

Extreme

// 极端环境下的控制开关/
SWITCH CONTROL UNDER EXTREME CONDITIONS

用于船舶和港口设备的产品
Products for shipbuilding and port technology

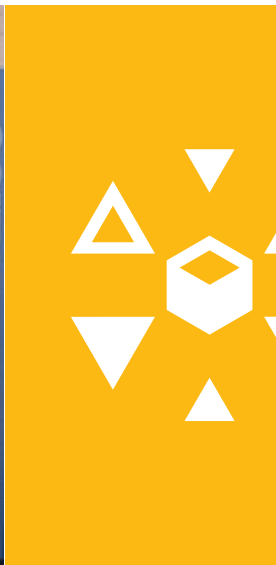






// 符合工业规范的实验室和测试标准 / LABORATORY AND STANDARD TESTS ACCORDING TO INDUSTRIAL SPECIFICATIONS





在实验室环境下的测试

盐雾实验和防护等级

有几种工业标准可用于检测电气设备的耐腐蚀性。首先从依据DIN EN ISO 9227的简单盐雾试验开始，再上升到依据IEC/EN 60068-2-52的循环盐雾试验，通常需要测试数周。在所有的这些标准中，都有统一定义的实验室环境标准，以便获得可重复的、可比较的结果。不幸的是，很少与实际做法有直接的联系。因此，一些船级社，如DNV-GL，根据相关业务领域的要求，按照自己的标准执行。

防护等级的定义依据IEC/EN 60529。除此以外，定义还包括防止带电线缆接触或渗入水。实际适用于海洋的防护等级从IP 65开始，尽管所有防护等级都依据IEC/EN 60529标准，仅在新设备上测试。以下是防护等级IP 66的示例。在距离设备2.5米至3米的地方，用喷水从不同方向以每分钟100升的流速冲击设备。喷水的直径为12.5毫米，试验持续时间至少3分钟。许多世德的极端产品的防护等级在IP 65和IP 69之间，并进行了额外的盐雾试验。尽管工业测试标准在实际应用中存在局限性，但在选择设备时，高防护等级和良好的盐雾试验结果仍然起决定作用。

Tests under laboratory conditions

Salt-mist tests and degrees of protection

There are several industrial standards that can be used to test the corrosion resistance of electrical equipment. They start with simple salt spray tests according to DIN EN ISO 9227 and rise to cyclic salt-mist tests according to IEC/EN 60068-2-52 that can run for many weeks. In all of these standards there are uniform defined laboratory environments to obtain reproducible and therefore always comparable results. Unfortunately, there is rarely a direct connection with actual practice. For this reason, some classification authorities, such as DNV-GL, work with their own standards in compliance with the relevant business field.

Degrees of protection are defined in e.g. IEC/EN 60529. Definitions refer, amongst other things, to the protection of live wires against contact or the penetration of water. Practically applicable degrees of protection for the maritime area start at IP 65, although all degrees of protection according to the IEC/EN 60529 standard are tested on new devices only. Here is an example of the degree of protection for IP 66. At a distance of 2.5 to 3.0 m, devices are treated with spray water that hits them at 100 l per minute from different directions. The water jet diameter is 12.5 mm and the test duration is at least 3 minutes. Many steute Extreme products have a degree of protection between IP 65 and IP 69 with an additional salt-mist test. Despite the limitations of industrial standard tests for actual practice, high degrees of protection and good salt-mist test results are still decision criteria when selecting devices.

// 北海 HELGOLAND 岛的真实海况下的现场试验 / FIELD TRIALS UNDER REAL MARITIME CONDITIONS ON THE NORTH SEA ISLAND OF HELGOLAND



6

IFAM 在 Helgoland 岛现场进行设备的防护测试和盐雾测试

Field test facility Fraunhofer IFAM on Helgoland IP test and salt-mist test

真实环境下的测试

盐雾试验的结果很少适用于比较涂层或涂层系统的长期性能，因为此类实验室试验的腐蚀应力与实际情况有显著差异。防护等级总是在新设备上根据标准进行测试。这就是为什么除了根据工业规范进行实验室和标准试验外，世德还要在现实环境和苛刻条件下实施自己的长期试验。在实践中，对腐蚀行为、功能和防护等级进行了评估。在2017年9月至2018年9月的第一个实验阶段，即总共8400小时，各种世德极端开关暴露在室外海洋环境下。在测试中，样品设备选择放在水面上方1米处的“飞溅区”。在试验阶段结束时，对设备的腐蚀和功能进行了评估。由此产生了一个新的面向实践的比较参数：“根据北海 Helgoland 岛一年来的典型气候条件”。

这些外包现场试验的结果随后被转移到结构相同的设备上，并被列入海事部门推荐的设备产品清单。这个清单可以在极端和防爆章节找到。

Testing under real-life conditions

Results from salt-mist tests are rarely suitable for comparing the long-term behaviour of different coating or coating systems because the corrosion stress in such laboratory tests differs significantly from actual practice. Degrees of protection are always tested according to the standard on new devices only. This is why steute has implemented its own long-term tests under real-life and demanding conditions in addition to the laboratory and standard tests according to industrial specifications. Here the corrosion behaviour, the function and the degree of protection are all evaluated in practice. In the first test phase from September 2017 to September 2018, i.e. a total of 8400 hours, various steute Extreme switches were exposed to outdoor maritime conditions. In the test set-up, a sample device selection was placed 1 metre above the surface of the water in the “splash zone”. At the end of the test phase, the corrosion and function of the devices were evaluated. A new practice-oriented comparative parameter was thus created: “According to the typical climatic conditions at the Helgoland site in the North Sea over the course of one year”.

The results from these outsourced field tests were then transferred to identically constructed devices and included in the product lists of devices recommended for the maritime sector. These lists can be found in the sections Extreme and Ex.

关于功能的腐蚀、防护等级以及污染敏感度的开关额定值:

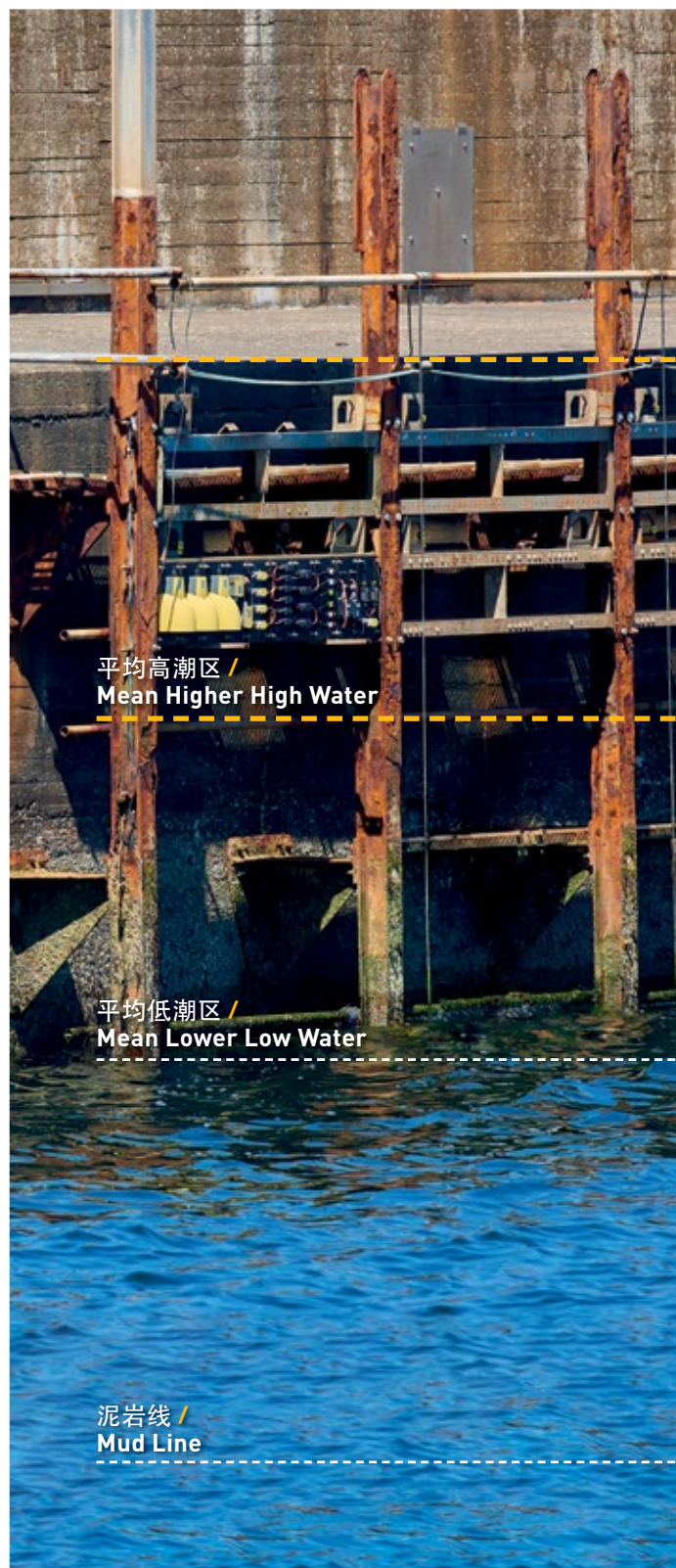
A+ = 强烈推荐; A = 推荐;
B = 合适的; C = 有限适用

Switch rating for corrosion, degree of protection and soiling sensitivity with regard to function:

A+ = Highly recommended; A = Recommended;
B = Suitable; C = Of limited suitability



Helgoland 岛测试设备 /
Test set-up Helgoland



平均高潮区 /
Mean Higher High Water

平均低潮区 /
Mean Lower Low Water

泥岩线 /
Mud Line

码头区和海岸建筑物 /
Waterfront and coastal structures

海气区 / Atmospheric Zone

飞溅区 / Splash Zone

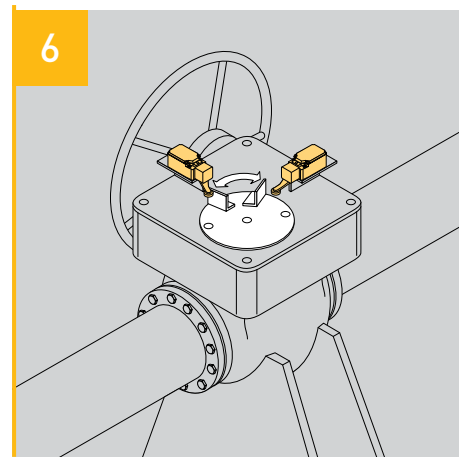
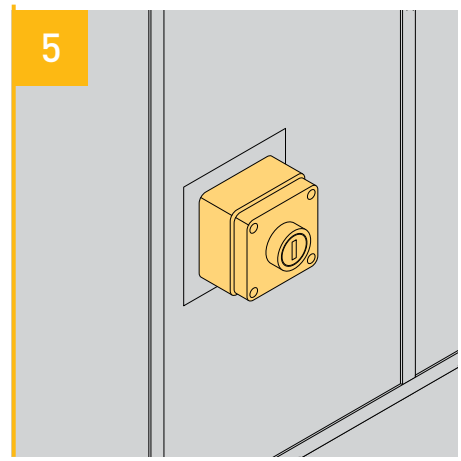
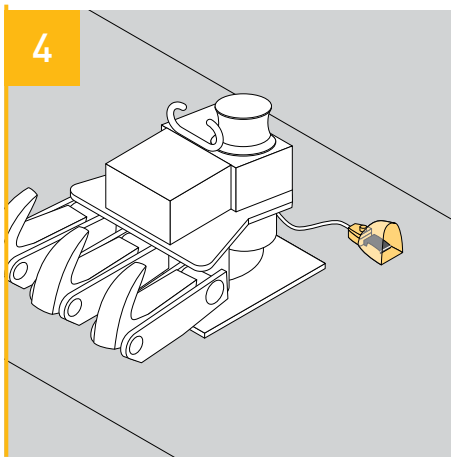
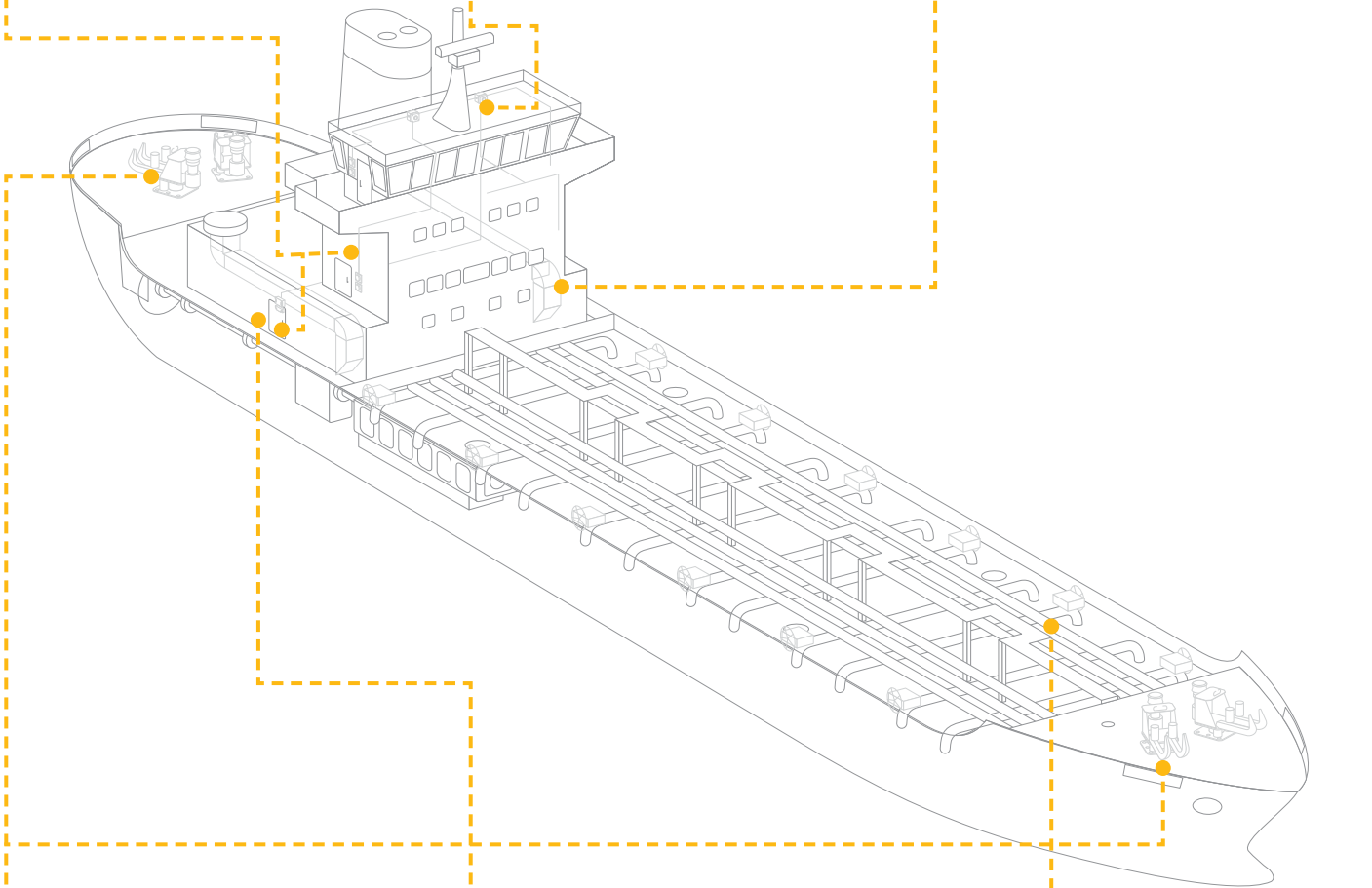
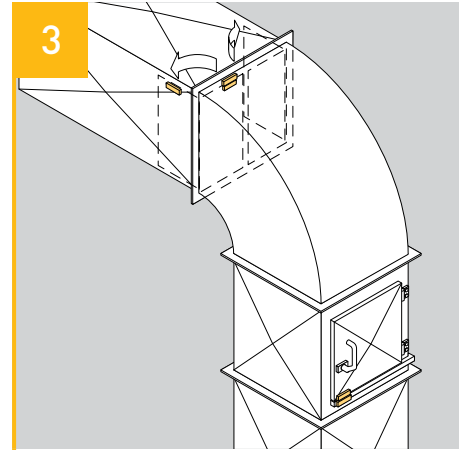
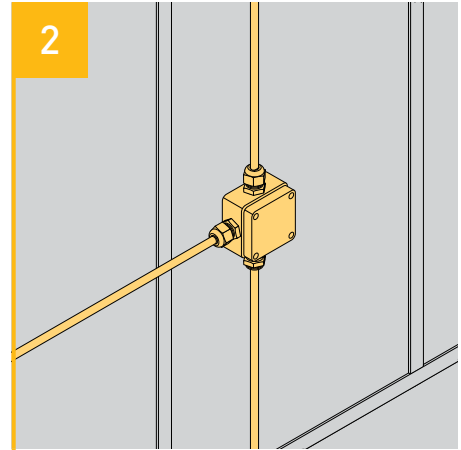
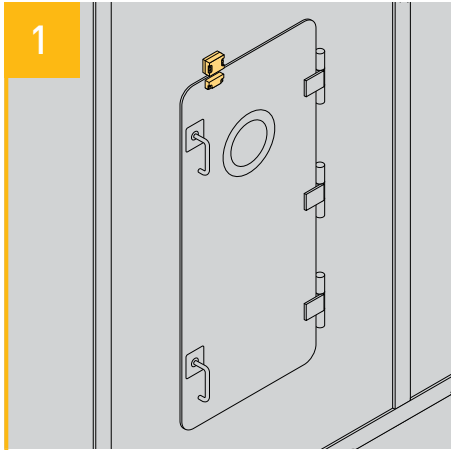
世德产品测试区 /
Test zone for
steute products

潮汐区 / Tidal Zone

浸水区 / Submerged Zone

底土 / Subsoil

// 油轮 /
TANKSHIPS



// 应用描述 /

DESCRIPTION OF THE APPLICATIONS

1 防护门监控

使用防爆安全传感器监控防护门

Guard door monitoring

Guard door monitoring by Ex safety sensors

2 安装设备电气布线

防爆接线盒和防爆端子盒

Installation equipment for electric wiring

Ex junction and terminal boxes

3 带有防火阀的空调系统

使用防爆磁传感器监控空调系统的防火阀位置

Air conditioning system with fire protection flaps

Position monitoring of fire protection flaps of air conditioning systems with Ex magnetic sensors

4 船舶绳索锚钩

使用防爆脚踏开关操作锚钩

Anchorage hook for ship ropes

Actuation of an anchorage hook with an Ex foot switch

5 信号和指令设备

防爆指令设备和信号设备用于不同流程的启动和可视化，也可提供无线技术版本

Signalling and command devices

Ex command and signalling devices for the initiation and visualisation of very different processes, also available with wireless technology

6 阀门位置监控

防爆限位开关监控阀门位置，也可以使用防爆无线开关

Valve position monitoring

Position monitoring of valves with Ex position switches, also available as Ex wireless position switches

// 应用描述 / DESCRIPTION OF THE APPLICATIONS

1 船舶绳索锚钩
使用防爆无线脚踏开关操作锚钩

Anchorage hook for ship ropes
Actuation of an anchorage hook with an Ex wireless foot switch

2 防碰撞开关用于起重机吊钩
极端防碰撞开关用于吊钩位置确认

Anti-two-block switch for crane hooks
Query of the hook position with Extreme anti-two-block switch

3 防跑偏开关靠在输送带边上
重载型极端防跑偏开关监控输送带位置

Belt alignment switch along conveyor belt
Monitoring of conveyor belt position with a heavy-duty Extreme belt alignment switch

4 转向装卸臂
使用防爆限位开关监控装卸臂位置

Steering loading arms
Monitoring the positions of a loading arm with Ex position switches

5 船舶绳索锚钩
使用防爆脚踏开关操作锚钩

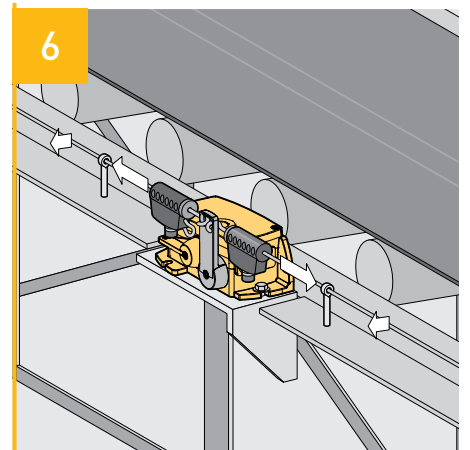
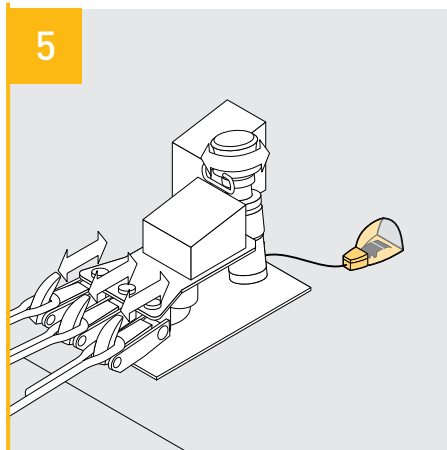
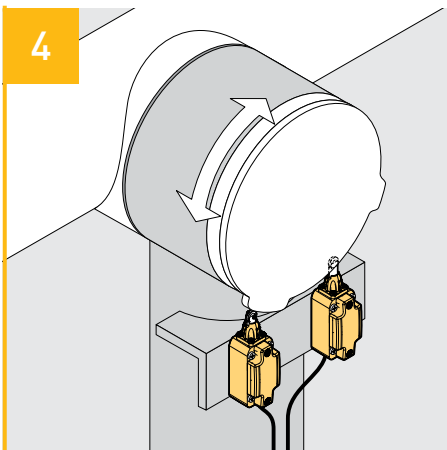
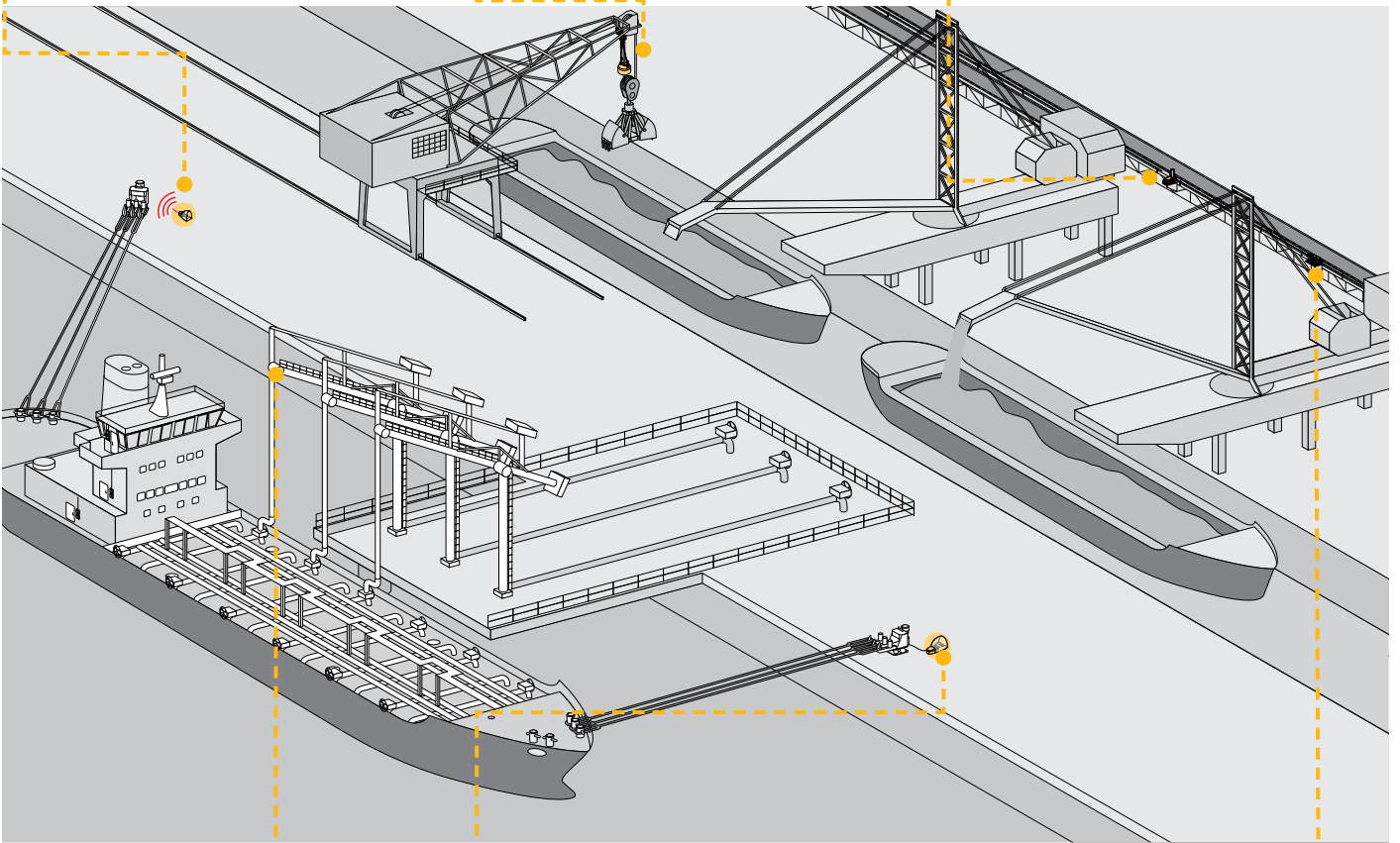
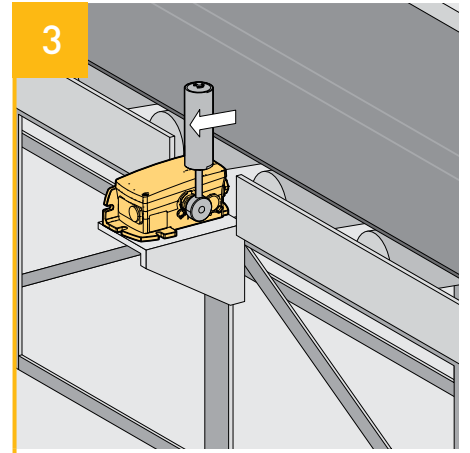
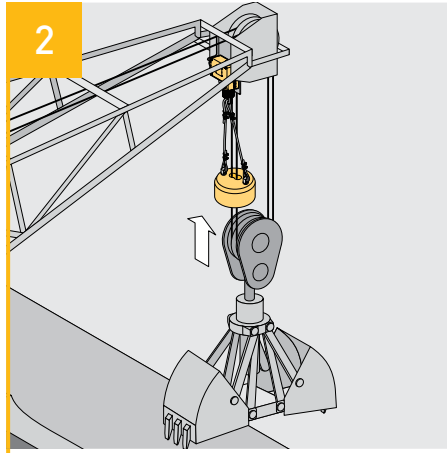
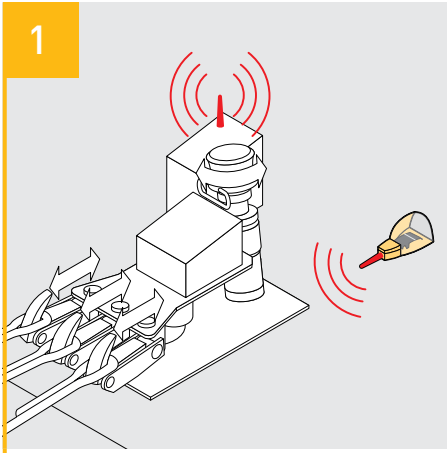
Anchorage hook for ship ropes
Actuation of an anchorage hook with an Ex foot switch

6 紧急拉线开关靠在输送带边上
输送带的紧急停止功能使用一个紧急拉线开关

Emergency pull-wire switch along conveyor belt

Emergency-stop function along conveyor belt with an emergency pull-wire switch

// 港口设施 / PORT FACILITY






第 14 页 Page 14	海洋环境推荐产品清单 Recommendation list of devices in the maritime field
第 20 页 Page 20	带独立操作头的安全开关 Safety switches with separate actuator
第 22 页 Page 22	安全传感器 Safety sensors
第 26 页 Page 26	限位开关 Position switches
第 32 页 Page 32	紧急拉线开关 Emergency pull-wire switches
第 36 页 Page 36	防跑偏开关 Belt alignment switches
第 38 页 Page 38	防碰撞开关 Anti-two-block switches
第 40 页 Page 40	拉线开关 Pull-wire switches
第 42 页 Page 42	脚踏开关 Foot switches
第 46 页 Page 46	磁传感器 Magnetic sensors
第 50 页 Page 50	电感式传感器 Inductive sensors

海洋环境推荐产品清单 /

RECOMMENDATION LIST OF DEVICES IN THE MARITIME FIELD

带独立操作头的安全开关 /

Safety switches with separate actuator









产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	ES 97 AZ Extreme	C	-

安全传感器 / Safety sensors

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	HS Si 4 1Ö/1S 2m -40°C IP69K Extreme	A+	A+ 特殊线缆/with special cable
	HS Si 4 1Ö/1S 5m -40°C IP69K Extreme	A+	A+ 特殊线缆/with special cable
	HS Si 4 2Ö 2m -40°C IP69K Extreme	A+	A+ 特殊线缆/with special cable
	HS Si 4 2Ö 5m -40°C IP69K Extreme	A+	A+ 特殊线缆/with special cable
	RC Si M30 1Ö/1S-2m-NIRO IP69 Extreme	A+	A 特殊线缆/with special cable
	RC Si M30 1Ö/1S-5m-NIRO IP69 Extreme	A+	A 特殊线缆/with special cable
	RC Si M30 1Ö/1S-10m-NIRO IP69 Extreme	A+	A 特殊线缆/with special cable
	RC Si M30 1Ö/1S-10m-NIRO IP69K Extreme GL	A+	A
	RC Si M30 1Ö/1S-LED-2m-NIRO IP69 Extreme	A+	A 特殊线缆/with special cable
	RC Si M30 2Ö-2m-NIRO IP69 Extreme	A+	A 特殊线缆/with special cable
	RC Si M30 2Ö-5m-NIRO IP69 Extreme	A+	A 特殊线缆/with special cable
	RC Si M30 2Ö-10m-NIRO IP69 Extreme	A+	A+ 特殊线缆/with special cable
	RC Si M30 2Ö-LED-2m-NIRO IP69 Extreme	A+	A 特殊线缆/with special cable
	RC Si 56 1Ö/1S-2m IP69K Extreme	A+	A+ 特殊线缆/with special cable
	RC Si 56 1Ö/1S-5m IP69K Extreme	A+	A+ 特殊线缆/with special cable
	RC Si 56 1Ö/1S-10m IP69 Extreme	A+	A+ 特殊线缆/with special cable
	RC Si 56 2Ö-2m IP69K Extreme	A+	A+ 特殊线缆/with special cable
	RC Si 56 2Ö-5m IP69K Extreme	A+	A+ 特殊线缆/with special cable
	RC Si 56 2Ö-10m IP69 Extreme	A+	A+ 特殊线缆/with special cable
			

*根据需求可提供 / On request





限位开关 / Position switches

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	ES 97 WHKR-11 IP69 Extreme	A	A
	ES 97 WHKD-11 IP69 Extreme	A	B
	ES 97 TTK-11 IP69 -40°C Extreme	B	-
	ES 98 -11 -40°C IP66 Extreme	A	C
	ES 98-12 -40°C IP66 Extreme	A	C
	EM 98-12 -40°C IP66 Extreme	A	C
	ES 98 R-11 -40°C IP66 Extreme	A	C
	ES 98 R-12 -40°C IP66 Extreme	A	C
	EM 98 R-12 -40°C IP66 Extreme	A	C
	ES 98 H-11 -40°C IP66 Extreme	A	C
	ES 98 H-12 -40°C IP66 Extreme	A	C
	EM 98 H-12 -40°C IP66 Extreme	A	C
	ES 14 W 10/1S 2m -40°C IP66 Extreme	A	-
	ES 14 W 20/1S 2m -40°C IP66 Extreme	A	-
	EM 14 W 2m -40°C IP66 Extreme	A	-
	ES 14 WKU 10/1S 2m -40°C IP66 Extreme	A	-
	ES 14 WKU 20/1S 2m -40°C IP66 Extreme	A	-
	EM 14 WKU 2m -40°C IP66 Extreme	A	-

从功能、腐蚀性、防护等级以及污垢敏感性等方面进行评价：
A+ = 强烈推荐; **A** = 推荐;
B = 合适的; **C** = 有限适用




In terms of function, corrosion, degree of protection and fouling sensitivity were evaluated.
A+ = Highly recommendable; **A** = Recommendable;
B = Suitable; **C** = Of limited suitability

限位开关 / Position switches



产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	ES 14 WR 1Ö/1S 2m -40°C IP66 Extreme	B	-
	ES 14 WR 2Ö/1S 2m -40°C IP66 Extreme	B	-
	EM 14 WR 2m -40°C IP66 Extreme	B	-
	EM 14 WPH 1Ö/1S 5m -40°C	A+	A
	ES 14 WPH 2Ö 5m -40°C	A+	A
	ES 14 D 1Ö/1S 2m -40°C IP66 Extreme	B	-
	ES 14 D 2Ö/1S 2m -40°C IP66 Extreme	B	-
	EM 14 D 2m -40°C IP66 Extreme	B	-
	ES 14 TF 1Ö/1S 2m -40°C IP66 Extreme	B	-
	EM 14 TF 2m -40°C IP66 Extreme	B	-

16


紧急拉线开关 / Emergency Pull-wire switches

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	ZS 71 2Ö/1S WVD KST IP69 NIRO Extreme	A	C
	ZS 73 1Ö/1S WVD 295-390 N Niro hard-coated Extreme	A	C
	ZS 73 1Ö/1S WVD 120-180 N Niro hard-coated Extreme	A	C
	ZS 73 2Ö WVD 295-390 N Niro hard-coated Extreme	A	C
	ZS 92 S 22 VD F -40°C +85°C Extreme	A+	A
	ZS 92 S 22 VD B -40°C +85°C Extreme	A+	A

防跑偏开关 / Belt alignment switches

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	ES 98 SR-11 -40°C IP66 Extreme	B	C
	ES 98 SR-11U -40°C IP66 Extreme	B	C
	ES 98 SR-11 +90°C IP69 Extreme	B	C
	ES 98 SR-11U +90°C IP69 Extreme	B	C
	ZS 92 SR 22 P -40°C ...+85°C IP66/67 Extreme	A	C
	ZS 92 SR 22 -40°C ...+85°C IP66/67 Extreme	A	C

防碰撞开关 / Anti two-block switches

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	ZS 73 10/1S W HES 130N -40°C NIRO Extreme	A	B
	ZS 73 20 W HES 130N -40°C NIRO Extreme	A	B

拉线开关 / Pull-wire switches

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	ZS 71 WZ 10/1S KST IP69 NIRO 55N Extreme	A	C




从功能、腐蚀性、防护等级以及污垢敏感性等方面进行评价：
A+ = 强烈推荐; **A** = 推荐;
B = 合适的; **C** = 有限适用

In terms of function, corrosion, degree of protection and fouling sensitivity were evaluated.
A+ = Highly recommendable; **A** = Recommendable;
B = Suitable; **C** = Of limited suitability

脚踏开关 / Foot switches

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	GFI 1Ö/1S -40°C ... +90°C Extreme	A+	A
	GFI 2Ö/2S -40°C ... +90°C Extreme	A+	A
	GFSI 1Ö/1S -40°C ... +90°C Extreme	A+	A
	GFS 1Ö/1S IP69K KST-Haube Extreme	A	-

磁传感器 / Magnetic sensors

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	RC M14 1S 2m -40°C Extreme GL	A	B
	RC 23 1S-2m -60°C...+100°C IP69K Extreme	A	A 特殊线缆/with special cable
	RC 23 1S 10m -60°C...+100°C IP69K Extreme	A	A 特殊线缆/with special cable
	RC 23 1W 2m -60°C...+100°C IP69K Extreme	A	A 特殊线缆/with special cable
	RC 23 1W 10m -60°C...+100°C IP69K Extreme	A	A 特殊线缆/with special cable
	RC 2580 1W-2m -40°C IP68 Niro Extreme	A+	A 特殊线缆/with special cable
	RC 2580 1W-5m -40°C IP68 Niro Extreme	A+	A 特殊线缆/with special cable
	RC 2580 1W-B-2m -40°C IP68 Niro Extreme	A+	A 特殊线缆/with special cable
	RC 2580 1W-B-5m -40°C IP68 Niro Extreme	A+	A 特殊线缆/with special cable

*根据需求可提供 / On request

电感式传感器 / Inductive sensors

产品 / Product	Extreme	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	IS M12b 3DCCDA NPN PNP NO 2m Extreme	A	B 线缆防紫外线辐射/protect cable from UV radiation
	IS M12b 3DCCC PNP NO ST2 Extreme	A	B
	IS M18b 5DCCDA NPN PNP NO 2m Extreme	A	B 线缆防紫外线辐射/protect cable from UV radiation
	IS M18b 5DCCC PNP NO ST2 Extreme	A	B
	IS M30b 10DCCDA NPN PNP NO 2m Extreme	A	B 线缆防紫外线辐射/protect cable from UV radiation
	IS M30b 10DCCC PNP NO ST2 Extreme	A	B

从功能、腐蚀性、防护等级以及污垢敏感性等方面进行评价：
A+ = 强烈推荐; **A** = 推荐;
B = 合适的; **C** = 有限适用

In terms of function, corrosion, degree of protection and fouling sensitivity were evaluated.
A+ = Highly recommendable; **A** = Recommendable;
B = Suitable; **C** = Of limited suitability

带独立操作头的安全开关 ES 97 AZ Extreme / Safety switches with separate actuator ES 97 AZ Extreme



特点/选项

- 金属外壳
- 设计依据 EN 50041
- 高防护等级 IP 66/67/69

注释

操作件不包含在订购的开关中

Features/options

- Thermoplastic enclosure
- Design according to EN 50047
- High degree of protection IP 66/67/69

Note

The actuator is not included in the delivery of the switches

// ES 97 AZ EXTREME



技术参数

适用标准

EN 60947-5-1; EN ISO 13849-1;
EN ISO 14119

外壳

增强玻璃纤维，抗震热塑性塑料，自熄性依据 UL 94-V0

开关类型

2类, 低编码

防护等级

IP 66, 67, 69 依据 IEC/EN 60529

开关原理

缓动型或速动型, 肯定断开常闭触点 ⊖

开关元件

1个常闭/1个常开触点, Zb类

连接类型

螺丝连接端子, 最大 2,5 mm² (包括导线套管)

B_{10d} (10% 额定负载)

2百万

T_M

最长 20年

U_{imp}

4 kV

U_i

250 V

I_{the}

6 A

I_e/U_e

6 A/250 VAC; 0,25 A/230 VDC;
4 A/24 VDC 最小 10 mA / 24 V

应用类别

AC-15; DC-13

短路保护

6 A gG/gN 型熔丝管

机械寿命

100万操作次数

环境温度

-20 °C ... +70 °C

Technical data

Applied standards

EN 60947-5-1; EN ISO 13849-1;
EN ISO 14119

Enclosure

glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0

Switch type

Type 2, low coding

Degree of protection

IP 66, 67, 69 to IEC/EN 60529

Switching system

slow action, positive break NC contacts

Switching elements

1 NC/1 NO, type Zb

Connection

screw connection terminals, max. 2.5 mm² (incl. conductor ferrules)

B_{10d} (10% nominal load)

2 million operations

T_M

max. 20 years

U_{imp}

4 kV

U_i

250 V

I_{the}

6 A

I_e/U_e

6 A/250 VAC; 0,25 A/230 VDC;
4 A/24 VDC min. 10 mA / 24 V

Utilisation category

AC-15; DC-13

Max. fuse rating

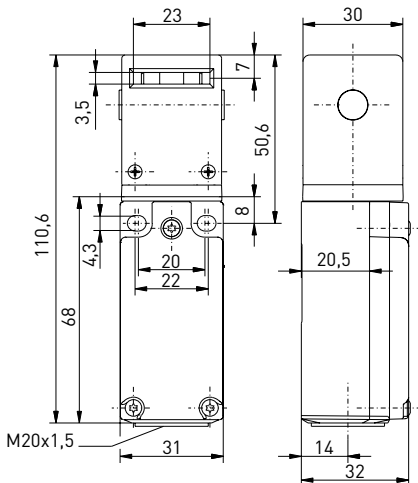
6 A gG/gN fuse

Mechanical life

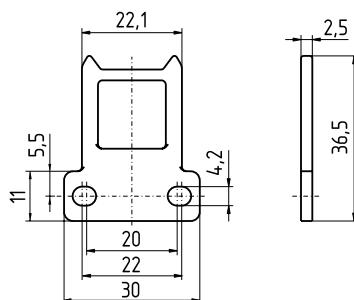
1 million operations

Ambient temperature

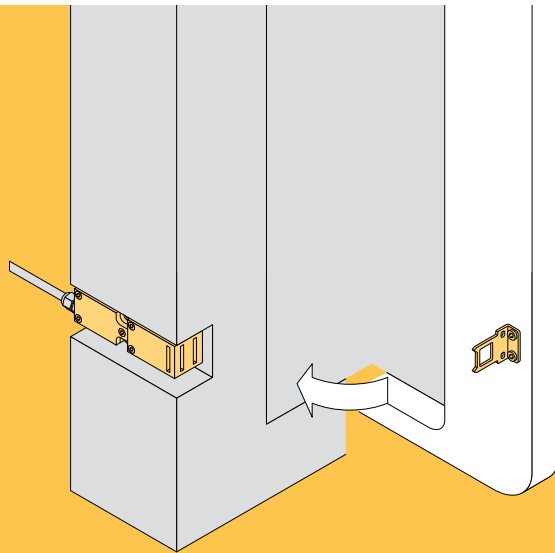
-20 °C ... +70 °C



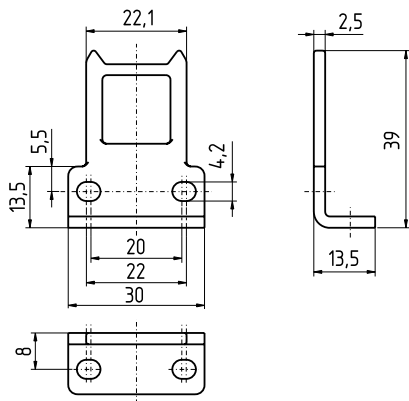
95 AZ-B1



带独立操作头的安全开关 ES 98 ST Extreme /
Safety switches with separate actuator ES 98 ST Extreme



95 AZ-B5



安全传感器 HS Si 4 Extreme / Safety sensor HS Si 4 Extreme



特点/选项

- 耐低温至 -40 °C
- 高防护等级 IP69
- 热塑性塑料外壳
- 霍尔传感器1个常闭/1个常开触点或2个常闭触点
- 高抗冲击性和振动性

注释

操作件不包含在订购的开关中

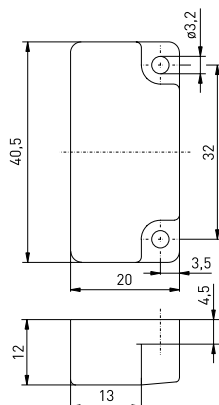
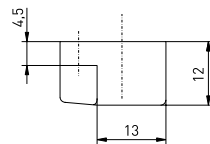
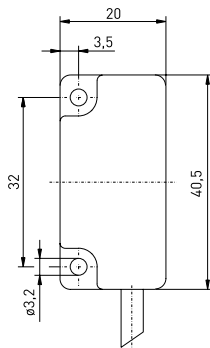
Features/Options

- Cold-resistant down to -40°C
- High degree of protection IP69
- Thermoplastic enclosure
- Hall sensor 1 NC/1 NO or 2 NC contacts
- High shock and vibration resistance

Note

The actuator is not included in the delivery of the switches

// HS SI 4 EXTREME



MC 4

技术参数

适用标准

EN 60947-5-2, EN 60947-5-3; EN ISO 13849-1; EN ISO 14119; EN 62061

外壳

增强玻璃纤维，抗震热塑性塑料，自熄性依据 UL 94-V0

连接类型

线缆，6 x AWG 26, 2 或 5 m, 最长 15 m

传感器类型

4 类联锁装置，低编码

防护等级

IP 66/67/69 依据 IEC/EN 60529

开关原理

霍尔传感器，2 个电流隔离通道，半导体，1 个常闭/1 个常开触点或 2 个常闭触点

MTTF_d

> 100 年

DC/DC_{avg}

> 99 %

EN 62061

SIL CL 3

PFH_d

≥ 2,47 x 10⁻⁸ 1/h

T_M

最长 20 年

应用类别

DC-12

U_e

24 VDC

U_B

10 ... 30 VDC

I_e

每个通道最大 40 mA

环境温度

-40°C ... +70°C

感应距离

s_n 7 mm, s_{ao} 6 mm, s_{ar} 20 mm

重复性

< 5 %

产品认证

CE, US

Technical data

Applied standards

EN 60947-5-2, EN 60947-5-3; EN ISO 13849-1; EN ISO 14119; EN 62061

Enclosure

glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0

Connection

cable 6 x AWG 26, 2 or 5 m, max. 15 m

Sensor type

type 4 interlocking device, low coding

Degree of protection

IP 66/67/69 to IEC/EN 60529

Switching system

Hall sensor, 2 galvanically separated channels, semiconductor, 1 NC/1 NO or 2 NC contacts

MTTF_d

> 100 years

DC/DC_{avg}

> 99 %

EN 62061

SIL CL 3

PFH_d

≥ 2,47 x 10⁻⁸ 1/h

T_M max.

20 years

I_e / U_e

6 A/400 VAC

Utilisation category

AC-15

U_e

24 VDC

U_B

10 ... 30 VDC

I_e

max. 40 mA per channel

Ambient temperature

-40°C ... +70°C

Switching distances

s_n 7 mm, s_{ao} 6 mm, s_{ar} 20 mm

Repeatability

< 5 %

Approvals

CE, US

安全传感器 RC Si 56 Extreme / Safety sensor RC Si 56 Extreme



特点/选项

- 高防护等级 IP 66/67/69
- 热塑性塑料外壳
- 簧片触点, 编码型
- 从正面操作
- 感应距离 6 mm
- 根据需求可提供带 LED 灯版本

注释

操作件不包含在订购的开关中

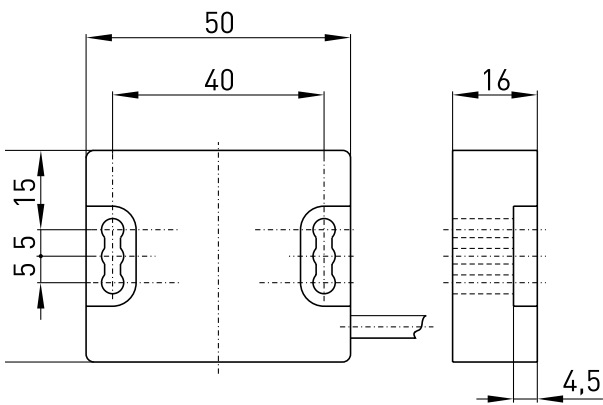
Features / Options

- High degree of protection IP 66/67/69
- Thermoplastic enclosure
- Reed contacts, coded
- Actuation from front
- Switching distance up to 6 mm
- Version with LED available on request

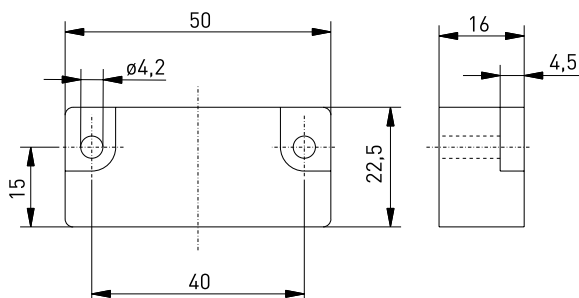
Note

The actuator is not included in the delivery of the switches

// RC SI 56 EXTREME



MC 56



技术参数

适用标准	EN 60947-5-2, EN 60947-5-3; EN ISO 13849-1; EN ISO 14119
外壳	增强玻璃纤维, 抗震热塑性塑料, 自熄性依据 UL 94-V0
连接类型	线缆, 4 x AWG 24
传感器类型	4 类联锁装置, 低编码
防护等级	IP 66/67/69 依据 IEC/EN 60529
开关原理	簧片触点, 1 个常闭/1 个常开触点或 2 个常闭触点
MTTF _d	> 100 年
DC/DC _{avg}	> 99 %
B _{10d} (额定负载)	2000 万
T _M	最长 20 年
应用类别	DC-12
I _e /U _e	最大 157 mA, 带有 LED: 最大 20 mA/24 VDC
环境温度	-20°C ... +85°C
感应距离	s _n 6 mm, s _{ao} 4 mm, s _{ar} 20 mm
重复性	< 5 %
产品认证	根据需求可提供:

Technical data

Applied standards	EN 60947-5-2, EN 60947-5-3; EN ISO 13849-1; EN ISO 14119
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Connection	cable 4 x AWG 24, 2, 5 or 10 m
Sensor type	type 4 interlocking device
Coding level	low coding
Degree of protection	IP 66/67/69 to IEC/EN 60529
Switching system	reed contacts, 1 NC/1 NO contact or 2 NC contacts
MTTF _d	> 100 years
DC/DC _{avg}	> 99 %
B _{10d}	20 million
T _M max.	20 years
Utilisation category	DC-12
I _e /U _e	max. 157 mA, with LED: max. 20 mA/24 VDC
Ambient temperature	-20°C ... +85°C
Switching distances	s _n 6 mm, s _{ao} 4 mm, s _{ar} 20 mm
Repeatability	< 5 %
Approvals	on request:

安全传感器 RC Si M30 Extreme / Safety sensor RC Si M30 Extreme



特点/选项

- 高防护等级 IP 66/67/69
- 不锈钢外壳
- 簧片触点, 编码型
- 从正面操作
- 感应距离 10 mm

注释

操作件不包含在订购的开关中

Features/Options

- High degree of protection IP 66/67/69
- Stainless steel enclosure
- Reed contacts, coded
- Actuation from front
- Switching distance up to 10 mm

Note

The actuator is not included in the delivery of the switches

// RC SI M30 EXTREME



技术参数

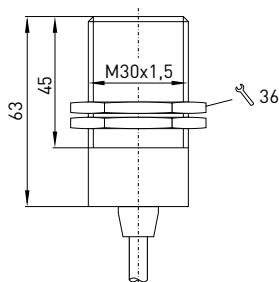
适用标准	EN ISO 13849-1; EN ISO 14119; EN 60947-5-2, -3 ¹
外壳	不锈钢 1.4539
连接类型	线缆 4 x AWG 20, 2, 5 或 10 m
传感器类型	4 类联锁装置, 低编码
防护等级	IP 66/67/69 依据 IEC/EN 60529
开关原理	簧片触点, 1 个常闭/1 个常开触点或 2 个常闭触点
MTTF _d	> 100 年
DC/DC _{avg}	> 99 %
B _{10d}	2000 万
T _M	最长 20 年
应用类别	DC-12
I _e /U _e	最大 157 mA, 带有 LED: 最大 20 mA/24 VDC
环境温度	-20°C ... +85°C
感应距离	s _n 10 mm, s _{ao} 8 mm, s _{ar} 30 mm
重复性	± 5 %
产品认证	根据需求可提供:

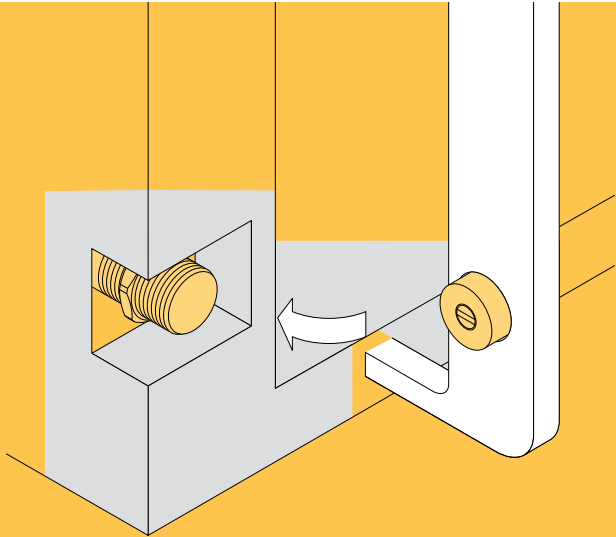
¹ 只有与安全模块结合才能使用

Technical data

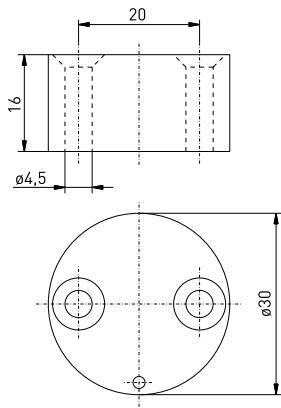
Applied standards	EN EN ISO 13849-1; EN ISO 14119; EN 60947-5-2, -3 ¹
Enclosure	Stainless steel 1.4539
Connection	cable 4 x AWG 20, 2, 5 or 10 m
Sensor type	type 4 interlocking device, low coding
Degree of protection	IP 66/67/69 to IEC/EN 60529
Switching system	reed contacts, 1 NC/1 NO contact or 2 NC contacts
MTTF _d	> 100 years
DC/DC _{avg}	> 99 %
B _{10d}	20 million
T _M	max. 20 years
Utilisation category	DC-12
I _e /U _e	max. 157 mA, mit LED: max. 20 mA/24 VDC
Ambient temperature	-20°C ... +85°C
Switching distances	s _n 10 mm, s _{ao} 8 mm, s _{ar} 30 mm
Repeatability	± 5 %
Approvals	根据需求可提供:

¹ is only achieved in combination with a safety module





MC 30



限位开关 ES 97 Exteme / Position switches ES 97 Extreme



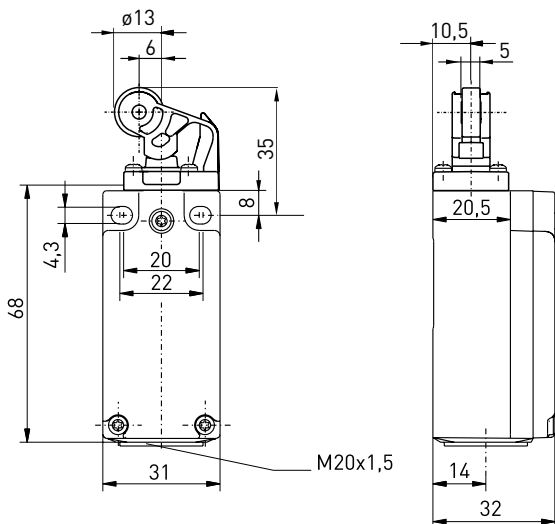
特点/选项

- 高防护等级 IP 66/67/69
- 防盐雾
- 热塑性塑料外壳
- 设计依据 EN 50047
- 双重绝缘

Features/options

- High degree of protection IP 66/67/69
- Salt-mist proof
- Thermoplastic enclosure
- Design to EN 50047
- Double insulated

// ES 97 EXTREME



技术参数

适用标准	EN 60947-5-1; EN ISO 13849-1; EN ISO 14119
外壳	增强玻璃纤维，抗震热塑性塑料，自熄性依据 UL 94-V0
开关类型	1 类, 无编码
防护等级	IP 66, 67, 69 依据 IEC/EN 60529
开关原理	缓动型或速动型, 肯定断开常闭触点 ⊖
开关元件	1 个常闭/1 个常开触点, Zb 类
连接类型	螺丝连接端子, 最大 2,5 mm ² (包括导线套管)
B _{10d} (10 % 额定负载)	-20 °C: 800 000, +20 °C: 2 000 000, +70 °C: 1 000 000
T _M	最长 20 年
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 0,25 A/230 VDC; 4 A/24 VDC 最小 10 mA / 24 V
应用类别	AC-15; DC-13
短路保护	6 A gG/gN 型熔丝管
机械寿命	-20 °C: 400 000 操作次数, +20 °C: 1 000 000 操作次数, +70 °C: 500 000 操作次数
运行周期	最长 1800/小时
环境温度	-20 °C ... +70 °C

Technical data

Applied standards	EN 60947-5-1; EN ISO 13849-1; EN ISO 14119
Enclosure	glass-fibre reinforced, shock-proof thermo- plastic, self-extinguishing UL 94-V0
Switch type	type 1, no coding
Degree of protection	IP 66, 67, 69 to IEC/EN 60529
Switching system	slow or snap action, positive break NC contacts
Switching elements	1 NC/1 NO, type Zb
Connection	screw connection terminals, max. 2.5 mm ² (incl. conductor ferrules)
B _{10d} (10 % nominal load)	-20 °C: 800 000, +20 °C: 2 000 000, +70 °C: 1 000 000
T _M	max. 20 years
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 0,25 A/230 VDC; 4 A/24 VDC min. 10 mA / 24 V
Utilisation category	AC-15; DC-13
Max. fuse rating	6 A gG/gN fuse
Mechanical life	-20 °C: 400 000 operations, +20 °C: 1 000 000 operations, +70 °C: 500 000 operations
Operation cycles	max. 1800/h
Ambient temperature	-20 °C ... +70 °C



// ES 97 WHKR

// ES 97 WHKD

// ES 97 TTK



限位开关 ES 98 Exteme / Position switches ES 98 Extreme



特点/选项

- 耐低温至 -40 °C
- 耐高温达 +90 °C
- 高防护等级 IP 66/69
- 金属外壳
- 设计依据 EN 50041
- ES 98: 缓动型, 切换触点或带双断开的2个常闭/1个常开触点
- EM 98: 速动型, 带双断开的2个常闭/1个常开触点

Features/options

- Cold-resistant down to -40 °C
- Heat-resistant up to +90 °C
- High degree of protection IP 66/69
- Metal enclosure
- Design to EN 50041
- ES 98: Slow action, change-over contact or 2 NC/1 NO contact with double break
- EM 98: Snap action, 2 NC/1 NO contact with double break

// ES 98 EXTREME



技术参数

适用标准

EN 60947-5-1; EN ISO 13849-1;
EN ISO 14119

外壳

抗腐蚀铝, 粉末涂层, 类似 7016

外盖

不锈钢 1.4401, 粉末涂层, 类似 RAL 1003

开关类型

1 类, 无编码

防护等级

IP 66 (... -40 °C); IP 67 (... -20 °C), IP 69 依据 IEC/EN 60529

开关原理

缓动型或速动型, 肯定断开常闭触点 ⊖

开关元件

1个常闭/1个常开触点, 2个常闭/1个常开触点, Zb类

连接类型

螺丝连接端子, 2个触点: 最大 2,5 mm², 3个触点: 最大 1,5 mm² (包括导线套管)

B_{10d} (10 % 额定负载)

2 百万

T_M

最长 20 年

U_{imp}

4 kV

U_i

400 V

I_e/U_e

2个触点: 6 A/250 VAC; 0,25 A/230 VDC;
3个触点: 1,5 A/230 VAC; 0,27 A/250 VDC

应用类别

AC-15; DC-13

机械寿命

> 100万操作次数

环境温度

-40 °C ... +60 °C; -20 °C ... +90 °C

产品认证

UL US ENEC CE

Technical data

Applied standards

EN 60947-5-1; EN ISO 13849-1;
EN ISO 14119

Enclosure

Corrosion-resistant aluminium, powder-coated, similar to RAL 7016

Switch type

type 1, no coding

Degree of protection

IP 66 (... -60 °C); IP 67 (... -20 °C), IP 69 to IEC/EN 60529

Switching system

slow or snap action, positive break

Switching elements

NC contacts ⊖

Connection

1 NC/1 NO, 2 NC/1 NO contact, type Zb screw connection terminals, 2 contacts: max. 2.5 mm², 3 contacts: max. 1.5 mm² (incl. conductor ferrules)

B_{10d} (10 % nominal load)

2 million

T_M

max. 20 years

U_{imp}

4 kV

U_i

400 V

I_e/U_e

2 contacts: 6 A/250 VAC; 0.25 A/230 VDC;
3 contacts: 1.5 A/230 VAC; 0.27 A/250 VDC

Utilisation category

AC-15; DC-13

Mechanical life

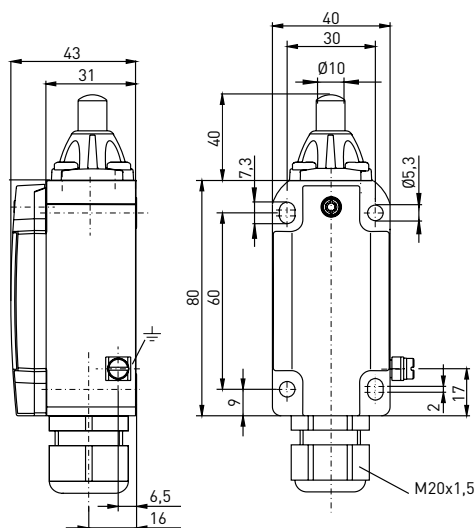
> 1 million operations

Ambient temperature

-40 °C ... +60 °C; -20 °C ... +90 °C

Approvals

UL US ENEC CE





// ES 98



// ES 98 R



// ES 98 H



// ES 98 D



// ES 98 DS



限位开关 ES 14 Exteme / Position switches ES 14 Extreme



特点/选项

- 耐低温至 -40 °C
- 高防护等级 IP 66
- 热塑性塑料外壳
- 双重绝缘 \square
- 缓动型或速动型
- 安装细节依照 EN 50047

Features/options

- Cold-resistant down to -40 °C
- High degree of protection IP 66
- Thermoplastic enclosure
- Double insulated \square
- Slow or snap action
- Mounting details to EN 50047s

// ES 14 EXTREME

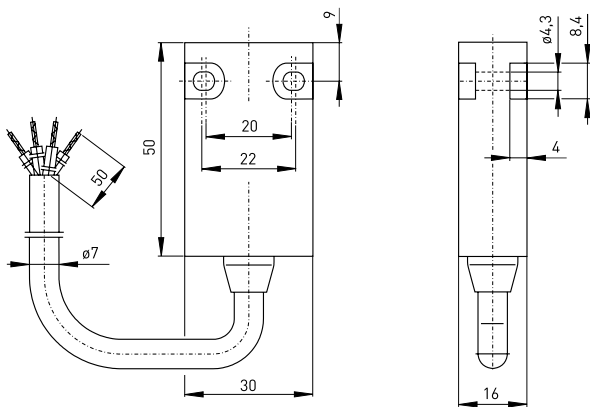


技术参数

适用标准	EN 60947-5-1; EN ISO 13849-1; EN ISO 14119
外壳	增强玻璃纤维，抗震热塑性塑料，自熄性依据 UL 94-V0
开关类型	1 类, 无编码
防护等级	IP 66 依据 IEC/EN 60529
开关原理	缓动型或速动型, 缓动型: 肯定断开常闭触点 \ominus
开关元件	ES 14: 1个常闭/1个常开触点或 2 个常闭触点, Zb 类; EM 14: 单断开切换触点
连接类型	线缆, ES 14 1Ö/1S: 4 x AWG 20; ES 14 2Ö/1S: 6 x AWG 26; EM 14: 3 x AWG 20
B _{10d} (10 % 额定负载)	2 百万
T _M	最长 20 年
应用类别	AC-15; DC-13
I _e /U _e	ES 14: 6 A/250 VAC; 0,25 A/230 VDC; EM 14: 5 A/250 VAC; 0,16 A/230 VDC
机械寿命	> 100 万操作次数
环境温度	-40 °C ... +75 °C
产品认证	\circ UL_{us} ERIC CC

Technical data

Applied standards	EN 60947-5-1; EN ISO 13849-1; EN ISO 14119
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch type	type 1, no coding
Degree of protection	IP 66 [... -60 °C]; IP 67 [... -20 °C] to IEC/EN 60529
Switching system	slow or snap action, slow action: positive break NC contacts \ominus
Switching elements	ES 14: 1 NC/1 NO or 2 NC contacts, type Zb; EM 14: change-over contact with single break
Connection	cable, ES 14 1Ö/1S: 4 x AWG 20; ES 14 2Ö/1S: 6 x AWG 26; EM 14: 3 x AWG 20
B _{10d} (10 % nominal load)	2 million
T _M	max. 20 years
Utilisation category	AC-15; DC-13
I _e /U _e	ES 14: 6 A/250 VAC; 0.25 A/230 VDC; EM 14: 5 A/250 VAC; 0.16 A/230 VDC
Mechanical life	> 1 million operations
Ambient temperature	-40 °C ... +75 °C
Approvals	\circ UL_{us} ERIC CC





// ES 14 W



// ES 14 WKU



// ES 14 WR



// ES 14 D



// ES 14 WPH



// ES 14 TF



紧急拉线开关 ZS 71 KST Extreme / Emergency pull-wire switch ZS 71 KST Extreme



特点/选项

- 高防护等级 IP 66/67/69
- 热塑性塑料外壳
- 3 个触点
- 拉线模块和螺丝的材质为不锈钢 1.4305 (NIRO)
- 拉线长度 35 m
- 钢丝绳断线检测

Features/Options

- High degree of protection IP 66/67/69
- Thermoplastic enclosure
- 3 contacts
- Pull-wire unit and screws made of stainless steel 1.4305 (NIRO)
- Wire length up to 35 m
- Wire pull and breakage detection

// ZS 71 KST EXTREME



技术参数

适用标准

EN 60947-5-1, -5;
EN ISO 13850; EN ISO 13849-1

外壳

增强玻璃纤维，抗震热塑性塑料，自熄性依据 UL 94-V0

连接类型

螺丝连接端子

线缆横截面

最大 2,5 mm² (包括导线套管)

线缆进线孔

3 x M20 x 1,5

防护等级

IP 66/67/69 依据 IEC/EN 60529

开关原理

速动型，肯定断开常闭触点 ⊖

开关元件

2 个常闭/1 个常开触点, Zb 类

B_{10d} (10 % 额定负载)

200 000

T_M

最长 20 年

I_e / U_e

2 A/250 VAC

应用类别

AC-15

短路保护

2 A gG/gN 型熔丝管

环境温度

-25°C ... +70°C

机械寿命

> 100 000 操作次数

产品认证

CE

Technical data

Applied standards

EN 60947-5-1, -5;
EN ISO 13850; EN ISO 13849-1

Enclosure

glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0

Connection

screw connection terminals

Cable cross-section

max. 2.5 mm² (incl. conductor ferrules)

Cable entry

3 x M20 x 1.5

Degree of protection

IP 66/67/69 to IEC/EN 60529

Switching system

Snap action, positive break NC contact ⊖

Switching elements

2 NC/1 NO, type Zb

B_{10d} (10 % load)

200 000

T_M

max. 20 years

I_e / U_e

2 A/250 VAC

Utilisation category

AC-15

Max. fuse rating

2 A gG/gN fuse

Ambient temperature

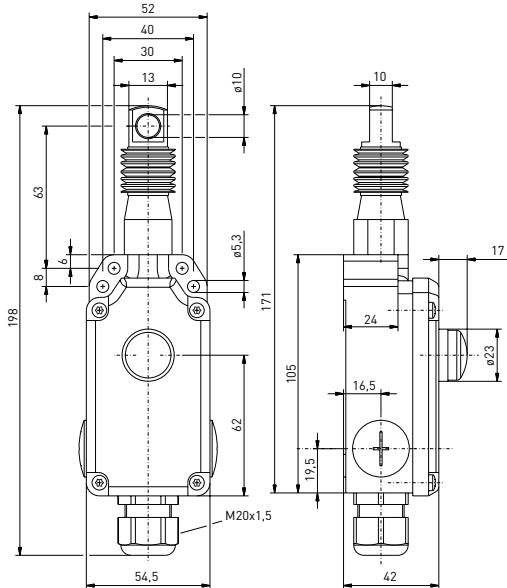
-25°C ... +70°C

Mechanical life

> 100 000 operations

Approvals

CE



紧急拉线开关 ZS 73 Extreme / Emergency pull-wire switch ZS 73 Extreme



特点/选项

- 拉线模块和螺丝的材质为不锈钢 1.4305, 硬涂层搪瓷饰面外壳
- 拉线长度 130 m
- 复位按钮解锁
- 钢丝绳断线检测

Features/Options

- Pull-wire unit and screws made of stainless steel 1.4305, hard-coated enclosure with enamel finish
- Wire length up to 130 m
- Release by push-button
- Wire pull and breakage detection

// ZS 73 EXTREME



技术参数

适用标准

EN 60947-5-1, -5-5; EN ISO 13850;
EN ISO 13849-1

外壳

压铸铝, 硬涂层搪瓷饰面外壳

连接类型

螺丝连接端子

线缆横截面

最大 2,5 mm² (包括导线套管)

线缆进线孔

1 x M16 x 1,5

防护等级

IP 65 依据 IEC/EN 60529

开关原理

速动型, 肯定断开常闭触点 ⊖

开关元件

1 个常闭/1 个常开触点或 2 个常闭触点

B_{10d} (10 % 额定负载)

200 000

T_M

最长 20 年

I_e / U_e

6 A/400 VAC

应用类别

AC-15

短路保护

6 A gG/gN 型熔丝管

环境温度

-25°C ... +70°C

机械寿命

> 100 000 操作次数

指示灯

作为选项

产品认证

Technical data

Applied standards

EN 60947-5-1, -5-5; EN ISO 13850;
EN ISO 13849-1

Enclosure

aluminium die-cast, hard-coated
and enamel finish

Connection

screw connection terminals

Cable cross-section

max. 2.5 mm² (incl. conductor ferrules)

Cable entry

1 x M16 x 1.5

Degree of protection

IP 65 to IEC/EN 60529

Switching system

Snap action, positive break NC contact ⊖

Switching elements

1 NC/1 NO or 2 NC contacts

B_{10d} (10 % load)

200 000

T_M

max. 20 years

I_e / U_e

6 A/400 VAC

Utilisation category

AC-15

Max. fuse rating

6 A gG/gN fuse

Ambient temperature

-25°C ... +70°C

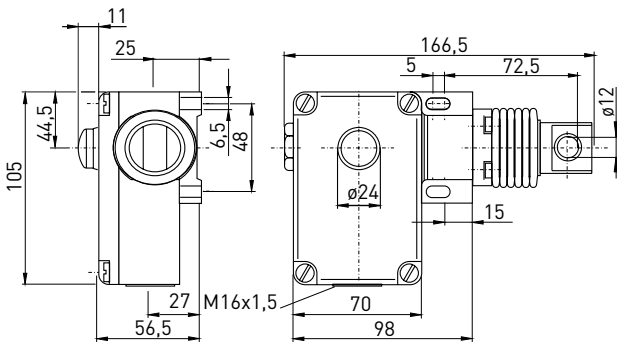
Mechanical life

> 100 000 operations

Indicator lamp

as option

Approvals



紧急拉线开关 ZS 92 S Extreme / Emergency pull-wire switch ZS 92 S Extreme



特点/选项

- 温度范围从 -40°C 到 +85°C
- 高防护等级 IP 66/67/69
- 螺丝的材质为不锈钢
- 拉线长度 2 x 100 m
- 通过杠杆解锁, 重置杠杆可在正面或背面
- 钢丝绳断线检测
- 根据需求可提供 Si-Bus 版本

Features/Options

- Temperature resistant from -40°C to +85°C
- High degree of protection IP 66/67/69
- Screws made of stainless steel
- Wire length up to 2 x 100 m
- Release by lever, reset lever at the front side or back side possible
- Wire pull and breakage detection
- Version with Si-Bus available on request

// ZS 92 EXTREME



技术参数

适用标准

EN 60947-5-1, -5-5; EN ISO 13850;
EN ISO 13849-1; DIN EN 620;
AS 1755-2000-2.7.9.1;
AS/NZS 4024.3610:2015-2.10.6.2

外壳

耐腐蚀铝, 粉末涂层, 抗震, 钝化
螺丝连接端子

连接类型

最大 2,5 mm² (包括导线套管)
2 x M25 x 1,5

线缆横截面

线缆进线孔

防护等级

IP 66/67 依据 IEC/EN 60529

开关原理

速动型, 肯定断开常闭触点 ⊖

开关元件

2 个常闭/2 个常开触点, Zb 类
100 000

B_{10d} (10 % 额定负载)

最长 20 年

T_M

6 A/400 VAC

I_e / U_e

AC-15

应用类别

6 A gG/gN 型熔丝管

短路保护

-40°C ... +85°C

环境温度

> 50 000 操作次数

机械寿命

杠杆操作力大约 30 N;

复位杠杆操作力大约 40 N

操动力

指示灯

作为选项

产品认证

ERL

Technical data

Applied standards

EN 60947-5-1, -5-5; EN ISO 13850;
EN ISO 13849-1; DIN EN 620;
AS 1755-2000-2.7.9.1;
AS/NZS 4024.3610:2015-2.10.6.2

Enclosure

corrosion-resistant aluminium, powder-coated, shock-proof, passivated

Connection

screw connection terminals

Cable cross-section

max. 2.5 mm² (incl. conductor ferrules)

Cable entry

2 x M25 x 1.5

Degree of protection

IP 66/67/69 to IEC/EN 60529

Switching system

Snap action, positive break NC contact ⊖

Switching elements

2 NC/2 NO, type Zb,

B_{10d} (10 % load)

100 000

T_M

max. 20 years

I_e / U_e

6 A/400 VAC

Utilisation category

AC-15

Max. fuse rating

6 A gG/gN fuse

Ambient temperature

-40°C ... +85°C

Mechanical life

> 50 000 operations

Actuating force

actuating lever approx. 30 N;

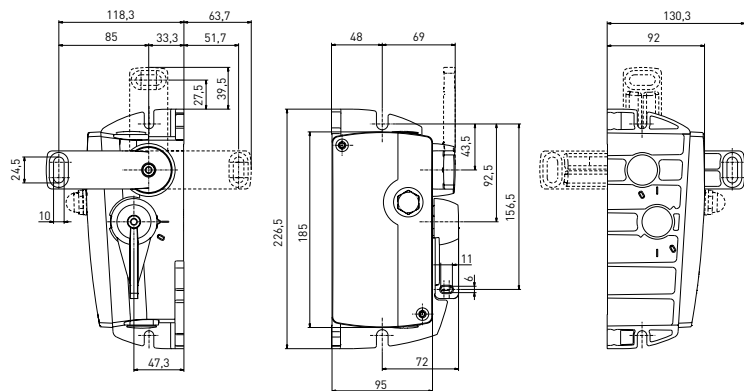
reset lever approx. 40 N

Indicator lamp

as option

Approvals

ERL



紧急拉线开关 ZS 92 S Extreme / Emergency pull-wire switch ZS 92 S Extreme



ZS 92 S VD B.



35

ZS 92 S L F



防跑偏开关 ES 98 SR Extreme / Belt alignment switch ES 98 SR Extreme



特点/选项

- 耐低温至 -40 °C
- 耐高温达 +90 °C
- 高防护等级 IP 66/69
- 金属外壳
- 设计依据 EN 50041
- 2 个触点
- 防跑偏杠杆通过自锁机构可以按 13° 调整

Features/Options

- Cold-resistant down to -40 °C
- Heat-resistant up to +90 °C
- High degree of protection IP 66/69
- Metal enclosure
- Design to EN 50041
- 2 contacts
- Belt alignment lever can be adjusted in 13° steps using a self-locking mechanism

// ES 98 SR EXTREME

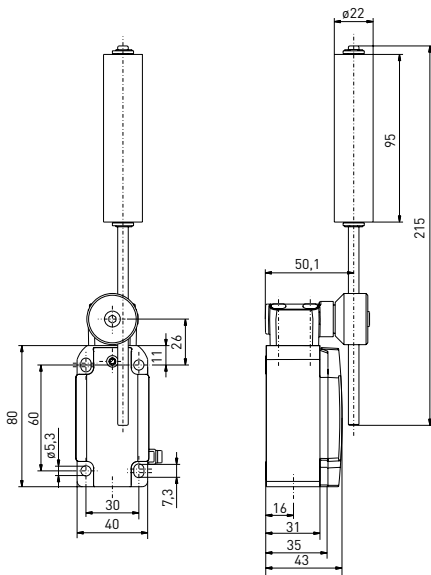


技术参数

适用标准	EN 60947-5-1; EN ISO 13849-1
外壳	抗腐蚀铝·粉末涂层, 类似 7016
连接类型	螺丝连接端子
线缆横截面	最大 1,5 mm ² (包括导线套管)
防护等级	IP 66/69 依据 IEC/EN 60529
开关原理	缓动型
开关元件	1 个常闭/1 个常开触点, Zb 类
I _e / U _e	6 A/250 VAC; 0,25 A/230 VDC
应用类别	AC-15; DC-13
短路保护	6 A gG/gN 型熔丝管
环境温度	-40°C ... +60°C; -20 °C ... +90 °C
机械寿命	> 100 万操作次数
开关点的重复性精度	± 0,1 mm
产品认证	EAR

Technical data

Applied standards	EN 60947-5-1; EN ISO 13849-1
Enclosure	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016
Connection	screw connection terminals
Cable cross-section	max. 1.5 mm ² (incl. conductor ferrules)
Degree of protection	IP 66 to IEC/EN 60529
Switching system	Slow action
Switching elements	1 NC/1 NO, type Zb
I _e / U _e	6 A/250 VAC; 0.25 A/230 VDC
Utilisation category	AC-15; DC-13
Max. fuse rating	6 A gG/gN fuse
Ambient temperature	-40°C ... +60°C; -20 °C ... +90 °C
Mechanical life	> 1 million operations
Repeat accuracy of switching points	± 0.1 mm
Approvals	EAR



防跑偏开关 ZS 92 SR Extreme / Belt alignment switch ZS 92 SR Extreme



特点/选项

- 温度范围从 -40°C 到 +85°C
- 高防护等级 IP 66/67
- 耐腐蚀铝外壳
- 螺丝和防跑偏辊材质为不锈钢
- 重叠型触点, 可从 5° 调整到 35°
- 防跑偏杠杆可以安装在左边或右边
- 可使用夹具夹紧或齿轴
- 可提供信号灯

Features / Options

- Temperature resistant from -40°C to +85°C
- High degree of protection IP 66/67
- Corrosion-resistant aluminium enclosure
- Screws and belt alignment roller made of stainless steel
- With staggered contacts, adjustable from 5° to 35°
- Belt alignment lever can be repositioned to the left or right
- Available with clamping or toothed shaft
- Available with signalling lamp

// ZS 92 SR EXTREME

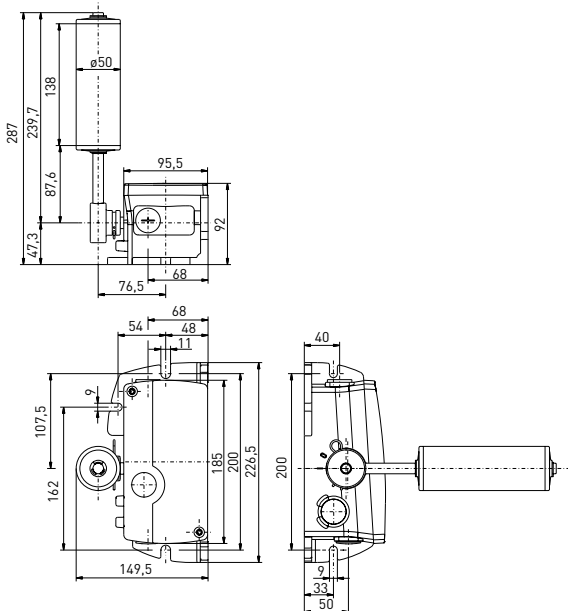


技术参数

适用标准	EN 60947-5-1
外壳	耐腐蚀铝, 粉末涂层, 抗震, 钝化
连接类型	螺丝连接端子
线缆横截面	最大 2,5 mm ² (包括导线套管)
线缆进线孔	2 x M25 x 1,5
防护等级	IP 66/67 依据 IEC/EN 60529
开关原理	速动型, 肯定断开常闭触点 ⊖
开关元件	2 个常闭/2 个常开触点, Zb 类
B _{10d} (10 % 额定负载)	2 百万
T _M	最长 20 年
I _e / U _e	4 A/400 VAC
应用类别	AC-15; DC-13
短路保护	4 A gG/gN 型熔丝管
环境温度	-40°C ... +85°C
机械寿命	> 100 万操作次数 操作角度最大 45°
指示灯	作为选项
产品认证	ENEC

Technical data

Applied standards	EN 60947-5-1
Enclosure	corrosion-resistant aluminium, powder-coated, shock-proof, passivated screw connection terminals
Connection	max. 2.5 mm ² (incl. conductor ferrules)
Cable cross-section	2 x M25 x 1.5
Cable entry	IP 66/67 to IEC/EN 60529
Degree of protection	Snap action, positive break NC contact ⊖
Switching system	2 NC/2 NO, type Zb
Switching elements	2 million
B _{10d} (10 % load)	max. 20 years
T _M	4 A/400 VAC
I _e / U _e	AC-15; DC-13
Utilisation category	4 A gG/gN fuse
Max. fuse rating	-40°C ... +85°C
Ambient temperature	> 1 million operations at max. 45° operating angle as option
Mechanical life	ENEC
Indicator lamp	
Approvals	



防碰撞开关 ZS 73 HES Extreme / Anti-two-block switch ZS 73 HES Extreme



特点/选项

- 拉线模块的材质为不锈钢 1.4404, 硬涂层外壳, 盖的材质为不锈钢 1.4404, 螺丝 A2
- 耐低温至 -40 °C
- 高防护等级 IP 66/67
- 密封圈 W 可以防止污垢渗透
- 2 个触点
- 用于限制提升高度

Features/Options

- Pull-wire unit made of stainless steel 1.4404, hard-coated housing, cover made of stainless steel 1.4404, screws A2
- Cold-resistant down to -40 °C
- High degree of protection IP 66/67
- Watertight collar W for protection against penetration of dirt available
- 2 contacts
- For limiting the hoist height

// ZS 73 HES EXTREME

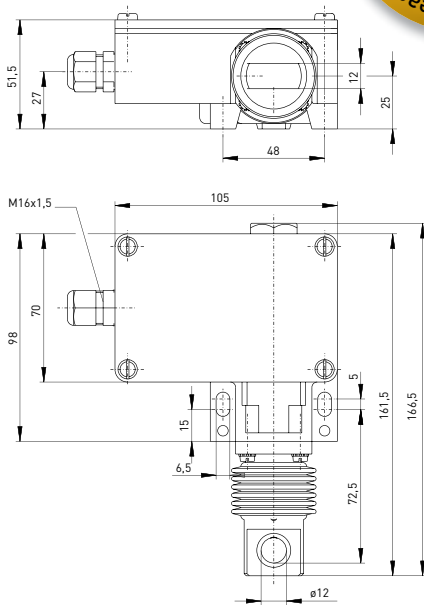


技术参数

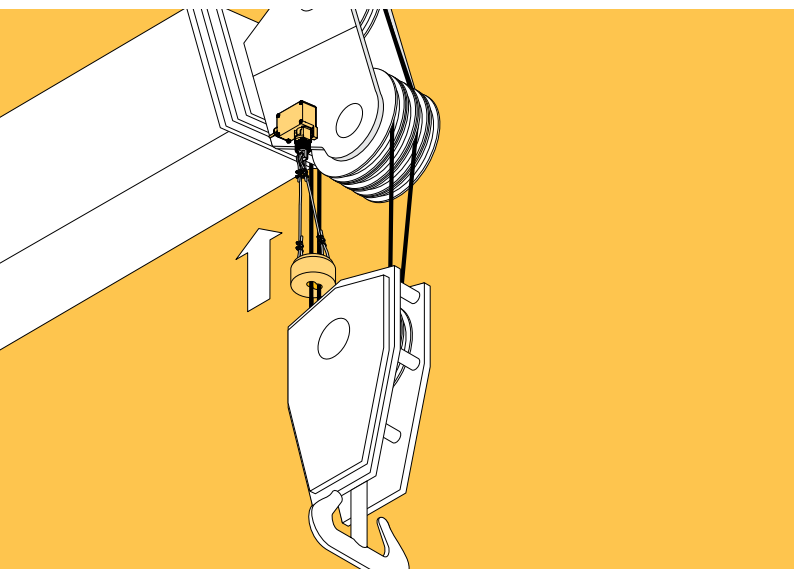
适用标准	EN 60947-5-1
外壳	压铸铝, 硬涂层和粉末涂层, 类似 7016
连接类型	螺丝连接端子
线缆横截面	最大 2,5 mm ² (包括导线套管)
防护等级	IP 66/67 依据 IEC/EN 60529
开关原理	速动型
开关元件	1 个常闭/1 个常开触点或 2 个常闭触点
B _{10d} (10 % 额定负载)	200 000
T _M	最长 20 年
I _e / U _e	6 A/400 VAC
应用类别	AC-15
短路保护	6 A gG/gN 操作次数
环境温度	-40°C ... +70°C
机械寿命	> 100 万操作次数

Technical data

Applied standards	EN 60947-5-1
Enclosure	aluminium die-cast, hard-coated and powder-coated, similar to RAL 7016
Connection	screw connection terminals
Cable cross-section	max. 2.5 mm ² (incl. conductor ferrules)
Degree of protection	IP 66/67 to IEC/EN 60529
Switching system	snap action
Switching elements	1 NC/1 NO or 2 NC contacts
B _{10d} (10 % load)	200 000
T _M	max. 20 years
I _e / U _e	6 A/400 VAC
Utilisation category	AC-15
Max. fuse rating	6 A gG/gN fuse
Ambient temperature	-40°C ... +70°C
Mechanical life	100 000 operations



防碰撞开关 ZS 73 HES Extreme /
Anti-two-block switch ZS 73 HES Extreme



39



拉线开关 ZS 71 WZ KST Extreme / Pull-wire switch ZS 71 WZ KST Extreme



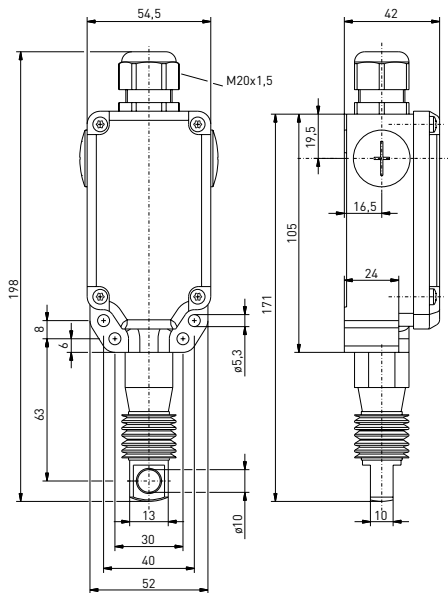
特点/选项

- 拉线部件和螺丝材质为不锈钢 1.4305 (NIRO)
- 高防护等级 IP 69
- 密封圈 W 可以防止污垢渗透
- 2 个触点
- 拉线功能

Features/Options

- Pull-wire unit and screws made of stainless steel 1.4305 (NIRO)
- High degree of protection IP 69
- Watertight collar W for protection against penetration of dirt available
- 2 contacts
- Pull-wire function

// ZS 71 WZ KST EXTREME



技术参数

适用标准

EN 60947-5-1, -5; EN ISO 13850;
EN ISO 13849-1

外壳

增强玻璃纤维，抗震热塑性塑料，自熄性依据
UL 94-V0

连接类型

螺丝连接端子

线缆横截面

最大 2,5 mm² (包括导线套管)

防护等级

IP 66/67/69 依据 IEC/EN 60529

开关原理

速动型，肯定断开常闭触点 ⊖

开关元件

1 个常闭/1 个常开触点, Zb 类

B_{10d} (10 % 额定负载)

200 000

T_M

最长 20 年

U_{imp}

6 kV

U_i

400 VAC

I_{the}

6 A

I_e / U_e

6 A/400 VAC

应用类别

AC-15

短路保护

6 A gG/gN 操作次数

环境温度

-25°C ... +70°C

机械寿命

> 100 000 操作次数

产品认证

CE, CCC, RoHS

Technical data

Applied standards

EN 60947-5-1, -5; EN ISO 13850;
EN ISO 13849-1

Enclosure/Cover

glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94 V-0

Connection

screw connection terminals

Cable cross-section

max. 2.5 mm² (incl. conductor ferrules)

Degree of protection

IP 66/67/69 to IEC/EN 60529

Switching system

snap action, positive break NC contacts ⊖

Switching elements

1 NC/1 NO contact, type Zb

B_{10d} (10 % load)

200 000

T_M

max. 20 years

U_{imp}

6 kV

U_i

400 VAC

I_{the}

6 A

I_e / U_e

6 A/400 VAC

Utilisation category

AC-15

Max. fuse rating

6 A gG/gN fuse

Ambient temperature

-25°C ... +70°C

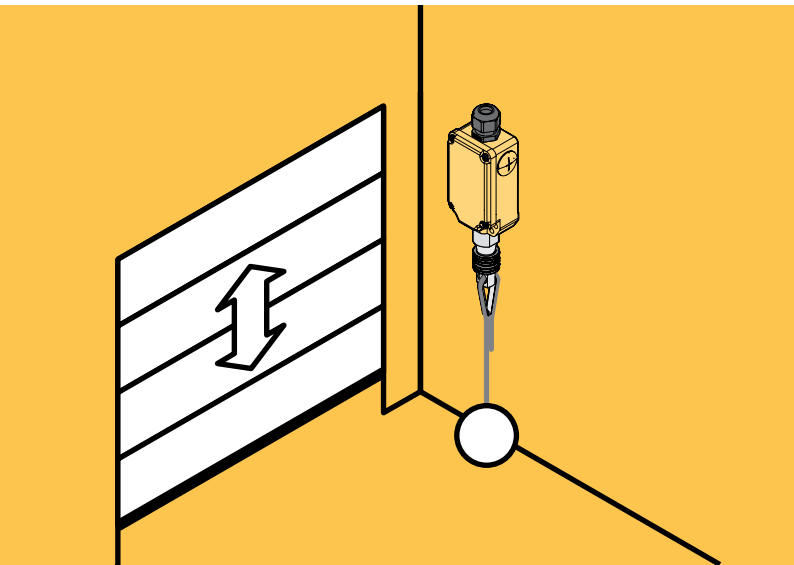
Mechanical life

> 100 000 operations

Approvals

CE, CCC, RoHS

拉线开关 ZS 71 WZ KST Extreme /
Pull-wire switch ZS 71 WZ KST Extreme



脚踏开关 GFI Extreme / Foot switch GFI Extreme



特点/选项

- 耐腐蚀铝
- 盐雾试验依据 DIN EN ISO 9227
- 高防护等级 IP 66/67/69 取决于线缆接头
- 温度范围从 -40°C 到 +90°C
- 螺丝和金属部件的材质为不锈钢

Features/Options

- Corrosion-resistant aluminium enclosure
- Salt-mist spray test to DIN EN ISO 9227
- High degree of protection IP 66/67/69 depending on selected cable gland
- Temperature resistant from -40 °C up to +90 °C
- Screws and metal parts made of stainless steel

// GFI EXTREME

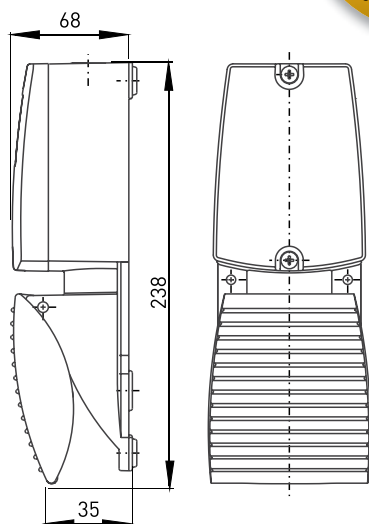


技术参数

适用标准	EN 60947-5-1
外壳	抗腐蚀铝，粉末涂层，类似 7016
外盖	抗腐蚀铝，粉末涂层，类似 1003
连接类型	螺丝连接端子
线缆横截面	最大 2,5 mm ² (包括导线套管)
线缆进线孔	1 x M20 x 1,5
防护等级	IP 66/67/69 依据 IEC/EN 60529
开关原理	缓动，肯定断开常闭触点 ⊖
开关元件	1个常闭/1个常开触点或2个常闭/2个常开触点, Zb类
B _{10d} (10 % 额定负载)	2 百万
T _M	最长 20 年
I _e / U _e	2 个触点: 16 A/400 VAC; 4 个触点: 6 A/400 VAC
应用类别	AC-15
短路保护	2 个触点: 16 A gG/gN 型熔丝管; 4 个触点: 6 A gG/gN 型熔丝管
环境温度	-40°C ... +90°C
机械寿命	> 100 万操作次数
产品认证	Ⓢ Ⓞ

Technical data

Applied standards	EN 60947-5-1
Enclosure/Pedal	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016
Cover	Corrosion-resistant aluminium, powder-coated, similar to RAL 1003
Connection	screw connection terminals
Cable cross-section	max. 2.5 mm ² [incl. conductor ferrules]
Cable entry	1 x M20 x 1.5
Degree of protection	IP 66/67/69 to IEC/EN 60529
Switching system	Slow action, positive break NC contact ⊖
Switching elements	1 NC/1 NO or 2 NC/2 NO, type Zb,
B _{10d} (10 % load)	2 million
T _M	max. 20 years
I _e / U _e	2 contacts: 16 A/400 VAC; 4 contacts: 6 A/400 VAC
Utilisation category	AC-15
Max. fuse rating	2 contacts: 16 A gG/gN fuse; 4 contacts: 6 A gG/gN fuse
Ambient temperature	-40°C ... +90°C
Mechanical life	> 1 million operations
Approvals	Ⓢ Ⓞ



脚踏开关 GFSI Extreme / Foot switch GFSI Extreme



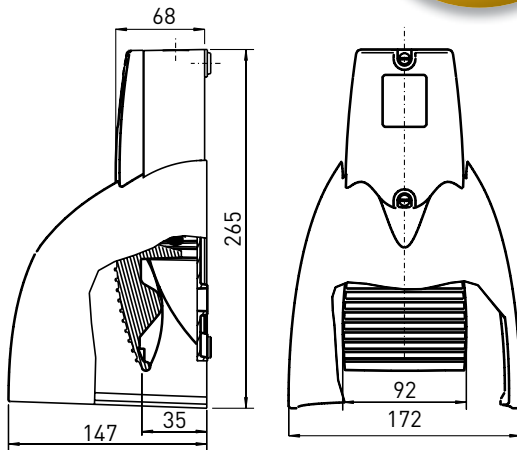
特点/选项

- 耐腐蚀铝
- 盐雾试验依据 DIN EN ISO 9227
- 高防护等级 IP 66/67/69 取决于线缆接头
- 温度范围从 -40°C 到 +90°C
- 螺丝和金属部件的材质为不锈钢

Features/Options

- Corrosion-resistant aluminium enclosure
- Salt-mist spray test to DIN EN ISO 9227
- High degree of protection IP 66/67/69 depending on selected cable gland
- Temperature resistant from -40 °C up to +90 °C
- Screws and metal parts made of stainless steel

// GFSI EXTREME



技术参数

适用标准	EN 60947-5-1
外壳	抗腐蚀铝, 粉末涂层, 类似 7016
防护罩	抗腐蚀铝, 粉末涂层, 类似 1003
连接类型	螺丝连接端子
线缆横截面	最大 2,5 mm ² (包括导线套管)
线缆进线孔	1 x M20 x 1,5
防护等级	IP 66/67/69 依据 IEC/EN 60529
开关原理	缓动, 肯定断开常闭触点 ⊖
开关元件	1个常闭/1个常开触点或2个常闭/2个常开触点, Zb类
B _{10d} (10 % 额定负载)	2 百万
T _M	最长 20 年
I _e / U _e	2 个触点: 16 A/400 VAC; 4 个触点: 6 A/400 VAC
应用类别	AC-15
短路保护	2 个触点: 16 A gG/gN 型熔丝管; 4 个触点: 6 A gG/gN 型熔丝管
环境温度	-40°C ... +90°C
机械寿命	> 100 万操作次数
产品认证	UL, CE

Technical data

Applied standards	EN 60947-5-1
Enclosure/Pedal	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016
Protective shield	Corrosion-resistant aluminium, powder-coated, similar to RAL 1003
Connection	screw connection terminals
Cable cross-section	max. 2.5 mm ² (incl. conductor ferrules)
Cable entry	1 x M20 x 1.5
Degree of protection	IP 66/67/69 to IEC/EN 60529
Switching system	Slow action, positive break NC contact ⊖
Switching elements	1 NC/1 NO or 2 NC/2 NO, type Zb,
B _{10d} (10 % load)	2 million
T _M	max. 20 years
I _e / U _e	2 contacts: 16 A/400 VAC; 4 contacts: 6 A/400 VAC
Utilisation category	AC-15
Max. fuse rating	2 contacts: 16 A gG/gN fuse; 4 contacts: 6 A gG/gN fuse
Ambient temperature	-40°C ... +90°C
Mechanical life	> 1 million operations
Approvals	UL, CE

脚踏开关 GFS KST Extreme / Foot switch GFS KST Extreme



特点/选项

- IP 69 适用于 80 °C 热水在 100 帕压强下从 100 毫米的距离不同方向清洗开关
- 热塑性塑料防护罩
- 最多 4 个触点
- 高稳定性
- 低踏板高度

Features/Options

- Version with higher degree of protection IP 69: suitable for cleaning with 80 °C hot water at 100 bar pressure at a distance of 100 mm from different directions
- With thermoplastic protective shield
- Max. 4 contacts
- High level of stability
- Low pedal height

// GFS KST EXTREME

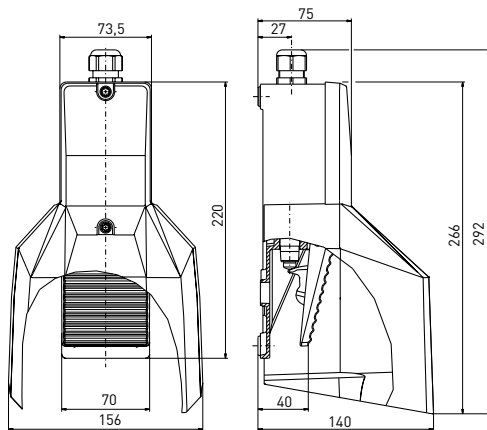


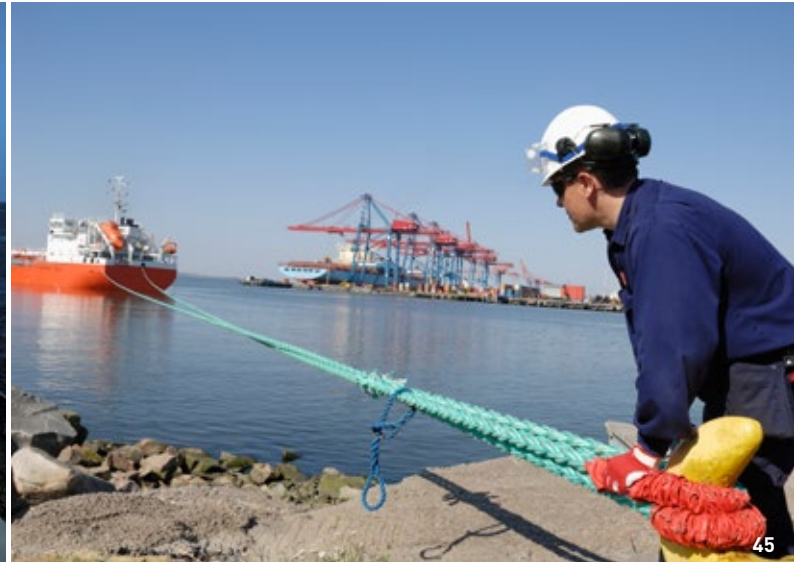
技术参数

适用标准	EN 60947-5-1
外壳	压铸铝, 粉末涂层
踏板/防护罩	增强玻璃纤维, 抗震热塑性塑料, 自熄性 依据 UL 94-V0
连接类型	螺丝连接端子
线缆横截面	最大 2,5 mm ² (包括导线套管)
线缆进线孔	1 x M20 x 1,5
防护等级	IP 66/67/69 依据 IEC/EN 60529
开关原理	缓动型或速动型, 肯定断开常闭触点 ⊖
开关元件	Zb 类双断开 1 个常闭触点 / 1 个常开触点或 2 个常闭触点
B _{10d} (10 % 额定负载)	2 百万
T _M	最长 20 年
I _e / U _e	缓动型: 4 个触点: 6 A/400 VAC; 2 个触点: 16 A/400 VAC; 速动型: 2 个和 4 个触点: 4 A/230 VAC; 2,5 A/400 VAC; 1 A/500 VAC
应用类别	AC-15
短路保护	缓动型: 4 个触点: 6 A gG/gN 型熔丝管; 2 个触点: 16 A gG/gN 型熔丝管; 速动型: 4 A gG/gN 型熔丝管
环境温度	-25°C ... +80°C
机械寿命	> 100 万操作次数
产品认证	UL, CE, ENEC

Technical data

Applied standards	EN 60947-5-1
Enclosure	aluminium die-cast, powder-coated
Protective shield/Pedal	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Connection	screw connection terminals
Cable cross-section	max. 2.5 mm ² (incl. conductor ferrules)
Cable entry	1 x M20 x 1.5
Degree of protection	IP 66/67/69 to IEC/EN 60529
Switching system	Slow or snap action, positive break NC contact ⊖
Switching elements	1 NC/1 NO or 2 NC/2 NO, type Zb
B _{10d} (10 % load)	2 million
T _M	max. 20 years
I _e / U _e	slow action: 4 contacts: 6 A/400 VAC; 2 contacts: 16 A/400 VAC; snap action: 2 and 4 contacts: 4 A/230 VAC; 2.5 A/400 VAC; 1 A/500 VAC
Utilisation category	AC-15
Max. fuse rating	slow action: 4 contacts: 6 A gG/gN fuse; 2 contacts: 16 A gG/gN fuse; snap action: 4 A gG/gN fuse
Ambient temperature	-25°C ... +80°C
Mechanical life	> 1 million operations
Approvals	UL, CE, ENEC





磁传感器 RC M14 Extreme / Magnetic sensors RC M14 Extreme



特点/选项

- 耐低温至 -40 °C
- 金属外壳
- 螺纹 M14 x 1
- 长寿命
- 1 个簧片触点
- 从正面操作

注释

- 产品包括 2 个安装螺母
- 操作件不包含在订购的开关中

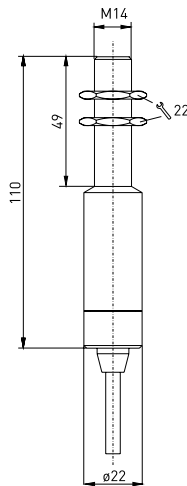
Features/Options

- Cold-resistant down to -40 °C
- Metal enclosure
- M14 x 1 thread
- Long life
- 1 Reed contact
- Actuation from front

Notes

- 2 mounting nuts are included in delivery
- The actuator is not included in the delivery of the switches

// RC M14 EXTREME



技术参数

适用标准	EN 60947-5-1
外壳	黄铜, 镍
连接类型	线缆 MNZ45M, 符合 GL 标准, 长度 2 m
线缆横截面	2 x 0,75 mm ²
防护等级	IP 67 依据 IEC/EN 60529
开关原理	簧片触点
开关元件	1 个常开触点
开关电压	最大 250 VAC/DC
开关电流	最大 2 A
开关频率	最大 50 W
应用类别	AC-12; DC-12
跳转持续时间	0,3 ... 0,6 ms
环境温度	-40 °C ... +70 °C (固定线缆)
机械寿命	> 100 万操作次数
电气寿命	10 ⁶ ... 10 ⁹ 操作次数
抗振动	30 g
产品认证	

Technical data

Applied standards	EN 60947-5-1
Enclosure	brass, nickeled
Connection	pre-wired cable MNZ45M, GL approval, length 2 m
Cable cross-section	2 x 0.75 mm ²
Degree of protection	IP 67 to IEC/EN 60529
Switching system	reed contacts
Switching elements	1 NO contact
Switching voltage	max. 250 VAC/DC
Switching current	max. 2 A
Switching capacity	max. 50 W
Utilisation category	AC-12; DC-12
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	-40 °C ... +70 °C (fixed cable)
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁹ operations
Vibration resistance	30 g
Approvals	

磁传感器 RC 23 Extreme / Magnetic sensors RC 23 Extreme



特点/选项

- 温度范围从 -60 °C 到 +100 °C
- 高防护等级 IP 69
- 金属外壳
- 螺纹 M12 x 1
- 长寿命
- 1 个簧片触点
- 从正面或侧面操作

注释

- 产品包括 2 个安装螺母
- 操作件不包含在订购的开关中

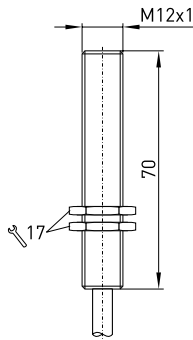
Features / Options

- Temperature resistant from -60 °C to +100 °C
- High degree of protection IP 69
- Metal enclosure
- M12 x 1 thread
- Long life
- 1 Reed contact
- Actuation from front and from side

Notes

- 2 mounting nuts are included in delivery
- The actuator is not included in the delivery of the switches

// RC 23 EXTREME



技术参数

适用标准	EN 60947-5-1
外壳	黄铜, 镍
连接类型	线缆 硅胶 SIHF
线缆横截面	1S: 2 x 0,75 mm ² , 1W: 3 x 0,75 mm ²
防护等级	IP 66/67/69 依据 IEC/EN 60529
开关原理	簧片触点
开关元件	常闭触点或切换触点
开关电压	最大 90 VAC / 125 VDC
开关电流	最大 1 A
开关频率	最大 30 W
环境温度	-60°C ... +100°C
机械寿命/电气寿命	10 ⁹ 操作次数
抗振动	20 g
产品认证	根据需求可提供:

Technical data

Applied standards	EN 60947-5-1
Enclosure	brass, nickeled
Connection	pre-wired cable, Silicone SIHF
Cable cross-section	1S: 2 x 0.75 mm ² , 1W: 3 x 0.75 mm ²
Degree of protection	IP 66/67/69 to IEC/EN 60529
Switching system	reed contacts
Switching elements	NO or change-over contact
Switching voltage	max. 90 VAC / 125 VDC
Switching capacity	max. 1 A
Switching frequency	max. 30 W
Ambient temperature	-60°C ... +100°C
Mechanical/electrical life	10 ⁹ operations
Vibration resistance	20 g
Approvals	on request:

磁传感器 RC 2580 Extreme / Magnetic sensors RC 2580 Extreme



特点/选项

- 耐低温至 -40 °C
- 高防护等级 IP 68
- 不锈钢外壳
- 1 个簧片触点
- 从正面操作
- 感应距离高达 30 mm
- RC 2580-B: M16 x 1,5 安装螺纹版本用于线缆保护系统

注释

- 操作件不包含在订购的开关中

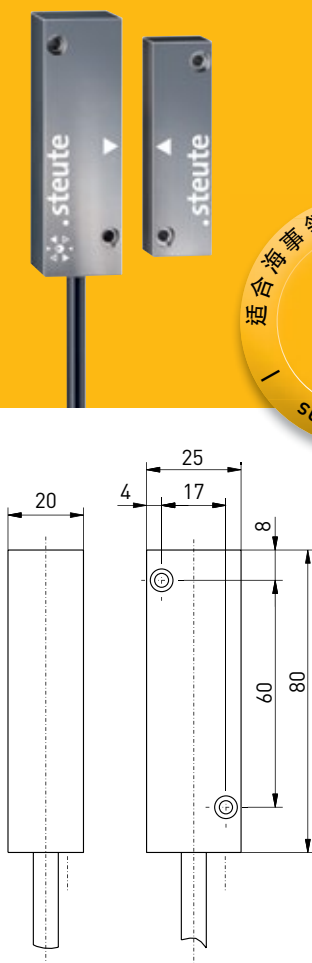
Features/Options

- Cold-resistant down to -40 °C
- High degree of protection IP 68
- Stainless steel enclosure
- 1 Reed contact
- All side actuation
- Switching distance up to 30 mm
- RC 2580-B: Variant with mounting thread M16 x 1.5 for cable protection system

Notes

- The actuator is not included in the delivery of the switches

// RC 2580 EXTREME



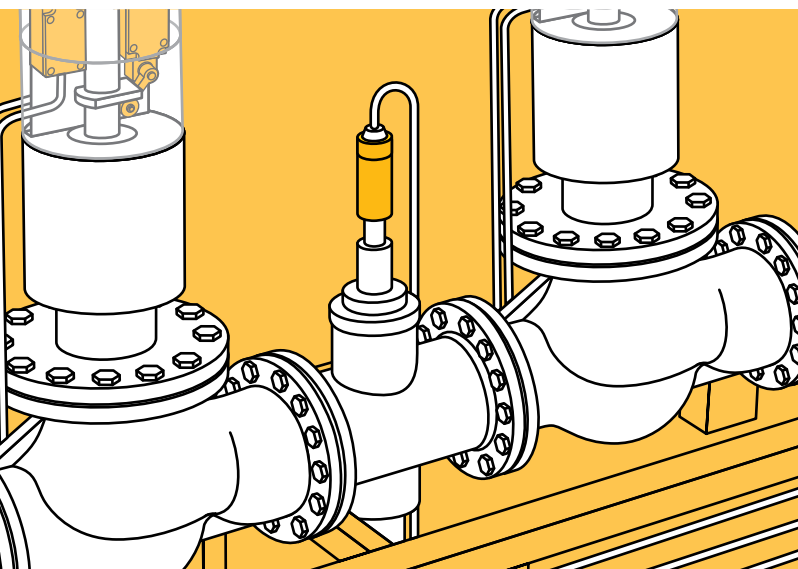
技术参数

适用标准	EN 60947-5-1
外壳	不锈钢 1.4571
连接类型	线缆, 3 x AWG 20
线缆横截面	3 x 0,56 mm ²
线缆长度	2, 5 或 10 m
防护等级	IP 68 依据 IEC/EN 60529
开关原理	簧片触点
开关元件	1 个切换触点
开关电压	250 VAC
开关电流	最大 1 A
开关频率	最大 50 W
应用类别	AC-15; DC-13
短路保护	6 A gG/gN 型熔丝管
环境温度	-40°C ... +70°C
机械寿命	> 100 万操作次数
电气寿命	10 ⁶ ... 10 ⁹ 操作次数
抗振动	10 ... 50 g
产品认证	根据需求可提供:

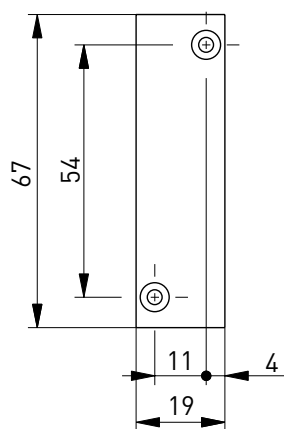
Technical data

Applied standards	EN 60947-5-1
Enclosure	Stainless steel 1.4571
Connection	cable 3 x AWG 20
Cable cross-section	3 x 0.56 mm ²
Cable length	2, 5 or 10 m
Degree of protection	IP 68 to IEC/EN 60529
Switching system	reed contacts
Switching elements	1 change-over contact
Switching voltage	250 VAC
Switching current	max. 1 A
Switching capacity	max. 50 W
Utilisation category	AC-15; DC-13
Max. fuse rating	6 A gG/gN fuse
Ambient temperature	-40°C ... +70°C
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁹ operations
Vibration resistance	10 ... 50 g
Approvals	on request:

磁传感器 RC 23 Extreme /
Magnetic sensors RC 23 Extreme



M 2580



电感式传感器 IS M Extreme / Inductive sensors IS M Extreme



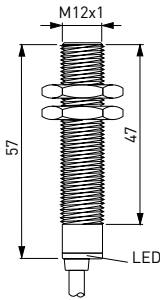
特点/选项

- 高防护等级 IP 69
- 不锈钢外壳
- 齐平安装
- 长寿命，无机械磨损
- 对污染不敏感
- LED 灯
- 可提供带插入式连接器的版本

Features/Options

- High degree of protection IP 69
- Stainless steel enclosure
- Flush mounting
- Long life, no mechanical wear
- Insensitive to soiling
- With LED
- Version with plug-in connector possible

// IS M 12 EXTREME



技术参数

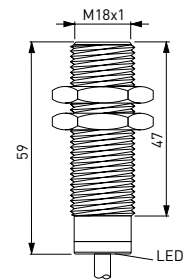
适用标准	EN 60947-5-2
外壳	不锈钢 AISI 316L
连接类型	线缆 PVC
线缆横截面	4 x 0,25 mm ²
防护等级	IP 68 依据 IEC/EN 60529
开关元件	1 个常开触点, PNP, 4-线
额定感应距离 s_n	M12: 2 或 4 mm, M18: 5 或 8 mm, M30: 10 mm
修正系数	钢 (Fe360) = 1; 不锈钢 大约 0,7; 黄铜 大约 0,5; 铝 大约 0,4; 铜 大约 0,4
额定工作电压范围 U_B	10 ... 30 VDC
余纹波	≤ 10 %
开关电流	最大 0,2 A
额定电流的电压降 I_e	最大 1,8 V
冲击电流的吸收	在 24 VDC 时 < 15 mA
磁滞现象	大约 10 %
环境温度	-25 °C ... +70 °C

Technical data

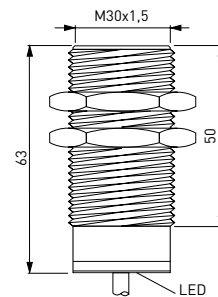
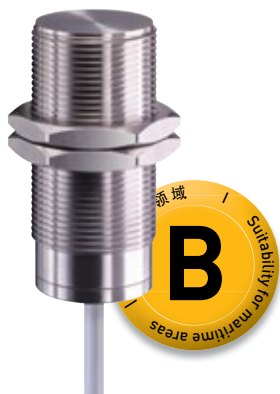
Applied standards	EN 60947-5-2
Enclosure	Stainless steel AISI 316L
Connection	cablc PVC
Cable cross-section	4 x 0.25 mm ²
Degree of protection	IP 68 to IEC/EN 60529
Switching elements	1 NO contact, PNP, 4-wire
Rated switching distance s_n	M12: 2 or 4 mm, M18: 5 or 8 mm, M30: 10 mm
Correction factors	Steel (Fe360) = 1; Stainless steel approx. 0.7; Brass approx. 0.5; Aluminium approx. 0.4; Copper approx. 0.4
Rated operating voltage range U_B	10 ... 30 VDC
Residual ripple	≤ 10 %
Switching current	max. 0.2 A
Voltage drop at I_e	max. 1.8 V
Current consumption	< 15 mA at 24 VDC
Hysteresis	approx. 10 %
Ambient temperature	-25 °C ... +70 °C



// IS M18



// IS M30





第 54 页 Page 54	海洋环境推荐产品清单 Recommendation list of devices in the maritime field
第 62 页 Page 62	带独立操动头的防爆安全开关 Ex safety switches with separate actuator
第 66 页 Page 66	防爆安全传感器 Ex safety sensors
第 70 页 Page 70	防爆限位开关 Ex position switches
第 78 页 Page 78	防爆指令设备 Ex command devices
第 80 页 Page 80	防爆防跑偏开关 Ex belt alignment switches
第 82 页 Page 82	防爆防碰撞开关 Ex anti-two-block switches
第 84 页 Page 84	防爆脚踏开关 Ex foot switches
第 86 页 Page 86	防爆磁传感器 Ex magnetic sensors
第 90 页 Page 90	防爆电感式传感器 Ex inductive sensors

海洋环境推荐产品清单 /




RECOMMENDATION LIST OF DEVICES IN THE MARITIME FIELD

带独立操动头的防爆安全开关 /

Ex safety switches with separate actuator









产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex ES 97 AZ-11 -60°C	C	-
	Ex ES 97 AZ-02 -60°C	C	-
	Ex ES 99 ST-11 -60°C X	C	-
	Ex ES 99 ST-02 -60°C X	C	-
	Ex ES 98 ST-11	C	-
	Ex ES 98 ST-02	C	-

防爆安全传感器 / Ex safety sensors

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex HS Si 4 10/1S 2m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex HS Si 4 10/1S 5m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex HS Si 4 20 2m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex HS Si 4 20 5m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si M30 10/1S-B IP69 NiRO - 1m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si M30 10/1S - 5m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si M30 20 - 5m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si M30 20 - 5m NIRO	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si 56 10/1S - 2m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si 56 10/1S - 5m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si 56 10/1S - 10m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si 56 20 - 2m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si 56 20 - 5m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC Si 56 20 - 10m	A+	B 线缆防紫外线辐射/protect cable from UV radiation

*根据需求可提供 / On request




防爆限位开关 / Ex position switches

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex ES 97 W-11 -60°C	A+	A+
	Ex ES 97 W-02 -60°C	A+	A+
	Ex EM 97 W-11 -60°C	A+	A+
	Ex ES 97 R-11 -60°C	A	B
	Ex ES 97 R-02 -60°C	A	B
	Ex EM 97 R-11 -60°C	A	B
	Ex ES 97 RL-11 -60°C	A	B
	Ex ES 97 RL-02 -60°C	A	B
	Ex EM 97 RL-11 -60°C	A	B
	Ex ES 97 WH-11 -60°C	A	B
	Ex ES 97 WH-02 -60°C	A	B
	Ex EM 97 WH-11 -60°C	A	B
	Ex ES 97 WPH-11 -60°C	A	B
	Ex ES 97 WPH-02 -60°C	A	B
	Ex EM 97 WPH-11 -60°C	A	B
	Ex ES 97 D-11 -60°C	A	C
	Ex ES 97 D-02 -60°C	A	C
	Ex EM 97 D-11 -60°C	A	C
	Ex ES 97 D50-11 -60°C	A	C
	Ex ES 97 D50-02 -60°C	A	C
	Ex EM 97 D50-11 -60°C	A	C
	Ex ES 97 DS-11 -60°C	A	C
	Ex ES 97 DS-02 -60°C	A	C
	Ex EM 97 DS-11 -60°C	A	C
	Ex ES 97 DD-11 -60°C	A	C
	Ex ES 97 DD-02 -60°C	A	C
	Ex EM 97 DD-11 -60°C	A	C








从功能、腐蚀性、防护等级以及污垢敏感性等方面进行评价：
A+ = 强烈推荐; **A** = 推荐;
B = 合适的; **C** = 有限适用

In terms of function, corrosion, degree of protection and fouling sensitivity were evaluated.
A+ = Highly recommendable; **A** = Recommendable;
B = Suitable; **C** = Of limited suitability

防爆限位开关 / Ex position switches

产品 / Product	Ex	室内典型应用，例 如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及 港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex ES 97 TK-11 -60°C	B	-
	Ex ES 97 TK-02 -60°C	B	-
	Ex EM TK-11 -60°C	B	-
	Ex ES 97 TTK-11 -60°C	B	-
	Ex EM 97 TTK-11 -60°C	B	-
	Ex ES 99 S-11 -60°C	A+	A+
	Ex ES 99 S-02 -60°C	A+	A+
	Ex EM 99 S-11 -60°C	A+	A+
	Ex ES 99 R-11 -60°C	A	B
	Ex ES 99 R-02 -60°C	A	B
	Ex EM 99 R-11 -60°C	A	B
	Ex ES 99 H-11 -60°C	A	A
	Ex ES 99 H-02 -60°C	A	A
	Ex EM 99 H-11 -60°C	A	A
	Ex ES 99 PH-11 -60°C	A	A
	Ex ES 99 PH-02 -60°C	A	A
	Ex EM 99 PH-11 -60°C	A	A
	Ex ES 99 D-11 -60°C	A	C
	Ex ES 99 D-02 -60°C	A	C
	Ex EM 99 D-11 -60°C	A	C
	Ex ES 99 DS-11 -60°C	A	C
	Ex ES 99 DS-02 -60°C	A	C
	Ex EM 99 DS-11 -60°C	A	C
	Ex ES 99 DD-11 -60°C	A	C
	Ex ES 99 DD-02 -60°C	A	C
	Ex EM 99 DD-11 -60°C	A	C
	Ex ES 99 TK-02 -60°C	B	-
	Ex EM 99 TK-11 -60°C	B	-





防爆限位开关 / Ex position switches

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex ES 98-11 -40°C	A	C
	Ex ES 98-02 -40°C	A	C
	Ex ES 98-11U -40°C	A	C
	Ex EM 98-11 -40°C	A	C
	Ex ES 98 R-11 -40°C	A	C
	Ex ES 98 R-02 -40°C	A	C
	Ex ES 98 R-11U -40°C	A	C
	Ex EM 98 R-11 -40°C	A	C
	Ex ES 98 H-11 -40°C	A	C
	Ex ES 98 H-02 -40°C	A	C
	Ex ES 98 H-11U -40°C	A	C
	Ex EM 98 H-11 -40°C	A	C
	Ex ES 98 PH-11 -40°C	A	C
	Ex ES 98 PH-02 -40°C	A	C
	Ex EM 98 PH-11 -40°C	A	C
	Ex ES 98 D-11 -40°C	B	-
	Ex ES 98 D-02 -40°C	B	-
	Ex ES 98 D-11U -40°C	B	-
	Ex EM 98 D-11 -40°C	B	-
	Ex ES 98 DL-11 -40°C	B	-
	Ex ES 98 DL-02 -40°C	B	-
	Ex ES 98 DL-11U -40°C	B	-
	Ex EM 98 DL-11 -40°C	B	-
	Ex ES 98 DS-11 -40°C	B	-
	Ex ES 98 DS-02 -40°C	B	-
	Ex ES 98 DS-11U -40°C	B	-
	Ex EM 98 DS-11 -40°C	B	-

从功能、腐蚀性、防护等级以及污垢敏感性等方面进行评价：
A+ = 强烈推荐; **A** = 推荐;
B = 合适的; **C** = 有限适用

In terms of function, corrosion, degree of protection and fouling sensitivity were evaluated.
A+ = Highly recommendable; **A** = Recommendable;
B = Suitable; **C** = Of limited suitability

防爆限位开关 / Ex position switches








产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex ES 98 DD-11 -40°C	B	-
	Ex ES 98 DD-02 -40°C	B	-
	Ex ES 98 DD-11U -40°C	B	-
	Ex EM 98 DD-11 -40°C	B	-
	Ex 14 W 1Ö/1S - 2m	A	-
	ExM 14 W - 2m	A	-
	Ex 14 WKU 1Ö/1S - 2m	A	-
	ExM 14 WKU - 2m	A	-
	Ex 14 WR 1Ö/1S - 2m	B	-
	ExM 14 WR - 2m	B	-
	ExM 14 WPH 1Ö/1S 5m -40°C	A+	A
	Ex 14 WPH 2Ö 5m -40°C	A+	A
	Ex 14 D 1Ö/1S - 2m	B	-
	ExM 14 D - 2m	B	-
	Ex 14 TF 1Ö/1S - 2m	B	-
	ExM 14 TF - 2m	B	-

58

防爆指令设备 / Ex command devices


产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex BF 80 1 PZTNA (1Ö/1S, 38mm)	A	B
	Ex BF 80 1 PZTNA (2Ö/1S, 38mm)	A	B
	Ex BF 80 1 PZSTNA (1Ö/1S, 38mm)	A	-
	Ex BF 80 1 PZDTSW (1Ö/1S, 38mm)	A	B
	Ex BF 80 1 DT (1Ö/1S)	A	B

防爆指令设备 / Ex command devices

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex BF 80 1 LDT (1Ö/1S)	A	B
	Ex BF 80 1 DDT (1Ö/1S)	A	B
	Ex BF 80 1 LM	A	A
	Ex BF 80 1 WS (1Ö/1S)	A	B
	Ex BF 80 1 WS (1S/1S)	A	B
	Ex BF 80 1 SLS (0-I)	A	-
	Ex BF 80 1 SLS (I-0-II)	A	-
	Ex BF 80 2 DT/DT (1ÖS/1ÖS)	A	B
	Ex BF 80 2 LM/DT (LED/1ÖS)	A	B
	Ex BF 80 2 LM/DDT (LED/1ÖS)	A	B
	Ex BF 80 3 DT/DT/DT (1ÖS/1ÖS/1ÖS)	A	B
	Ex BF 80 3 LM/DT/DT (LED/1ÖS/1ÖS)	A	B
	Ex BF 80 3 LM/DDT/PZSTNA (LED/1ÖS/1ÖS)	A	B

59


防爆防跑偏开关 / Ex Belt alignment switches

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex ES 98 SR-11 -40°C *	B	C
	Ex ES 98 SR-02 -40°C	B	C
	Ex ES 98 SR-11U -40°C	B	C
	Ex EM 98 SR-11 -40°C	B	C


从功能、腐蚀性、防护等级以及污垢敏感性等方面进行评价：
A+ = 强烈推荐; **A** = 推荐;
B = 合适的; **C** = 有限适用

In terms of function, corrosion, degree of protection and fouling sensitivity were evaluated.
A+ = Highly recommendable; **A** = Recommendable;
B = Suitable; **C** = Of limited suitability

防爆防撞开关 / Ex anti two-block switches

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex ZS 73 10/1S W HES 5m 120N -40°C NIRO	A	B

防爆脚踏开关 / Ex foot switches



产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex GFI 10/1S -40°C Extreme	A+	A
	Ex GFSI 10/1S -40°C Extreme	A+	A

防爆磁传感器 / Ex magnetic sensors

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex RC M20 1W KST 2m -60°C	A+	A+
	Ex RC M20 1W KST 5m -60°C	A+	A+
	Ex RC M20 1W KST 10m -60°C	A+	A+
	Ex RC M14 1S - 2m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M14 1S - 5m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M14 1W - 2m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M14 1W - 5m	A	B 线缆防紫外线辐射/protect cable from UV radiation





*根据需求可提供 / On request

防爆磁传感器 / Ex magnetic sensors

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex RC M20 1W - 2m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M20 1W - 5m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M20 1W - 2m - Niro	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M20 1W - 5m - Niro	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M20 1Wr - 2m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M20 1Wr - 5m	A	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC M20 1Wr - 5m - Niro	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC 2580 1Wr -Niro - 5m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC 2580 1W-Niro-2m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC 2580 1W-Niro-5m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
	Ex RC 2580 1W-B-Niro-2m	A+	B 线缆防紫外线辐射/protect cable from UV radiation
Ex RC 2580 1W-B-Niro-5m	A+	B 线缆防紫外线辐射/protect cable from UV radiation	

*根据需求可提供 / On request

防爆电感式传感器 / Ex inductive sensors

产品 / Product	Ex	室内典型应用，例如：机房 Rating for indoor applications e.g. machine room	海洋典型应用，例如：船舶甲板、起重机以及港口设备 Rating for maritime outdoor applications e.g. deck of ships, cranes, harbour
	Ex IS M8b 1ABBAB N 1GD 2m	A	B Anschlusskabel vor UV-Strahlung schützen/protect cable from UV radiation
	Ex IS M8nb 2ABBAB N 1GD 2m	A	B Anschlusskabel vor UV-Strahlung schützen/protect cable from UV radiation
	Ex IS M12b 2ABBAB N 1GD 2m	A	B Anschlusskabel vor UV-Strahlung schützen/protect cable from UV radiation
	Ex IS M12nb 4ABBAB N 1GD 2m	A	B Anschlusskabel vor UV-Strahlung schützen/protect cable from UV radiation
	Ex IS M18b 5ABBAB N 1GD 2m	A	B Anschlusskabel vor UV-Strahlung schützen/protect cable from UV radiation
	Ex IS M18nb 8ABBAB N 1GD 2m	A	B Anschlusskabel vor UV-Strahlung schützen/protect cable from UV radiation
	Ex IS M30b 10ABBAB N 1GD 2m	A	B Anschlusskabel vor UV-Strahlung schützen/protect cable from UV radiation
	Ex IS M30nb 15ABBAB N 1GD 2m	A	B Anschlusskabel vor UV-Strahlung schützen/protect cable from UV radiation

从功能、腐蚀性、防护等级以及污垢敏感性等方面进行评价：
A+ = 强烈推荐; A = 推荐;
B = 合适的; C = 有限适用

In terms of function, corrosion, degree of protection and fouling sensitivity were evaluated.
A+ = Highly recommendable; A = Recommendable;
B = Suitable; C = Of limited suitability

带独立操动头的防爆安全开关 Ex 97 AZ / Ex safety switches with separate actuator Ex 97 AZ



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 热塑性塑料外壳, 双重绝缘 □
- 耐低温至 -60 °C
- 高防护等级 IP 66/67/69
- 接线舱
- 安装细则依据 EN 50047

注释

操作件不包含在订购的开关中

Features/options

- Ex zone 1 and 21
- Thermoplastic enclosure, double insulated □
- Cold-resistant down to -60 °C
- High degree of protection IP 66/67/69
- Wiring compartment
- Mounting details to EN 50047

Note

The actuator is not included in the delivery of the switches

// EX 97 AZ

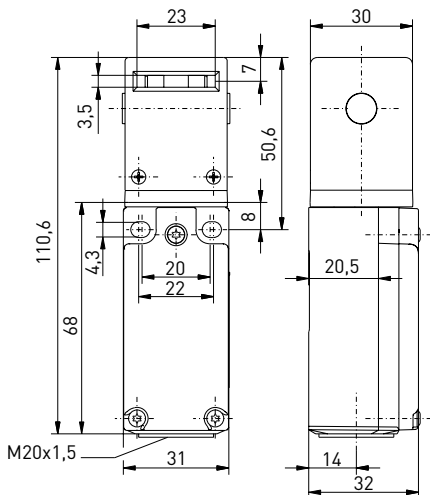


技术参数

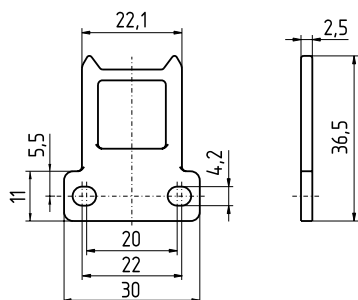
适用标准	EN 60947-5-1; EN 60079-0, -1, -7, -31; EN ISO 13849-1; EN ISO 14119
外壳	增强玻璃纤维, 抗震热塑性塑料, 自熄性依据 UL 94-V0
开关类型	2 类, 低编码
防护等级	IP 66 (... -60 °C), IP 67 (... -20 °C) 依据 EN 60079-0 + IEC/EN 60529, IP 67/69 依据 IEC/EN 60529
开关原理	缓动型, 肯定断开常闭触点 ⊕
开关元件	1 个常闭/1 个常开触点或 2 个常闭触点, Zb 类
连接类型	螺丝连接端子
B _{10d} (10% 额定负载)	2 百万
T _M	最长 20 年
应用类别	AC-15
I _e	最大 2 A 或 4 A 不等电位最大 250 VAC
U _e	最大 500 VAC, 2Ö: 最大 400 VAC, 不等电位最大 250 VAC
机械寿命	100 万操作次数
撞击能量	最大 7 J
环境温度	-60 °C ... +55 °C 最大 4 A, +60 °C 最大 2 A
防爆标志	⊕ II 2G Ex db e IIC T6 Gb II 2D Ex tb IIIC T80°C Db IECEx Ex db eb IIC T6 Gb Ex tb IIIC T80°C Db
产品认证	BVS 16 ATEX E 052, IECEx BVS 16.0052

Technical data

Applied standards	EN 60947-5-1; EN 60079-0, -1, -7, -31; EN ISO 13849-1; EN ISO 14119
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch type	Type 2, low coding
Degree of protection	IP 66 (... -60 °C), IP 67 (... -20 °C) to EN 60079-0 + IEC/EN 60529, IP 67/69 to IEC/EN 60529
Switching system	slow action, positive break NC contacts
Switching elements	1 NC/1 NO contact or 2 NC contacts, type Zb
Connection	screw connection terminals
B _{10d} (10% nominal load)	2 millions
T _M	max. 20 years
Utilisation category	AC-15
U _e	max. 500 VAC, 2Ö: max. 400 VAC, max. 250 VAC for unequal potential
I _e	max. 2 A or 4 A □
Mechanical life	1 million operations
Impact energy	max 7 J
Ambient temperature	-60 °C ... +55 °C max. 4 A, +60 °C max. 2 A
Ex marking	⊕ II 2G Ex db e IIC T6 Gb II 2D Ex tb IIIC T80°C Db IECEx Ex db eb IIC T6 Gb Ex tb IIIC T80°C Db
Approvals	BVS 16 ATEX E 052, IECEx BVS 16.0052



95 AZ-B1



带独立操动头的防爆安全开关 Ex 99 ST / Ex safety switches with separate actuator Ex 99 ST



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 热塑性塑料外壳, 双重绝缘
- 耐低温 (存储/防爆防护温度低至 $-60\text{ }^{\circ}\text{C}$;
机械功能温度低至 $-50\text{ }^{\circ}\text{C}$)
- 高防护等级 IP 66/67/69
- 接线舱
- 安装细则依据 EN 50041

注释

操作件不包含在订购的开关中

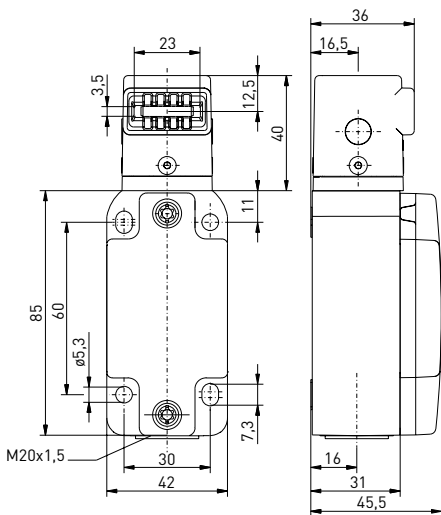
Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure, double insulated
- Cold-resistant (storage/Ex protection down to $-60\text{ }^{\circ}\text{C}$; mechanical function down to $-50\text{ }^{\circ}\text{C}$)
- High degree of protection IP 66/67/69
- Wiring compartment
- Mounting details to EN 50041t

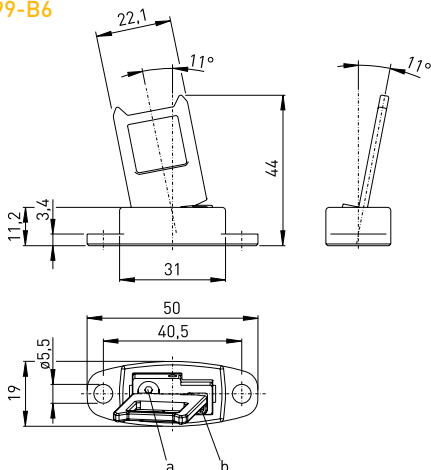
Note

The actuator is not included in the delivery of the switches

// EX 99 ST



ST 98/99-B6



技术参数

适用标准	EN 60947-5-1; EN 60079-0, -1, -7, -31; EN ISO 13849-1; EN ISO 14119
外壳	增强玻璃纤维, 抗震热塑性塑料, 自熄性依据 UL 94-V0
开关类型	2 类, 低编码
防护等级	IP 66 [EN 60079-0 + IEC/EN 60529], IP 67, IP 69 [IEC/EN 60529]
连接类型	螺丝连接端子
B_{10d} (10% 额定负载)	2 百万
T_M	最长 20 年
应用类别	AC-15
开关原理	缓动型, 肯定断开常闭触点 \ominus
开关元件	1 个常闭/1 个常开触点或 2 个常闭触点, Zb 类
I_e	最大 2 A 或 4 A
U_e	最大 500 VAC, 20: 最大 400 VAC, 不等电位最大 250 VAC
撞击能量	低温至 $-40\text{ }^{\circ}\text{C}$ 时最大 7 J, 低温至 $-60\text{ }^{\circ}\text{C}$ 时最大 4 J
环境温度	$-50\text{ }^{\circ}\text{C}$... $+55\text{ }^{\circ}\text{C}$ 最大 4 A, $+60\text{ }^{\circ}\text{C}$ 最大 2 A
机械寿命	> 100 万操作次数
防爆标志	$\text{Ex II 2G Ex db eb IIC T6 Gb, II 2D Ex tb IIIC T80 }^{\circ}\text{C Db}$ IECEx Ex db eb IIC T6 Gb, Ex tb IIIC T80 $^{\circ}\text{C Db}$
产品认证	BVS 16 ATEX E113 X, IECEx BVS 16.0076X

Technical data

Applied standards	EN 60947-5-1; EN 60079-0, -1, -7, -31; EN ISO 13849-1; EN ISO 14119
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94 V-0
Switch type	Type 2, low coding
Degree of protection	IP 66 [EN 60079-0 + IEC/EN 60529], IP 67, IP 69 [IEC/EN 60529]
Connection	screw connection terminals
B_{10d} (10% nominal load)	2 millions
T_M	max. 20 years
Utilisation category	AC-15
Switching system	slow action, positive break NC contacts \ominus
Switching elements	1 NC/1 NO or 2 NC contacts, type Zb
I_e	max. 2 A or 4 A
U_e	max. 500 VAC, 20: max. 400 VAC, max. 250 VAC for unequal potential
Impact energy	max. 7 J down to $-40\text{ }^{\circ}\text{C}$, max. 4 J down to $-60\text{ }^{\circ}\text{C}$
Ambient temperature	$50\text{ }^{\circ}\text{C}$... $+55\text{ }^{\circ}\text{C}$ max. 4 A, $+60\text{ }^{\circ}\text{C}$ max. 2 A
Mechanical life	> 1 million operations
Ex marking	$\text{Ex II 2G Ex db eb IIC T6 Gb, II 2D Ex tb IIIC T80 }^{\circ}\text{C Db}$ IECEx Ex db eb IIC T6 Gb, Ex tb IIIC T80 $^{\circ}\text{C Db}$
Approvals	BVS 16 ATEX E113 X, IECEx BVS 16.0076X

带独立操动头的防爆安全开关 Ex 98 ST / Ex safety switches with separate actuator Ex 98 ST



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 金属外壳
- 安装细则依据 EN 50041
- 接线舱
- 操作头可以在出厂前 4 x 90° 调整

注释

操作件不包含在订购的开关中

Features/options

- Ex zone 1 and 21
- Metal enclosure
- Mounting details to EN 50041
- Wiring compartment
- Actuator can be repositioned in factory by 4 x 90°

Note

The actuator is not included in the delivery of the switches

// EX 98 ST



技术参数

适用标准

EN 60079-0, -1, -7, -31; EN 60947-5-1;
EN ISO 13849-1; EN ISO 14119

外壳

抗腐蚀铝，粉末涂层，类似 7016

外盖

不锈钢 1.4401，粉末涂层，类似 RAL 1003

开关类型

2 类，低编码

防护等级

IP 66 依据 IEC/EN 60529

开关原理

缓动型，肯定断开常闭触点 ⊖

开关元件

1 个常闭/1 个常开触点或 2 个常闭触点，
Zb 类

连接类型

螺丝连接端子，最小 5 mm² / AWG 24，最大
1,5 mm² / AWG 16，包括导线套管

B_{10d} (10% 额定负载)

2 百万

T_M

最长 20 年

应用类别

AC-15 ; DC-13

U_e/I_e

6 A/250 VAC; 0,25 A/230 VDC

机械寿命

100 万操作次数

撞击能量

最大 7 J

环境温度

T6: -20 °C ... +40 °C; T5: -20 °C ... +60 °C

防爆标志

⊕ II 2G Ex de IIC T6/T5 Gb,
II 2D Ex tD A21 IP67 T80 °C/T95 °C
IECEX Ex de IIC T6/T5 Gb,
Ex tb IIIC T80 °C/T95 °C Db

产品认证

DMT 01 ATEX E 178, IECEx BVS 07.0014



Technical data

Applied standards

EN 60079-0, -1, -7, -31; EN 60947-5-1;
EN ISO 13849-1; EN ISO 14119

Enclosure

Corrosion-resistant aluminium, powder-
coated, similar to RAL 7016

Switch type

type 2, low coding

Degree of protection

IP 66 to IEC/EN 60529

Switching system

slow action, positive break NC contacts ⊖

Switching elements

1 NC/1 NO or 2 NC contacts, type Zb

Connection

screw connection terminals, min. 0.5 mm² /
AWG 24, max. 1.5 mm² / AWG 16, incl. con-
ductor ferrules

B_{10d} (10% nominal load)

2 millions

T_M

max. 20 years

Utilisation category

AC-15; DC-13

U_e/I_e

6 A/250 VAC; 0,25 A/230 VDC

Mechanical life

1 million operations

Impact energy

max 7 J

Ambient temperature

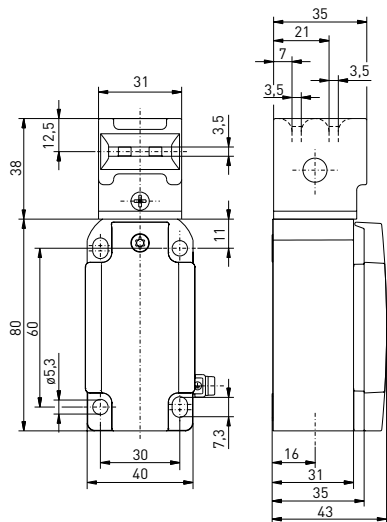
T6: -20 °C ... +40 °C; T5: -20 °C ... +60 °C

Ex marking

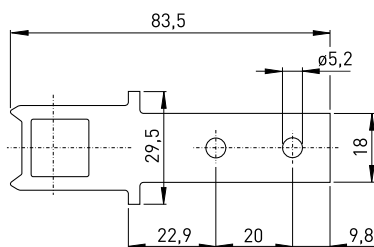
⊕ II 2G Ex de IIC T6/T5 Gb,
II 2D Ex tD A21 IP67 T80 °C/T95 °C
IECEX Ex de IIC T6/T5 Gb,
Ex tb IIIC T80 °C/T95 °C Db

Approvals

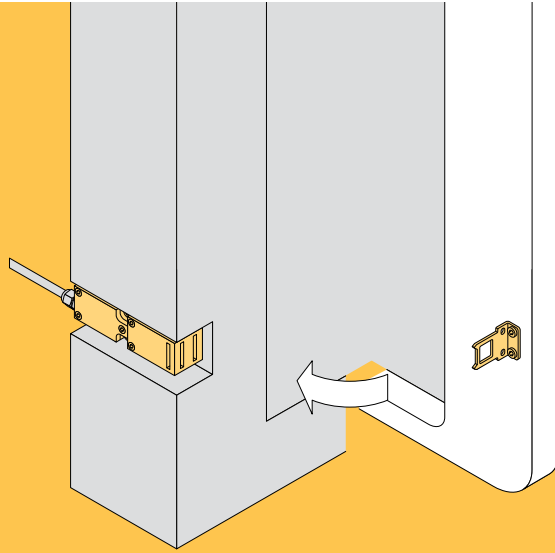
DMT 01 ATEX E 178, IECEx BVS 07.0014



ST 98/99-B1

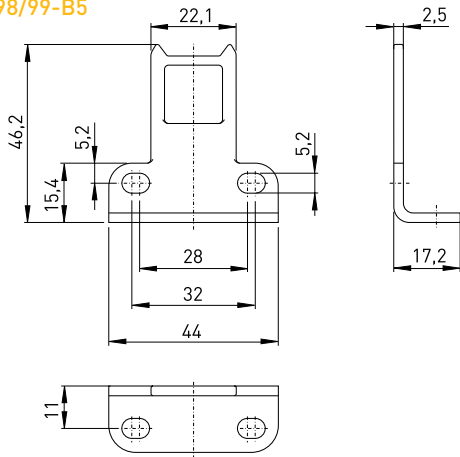


带独立操动头的防爆安全开关 Ex 98 ST /
Ex safety switches with separate actuator Ex 98 ST

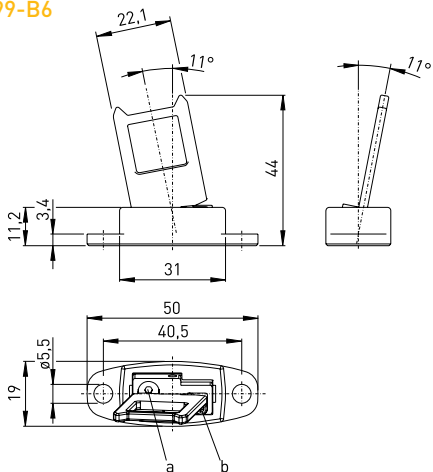


65

ST 98/99-B5



ST 98/99-B6



防爆安全传感器 Ex RC Si 56 / Ex safety sensor Ex RC Si 56



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 热塑性塑料外壳
- 霍尔传感器 1 个常闭/1 个常开触点或 2 个常闭触点
- 高抗冲击性和振动性

注释

操作件不包含在订购的开关中

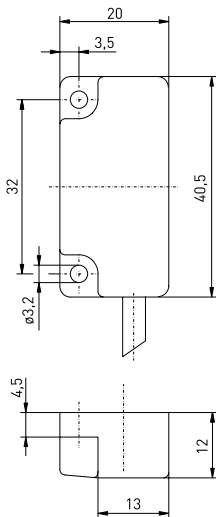
Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Hall sensor 1 NC/1 NO or 2 NC contacts
- High shock and vibration resistance

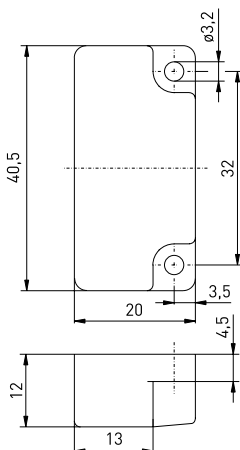
Note

The actuator is not included in the delivery of the switches

// EX HS SI 4



MC 4



技术参数

适用标准

EN ISO 13849-1; EN 60947, -5-2, -5-3;
EN ISO 14119; EN 62061; EN 60079-0, -18
增强玻璃纤维, 抗震热塑性塑料, 自熄性依
据 UL 94-V0

外壳

连接类型
传感器类型
防护等级
开关原理

线缆, 6 x AWG 26, 2, 5 或 10 m, 最长 15 m
4 类联锁装置, 低编码
IP 67 依据 IEC/EN 60529
霍尔传感器, 2 个电流隔离通道, 半导体, 1 个
常闭/1 个常开触点或 2 个常闭触点

MTTF_d
DC/DC_{avg}
EN 62061

> 100 年
> 99 %
SIL CL 3

PFH_d

≥ 2,47 x 10⁻⁸ 1/h

T_M

最长 20 年

U_e

24 VDC

U_B

10 ... 30 VDC

I_e

每个通道最大 40 mA

环境温度

-20°C ... +60°C

感应距离

s_n 7 mm, s_{ao} 6 mm, s_{ar} 20 mm

撞击能量

最大 7 J

防爆标志

⊕ II 2G Ex mb IIC T6 Gb
II 2D Ex mb IIIC T80°C Db
IECEx Ex mb IIC T6 Gb
Ex mb IIIC T80°C Db

产品认证

BVS 08 ATEX E 150 X, IECEx BVS 08.0054X



Technical data

Applied standards

EN ISO 13849-1; EN 60947, -5-2, -5-3;
EN ISO 14119; EN 62061; EN 60079-0, -18

Enclosure

glass-fibre reinforced, shock-proof ther-
moplastic, self-extinguishing UL 94-V0

Connection

Sensor type

Degree of protection

Switching system

cable 6 x AWG 26, 2, 5 or 10 m, max. 15 m
type 4 interlocking device, low coding
IP 67 to IEC/EN 60529
Hall sensor, 2 galvanically separated
channels, semiconductor, 1 NC/1 NO
or 2 NC contacts

MTTF_d
DC/DC_{avg}
EN 62061

> 100 years
> 99 %
SIL CL 3

PFH_d

≥ 2,47 x 10⁻⁸ 1/h

T_M

max. 20 years

I_e / U_e

6 A/400 VAC

U_e

24 VDC

U_B

10 ... 30 VDC

I_e

max. 40 mA per channel

Ambient temperature

-20°C ... +60°C

Switching distances

s_n 7 mm, s_{ao} 6 mm, s_{ar} 20 mm

Impact energy

max. 7 J

Ex marking

⊕ II 2G Ex mb IIC T6 Gb
II 2D Ex mb IIIC T80°C Db
IECEx Ex mb IIC T6 Gb
Ex mb IIIC T80°C Db

Approvals

BVS 08 ATEX E 150 X, IECEx BVS 08.0054X



防爆安全传感器 RC Si M30 / Ex safety sensor RC Si M30



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 可提供不锈钢外壳
- 簧片触点, 编码型
- 从正面操作
- 感应距离 10 mm

注释

操作件不包含在订购的开关中

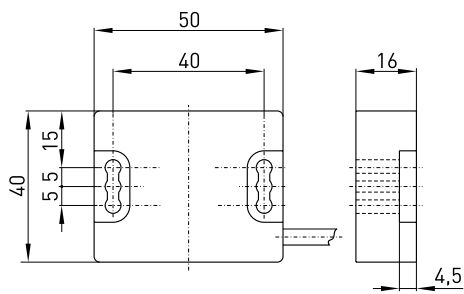
Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Reed contacts, coded
- Actuation from front
- Switching distance up to 6 mm

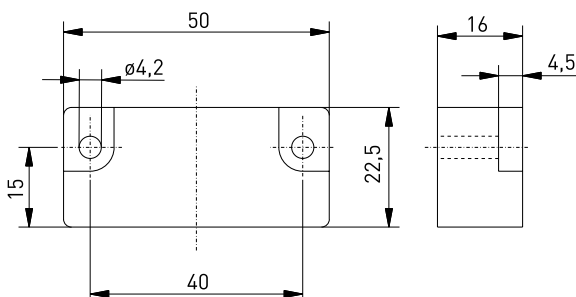
Note

The actuator is not included in the delivery of the switches

// EX RC SI 56



MC 56



技术参数

适用标准

EN ISO 13849-1; EN 60947-5-3;
EN ISO 14119; EN 60079-0, -18

外壳

黄铜, 镍 或 不锈钢 1.4539

连接类型

线缆 H05VV5-F 5G,
2, 5 或 10 m, 最长 15 m

传感器类型

4 类连锁装置, 低编码

防护等级

IP 67 (EN 60079-0 + IEC/EN 60529) 或 IP 69
(IEC/EN 60529)

开关原理

簧片触点, 1 个常闭/1 个常开触点或 2 个常
闭触点

MTTF_d

> 100 年

DC/DC_{avg}

> 99 %

B_{10d}(10% 额定负载)

2000 万

T_M

最长 20 年

环境温度

-20°C ... +70°C

感应距离

s_n 10 mm, s_{ao} 8 mm, s_{ar} 30 mm

撞击能量

最大 7 J

防爆标志

⊕ II 2G Ex mb IIC T6 Gb
II 2D Ex mb IIIC T80°C Db IP67
IECEx Ex mb IIC T6 Gb,
Ex mb IIIC T80°C Db IP67

产品认证

PTB 05 ATEX 2024 X, IECEx PTB 07.0008 X
cULus, 根据需求可提供: DNVGL ICS

Technical data

Applied standards

EN ISO 13849-1; EN 60947-5-3;
EN ISO 14119; EN 60079-0, -18

Enclosure

brass, nicked or stainless steel 1.4539

Connection

cable H05VV5-F 5G

Sensor type

type 4 interlocking device, low coding

Degree of protection

IP 67 (EN 60079-0 + IEC/EN 60529)
or IP 69 (IEC/EN 60529)

Switching system

reed contacts, 1 NC/1 NO contact
or 2 NC contacts

MTTF_d

> 100 years

DC/DC_{avg}

> 99 %

B_{10d}

20 million

T_M

max. 20 years

Ambient temperature

-20°C ... +70°C

Switching distances

s_n 10 mm, s_{ao} 8 mm, s_{ar} 30 mm

Impact energy

max. 7 J

Ex marking

⊕ II 2G Ex mb IIC T6 Gb,
II 2D Ex mb IIIC T80°C Db IP67
IECEx Ex mb IIC T6 Gb,
Ex mb IIIC T80°C Db IP67

Approvals

PTB 05 ATEX 2024 X, IECEx PTB 07.0008 X
cULus, on request: DNVGL ICS

防爆安全传感器 RC Si M30 / Ex safety sensor RC Si M30



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 可提供不锈钢外壳
- 簧片触点, 编码型
- 从正面操作
- 感应距离 10 mm

注释

操作件不包含在订购的开关中

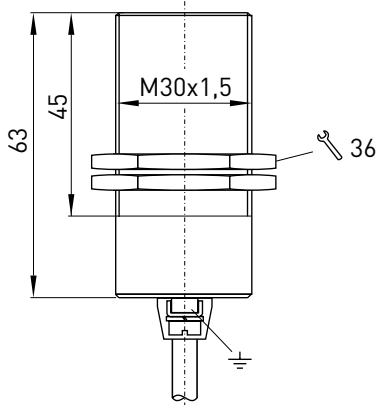
Features/Options

- Ex zone 1 and 21
- Available in stainless steel enclosure
- Reed contacts, coded
- Actuation from front
- Switching distance up to 10 mm

Note

The actuator is not included in the delivery of the switches

// EX RC SI M30



技术参数

适用标准

EN ISO 13849-1; EN 60947-5-3;
EN ISO 14119; EN 60079-0, -18

外壳

黄铜, 镍 或 不锈钢 1.4539

连接类型

线缆 H05VV5-F 5G,
2, 5 或 10 m, 最长 15 m

传感器类型

4 类联锁装置, 低编码

防护等级

IP 67 (EN 60079-0 + IEC/EN 60529) 或 IP 69
(IEC/EN 60529)

开关原理

簧片触点, 1 个常闭/1 个常开触点或 2 个常
闭触点

MTTF_d

> 100 年

DC/DC_{avg}

> 99 %

B_{10d}(10 % 额定负载)

2000 万

T_M

最长 20 年

环境温度

-20°C ... +70°C

感应距离

s_n 10 mm, s_{ao} 8 mm, s_{ar} 30 mm

撞击能量

最大 7 J

防爆标志

⊕ II 2G Ex mb IIC T6 Gb
II 2D Ex mb IIIC T80°C Db IP67
IECEx Ex mb IIC T6 Gb,
Ex mb IIIC T80°C Db IP67

产品认证

PTB 05 ATEX 2024 X, IECEx PTB 07.0008 X
cULus, 根据需求可提供: DNV-GL

Technical data

Applied standards

EN ISO 13849-1; EN 60947-5-3;
EN ISO 14119; EN 60079-0, -18

Enclosure

brass, nicked or stainless steel 1.4539

Connection

cable H05VV5-F 5G

Sensor type

type 4 interlocking device, low coding

Degree of protection

IP 67 (EN 60079-0 + IEC/EN 60529)
or IP 69 (IEC/EN 60529)

Switching system

reed contacts, 1 NC/1 NO contact
or 2 NC contacts

MTTF_d

> 100 years

DC/DC_{avg}

> 99 %

B_{10d}

20 million

T_M

max. 20 years

Ambient temperature

-20°C ... +70°C

Switching distances

s_n 10 mm, s_{ao} 8 mm, s_{ar} 30 mm

Impact energy

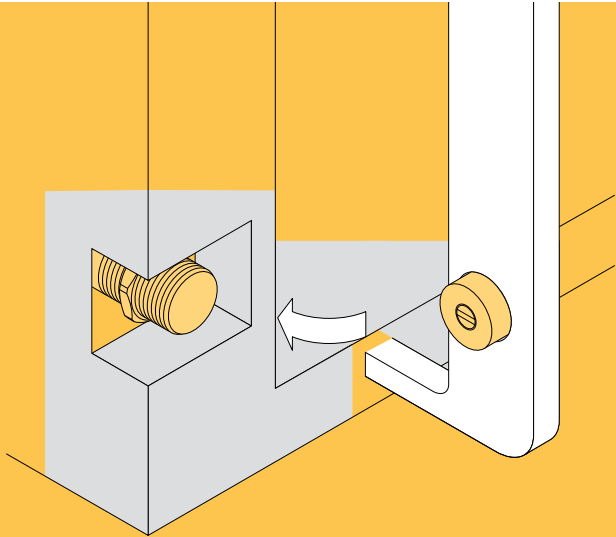
max. 7 J

Ex marking

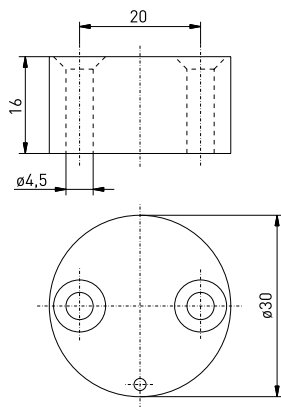
⊕ II 2G Ex mb IIC T6 Gb,
II 2D Ex mb IIIC T80°C Db IP67
IECEx Ex mb IIC T6 Gb,
Ex mb IIIC T80°C Db IP67

Approvals

PTB 05 ATEX 2024 X, IECEx PTB 07.0008 X
cULus, on request: DNV-GL



MC 30



防爆限位开关 Ex 97 / Ex position switches Ex 97



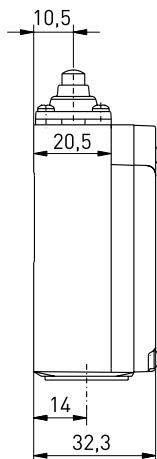
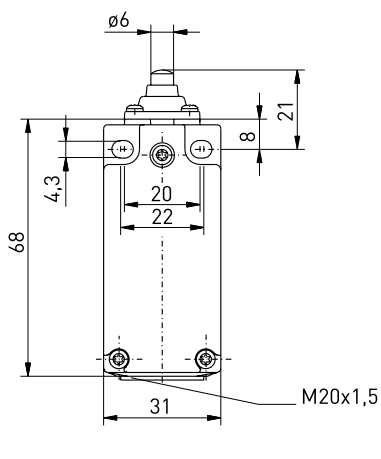
特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 热塑性塑料外壳
- 耐低温至 -60 °C
- 高防护等级 IP 66/67
- 设计依据 EN 50047
- 接线舱
- 双重绝缘 □

Features/options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Cold-resistant down to -60 °C
- High degree of protection IP 66/67
- Design to EN 50047
- Wiring compartment
- Double insulated □

// EX 97



技术参数

适用标准	EN 60947-5-1; EN 60079-0, -1, -7, -31; EN ISO 13849-1; EN ISO 14119
外壳	增强玻璃纤维，抗震热塑性塑料，自熄性依据 UL 94-V0
开关类型	1 类，无编码
防护等级	IP 66 (... -60 °C), IP 67 (... -20 °C) 依据 EN 60079-0 + IEC/EN 60529, IP 67/69 依据 IEC/EN 60529
开关原理	缓动型或速动型，肯定断开常闭触点 ⊖
开关元件	1 个常闭/1 个常开触点，2 个常闭触点或 1 个常闭/1 个常开重叠型触点，Zb 类
连接类型	螺丝连接端子
B _{10d} (10 % 额定负载)	2 百万
T _M	最长 20 年
应用类别	AC-15
I _e	最大 2 A 或 4 A □
U _e	最大 500 VAC, 2Ö: 最大 400 VAC 不等电位最大 250 VAC
机械寿命	> 100 万操作次数
撞击能量	最大 7 J
环境温度	-60 °C ... +55 °C 最大 4 A, +60 °C 最大 2 A
防爆标志	⊕ II 2G Ex db eb IIC T6 Gb, II 2D Ex tb IIIC T80 °C Db IECEx Ex db eb IIC T6 Gb, Ex tb IIIC T80 °C Db
产品认证	BVS 16 ATEX E 052; IECEx BVS 16.0052 UL ENEC

Technical data

Applied standards	EN 60947-5-1; EN 60079-0, -1, -7, -31; EN ISO 13849-1; EN ISO 14119
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch type	type 1, no coding
Degree of protection	IP 66 (... -60 °C); IP 67 (... -20 °C) to IEC/EN 60529
Switching system	slow or snap action, positive break NC contacts
Switching elements	1 NC/1 NO, 2 NC or 1 NC/1 NO contact with contact overlapping, type Zb screw connection terminals
Connection	
B _{10d} (10 % nominal load)	2 million
T _M	max. 20 years
Utilisation category	AC-15
I _e	max. 2 A or 4 A □
U _e	max. 500 VAC, 2Ö: max. 400 VAC, max. 250 VAC for unequal potential
Mechanical life	> 1 million operations
Impact energy	max. 7 J
Ambient temperature	-60 °C ... +55 °C max. 4 A, +60 °C max. 2 A
Ex marking	⊕ II 2G Ex db eb IIC T6 Gb, ⊕ II 2D Ex tb IIIC T80 °C Db IEC Ex Ex db eb IIC T6 Gb Ex tb IIIC T80 °C Db
Approvals	BVS 16 ATEX E 052; IECEx BVS 16.0052 UL ENEC

// Ex 97 R



// Ex 97 RL



// Ex 97 WH



// Ex 97 WPH



// Ex 97 D



// Ex 97 DS



// Ex 97 DD



// Ex 97 TK



防爆限位开关 Ex 99 / Ex position switches Ex 99



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 热塑性塑料外壳
- 耐低温至 -60 °C
- 高防护等级 IP 66/67/69
- 设计依据 EN 50041
- 接线舱
- 双重绝缘 □
- 缓动型或速动型

Features/options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Cold-resistant down to -60 °C
- High degree of protection IP 66/67/69
- Design to EN 50041
- Wiring compartment
- Double insulated □
- Slow or snap action

// EX 99

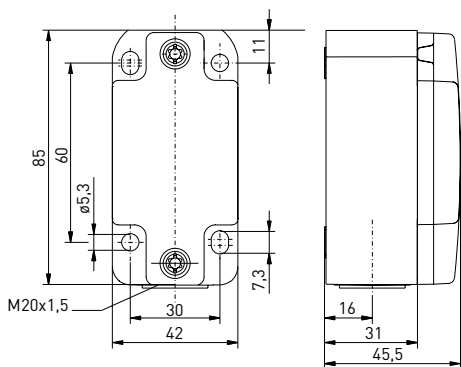


技术参数

适用标准	EN 60079-0, -1, -7, -31; EN 60947-5-1; EN ISO 13849-1; EN ISO 14119
外壳	增强玻璃纤维，抗震热塑性塑料，自熄性依据 UL 94-V0
开关类型	1 类，无编码
防护等级	IP 66 (EN 60079-0 + IEC/EN 60529), IP 67, IP 69 (IEC/EN 60529)
开关原理	缓动型或速动型，肯定断开常闭触点 ⊖
开关元件	1个常闭/1个常开触点, 2个常闭触点或重叠型1个常闭/1个常开触点, Zb类
连接类型	螺丝连接端子
B_{10d} (10 % 额定负载)	2 百万
T_M	最长 20 年
应用类别	AC-15
I_e	最大 2 A 或 4 A □
U_e	最大 500 VAC, 2Ö: 最大 400 VAC 不等电位最大 250 VAC
机械寿命	> 100 万操作次数
撞击能量	低温至 -40 °C 时最大 7 J, 低温至 -60 °C 时最大 4 J
环境温度	-60 °C ... +55 °C 最大 4 A, +60 °C 最大 2 A
防爆标志	⊕ II 2G Ex db eb IIC T6 Gb, II 2D Ex tb IIIC T80 °C Db IECEx Ex db eb IIC T6 Gb, Ex tb IIIC T80 °C Db
产品认证	BVS 16 ATEX E 113; IECEx BVS 16.0076X UL US ENEC

Technical data

Applied standards	EN 60947-5-1; EN 60079-0, -1, -7, -31; EN ISO 13849-1; EN ISO 14119
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch type	type 1, no coding
Degree of protection	IP 66 (... -60 °C); IP 67 (... -20 °C) to IEC/EN 60529
Switching system	slow or snap action, positive break NC contacts
Switching elements	1 NC/1 NO, 2 NC or 1 NC/1 NO contact with contact overlapping, type Zb screw connection terminals
Connection	
B_{10d} (10 % nominal load)	2 million
T_M	max. 20 years
Utilisation category	AC-15
I_e	max. 2 A or 4 A □
U_e	max. 500 VAC, 2Ö: max. 400 VAC, max. 250 VAC for unequal potential
Mechanical life	> 1 million operations
Impact energy	max. 7 J bis -40 °C, max. 4 J bis -60 °C
Ambient temperature	-60 °C ... +55 °C max. 4 A, +60 °C max. 2 A
Ex marking	⊕ II 2G Ex db eb IIC T6 Gb, II 2D Ex tb IIIC T80 °C Db IEC Ex Ex db eb IIC T6 Gb Ex tb IIIC T80 °C Db
Approvals	BVS 16 ATEX E 113; IECEx BVS 16.0076X UL US ENEC





// Ex 99 R



// Ex 99 H



// Ex 99 PH



// Ex 99 D



// Ex 99 DS



// Ex 99 DD



// Ex 99 TK



防爆限位开关 Ex 98 / Ex position switches Ex 98



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 金属外壳
- 设计依据 EN 50041
- 高防护等级 IP 66
- 耐低温至 -40 °C

Features/options

- Ex zone 1 and 21
- Metal enclosure
- Design according to EN 50041
- High degree of protection IP 66
- Cold-resistant down to -40 °C

// EX 98



技术参数

适用标准

EN 60079-0, -1, -7, -31; EN 60947-5-1;
EN ISO 13849-1; EN ISO 14119

外壳

抗腐蚀铝，粉末涂层，类似 7016

外盖

不锈钢 1.4401，粉末涂层，类似 RAL 1003

开关类型

1 类，无编码

防护等级

IP 66 依据 IEC/EN 60529

开关原理

缓动型或速动型，肯定断开常闭触点 ⊖

开关元件

1 个常闭/1 个常开触点，2 个常闭触点或重叠型 1 个常闭/1 个常开触点，Zb 类

连接类型

螺丝连接端子

B_{10d} (10% 额定负载)

2 百万

T_M

最长 20 年

应用类别

AC-15; DC-13

U_e/I_e

最大 4,4 A T6 / 最大 6,6 A T5,
最大 250 VAC; 125 VDC

机械寿命

100 万操作次数

撞击能量

最大 7 J

环境温度

T6: -40° C ... +70° C (最大 4.4 A),
T5: -40° C ... +70° C (最大 6.6 A)

防爆标志

⊕ II 2G Ex de IIC T6/T5 Gb
II 2D Ex tb IIIC T80 °C/T95 °C Db
IECEx Ex de IIC T6/T5 Gb
Ex tb IIIC T80 °C/T95 °C Db

产品认证

DMT 01 ATEX E 178, IECEx BVS 07.0014
CCC ENEC

Technical data

Applied standards

EN 60079-0, -1, -7, -31; EN 60947-5-1;
EN ISO 13849-1; EN ISO 14119

Enclosure

Corrosion-resistant aluminium, powder-coated,
similar to RAL 7016

Cover

Stainless steel 1.4401, powder-coated,
similar to RAL 1003

Switch type

Type 1, no coding

Degree of protection

IP 66 to IEC/EN 60529

Switching system

slow or snap action, positive break
NC contacts ⊖

Switching elements

1 NC/1 NO, 2 NC or 1 NC/1 NO contact with
contact overlapping, type Zb

Connection

screw connection terminals

B_{10d} (10% nominal load)

2 millions

T_M

max. 20 years

Utilisation category

AC-15

U_e/I_e

max. 4.4 A T6 / max. 6.6 A T5
max. 250 VAC; 125 VDC

Mechanical life

1 million operations

Impact energy

max 7 J

Ambient temperature

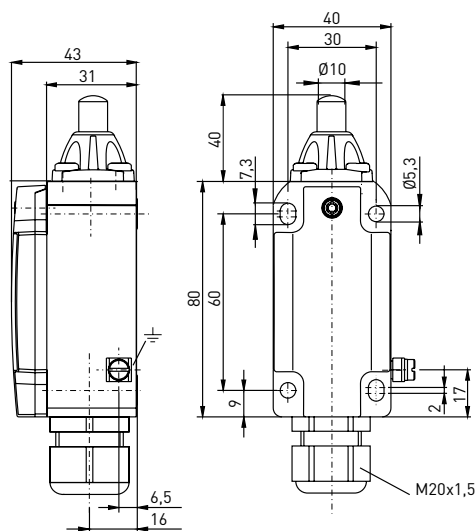
T6: -40° C ... +70° C (max. 4.4 A),
T5: -40° C ... +70° C (max. 6.6 A)

Ex marking

⊕ II 2G Ex de IIC T6/T5 Gb
II 2D Ex tb IIIC T80 °C/T95 °C Db
IECEx Ex de IIC T6/T5 Gb
Ex tb IIIC T80 °C/T95 °C Db

Approvals

DMT 01 ATEX E 178, IECEx BVS 07.0014
CCC ENEC



// Ex 98 R



// Ex 98 H



// Ex 98 PH



// Ex 98 D



// Ex 98 DL



// Ex 98 DS



// Ex 98 DD



// Ex 98 TK



防爆限位开关 Ex 14 / Ex position switches Ex 14



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 耐低温至 -40 °C
- 热塑性塑料外壳
- 双重绝缘 □
- 缓动型或速动型
- 安装细节依照 EN 50047

Features/options

- Ex zone 1 and 21
- Cold-resistant down to -40 °C
- Thermoplastic enclosure
- Double insulated □
- Slow or snap action
- Mounting details to EN 50047s

// EX 14



技术参数

适用标准

EN 60947-5-1; EN 60079-0, -1, -31;
EN ISO 13849-1; EN ISO 14119

外壳

增强玻璃纤维，抗震热塑性塑料，自熄性依据 UL 94-V0

开关类型

1 类，无编码

防护等级

IP 65 [EN 60079-0 + IEC/EN 60529],
IP 66 [IEC/EN 60529]

开关原理

缓动型或速动型，缓动型：肯定断开常闭触点

开关元件

1个常闭/1个常开触点或2个常闭触点，Ex 14:
Zb类，ExM 14: Za类

连接类型

线缆，BETAflam 145 flex, 4 x 0.75 mm² (包括导线线圈)

B_{10d} (10 % 额定负载)

2 百万

T_M

最长 20 年

应用类别

AC-1; DC-1

I_e/U_e

Ex 14: 6 A/250 VAC; 0,25 A/230 VDC;
ExM 14: 5 A/250 VAC; 0,2 A/230 VDC

机械寿命

> 100 万操作次数

撞击能量

最大 4 J

环境温度

-40 °C ... +60 °C

防爆标志

Ex 14: Ⓢ II 2G Ex db IIC T6/T5 Gb,
II 2D Ex tb IIIC T80 °C/T95 °C Db

ExM 14: Ⓢ II 2G Ex db IIC T6 Gb,

II 2D Ex tb IIIC T80 °C Db

产品认证

Ex 14: PTB 03 ATEX 1070 X, IECEx PTB
06.0098X Ⓢ Ⓢ_{us} Ⓢ EAC; ExM 14: PTB 00
ATEX 1006 X, IECEx PTB 13.0019X Ⓢ EAC

Technical data

Applied standards

EN 60947-5-1; EN 60079-0, -1, -31;
EN ISO 13849-1; EN ISO 14119

Enclosure

glass-fibre reinforced, shock-proof
thermoplastic, self-extinguishing UL 94-V0

Switch type

type 1, no coding

Degree of protection

IP 65 [EN 60079-0 + IEC/EN 60529],
IP 66 [IEC/EN 60529]

Switching system

slow or snap action, slow action: positive
break NC contacts ⊖

Switching elements

1 NC/1 NO or 2 NC contacts, Ex 14: type Zb,
ExM 14: type Za

Connection

cable, BETAflam 145 flex, 4 x 0.75 mm²
(incl. conductor ferrules)

B_{10d} (10 % load)

2 million

T_M

max. 20 years

Utilisation category

AC-1; DC-1

I_e/U_e

ES 14: 6 A/250 VAC; 0.25 A/230 VDC;
EM 14: 5 A/250 VAC; 0.2 A/230 VDC

Mechanical life

> 1 million operations

Impact energy

max 4 J

Ambient temperature

-40 °C ... +60 °C

Ex marking

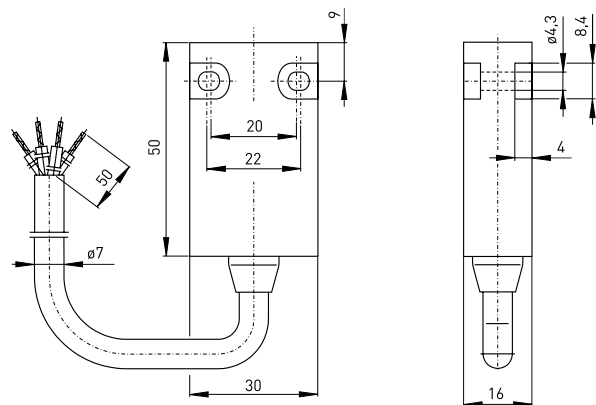
Ex 14: Ⓢ II 2G Ex db IIC T6/T5 Gb,
II 2D Ex tb IIIC T80 °C/T95 °C Db

ExM 14: Ⓢ II 2G Ex db IIC T6 Gb,

II 2D Ex tb IIIC T80 °C Db

Approvals

Ex 14: PTB 03 ATEX 1070 X, IECEx PTB
06.0098X Ⓢ Ⓢ_{us} Ⓢ EAC; ExM 14: PTB 00
ATEX 1006 X, IECEx PTB 13.0019X Ⓢ EAC





// Ex 14 W

// Ex 14 WKU

// Ex 14 WR

// Ex 14 WPH



// Ex 14 D

// Ex 14 TF



防爆指令设备 Ex BF 80 / Ex command devices switches Ex BF 80



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 聚酯树脂外壳
- 可提供不同的执行元件, 如按钮, 换挡器或钥匙开关
- 可提供 2 个或 3 个执行元件版本
- 可提供防爆无线指令设备

Features / options

- Ex zone 1 and 21
- Polyester resin enclosure
- Different actuating elements like push-buttons, selector- or key switches available
- Versions with two or three actuating elements available
- Ex wireless command devices available

// EX BF 80

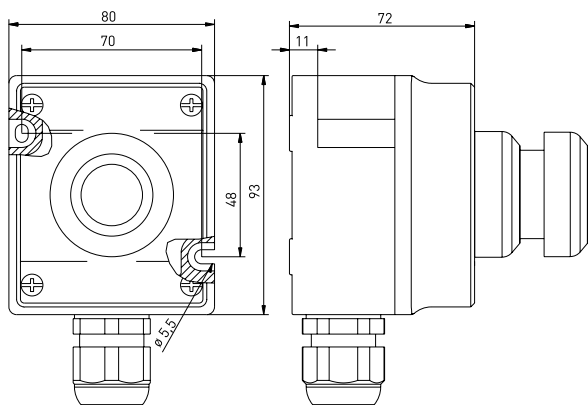


技术参数

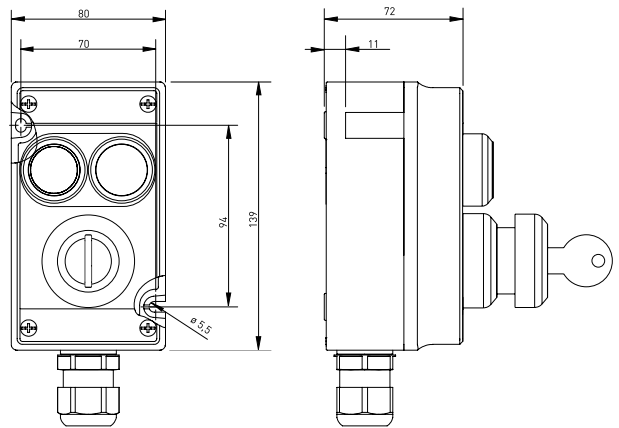
适用标准	EN 60079-0, -1, -7, -31; EN ISO 13849-1
外壳	增强玻璃纤维 聚酯树脂外壳
防护等级	IP 66 依据 IEC/EN 60529
开关原理	缓动型, 肯定断开常闭触点 ⊖
连接类型	螺丝连接端子, 最大 6 mm ² (包括导线套管), 连接夹最大 4 mm ²
B _{10d} (10% 额定负载)	6050
T _M	最长 20 年
I _e /U _e	AC-12: 6 A / 400 V; AC-13: 2.5 A / 400 V; DC-13: 1.25 A / 250 V
机械寿命	50 000 操作次数
撞击能量	最大 7 J
环境温度	T6: -60 °C ... +50 °C, T5: -60 °C ... +65 °C
防爆标志	⊕ II 2G Ex db eb IIC T6/T5 Gb II 2D Ex tb IIIC T80 °C/T95 °C Db IECEX Ex db eb IIC T6/T5 Gb Ex tb IIIC T80 °C/T95 °C Db
产品认证	PTB 10 ATEX 1018, IECEx PTB 12.0029

Technical data

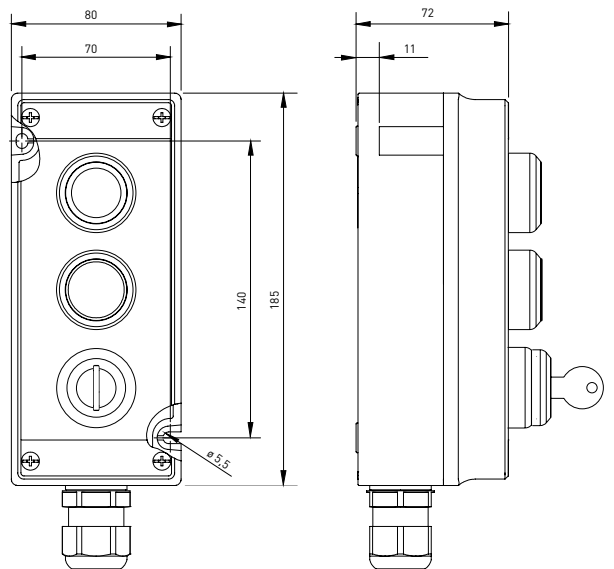
Applied standards	EN 60079-0, -1, -7, -31; EN ISO 13849-1
Enclosure	glass-fibre reinforced polyester resin
Degree of protection	IP 66 to IEC/EN 60529
Switching system	slow action, positive break NC contacts ⊖
Connection	screw connection terminals, max. 6 mm ² (incl. conductor ferrules), serial connection clamps max. 4 mm ²
B _{10d} (10% nominal load)	6050
T _M	max. 20 years
I _e /U _e	AC-12: 6 A / 400 V; AC-13: 2.5 A / 400 V; DC-13: 1.25 A / 250 V
Mechanical life	50 000 operations
Impact energy	max. 7 J
Ambient temperature	T6: -60 °C ... +50 °C, T5: -60 °C ... +65 °C
Ex marking	⊕ II 2G Ex db eb IIC T6/T5 Gb II 2D Ex tb IIIC T80 °C/T95 °C Db IECEX Ex db eb IIC T6/T5 Gb Ex tb IIIC T80 °C/T95 °C Db
Approvals	PTB 10 ATEX 1018, IECEx PTB 12.0029



// Ex BF 80-2



// Ex BF 80-3



防爆防跑偏开关 Ex ES 98 SR / Ex belt alignment switch EX ES 98 SR



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 耐低温至 -40 °C
- 金属外壳
- 设计依据 EN 50041
- 接线舱
- 调整长尼龙辊杠杆
- 防跑偏杠杆通过自锁机构可以按 13° 调整

Features/Options

- Ex zone 1 and 21
- Cold-resistant down to -40 °C
- Metal enclosure
- Design to EN 50041
- Wiring compartment
- Adjustable-length rod lever with nylon roller
- Belt alignment lever can be adjusted in 13° steps using a self-locking mechanism

// EX ES 98 SR



技术参数

适用标准

EN 60947-5-1, EN 60079-0, -1, -7, -31;
EN ISO 13849-1

外壳

抗腐蚀铝，粉末涂层，类似 7016

外盖

不锈钢 1.4401，粉末涂层，类似 RAL 1003

连接类型

螺丝连接端子

线缆进线孔

1 x M20 x 1,5

防护等级

IP 66 依据 IEC/EN 60529

开关原理

缓动型或速动型

开关元件

1 个常闭/1 个常开触点或 2 个常闭触点，
Zb 类

B_{10d} (10 % 额定负载)

2 百万

T_M

最长 20 年

I_e / U_e

最长 4,4 A T6 / 最长 6,6 A T5 /
最长 250 VAC; 125 VDC

应用类别

AC-15; DC-13

短路保护

6 A gG/gN 操作次数

环境温度

T6: -40 °C ... +70 °C (最长 4,4 A),
T5: -40 °C ... +70 °C (最长 6,6 A)

机械寿命

> 100 万操作次数

撞击能量

最长 7 J

防爆标志

⊕ II 2G Ex de IIC T6/T5 Gb
II 2D Ex tb IIIC T80 °C/T95 °C Db
IECEx Ex de IIC T6/T5 Gb
Ex tb IIIC T80 °C/T95 °C Db

产品认证

DMT 01 ATEX E 178, IECEx BVS 07.0014

Technical data

Applied standards

EN 60947-5-1, EN 60079-0, -1, -7, -31;
EN ISO 13849-1

Enclosure

corrosion-resistant aluminium, powder-coated, similar to RAL 7016

Cover

stainless steel 1.4401, powder-coated, similar to RAL 1003

Connection

screw connection terminals

Cable entry

1 x M20 x 1.5

Degree of protection

IP 66 to IEC/EN 60529

Switching system

Slow or snap action

Switching elements

1 NC/1 NO contact or 2 NC contacts,
type Zb

B_{10d} (10 % load)

2 million

T_M

max. 20 years

I_e / U_e

max. 4.4 A T6 / max. 6.6 A T5 /
max. 250 VAC; 125 VDC

Utilisation category

AC-15; DC-13

Max. fuse rating

6 A gG/gN fuse

Ambient temperature

T6: -40 °C ... +70 °C (max. 4.4 A),
T5: -40 °C ... +70 °C (max. 6.6 A)

Mechanical life

> 1 million operations

Impact energy

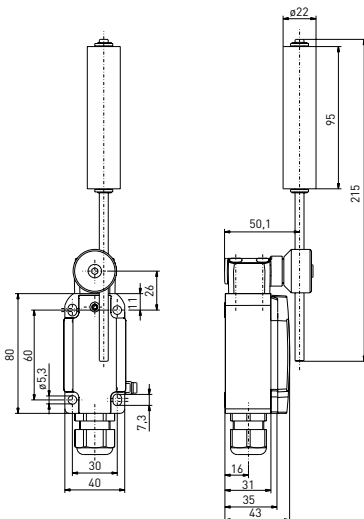
max. 7 J

Ex marking

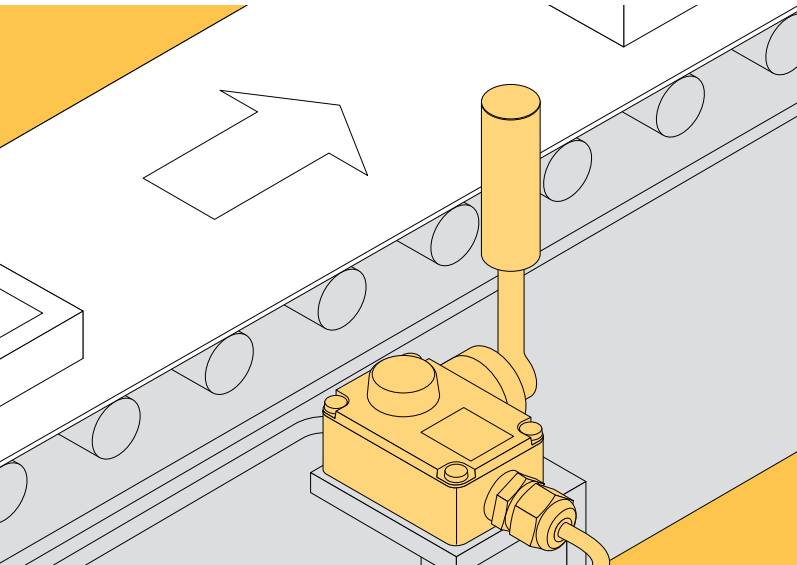
⊕ II 2G Ex de IIC T6/T5 Gb
II 2D Ex tb IIIC T80 °C/T95 °C Db
IECEx Ex de IIC T6/T5 Gb
Ex tb IIIC T80 °C/T95 °C Db

Approvals

DMT 01 ATEX E 178, IECEx BVS 07.0014



防爆防跑偏开关 Ex ES 98 SR /
Ex belt alignment switch EX ES 98 SR



防爆防撞开关 Ex ZS 73 HES / Ex anti-two-block switch Ex ZS 73 HES



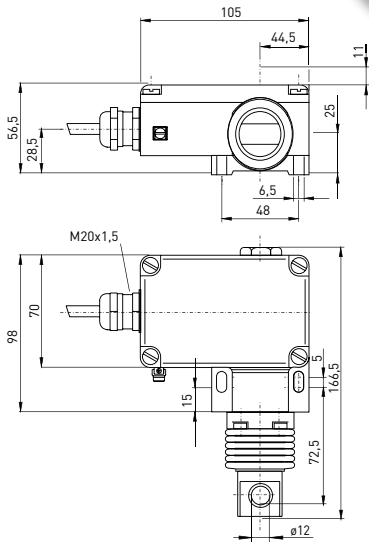
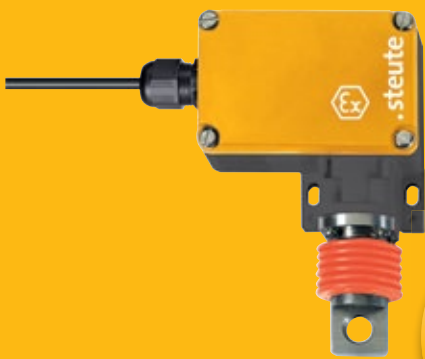
特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 拉线模块的材质为不锈钢 1.4404, 硬涂层外壳, 盖的材质为不锈钢 1.4404, 螺丝 A2
- 耐低温至 -40 °C
- 高防护等级 IP 66/97
- 最大牵引力 120 N
- 用于限制提升高度

Features/Options

- Ex zone 1 and 21
- Pull-wire unit made of stainless steel 1.4404, hard-coated housing, cover made of stainless steel 1.4404, screws A2
- Cold-resistant down to -40 °C
- High degree of protection IP 66/97
- Max. traction force 120 N
- For limiting the hoist height

// EX ZS 73 HES



技术参数

适用标准 外壳

EN 60947-5-1; EN 60079-0, -1, -31
压铸铝, 硬涂层和粉末涂层, 类似无烟煤
RAL 7016

外壳 连接类型 线缆横截面 防护等级 开关原理 开关元件

不锈钢 1.4404, 粉末涂层, 类似 RAL 1003
线缆 BETAflam 145 flex, 长度 5 m
4 x 0,75 mm² (包括导线套管)
IP 66/67 依据 IEC/EN 60529
缓动型

B_{10d} (10 % 额定负载) T_M I_e / U_e 应用类别 短路保护 环境温度

1 个常闭/1 个常开触点或 2 个常闭触点
2 百万
最长 20 年
6 A/250 VAC; 0,25 A/230 VDC
AC-15; DC-13
6 A gG/gN 型熔丝管
T6: -40 °C ... +65 °C,
T5: -40 °C ... +75 °C, +95 °C 时最大 3 A

机械寿命 撞击能量 防爆标志

> 100 万操作次数
最大 7 J
⊕ II 2G Ex d IIC T6/T5 Gb
II 2D Ex tb IIIC T80 °C/T95 °C Db

产品认证

IECEX Ex d IIC T6/T5 Gb
Ex tb IIIC T80 °C/T95 °C Db
PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X

Technical data

Applied standards Enclosure

EN 60947-5-1; EN 60079-0, -1, -31
aluminium die-cast, hard-coated and
powder-coated, similar to RAL 7016
cable BETAflam 145 flex

Connection Cable cross-section Degree of protection Switching system Switching elements

4 x 0.75 mm² (incl. conductor ferrules)
IP 66/67 to IEC/EN 60529
slow action
1 NC/1 NO or 2 NC contacts

B_{10d} (10 % load) T_M max. 20 years I_e / U_e Utilisation category Max. fuse rating Ambient temperature

2 million
6 A/250 VAC; 0.25 A/230 VDC
AC-15; DC-13
6 A gG/gN fuse
T6: -40 °C ... +65 °C, T5: -40 °C ... +75 °C,
+95 °C with max. 3 A

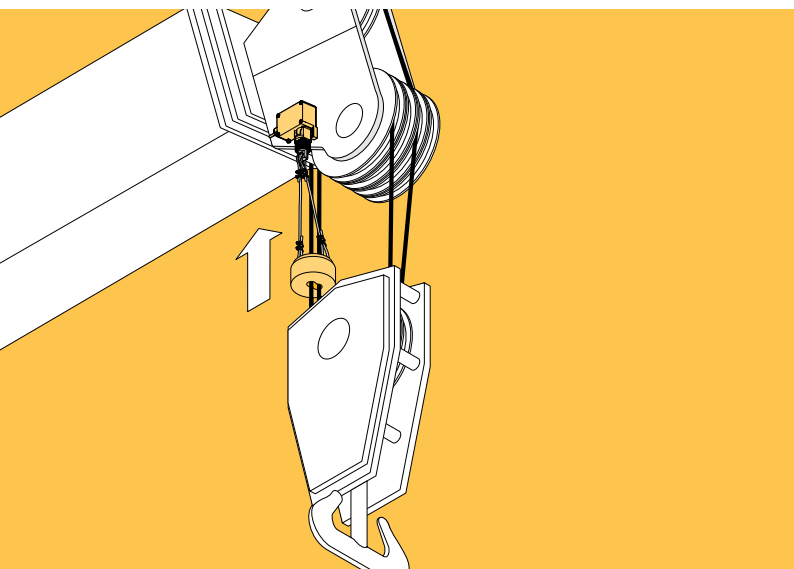
Mechanical life Impact energy Ex marking

> 1 million operation
max. 7 J
⊕ II 2G Ex d IIC T6/T5 Gb
II 2D Ex tb IIIC T80 °C/T95 °C Db
IECEX Ex d IIC T6/T5 Gb
Ex tb IIIC T80 °C/T95 °C Db

Approvals

PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X

防爆防碰撞开关 Ex ZS 73 HES /
Ex anti-two-block switch Ex ZS 73 HES



83



防爆脚踏开关 Ex GFI Extreme / Ex foot switch Ex GFI Extreme



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 耐腐蚀铝外壳
- 盐雾试验依据 DIN EN ISO 9227
- 温度范围从 -40°C 到 +55°C
- 高防护等级 IP 66/67
- 螺丝和金属部件的材质为不锈钢
- 接线舱

Features/Options

- Ex zone 1 and 21
- Corrosion-resistant aluminium enclosure
- Salt-mist spray test to DIN EN ISO 9227
- High degree of protection IP 66/67
- Temperature resistant from -40 °C to +55 °C
- Screws and metal parts made of stainless steel
- Wiring compartment

// EX GFI EXTREME



技术参数

适用标准

EN 60947-5-1; EN 60079-0, -1, -7, -31;
EN ISO 13849-1

外壳/踏板

抗腐蚀铝，粉末涂层，类似 7016

外盖

抗腐蚀铝，粉末涂层，类似 1003

连接类型

螺丝连接端子

线缆横截面

最长 2,5 mm² (包括导线套管)

防护等级

IP 66/67 依据 IEC/EN 60529

开关原理

缓动型，肯定断开常闭触点 ⊖

开关元件

1 个常闭/1 个常开触点, Zb 类

B_{10d} (10 % 额定负载)

2 百万

T_M

最长 20 年

I_e / U_e

5 A/250 VAC; 0,2 A/230 VDC

应用类别

AC-15; DC-13

短路保护

5 A gG/gN 型熔丝管

环境温度

T₆: -40 °C ... +55 °C

机械寿命

> 100 万操作次数

撞击能量

最大 7 J

防爆标志

⊕ II 2G Ex de IIC T₆ Gb
II 2D Ex tb IIIA T₈₀°C Db
IECEX Ex de IIC T₆ Gb
Ex tb IIIA T₈₀°C Db

产品认证

PTB 15 ATEX 1010, IECEx PTB 15.0035



Technical data

Applied standards

EN 60947-5-1; EN 60079-0, -1, -7, -31;
EN ISO 13849-1

Enclosure/Pedal

Corrosion-resistant aluminium, powder-coated, similar to RAL 7016

Cover

Corrosion-resistant aluminium, powder-coated, similar to RAL 1003

Connection

screw connection terminals

Cable cross-section

max. 2.5 mm² (incl. conductor ferrules)

Degree of protection

IP 66/67 to IEC/EN 60529

Switching system

Slow action,
positive break NC contact ⊖

Switching elements

1 NC/1 NO, type Zb

B_{10d} (10 % load)

2 million

T_M

max. 20 years

I_e / U_e

5 A/250 VAC; 0.2 A/230 VDC

Utilisation category

AC-15; DC-13

Max. fuse rating

5 A gG/gN fuse

Ambient temperature

T₆: -40 °C ... +55 °C

Mechanical life

> 1 million operations

Impact energy

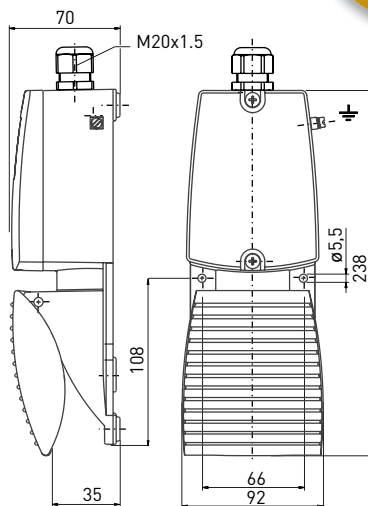
max. 7 J

Ex marking

⊕ II 2G Ex de IIC T₆ Gb
II 2D Ex tb IIIA T₈₀°C Db
IECEX Ex de IIC T₆ Gb
Ex tb IIIA T₈₀°C Db

Approvals

PTB 15 ATEX 1010, IECEx PTB 15.0035



防爆脚踏开关 Ex GFSI Extreme / Ex foot switch Ex GFSI Extreme



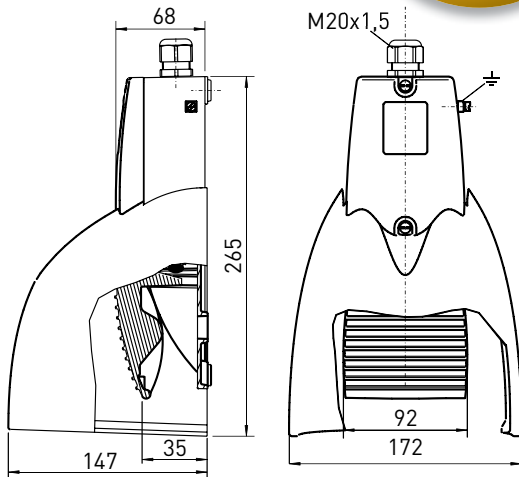
特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 耐腐蚀铝外壳
- 盐雾试验依据 DIN EN ISO 9227
- 温度范围从 -40°C 到 +55°C
- 高防护等级 IP 66/67
- 螺丝和金属部件的材质为不锈钢
- 接线舱

Features/Options

- Ex zone 1 and 21
- Corrosion-resistant aluminium enclosure
- Salt-mist spray test to DIN EN ISO 9227
- High degree of protection IP 66/67
- Temperature resistant from -40 °C to +55 °C
- Screws and metal parts made of stainless steel
- Wiring compartment

// EX GFSI EXTREME



技术参数

适用标准

EN 60947-5-1; EN 60079-0, -1, -7, -31;
EN ISO 13849-1

外壳/踏板

抗腐蚀铝, 粉末涂层, 类似 7016

防护罩

抗腐蚀铝, 粉末涂层, 类似 1003

连接类型

螺丝连接端子

线缆横截面

最长 2,5 mm² (包括导线套管)

防护等级

IP 66/67 依据 IEC/EN 60529

开关原理

缓动型, 肯定断开常闭触点 ⊖

开关元件

1 个常闭/1 个常开触点, Zb 类

B_{10d} (10 % 额定负载)

2 百万

T_M

最长 20 年

I_e / U_e

5 A/250 VAC; 0,2 A/230 VDC

应用类别

AC-15; DC-13

短路保护

5 A gG/gN 型熔丝管

环境温度

T₆: -40 °C ... +55 °C

机械寿命

> 100 万操作次数

撞击能量

最大 7 J

防爆标志

⊕ II 2G Ex de IIC T6 Gb
II 2D Ex tb IIIA T80°C Db
IECEx Ex de IIC T6 Gb
Ex tb IIIA T80°C Db

产品认证

PTB 15 ATEX 1010, IECEx PTB 15.0035



Technical data

Applied standards

EN 60947-5-1; EN 60079-0, -1, -7, -31;
EN ISO 13849-1

Enclosure/Pedal

Corrosion-resistant aluminium, powder-coated, similar to RAL 7016

Protective shield

Corrosion-resistant aluminium, powder-coated, similar to RAL 1003

Connection

screw connection terminals

Cable cross-section

max. 2.5 mm² (incl. conductor ferrules)

Degree of protection

IP 66/67 to IEC/EN 60529

Switching system

Slow action, positive break NC contact ⊖

Switching elements

1 NC/1 NO, type Zb

B_{10d} (10 % load)

2 million

T_M

max. 20 years

I_e / U_e

5 A/250 VAC; 0,2 A/230 VDC

Utilisation category

AC-15; DC-13

Max. fuse rating

5 A gG/gN fuse

Ambient temperature

T₆: -40 °C ... +55 °C

Mechanical life

> 1 million operations

Impact energy

max. 7 J

Ex marking

⊕ II 2G Ex de IIC T6 Gb
II 2D Ex tb IIIA T80°C Db
IECEx Ex de IIC T6 Gb
Ex tb IIIA T80°C Db

Approvals

PTB 15 ATEX 1010, IECEx PTB 15.0035



防爆磁传感器 Ex RC M20 KST / Ex magnetic sensors Ex RC M20 KST



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 耐低温至 -60 °C
- 热固性外壳
- 1 个切换触点
- 从正面操作

注释

- 操作件不包含在订购的开关中
- 产品包括 2 个安装螺母

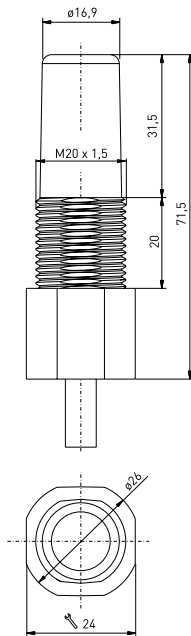
Features/Options

- Ex zone 1 and 21
- Cold-resistant down to -60 °C
- Thermoset enclosure
- 1 Reed contact
- Actuation from front

Notes

- The actuator is not included in the delivery of the switches
- 2 mounting nuts are included in delivery

// EX RC M20 KST -60°C



技术参数

适用标准
外壳

连接类型
线缆横截面
防护等级

开关原理
开关元件
开关电压
开关电流
开关频率
应用类别
跳转持续时间
环境温度
机械寿命
电气寿命
抗振动
撞击能量
防爆标志

EN 60947-5-1; EN 60079-0, -18
增强玻璃纤维, 防震保温材料,
自熄灭 UL 94 V-0
线缆 硅胶 SIHF, 长度 2, 5 或 10 m
3 x 0,75 mm²
IP 67 (EN 60079-0 + IEC/EN 60529),
IP 66, IP 68, IP 69 (IEC/EN 60529)

簧片触点
1 个切换触点
最大 250 VAC
最大 1 A
最大 50 W
AC-12; DC-12
0,3 ... 0,6 ms
-60 °C ... +70 °C
> 100 万操作次数
10⁶ ... 10⁹ 操作次数
10 ... 50 g
最大 7 J

⊕ II 2G Ex mb IIC T6 Gb
II 2D Ex mb IIIC T80 °C Db
IECEX Ex mb IIC T6 Gb
Ex mb IIIC T80 °C Db

产品认证

DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X

Technical data

Applied standards
Enclosure

Connection
Cable cross-section
Degree of protection

Switching system
Switching elements
Switching voltage
Switching current
Switching capacity
Utilisation category
Bounce duration
Ambient temperature
Mechanical life
Electrical life
Vibration resistance
Impact energy
Ex marking

EN 60947-5-1; EN 60079-0, -18
glass-fibre reinforced, shock-proof
thermoset material, self-extinguishing UL
94 V-0

cable, Silicone SIHF, length 2, 5 or 10 m
3 x 0.75 mm²
IP 67 (EN 60079-0 + IEC/EN 60529),
IP 66, IP 68, IP 69 (IEC/EN 60529)

reed contacts
1 change-over contact
max. 250 VAC
max. 1 A
max. 50 W
AC-12; DC-12
0.3 ... 0.6 ms
-60 °C ... +70 °C
> 1 million operations
10⁶ ... 10⁹ operations
10 ... 50 g
max. 7 J

⊕ II 2G Ex mb IIC T6 Gb
II 2D Ex mb IIIC T80 °C Db
IECEX Ex mb IIC T6 Gb
Ex mb IIIC T80 °C Db

Approvals

DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X

防爆磁传感器 Ex RC M14 / Ex magnetic sensors Ex RC M14



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 耐低温至 -40 °C 根据需要可提供
- 金属外壳
- 螺纹 M14 x 1
- 1 个簧片触点
- 从正面操作

注释

- 操作件不包含在订购的开关中
- 产品包括 2 个安装螺母

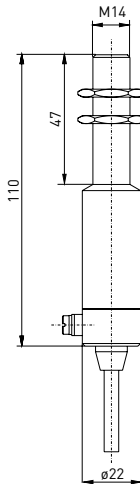
Features/Options

- Ex zone 1 and 21
- Cold-resistant down to -40 °C on request
- Metal enclosure
- M14 x 1 thread
- 1 Reed contact
- Actuation from front

Notes

- The actuator is not included in the delivery of the switches
- 2 mounting nuts are included in delivery

// EX RC M14



技术参数

适用标准	EN 60947-5-1; EN 60079-0, -18
外壳	黄铜, 镍
连接类型	线缆, 长度 2, 5 或 10 m
线缆横截面	1S: 3 x 0,75 mm ² , 1W: 4 x 0,75 mm ²
防护等级	IP 67 依据 IEC/EN 60529
开关原理	簧片触点
开关元件	常闭触点或切换触点
开关电压	250 VAC
开关电流	最大 1,5 A
开关频率	1S: 最大 100 W, 1W: 最大 50 W
应用类别	AC-12; DC-12
跳转持续时间	0,3 ... 0,6 ms
环境温度	-20 °C ... +70 °C
机械寿命	> 100 万操作次数
电气寿命	10 ⁶ ... 10 ⁹ 操作次数
抗振动	1S: 50 ... 100 g, 1W: 10 ... 50 g
撞击能量	最大 4 J
防爆标志	⊕ II 2G Ex mb IIC T6 Gb II 2D Ex mb IIIC T80 °C Db

产品认证

IECEX Ex mb IIC T6 Gb
Ex mb IIIC T80 °C Db
DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X
⚡, 根据需求可提供:

Technical data

Applied standards	EN 60947-5-1; EN 60079-0, -18
Enclosure	brass, nicked
Connection	pre-wired cable, length 2, 5 or 10 m
Cable cross-section	1S: 3 x 0.75 mm ² , 1W: 4 x 0.75 mm ²
Degree of protection	IP 67 to IEC/EN 60529
Switching system	reed contacts
Switching elements	NO contact or change-over contact
Switching voltage	250 VAC
Switching current	max. 1.5 A
Switching capacity	1S: max. 100 W, 1W: max. 50 W
Utilisation category	AC-12; DC-12
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	-20 °C ... +70 °C
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁹ operations
Vibration resistance	1S: 50 ... 100 g, 1W: 10 ... 50 g
Impact energy	max. 4 J
Ex marking	⊕ II 2G Ex mb IIC T6 Gb II 2D Ex mb IIIC T80 °C Db

Approvals

DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X
⚡, on request:

防爆磁传感器 Ex RC M20 / Ex magnetic sensors Ex RC M20



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 耐低温至 -40 °C 根据需求可提供
- 金属外壳
- 1 个簧片触点
- 从正面操作

注释

- 操作件不包含在订购的开关中
- 产品包括 2 个安装螺母

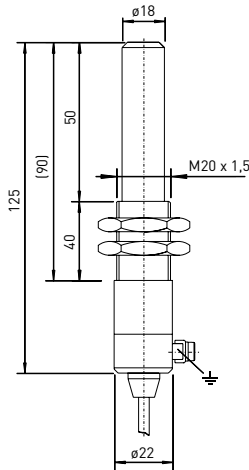
Features/Options

- Ex zone 1 and 21
- Cold-resistant down to -40 °C on request
- Metal enclosure
- 1 Reed contact
- Actuation from front, actuation from side only with bistable contact

Notes

- The actuator is not included in the delivery of the switches
- 2 mounting nuts are included in delivery

// EX RC M20



技术参数

适用标准	EN 60947-5-1; EN 60079-0, -18
外壳	黄铜, 镍或不锈钢
连接类型	线缆, 长度 2, 5 或 10 m
线缆横截面	0,75 mm ²
防护等级	IP 67 依据 IEC/EN 60529
开关原理	簧片触点
开关元件	常闭触点或切换触点, 双稳态触点或双稳态切换触点
开关电压	250 VAC/DC
开关电流	最大 1,5 A
开关频率	1W, 1Wr: 最大 50 W, 1S, 1Sr: 最大 100 W
应用类别	AC-12; DC-12
跳转持续时间	0,3 ... 0,6 ms
环境温度	-20 °C ... +70 °C, -40 °C ... +70 °C 根据需求可提供
机械寿命	> 100 万操作次数
电气寿命	10 ⁶ ... 10 ⁹ 操作次数
抗振动	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
撞击能量	最大 7 J
防爆标志	⊕ II 2G Ex mb IIC T6 Gb II 2D Ex mb IIIC T80 °C Db IECEx Ex mb IIC T6 Gb Ex mb IIIC T80 °C Db
产品认证	DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X ⚡, 根据需求可提供: Ⓢ

Technical data

Applied standards	EN 60947-5-1; EN 60079-0, -18
Enclosure	brass, nickered or stainless steel
Connection	cable, length 2, 5 or 10 m
Cable cross-section	0.75 mm ²
Degree of protection	IP 67 to IEC/EN 60529
Switching system	reed contacts
Switching elements	NO contact or change-over contact, bistable contact or bistable change-over contact
Switching voltage	250 VAC
Switching current	max. 1.5 A
Switching capacity	1W, 1Wr: max. 50 W, 1S, 1Sr: max. 100 W
Utilisation category	AC-12; DC-12
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	-20 °C ... +70 °C, -40 °C ... +70 °C on request
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁹ operations
Vibration resistance	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
Impact energy	max. 7 J
Ex marking	⊕ II 2G Ex mb IIC T6 Gb II 2D Ex mb IIIC T80 °C Db IECEx Ex mb IIC T6 Gb Ex mb IIIC T80 °C Db
Approvals	DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X ⚡, on request: Ⓢ

防爆磁传感器 Ex RC M2580 / Ex magnetic sensors Ex RC M2580



特点/选项

- 气体防爆 1 区和粉尘防爆 21 区
- 耐低温至 -40 °C
- 不锈钢外壳
- 1 个簧片触点
- 从正面操作
- 感应距离高达 30 mm

注释

- 操作件不包含在订购的开关中

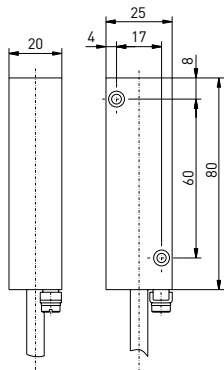
Features/Options

- Ex zone 1 and 21
- Cold-resistant down to -40 °C
- Stainless steel enclosure
- 1 Reed contact
- All side actuation
- Switching distance up to 30 mm

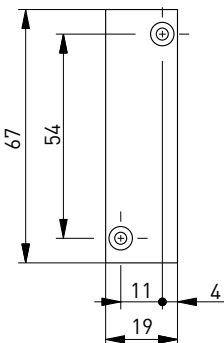
Notes

- The actuator is not included in the delivery of the switches

// EX RC M2580



Ex M 2580



技术参数

适用标准	EN 60947-5-1; EN 60079-0, -18
外壳	不锈钢 1.4571
连接类型	线缆 H05-FVV
线缆横截面	3 x 0,75 mm ²
防护等级	IP 67 [EN 60079-0 + IEC/EN 60529] 或 IP 69 [IEC/EN 60529]
开关原理	簧片触点
开关元件	1 个切换触点
开关电压	250 VAC
开关电流	最大 1 A
开关频率	最大 50 W
应用类别	AC-12; DC-12
跳转持续时间	0,3 ... 0,6 ms
环境温度	-40 °C ... +70 °C
机械寿命	> 100 万操作次数
电气寿命	10 ⁶ ... 10 ⁹ 操作次数
抗振动	10 ... 50 g
撞击能量	最大 7 J
防爆标志	Ⓔ II 2G Ex mb IIC T6 Gb II 2D Ex mb IIIC T80 °C Db IECEx Ex mb IIC T6 Gb Ex mb IIIC T80 °C Db

产品认证

DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X

Technical data

Applied standards	EN 60947-5-1; EN 60079-0, -18
Enclosure	Stainless steel 1.4571
Connection	pre-wired cable H05-FVV
Cable cross-section	3 x 0.75 mm ²
Degree of protection	IP 67 to IEC/EN 60529
Switching system	reed contacts
Switching elements	1 change-over contact
Switching voltage	250 VAC
Switching current	max. 1 A
Switching capacity	max. 50 W
Utilisation category	AC-12; DC-12
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	-40 °C ... +70 °C
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁹ operations
Vibration resistance	10 ... 50 g
Impact energy	max. 7 J
Ex marking	Ⓔ II 2G Ex mb IIC T6 Gb II 2D Ex mb IIIC T80 °C Db IECEx Ex mb IIC T6 Gb Ex mb IIIC T80 °C Db

Approvals

DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X

防爆电感式传感器 Ex IS M / Ex inductive sensors Ex IS M



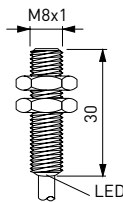
特点/选项

- 气体防爆 0 区和粉尘防爆 20 区
- 高防护等级 IP 66/67/68
- 不锈钢外壳
- 齐平安装或非齐平安装
- 长寿命, 无机械磨损
- 对污染不敏感
- LED 灯

Features/Options

- Ex zone 0 and 20
- High degree of protection IP 66/67/68
- Stainless steel enclosure
- Flush or non-flush mounting
- Long life, no mechanical wear
- Insensitive to soiling
- With LED

// EX IS M 8



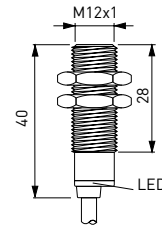
技术参数

适用标准	EN 60079-0, -11, -26
外壳	不锈钢 1.4305
连接类型	线缆 PUR
线缆横截面	M8, M12: 2 x 0,25 mm ² M18, M30: 2 x 0,5 mm ²
防护等级	IP 66, IP 67, IP 68 (EN 60079-0 + IEC/EN 60529)
开关原理	NAMUR 依据 EN 60947-5-6
额定感应距离 s_n	M8b: 1 mm, M8nb: 2 mm, M12b: 2 mm, M12nb: 4 mm, M18b: 5 mm, M18nb: 8 mm, M30b: 10 mm, M30nb: 15 mm
修正系数	钢 (Fe360) = 1; 不锈钢大约 0,7; 黄铜大约 0,5; 铝大约 0,4; 铜大约 0,4
额定工作电压范围 U_b	8,2 VDC
冲击电流的吸收	存在金属时 ≤ 1 mA; 不存在金属时 ≥ 3 mA
开关频率	2000 Hz
环境温度	-25 °C ... +60 °C
防爆标志	⊕ II 1G Ex ia IIB/IIC T6 Ga II 1D Ex ia IIIC T85°C Da IP66/IP67/IP68 IECEx Ex ia IIB/IIC T6 Ga Ex ia IIIC T85°C Da IP66/IP67/IP68
产品认证	IMQ 14 ATEX 001, IECEx IMQ 14.0001X

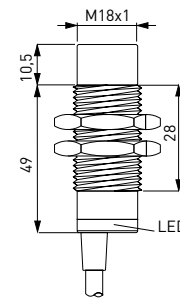
Technical data

Applied standards	EN 60079-0, -11, -26
Enclosure	Stainless steel 1.4305
Connection	cable PUR
Cable cross-section	M8, M12: 2 x 0.25 mm ² M18, M30: 2 x 0.5 mm ²
Degree of protection	IP 66, IP 67, IP 68 (EN 60079-0 + IEC/EN 60529)
Switching system	Namur to EN 60947-5-6
Rated switching distance s_n	M8b: 1 mm, M8nb: 2 mm, M12b: 2 mm, M12nb: 4 mm, M18b: 5 mm, M18nb: 8 mm, M30b: 10 mm, M30nb: 15 mm
Correction factors	Steel (Fe360) = 1; Stainless steel approx. 0.7; Brass approx. 0.5; Aluminium approx. 0.4; Copper approx. 0.4
Rated operating voltage range U_b	8.2 VDC
Current absorption	in presence of metal ≤ 1 mA; in absence of metal ≥ 3 mA
Switching frequency	2000 Hz
Ambient temperature	-25 °C ... +60 °C
Ex marking	⊕ II 1G Ex ia IIB/IIC T6 Ga II 1D Ex ia IIIC T85°C Da IP66/IP67/IP68 IECEx Ex ia IIB/IIC T6 Ga Ex ia IIIC T85°C Da IP66/IP67/IP68
Approvals	IMQ 14 ATEX 001, IECEx IMQ 14.0001X

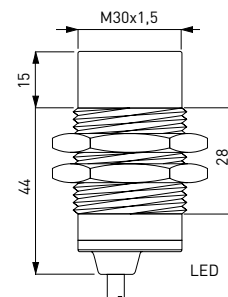
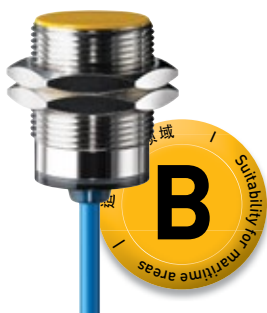
// Ex IS M12



// Ex IS M18



// Ex IS M30





世德研发、生产要求极其严格且至关重要应用的安全开关。除了应用广泛的无线产品、自动化产品、极端产品以及标准系列的医疗产品外，我们不断开发客户定制产品。如：应用于采矿业的紧急拉线开关、应用于工业自动化的限位开关和应用用于激光外壳手术的医疗脚踏开关。我们公司总部在德国威斯特伐利亚的洛纳。全球销售由世德的各大小子公司和合作伙伴实现。

steute develops and manufactures safe switchgear for demanding and critical application. Besides a comprehensive standard range of products for »Wireless, Automation, Extreme and Meditec« applications, we also and increasingly develop customised switchgear for all four business fields. Some examples: emergency pullwire switches for the mining industry, position switches for industrial automation and control panels for laser surgery. Our head office is in Löhne, Westphalia, Germany; worldwide sales are conducted through steute's subsidiaries and trading partners.

如需了解更多的信息或咨询产品，请联系我们。也可以访问我们的网站：www.steute.cn

For further information or individual service contact us. Detailed information can also be found at: www.steute.com

世德电子元件（上海）有限公司
上海市闵行区浦江镇新骏环路245号D幢2层203室
电话 +86 021 64457886
传真 +86 021 34060876
邮箱 industry@steute.cn
网站 www.steute.cn

steute
Technologies GmbH & Co. KG
Brückenstraße 91
32584 Löhne, Deutschland/Germany
Telefon/Phone + 49 (0) 57 31 7 45-0
Telefax/Fax + 49 (0) 57 31 7 45-200
info@steute.com
www.steute.com