

Technical Manual RZ-24 Central


You can find the current version of our manual on our website under «Downloads»:
<https://en.dictator.de/products/hold-open-systems-fire-protection-doors/central-units/central-unit-rz-24/>

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1) General Safety Instructions


Note to this manual

Since the RZ-24 central is used in both non-EX hold-open systems and EX hold-open systems, this manual contains important information on both areas of application. Information relevant only for the EX area is marked with .

General Safety Instructions



The RZ-24 central is a power supply with integrated tripping device for hold-open systems on fire doors, smoke evacuation flaps etc.

The RZ-24 is also the central of the DICTATOR hold-open system in  hazardous areas. The central itself is not protected against explosion and **therefore has to be mounted outside the hazardous area.**

When installing the ex-proof hold-open system, it is imperative to observe the instructions for implementing the 2014/34/EU directive and the safety instructions. Furthermore the regulations, especially regarding the marking, execution, approval, operation and maintenance, corresponding to the type approval Z-6.500-2443 of 17 October 19 have to be met.

Only trained professionals may effect the installation; e.g. only a qualified electrical technician may connect the power supply to the mains. To the electrical installation following the power supply (safety extra-low voltage 24 VDC) apply the acknowledged technical regulations for electrical installations. In the hazardous area all the demands applying to this area have to be adhered to (type of cables, marking of cables for intrinsical electric circuits, equipotential bonding etc.).

Only a professional trained by DICTATOR with an approval authorisation may approve the system.



The relevant regulations must be observed for all work.

The operation of all components is only permitted in undamaged condition.

The accident prevention regulations have to be respected.

Ignition Protection Type

The operating company has to determine and document the hazardous zones according to the explosion protection document where the ex-proof hold-open system shall be installed.

During installation the respective ignition protection type of every individual component has to be respected.

The RZ-24 central and the Zener barrier may solely be installed outside the hazardous area. Only exception is when they are supplied in a pressure capsulated, ex-proof housing.

General Safety Instructions - cont.

Ignition Protection Type - cont.

None of the used components may be modified without written consent of the manufacturer. This applies in particular to the connection cables of the magnets. If, for example, the connection cables are shortened, consultation with our technical customer service department is mandatory in advance.

Installation, Connection

When connecting the components of the ex-proof hold-open system, besides the generally accepted codes of practice you must respect in particular the **on-site requirements**, the **Equipment and Product Safety Act**, the **Ordinance on Hazardous Substances**, the **Law on operational safety** and **other relevant prescriptions for installations in hazardous areas**.

Outside the hazardous area you can use the usual method for connection. However, inside the hazardous area you may only use certificated material, e.g. EEx-e terminals and EEx-e terminal boxes. When using approved electromagnets with IP 65 terminal, please contact our technical customer service department.

Instructions for Wiring

The connection cables have to be installed in such a way that they cannot be moved and are sufficiently protected against damage. Also here you strictly have to adhere to the requirements of the respective operating company. All components of the system, the cables and their connections have to be clearly marked by the installation contractor.

If nothing else is required on site or by special regulations, the following specifications have to be respected:

- **All works on current circuits** may only be effected in the de-energized state.



- **Current circuits of the ignition protection type "m" (electromagnets):** Here it is imperative to respect the demands for the correct connection of the electromagnets (e.g. every magnet has to be fused individually, the fuse being upstream of the magnet). Apart from that apply the requirements of a "normal" installation.



- **Current circuits of the ignition protection type "i" (intrinsic safety) (smoke detectors):** Intrinsically safe current circuits have spatially to be separated from not intrinsically safe ones (separate laying of cables!). Intrinsically safe current circuits have to be marked as such. When using colour for marking, the cables have to be light blue. The marking should also include the cable ducts, possible connection boxes etc.

- **Equipotential bonding conductor:** The cable (yellow/green) has to have a cross section of 4 mm².

Repairs



- All defect ex-proof components **MUST** be sent to the factory for repair. An exchange of the components is possible, an on-site repair unfortunately not. If the damage of one or more components of an installation might cause an unsafe state, the complete system has to be shut down until it has been repaired and is safe again.

2. General Regulations for Hold-Open System

2a) Demands

In Germany, the installation of a hold-open system is regulated by the general building inspection approval or type approval of the DIBt. For European countries without national regulations, EN 14637 is used as a guideline.

These regulations also govern:

- the mounting positions and number of fire detectors
- the position and design of the hand switch
- the acceptance test (first placing in service) and marking
- the recurring functional tests and maintenance
- the requirements for the qualification of the persons testing and maintaining

The documents are available under www.dictator.de. The general type approval DIBt also includes all permissible device combinations.

For further instructions on installation, use, maintenance, functional testing and servicing as well as documentation, please refer to our operating manual for hold-open systems, which is available to our authorised specialists for DICTATOR hold-open systems.



In the Ex-area a hand switch with appropriate explosion protection must be used.



Only cables approved for this purpose may be used in the Ex-area (e.g. Ölflex EB 2 x 0.75 mm²). The cross-section must be selected according to the required cable length.

Depending on the application (must be clarified object-related), we recommend shielding the cables.

The device combinations "RZ-24" and "RZ-24-05" have to be mounted in the detection range of one of the fire detectors of the respective door. If not, an additional detector is required.

2b) Operational life

To ensure the correct functioning of the hold-open system, the DICTATOR smoke and heat detectors have to be replaced after a maximum of 8 years of operational life. In Germany the DIN 14677 regulates the replacement obligation of fire detectors in hold-open systems.

3. Components of the DICTATOR Hold-Open System

3a) Version Without Door Operator for Opening



The explosion-proof DICTATOR hold-open system is made up of maximum 20 smoke or heat detectors and up to 12 explosion-proof magnets (ATTENTION: consider the maximum output load of the RZ-24 central!).

Components:

- RZ-24 central unit with power supply, part no. 040553
- Shunt safety barrier: Zener barrier Z779, part no. 040589
- RM 3000IS EX smoke detector or WM 3000IS EX heat detector with base, part no. 040881SET or 040886SET
- Resistor 3.9 k Ω (included in the scope of delivery of the RZ-24 central)
- Explosion-proof magnet (DICTATOR electromagnets EM GD 50 EX or EM GD 70 EX, either with connection cable or terminal box, or EM GD 70 R 39 I, Ex2) - see separate manual
- Ex-proof hand release switch, part no. 700232, and outside the hazardous area (upstream of the Zener barrier) hand release switch, part no. 040005, or the key on the RZ-24 central
- Gas warning system (the need to be clarified on the basis of the on-site requirements)

3b) Version With Door Operator for Opening



In order to open a fire protection door automatically an approved, explosion-proof door operator can be used. In explosion-proof hold-open systems the magnets are generally installed only in the OPEN position of the door and are not integrated in the door operator.

In the case of an alarm it has absolutely to be made sure that the door closes and is not blocked due to an error of the control system. Therefore, in such a case, the RZ-24 central automatically switches off the control system of the ex-proof door operator.

Components:

- RZ-24 central unit with power supply, part no. 040553
- Shunt safety barrier: Zener barrier Z779, part no. 040589
- RM 3000IS EX smoke detector or WM 3000IS EX heat detector with base, part no. 040881SET or 040886SET
- Resistor 3.9 k Ω (included in the scope of delivery of the RZ-24 central)
- Explosion-proof magnet (DICTATOR electromagnets EM GD 50 EX or EM GD 70 EX, either with connection cable or terminal box, or EM GD 70 R 39 I, Ex2) - see separate manual
- Ex-proof hand release switch, part no. 700232, and outside the hazardous area (upstream of the Zener barrier) hand release switch, part no. 040005, or the key on the RZ-24 central
- Gas warning system (the need to be clarified on the basis of the on-site requirements)
- Ex-proof door operator for opening the door by motor
- Door operator controller

When installing the components, you have to adhere to the respective operating and mounting instructions and the directives for hazardous areas.

Components of the DICTATOR Hold-Open System - cont.**3c) Version Without
Door Operator for
Opening**

The DICTATOR hold-open system is also made up of maximum 20 smoke or heat detectors and up to 12 explosion-proof magnets (ATTENTION: consider the maximum output load of the RZ-24 central!).

Bestandteile:

- RZ-24 central unit with power supply, part no. 040553
- RM 4000 smoke detector or WM 4000 heat detector with base, part no. 040860SET or 040861SET
- Resistor 3.9 k Ω (included in the scope of delivery of the RZ-24 central)
- Magnet (DICTATOR electromagnets EM GD 50 to EM GD 70 - see separate catalogue pages)
- Hand release switch, part no. 040005, or the key on the RZ-24 central

**3d) Version With Door
Operator for
Opening**

In order to open a fire protection door automatically an approved door operator can be used. Die Haftmagnete werden in Feststellanlagen grundsätzlich nur in der Position AUF montiert und sind im Antrieb integriert. In hold-open systems the magnets are generally installed only in the OPEN position of the door and are not integrated in the door operator. In the case of an alarm it has absolutely to be made sure that the door closes and is not blocked due to an error of the control system. Therefore, in such a case, the RZ-24 central automatically switches off the control system of the door operator.


Components:

- RZ-24 central unit with power supply, part no. 040553
- RM 4000 smoke detector or WM 4000 heat detector with base, part no. 040860SET or 040861SET
- Resistor 3.9 k Ω (included in the scope of delivery of the RZ-24 central)
- Magnet (DICTATOR electromagnets EM GD 50 to EM GD 70 - see separate catalogue pages)
- Hand release switch, part no. 040005, or the key on the RZ-24 central
- Door operator for opening the door by motor
- Door operator controller

When installing the components, you have to adhere to the respective operating and mounting instructions.

4. Mounting the RZ-24 Central

4a) Choosing the Place of Installation

The RZ-24 central is the power supply with integrated tripping device of the DICTATOR hold-open system on fire doors, smoke evacuation flaps etc. also in  hazardous areas.



When using the RZ-24, it is mandatory to respect in addition to the regulations for hazardous areas also the regulations of the general type approval Z-6.500-2443.

The RZ-24 central itself is not ex-proof and **therefore must be mounted outside the hazardous area.**



When choosing the mounting place, please make sure that

- the indications on the cover of the casing are clearly visible,
- the keys can easily be reached,
- the warning of the horn can well be heard.

Furthermore you have to pay attention to the IP rating of the casing which is required for the chosen mounting place.

By default the casing of the RZ-24 central has 4 borings with M16 thread for the included cable inlets IP 64. When these are used, the whole casing corresponds to the IP rating IP 64 (when mounted with the cable inlets pointing downwards!).

IMPORTANT: After mounting, all not used cable inlets have to be closed professionally according to the required protection type (blind plugs)!

4b) Opening the Casing

For opening the casing, you turn each of the 4 spring-loaded screws (1) about 90° anticlockwise.

Now the cover can be opened to the right (on the right side (2) it is connected to the casing).

ATTENTION: When opening the cover, make sure not to damage the connection film (3) between casing and cover and the flat cable (4) to the membrane keys (see illustration 2 on the following page).

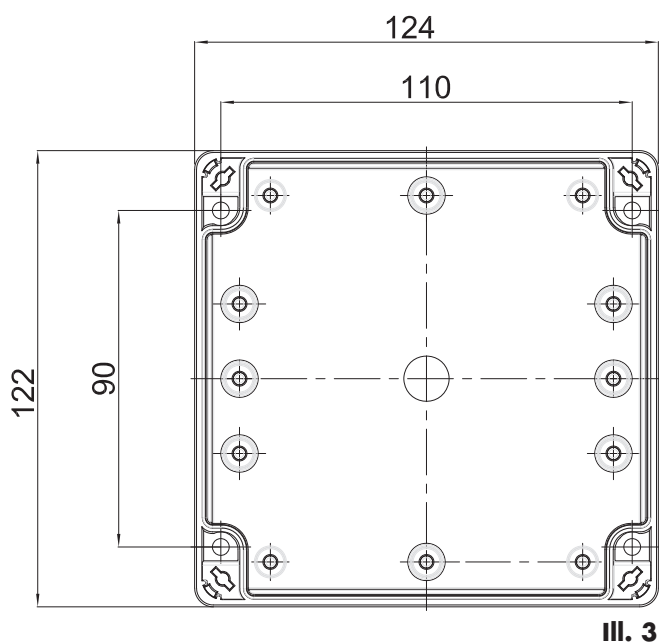
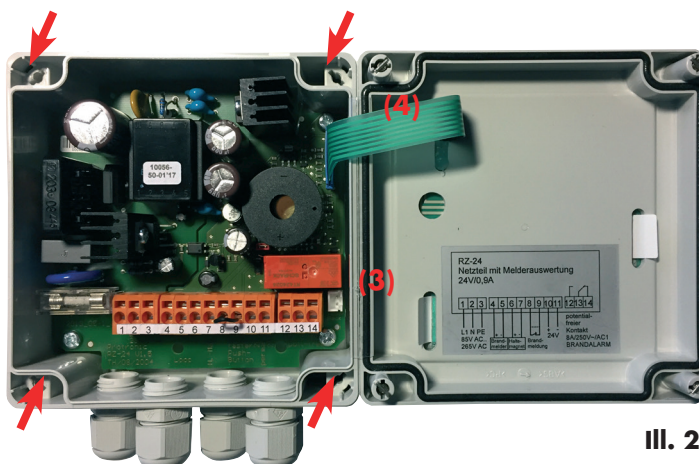


Ill. 1: Casing of RZ-24 central

Mounting the RZ-24 Central - cont.

4c) Fixing the RZ-24

For fixing the casing features 4 borings \varnothing 5 mm which are accessible when the cover is open (see ill. 2 and 3).



5. Electrical Connection and Installation of an Ex-Proof Hold-Open System with RZ-24



ATTENTION

Some parts inside the casing are energized with hazardous voltage during operation! May be opened only by professionals when being de-energized (the power supply of the RZ-24 is cut!!)

5a) Technical Data RZ-24

Dimensions	122 x 124 x 55 mm (height x width x depth)
Supply voltage	85 VAC - 265 VAC, 50/60 Hz
Power consumption	about 30 W
Additional switching contact	potential-free contact 8 A/<250 V~/ AC1 (relay fallen off = tripping)
Secondary output voltage	24 VDC \pm 5 %
Secondary total load	0.9 A (supply of fire detectors, electromagnets and other consumers)
Operating temperature	-25 °C to +40 °C
Relative air humidity	up to 50 % at 40 °C temporarily up to 95 % at 25 °C
Casing	plastic casing in ABS, light grey, with 4 threads M16 for cable inlets
Power consumption of the detection loop	alarm: $I > 12$ mA interruption: $I < 3$ mA short circuit current: max. 50 mA quiescent current: 4.5 mA line tension: $U_{lin} = 20.5...21.4$
LEDs on the cover of the casing	green LED is on: no fire alarm, system works normal. red LED is on: there is a fire alarm or an error in the detection loop.
IP rating	IP 64 when IP 64 cable inlets are used

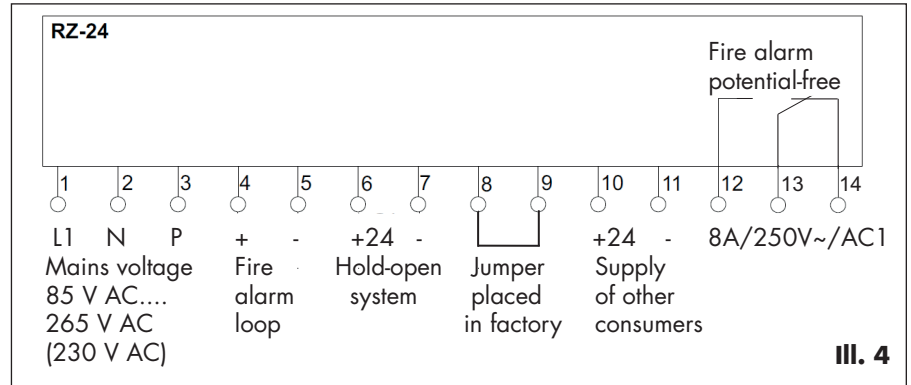


IMPORTANT: In total the RZ-24 central provides 0.9 A for the supply of the connected fire detectors, magnets etc.

In case the maximum power consumption is exceeded, the RZ-24 will automatically switch off. This also happens when it is overheated.

Electrical Connection and Installation of an Ex-Proof Hold-Open System with RZ-24 - cont.

5b) Block Diagram



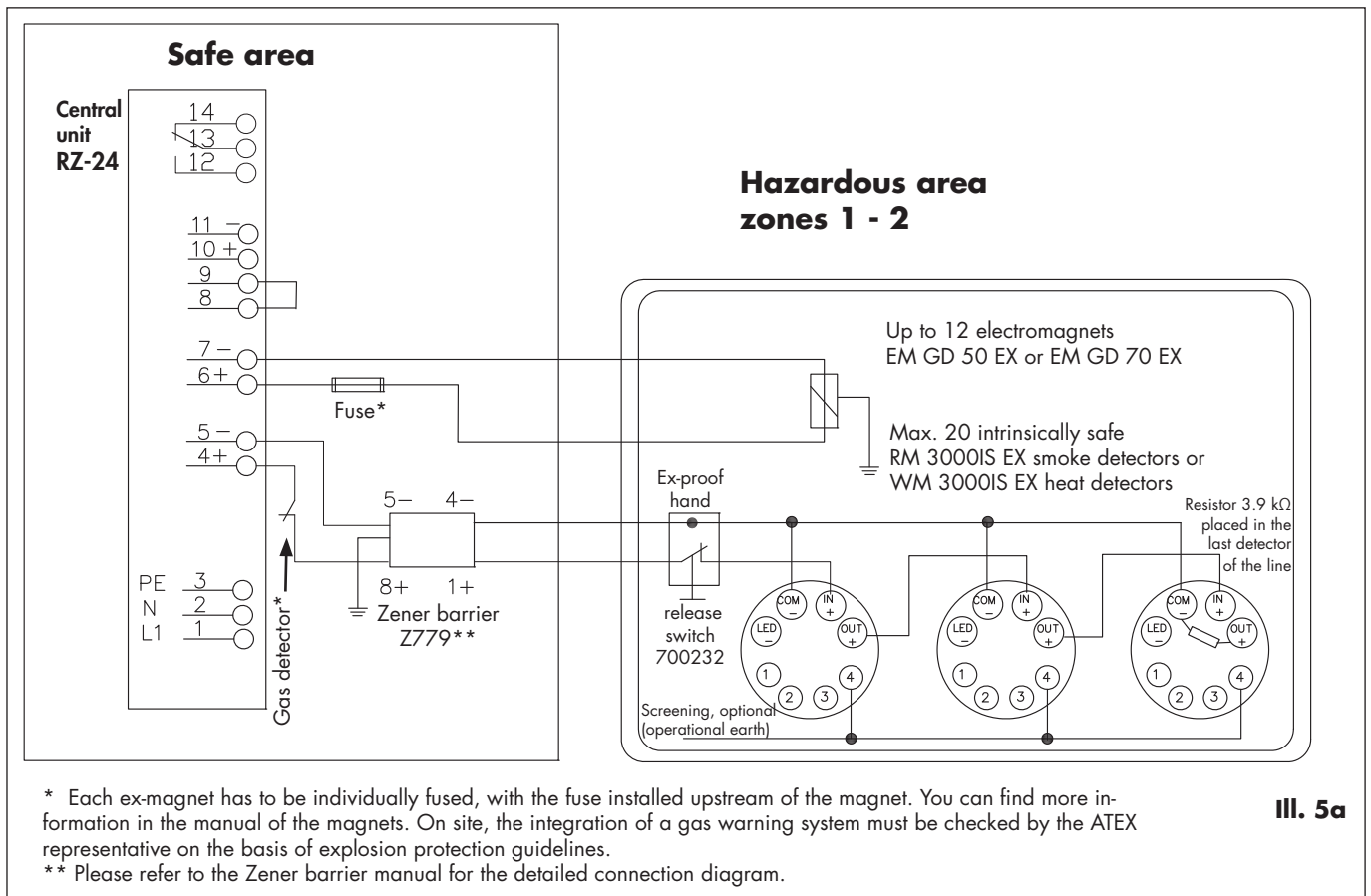
ATTENTION: The bridge between the terminals 8 and 9, which is put in factory, may not be removed!

5c) Wiring Diagram RZ-24 in an Ex-Proof Hold-Open System Without Door Operator

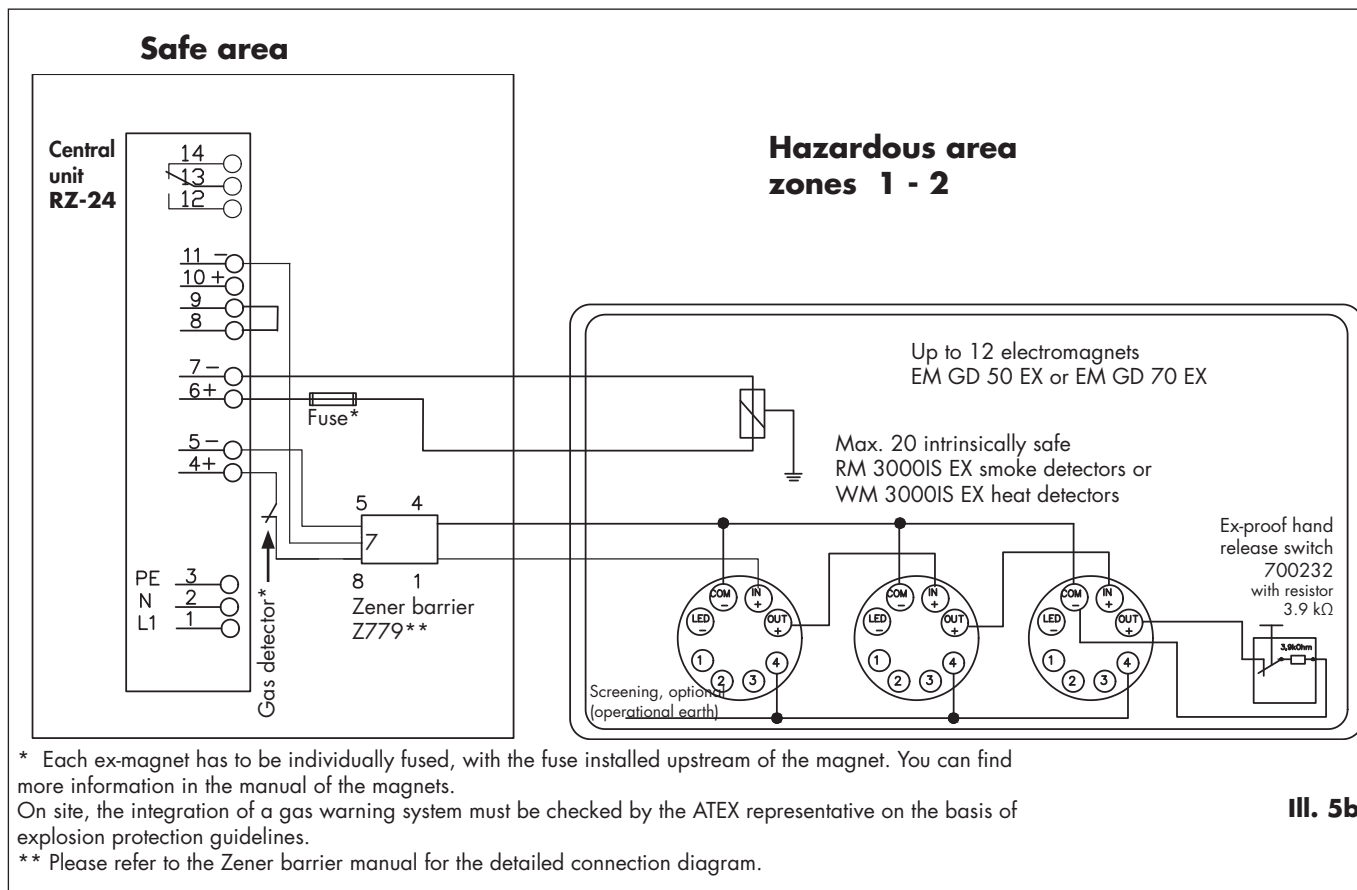


The following wiring diagrams apply when the components of point 3a are used. If for example other fire detectors (e.g. for installation outside the hazardous area) are used, please contact us.

A hand release switch mounted outside the hazardous area, has to be connected so that the Zener barrier is placed between it and the hazardous area.



Electrical Connection and Installation of an Ex-Proof Hold-Open System with RZ-24 - cont.



Electrical Connection and Installation of an Ex-Proof Hold-Open System with RZ-24 - cont.

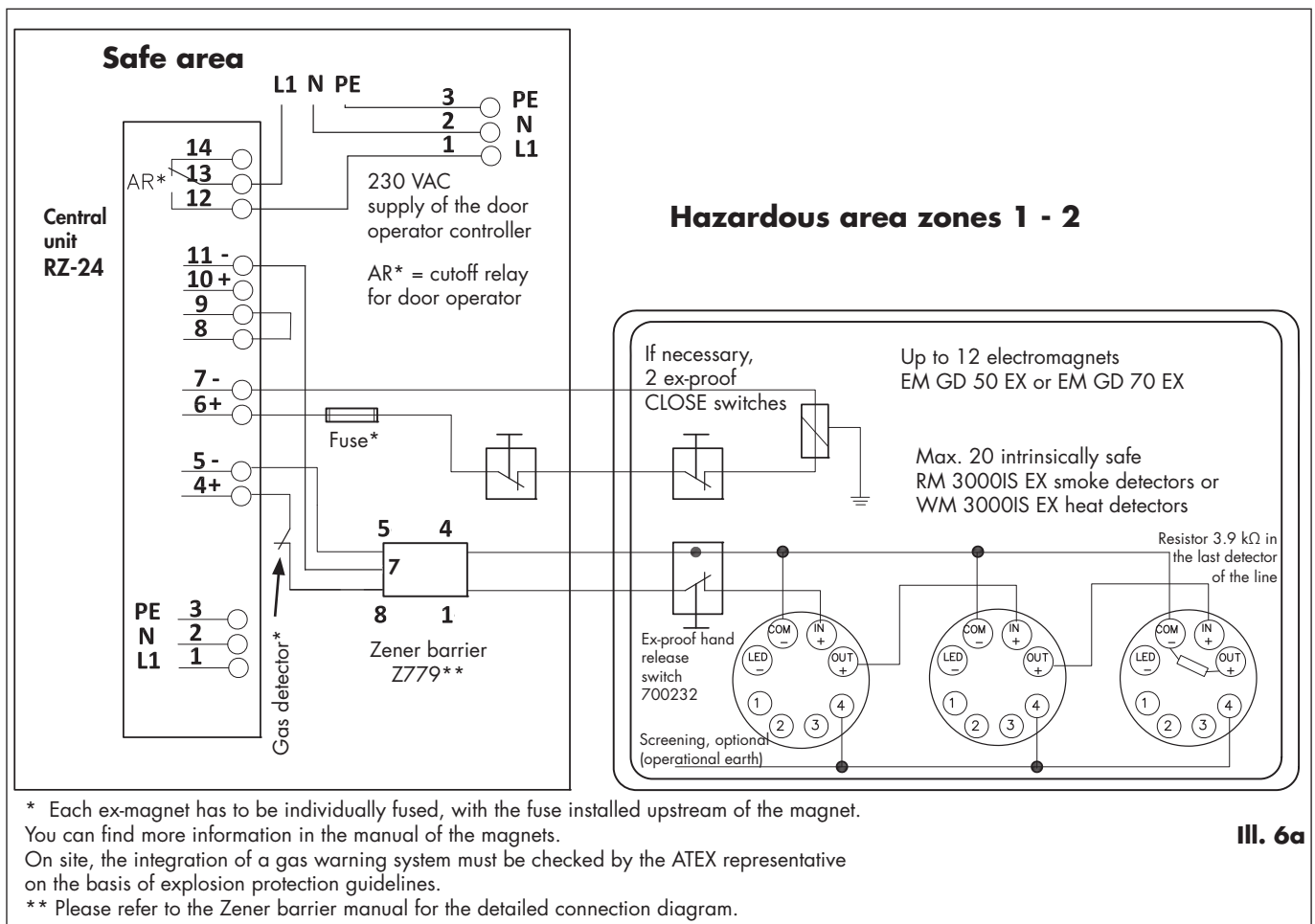
5d) Wiring Diagram RZ-24 in an Ex-Proof Hold-Open System With Door Operator for Opening



The following wiring examples apply when the components of points 3b and 6 are used. If for example other fire detectors (e.g. for installation outside the hazardous area) are used, please contact us.

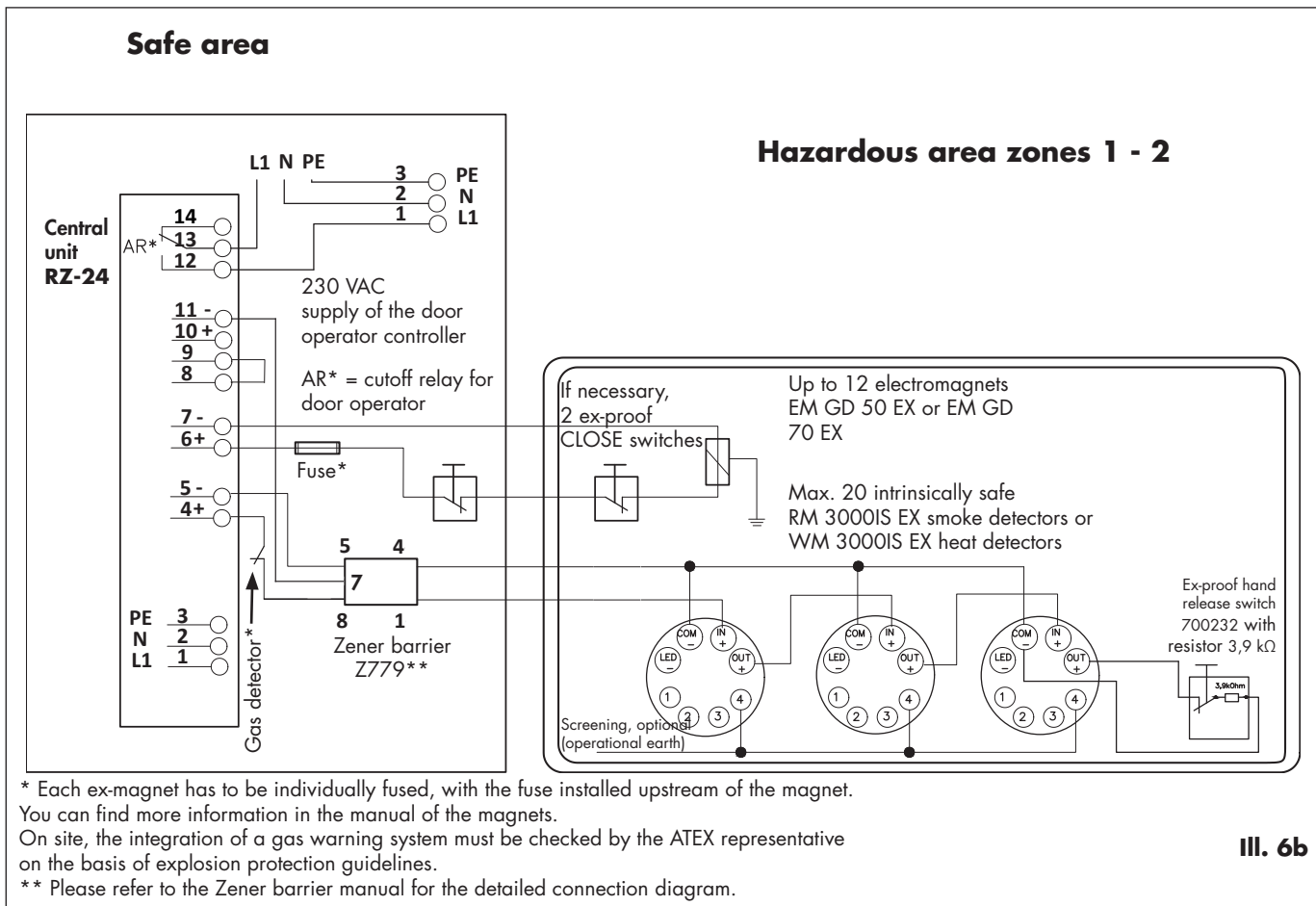
A hand release switch mounted outside the hazardous area, has to be connected so that the Zener barrier is placed between it and the hazardous area.

IMPORTANT: In case of an alarm the RZ-24 will completely electrically isolate the control system of the door operator!



III. 6a

Electrical Connection and Installation of an Ex-Proof Hold-Open System with RZ-24 - cont.



5e) Cable Installation



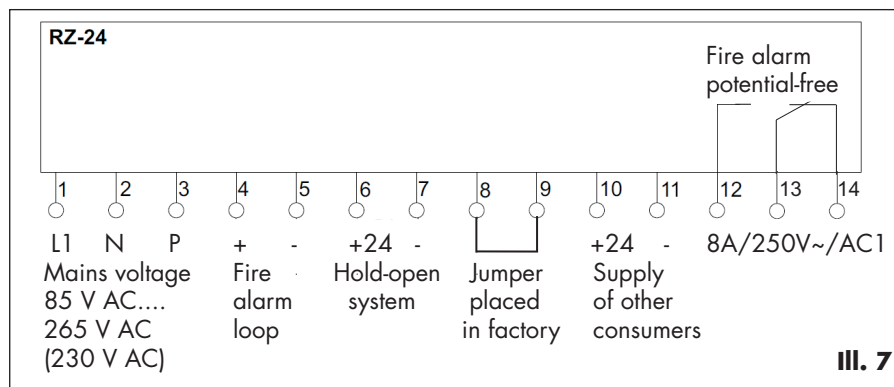
The detection line and the tripping line are energized with low voltage. Admissible laying systems are surface type with nail clamps, adhesive clamps or spacing clamps, in open or closed tubes, cable ducts and profile rails and flush type in slots or tubes.

For cabling you need:

- Fire detection line: e.g. Ölflex EB 2x0.75 mm²
Mark intrinsically safe current circuits light blue and lay them separately (see DIN EN 60079-14).
- Hold-open system: see description of the ex-proof electromagnets
- Power line: NYM-J 3x1.5 mm²

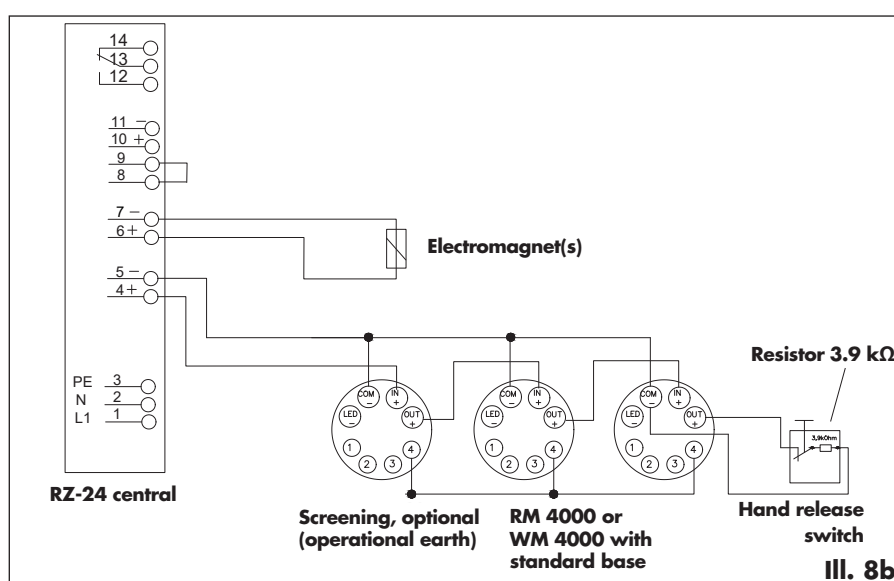
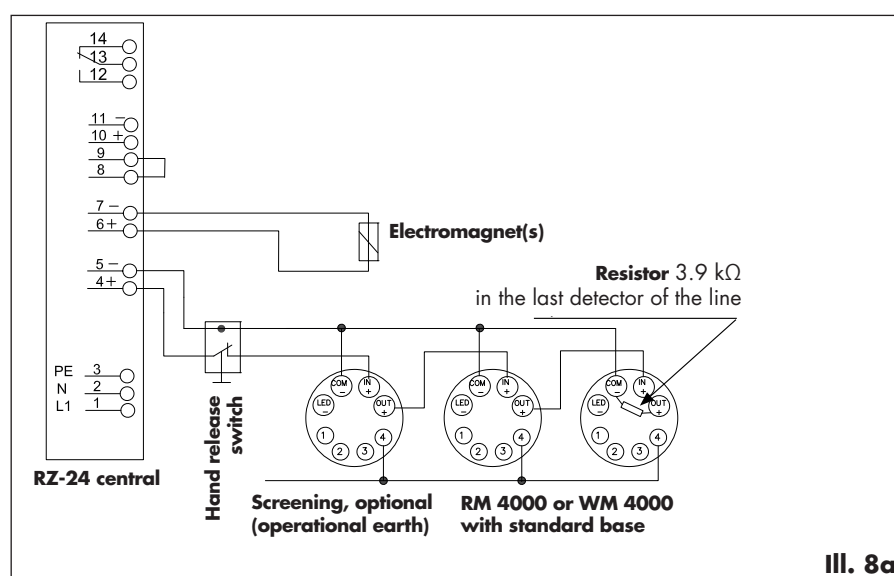
6. Electrical Connection and Installation of a Hold-Open System with RZ-24

6a) Block Diagram



6b) Wiring Diagram RZ-24 in a Hold-Open System Without Door Operator

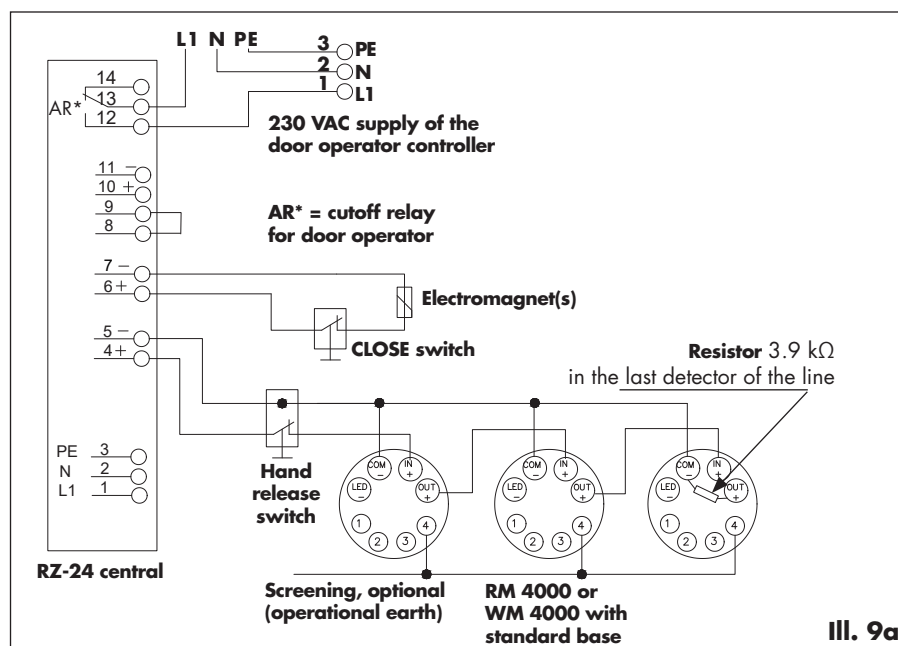
The following wiring examples apply when the components of point 3c are used.



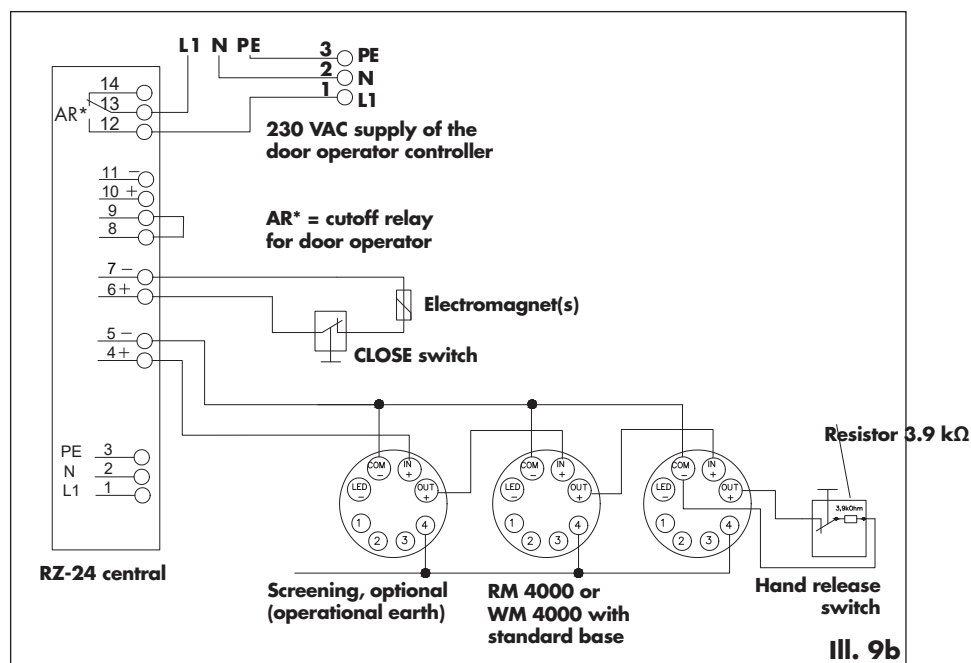
Electrical Connection and Installation of a Hold-Open System with RZ-24 - cont.

6c) Wiring Diagram RZ-24 in a Hold-Open System With Door Operator

The following wiring examples apply when the components of point 3d are used.



III. 9a



III. 9b

7. Placing into Operation of the Hold-Open System

7a) Steps for Placing into Operation

- After having connected all components in the RZ-24 central, close the cover and secure it with the 4 screws.
- Switch on the voltage supply.
When everything has been connected correctly =>
the horn in the casing will sound, the red LED (1) on the cover will be on.
- Reset the fire detection line by pressing the **key RESET (2)** on the cover. The horn will be switched off.



Now the system is ready for operation.

III. 10

7b) Functional Tests, Approval

When the system is ready for operation, its correct functioning and its installation according to the regulations has to be stated by an approval test. Only a correspondingly trained and authorized professional may effect this approval test.

Extent of the approval test

- Checking whether all installed devices are included in the approval of the RZ-24.
- Verifying whether the labelling of the installed devices corresponds to the labelling specified in the approval of the building authorities.
- Checking the interaction of all devices: Tripping by simulating the fire parameter on which is based the functioning principle of the detectors (e.g. smoke detectors by aerosol) as well as manually (pressing the hand release switch on the central and the ones installed beside the door).
- Checking whether the closure (door etc.) is also released for the automatic closing if the hold-open system doesn't work (e.g. due to a power cut or a defect detector, to be simulated by removing a detector and cutting the 230 V supply of the RZ-24 central).

After the successful approval test, the operating company has to permanently fix a plate of 105 mm x 52 mm in the immediate vicinity of the closure which has to be provided by the manufacturer of the hold-open system and reads



Hold-open system
Type approval no. Z-6.500-2443
Approved by

Company logo

month/year

III. 11

8. Functioning/Adjusting Instructions RZ-24 Central

8a) Functions of the RZ-24

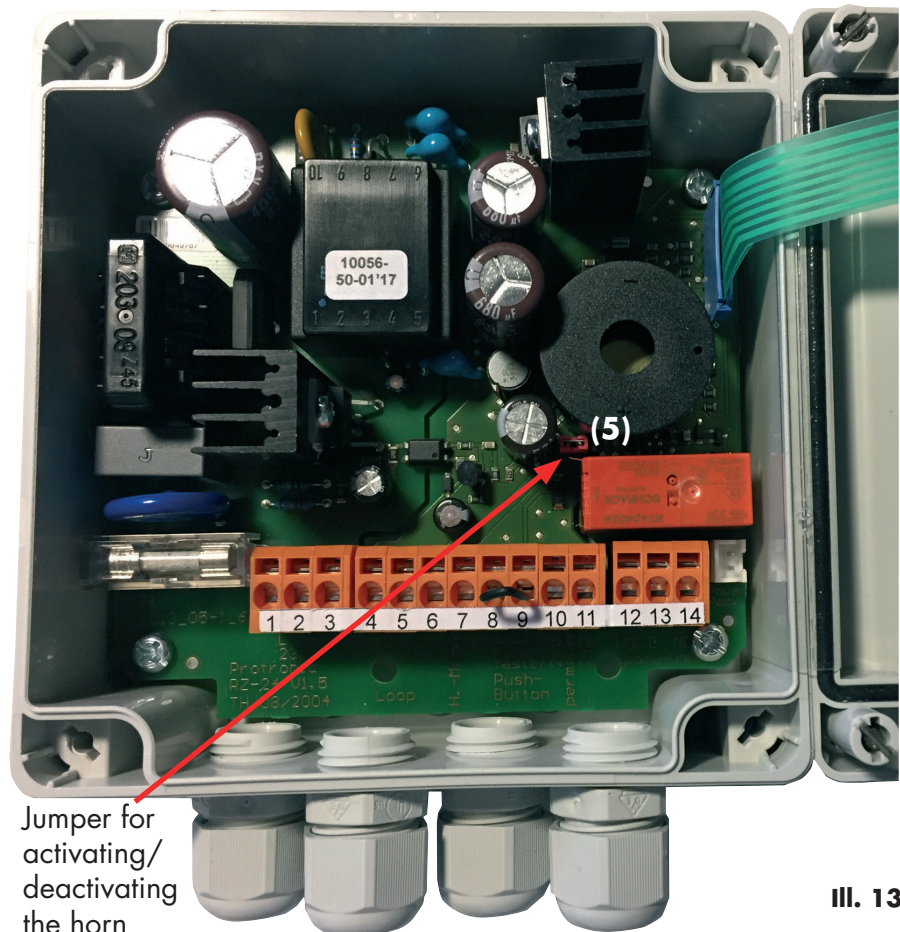
- **RESETTING the complete hold-open system after an alarm:**
Firstly reset the fire detectors by means of the hand release key (3) (press the key > 3 sec.) on the cover of the casing and then use the RESET key (2) on the central to switch the complete system again ready for use.
- The **integrated horn can be switched off** already before the RESET of the system by pressing the key "horn" (4).



III. 12

8b) Deactivating the Integrated Horn

The integrated horn of the RZ-24 can be deactivated, when you don't want the tripping of a detector to be signalled acoustically. For this purpose simply remove the jumper (5) (DON'T throw it away, but fix it with adhesive tape to the inside of the cover for a possible later activation!).



Jumper for
activating/
deactivating
the horn

III. 13

9. Error list

Status	Possible causes	Remedy of the error
The RZ-24 control cannot be reset from the alarm state.	Terminals 8/9 not bridged.	If there is no external connection, then bridge terminals 8/9.
	Fire alarm loop has no end resistance.	Insert a 3.9 kΩ resistor in the last fire detector.
	Open fire alarm loop	Check that the fire detectors are firmly seated in their base.
	Ribbon cable is torn/defective.	Housing must be replaced.
Alarm condition does not automatically reset after the manual release has been operated.	There is a standard reset board in the housing.	Install optional reset board for power failure and fire (not included in standard scope of delivery).
The LED on the housing cover shows red when the RZ-24 central unit is in normal operating mode and it shows green when the RZ-24 central unit is in alarm mode.	Defect of the housing cover of the RZ-24 control unit. Ribbon cable on the reset board is not plugged in correctly.	<ul style="list-style-type: none"> • Check the ribbon cable for damage. • Check the position of the ribbon cable on the reset board. • Check the position of the reset board on the main board.
The LED on the housing cover does not light up or does not light up properly.	Ribbon cable on the reset board is not plugged in correctly.	<ul style="list-style-type: none"> • Disconnect the ribbon cable with the reset board from the main board and then reconnect it. • Check the position of the ribbon cable on the reset board.