DICTATOR Hold-Open Systems for Hazardous Areas

Products to be used in hazardous areas obviously have to meet special demands. The European ATEX directives (first the EN 94/9/EG and then the directive 2014/34/EU) brought about the regulations becoming considerably more rigorous.

DICTATOR furnishes a hold-open system especially for hazardous areas that meets the requirements of the ATEX directive 2014/34/EU. The hold-open system has been tested and is approved by the Institute for Building Engineering in Berlin (approval no. Z-6.5-1872).

Two types are available:

- hold-open system without door operator
- hold-open system combined with a door operator for opening the door.

The central unit is installed outside the hazardous area. Special models with pressure capsulated casings for the hazardous area are available on demand.

The valid regulations and instructions relating to the protection in hazardous areas must strictly be observed. The installation of the components and operating elements must make sure that they cannot be damaged.

Technical Data

Use	hazardous areas of zones 1 and 2
Operating temperature	-20 °C to +40 °C
Ignition protection type fire detectors	Ex II 1G Ex ia II C T5 (at max. 40 °C) only in combination with a safety barrier
Ignition protection type electromagnets, model with cable	Ex II 2G Ex mb IIC T6 Gb or Ex II 2D Ex mb IIIC T85°C Db
Ignition protection type electromagnets, with terminal box	Ex II 2G Ex mb e IIC T6 Gb or Ex II 2D Ex mb e IIIC T85°C Db

Components of a Hold-Open System without Door Operator

Fire protection doors that have to stay open, e.g. because of the requirements of the operating procedure, demand a hold-open system. The smallest unit of such a hold-open system consists of a fire detector, a power supply, an electromagnet and a hand release switch. In case of fire or gas alarm the power supply to the electromagnet is interrupted, the door is set free and automatically closed by the built-in spring, a door closer or a counterweight. In the case of hold-open systems in hazardous areas, according to German regulations, an additional gas warning system with a potential-free NC-contact is required to release the hold-open system as well.

Components

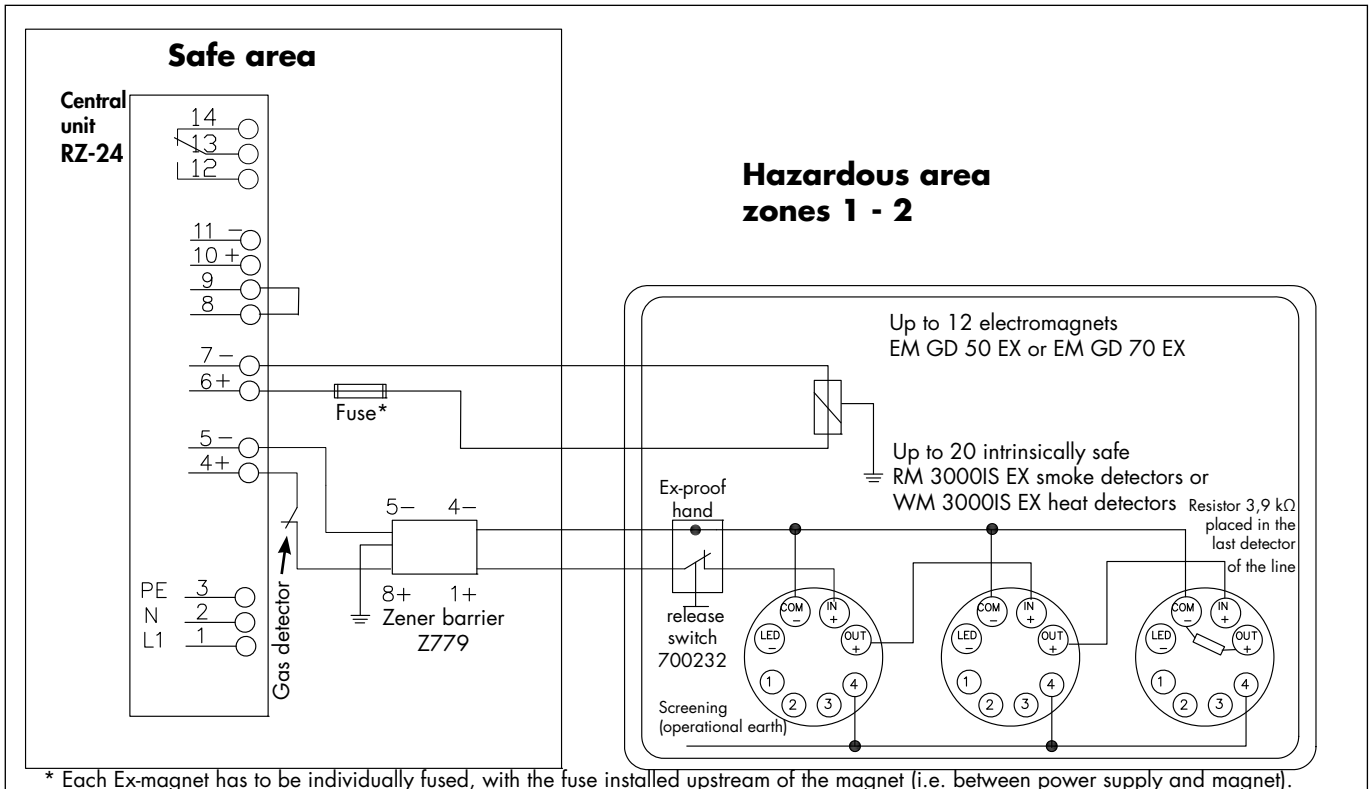
The explosion-proof DICTATOR hold-open system is made up of maximum 20 smoke or heat detectors and up to 12 explosion-proof magnets (ATTENTION: consider the maximum output load of the RZ-24 central!). The explosion-proof magnet is available in 2 different forces.

The RZ-24 central and the safety barrier (Zener barrier) are installed outside the hazardous area. Special models with pressure capsulated casings for the hazardous area are available on demand.

The cable recommended for the wiring within the hazardous area is an Ölflex cable 2x0,75 mm², max. length 100 m.

- RZ-24 central unit with power supply
- Shunt safety barrier: Zener barrier Z779
- RM 3000IS EX smoke detector (or WM 3000IS EX heat detector) with base
- Resistor 3.9 kΩ (to be placed in the last detector of the line)
- Explosion-proof magnet (for zones 1 + 2 see p. 07.043.00 et sqq., only for zone 2 see p. 07.041.00)
- Hand release switch (part no. 700232)
- Gas warning system (to be provided by the customer, requires for tripping a potential-free contact with the following switching capacity: 24 VDC/100 mA)

Wiring Diagram



* Each Ex-magnet has to be individually fused, with the fuse installed upstream of the magnet (i.e. between power supply and magnet). More information can be found in the manual of the magnets.

Components of a Hold-Open System with Door Operator

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 relay integrated in the RZ-24 central automatically switches off the control system of the ex-proof door operator (see diagram below).

Components

The door operator used to open the fire protection door is not shown in the list of the components. Which door drive should be chosen depends on the type of door, the required forces, functions etc.

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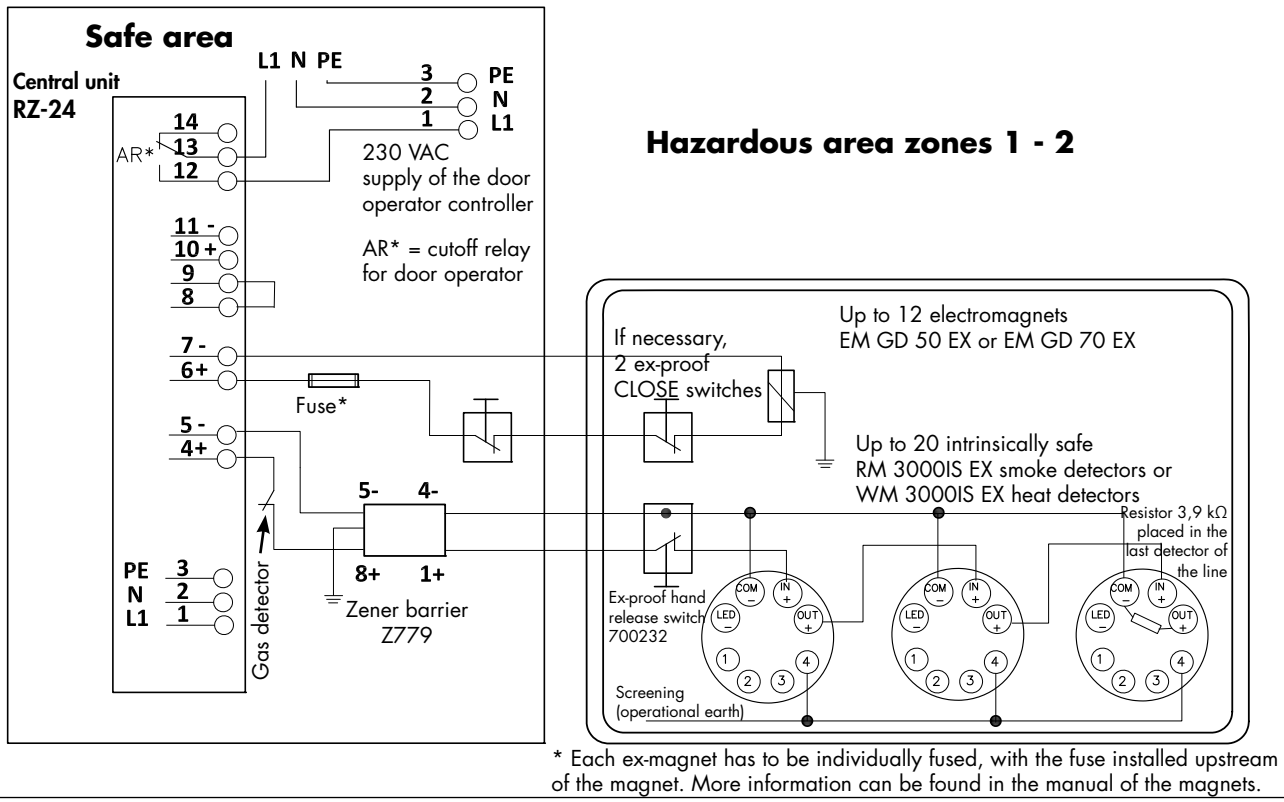
The cable recommended for the wiring within the hazardous area is an Ölflex cable 2x0,75 mm², max. length 100 m.

- RZ-24 central unit with power supply
- Shunt safety barrier: Zener barrier Z779
- RM 3000IS EX smoke detector (or WM 3000IS EX heat detector) with base
- Resistor 3.9 kΩ (to be placed in the last detector of the line)
- Explosion-proof magnet (for zones 1 + 2 see p. 07.043.00 et sqq., only for zone 2 see p. 07.041.00)
- Hand release switch (part no. 700232)
- Gas warning system (to be provided by the customer, requires for tripping a potential-free contact with the following switching capacity: 24 VDC/100 mA)
- If necessary, ex-proof CLOSE switches for the door

Wiring Diagram



* Each ex-magnet has to be individually fused, with the fuse installed upstream of the magnet. More information can be found in the manual of the magnets.

RZ-24 Central Unit with Power Supply and Tripping Device

In ex-proof hold-open systems the RZ-24 central unit evaluates the fire detectors. In addition to the alarm in case of a fire, it also registers disturbances like e.g. a short circuit or a wire break in the system. The alarm as well as disturbances can also be signalled acoustically by an integrated horn (adjustable in the RZ-24).

The central features an integrated hand release switch. After an alarm the system is reset in the central as well.

The RZ-24 central has been tested and is approved by the Deutsches Institut für Bautechnik (German institute for building engineering).

Functions

- Manual release of the hold-open system by the integrated or an additionally connected hand release switch (mounted in the immediate vicinity of the fire door)
- Tripping the hold-open system by the connected fire detectors or by the potential-free contact of a fire alarm central
- RESET of the complete hold-open system: first use the hand release switch to reset the fire detector and then the RESET switch on the RZ-24 central to reset the whole system
- Integrated excess-current protection: If too many consumers are connected, the power supply automatically cuts off.
- Potential-free contact for signalling the tripping, e.g. for relaying the alarm to a facility management system, an additional warning device etc. If a door operator forms part of the hold-open system, the contact is used to cut the power supply of the door operator in case of an alarm, to allow the mechanic closing of the door (door closer, closing spring or counterweight).
- Status indication for normal operation and alarm on the cover of the central

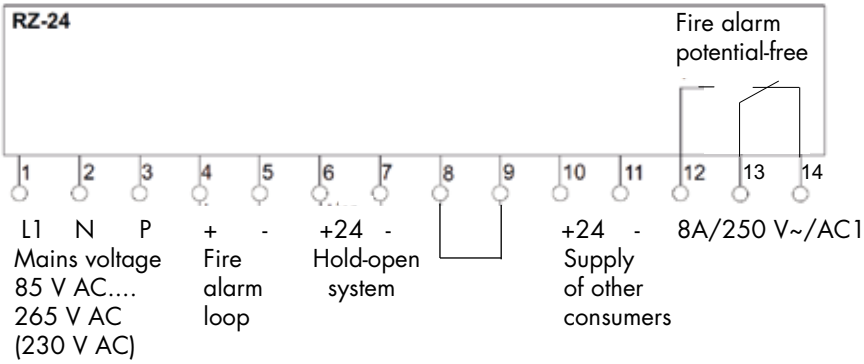
Indication and Operating Elements of the RZ-24

- Integrated hand release key (1)
- Integrated RESET key (2)
- 2 LEDs for status indication on the front panel (3):
  LED green "operation" (normal operation)
  LED red "alarm" (error or alarm)
- Key quitting horn (4):
  switches the horn off after an alarm.

Inputs/Outputs

The RZ-24 central features inputs for the mains supply and the fire alarm loop. Outputs are available for powering the hold-open system and additional consumers. Besides this is also integrated a potential-free relay for relaying the tripping.

Block Diagram

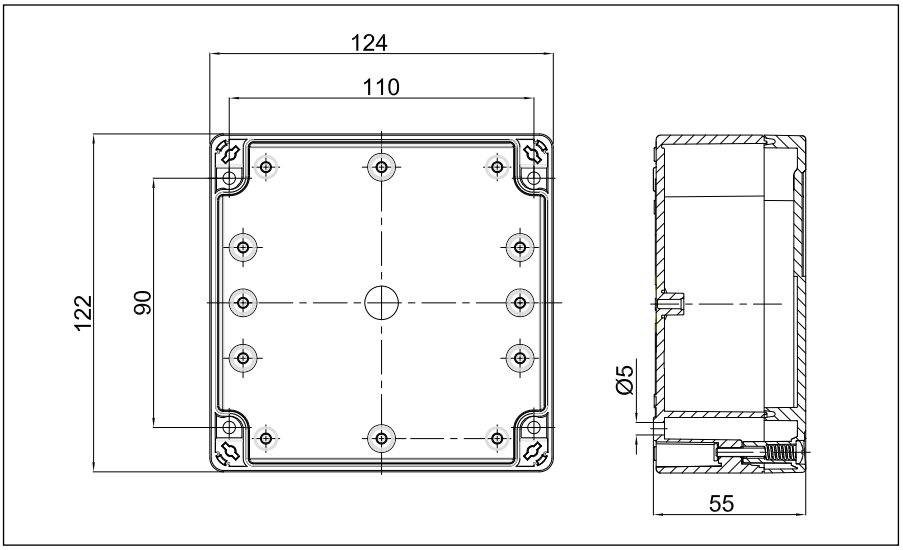


RZ-24 Central Unit - cont.

If necessary, the RZ-24 central unit can also be provided with an integrated or a separate emergency power supply. This allows to bridge a 230 V power supply failure up to 12 minutes - depending on the consumption of the connected smoke detectors, electromagnets and other consumers.

Important notice: When determining the number of required fire detectors, it has to be taken into consideration that an additonal fire detector has to be installed above the RZ-24 when the central unit is not placed within the detection range of one of the detectors mounted on the door!

Dimensions Casing



Installation

The RZ-24 central unit must be installed outside the hazardous area. Special models with pressure capsulated casings for the hazardous area are available on demand.

Technical Data

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 ±5 %
Secondary total load	0.9 A (supply of fire detectors, electromagnets and other consumers)
Operating temperature	-30 °C to +40 °C
IP rating	IP 64 when IP 64 cable inlets are used
Casing	plastic casing in ABS, light grey, with 4 threads M16 for cable inlets
Emergency power supply	on demand, up to max. 12 minutes (at a consumption of 70 mA)

Order Information

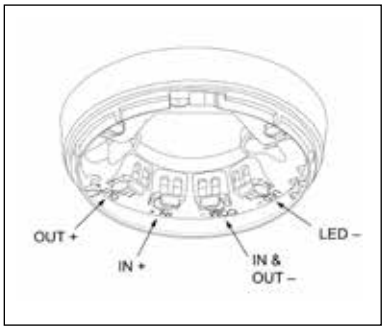
RZ-24 central unit with power supply and tripping device	part no. 040553

Smoke and Heat Detectors
RM 3000IS EX / WM 3000IS EX

Fire protection components installed in hazardous areas require in addition to the approval for fire protection a test and a certificate confirming their compliance with the ATEX directive. Both the smoke detector RM 3000IS EX and the heat detector WM 3000IS EX meet these requirements.
The smoke detector RM 3000IS EX is a stray light detector with integrated thermo sensor.
The smoke detectors RM 3000IS EX and the heat detectors WM 3000IS EX are intrinsically safe. In hazardous areas they may only be used in combination with the Zener barrier described on the next page.

Dimensions

Smoke detector RM 3000IS EX with base	Ø 100 mm height 60 mm
Hear detector WM 3000IS EX with base	Ø 100 mm height 50 mm



Installation

The wiring is done in the base S 3000IS EX. In the last detector the 3.9 kΩ resistor has to be installed between the clamps Com- and Out+.

Intrinsically safe circuits (components marked light-blue) may enter hazardous areas - depending on the type of protection required. However, it has to be assured that each intrinsically safe circuit is safely separated from any not intrinsically safe circuit. The requirements of the EN 60079-14 standard have to be observed. In Germany additionally applies the "National Preamble" of the DIN EN 60079-14/VDE 0165 part 1.

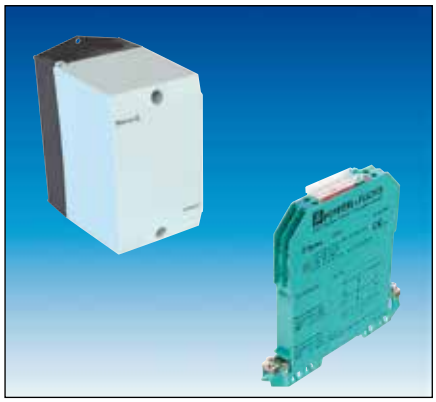
On demand an additional parallel display can be connected to the RM/WM 3000IS EX smoke/heat detectors to faster locate the triggered detector or the seat of fire in case of alarm.

Technical Data

Supply voltage	14 to 28 VDC
Average quiescent current	85 µA at 24 VDC
Starting current	105 µA at 24 VDC
Alarm load	325 Ω in series with 1.0 V descent
Operating temperature	-40 °C to +60 °C (class T4) -40 °C to +40 °C (class T5) (Protect against condensation and icing!)
Heat detector	rate-of-rise detector
Reaction point class acc. EN 54-5:2000	AR1, max. room temperature 50 °C
Ignition protection type	Ⓔx II 1G EEx ia IIC T5 (at max. 40 °C)
IP rating	IP 23
Indication of alarm	red LED indicator on the detector
Material / colour of the casing	polycarbonate / white

Order Information

Smoke detector RM 3000IS EX with S 3000IS EX base	part no. 040881SET
Heat detector WM 3000IS EX with S 3000IS EX base	part no. 040886SET
Resistor 3.9 kΩ	part no. 040893



Zener Barrier Z779

A shunt safety barrier, the Z779 Zener barrier, must be placed in between the RZ-24 central unit and the intrinsically safe smoke detectors installed in the hazardous area. If the maximum admissible voltage is exceeded, it prevents that too high energies occcur in the hazardous area which could ignite explosive gases or vapours.

The Zener barrier Z779 has been tested and is certified according to the requirements of the European ATEX directive 2014/34/EU (approval no. BAS 01 ATEX7 005).

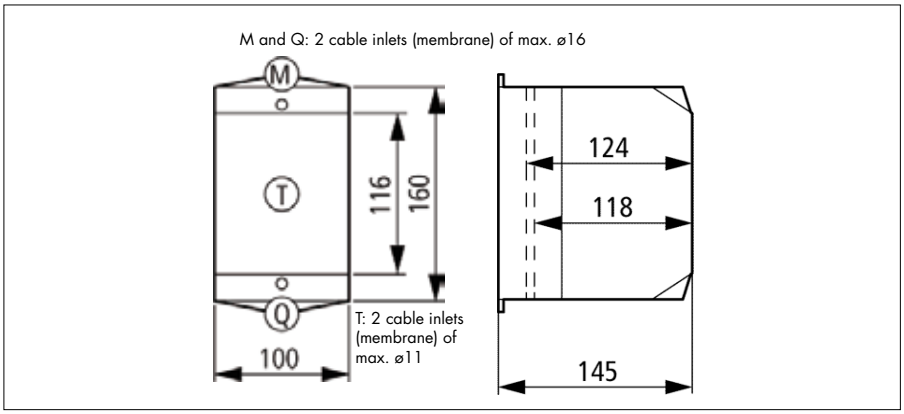
Functioning

The shunt safety barrier contains several diodes which are connected in reverse direction. If the voltage in the safe area exceeds the maximum voltage admissible for these diodes, they start to conduct current and release the fuse of the Zener barrier. This way the transfer of too high energies to the hazardous area is prevented.

The Zener barrier **must** be installed outside the hazardous area. Special models with pressure capsulated casings for the hazardous area are available on demand.

If on site no suitable casing (with a top hat rail according to EN 50222) is available, we offer a separate casing with IP rating IP 65. The Zener barrier is simply snapped onto the top hat rail in the casing.

Dimensions Casing CI-K



Technical Data

Characteristics Zener barrier Z779	2-channel, DC version, positive polarity
Supply voltage	max. 27 VDC
Fuse rating	50 mA
Series resistance	min. 301 Ω/max. 327 Ω
Number of connectable ex-proof detectors	max. 20 pieces of intrinsical safe detectors
IP rating	IP 20 / casing IP 65
Operating temperature	-20 °C to +60 °C
Dimensions Zener barrier	12.5 x 115 x 110 mm
Material casing	glassfiber reinforced polycarbonate
Colour of the casing	bottom black RAL 9005, upper part grey RAL 7035

Order Information

Zener barrier Z779	part no. 040589
CI-K casing for the Zener barrier	part no. 040585

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