminal X5:9 and the preconfigured time lag* until release of the fire extinguishing generators does not start.

For basic variant 4*:

All potential-free "Fault" contacts are open and the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically.

If an "Alarm"-message is raised on one of the detector inputs, the open-collector "General Alarm" output on terminal X5:8 is connected.

The red LED M...A of the of the detector input on which the "Alarm"-message is pending lights up.

Depending on the interface on which the alarm was raised, the corresponding open-collector "Alarm ..." output is also connected on terminal X5:2 or X5:3.

All potential-free contacts with an "Alarm" contact open.

The open-collector output "Release initiated" on terminal X5:9 is not connected, and the preconfigured time lag* until release of the fire extinguishing generators does not start.

* see Version Key (section 10) and the Version on the type label

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7.2.2 Manual release of fire extinguishing generators (depending on basic variant*):

For basic variants 1 and 3*:

All potential-free "Fault" contacts are open and the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically.

After activation of either "Manual release" inputs on terminal X1:9 or "External manual release" on terminal X1:10 the open-collector "General Alarm" output on terminal X5:8 is connected.

All potential-free contacts with an "Alarm" contact open.

The open-collector output "Release initiated" is also connected on terminal X5:9 and the preconfigured time lag* until release of the fire extinguishing generators starts to elapse.

After the preconfigured time lag* elapses, the release circuits of the fire extinguishing generators are activated with ignition pulses one after another G5, G6, G7, G8, G1, G2, G3, G4 for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

After activation of all release circuits with an ignition pulse, the "Released" output is connected.

Note 4:

When real fire extinguishing generators are connected, the yellow G...S LEDs light up on the central unit.

The G...S LEDs of the release circuits terminated with line termination resistors flash during activation.

During a functional check with test connectors of type PSDY06, the release circuits are periodically activated one after the other. The G...S LEDs flash one after the other.

For basic variant 2*:

All potential-free "Fault" contacts are open and the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically.

After activation of either "Manual release" inputs on terminal X1:9 or "External manual release" on terminal X1:10 the open-collector "General Alarm" output on terminal X5:8 is connected.

All potential-free contacts with an "Alarm" contact open.

The first release circuits G5, G6, G7, and G8 are activated one after the other with ignition pulses for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

See note 4:

The open-collector output "Release initiated" is also connected on terminal X5:9 and the preconfigured time lag* until release of the rest of the fire extinguishing generators on release circuits G1, G2, G3, and G4 starts to elapse.

After the preconfigured time lag* elapses, each release circuit G1, G2, G3, G4 is activated one after the other with ignition pulse for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

See note 4:

After activation of all release circuits with an ignition pulse, the "Released" output is connected.

For basic variant 4*:

All potential-free "Fault" contacts are open and the open-collector "Operation" output on terminal X5:1 is either not connected or* is connected periodically.

After activation of either "Manual release" inputs on terminal X1:9 or "External manual release" on terminal X1:10 the open-collector "General Alarm" output on terminal X5:8 is connected.

All potential-free contacts with an "Alarm" contact open.

The release circuits G1, G2, G3, and G4 are activated one after the other with ignition pulses for about 100 ms.

During activation of each release circuit, the corresponding LED G...S lights up during the activation.

See note 4:

* see Version Key (section 10) and the Version on the type label

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8. Special functions

8.1 Interruption of an automatically initiated release (depending on basic variant*):

For basic variant 1*:

Interrupting an automatically initiated release is possible, during the time lag* (ZT≠0 seconds), by activating the input "Automatic Release OFF" on terminal X1:12 for the time the input is activated. If the input "Automatic Release OFF" is no longer activated and alarms are indicated by fire detectors, then the time lag* until release of the fire extinguishing generators starts over from the beginning.

For basic variant 2*:

Interrupting an automatically initiated release, during the time lag* (ZT≠0 seconds), is only possible for the second "shot" by activating the input "Automatic Release OFF" on terminal X1:12 for the time the input is activated, because the first "shot" was already initiated when the "Alarm"-message was raised. If the input "Automatic Release OFF" is no longer activated and alarms are indicated by fire detectors, then the time lag* until release of the fire extinguishing generators starts over from the beginning, and the remaining fire extinguishing generators will be released.

For basic variant 3*:

Interrupting an automatically initiated release is possible, during the time lag* (ZT≠0 seconds), by activating the input "Automatic Release OFF" on terminal X1:12 for the time the input is activated. If the input "Automatic Release OFF" is no longer activated and alarms are indicated by fire detectors that meet the release criteria for "2-line dependency", then the time lag* until release of the fire extinguishing generators starts over from the beginning.

For basic variant 4*:

Interrupting an automatically initiated release by activating the input "Automatic Release OFF" on terminal X1:12 for the time the input is activated is not possible, because the fire extinguishing generators affected by the automatic initiation were already released when the first "Alarm"-message was raised by one of the fire detectors.

8.2 Canceling of a manually or automatically initiated release (depending on basic variant*):

After manually or automatically initiation of the release of fire extinguishing generators:

For basic variant 1*:

Cancelling of a manually or automatically initiated release is possible, during the time lag* (ZT≠0 seconds), by activating the "Reset" input on terminal X1:11 (activation for longer than 100 ms).

For basic variant 2*:

Cancelling of a manually or automatically initiated release is possible, during the time lag* (ZT≠0 seconds), by activating the "Reset" input on terminal X1:11 but only for the second "shot", since the first was already released after one of the detector inputs was activated (activation longer than 100 ms).

For basic variant 3*:

Cancelling of a manually or automatically initiated release is possible, during the time lag* (ZT≠0 seconds), by activating the "Reset" input on terminal X1:11 (activation for longer than 100 ms).

For basic variant 4*:

Cancelling of a manually or automatically initiated release by activating the "Reset" input on terminal X1:11 is not possible, since the first fire extinguishing generators are released immediately.

* see Version Key (section 10) and the Version on the type label

8.3 Resetting the central unit after a release of the fire extinguishing generators

After releasing the fire extinguishing generators, the central unit must be reset by activating the "Reset" input. The re-commissioning must be carried out in accordance with the commissioning protocol.

9. Inputs "Manual Release", "External Manual Release" and output "Released"

For the activation of the "Manual Release" or "External Manual Release" inputs, we recommend illuminated push buttons each with a red dome and a sealable protection cover to protect against unintentional actuation. A red LED should be installed in this illuminated push button that is controlled by the "Released" output.

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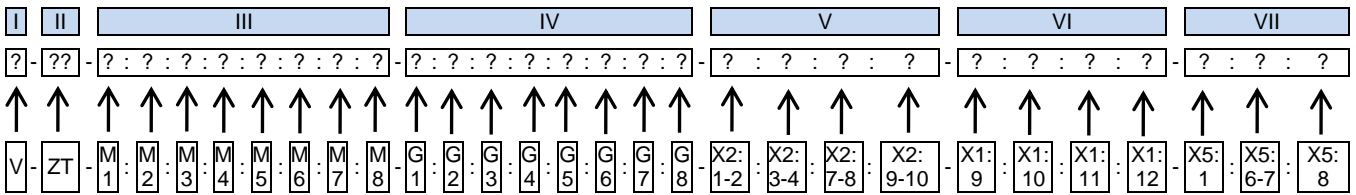
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10. Version Key



I	V	Basic variant V in operating mode: Automatic Release ON
1		Each individual alarm releases all fire extinguishing generators after the predefined time lag.
2		Each alarm from a fire detector immediately releases the release circuits G5, G6, G7, and G8. Release circuits G1, G2, G3, and G4 are only released after the predefined time lag.
3		Alarm 1 on detector inputs M2, M4, M6, M8 does not lead to a release of the fire extinguishing generators. Alarm 2 on detector inputs M1, M3, M5, M7 does not lead to a release of the fire extinguishing generators. Alarm 1 and Alarm 2 release all fire extinguishing generators after the predefined time lag.
4		Each alarm from a fire detector immediately releases the release circuits G5, G6, G7, and G8. Release circuits G1, G2, G3, and G4 released immediately after actuation of an manual release push button.
5		Special variant

II	ZT	Adjustable time lag ZT
00		0 seconds
03		3 seconds
05		5 seconds
12		12 seconds
20		20 seconds
30		30 seconds

III	M1	M2	M3	M4	M5	M6	M7	M8	Configuring of the detector inputs on interfaces X6 and X7 for each module M...
A									n.c. (internally terminated)
B									potential-free NO "Alarm" contact with a line termination resistor Re=4K7
C									Heat Detector of type: Pt100 (alarm switching point = 240 °C)
D									Heat Detector of types: TF 180-... (alarm switching point = 60 °C)
E									Heat Detector of types: TF 180-... (alarm switching point = 90 °C)
F									Heat Detector of types: TF 180-... (alarm switching point = 120 °C)
G									Heat Detector of types: TF 180-... (alarm switching point = 180 °C)

IV	G1	G2	G3	G4	G5	G6	G7	G8	Configuring of the outputs on interfaces X3 and X4 for each release circuit G...
1	X	X	X	X	X	X	X	X	connection of fire extinguishing generator(s) possible

V	Configuring of the potential-free contacts on interface X2
X2:1-2 "Alarm"-message	
0	NC contact
X2:2-3 "Shutoff 1"	
0	combination of "Alarm" NC contact and "Fault" NO contact (quiescent current principle)
1	"Alarm" NC contact
X2:7-8 "Shutoff 2"	
0	combination of "Alarm" NC contact and "Fault" NO contact (quiescent current principle)
1	"Alarm" NC contact
X2:9-10 "Fault"-message	
0	NO contact (quiescent current principle)

VI	X1:9	X1:10	X1:11	X1:12	Configuring of the connections for control elements on the inputs: X1:9 - Manual Release; X1:10 - External Manual Release; X1:11 - Reset; X1:12 - Automatic Release OFF
0					without wire breakage monitoring (internally terminated with Re=4K7)
1					with wire breakage monitoring (must be externally terminated with Re=4K7)

VII	Configuring of the connections for indicator elements on outputs X5:1, X5:6-7, and X5:8
X5:1 Operation	
0	alternating signal in the operating mode "Automatic Release OFF" and in a case of fault
1	constant signal (no signal) in the operating mode "Automatic Release OFF" and in a case of fault
X5:6-7 Released	
0	NO contact, potential-free
1	NO contact with internal ground potential (0 V or GND).
X5:8 Alarm	
0	load current principle