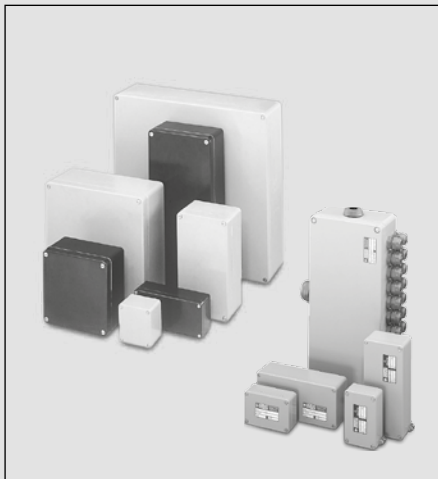


ATEX-approved products for potentially explosive atmospheres

- Ex e, Ex ia and Ex e\ia terminal boxes made from polyester and aluminium
- Ex d limit switches, rope pull switches and foot switches
- Ex mb/Ex tb magnetic switches



Services, training, system solutions, project- and customer-specific solutions.


Terminal boxes and empty enclosures

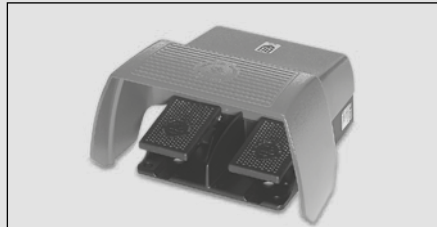
Only materials that correspond to the temperature range T6 required for Ex enclosures are used in these enclosures and components.

The minimum type of protection rating of all enclosures and screw connections is IP 64, other protection classes available on request.

The latching devices on the enclosures are optionally available as captive screw connections or quick-release fasteners.

Various CA versions are available with flange plates.

All built-in components must conform to the relevant approvals.


Momentary contact, cable pull and foot switches

An Ex d-certified switching element lies at the core of these Ex-approved switches.

It is mounted in the corresponding switch enclosures. The mechanical actuator and its installation are certified separately.

The approval of additional actuators and switch enclosures from other series is possible on request.

All switches and momentary contact switches feature one NO contact and one NC contact.


Magnetic switches

The magnetic switches are fitted at the factory with an up to 7 m long connection cable.

The cable is permanently connected to the enclosure and is part of the approval.

All sensors are certified for a maximum ambient temperature of +60 °C.

Services offered by the BERNSTEIN-ATEX experts:

- Approval of a stainless steel enclosure with freely definable dimensions
- Approvals assistance for plant operators
- Approval of switching and control elements in all enclosures
- Approval of plug-in devices in all enclosures
- Component mounting and wiring of enclosures according to customer specifications
- Training courses for planners and plant operators
- Cross-product system solutions
- Customer-specific development and project management on request
- TR (Russia) and NEC (North America) approvals on request

Explosion protection at a glance

	II2G	Ex	ia	IIC	T6	TÜV	2008	ATEX	1234	–
Type approval to RAL 94/9/EC	Application	Explosion protection	Protection class	Device group	Temperature class	Inspection authority	Year	As per Directive 94/9/EC	Consecutive number	Additional conditions
Types of protection for gas-explosion hazardous areas										
Symbol		Type of protection							Standard	
	Ex “d”	Flameproof encapsulation Switching devices, motors, transformers etc. IEC60079-1							IEC60079-1	
	Ex “p”	Pressurised encapsulation Control cabinets px = Use in Zone 1, 2 py = Use in Zone 1, 2 pz = Use in Zone 2							IEC60079-2	
	Ex “q”	Powder-filled encapsulation Transformers, capacitors							IEC60079-5	
	Ex “o”	Oil immersion encapsulation Transformers, load resistors							IEC60079-6	
	Ex “e”	Increased safety Terminal boxes, control cabinets, enclosures for installing devices of other protection class							IEC60079-7	
	Ex “i”	Intrinsically safe Terminal boxes, control cabinets, sensors, measurement and control equipment ia = Use in Zone 0, 1, 2 ib = Use in Zone 1, 2							IEC60079-11	
		Intrinsically safe systems							IEC60079-25	
	Ex “n”	Non sparking Systems that, due to their design, cannot spark							IEC60079-15	
	Ex “m”	Encapsulation Command and signalling devices, sensors, display/indicator devices ma = Use in Zone 0,1,2 mb = Use in Zone 1,2							IEC60079-18	
	Ex “op”	Optical radiation op is = Intrinsically safe optical radiation op pr = Protected optical radiation op sh = Shutdown optical radiation							IEC60079-28	
IP Protection Classes										
IP 1st digit	Contact	Foreign bodies			IP 2nd digit	Water		Max. permissible surface temperature	Temperature classes for gases	
0	No protection	No protection			0	No protection				
1	Large body parts	Solid object > 50 mm			1	Water dripping vertically				
2	Finger	Solid object > 12.5 mm			2	Water dripping at angle up to 15°		450°	T1	
3	Tool > 2.5 mm	Solid object > 2.5 mm			3	Water sprayed at an angle up to 60°		300°	T2	
4	Tool > 1 mm	Solid object > 1 mm			4	Spayed water 360°		200°	T3	
5	Complete protection	Dust accumulation			5	Hose water 360°		135°	T4	
6	Complete protection	Dust infiltration			6	Strong hose water 360°		100°	T5	
					7	Temporary submersion		85°	T6	
					8	Submersion		Explosion groups for gases		
Device group I Mining								Group	Typical gas	Ignition energy
I M1	Safety provided by 2 safety measures, 2 faults							I	Methane	280 µJ
I M2	Shutdown on occurrence of explosive atmosphere							IIA	Propane	> 180 µJ
Device group II All potentially explosive atmospheres except mining								IIB	Ethylene	60...180 µJ
II 1	Zone 0	Zone 20	Safety provided by 2 safety measures, 2 faults					IIC	Hydrogen	< 60 µJ
II 2	Zone 1	Zone 21	Safety in the event of frequent equipment malfunctions, 1 fault							
II 3	Zone 2	Zone 22	Safety in trouble-free operation					Additional conditions		
Zone categories, device group II								–	No restriction	
Hazard			Gas as per IEC		Dust as per IEC			X	Special conditions	
permanent or frequent			Zone 0		Zone 20					
occasional			Zone 1		Zone 21			U	Component certification Parts certification	
rare, temporary no longer than 30 min per year			Zone 2		Zone 22					

EX versions of BERNSTEIN switches with ATEX approval are also available for applications involving potentially gas and dust explosive atmospheres.

Approvals for gas "ii G" and dust "ii D" in accordance with DIN EN 60079-XX



Make use of our Ex protection expertise for your applications.

What is ATEX?

ATEX = Explosive atmosphere (Atmosphère explosible)

The European Directive 94/4/EC governs the production and the circulation of devices and components for explosive atmospheres in the European Union. The IEC Standards harmonised throughout the EU stipulate that ATEX products approved by a certification authority can be used anywhere throughout the EU.

In most aspects the certification authorities of non-European countries such as North America, Russia etc. closely follow ATEX-relevant standards so that various approvals can be acquired worldwide based on an ATEX approval. Corresponding national approvals are available on request.

Where are devices with ATEX approval used?

The fields of application for Ex-protected switches include mixing and processing machines in bakeries (flour dust explosion), processing machines in the food industry where spices are mixed (spice dust explosion), sewer manholes, pump stations and sewage treatment plant (explosive gases "fermentation/digester gas"), waste disposal and recycling industry (various sources of dust and gas explosion), automotive industry and wherever paints and lacquers are used (painting booth) in addition to the classic explosion-hazard branches of industry such as the chemical, petrochemical, pharmaceutical industries as well as the coal, gas and oil-producing and processing industries. Mobile equipment and systems such as vacuum cleaners, stacker lift trucks, fans etc. that are used in the above fields of application must exhibit a corresponding ATEX approval. ATEX products are therefore a part of our everyday lives.

Who is responsible for what in Ex applications?

The device or component manufacturer must obtain a type approval certificate (ATEX approval) for these devices and components. The machine manufacturer can acquire his system approval based on these approvals and the declaration of conformity.

The manufacturer of a machine or system that is used in Ex applications must obtain a corresponding system approval for the machines it markets. The entire system must be taken into consideration both from a mechanical as well as from an electrical aspect.

In accordance with the ATEX Operator Directive 1999/92/EC (ATEX137), the operator of technical facilities shall be responsible for avoiding or restricting the formation of explosive atmospheres (primary explosion protection), avoiding effective ignition sources (secondary or design explosion protection) and restricting the effect of an explosion to a safe level (tertiary explosion protection). An explosion protection document describing the implemented measures and hazard assessments is to be compiled.

In addition to foot switches and rope pull switches, our current ATEX-certified product range also includes various standard limit switches, limit switches and miniature limit switches.

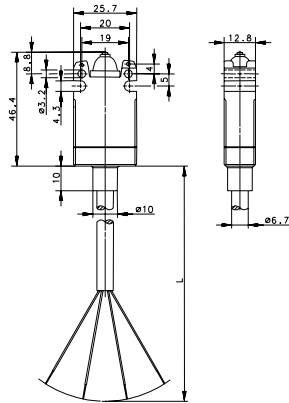
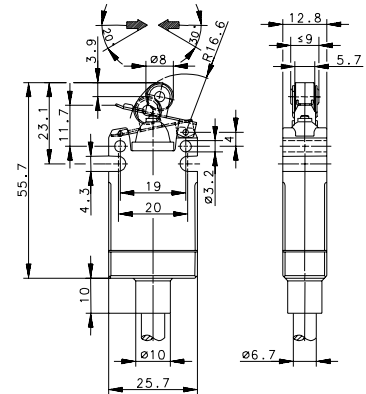
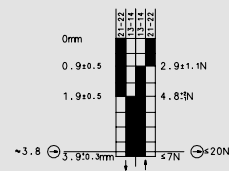
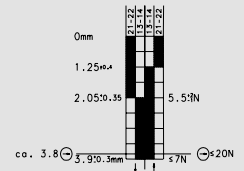
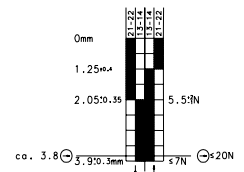
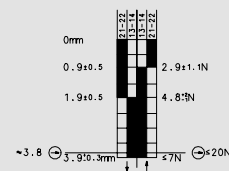
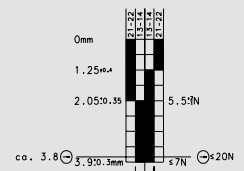
Customer-specific individual approvals or approvals for switches and components from the BERNSTEIN range not yet certified are available on request.



ATEX Products

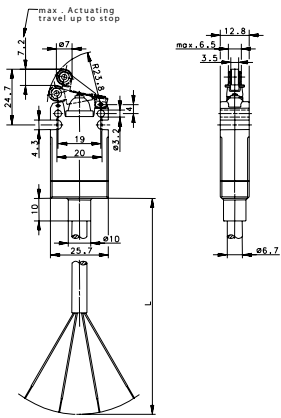
Technical data		EEX	GC	ENM2	F
Electrical data					
Rated insulation voltage	U _i max.	250 V	250 V	250 V	250 V
Rated operating voltage	U _e max.	230 V AC	230 V AC	230 V AC	230 V AC
Conventional thermal current	I _{the}	5 A	5 A	5 A	5 A
Utilisation category: switching capacity		AC 15, 240 V / 3 A; DC 13, 250 V / 0.27 A	AC 15, 240 V / 3 A; DC 13, 250 V / 0.27 A	AC 15, 240 V / 3 A; DC 13, 250 V / 0.27 A	AC 15, 240 V / 3 A; DC 13, 250 V / 0.27 A
Mechanical data					
Mechanical switching frequency		max. 120/min.	max. 50/min.	max. 50/min.	max. 50/min.
Mechanical service life		2 x 10 ⁶ switching cycles	2 x 10 ⁶ switching cycles	2 x 10 ⁶ switching cycles	2 x 10 ⁶ switching cycles
Contact type		1 NC / 1 NO contact (Zb)	1 NC / 1 NO contact (Zb)	1 NC / 1 NO contact (Zb)	2 NC / 2 NO contact (Zb)
B10d		4 mill.	4 mill.	4 mill.	4 mill.
Short-circuit protection		Fuse 4 A gL (Human protection function)	Fuse 4 A gL (Human protection function)	Fuse 4 A gL (Human protection function)	Fuse 4 A gL (Human protection function)
Protection class		II, Insulated	II, Insulated	II, Insulated	II, Insulated
Approval for Zone		II 2G (GAS)	II 2G (GAS)	II 2G (GAS)	II 2G (GAS)
Admissible ambient temperature		– 20 °C to + 60 °C	– 20 °C to + 60 °C	– 20 °C to + 60 °C	– 20 °C to + 60 °C
Protection class of built-in snap-action switch		IP 66 / IP 67 conforming to IEC/EN 60529	IP 66 / IP 67 conforming to IEC/EN 60529	IP 66 / IP 67 conforming to IEC/EN 60529	IP 66 / IP 67 conforming to IEC/EN 60529
Type of connection		Control line (with ferrules)	Control line (with ferrules)	Control line (with ferrules)	Control line (with ferrules)
Conductor cross sections		4 x 0,75 mm ²	4 x 0,75 mm ²	4 x 0,75 mm ²	4 x 0,75 mm ²
Enclosure		PEI	Aluminium pressure die-casting	Aluminium pressure die-casting	Aluminium pressure die-casting
Cable entry		Cast	1 x cable screw connection M20 x 1,5	1 x cable screw connection M20 x 1,5	1 x cable screw connection M20 x 1,5

Technical data		SN2	SI2 U2Z AW	SI2 U2Z AK	
Electrical data					
Rated insulation voltage	U _i max.	400 V AC	400 V AC	400 V AC	
Rated operating voltage	U _e max.	240 V	240 V	240 V	
Conventional thermal current	I _{the}	10 A	10 A	10 A	
Utilisation category: Switching capacity		AC 15, U _e / I _e 240 V / 3 A	AC 15, U _e / I _e 240 V / 3 A	AC 15, U _e / I _e 240 V / 3 A	
Mechanical data					
Mechanical Switching frequency		≤ 60/min.	≤ 10/min.	≤ 10/min.	
Mechanical service life		10 x 10 ⁶ switching cycles	2 x 10 ⁶ switching cycles	2 x 10 ⁶ switching cycles	
Actuation		Spindle-mounted lever (Zn-Al), Roller (thermoplastic)	Roller lever (St)	Lever (St)	
Ambient temperature		– 20 °C to + 80 °C	– 20 °C to + 60 °C	– 20 °C to + 60 °C	
Contact type		1 NC / 1 NO contact	2 NC / 2 NO contact (Zb)	2 NC / 2 NO contact (Zb)	
B10d		20 mill.	4 mill.	4 mill.	
Short-circuit protection		Fuse 2 A gL/gG	Fuse 10 A gL/gG	Fuse 10 A gL/gG	
Protection class		I	I	I	
Approval for Zone		II 2D (DUST)	II 2D (DUST)	II 2D (DUST)	
Surface temperature T		85 °C	80 °C	80 °C	
Protection class		IP 65 conforming to IEC/EN 60529	IP 65 conforming to IEC/EN 60529	IP 65 conforming to IEC/EN 60529	
Type of connection		Contact screws	Screw connections	Screw connections	
Conductor cross sections		Single-wire 0.5 – 1.5 mm ² or Strand- ed wire with ferrule 0.5 – 1.5 mm ²	Single-wire 0.5 – 1.5 mm ² or Strand- ed wire with ferrule 0.5 – 1.5 mm ²	Single-wire 0.5 – 1.5 mm ² or Strand- ed wire with ferrule 0.5 – 1.5 mm ²	
Enclosure		AL-Aluminium pressure die-casting	Cast iron	Cast iron	
Cable entry		3 x M20 x 1.5	3 x M20 x 1.5	3 x M20 x 1.5	
Standards					
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1 VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1 EN 60079-0, DIN EN 60079-0 EN 60079-1, DIN EN 60079-1 Directive 94/9 EG (ATEX 95)					

EEX W

EEX RH

2 meter connection cable
6090153002
EEX-SU1Z W -2M-

6090148022
EEX-SU1Z RH -2M-

5 meter connection cable
6090148024
EEX-SU1Z RH -5M-

9 meter connection cable
6090153005
EEX-SU1Z W -9M-

6090148025
EEX-SU1Z RH -9M-

EX certification
 II 2 G EEx d IIC T6

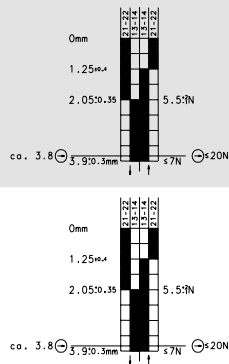
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EEX RHL



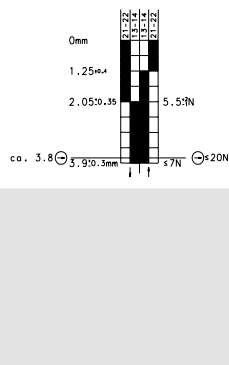
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6090149027
EEX-SU1Z RHL -2M-



5 meter connection cable

6090149029
EEX-SU1Z RHL -5M-

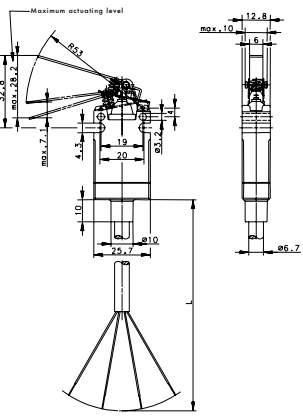


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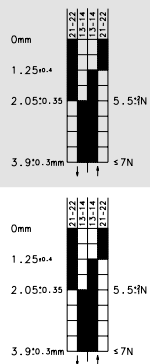
EX certification

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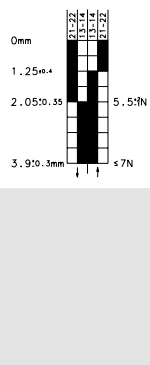
EEX UH



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EEX-SU1 UH -2M-

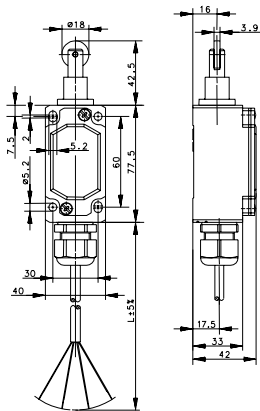


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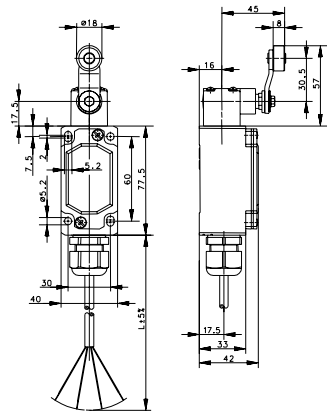


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ENM2 RIW

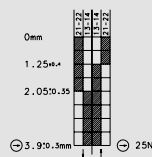


ENM2 AHT

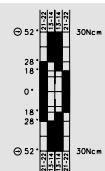


2 meter connection cable

6097167062
ENM2-SU1Z EX RIW -2M-

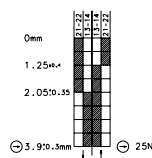


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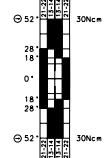


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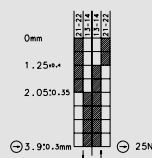


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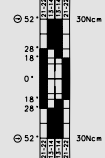


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6097185085
ENM2-SU1Z EX AHT -9M-

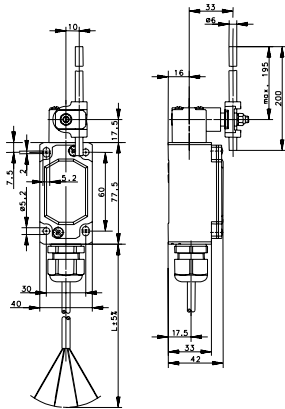


EX certification

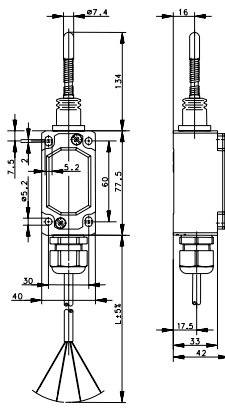
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II 2 G EEx d IIC T6

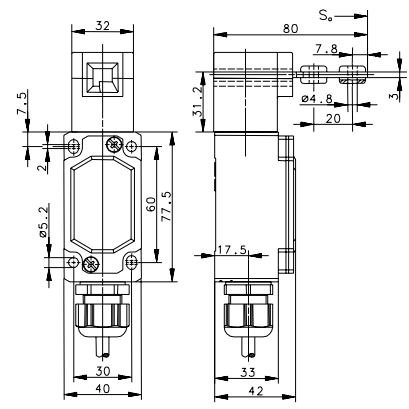
ENM2 AD



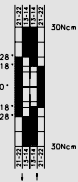
ENM2 FF



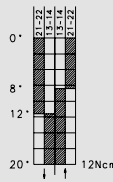
ENM2 VTW



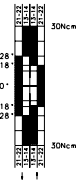
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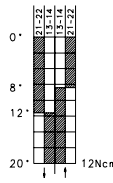
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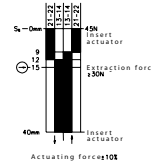
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ENM2-SU1 EX AD -5M-



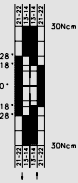
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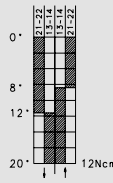
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6097190100
ENM2-SU1 EX FF -9M-

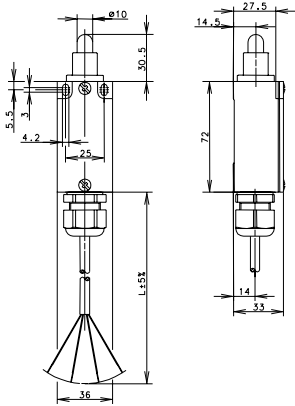


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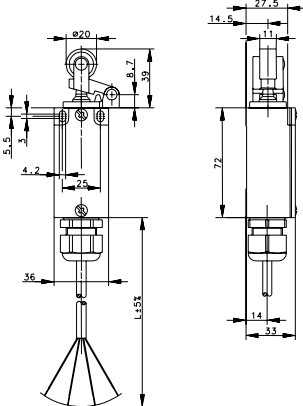
Ex II 2 G EEx d IIC T6

Ex II 2 G EEx d IIC T6

GCIW

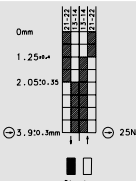


GC HW



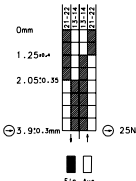
2 meter connection cable

6092152002
GC-SU1Z EX IW -2M-



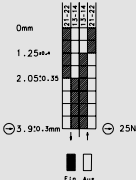
5 meter connection cable

6092152004
GC-SU1Z EX IW -5M-

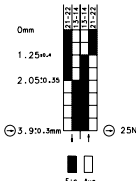


9 meter connection cable

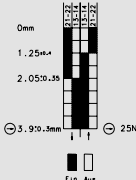
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6092171024
GC-SU1Z EX HW -5M-



6092171025
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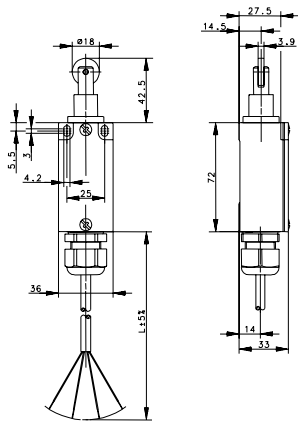


EX certification

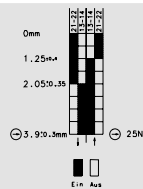
II 2 G EEx d IIC T6

II 2 G EEx d IIC T6

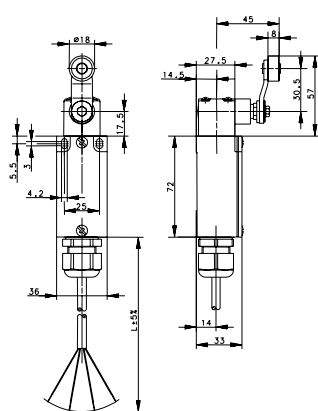
GC RIW



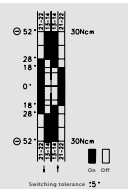
6092167012
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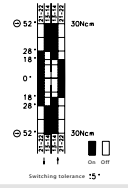
GA AHT



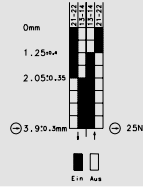
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GC-SU1Z EX AHT -2M-



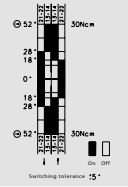
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GC-SU1Z EX AHT -5M-



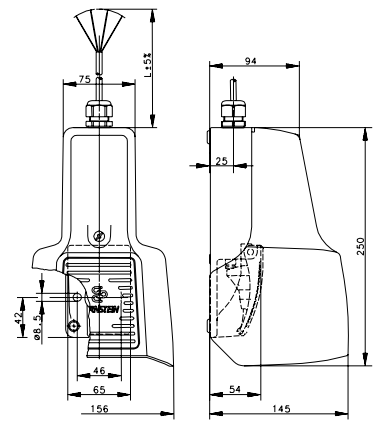
6092167015
GC-SU1Z EX RIW -9M-



6092185035
GC-SU1Z EX AHT -9M-



F1 UN



6096197017
F1-SU1Z EX UN -2M-

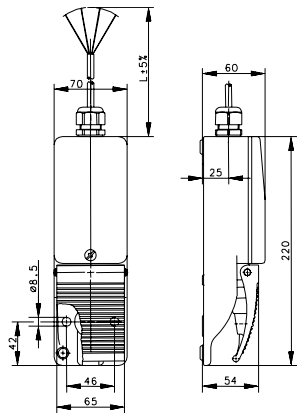
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Ex II 2 G EEx d IIC T6

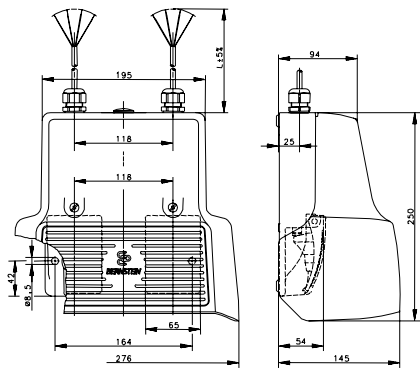
Ex II 2 G EEx d IIC T6

Ex II 2 G EEx d IIC T6

F1



F2 UN



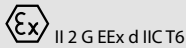
2 meter connection cable

5 meter connection cable

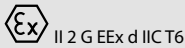
9 meter connection cable

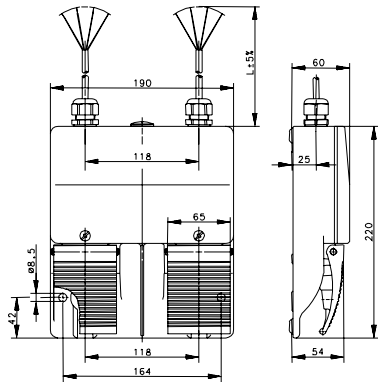
EX certification

6096198014
F1-SU1Z EX -5M-



6096197029
F2-SU1Z/SU1Z EX UN -5M-

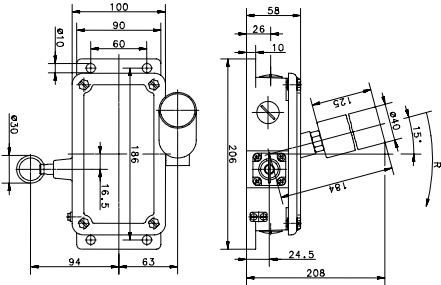
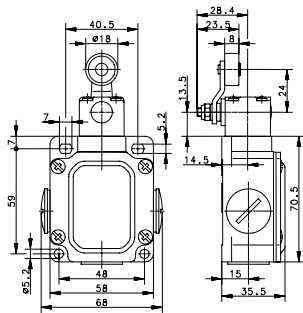


F2

6096198022
 F2-SU1Z/SU1Z EX -2M-


II 2 G EEx d IIC T6

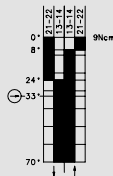
Explosion-protected metal-enclosed switch SN2

Series SI2



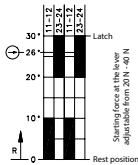
1 NC /1 NO contact

6193285001
SN2-SU1Z AH EXD 180 Gr.



2 NC /2 NO contacts

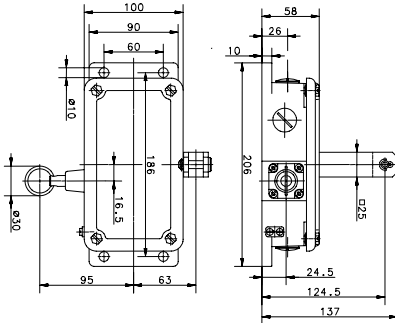
6091295025
SI2-U2Z AW EXD



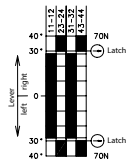
EX certification

Ex II 2 D IP65 T 85 °C

Ex II 2D Ex tb IIIC T80°C Db

Series SI2


6091288024
SI2-U2Z AK EXD



II 2D Ex tb IIIC T80°C Db