

Position switch

Type 07-291*-*****



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Position switch

When working in hazardous areas, the safety of individuals and equipment depends on observing the relevant safety regulations. Those persons responsible for assembly and maintenance bear a special responsibility.

They must have exact knowledge of the applicable regulations and provisions.

The instructions summarise the most important safety measures and must be read by all people working with the product so that they are acquainted with its correct handling.

The instructions must be kept and must be available over the entire useful life of the product.

Description

The position switch, type 07-291*-******, serves as an auxiliary power switch for signal, control and regulation circuits or as an equipment switch in hazardous areas.

The position switch is constructed with the mounting dimensions 30 x 60 mm (1.18 x 2.36 in) with actuating variants and dimensions in accordance with DIN EN 50041, and is therefore compatible with position switches corresponding to the same DIN.

The position switch has snap-action contacts with several switching element variants. The limit switch with connection cable (type 07-25*1-******) is fitted into the enclosure as a switching element. Gold-plated contacts are available for switching low currents and voltages. The standard length of the connection cables is 3 m (9.84 ft).

Various actuator heads are available for the variety of the actuating options, which can be rotated through 90° after loosening four screws so that four actuating directions are possible.

A wide range of Ex e distribution boxes made of polyester and aluminium are available for the connection of the position switch in the Ex area.

Explosion protection

ATEX designation	Ex II 2G Ex db IIC T6, T5 Gb Ex II 2D Ex tb IIIC T80°C, T95°C Db CE 0044
Test certificates	EPS 14 ATEX 1 766 X
IECEx designation	Ex db IIC T6, T5 Gb Ex tb IIIC T80°C, T95°C Db
Test certificates	IECEx EPS 14.0092X
Ambient temperature	The position switches can be used depending on current load, cable cross-section as well as type of cable with different ambient temperatures in the temperature classes T6 and T5. For details, see marking of the position switch.
Minimum ambient temperature	-20 °C (-4 °F) to +xxx °C* Type 07-2911-*****/**** 07-2913-*****/**** -50 °C (-58 °F) to +xxx °C* Type 07-2917-*****/**** 07-2918-*****/****
Approved for the zones	1, 2 and 21, 22

* See table on page 7 for maximum ambient temperature.

Technical data

Protection class	IP66 (IEC 60529)
Rated voltage/ current	Electrical load of silver-plated contacts AC 250 V, 5 A; AC 400 V, 2 A; DC 250 V, 0.5 A Type 07-2911-***** 07-2917-***** Electrical load of gold-plated contacts Min. DC 2.4 V - 50 mA Max. DC 30 V - 4 mA Typ 07-2913-***** 07-2918-***** The value of current and voltage may not exceed 0.12 VA. For alternating current, these values are to be interpreted as peak value.
Tightening torque	Fastening screws: max. 0.6 Nm (0.04 lb.ft)
Switching rate	Max. 1000/h
Useful life	Mechanical: 10 ⁶ switching cycles, depending on approach angle and approach speed Electrical: depending on load
Switching elements / contact assembly / connection	See selection table, page 6
Plunger / actuator	Rust-free steel Actuator variants, see page 5 Travel / forces: See selection table, page 6
Enclosure	Aluminium
Weight	280-315 g (excluding hose line)
Dimensions	See page 5

Notes on safety

The position switches have been developed to assume safety-related functions as part of an overall system or machine. A complete safety-related system usually contains sensors, analysis units, signalling devices and concepts for safe shut-down. It is the responsibility of the manufacturer of a plant or machine to ensure the correct overall function.

The position switch may only be used within the set temperature range. Unprotected and incorrect installation can cause malfunction or the Ex protection may be lost.

Never install or dismantle position switches when they are live.

Use in areas other than those specified or modification of the product by anyone other than the manufacturer will release BARTEC from liability for defects and from any further liability.

The generally applicable statutory rules and other binding guidelines on occupational health and safety, accident prevention and environmental protection must be observed.

The position switch may only be operated in a clean and undamaged condition. It may not be used as a mechanical stop. Conversions and modifications are not permitted.

The position switch must be replaced after any short circuit that occurs in the main circuit because with an encapsulated device, the state of the switching contacts cannot be checked.

Marking

Particularly important points in these instructions are marked with a symbol:



DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.



NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.



NOTE Important instructions and information on effective, economical and environmentally compatible handling.

Standards complied with

See EU Declaration of Conformity 01-2511-7C0001

Transport, storage



NOTICE

Damage to the position switch due to incorrect transport or storage.

- Transport and storage permitted in original packaging only.

Assembly, installation and commissioning



WARNING

Serious danger of injury due to incorrect approach.

- All assembly, dismantling, installation and commissioning work must be performed exclusively by skilled personnel.
- When installing or operating explosion-protected electrical systems, the pertinent installation and operating regulations must be observed.

Assembly

The following should be observed for assembly:

- Use suitable tools
- Observe the necessary type of assembly (installation in enclosure/ fitting with distribution box)
- In the case of distribution boxes outdoors, measures should be taken to ensure smooth operation (e.g. rain protection, surrounding enclosure with adequate class of protection)



NOTE Switches installed outdoors must be installed in a surrounding enclosure with adequate class of protection where required.

Installation

The following should be observed for installation:

- Prepare the ends of multi-stranded and fine-stranded conductors.
- Crimp wire end ferrules with suitable crimping tool.
- Do not damage the individual wires during installation



NOTE See pages 5-7 for connection, marking of cables and actuator variants.

Commissioning

Before commissioning, check that:

- The switch has been installed correctly.
- The switch is not damaged.
- There is no foreign matter obstructing the actuator travel.
- The junction box is clean.
- The connection has been established properly.
- The cables have been laid correctly
- All screws are tightened.
- The switch encapsulation is not damaged.



NOTE The temperature ranges are specified for the "fixed and permanent laying of the cables".

Operation



DANGER

Death or danger of injuries due to use contrary to the intended purpose.

- The position switch may only be used within the limits / areas of use intended for it so that the temperature classes in the end application are observed (see pages 2 and 7).



NOTE If the switch is used without interruption, it is recommended that it be switched at regular intervals (at least once per month).

Maintenance and troubleshooting



WARNING

Serious risk of injuries through incorrect approach.

- Maintenance and troubleshooting work may be conducted by authorised skilled personnel only.
- IEC/EN 60079-17 must be observed. It is recommended that a maintenance plan is drawn up in accordance with this standard.

Maintenance work



WARNING

Serious accidents through damaged components.

- Regularly check position switches and cables for cracks, damage and tight fit.

The operator of the position switch must keep it in good condition, operate it properly, monitor and clean it regularly.

The maintenance intervals must be stipulated by the operator depending on the respective conditions of use



NOTE Dirty enclosure/actuator can be cleaned with compressed air.

Troubleshooting

The position switch is defective if the switching unit does not perform the switching function or the actuator no longer activates the switching unit.

Defective position switches cannot be repaired. They must be replaced in accordance with these operating instructions.

Accessories, spare parts

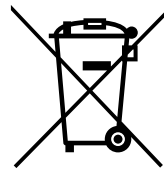
BARTEC offers a wide range of terminal boxes for connection in Ex areas; see BARTEC catalogue.

Disposal

Incorrect disposal can cause environmental damage. In cases of doubt, obtain information on environmentally compatible disposal from the local municipality or special disposal companies.

The components of the position switch contain metal and plastic parts.

For this reason, the statutory requirements for electric scrap must be observed (e.g. disposal by an approved disposal company).



Service address

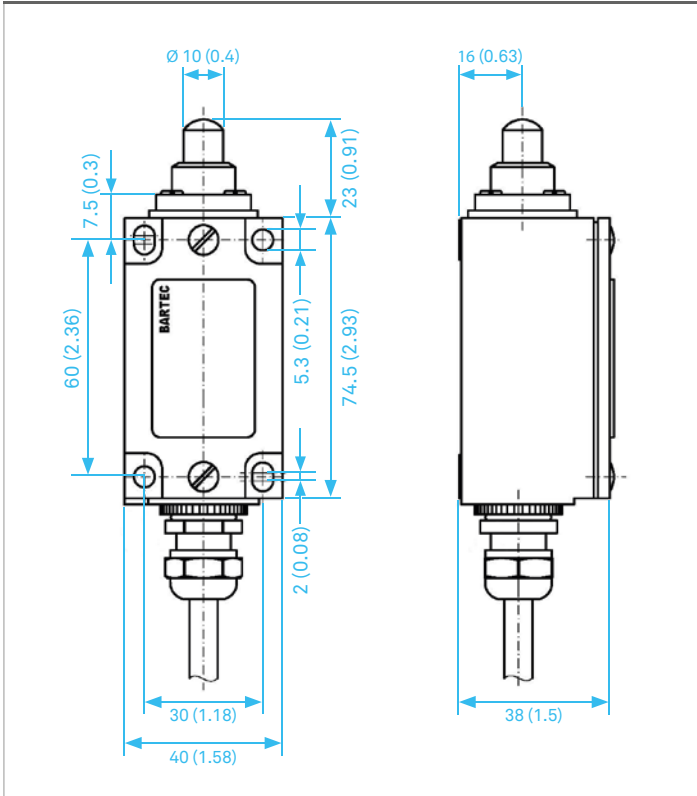
BARTEC GmbH
 Max-Eyth-Str. 16
 97980 Bad Mergentheim
 Germany
 Tel. : +49 7931 597-0
 Fax : +49 7931 597-119

Dimensions in mm (in)

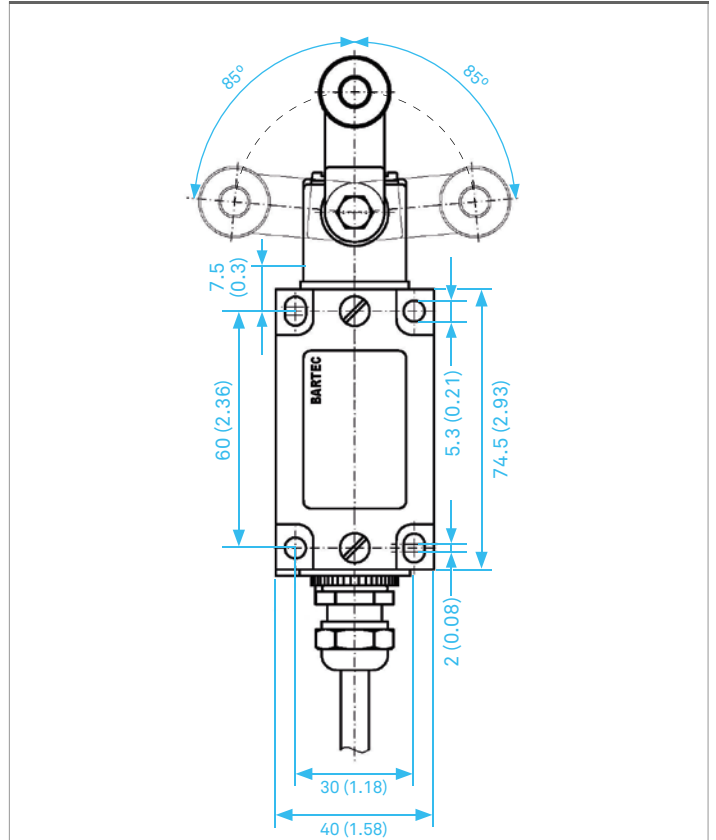


NOTE Dimensions of the actuator are guide values

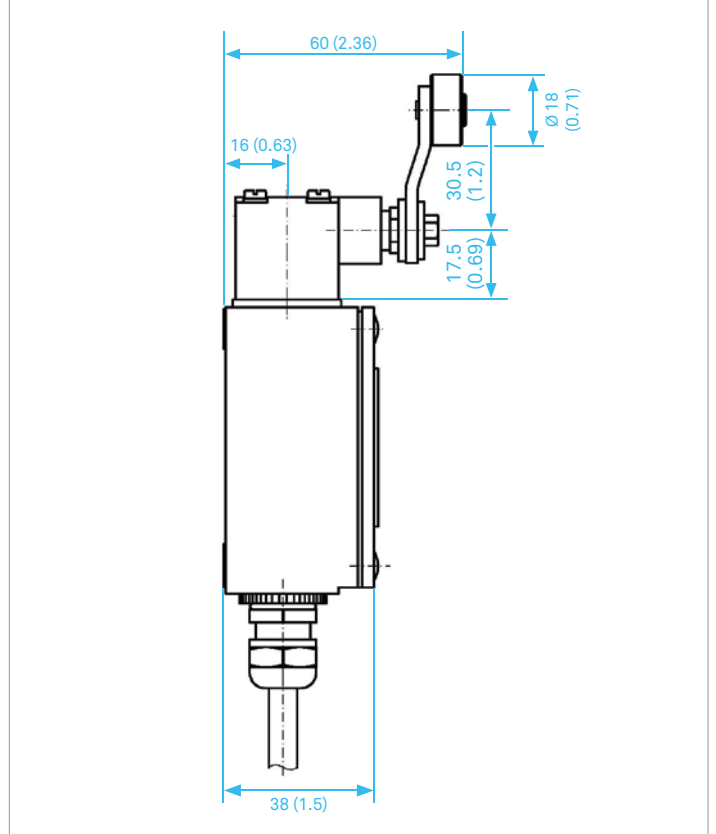
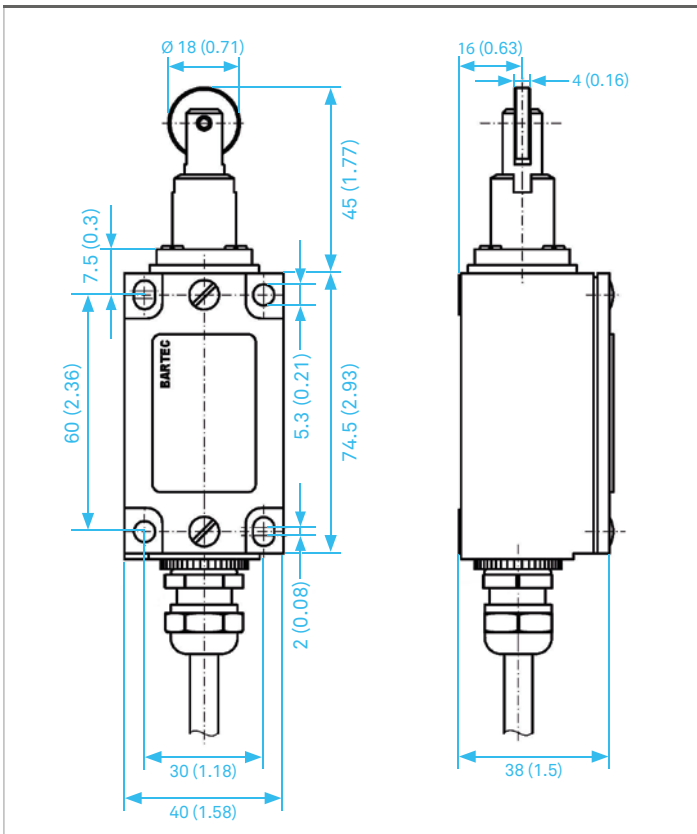
Type 07-2911-13../10 – Plunger



Type 07-2911-13../30 – Axle lever



Type 07-2911-13../20 – Roll lever



Selection table

Connection, type of contact, forces, travel

0	7 - 2	9	1	*	-	1	*	*	/*	*
				A		B	C	C	D	D

A	1 – Silver contacts -20°C 7 – Silver contacts -60 °C 3 – Gold contacts -20°C 8 – Gold contacts -60°C
B	Connection length in m (standard length 3 m) 0 – Special length

Contact type		Actuator						
CC	Interrupter chamber 1	Interrupter chamber 2	DD	Max. operating force	Pretravel	Overtravel	Differential travel	Max. approach speed
10		–	10	17 N	1 mm (0.04 in)	5 mm (0.2 in)	~0.4 mm (~0.02 in)	5 m/s (16.4 fps)
20		–	10	17 N	1 mm (0.04 in)	5 mm (0.2 in)	~0.4 mm (~0.02 in)	5 m/s (16.4 fps)
30		–	10	17 N	1 mm (0.04 in)	5 mm (0.2 in)	~0.4 mm (~0.02 in)	5 m/s (16.4 fps)
11			20	17 N	1 mm (0.04 in)	5 mm (0.2 in)	~0.4 mm (~0.02 in)	5 m/s (16.4 fps)
22			20	17 N	1 mm (0.04 in)	5 mm (0.2 in)	~0.4 mm (~0.02 in)	5 m/s (16.4 fps)
21			30	6 N	10°	70°	~4°	5 m/s (16.4 fps)
33			30	6 N	10°	70°	~4°	5 m/s (16.4 fps)

Key:

BK	Black wire
BN	Brown wire
BK	Blue wire
BN	Grey wire

Use of the position switch in the end application connection



NOTE The position switches are suitable for use in the temperature classes T6 and T5 depending on the current load, cable cross-section and type of cable in different ambient temperatures.

Type	Marking on position switch	T classe	Ta max @ load current			
			≤ 1 A	≤ 3 A	≤ 5 A	
07-291*-***0/**** (with ONE CHAMBER limit switch)	xx °C* ≤ Ta ≤ 50°C@5A, 55°C@3A, 55°C@1A (T6, T5) 0.5 mm ²	T6 T5	55 °C (131 °F)	55 °C (131 °F)	50 °C (122 °F)	
	xx °C* ≤ Ta ≤ 50°C@5A, 55°C@3A, 55°C@1A (T6, T5) 0.75 mm ²	T6 T5	55 °C (131 °F)	55 °C (131 °F)	50 °C (122 °F)	
	xx °C* ≤ Ta ≤ 60°C@5A, 65°C@3A, 65°C@1A (T6, T5) 0.5 mm ²	T6 T5	65 °C (149 °F)	65 °C (149 °F)	60 °C (140 °F)	
	xx °C* ≤ Ta ≤ 60°C@5A, 65°C@3A, 65°C@1A (T6, T5) 0.75 mm ²	T6 T5	65 °C (149 °F)	65 °C (149 °F)	60 °C (140 °F)	
	xx °C* ≤ Ta ≤ 65°C@5A, 70°C@3A, 75°C@1A (T6) xx °C* ≤ Ta ≤ 70°C@5A, 70°C@3A, 75°C@1A (T5) 0.5 mm ²	T6 T5	75 °C (167 °F)	70 °C (158 °F)	65 °C (149 °F) 70 °C (158 °F)	
	xx °C* ≤ Ta ≤ 70°C@5A, 75°C@3A, 75°C@1A (T6, T5) 0.75 mm ²	T6 T5	75 °C (167 °F)	75 °C (167 °F)	70 °C (158 °F)	
	xx °C* ≤ Ta ≤ 65°C@5A, 70°C@3A, 75°C@1A (T6) xx °C* ≤ Ta ≤ 80°C@5A, 85°C@3A, 90°C@1A (T5) 0.5 mm ²	T6 T5	75 °C (167 °F) 90 °C (194 °F)	70 °C (158 °F) 85 °C (185 °F)	65 °C (149 °F) 80 °C (176 °F)	
	xx °C* ≤ Ta ≤ 70°C@5A, 75°C@3A, 75°C@1A (T6) xx °C* ≤ Ta ≤ 85°C@5A, 90°C@3A, 90°C@1A (T5) 0.75 mm ²	T6 T5	75 °C (167 °F) 90 °C (194 °F)	75 °C (167 °F) 90 °C (194 °F)	70 °C (158 °F) 85 °C (185 °F)	
	07-291*-***y/**** (with DOUBLE CHAMBER limit switch y ≠ /0)	xx °C* ≤ Ta ≤ 45°C@5A, 50°C@3A, 55°C@1A (T6, T5) 0.5 mm ²	T6 T5	55 °C (131 °F)	50 °C (122 °F)	45 °C (113 °F)
		xx °C* ≤ Ta ≤ 50°C@5A, 50°C@3A, 55°C@1A (T6, T5) 0.75 mm ²	T6 T5	55 °C (131 °F)	50 °C (122 °F)	50 °C (122 °F)
		xx °C* ≤ Ta ≤ 55°C@5A, 60°C@3A, 65°C@1A (T6, T5) 0.5 mm ²	T6 T5	65 °C (149 °F)	60 °C (140 °F)	55 °C (131 °F)
		xx °C* ≤ Ta ≤ 60°C@5A, 60°C@3A, 65°C@1A (T6, T5) 0.75 mm ²	T6 T5	65 °C (149 °F)	60 °C (140 °F)	60 °C (140 °F)
		xx °C* ≤ Ta ≤ 60°C@5A, 70°C@3A, 75°C@1A (T6) xx °C* ≤ Ta ≤ 65°C@5A, 70°C@3A, 75°C@1A (T5) 0.5 mm ²	T6 T5	75 °C (167 °F)	70 °C (158 °F)	60 °C (140 °F) 65 °C (149 °F)
		xx °C* ≤ Ta ≤ 65°C@5A, 70°C@3A, 75°C@1A (T6) xx °C* ≤ Ta ≤ 70°C@5A, 70°C@3A, 75°C@1A (T5) 0.75 mm ²	T6 T5	75 °C (167 °F)	70 °C (158 °F)	65 °C (149 °F) 70 °C (158 °F)
xx °C* ≤ Ta ≤ 60°C@5A, 70°C@3A, 75°C@1A (T6) xx °C* ≤ Ta ≤ 75°C@5A, 85°C@3A, 90°C@1A (T5) 0.5 mm ²		T6 T5	75 °C (167 °F) 90 °C (194 °F)	70 °C (158 °F) 85 °C (185 °F)	60 °C (140 °F) 75 °C (167 °F)	
xx °C* ≤ Ta ≤ 65°C@5A, 70°C@3A, 75°C@1A (T6) xx °C* ≤ Ta ≤ 80°C@5A, 85°C@3A, 90°C@1A (T5) 0.75 mm ²		T6 T5	75 °C (167 °F) 90 °C (194 °F)	70 °C (158 °F) 85 °C (185 °F)	65 °C (149 °F) 80 °C (176 °F)	

*Minimum ambient temperature, see page 2.

Wir	We	Nous
BARTEC GmbH Max-Eyth-Straße 16 97980 Bad Mergentheim Germany		
erklären in alleiniger Verantwortung, dass das Produkt Endschalter Positionsschalter	declare under our sole responsibility that the product Limit Switch Position switch	attestons sous notre seule responsabilité que le produit Fin de course Interrupteur de position

Limit Switch Typ: 07-2511-**/****; 07-2581-****/****;**
Position Switch Typ: 07-291*-**/******

auf das sich diese Erklärung bezieht den Anforderungen der folgen- den Richtlinien (RL) entspricht ATEX-Richtlinie 2014/34/EU RoHS-Richtlinie 2011/65/EU RoHS-Richtlinie 2015/863/EU und mit folgenden Normen oder nor- mativen Dokumenten übereinstimmt	to which this declaration relates is in accordance with the provision of the following directives (D) ATEX-Directive 2014/34/EU RoHS-Directive 2011/65/EU RoHS-Directive 2015/863/EU and is in conformity with the following standards or other normative documents	se référant à cette attestation correspond aux dispositions des directives (D) suivantes Directive ATEX 2014/34/UE Directive RoHS 2011/65/UE Directive RoHS 2015/863/UE et est conforme aux normes ou docu- ments normatifs ci-dessous
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EN IEC 60079-0:2018
EN 60079-1:2014
EN 60079-31:2014
EN 60529:1991
+ A1:2000 + A2:2013
EN 60947-1:2007 +
A1:2011 + A2:2014
EN 60947-5-1:2017

Verfahren der EU-Baumuster- prüfung / Benannte Stelle	Procedure of EU-Type Examination / Notified Body	Procédure d'examen UE de type / Organisme Notifié
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Bad Mergentheim, 17.02.2020


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