



Your partner for explosion protection

Ex-approved products and know-how

BERNSTEIN — since 70 years

Competence in safety technology

BERNSTEIN AG is one of the world's leading product and service providers in the field of safety technology for the electrical, chemical and mechanical engineering industry.

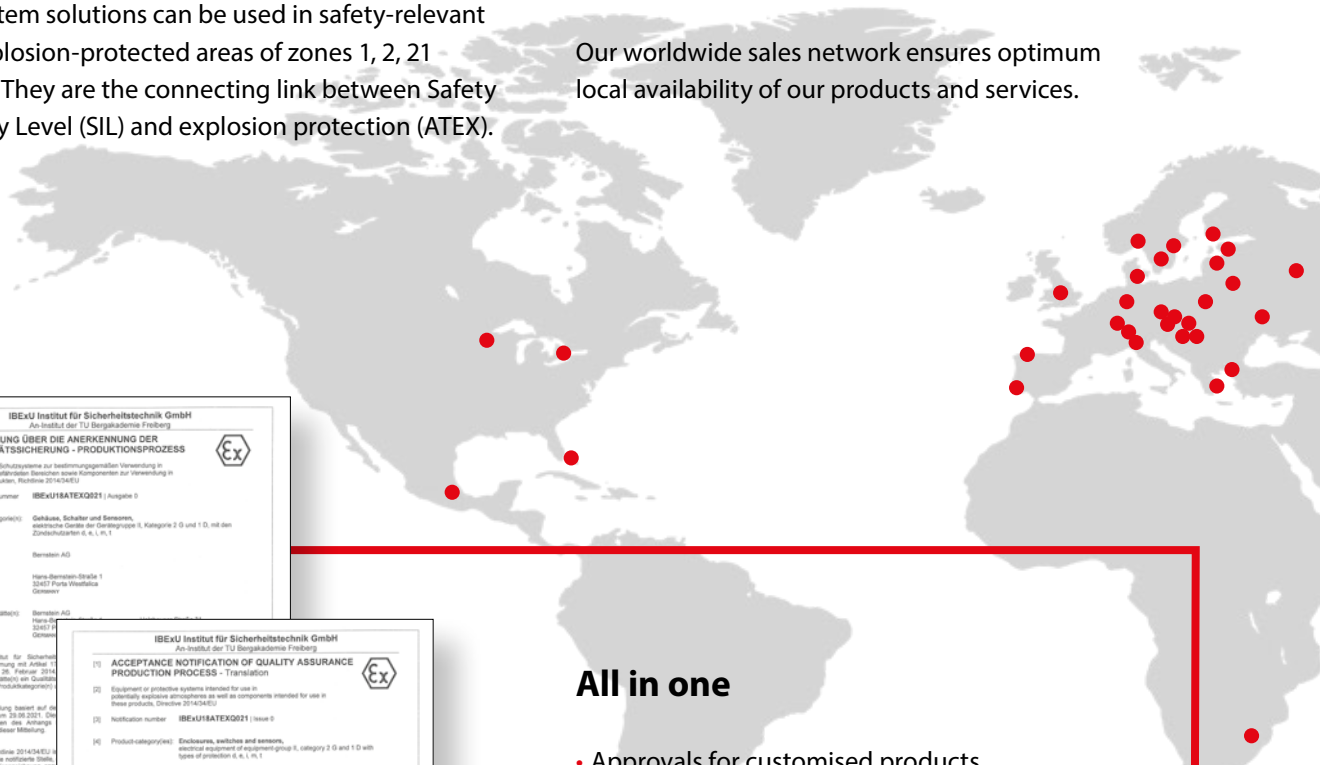
The emphasis of our 70 years of activity in the field of safety technology lies on advising and supplying our partners both with standard components and solutions. The explosion protection (ATEX) and the machine safety (MRL) form the technical framework.

Our system solutions can be used in safety-relevant and explosion-protected areas of zones 1, 2, 21 and 22. They are the connecting link between Safety Integrity Level (SIL) and explosion protection (ATEX).

Our priority is customer satisfaction. The assurance of high quality and the solution to individual customer requirements are the central aspects of our daily work. The cost leadership due to optimised production processes also offers you the decisive economic advantage in addition to the many technical advantages.

The approvals and type examination certificates comply with the current state of the standards, the ATEX EU Directive and the Machinery Directive.

Our worldwide sales network ensures optimum local availability of our products and services.



All in one

- Approvals for customised products
- Application and product advice
- Product development
- Approval assistance according to NEC
- Special delivery service for defined standard products
- Certified quality assurance system
- Approval assistance according to ATEX directive
- UL and CSA approvals
- Approval according to IEC Ex

Our promise to you

- The right product for your application
- Professional technical advice
- Engineering and project management from one provider
- Continuously monitored quality system
- Customer specific developments and approvals
- The right contact for all matters concerning explosion protection and machinery safety
- Product and professional trainings for Ex applications
- Specialists who always have the latest know-how from internal and external basic and further training courses

You can be sure of that.



1947

COMPANY FOUNDATION
by Hans Bernstein
in Porta Westfalica

3

GENERATIONS
shaped the successful
family owned company

4

PRODUCTION SITES
worldwide produce
for our international
customers

560

More than
EMPLOYEES
in ten countries

Our Products

For industry and end users



Industry sectors

- Chemical industry
- Petrochemical industry
- Medical and pharmaceutical technology
- Pharmaceutical industry
- Food industry
- Disposal and recycling industry
- Wood-working
- Safety through spatial separation between the connection compartment and the mechanics
- Flexible application due to different guying lengths

End user

- Ex-protected plant operators
- Ex-protected plant manufacturers
- Planners and constructing engineer
- Ex-protected systems manufacturers



BERNSTEIN Ex competence for potentially explosive areas



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 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, inductive NAMUR sensors

For magnetic switches, protection against ignition energy is achieved by encapsulation. For inductive namur sensors, protection is achieved by the principle of intrinsic safety. Magnetic switches and namur sensors have a factory fitted connection cable. This cable is permanently attached to the body and forms part of the approval. All sensors are certified for a surface temperature of +80 °C.



Terminal enclosures and empty enclosures

Only materials that correspond to the temperature range required for Ex enclosures are used in these enclosures and components. The minimum type of protection rating of all enclosures and screw connections is IP64, other protection classes available on request. The latching devices on the enclosures are available as captive screw connections. Various CA versions are available with flange plates. All built-in components must conform to the relevant approvals.










Ex-approved products for potentially explosive atmospheres

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

Our Ex-experts' services:

- Approvals assistance for plant operators
- Approval of switching and control elements in all enclosures
- Approval of plug-in devices in all enclosures
- Customised component mounting and wiring of enclosures
- Training courses for planners and plant operators
- Cross-product system solutions
- Customer-specific development and project management on request
- Approval according to IEC Ex on request

Explosion protection at a glance

II2G	Ex	ia	IIC	T6	TÜV	2008	ATEX	1234	–	
Type approval to directive 2014/34/EU	Application	Explosion protection	Type of protection	Device group	Temperature class	Inspection authority	Year	As per directive 2014/34/EU	Consecutive number	Additional conditions
Protection Concept										
Symbol		Type of protection						Standards		
	Ex "d"	Flameproof encapsulation Switching devices, motors, transformers etc. IEC60079-1						IEC / EN 60079-1		
	Ex "p"	Pressurised encapsulation Control cabinets px = Use in Zone 1, 2 py = Use in Zone 1, 2 pz = Use in Zone 2 pb = Use in Zone 21, 22 pc = Use in Zone 22						IEC / EN 60079-2		
	Ex "q"	Powder-filled encapsulation Transformers, capacitors						IEC / EN 60079-5		
	Ex "o"	Oil immersion encapsulation Transformers, load resistors						IEC / EN 60079-6		
	Ex "e"	Increased safety Terminal boxes, control cabinets, enclosures for installing devices of other protection class						IEC / EN 60079-7		
	Ex "i"	Intrinsically safe Terminal boxes, control cabinets, sensors, measurement and control equipment ia = Use in Zone 0, 1, 2, 20, 21, 22 ib = Use in Zone 1, 2, 21, 22						IEC / EN 60079-11		
	Ex "n"	Intrinsically safe systems Non sparking Systems that, due to their design, cannot spark						IEC / EN 60079-25		
	Ex "m"	Encapsulation Command and signalling devices, sensors, display/indicator devices ma = Use in Zone 0, 1, 2, 20, 21, 22 mb = Use in Zone 1, 2, 21, 22						IEC / EN 60079-18		
	Ex "op"	Optical radiation op is = Intrinsically safe optical radiation op pr = Protected optical radiation op sh = Shutdown optical radiation						IEC / EN 60079-28		
	Ex "t"	Protection by enclosure Switching devices, Terminal boxes, control cabinets ta = Use in Zone 20, 21, 22 tb = Use in Zone 21, 22 tc = Use in Zone 22						IEC / EN 60079-31		
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	450°	T1				
1	Large body parts	Solid object > 50 mm	1	Water dripping vertically	300°	T2				
2	Finger	Solid object > 12.5 mm	2	Water dripping at angle up to 15°	200°	T3				
3	Tool > 2.5 mm	Solid object > 2.5 mm	3	Water sprayed at an angle up to 60°	135°	T4				
4	Tool > 1 mm	Solid object > 1 mm	4	Spayed water 360°	100°	T5				
5	Complete protection	Dust accumulation	5	Hose water 360°	85°	T6				
6	Complete protection	Dust infiltration	6	Strong hose water 360°	Explosion groups for gases					
				7	Temporary submersion	Group	Typical gas	Ignition energy		
				8	Submersion	I	Methane	280 µJ		
Device group I Mining						IIA	Propane	> 180 µJ		
IM1	Safety provided by 2 safety measures, 2 faults				IIB	Ethylene	60...180 µJ			
IM2	Shutdown on occurrence of explosive atmosphere				IIC	Hydrogen	< 60 µJ			
Device group II All potentially explosive atmospheres except mining						Explosion groups for dusts				
II 1	Zone 0	Zone 20	Safety provided by 2 safety measures, 2 faults		Group	Dust				
II 2	Zone 1	Zone 21	Safety in the event of frequent equipment malfunctions, 1 fault		IIIA	combustible flyings				
II 3	Zone 2	Zone 22	Safety in trouble-free operation		IIIB	non-conductive dust				
					IIIC	conductive dust				
Zone categories, device group II						Additional conditions				
Hazard		Gas as per IEC / EN		Dust as per IEC / EN		– No restriction				
permanent or frequent		Zone 0		Zone 20		X Special conditions				
occasional		Zone 1		Zone 21		U Component certification Parts certification				
rare, temporary no longer than 30 min per year		Zone 2		Zone 22						

Aluminium and polyester blank enclosures CA, CP, CPS



ATEX-U certified standard enclosures

BERNSTEIN enclosures have been tested by an internationally recognised and certified inspection authority and certified through type approval testing for use in areas with potentially explosive dust and gas atmospheres. Used as terminal and control enclosures, the aluminium pressure die-cast (CA) and glass-fibre reinforced polyester (CPG, CPS) enclosures are designed to accept corresponding mechanical and electrical equipment. The enclosures come with operating instructions, type identification plate and CE Declaration of Conformity. Either an EPDM or silicone seal can be used. The enclosures can be fitted at the factory with external hinges.

Technical Data

- Protection class IP66 to IEC 60529
- Ex-Identification
 - ⊕ II 2G Ex eb IIC Gb
 - ⊕ II 2D Ex tb IIIC Db
- Impact strength > 7 joules
- Operating temperature
max. -55 °C to +135 °C (special seal)
- CA Enclosure colour: RAL 7001 (silver grey)
Powder-coating corrosion protection
- CP/CPS Enclosure colour: RAL 7000 (squirrel grey) CP
RAL 9005 (jet black) CPS
- UV resistance
- Certificates:
 - CA IBExU 16 ATEX 1130 U, IECEx IBE 15.0025U
 - CP/CPS IBExU 16 ATEX 1197 U, IECEx IBE 16.0036U

Ordering data blank enclosures

CA, CP, CPS



Type	External dimension (mm)	Art.No. with silicone seal	Art.No. with EPDM seal
CA-060	58 × 64 × 36	1064005000	1064000000
CA-080	98 × 64 × 36	1084005000	1084000000
CA-100	150 × 64 × 36	1104005000	1104000000
CA-130	75 × 80 × 57	1134005000	1134000000
CA-150	125 × 80 × 57	1154005000	1154000000
CA-170	175 × 89 × 57	1174005000	1174000000
CA-190	250 × 80 × 57	1194005000	1194000000
CA-210	122 × 122 × 80	1214005000	1214000000
CA-215	122 × 122 × 90	1214005050	1214000050
CA-220	122 × 122 × 80	1224005000	1224000000
CA-230	220 × 122 × 80	1234005000	1234000000
CA-235	220 × 122 × 90	1234005050	1234000050
CA-240	220 × 122 × 80	1244005000	1244000000
CA-250	360 × 122 × 80	1254005000	1254000000
CA-270	160 × 160 × 90	1274005000	1274000000
CA-280	160 × 160 × 90	1284005000	1284000000
CA-290	260 × 160 × 90	1294005000	1294000000
CA-300	260 × 160 × 90	1304005000	1304000000
CA-310	360 × 160 × 90	1314005000	1314000000
CA-330	560 × 160 × 90	1334005000	1334000000
CA-350	200 × 230 × 110	1354005000	1354000000
CA-360	200 × 230 × 180	1364005000	1364000000
CA-370	280 × 230 × 110	1374005000	1374000000
CA-380	330 × 230 × 110	1384005000	1384000000
CA-390	330 × 230 × 180	1394005000	1394000000
CA-400	400 × 230 × 110	1404005000	1404000000
CA-420	600 × 230 × 110	1424005000	1424000000
CA-450	402,5 × 310 × 110	1454005000	1454000000
CA-460	402,5 × 310 × 180	1464005000	1464000000
CA-470	600 × 310 × 110	1474005000	1474000000
CA-480	600 × 310 × 180	1484005000	1484000000
CP-140	80 × 75 × 55	4144005000	4144000000
CP-145	80 × 75 × 75	4144005050	4144000050
CP-150	110 × 75 × 55	4154005000	4154000000
CP-155	110 × 75 × 75	4154005050	4154000050
CP-170	160 × 75 × 55	4174005000	4174000000
CP-175	160 × 75 × 75	4174005050	4174000050
CP-190	190 × 75 × 55	4194005000	4194000000
CP-195	190 × 75 × 75	4194005050	4194000050
CP-220	122 × 120 × 90	4224005000	4224000000
CP-240	220 × 120 × 90	4244005000	4244000000
CP-280	160 × 160 × 90	4284005000	4284000000
CP-300	260 × 160 × 90	4304005000	4304000000
CP-320	360 × 160 × 90	4324005000	4324000000
CP-330	560 × 160 × 90	4334005000	4334000000
CP-370	255 × 250 × 120	4374005000	4374000000
CP-400	400 × 250 × 120	4404005000	4404000000
CP-450	400 × 405 × 120	4454005000	4454000000
CPS-140	80 × 75 × 55	5144005000	5144000000
CPS-145	80 × 75 × 75	5144005050	5144000050
CPS-150	110 × 75 × 55	5154005000	5154000000
CPS-155	110 × 75 × 75	5154005050	5154000050
CPS-170	160 × 75 × 55	5174005050	5174000050
CPS-175	160 × 75 × 75	5174005050	5174000050
CPS-190	190 × 75 × 55	5194005000	5194000000
CPS-195	190 × 75 × 75	5194005050	5194000050
CPS-220	122 × 120 × 90	5224005000	5224000000
CPS-240	220 × 120 × 90	5244005000	5244000000
CPS-280	160 × 160 × 90	5284005000	5284000000
CPS-300	260 × 160 × 90	5304005000	5304000000
CPS-320	360 × 160 × 90	5324005000	5324000000
CPS-330	560 × 160 × 90	5334005000	5334000000
CPS-370	255 × 250 × 120	5374005000	5374000000
CPS-400	400 × 250 × 120	5404005000	5404000000
CPS-450	400 × 405 × 120	5454005000	5454000000

Aluminium and polyester Terminal enclosures

The Ex standard enclosures of the CA and CP series are designed as fully machined and assembled connection and wiring enclosures for use in zones 1, 2, 21 and 22. They are machined and assembled according to the customer's needs and wishes. A combination of terminals and cable glands of various manufacturers is possible.



All common connecting terminals and cable glands can be combined.

- Screw terminals
- Direct push in terminals
- Wire piercing clamps
- Quick connect push terminals
- Single screw-type metal or plastic glands
- Multiple screw-type metal or plastic glands
- Special screw type glands for ribbon cables
- Certificates:
 - CA IBEExU 16 ATEX 1131, IECEx IBE 15.0029
 - CP/CPS IBEExU 16 ATEX 1198 X, IECEx IBE 16.0037X

The enclosures are designed in “enhanced safety” and “intrinsic safety” protection types or a combination of both.

A protection type up to IP66 in accordance with ISO 60529 is possible depending on the seal. The operating temperature ranges from –55 °C to +130 °C depending on the version.

All sizes of the blank enclosures are available as assembled enclosures. Either an earthing rail or an earthing clamp is used as an earth connection.

Cable gland, plastic M12-M63



- -20 °C to +80 °C, PA6
- IP66/68, Ex e and Ex i

Cable glands, metal M12-M63



- -30 °C to +90 °C, MS
- IP66/68, Ex e

Screw terminals



TS15 (Standard)
TS35 (Standard)

- MUT 2,5
- UT 2,5

Mounting plates



galvanised steel
laminated paper

- as from CP-370/CA
- up to CP-320

External mounting brackets



for mounting without
opening the covers

- stainless steel

Mounting rails



TS-35
TS-15

- as from CA-210/CP-220
- up to CA-190/CP-195

Earthing bars



as option
to PE terminals

- solid earthing brass nickel-plated
- as from CA-210/CP-220

Monitor enclosures for zone 2/22

To enable the use of controllers and operating units in explosive areas of zones 2 and 22, monitor and controller enclosures of the CC-4000 series and the CA and CP series with customised assemblies can be used.



Zone 22

For operation in zone 22 (Dust 3D) the enclosures are designed to ensure explosion protection type tc (protection by enclosure). The basic preconditions for this are:

- Enclosure and suspension system protection class IP6x
- All add-on parts with type examination certificates or rather CE declaration of conformity for zone 22
- The assembly of all externally accessible parts at BERNSTEIN AG
- Issuing of a manufacturer declaration / CE declaration of conformity for the complete enclosure
- Documentation and monitored production by ATEX-QA

Zone 2

For operation in zone 2 (Gas 3G) the enclosures are designed to ensure explosion protection type Ex nA (non-sparking device) and/or Ex i (intrinsic safety).

The basic preconditions for this are:

- Enclosure and suspension system protection class IP54
- All add-on and built-in parts with type examination certificates or CE declaration of conformity for zone 2



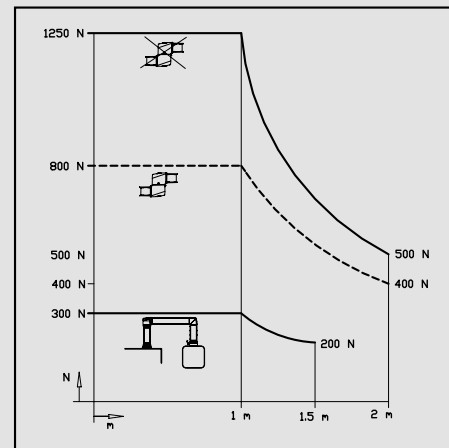
Accessories, built-in and add-on parts

Parts of all renowned manufacturers are used.

This include:

- Operator panel parts
- Terminals
- Touch panels
- Cable glands
- Power devices
- IPC Panels
- Signal lamps
- Alphanumeric displays

Aluminium suspension system CS-3000



Load diagram

Product description

BERNSTEIN has available the adequate suspension system CS-3000 for the control enclosure CC-4000.

Modern industrial design, well-conceived safety features (six-fold form-fit in tube attachment area) and the unique possibility of a one-man installation of the whole system.

The components are supplied powder-coated in anthracite-grey (RAL 7016) or white-aluminium (RAL 9006).

You will find detailed information in the BERNSTEIN enclosure system catalogue. You have simply to call us.

Aluminium tubing (70 × 90 mm)



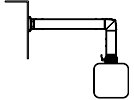

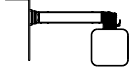





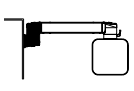

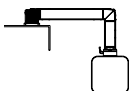

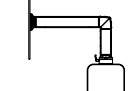

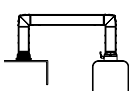

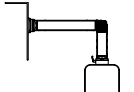

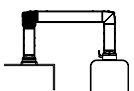

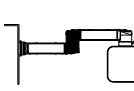

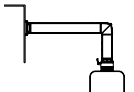
Silver anodised, machining on both tube ends

Standard lengths

250 mm
500 mm
750 mm
1000 mm
1250 mm
1500 mm
1750 mm
2000 mm

Art.-No.

9524500001
9524500002
9524500003
9524500004
9524500005
9524500006
9524500007
9524500008

Image	Article	Size in mm	Article number	Weight	Application example
	1 CC-4000 Control enclosure	max. 600 × 600 mm	kundenspezifisch		
	2 Coupling		1015300001 RAL 7016 anthracite-grey 1015300177 RAL 9006 white-aluminium	1,45 kg	
	2 Elbow coupling		1015300002 RAL 7016 anthracite-grey 1015300178 RAL 9006 white-aluminium	2,07 kg	
	2 Base coupling		1015300017 RAL 7016 anthracite-grey 1015300183 RAL 9006 white-aluminium	2,12 kg	
	3 Wall joint vertical		1015300006 RAL 7016 anthracite-grey 1015300199 RAL 9006 white-aluminium	2,45 kg	
	3 Wall joint horizontal		1015300007 RAL 7016 anthracite-grey 1015300200 RAL 9006 white-aluminium	2,93 kg	
	3 Top joint		1015300003 RAL 7016 anthracite-grey 1015300198 RAL 9006 white-aluminium	2,25 kg	
	4 Base plate/ wall flange		1015300010 RAL 7016 anthracite-grey 1015300204 RAL 9006 white-aluminium	1,30 kg	
	4 Rotary base plate		1015300005 RAL 7016 anthracite-grey 1015300205 RAL 9006 white-aluminium	1,78 kg	
	5 Elbow		1015300008 RAL 7016 anthracite-grey 1015300195 RAL 9006 white-aluminium	1,68 kg	
	5 Rotary elbow		1015300009 RAL 7016 anthracite-grey 1015300196 RAL 9006 white-aluminium	2,46 kg	
	5 Intermediate joint		1015300004 RAL 7016 anthracite-grey 1015300201 RAL 9006 white-aluminium	2,94 kg	
	6 Adapter (for narrow sections)		1015300011 RAL 7016 anthracite-grey 1015300209 RAL 9006 white-aluminium	0,30 kg	



Sensors for potentially explosive atmospheres

Technical Data



BERNSTEIN offers a wide range of sensors for monitoring and controlling machines in areas with a risk of explosion. They include magnetic switches with reed contact, electronic magnetic slot sensors with freely programmable switching outputs, inductive NAMUR sensors and inductive sensors with switching output. The range of BERNSTEIN include many designs and sizes.



Electronic Slot Sensors Type MEK-E (S) 22


- Operating voltage range 10 – 30 V DC
- Output current $I_e \leq 50$ mA
- Ambient temperature -20 °C to $+80$ °C
- Protection class IP67
- Cable $4 \times 0,05$ mm² or connector M8
- Black, PA enclosure
- Teachable switching points
- Suitable for zones 1, 2, 21, 22 (2G/2D)
- Ex-Identification
 -  II 2G Ex mb IIC T6 Gb
 -  II 2D Ex tb IIIC T85 °C Db
- Certificate KEMA 08 ATEX 0130 X

Magnetic Switches Type MAK-1515-LEX

- Operating voltage range max. 250 V DC
- Output current max. 1 A
- Ambient temperature -20 °C to $+60$ °C
- Protection class IP66
- Cable $3 \times 0,75$ mm²
- Red, PA enclosure
- Suitable for zones 1, 2, 21, 22 (2G/2D)
- Ex-Identification
 -  II 2G Ex mb IIC T6 Gb
 -  II 2D Ex tb IIIC T85 °C Db
- Certificate KEMA 03 ATEX 1399 X

Type	Article number	Sensor type
MAK-1513-LEX-3	6316315001	Magnetic switch
MAK-1513-LEX-1	6316315308	Magnetic switch
MAK-1513-LEX-7	6316315344	Magnetic switch
MAK-1513-LEX-10	6316315654	Magnetic switch
MEK-E22PS/HP2-KL2-EX	6370281189	Slot Sensor with connection cable
MEK-E22PS/HP2-KL0,3S8-EX	6370281190	Slot Sensor with connector M8
KIB-M05EA/001-2G	6581699013	NAMUR sensor M5 flush
KIB-M08EA/1,5-2G	6581631014	NAMUR sensor M8 flush
KIB-M12EA/002-2G	6581699016	NAMUR sensor M12 flush
KIB-M18EA/005-2G	6581638018	NAMUR sensor M18 flush
KIB-M30EA/010-2G	6581699020	NAMUR sensor M30 flush
KIN-M08EA/002-2G	6581645015	NAMUR sensor M8 non-flush
KIN-M12EA/004-2G	6581699017	NAMUR sensor M12 non-flush
KIN-M18EA/008-2G	6581699019	NAMUR sensor M18 non-flush
KIB-M12PS/002-KL2D	6522903009	Inductive sensor M12 flush
KIN-M12PS/004-KL2D	6522904010	Inductive sensor M12 non-flush
KIB-M12PS/002-KLS12D	6522943011	Inductive Sensor M12 flush
KIN-M12PS/002-KLS12D	6522944012	Inductive sensor M12 non-flush
KIB-M18PS/005-KL2D	6522905013	Inductive sensor M18 flush
KIN-M18PS/008-KL2D	6522906014	Inductive sensor M18 non-flush
KIB-M18PS/005-KLS12D	6522905015	Inductive sensor M18 flush
KIN-M18PS/008-KLS12D	6522906016	Inductive sensor M18 non-flush
KIB-M30PS/010-KL2D	6522907017	Inductive sensor M30 flush
KIN-M30PS/015-KL2D	6522908018	Inductive sensor M30 non-flush
KIB-M30PS/010-KLS12D	6522907019	Inductive sensor M30 flush
KIN-M30PS/015-KLS12D	6522908020	Inductive sensor M30 non-flush

NAMUR Sensors Type KI ... EA

- Operating voltage range max. 30 V DC
- NAMUR output
- Ambient temperature -20 °C to +60 °C
- Protection class IP67
- Cable from 2 × 0,14 mm² up to 2 × 0,5 mm²
- Metal enclosure from M5 up to M30
- Suitable for zones 1, 2 (2G)
- Ex-Identification
 II 2G Ex ib IIC T6 Gb
- Certificate TÜV 98 ATEX 1293

Inductive Sensors Typ KI ... PS

- Operating voltage range 10–25 V DC
- Output current < 200 mA
- PNP switching output
- Ambient temperature -25 °C to +70 °C
- Protection class IP67
- Cable connection
- Metal enclosure from M12 up to M30
- Suitable for zones 2, 22 (3G/3D)

Electromechanical Switches for potentially explosive atmospheres



An Ex d-certified snap-action switch lies at the core of the Ex-approved switches. This switch with protection class flameproof encapsulation can be used in zones 1, 2, 21 and 22.

The snap-action switch has two galvanically isolated contacts, one NC contact and one NO contact. It is designed for use as a mechanically protected built-in switch in enclosures, control and monitoring devices. It is available with different actuators for this purpose.

The switch insert is also used in various switch enclosures with different actuating devices.

For potentially explosive atmospheres, BERNSTEIN proposes the ENM2, GC and SN2 series as position switches, the F series as foot switches and the SD series as rope pull switches.

However, the SI2 series as rope pull switch and belt alignment switch is also possible for the use in zones 21 and 22.

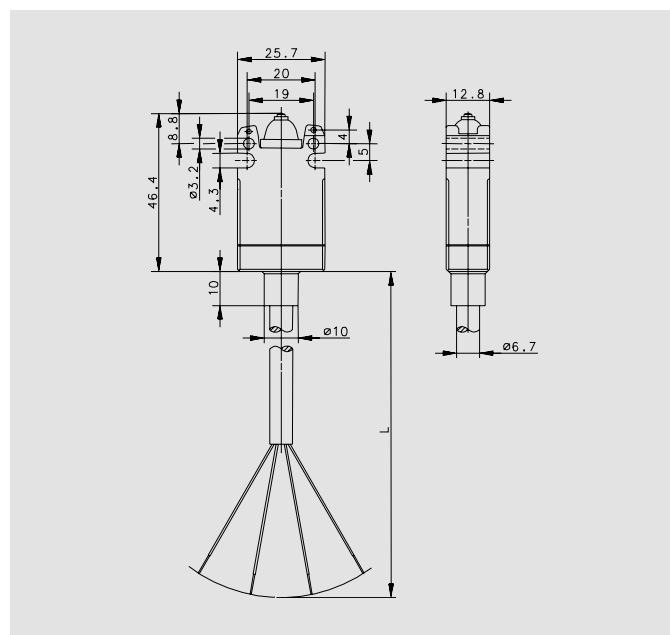
Snap-action Switch EEX-SU1...



Typ	Article number	Type of switch
EEX-SU1Z W-2M-	6090153002	Version with plunger 2 m cable
EEX-SU1Z W-9M-	6090153005	Version with plunger 9 m cable
EEX-SU1Z RH-2M-	6090148022	Version with roller lever 2 m cable
EEX-SU1Z RH-5M-	6090148024	Version with roller lever 5 m cable
EEX-SU1Z RH-9M-	6090148025	Version with roller lever 9 m cable
EEX-SU1Z RHL-2M-	6090149027	Version with roller lever lang 2 m cable
EEX-SU1Z RHL-5M-	6090149029	Version with roller lever lang 5 m cable
EEX-SU1Z FH-2M-	6090145007	Version with flat lever 2 m cable
EEX-SU1Z FH-9M-	6090145010	Version with flat lever 9 m cable

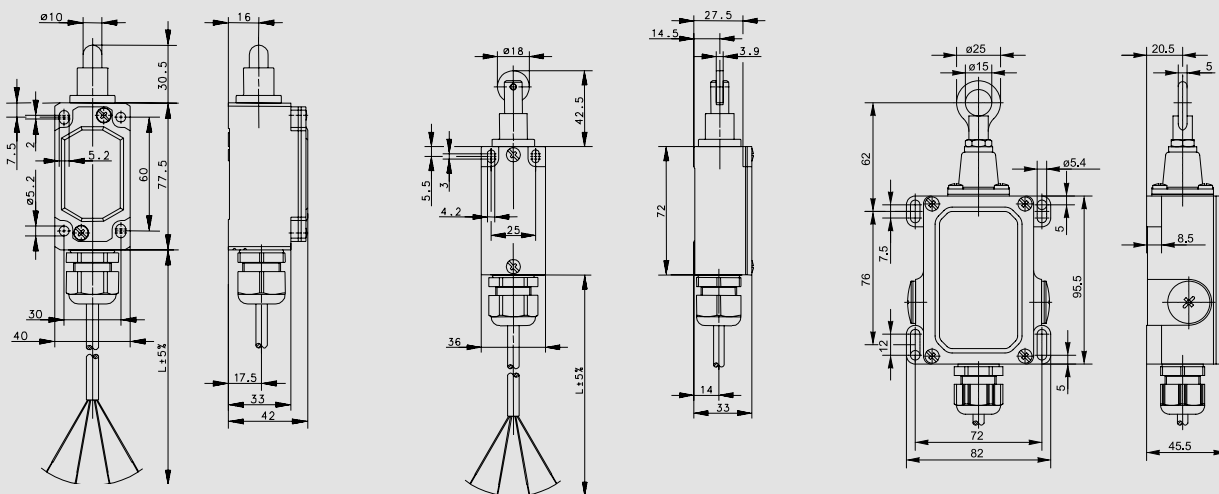
Technical Data EEX-SU1Z

- Rated insulation voltage 250 V
- Rated operating voltage 230 V AC
- Conventional thermal current 5 A
- Utilization category /switching capacity
AC 15 240 V / 3 A
DC 13 250 V / 0,27 A
- Mechanical switching frequency max. 120/min
- Mechanical service life 2×10^6 switching cycles
- 1 NC/1 NO
- B10d: 4 million
- Suitable for zones 1, 2, 21, 22 (2G, 2D)
- Admissible ambient temperature $-20\text{ }^{\circ}\text{C}$ to $+60\text{ }^{\circ}\text{C}$
- Protection class IP66/67 according to IEC 60529
- PEI enclosure
- Ex-Identification
 II 2G Ex db IIC T6 Gb
 II 2D Ex tb IIIC T80°C Db
- Certificate TÜV 03 ATEX 2021 X



Position Switch series

ENM2 and GC, Rope Pull Switch SD



Types ENM2 and GC

- Standard switch conforming to DIN EN 50041 (ENM2)
- Standard actuator conforming to DIN EN 50041, Type A, B, C, D
- Protection class IP66/ 67 to IEC 60529
- Aluminium pressure die-casting enclosure
- Sheet aluminium cover
- Actuator can be repositioned by $4 \times 90^\circ$
- Cable entry M20 \times 1.5
- Metal actuators for high loads

Ordering data

ENM2, GC and SD

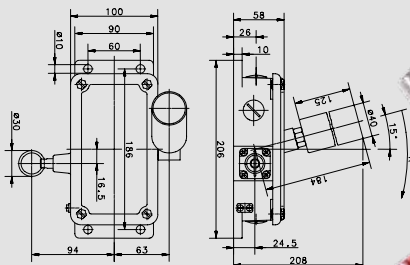


Type	Article number	Type of switch
ENM2-SU1Z EX IW -2M-	6097152052	Version with plunger 2 m cable
ENM2-SU1Z EX IW -5M-	6097152054	Version with plunger 5 m Cable
ENM2-SU1Z EX IW -9M-	6097152055	Version with plunger 9 m Cable
ENM2-SU1Z EX HW -2M-	6097171072	Version with lever 2 m cable
ENM2-SU1Z EX HW -5M-	6097171074	Version with lever 5 m cable
ENM2-SU1Z EX HW -9M-	6097171075	Version with lever 9 m cable
ENM2-SU1Z EX RIW -2M-	6097167062	Version with roller 2 m cable
ENM2-SU1Z EX RIW -5M-	6097167064	Version with roller 5 m cable
ENM2-SU1Z EX RIW -9M-	6097167065	Version with roller 9 m Cable
ENM2-SU1Z EX AHT -2M-	6097185082	Version with spindle-mounted lever 2 m cable
ENM2-SU1Z EX AHT -5M-	6097185084	Version with spindle-mounted lever 5 m cable
ENM2-SU1Z EX AHT -9M-	6097185085	Version with spindle-mounted lever 9 m cable
ENM2-SU1Z EX AD -2M-	6097187092	Version with spindle-mounted lever wire 2 m cable
ENM2-SU1Z EX AD -5M-	6097187094	Version with spindle-mounted lever wire 5 m cable
ENM2-SU1Z EX AD -9M-	6097187095	Version with spindle-mounted lever wire 9 m cable
ENM2-SU1Z EX FF -2M-	6097190097	Version with spring feeler 2 m cable
ENM2-SU1Z EX FF -5M-	6097190099	Version with spring feeler 5 m cable
ENM2-SU1Z EX FF -9M-	6097190100	Version with spring feeler 9 m cable
ENM2-SU1Z EX VTW -5M-	6197100010	Version with separate actuator 5 m cable
GC-SU1Z EX IW -2M-	6092152002	Version with plunger 2 m cable
GC-SU1Z EX IW -5M-	6092152004	Version with plunger 5 m cable
GC-SU1Z EX IW -9M-	6092152005	Version with plunger 9 m cable
GC-SU1Z EX HW -5M-	6092171024	Version with lever 5 m cable
GC-SU1Z EX HW -9M-	6092171025	Version with lever 9 m cable
GC-SU1Z EX RIW -2M-	6092167012	Version with roller 2 m cable
GC-SU1Z EX RIW -9M-	6092167015	Version with roller 5 m cable
GC-SU1Z EX AHT -2M-	6092185032	Version with spindle-mounted lever 2 m cable
GC-SU1Z EX AHT -5M-	6092185034	Version with spindle-mounted lever 5 m cable
GC-SU1Z EX AHT -9M-	6092185035	Version with spindle-mounted lever 9 m cable
SD-SU1 EX -2M-	6091100002	Version with 2 m cable
SD-SU1 EX -5M-	6091100004	Version with 5 m cable
SD-SU1 EX -9M-	6091100005	Version with 9 m cable

Technical Data ENM2, GC and SD

- Rated insulation voltage 250 V
- Rated operating voltage 230 V AC
- Conventional thermal current 5 A
- Utilization category/switching capacity:
AC 15 240 V / 3 A
DC 13 250 V / 0,27 A
- Mechanical switching frequency max. 50/min
- Mechanical service life
2 × 10⁶ switching cycles
- 1 NC / 1 NO
- B10d: 4 million
- Suitable for zones 1, 2, 21, 22 (2G/2D)
- Admissible ambient temperature -20 °C to +60 °C
- Protection class IP 66/IP 67 according to IEC 60529
- Aluminium pressure die-casting enclosure
- Ex-Identification
 - II 2G Ex db IIC T6 Gb
 - II 2D Ex tb IIIC T80°C Db
- Certificate TÜV 03 ATEX 2043 X

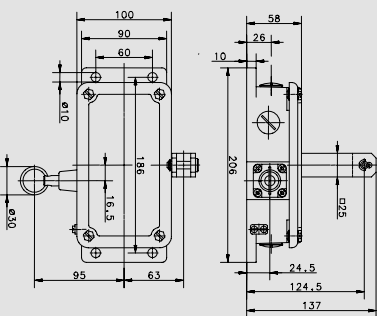
Foot Switch series F, Rope Pull Switch and Belt Alignment Switch series SI2



Belt alignment switch

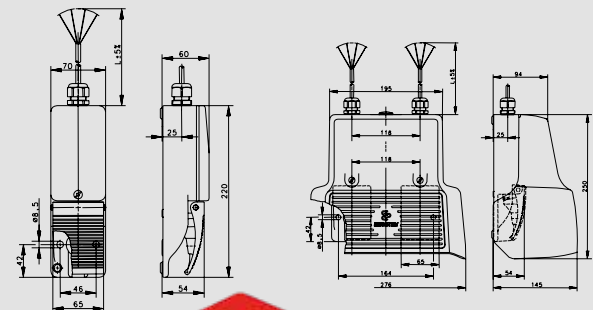
In conveyor belt applications, the safety switch prevents conveyor belts from being damaged or being destroyed as the result of the belt running off track. When the roller lever is deflected by a conveyor belt running off track the safety contacts in the switch engage, thus shutting down the conveyor belt.

Only after eliminating the cause of the malfunction can the system be restarted by means of the pull release (key ring).



Rope pull switch

BERNSTEIN double-spanned cable pull switches Si2 are also used in emergency stop applications. When the cable is pulled the switching lever is deflected in the corresponding direction and the system shut down. These rope pull switches can be used in applications with high temperature fluctuations and long cable spans. With their sturdy enclosure, these switches are perfect for harsh environments. Two cables spanned in opposite directions are attached to the switching device. The counter springs are secured to the wall at the ends of the cables. Provided the change in temperature is the same at all points along the cable, the springs will effectively compensate for the change in cable length.




Footswitch

BERNSTEIN offers you a wide range of foot switches to meet exacting requirements in industrial applications. They can be optionally equipped with an aluminium cover panel or a protective hood (UN) and have the protection class IP 66. The ambient temperature can reach from $-20\text{ }^{\circ}\text{C}$ up to $+60\text{ }^{\circ}\text{C}$. The mounting holes make it possible to anchor the foot switch to the floor. Each foot switch is equipped with four rubber feet to prevent it slipping.



The separators on multi-pedal foot switches prevent several pedals being inadvertently operated simultaneously (version without separators available on quest). Type F1–F3 foot pedals are made from aluminium.

Type	Article number	Type of switch
F1-SU1Z EX UN -2M-	6096197017	Foot switch 1 pedal with protective hood 2 m cable
F1-SU1Z EX UN -5M-	6096197019	Foot switch 1 pedal with protective hood 5 m cable
F1-SU1Z EX -5M-	6096198014	Foot switch 1 pedal without protective hood 5 m cable
F2-SU1Z/SU1Z EX UN -5M-	6096197029	Foot switch 2 pedals with protective hood 5 m cable
F2-SU1Z/SU1Z EX -2M-	6096198022	Foot switch 2 pedals without protective hood 2 m cable
SI2-U2Z AW EXD	6091295025	Belt alignment switch
SI2-U2Z AK EXD	6091288024	Rope pull switch

Technical Data SI2 series

- Rated insulation voltage 400 V
- Rated operating voltage 240 V AC
- Conventional thermal current 10 A
- Utilization category / switching capacity:
AC 15 240 V / 3 A
- Mechanical switching frequency max. 10/min
- Mechanical service life 2×10^6 switching cycles
- 2 NC/2 NO
- B10d: 4 million
- Suitable for zones 21, 22 (2D)
- Admissible ambient temperature -20 °C to $+60\text{ °C}$
- Protection class IP65 according to IEC 60529
- Metal enclosure
- Ex-Identification
 II 2D Ex tb IIIC T80°C Db
- Certificate IBEU13 ATEX 1115

Technical data foot switches

- Rated insulation voltage 250 V
- Rated operating voltage 230 V AC
- Conventional thermal current 5 A
- Utilization category / switching capacity:
AC 15 240 V / 3 A
DC 13 250 V / 0,27 A
- Mechanical switching frequency max. 50/min
- Mechanical service life 2×10^6 switching cycles
- 1 NC/1 NO
- B10d: 4 million
- Suitable for zones 1, 2, 21, 22 (2G / 2D)
- Admissible ambient temperature -20 °C to $+60\text{ °C}$
- Protection class IP66 / IP67 according to IEC 60529
- Aluminium pressure die-casting enclosure
- Ex-Identification
 II 2G Ex db IIC T6 Gb
 II 2D Ex tb IIIC T80°C Db
- Certificate TÜV 03 ATEX 2043 X

Checklist – Pre-assembled standard enclosures in Ex version

Customer	
Contact person	
Telephone	
Annual requirement	Delivered lot size

The pre-assembled standard enclosures in Ex version can be used in zones 1, 2, 21 and 22 and are delivered in the following explosion protection types:

<input type="checkbox"/> Ex ia (Intrinsic safety) II 2G Ex ia IIC T* Gb II 2D Ex ia IIIC T***C Db	<input type="checkbox"/> Ex e (Increased safety) II 2G Ex eb IIC T* Gb II 2D Ex tb IIIC T***C Db	<input type="checkbox"/> Ex e ia (Mixed assembly) II 2G Ex eb ia IIC T* Gb II 2D Ex tb IIIC T***C Db
Operating temperature range <input type="checkbox"/> Ta = -20 °C to +40 °C, T6 / T80°C (standard) <input type="checkbox"/> Ta = -20 °C to +55 °C, T5 / T95 °C (only with silicone seal) <input type="checkbox"/> Ta = -20 °C to +90 °C, T4 / T130 °C (only with silicone seal) <input type="checkbox"/> Deviating operating temperature range: _____		
Observe temperature range of terminals and cable glands of T5 and T4. Ta to -55 °C on request		

Enclosures with ATEX- and IECEx-Identification



Configuration

<input type="checkbox"/> Aluminium CA series Enclosure type: _____ Dimensions: _____ Colour: <input type="checkbox"/> RAL 7001 (standard) <input type="checkbox"/> RAL _____ <input type="checkbox"/> not painted Type of cover locking: <input type="checkbox"/> Screws cross recessed head (standard) <input type="checkbox"/> Hexagon socket head cap (from CA-210) Aluminium external articulated hinges (from CA 130): Side <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> Without external ground connection (only possible for Ex i)	<input type="checkbox"/> Polyester CP series Enclosure type: _____ Dimensions: _____ Colour: CPS = RAL 9005 CPG = RAL 7000 Surface resistance: CPS - ≤10 ⁹ Ω CPG - >10 ⁹ Ω Type of cover locking: <input type="checkbox"/> Screws cross recessed head (standard) <input type="checkbox"/> Hexagon socket head cap Aluminium external articulated hinges (from CP 220): Side <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D
Seal material: <input type="checkbox"/> Silicone (-55 °C to +130 °C) <input type="checkbox"/> EPDM (-35 °C to +80 °C)	

2.1 Internal system

<input type="checkbox"/> Mounting rail TS 15 to CA 190 / CP 195 TS 35 from CA 210 / CP 220	<input type="checkbox"/> Mounting plate			
<input type="checkbox"/> Earthing terminals Type and number of see below	<input type="checkbox"/> Protective earth conductor busbar (from CA 270 / CP 280) <input type="checkbox"/> Isolated construction			
Terminals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Customer specification
Manufacturer	Phoenix-Contact			
Conductor cross section:	2,5 mm ²		4 mm ²	
Mounting rail:	TS 35	TS 15	TS 35	TS 15
Type:	UT 2,5	MUT 2,5	UT 4	MUT 4
Operating temperature:	-60 °C to +110 °C	-60 °C to +110 °C	-60 °C to +110 °C	-60 °C to +110 °C
Current:	22 A	20,5 A	32 A	27,5 A
Voltage:	690 V	352 V	690 V	352 V
Width:	5,2 mm	5,2 mm	6,2 mm	6,2 mm
Connection:	Screw		Screw	
Earthing terminal Type:	UT 2,5-PE	MUT 2,5-PE	UT 4-PE	MUT 4-PE


Connecting terminal plate (system)	
Number of terminals:	
Number of earthing terminals:	
Arrangement of terminals:	
Identification of connecting terminal plate (ex.: X1):	
Identification of terminals (ex.: 1, 2, 3 ...):	

2.2 External system

Machining / Mounting

Side A, machined / mounted with:	M12	M16	M20	M25	M32	M40	M50	M63	Version	
									Plastic	Metal
Number of threaded holes										
Number of through holes										
Number of cable glands Ex e									<input type="checkbox"/>	<input type="checkbox"/>
Number of cable glands Ex i									<input type="checkbox"/>	<input type="checkbox"/>
Number of screw plugs									<input type="checkbox"/>	<input type="checkbox"/>
Side B, machined / mounted with:	M12	M16	M20	M25	M32	M40	M50	M63	Version	
Number of threaded holes										
Number of through holes										
Number of cable glands Ex e									<input type="checkbox"/>	<input type="checkbox"/>
Number of cable glands Ex i									<input type="checkbox"/>	<input type="checkbox"/>
Number of screw plugs									<input type="checkbox"/>	<input type="checkbox"/>
Side C, machined / mounted with:	M12	M16	M20	M25	M32	M40	M50	M63	Version	
Number of threaded holes										
Number of through holes										
Number of cable glands Ex e									<input type="checkbox"/>	<input type="checkbox"/>
Number of cable glands Ex i									<input type="checkbox"/>	<input type="checkbox"/>
Number of screw plugs									<input type="checkbox"/>	<input type="checkbox"/>
Side D, machined / mounted with:	M12	M16	M20	M25	M32	M40	M50	M63	Version	
Number of threaded holes										
Number of through holes										
Number of cable glands Ex e									<input type="checkbox"/>	<input type="checkbox"/>
Number of cable glands Ex i									<input type="checkbox"/>	<input type="checkbox"/>
Number of screw plugs									<input type="checkbox"/>	<input type="checkbox"/>

Plastic cable gland PA (-20 °C to +80 °C) Reduced impact strength (4J) at the sizes M12 to M20				
Type	Dimension	Clamping range (from to)		*
K	M12 x 1,5	3,0	5,5	15
K	M16 x 1,5	7,0	9,0	19
K	M20 x 1,5	7,0	13,0	25
K	M25 x 1,5	11,0	17,0	30
K	M32 x 1,5	12,0	21,0	36
K	M40 x 1,5	19,0	28,0	46
K	M50 x 1,5	27,0	35,0	55
K	M63 x 1,5	36,0	45,0	66

Brass cable gland (-30 °C to +90 °C)				
Type	Dimension	Clamping range (from to)		* 
M	M12 x 1,5	3,0	7,0	16
M	M16 x 1,5	4,5	10,0	20
M	M20 x 1,5	7,0	13,0	24
M	M25 x 1,5	9,0	17,0	29
M	M32 x 1,5	11,0	21,0	36
M	M40 x 1,5	19,0	28,0	45
M	M50 x 1,5	26,0	35,0	54
M	M63 x 1,5	34,0	45,0	67

* WAF in mm

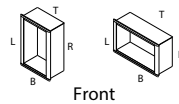
External mounting brackets (from CA 210 / CP 140):	<input type="checkbox"/> yes <input type="checkbox"/> no
Documentation: (acc. to customer specif.)	<input type="checkbox"/> Standard (German, English, French) <input type="checkbox"/> Others: _____
Accessories, remarks:	
Annexes:	<input type="checkbox"/> yes <input type="checkbox"/> no
Annexes' types: (for ex., customer drawings, written agreement etc.; if available please attach)	
The recorded data correspond to the requirements:	<input type="checkbox"/> yes <input type="checkbox"/> no
_____ Name/Signature Customer or Sales	

Checklist – Control Enclosure CC-4000Ex

Customer	*Product group	*Code	*Article number
Address			Customer No.
Telephone	Fax	Industry	
Contact person		Department	
<input type="checkbox"/> Pricing enquiry			
		Target price	Quantity
<input type="checkbox"/> Enquiry			
		*Enquiry No.	Annual requirement
<input type="checkbox"/> Order			
Delivery date			

1 Enclosure

- Standard**
- Console enclosure, upper section
- Console enclosure, lower section



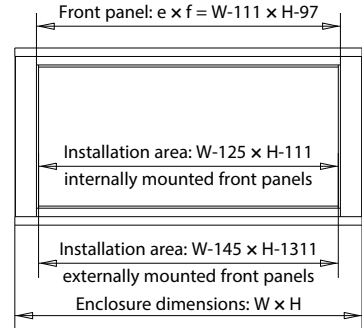
Anticipated installation weight _____ kg

2 Dimensions (mm)

Ext. enclosure dim.
Width x height (W x H) _____ x _____

***Front panel dim.**
e x f = W - 111 x H - 97 _____ x _____

***Rear panel dim.**
B x H = W - 61 x H - 47 _____ x _____



3 Enclosure depth, ext.

Frame section
with 3 mm deep FP support
 140 200 290

or _____ 52 80
with 6.5 mm deep FP support

Expansion

**Internal depth with internally mounted 4 mm FP
 68 128 228 128 68

68 128 228 128 68
The internal depth is reduced by 2.5 mm with 6.5 mm FP

Profil	52	80	120	140	148	180	188	200	208	216	248	268	276	280	290	308	328	336	348	358	368	376	396	408	418	426	428	436	456	486	496	518	A								
	37	65	105	125	133	165	173	185	193	201	233	253	261	265	275	293	313	321	333	343	353	361	381	393	403	411	413	421	441	471	481	503	I**								
52	•		•			•	•				•			•		•			•					•																	
80		•			•				•	•			•			•		•					•						•												
140				•					•			•	•					•				•							•												
200								•				•					•		•					•					•												
290															•							•					•														
68			•			•			•	•	•	•	•	•				•	•	•			•	•				•													
68						•				•			•					•						•				•													
128						•			•		•	•	•				•	•	•					•	•				•												
128																•			•					•					•												
228															•		•			•				•					•												

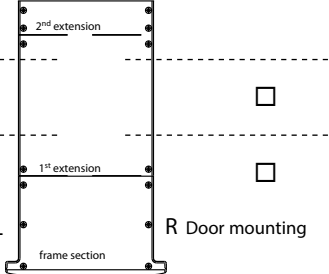
A = External depth, I = Internal depth Internal depth is increased by 7 mm for external mounting. ◆■ = Alternative combination
* Completed by BERNSTEIN AG

4 Door mounting (suspension system)

2nd extension

1st extension

Section/fixed rear panel



2nd extension

1st extension

Frame section (from 140)
Suspension system position

5 Front panel (4 mm)

- internally mounted externally mounted

Rear panel (3 mm)

externally screw-mounted

6 Lock

- | | | | |
|------------------------|--------------------------------|----------------------------|---------------------------------------|
| Square (mm) | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 (Standard) |
| Triangle (mm) | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | |
| Two-way bit (mm) | <input type="checkbox"/> 3 | <input type="checkbox"/> 5 | |
| T-handle with lock | <input type="checkbox"/> | | |
| Customer specification | <input type="checkbox"/> _____ | | |

7 Preparation for suspension system

No

Type of coupling

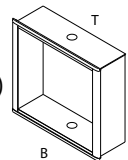
- Turn/tilt coupling (from section 128)
- Flange (see system on the right)
- Tilt adapter (from section 200)
- Coupling head CC-4000
- Spec. preparation to customer specif.

- Console connector
- CS-3000/48
- SS in section _____

System

- SL (only section 80)
- CS-3000 (from section 128)
- 80 (from section 128)
- SS cover, top
- SS cover bottom

Top



Bottom

8 Surface finish
Standard

- Horizontal sections: RAL 7043, power-coated
- Vertical sections: anodised, natural
- Front panels: anodised, natural
- Rear panels: anodised, natural

Customer specification

9 Climate control data for checking heat dissipation over enclosure surface

____ (Pv) total installed power loss ____ (°C) ambient temperature ____ (°C) max. temperature of installation

10 Application in zone

- 2 (gas) Ex nA 2 (gas) Ex i 22 (dust) Ex tc

11 Accessories, Remarks

12 General information

Protection class in zone 2 min IP54, in zone 22 min IP64. All built-in and add-on parts for zone 2 must be suitable and certified. All add-on parts are mounted at the factory. Control and operator components of all leading providers are being used.



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