

## DICTATOR Hold-Open Systems for Hazardous Areas

Products to be used in hazardous areas obviously have to meet special requirements. In July 2003 the new European directive 94/9/EG (ATEX 100) has come into force making regulations more rigorous than before.

DICTATOR furnishes a hold-open system especially for hazardous areas that meets the requirements of the ATEX 100. The hold-open system has been tested and is approved by the Institute for Building Engineering in Berlin for the use on fire protection doors (approval no. Z-6.5-1646).

There are two types 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.

The valid regulations and instructions must strictly be observed. The installation of the components and operating elements must assure that they cannot be damaged.



### Technical Data

Use	hazardous areas zones 1 and 2
Operating temperature	0 °C to +40 °C
Type of protection fire detector	Ex II 1G Ex ia II C T5 (at max. 40 °C) only in combination with a safety barrier
Type of protection electromagnets	Ex II 2G EEx m II T6 or Ex II 2G EEx em II T6



## Components of a Hold-Open System without Door Operator

Fire protection doors, that are not kept closed all the time require 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 case of hold-open systems in hazardous areas, according to German regulations, an additional gas warning system with a NC-contact is required to release the hold-open system as well. If the switching capacity of the potential-free contact of the gas alarm is not sufficient, an additional relay might be used that is fed by the power supply of the hold-open system.

## Components

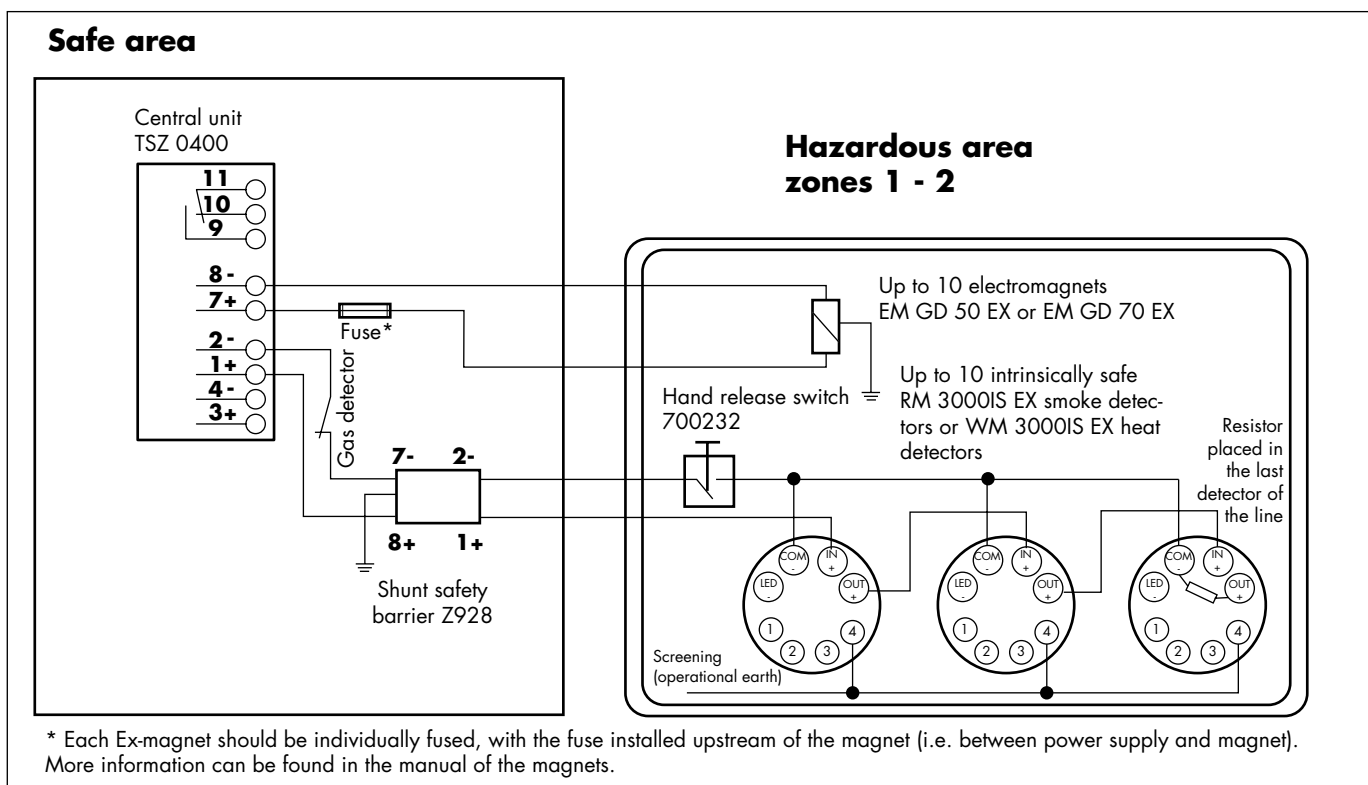
The explosion-proof hold-open system is made up of maximum 10 smoke or heat detectors and up to 10 explosion-proof magnets. The explosion-proof magnet is available in 2 different forces and 2 different designs (with connection box or just with a 2 m ex-proof cable).

The TSZ 0400 central and the safety barrier (Zenerbarriere) are installed outside the hazardous area.

For the explosion-proof DICTATOR hold-open system with the following components a hazard analysis of the TÜV Süd (South) is existent. The cable recommended for the wiring within the hazardous area is an Ölflex cable 2x0,75 mm<sup>2</sup>, max. length 100 m.

- TSZ 0400 central unit with power supply
- Shunt safety barrier: Zenerbarriere Z928
- RM 3000IS EX smoke detector (or WM 3000IS EX heat detector) with base
- Resistor 5.6 kΩ (to be placed in the last detector of the line)
- Explosion-proof magnet
- Hand release switch (part no. 700232)
- Gas warning system

## Wiring Diagram





### 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. The magnets of explosion-proof hold-open systems are generally installed only in the OPEN position of the door and are not integrated in the door operator. In case of alarm, the AR 20 cutoff relay completely cuts off the door operator to make sure that the door does not stay open, even in case of an error of the control system. The door is closed mechanically.

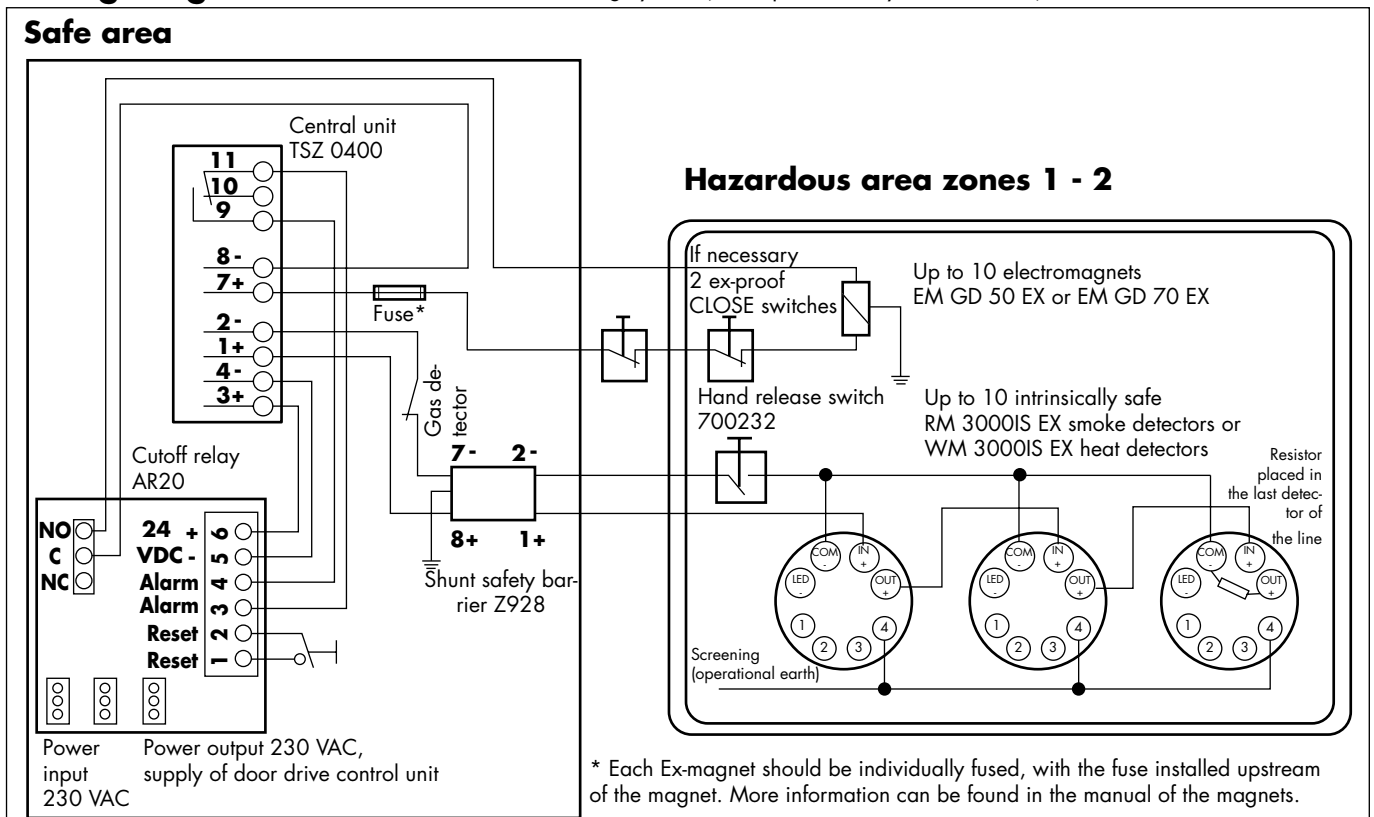
### Components

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. Information on our explosion-proof door operators are to be found in the two chapters about door operators in our catalogue. The TSZ 0400 central unit, the shunt safety barrier and the AR 20 shut-off relay are installed outside the hazardous area.

For the explosion-proof DICTATOR hold-open system with the following components a hazard analysis of the TÜV Süd (South) is existent. The cable recommended for the wiring within the hazardous area is an Ölflex cable 2x0,75 mm<sup>2</sup>, max. length 100 m.

- TSZ 0400 central unit with power supply
- Shunt safety barrier: Zenerbarriere Z928
- AR20 cutoff relay (completely cutting off the door operator control system in case of alarm)
- RESET switch
- RM 3000IS EX smoke detector (or WM 3000IS EX heat detector) with base
- Resistor 5.6 kΩ (to be placed in the last detector of the line)
- Explosion-proof magnet
- Hand release switch (part no. 700232)
- Gas warning system (to be provided by the customer)

### Wiring Diagram



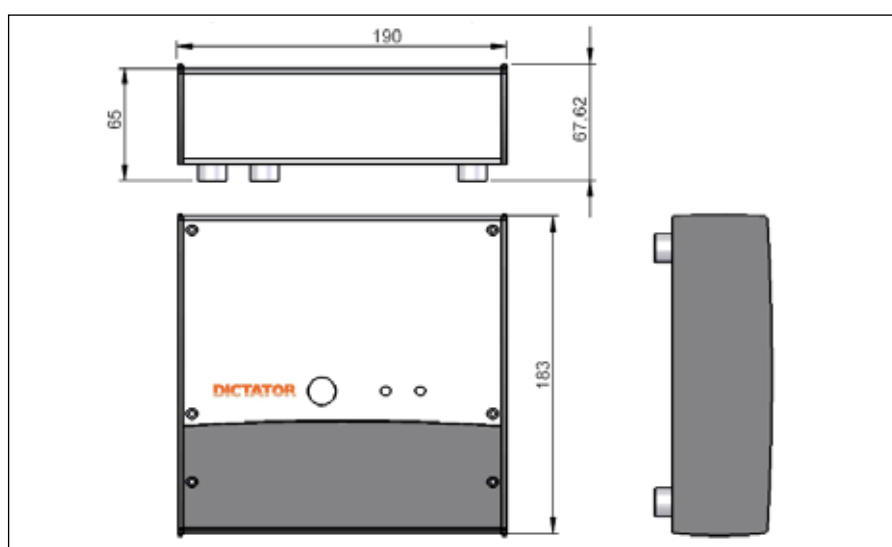


## TSZ 0400 Central Unit with Power Supply

Functions of the TSZ 0400 central unit:

- Power supply of the connected smoke detectors and electromagnets
- Control and evaluation of the smoke detectors: in case of alarm or errors the integrated relay contact interrupts the power supply to the magnet and the door closes
- RESET: after each alarm the connected smoke detectors must be reactivated. This is done either with the RESET switch on the front panel of the central unit or with a separate RESET-switch (obligatory in combination with the AR20 shut-off relay).
- Power supply of further consumers such as a warning siren or flash light
- Additional potential-free contact

## Dimensions



## Installation

The TSZ 0400 central unit must be installed outside the hazardous area.

## Technical Data

• Supply voltage	230 VAC ± 15 %, 50 Hz
• Power consumption (without load)	about 50 mA
• Relay contact for hold-open system	max. 30 VDC at 1 A
• Additional contact*	change over contact, max. 30 VDC at 1 A
• Output voltage	24 VDC
• Output current max.	0.8 A
• Operating temperature	0 °C to 40 °C
• IP rating	IP 42
• Material, colour of the casing	plastic casing, RAL 9002
• LEDs on the front panel	LED green "working" (ON) (normal operation) LED red "alarm" (error or alarm)
• "Rückstellaste" switch on the front panel	hand release and RESET of the detectors

Up to 3 central units can be inter-connected using the integrated terminals. If one of the detectors connected to one central unit is released, this central unit switches the other connected central units to alarm.

\* Not available when an AR 20 cutoff relay is connected.

## Order Information

TSZ 0400 central unit with power supply

part no. 040580

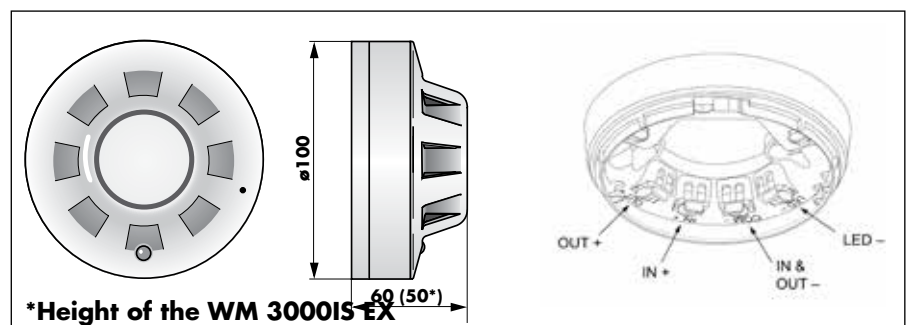


### Smoke and Heat Detectors RM 3000IS EX / WM 3000IS EX

Fire protection components installed in hazardous areas require in addition to the approval for fire protection a test and certificate confirming their compliance with the EN 94/9/EG (ATEX 100) standard. Both the smoke and heat detector RM 3000IS EX and WM 3000IS EX meet these requirements.

The smoke detector RM 3000IS EX is a stray light detector with integrated thermo sensor. The smoke and heat detectors RM 3000IS EX and WM 3000IS EX are intrinsically safe. In hazardous areas they may only be used in combination with the shunt safety barrier described on the next page.

### Dimensions



### Installation

The wiring is done in the base S 3000IS EX. In the last detector the 5.6 k $\Omega$  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 $\mu$ A at 24 VDC
• Starting current	105 $\mu$ A at 24 VDC
• Alarm load	325 $\Omega$ <b>in series with 1.0 V descent</b>
• 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 54-5:2000AR1, max. room temperature 50 °C
• Ignition protection type	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 5.6 k $\Omega$	part no. 040891

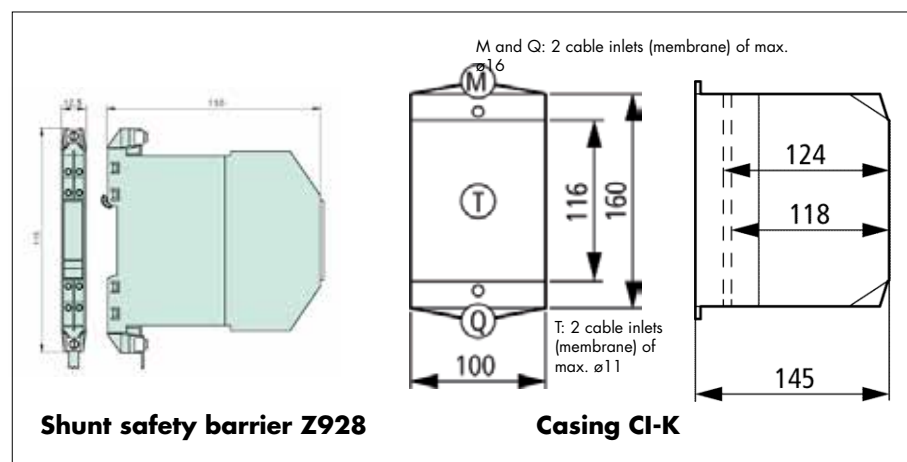


## Safety Barrier: Zenerbarriere Z928

A shunt safety barrier, the Z928, must be placed in between the TSZ 0400 central unit and the intrinsically safe smoke detectors installed in the hazardous area. It restricts the transfer of energy from safe area equipment to the intrinsically safe smoke detectors, by the limitation of voltage and current.

The shunt safety barrier Z928 has been tested and is certified according to the requirements of the 94/9/EG (ATEX 100) standard (approval no. BAS01ATEX7005).

## Dimensions



## Functioning

The shunt safety barrier integrates several diodes. If the voltage in the safe area exceeds the maximum voltage admissible for these diodes, they start to conduct current and blow the fuse of the safety barrier. This way the transfer of too high energies to the hazardous area is prevented.

The safety barrier has to be installed outside the hazardous area.

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

## Technical Data

• Supply voltage	max. 28 VDC
• Nominal power	max. 93 mA
• Integrated resistor	min. 300 Ohm
• EEx ia detectors to be connected	max. 10 units
• IP rating	IP 20 / casing IP 65
• Operating temperature	0 °C to +60 °C
• Material casing	glassfiber reinforced polycarbonate
• Colour of the casing	bottom black RAL 9005, upper part grey RAL 7035

## Order Information

Shunt safety barrier Z928	part no. 040584
CI-K casing for the safety barrier	part no. 040585



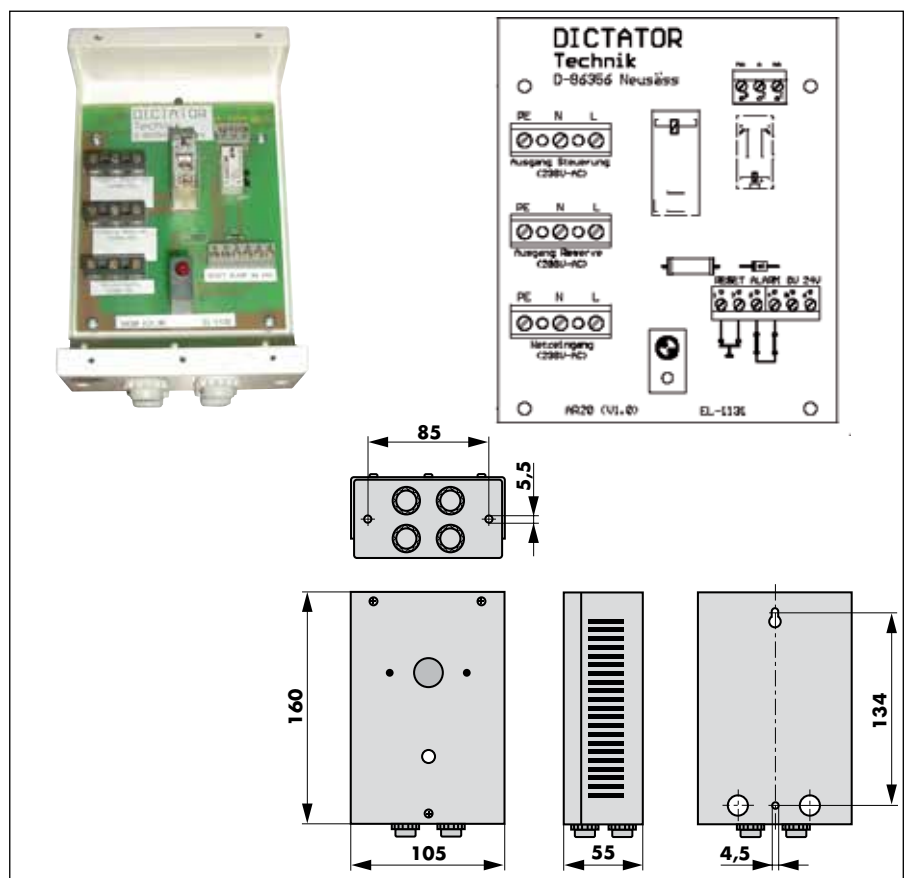


### AR 20 Cutoff Relay

The AR20 cutoff relay is required as a component in explosion proof hold-open systems when a door operator is used to open the door. In case of an alarm it completely cuts off the power supply to the control system of the door operator and the door is closed mechanically (door closer, closing spring or counterweight).

After each alarm the shut-off relay has to be reactivated with a separate RESET switch. The AR 20 cutoff relay has to be installed outside the hazardous area.

### Interior View Dimensions



### Technical Data

• Control voltage	24 VDC $\pm$ 10 %
• Power consumption	max. 40 mA
• Switching capacity	max. 3 A at 250 VAC
• Max. switchable motor power	0.37 kW
• Operating temperature	0 °C to 40 °C
• IP rating	IP 20
• Material, colour of the casing	sheet steel casing, RAL 9010
• Cable inlets of the casing	4 x Pg 9
• Indicator diode on the casing	LED red = triggered (error or alarm)

### Order Information

Cutoff relay AR 20	part no. 040582
RESET switch to reactivate the cutoff relay	part no. 700112

