

Control Panels and Accessories DATASHEET

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Tel: (+351) 21 843 64 00
Fax: (+351) 21 843 64 09
geral@bhb.pt www.bhb.pt



Local control stations for Zone 1 and Zone 21

Features

- The right size/material enclosure
- Optimum functionality thanks to the great variety of components
- Customised planning and implementation
- Certified to many standards

Description

For explosion-proof local controllers BARTEC offers an extensive range of polyester enclosures with screw fixing lid and hinged doors.

BARTEC local control stations are certified for use in hazardous areas with combustible gas or dust.

The enclosures must be produced in compliance with the requirements for the "Increased Safety" type of protection or "Protection by Enclosure".

Depending on the specification and number of equipment, various enclosure types and sizes are available. The control stations will be equipped according to your individual requirements with control units, alarm units, display units and bus interface modules.

Industrial serial products can also be fitted in the controllers for Zone 21 with the tD "Protection by Enclosure" type of protection.

The components are mounted either on DIN rails or installed on the front lid. Depending on the design and requirements, BARTEC not only

supplies control units but also offers the complete wiring to terminal blocks.

The supply range includes enclosures made of aluminium, polyester and stainless steel. These are fitted with certified modules and glands at points of penetration in the wall of the enclosure.

Fields of application

Chemical and petrochemical industry, process and plant engineering, pharmaceutical and food industry, OFF SHORE areas.

Thanks to their great variety, the enclosure are particularly suited for local control stations and bus interface units.



Explosion protection

Ex protection type

(depending on the components installed)

for Zone 1

Ex II 2(1)G Ex demq ia/ib [ia] IIA, IIB, IIC
T6, T5, T4

Ex II 2G Ex demq ia/ib [ib] IIA, IIB, IIC
T6, T5, T4

for Zone 21

Ex II 2D Ex tD [ibD] A21 IP 6X
T80 °C to T100 °C (at a distance of 5 K)

Ex II 2(1)D Ex tD [iaD] A21 IP 6X
T80 °C to T100 °C (at a distance of 5 K)

Ambient temperature

(special design on request)

-20 °C to +40 °C

-55 °C to +70 °C

Certification

PTB 02 ATEX 1159 for Zone 1

IBExU00ATEX1079 for Zone 21

IECEx PTB 10.0043

(Further certifications on request)

Technical data

Material

Type 07-3101 with lid

aluminium

ALSi 12, pressure or chill casting

RAL 7001 silver grey

Type 07-3103 with lid

glass-fibre reinforced polyester

RAL 9005, deep black

Type 07-3109 mit door

glass-fibre reinforced polyester

RAL 9011, graphite black

Type 07-3113 with door

High-quality stainless steel 304

Type 07-3132 with lid

High-quality stainless steel 316L

Enclosure with lid

Type 07-3136 with door

High-quality stainless steel 316L

Seals

EPDM (Standard)

-20 °C to +85 °C

PU (Standard at 07-3109)

-20 °C to +80 °C

Silicone

-55 °C to +100 °C

Mechanical strength

(acc. to DIN EN 60079-0: 2006)

Impact energy 7 Nm

Protection class

(higher degree of protection on request)

EN 60529/IEC 60529

max. IP 66

Electrical data

Rated voltage

up to 1000 V

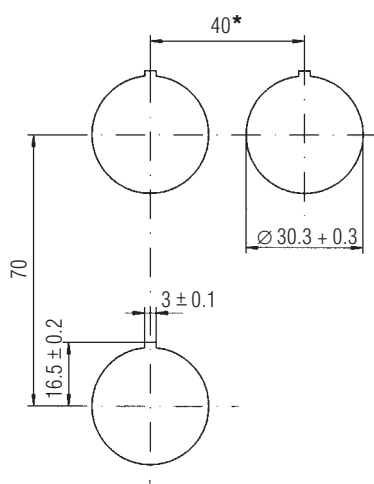
Rated current

max. 160 A depending on devices fitted

max. 125 A (for Zone 21)

Mounting dimensions

for switching and light elements according to EN 60947-5-1



* Recommended distance for mushroom pushbutton, emergency switch as well as position selector with protective shroud: 100 mm (3.94 in).

Configuration data for control stations

Type of enclosure

07-31 ☐ ☐ -

Dimensions

Width _____ Height _____ Depth _____

Nominal voltage

AC _____ V / DC _____ V

Threaded glands



Local control stations for Zone 2 and Zone 22

Features

- The right size/material enclosure
- Optimum functionality thanks to the great variety of components
- Customised planning and implementation
- Certified to many standards

Description

For explosion-proof local controllers BARTEC offers an extensive range of polyester enclosures with screw fixing lid and hinged doors.

The enclosures must be produced in compliance with the requirements for the "Increased Safety" type of protection or "Protection by Enclosure".

Depending on the specification and number of equipment, various enclosure types and sizes are available. The control stations will be equipped according to your individual requirements with control units, alarm units, display units and bus interface modules.

Industrial serial products can also be fitted in the controllers for Zone 22 with the tD "Protection by Enclosure" type of protection.

The components are mounted either on DIN rails or installed on the front lid. Depending on the design and requirements, BARTEC not only supplies control units but also offers the complete wiring to terminal blocks.

The supply range includes enclosures made of aluminium, polyester and stainless steel. These are fitted with certified modules and glands at points of penetration in the wall of the enclosure.

Fields of application

Chemical and petrochemical industry, process and plant engineering, pharmaceutical and food industry, OFF SHORE areas.

Thanks to their great variety, the enclosure are particularly suited for local control stations and bus interface units.



Explosion protection

Ex protection type

(depending on the components installed)

for Zone 2

Ex II 3G Ex nA nC nL [nL]
IIA, IIB, IIC T6, T5 or T4

Ex II 3(1)G Ex nA nC nL [ia]
IIA, IIB, IIC T6, T5 or T4

Ex II 3(2)G Ex nA nC nL [ib]
IIA, IIB, IIC T6, T5 or T4

for Zone 22

Ex II 3D Ex tD A22 IP 6X
T 80 °C to 100 °C

Ex II 3(1)D Ex tD [iaD] A22 IP 6X
T 80 °C to 100 °C

Ex II 3(2)D Ex tD [ibD] A22 IP 6X
T 80 °C to 100 °C

Ambient temperature

(special design on request)

-20 °C to +40 °C

-55 °C to +70 °C

Technical data

Material

Type 07-3101 with lid

aluminium
ALSi 12, pressure or chill casting
RAL 7001 silver grey

Type 07-3103 with lid

glass-fibre reinforced polyester
RAL 9005, deep black

Type 07-3109 mit door

glass-fibre reinforced polyester
RAL 9011, graphite black

Type 07-3113 with door

High-quality stainless steel 304

Type 07-3132 with lid

High-quality stainless steel 316L
Enclosure with lid

Type 07-3136 with door

High-quality stainless steel 316L

Seals

EPDM (Standard)

-20 °C to +85 °C

PU (Standard at 07-3109)

-20 °C to +80 °C

Silicone

-55 °C to +100 °C

Mechanical strength

(acc. to DIN EN 60079-0: 2006)

Impact energy 7 Nm

Protection class

(higher degree of protection on request)

EN 60529/IEC 60529

max. IP 66

Electrical data

Rated voltage

up to 1000 V

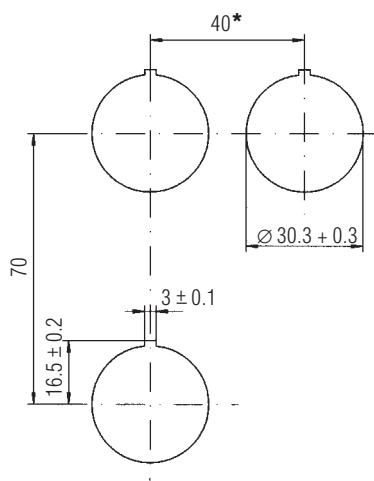
Rated current

max. 160 A depending on devices fitted

max. 125 A (for Zone 22)

Mounting dimensions

for switching and light elements according to EN 60947-5-1



* Recommended distance for mushroom pushbutton, emergency switch as well as position selector with protective shroud: 100 mm (3.94 in).

Configuration data for control stations

Type of enclosure

A7-31 ☐ ☐ -

Dimensions

Width _____ Height _____ Depth _____

Nominal voltage

AC _____ V / DC _____ V

Threaded glands



The TNCC range of control stations / enclosures are manufactured in 316 stainless steel and designed to meet the requirements for use on and offshore, in petrochemical and marine applications and for any other industry where an explosive atmosphere may be present.

Specifications

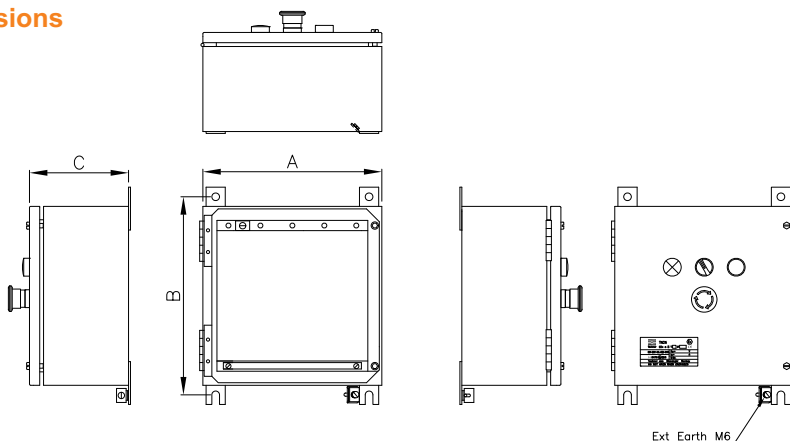
Material	Acid resistant Stainless steel AISI316L
IP Rating	IP66 standard (67 and 68 upon request)
Temperature	-40°C to +60°C
Approvals	
- Atex	DNV-2003-OSL-ATEX-0042
- Brazilian	09/UL-BRCN-0004
- GOST	GOST Certificate
Standards	EN/IEC: 60079-0, 60079-1, 60079-7, 60079-18, EN: 61241-0, 61241-1
Lid/Door gasket	Neoprene (temp. -40°C to +100°C) Silicone (temp. -40°C to +200°C)
Surface treatment	Acidized Pickling as standard Electropolished as an option
Material thickness	Min. 1.5 mm (depending on the box size)
Earthing	Internal earth bar/bracket External earth bracket
Drain Plug	Optional
Other options	Ref. TNCN

TNCC Measurement Range of Stocked Boxes

Type	A Width cm	B Height cm	C Depth cm	Volume dm ³	Weight kg
121009	12	10	9	1.08	1.5
151510	15	15	10	2.25	2.5
202010	20	20	10	4.00	3.0
202015	20	20	15	6.00	3.5
204015	20	40	15	12.00	5.4
282815	28	28	15	11.76	5.2
282827	28	28	27	21.17	7.0
302015	30	20	15	9.00	5.0
383815	38	38	15	21.66	8.1
383827	38	38	27	38.99	10.3
384515	38	45	15	25.65	8.9
385715	38	57	15	32.49	10.7
575715	57	57	15	48.74	16.4
575730	57	57	30	97.47	21.4
577620	57	76	20	77.98	21.7
769520	76	95	20	13.00	32.9



Dimensions





Limit Monitor

Description

The limit value transmitters of Types 07-31...-.../... are deployed in conjunction with pneumatic actuators on valves and fittings.


They serve to signal the "open/closed" status of a fitting. This end position is communicated by means of up to a maximum of 6 limit switches in the "Ex d" type of protection or by means of 6 proximity initiators in conformance to NAMUR in the "Ex i" type of protection. In intrinsically safe proximity initiators there is a choice of slot initiators or V3 initiators.

The limit monitors are available in polyester, aluminium and stainless steel. The metal versions can be used in temperatures down to -60 °C – depending on the fitted components.

To ensure mechanical adaptability to the pneumatic actuators, we supply 4 consoles according to VDI/VDE 3845.

The BARTEC limit monitors can be used in hazardous (potentially explosive) areas in Zone 1 and 2 in accordance with the certified explosion sub-groups IIA, IIB and IIC and the temperature classes T5/T6 and in Zone 21 and 22 in accordance with the certified max. surface temperature.

Selection chart for Standard-Limit Monitors

		Console Dimensions (mm)			 Order no.
		A	B	H	
		for Zone 1 + 2 and 21 + 22			
	Aluminium enclosure black (220 x 120 x 90 mm)				
Ex e d m Picture 1	Console VDI/VDE 3845	130	50	75	
	Console VDI/VDE 3845	130	30	55	
	Console VDI/VDE 3845	80	30	55	
	Console VDI/VDE 3845	80	20	45	
	Connection dimensions DIN EN ISO 5211 F05	without console			
	Polyester enclosure black (220 x 120 x 90 mm)	for Zone 1 + 2 and 21 + 22			
Ex e d m Picture 1	Console VDI/VDE 3845	130	50	75	
	Console VDI/VDE 3845	130	30	55	
	Console VDI/VDE 3845	80	30	55	
	Console VDI/VDE 3845	80	20	45	
	Connection dimensions DIN EN ISO 5211 F05	without console			
	Polyester enclosure black (110 x 75 x 55 mm)	for Zone 1 + 2 and 21 + 22			
Ex e d m Picture 2	Console VDI/VDE 3845	130	50	75	
	Console VDI/VDE 3845	130	30	55	
	Console VDI/VDE 3845	80	30	55	
	Console VDI/VDE 3845	80	20	45	
	Connection dimensions DIN EN ISO 5211 F05	without console			
	Stainless-steel enclosure (150 x 150 x 80 mm)	for Zone 1 + 2 and 21 + 22			
Ex e d m Picture 3	Console VDI/VDE 3845	130	50	75	
	Console VDI/VDE 3845	130	30	55	
	Console VDI/VDE 3845	80	30	55	
	Console VDI/VDE 3845	80	20	45	
	Connection dimensions DIN EN ISO 5211 F05	without console			



Explosion protection

Ex protection type (max.) dependent on the installed parts
Ex II 2G Ex e d mb ia or ib IIC T6 or T5 Gb
Ex II 2D Ex tb IIIC T90 °C Db

Certification IBExU02ATEX1126
IECEx IBE 13.0038

Ambient temperature -60 °C to max. +70 °C

Technical data

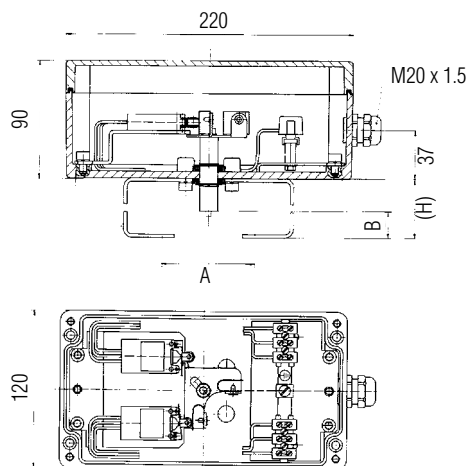
Protection class Enclosure IP 65/67 according to EN 60529 and IEC 60529

Material Type 07-31A cast aluminium
Type 07-31B polyester black
Type 07-31D high quality stainless steel

Mounting console and connection dimensions according to DIN EN ISO 5211 F05 resp. VDI/VDE 3845

Connection Ex glands M20 x 1.5 resp. M16 x 1.5

Picture 1



Aluminium enclosure 220 x 120 x 90 mm
Polyester enclosure 220 x 120 x 90 mm

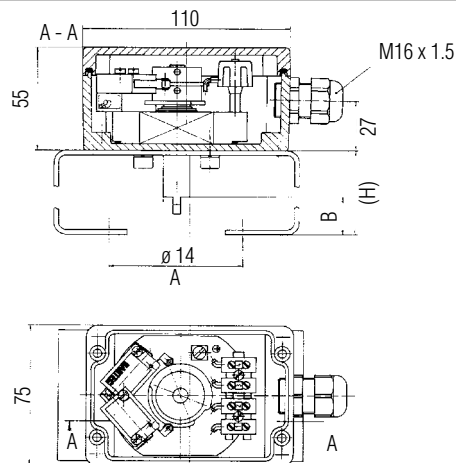
Built-in

2 microswitches
Ex protection type Ex e d IIC
Switching function changeover contact

Cable connection via Ex e modular terminals. An Ex e cable gland is provided for the cable connection M20 x 1.5 (6 to 12).

The version with enclosure dimensions 220 x 120 x 90 mm optionally provides additional terminals for the connection of a magnetic valve.

Picture 2



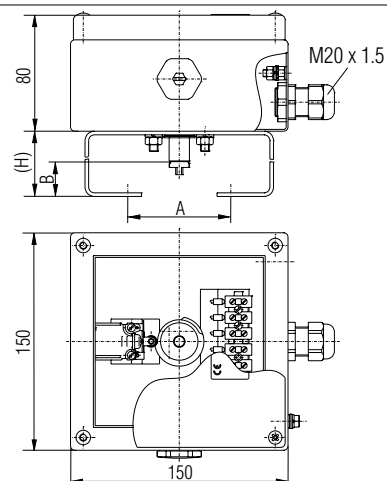
Polyester enclosure 110 x 75 x 55 mm

Built-in

2 micro-switches
Ex protection type Ex e d IIC
Switching function NO contact

The cable is connected to Ex e-rail-mounted terminals. An Ex e-cable gland is provided to insert the cable M16 x 1.5 (5 to 10).

Picture 3



Stainless-steel enclosure 150 x 150 x 80 mm

Fitted components

2 microswitches
Ex protection type Ex e d IIC
Switching function Changeover contact

The cable is connected to Ex e-rail-mounted terminals. An Ex e-cable gland is provided to insert the cable M16 x 1.5 (6 to 12).



Flameproof control unit

Features

- Variety of covers
- Variety of connection possibilities
- Bushings can be fitted on all sides
- Flange surfaces for mounting enclosures
- Low weight

Description

As flameproof control unit, this Ex d enclosure from BARTEC provides a compact solution for the installation of standard industrial products, whereby components such as contactors and relays are installed in a flameproof enclosure.

The enclosure is light, flexible with respect to wiring systems, may be flange mounted and can be equipped with electrical or mechanical line bushings on the sides and in the lid. The different versions of lids enable the installation of display units or devices with control buttons. The installation of Ex i assemblies is also permitted.

Types of connection

Flameproof control units may be connected either with direct cable entry by means of Ex d cable glands or indirectly using an Ex e junction box. The electrical connection between Ex d and Ex e area takes place using Ex d line bushings with terminals. Control devices and display units can be installed in the junction box.

Note:

The use of an empty enclosure requires an acceptance inspection by a notified body.

➤ Explosion protection

Ex protection type max.

Dependent on the installed components;
Observe the information on the type label.

ATEX Ex protection type

⊕ II 2 G Ex db eb ia/ib [ib]
IIA, IIB resp. IIC T6, T5 resp. T4

⊕ II 2 (1) G Ex db eb ia/ib [ia]
IIA, IIB resp. IIC T6, T5 resp. T4

Certification

Ex d control unit
PTB 03 ATEX 1138

Empty enclosure
PTB 03 ATEX 1137 U

IECEx Ex protection type

Ex db eb ia/ib [ib]
IIA, IIB resp. IIC T6, T5 resp. T4

Ex db eb ia/ib [ia]
IIA, IIB resp. IIC T6, T5 resp. T4

Certification

Ex d control unit
IECEx PTB 11.0038

Empty enclosure
IECEx PTB 11.0026U

Ambient temperature

Dependent on the installed components;
Observe the information on the type label.

Operating temperature

-20 °C to +55 °C

Approved for

Zone 1 and 2

➤ Technical data

Power dissipation

max. 67 W
(depending on version and type of protection)

Protection class

max. IP 54 (IEC 60529)

Rated cross-section of conductor

max. 16 mm²

Weight

approx. 4 kg
(depending on the version)

Enclosure material

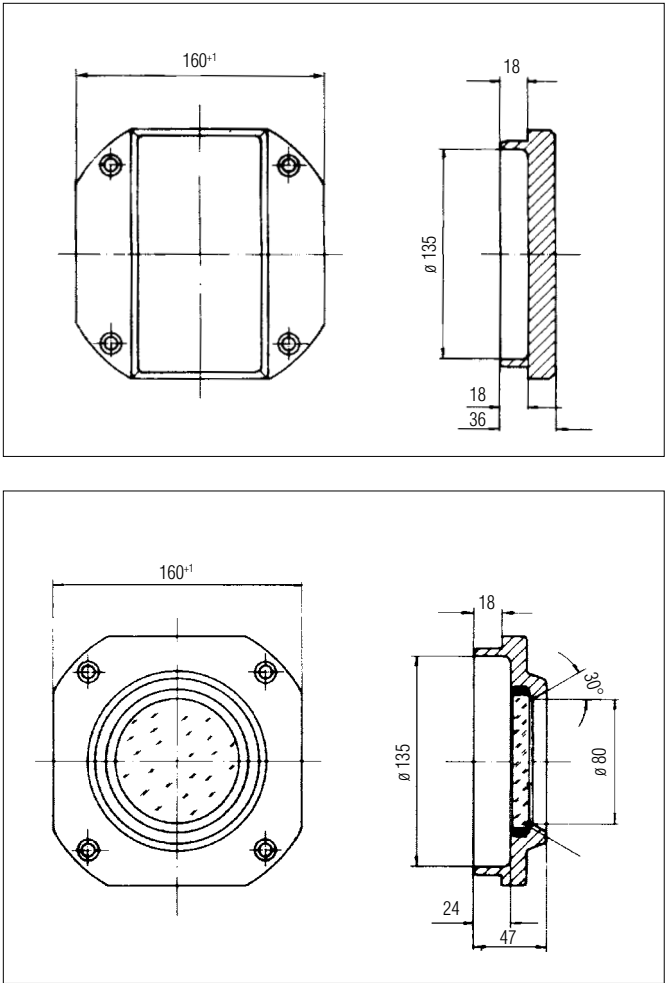
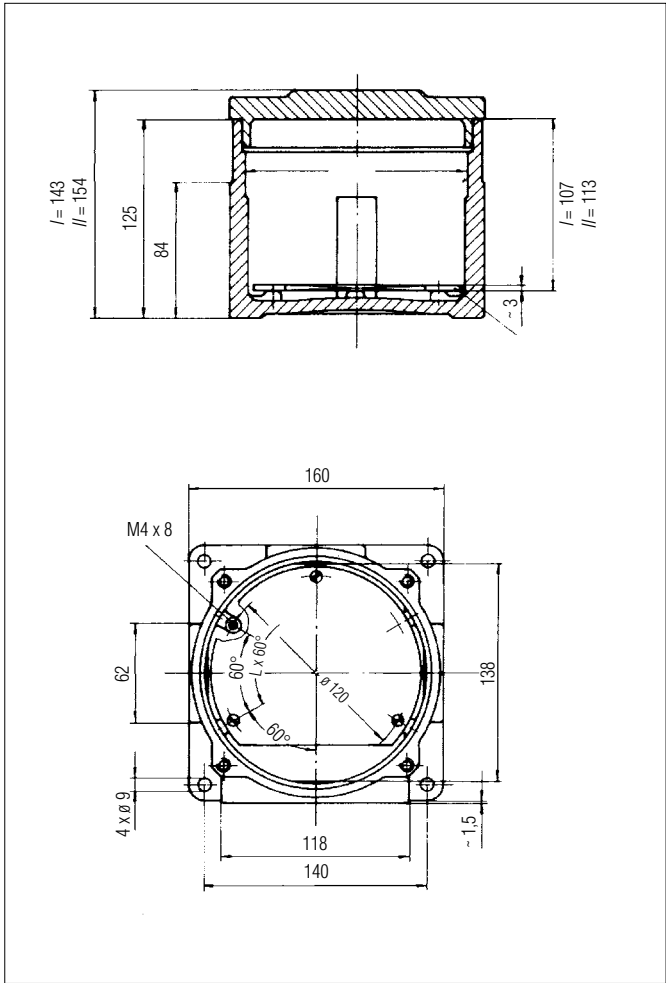
aluminium

Rated voltage

max. 690 V

Rated current

max. 104 A



Versions to specification, please give particulars in pain text.



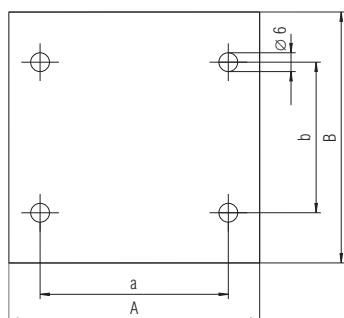
Control stations in flameproof enclosures for Zone 1 + 2 and for Zone 21 + 22

BARTEC



Control stations in flameproof enclosures

Dimensions Mounting plate



Description

The control stations in flameproof enclosure of the GUB series in compact design allow standard electronics and control components to be installed. The enclosure is light; numerous connection systems can be used; flanging is possible; can be equipped with electrical or mechanical bushings at the edges.

The GUB control stations can be applied in hazardous areas, Zone 1 and Zone 2 as well as in areas endangered by flammable dusts, Zone 21 and Zone 22.

Explosion protection

Ex protection type

- Ex II 2D Ex td A21 [ia]
IP 66 T85 °C or 100 °C
- Ex II 2(1)G Ex de [ia] IIC T6 or T5

Certification

KEMA 08 ATEX 0123

Technical data

Protection class

IEC 60529
max. IP 66

Enclosure material

copper-free aluminium pressure casting

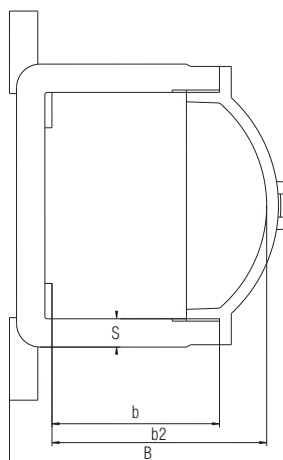
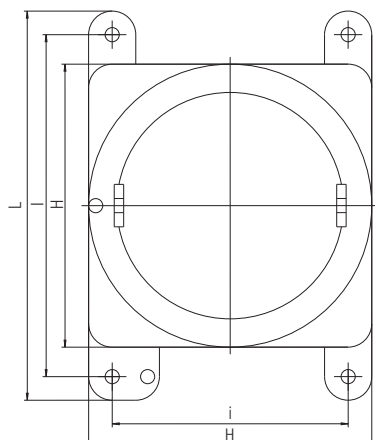
Surface

Acrylic varnish, similar to RAL 7016

Electrical connection

Directly through cable entry or cable gland
or mounted Ex e enclosure

Dimensions





Control stations in flameproof enclosures

for Zone 1 + 2 and for Zone 21 + 22

BARTEC

Enclosure										
Type	➔ Order no.	Dimensions (mm)								Weight (kg)
		B	b	b2	H	I	i	L	S	
GUB		116	81	91	120	145	100	165	12	1.6
GUB 0		130	89	98	150	174	126	198	12	2.6
GUB 01		139	99	108	174	195	150	218	12	3.6
GUB 02		165	113	130	230	267	196	302	12	6.4
GUB 03		217	158	181	276	316	236	356	12	11.4
GUB 04		290	185	215	430	480	390	520	16	29.4

Mounting plate					
Type	Enclosure	A	B	a	b
GUB	07-4120	80	80	60	48
GUB 0	07-4140	100	100	80	60
GUB 01	07-4150	115	115	90	90
GUB 02	07-4160	150	150	130	130
GUB 03	07-4170	170	170	158	158
GUB 04	07-4180	270	270	230	230

Selection chart			
Enclosure size	Code no.	Cover variants	Code no.
120 x 120 GUB		closed	
150 x 150 GUB 0			
174 x 174 GUB 01			
230 x 230 GUB 02		with window only for GUB 0, GUB 01, GUB 02, GUB 03	
276 x 276 GUB 03			
430 x 430 GUB 04			



Control and switchgear units with metal flameproof enclosures

Description

These BARTEC enclosures offer a variety of options for control equipment in Ex areas. Flameproof enclosures in compliance standard with EN are available for electrical devices such as contactors, relays, barriers, electronic controllers and PLC-D/A-modules.

BARTEC flameproof cable bushings are provided for cable interconnections between the Ex d & EEx e enclosures. Inside the Ex e enclosure the conductors are connected to Ex e terminal blocks. The pushbuttons, switches and LEDs are located on the cover of the EEx e enclosure.

➤ Explosion protection

Ex protection type max.

depends on the fitted components; observe the specifications on the type label

Ex II 2G Ex de ia/ib [ia] IIA, IIB, IIC
T6, T5, T4

Ex II 2G Ex de ia/ib [ib] IIA, IIB, IIC
T6, T5, T4

Certification

PTB 03 ATEX 1024

Ambient temperature

-20 °C to +40 °C

➤ Technical data

Power dissipation

max. 80 W to 1350 W
(depends on the version and type of protection)

Protection class

according to IEC 60529

IP 54 (IEC 60529)

IP 66 on request

Rated cross-section of conductor

up to 300 mm²

Weight

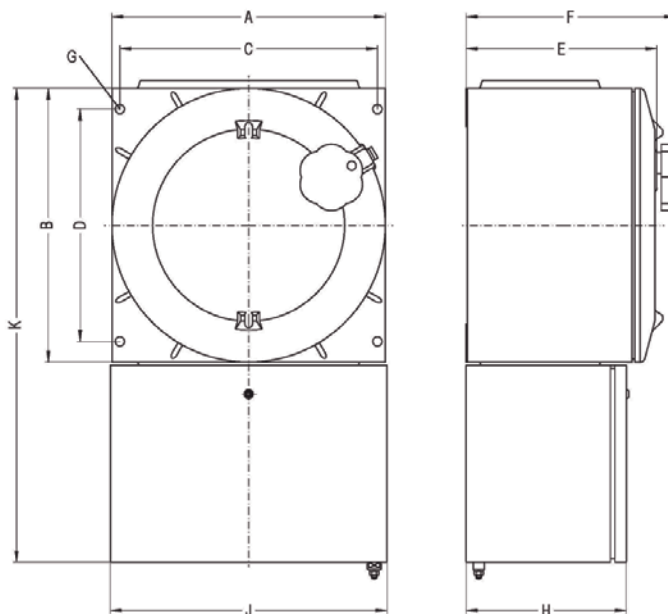
approx. 8 kg to approx. 320 kg

Mechanical strength

Impact energy max. 7 Nm



Dimensions



Selection chart (Dimensions in mm)

A	B	C	D	E	F	G	H	J	K	
210	210	187	145	180	203	2x ø14	128	216	450	
210	210	187	145	180	-	2x ø14	128	216	450	
320	320	295	255	180	203	2x ø14	128	326	634	
320	320	295	255	180	-	2x ø14	128	326	634	
320	320	295	255	300	329	2x ø14	252	326	634	
320	320	295	255	300	-	2x ø14	252	326	634	
430	430	405	365	300	329	4x ø14	252	326	744	
430	430	405	365	300	-	4x ø14	252	326	744	
650	650	600	505	480	517	4x ø24	252	345	1100	
650	650	600	505	480	-	4x ø24	252	345	1100	
430	650	405	505	300	329	4x ø14	252	326	964	
430	650	405	505	300	-	4x ø14	252	326	964	

¹ Version without inspection window.

If required, the enclosure can be supplied with an inspection window. (Please ask!)



Ex d control units

Features

- Standard components
- Cost-effective; also applies to spare parts
- Easy-to-service
- Expandable

Description

The BARTEC ATEX certified Ex d control panels are constructed according to protection type Ex d, flameproof encapsulation. Standard components such as switches, contactors and relays are mounted in an explosionproof enclosure constructed in such a way as to keep internal explosions from igniting the surrounding atmosphere.

Ex d control panels are usually custom-built in close cooperation with the customer himself for his special application.

Version

Flameproof control panels are available either with direct cable-entries through Ex d cable-glands or with indirect cable-entries through a junction box with protection type increased safety Ex e.

The electrical wiring between Ex d and Ex e enclosure will be done through Ex d line bushings.

Fields of application

- Zone 1 + 2 and zone 21 + 22
- Gas groups IIA and IIB
- Temperature class T4/T5 or T6

Explosion protection

Explosive atmospheres can occur wherever flammable gases, liquids or materials are processed, transported and stored. It is therefore necessary to take appropriate measures to prevent possible explosions. BARTEC protects people and the environment by the safety of components, systems and plant safe.

When the 94/9/EC (ATEX 95) guideline comes into force on 01/07/2003, explosion protected operating equipment must be properly installed in accordance with EN 60079-14. Our safety standards comply to the national directives for commissioning, maintenance and repair of electrical devices; construction and manufacturing according to the CENELEC standards EN 60079-0/EN 60079-11/EN 60079-18/EN 60079-25.

Three Ex groups of flammable gases can be introduced following safety gaps and/or minimum ignition currents determined in experiments.

- IIA** e. g. ethane, methane, petrol
- IIB** e. g. ethylene, dimethylether, towngas
- IIC** e. g. hydrogen, acetylene, sulphur carbonate

Further selection criteria is the categorizing into temperature classes. The device temperature is added to a supposed ambient temperature of +40 °C and divided in the following six temperature classes:

- T1** +450 °C
- T2** +300 °C
- T3** +200 °C
- T4** +135 °C
- T5** +100 °C
- T6** +85 °C



Explosive areas have three different zones:

Zone 0

(Category 1G-devices necessary)

A place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist is present continuously, for long periods or frequently.

Zone 1

(Category 1G- or 2G-devices necessary)

A place in which an explosive atmosphere consisting of a mixture with air or flammable substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.

Zone 2

(Category 1G-, 2G- or 3G-devices necessary)

A place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Electrical control panels contain switches, relays, pushbutton etc. which may produce a spark when they switch. In order to keep such sparks or other hot spots from causing an explosion, the components are housed within flameproof enclosures.

Explosion protection

Ex protection type

- Ex II 2G Ex d...IIB, IIB+H2
T6 or T4
- Ex II 2(1, 2 or 3)G Ex d...IIB, IIB+H2
T6 or T5
- Ex II 2D Ex td...A21 IP6X
T80 °C to T130 °C
- Ex II 2(1, 2 or 3)D Ex td...A21 IP6X
T80 °C to T130 °C

Certification

KEMA 08 ATEX 0123

Technical data

Nominal voltage

AC 1000 V
DC 1500 V

Operating voltage

25 kV

Rated current

1000 A

Protection class

IP 65/IP 66/IP 67

Material

Aluminium alloy < (Cu 0.05%)
Stainless steel 1.4404

Selection chart

Name	Dimensions (mm) outside			Dimensions (mm) inside			empty weight kg
	width	height	depth	width	height	depth	
EJB 1	198	298	197	140	240	145	8.5
EJB 2	218	418	208	160	360	150	14.2
EJB 3	278	358	268	220	300	210	17.8
EJB 3B	278	358	208	220	300	150	16.4
EJB 4	332	432	288	260	360	230	24.1
EJB 4B	332	432	223	260	360	165	23.2
EJB 45	380	560	295	490	305	210	35.0
EJB 45B	360	560	245	490	305	160	27.0
EJB 5	432	632	341	360	560	275	56.5
EJB 5B	432	632	271	360	560	205	49.9
EJB 503	432	632	397	360	560	330	61.6
EJB 55	510	710	455	430	630	380	98.6
EJB 55B	510	710	350	430	630	280	77.4
EJB 6	640	860	470	540	760	315	170.0
EJB 6B	640	860	370	540	760	215	150.0
EJB 7	700	1000	500	590	890	340	235
EJB 7B	700	1000	400	590	890	240	210

It is possible to combine the various enclosures.



Flameproof enclosures



Flameproof Enclosures

TNCD/TNBCD

BARTEC **TECHNOR**

The TNCD / TNBCD range comprises of many standard sizes of enclosures manufactured in stainless steel 316L/CF-3M, for maximum environmental protection.

The enclosures allow for standard electrical components inside. Thus subsequent replacement and maintenance of the installed components is easy, and may be performed by skilled electricians. If required, several enclosures may be assembled on a framework, with separate or common Ex e/i connection boxes. The enclosures can be delivered empty with U-component certificate, or supplied fully assembled according to client's demands.

- Flexible product range with many standard sizes
- Ingress protection, IP66 as standard, to meet harsh environment.
- Wide temperature range
- Many cable entry possibilities
- Several earthing options

Applications

The TNCD / TNBCD range of enclosures are designed to meet the harsh environments of the North Sea and are also ideal for Petrochemical and Marine applications as well for all kind of industry where an explosive atmosphere may be present. Thousands of BARTEC TECHNOR enclosures are installed on- and offshore. If you should have a particular need, our sales staff will be happy to advise on this.

General Specifications

Material	Stainless steel 316L/CF-3M
IP rating TNCD	IP66 (IP67 upon request)
IP Rating TNBCD	IP66 (IP67 and IP68 upon request)
Temperature TNCD	-20°C - +40°C, option -40°C - +60°C
Temperature TNBCD	-20°C - +50°C, option -50°C - +60°C
Approvals TNCD	
- ATEX	
* Component	NEMKO 03ATEX263U
* Complete	DNV-2003-OSL-ATEX-0135
* IEC	IECEx NEM 10.0001U
Approvals TNBCD	
- ATEX	
* Component	NEMKO 03ATEX264U
* Complete	DNV-2003-OSL-ATEX-0136
* IEC	IECEx NEM 10.0003U
Standards	EN/IEC: 60079-0, 60079-1
Ex-Code	⊕ II 2 G/D or II 2(1/2)G/D
- TNCD	Ex d IIC T6 – T4
- TNBCD	Ex d IIB T6 – T4
Surface treatment	Shot blasted
Earthing between	
Ex d and Ex e/i enclosures	Through the flange assembly
Lid	With or without hinges, depending on size

- May be used with an Ex e/i connection box
- Window may be fitted in cover and all sides
- Motor starters
- Alarm panels for offshore containers
- Zenerbarriers
- Transformers
- Charging units
- PLCs
- Control panels
- Terminal boxes
- High operational reliability and reduced lifetime maintenance costs
- ATEX, IEC and GOST approved





Flameproof Enclosures

TNCD/TNBCD

BARTEC **TECHNOR**

Viewing window TNCD

The window is placed in centre of the lid.
Windows (ø65) can also be placed on the sides or back wall. Viewing windows are available with the following diameters: 65mm, 100mm and 154mm.

Enclosure type	Maximum window diameter
TNCD 1919XX	65mm
TNCD 2828XX	100mm
TNCD 3838XX	100mm
TNCD 5757XX	154mm

Measurement table for Ex d IIC Explosion proof enclosures

External dimensions						Internal dimensions				Fixing dimensions	
TNCD	Wide A	Height B	Depth C	Total Depth D	Lid aperture	Wide a	Height b	Depth c	Kg	H	I
191918	190	190	180	213	150	170	170	131	16	166	166
282827	280	280	270	300	235	260	260	217	37	256	256
383827	380	380	270	300	335	360	360	217	60	356	356
575727	570	570	270	300	500	550	550	213	125	546	546

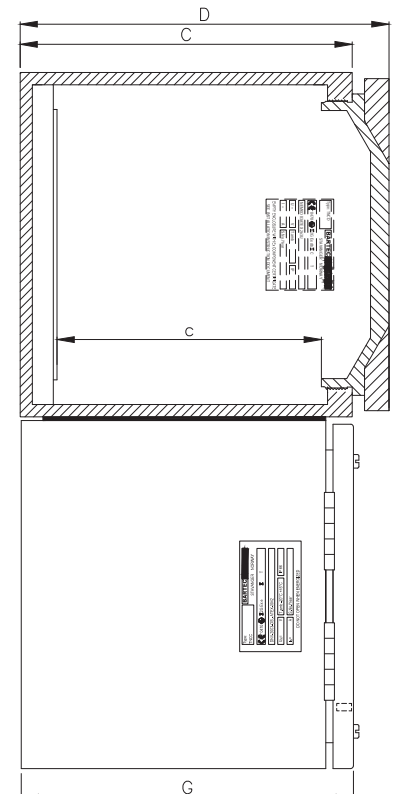
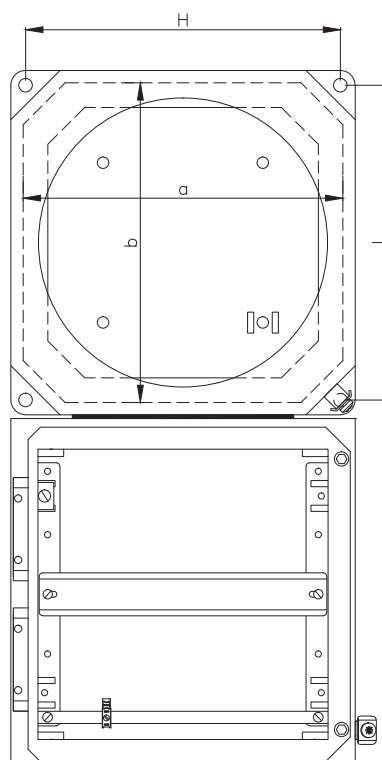
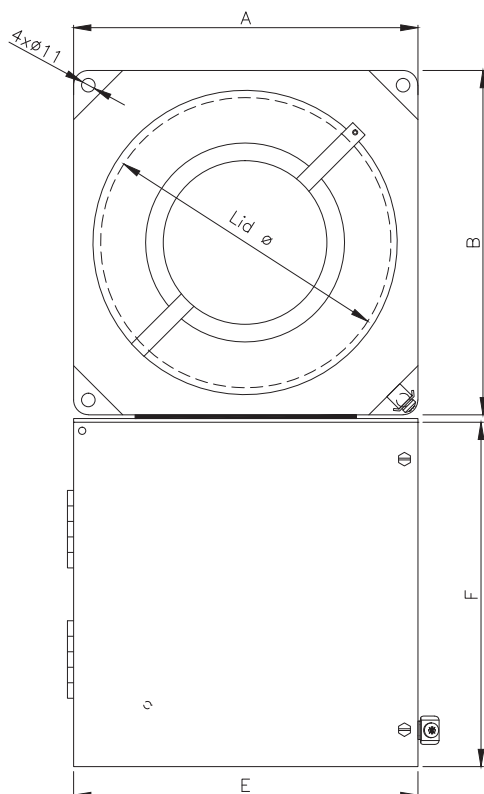
Measures in mm. Other sizes upon request.

Measurement table for Ex e connection boxes

TNCC	E (Wide)	F (Height)	G (Depth)	Kg
191918	190	190	180	3,0
281927	280	190	270	4,4
282827	280	280	270	6,6
381927	380	190	270	4,6

TNCC	E (Wide)	F (Height)	G (Depth)	Kg
383827	380	380	270	10,5
571927	570	190	270	9,6
573827	570	380	270	13,4
575727	570	570	270	19,7

Measures in mm. Other sizes upon request.





Flameproof Enclosures

TNCD/TNBCD

BARTEC **TECHNOR**

Measurement table for Ex d IIB Explosion proof enclosures

External dimensions						Internal dimensions				Fixing dimensions		Mounting plate	
TNBCD	Wide A	Height B	Depth C	Total Depth D	Window	Wide a	Height b	Depth c	Kg	L1	H1	L	H
262531	300	290	280	315	65/100	226	216	265	16	230	290	210	196
323321	360	370	180	215	65/100	286	296	165	37	360	300	266	280
453535	490	390	320	355	65/100/154	416	316	305	60	420	390	400	296
573835	615	420	320	355	65/100/154	541	346	305	125	545	420	525	326

Measures in mm. Other sizes upon request.

Measurement table for Ex e connection boxes

TNCC			
	E	F	G
202025	200	200	255
252015	250	200	155
383825	380	380	255
453825	450	380	255

Measures in mm.



Control and indication equipment can be fitted directly into the cover of an Ex d enclosure, or in the Ex e connection box.

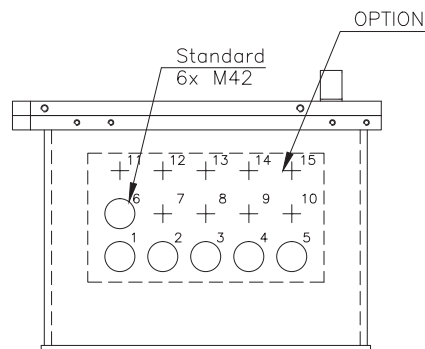
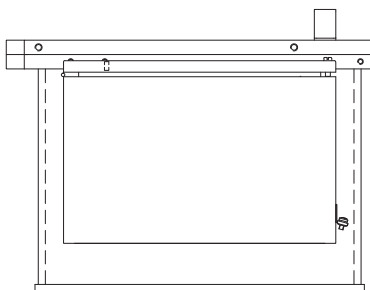
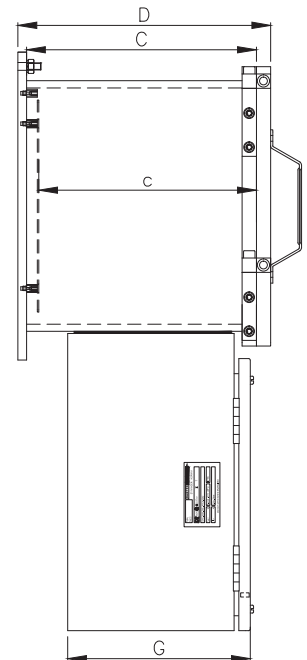
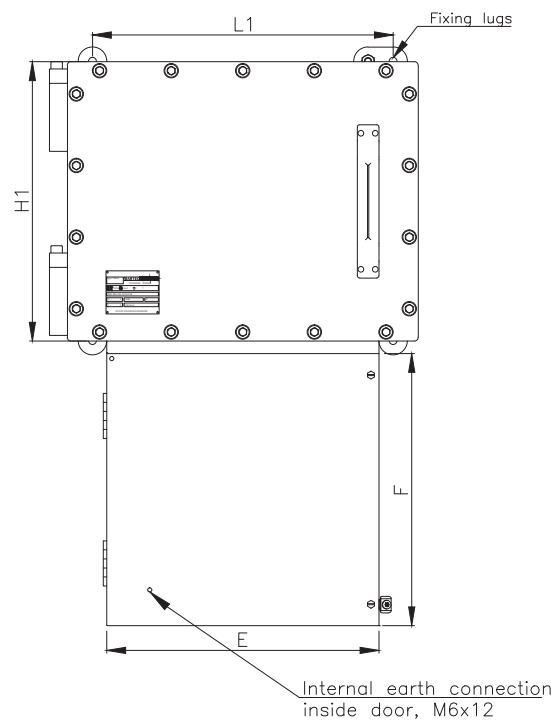
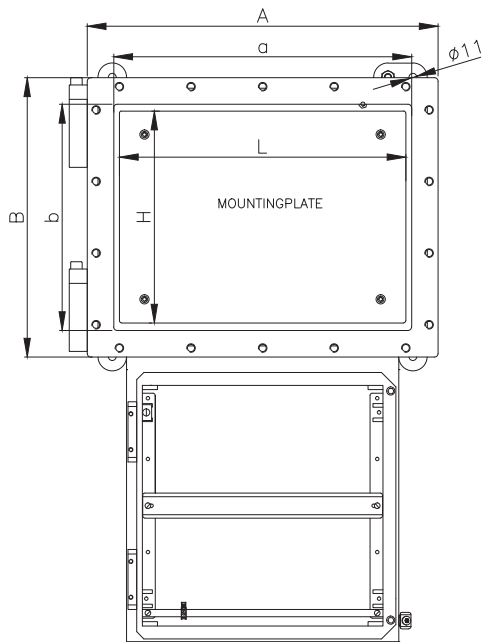




Flameproof Enclosures

TNCD/TNBCD

BARTEC **TECHNOR**



Options:

Ex d enclosure with windows in lid ($\phi 65$ or $\phi 100$) or base ($\phi 65$).

Lamps or switches in lid or base, for Ex d enclosure, as well as Ex e enclosure.

* Option: Without hinges but with a support below the lid. (Holding the lid in correct position while fitting)

Material Stainless steel 316L.



Flameproof Enclosures

TNCD/TNBCD

BARTEC **TECHNOR**

Hazardous area information & terminology

ATEX Directive

The ATEX Directive, derived from the French “AT mosphères EXplosibles” and formally known as 94/9/EC, contains the ESR (Essential Safety Requirements) to which electrical equipment and protective systems used within potentially explosive atmospheres must conform.

The new ATEX Directive currently in place within the European Union was made mandatory on 1st July 2003. Primarily intended for manufacturers of hazardous area equipment for use in the presence of flammable gases, vapours, fumes or dusts, the new directive requires a quality management system to be implemented.

Procedures for the design, manufacture and verification of products are to be approved by a notified body (i.e. DNV, NEMKO, etc.) and all equipment conforming to the new directive will feature CE and Ex Marking.

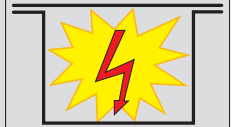
Zone Classification with the presence of GAS

Zone 1 (Category 2)	An area in which explosive gas is likely to be present during normal operation of the plant.
Zone 2 (Category 3)	An area in which explosive gas is not continuously present, but may exist for a short period of time.

Applicable EX protection

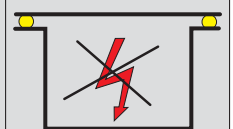
Ex d Protection

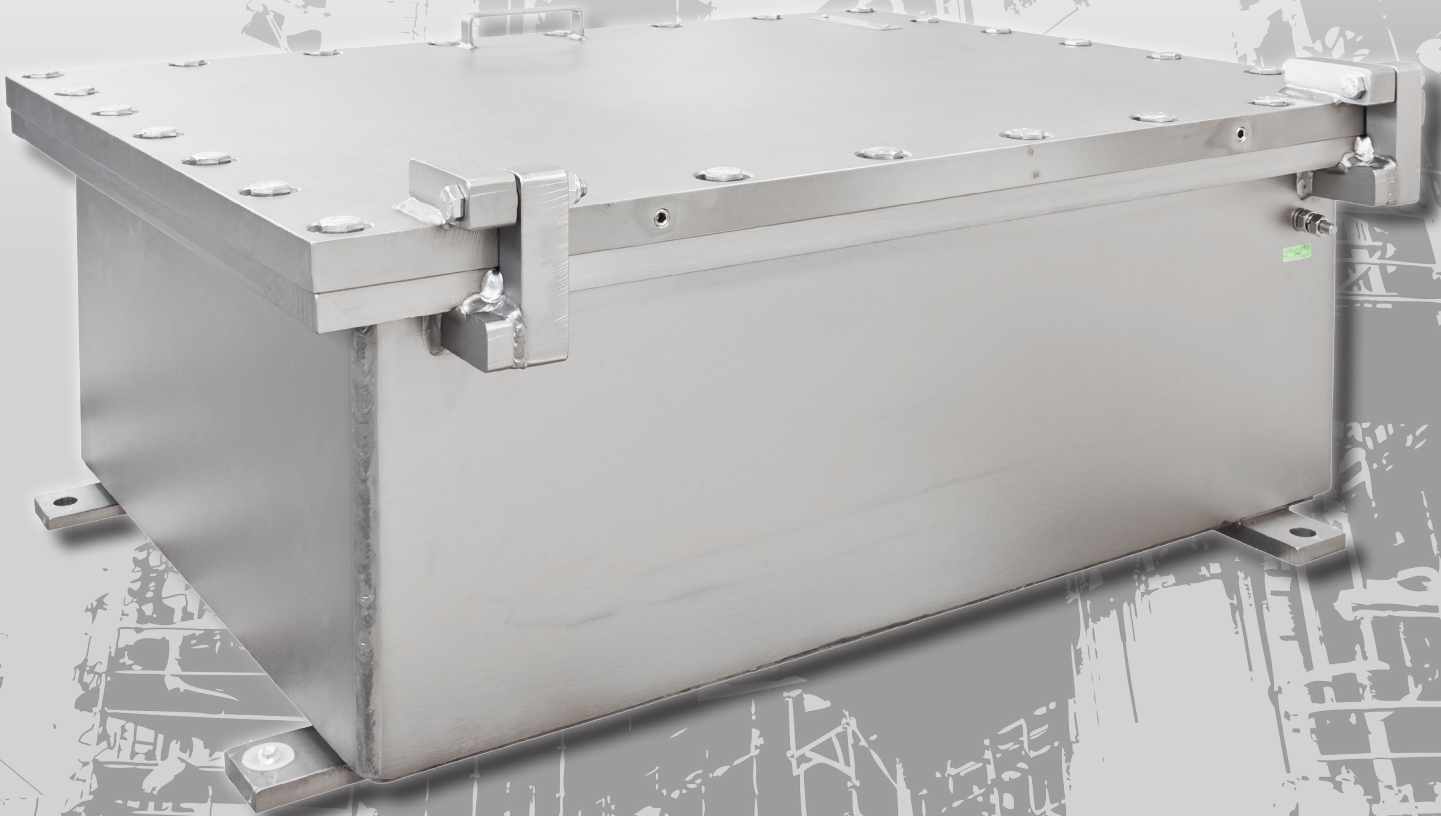
Parts, which can ignite a potentially explosive atmosphere, are surrounded by an enclosure, which are designed to withstand the pressure of an internal explosion and to prevent the propagation of the explosion to the atmosphere surrounding the enclosure.



Ex e Protection

for electrical components that do not spark under normal working conditions but where measures are applied to prevent high temperatures and the occurrence of arcs and sparks internally.





Flameproof Enclosures



Flameproof Enclosures

DE8BC

BARTEC **TECHNOR**

The DE8BC range comprises many standard sizes of enclosures manufactured in stainless steel 316L and/or in painted carbon steel. The enclosures allow for utilization of standard electrical components inside. Thus subsequent replacement and maintenance of the installed components is easy, and may be performed by skilled electricians. If required, several enclosures may be assembled on a framework, with separate or common

Ex e/i junction boxes. The enclosures can be delivered empty with U-component certificate or supplied fully assembled according to client demands.

- Flexible product range with many standard sizes.
- Ingress protection IP66 to meet harsh environment.
- Suitable for demanding environments.
- Wide temperature range (-20°C to +60°C).
- Many cable entries possibilities.
- Several earthing alternatives.
- May be used with a Ex e/i connection box
- Window in lid/door may be fitted in IIB version.
- High operational reliability and cost efficiency, reduced lifetime maintenance costs.
- ATEX approved.

Applications

The DE8BC range of enclosures are designed to meet the requirements for use at the on- and offshore market, and are ideal for Petrochemical plants and other kinds of industry where an explosive atmosphere may be present. For particular needs, please contact our sales staff.

General Specifications

Material	Stainless steel 316L or carbon steel as option
IP rating	IP66
Temperature	-20°C to +60°C
- Option	-40°C to +60°C
Approvals:	
Component enclosure DE8BC	INERIS09ATEX9017U
Standards	EN: 60079-0, 60079-1, 60079-31
Ex-Code	Ⓔ II 2 GD or 2[1]GD Ex d IIB T6 to T4 - T85°C to T135°C, Ex d [ia] ia or de [ia] ia IIB T6 IP65 T85°C
Surface treatment	DE8BC SS316L is shot blasted DE8BC carbon steel version is RAL 7032 painted - special painting on request.
Earthing	M10
Drain plug	Upon request





Flameproof Enclosures

DE8BC

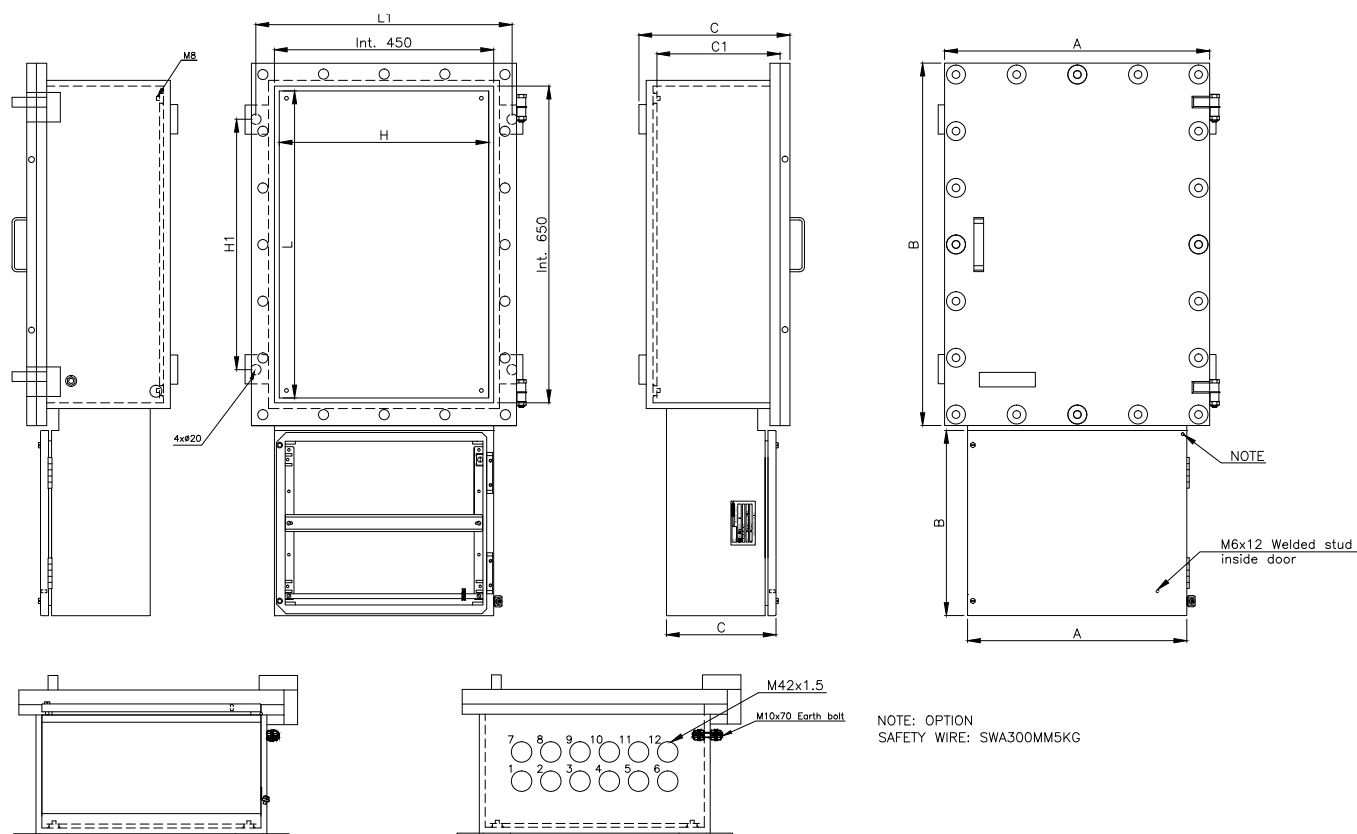
BARTEC **TECHNOR**

Measurement table for Ex d IIB Explosion proof enclosure DE8BC...

Reference DE8BC	Width A	Height B	Depth C	Useful Depth C1	External fixing (H1xL1)	Diameter of fixing holes	Base plate useful surface (HxL) (fixing holes)	Max. heat dissipation (W)	Weight (kg)
DE8BC32	334	434	208	186	234x326	Ø 12	230x330	260	51
DE8BC351	354	474	240	188	274x346	Ø 12	250x370	200	61
DE8BC43	434	534	290	248	334x426	Ø 12	330x430	300	86
DE8BC44	544	544	295	248	334x526	Ø 12	430x430	380	113
DE8BC54	544	644	305	248	414x526	Ø 20	430x530	410	139
DE8BC64	544	744	310	248	514x526	Ø 20	430x630	470	154
DE8BC75	664	864	320	253	614x630	Ø 20	530x730	590	260
DE8BC86	764	964	325	293	714x734	Ø 20	630x830	600	370
DE8BC107	864	1164	325	293	908x868	Ø 20	730x1030	800	530
DE8BC108	864	1164	425	338	908x868	Ø 20	730x1030	800	580
DE8BC148	940	1590	455	410	1200x900	Ø 20	750x1430	1500	1100

All dimensions in mm

Dimension tolerance: ± 5 mm

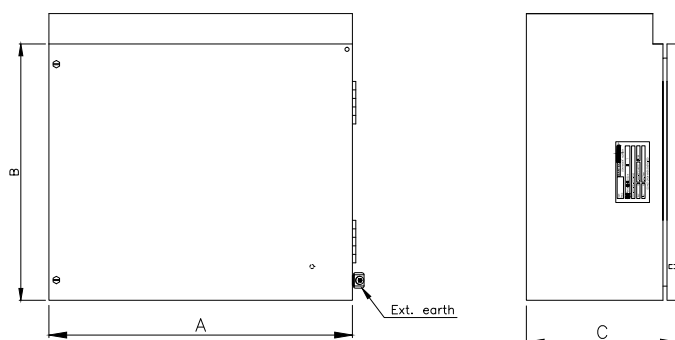




Measurement table for Ex e II Increased safety enclosures TNCC

Reference	Width A	Height B	Depth C	No of command and signal unit	No of Ammeter	Max. heat dissipation (W)	Weight (kg)
TNCC354520	350	450	200	9	2	25	6
TNCC453822	450	380	220	18	4	42	8
TNCC575727	570	570	270	40	4	72	13
TNCC767630	760	760	300	108	5	120	22

Dimension precision: ± 5 mm



Assembly possibilities between DE8BC and TNCC

	DE8BC								
	43	44	54	64	75	86	107	108	148
TNCC354520	X	X	X	X	X	X	X	X	X
TNCC453822		X	X	X	X	X	X	X	X
TNCC575727						X	X	X	X
TNCC767630							X	X	X

X: possibility of combination



Hazardous area information & terminology

ATEX Directive

The ATEX Directive, derived from the French “AT mosphères EXplosibles” and formally known as 94/9/EC, contains the ESR (Essential Safety Requirements) to which electrical equipment and protective systems used within potentially explosive atmospheres must conform.

The new ATEX Directive currently in place within the European Union was made mandatory on 1st July 2003. Primarily intended for manufacturers of hazardous area equipment for use in the presence of flammable gases, vapours, fumes or dusts, the new directive requires a quality management system to be implemented.

Procedures for the design, manufacture and verification of products are to be approved by a notified body (i.e. DNV, NEMKO, etc.) and all equipment conforming to the new directive will feature CE and Ex Marking.

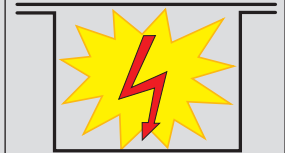
Zone Classification with the presence of DUST

Zone 21	An area in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation of the plant.
Zone 22	A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation, if it does occur, will persist for a short period only.

Applicable EX protection

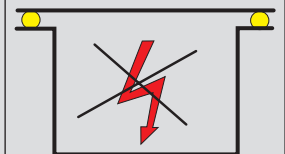
Ex d Protection

Parts, which can ignite a potentially explosive atmosphere, are surrounded by an enclosure, which are designed to withstand the pressure of an internal explosion and to prevent the propagation of the explosion to the atmosphere surrounding the enclosure.



Ex e Protection

for electrical components that do not spark under normal working conditions but where measures are applied to prevent high temperatures and the occurrence of arcs and sparks internally.



Zone Classification with the presence of GAS

Zone 1 (Category 2)	An area in which explosive gas is likely to be present during normal operation of the plant.
Zone 2 (Category 3)	An area in which explosive gas is not continuously present, but may exist for a short period of time.





Flameproof enclosures



Flameproof Enclosures

TNXCD

BARTEC **TECHNOR**

Features

BARTEC TECHNOR's cylindrical Ex d/de certified enclosures, manufactured in stainless steel 316L/CF-3M, are more cost efficient than traditional Ex d enclosures. The design makes the unit easy to install and use, and also allows for simple solutions within numerous different applications. The enclosures can be delivered empty with U-component certificate or supplied fully assembled according to clients demands.

- Flexible product range with several standard sizes.
- Ingress protection to meet harsh environment with IP66 as standard.
- Suitable for demanding environments.
- Wide temperature range (-50°C to +60°C).
- Several cable entry possibilities.
- Several earthing alternatives.
- May be used with an Ex e/i connection box.
- Window in front may be fitted, as well as a dome for some of the sizes
- High operational reliability and reduced lifetime maintenance costs.

General specification

Material	Stainless steel 316L/CF-3M
IP Rating	IP66 (IP67 and IP68 upon request)
Temperature	Various, max: -50°C to +60°C
Approvals	
- ATEX, Empty enclosure	DNV-2003-OSL-ATEX-0436U
- ATEX, complete enclosure	DNV-2004-OSL-ATEX-0115
Standards	EN/IEC: 60079-0, 60079-1, 60079-7 EN 50281
Ex-Code for empty enclosure:	Ex II 2 G, Ex d/de IIC
Ex-Code for complete enclosure:	Ex II 2 G / D, Ex d/de IIC Option: Ex dem ia/ib [opis] T6-T4
Entries	Ex e glands and Ex d bushings, or Ex d glands only
Gland Size Ex e	M25
Gland Size Ex d	According to specification
Bushings Ex d	Max M42, number and core size acc. to spec.
Earthing between Ex d and Ex e enclosures	Through the flange assembly

Applications

The TNXCD range of enclosures are designed to meet the harsh environments of the North Sea, and are ideal for Petrochemical and Marine applications as well as for all kind of industry where an explosive atmosphere may be present.

Thousands of BARTEC TECHNOR enclosures have been installed on- and offshore. If you should have a particular need our sales staff will be pleased to advise.

- CCTV systems
- Zenerbarriers
- PLC
- Charging units
- Counters
- Clocks
- Alarm status
- Warning/Signalling
- Marking lights
- Printed Circuit Boards (PCB)



TNXCD Ex d enclosures allow for utilization of standard electrical components. Subsequent replacement and maintenance of installed components is thus easy. The Ex d enclosures and components are designed, built and delivered in full compliance with current specifications and standards. The client receives a complete system including user manual, part list, wiring diagram and an EC-Declaration of Conformity. We can also deliver empty enclosures with U-component certificate.

The client performs installation of electrical equipment and subsequently applies to the Certifying Authority (Notified Body) for full Certificate of Conformity according to ATEX 94/9 EC directive.

TNXCD enclosures are manufactured in the following standard diameters: 100, 130, 155 and 195 mm. Enclosure lengths are according to measurement table.

The enclosures can be delivered with or without an inspection window in the front, or a dome.

Ex d enclosures normally are delivered in combination with an Ex e/Ex i connection box. Incoming and outgoing cables are terminated in the connection box. Standard TNXCD connection boxes are available in several sizes. If there is a need for a bigger connection box, all Ex approved BARTEC TECHNOR TNCN boxes can be used.

If required, it is also possible to have a direct entry by use of Ex d glands. In this case the Ex d enclosure is delivered without a connection box.

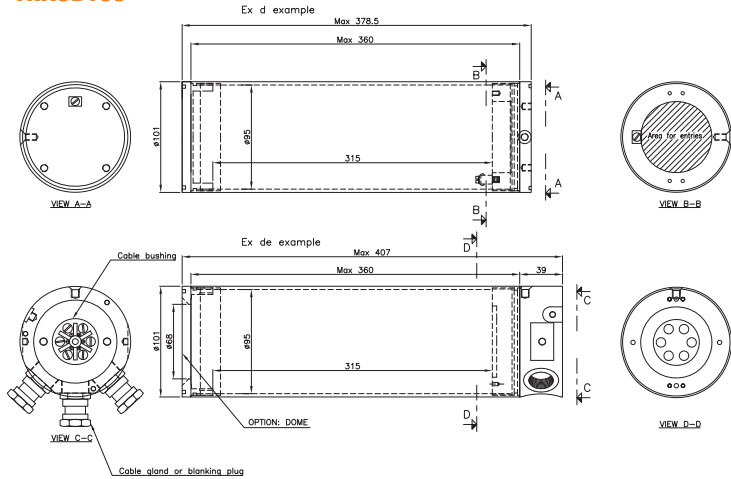


Flameproof Enclosures

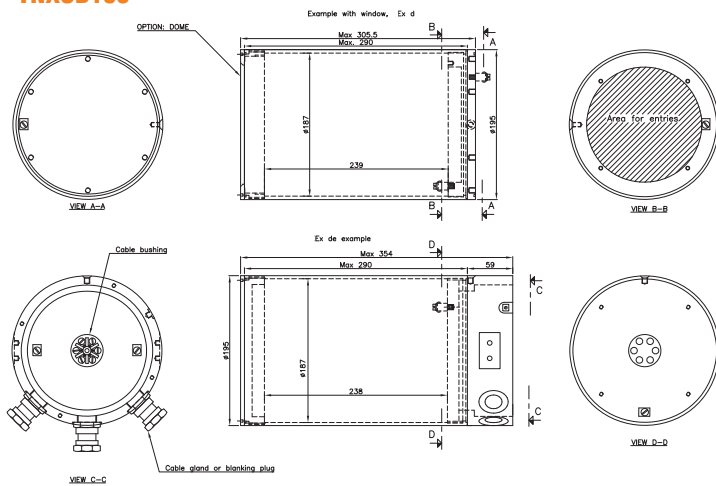
TNXCD

BARTEC **TECHNOR**

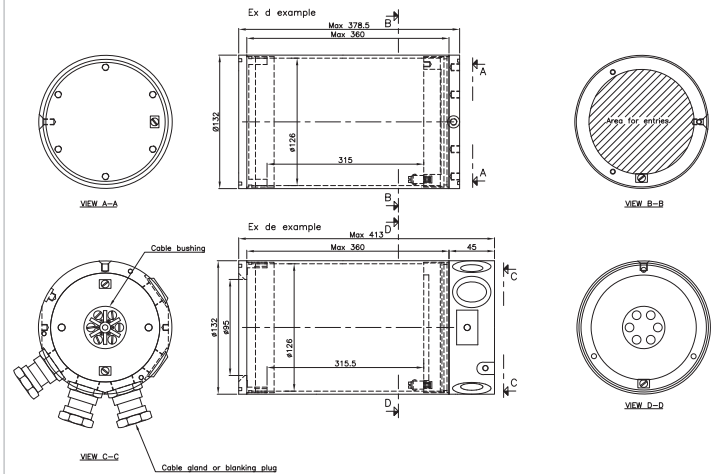
TNXCD100



TNXCD195



TNXCD130



TNXCD Ex d						
	A	B	C	D		Ø
TNXCD	Total length (mm)	Tube length (mm)	Diameter (mm)	Internal dia. (mm)	Weight (kg)	Window/dome (mm)
XCD1003200 T3	212	193	101	95	3,3	68
XCD1003360 T3	379	360	101	95	4,1	68
XCD1303200 T3	219	200	132	126	4,0	95*
XCD1303360 T3	379	360	132	126	7,0	95*
XCD1553184 D10	251	184	155	149	9,0	107
XCD1953290 T4	306	290	195	187	13,0	155

TNXCD Ex de						
	A	B	C	D		Ø
TNXCD	Total length (mm)	Tube length (mm)	Diameter (mm)	Internal dia. (mm)	Weight (kg)	Window/dome (mm)
XCD1002200 T1	245	193	100	95	3,9	68
XCD1002360 T1	412	360	100	95	4,8	68
XCD1301200 T2	258	200	130	126	5,6	95*
XCD1301360 T2	418	360	130	126	6,9	95*
XCD1551184 T1	257	184	155	149	9,0	107
XCD1951290 T1	354	290	195	187	17,1	155

Available with window, dome or SS316L top

* Dome not available



Hazardous area information & terminology

ATEX Directive

The ATEX Directive, derived from the French “AT mosphères EXplosibles” and formally known as 94/9/EC, contains the ESR (Essential Safety Requirements) to which electrical equipment and protective systems used within potentially explosive atmospheres must conform.

The new ATEX Directive currently in place within the European Union was made mandatory on 1st July 2003. Primarily intended for manufacturers of hazardous area equipment for use in the presence of flammable gases, vapours, fumes or dusts, the new directive requires a quality management system to be implemented.

Procedures for the design, manufacture and verification of products are to be approved by a notified body (i.e. DNV, NEMKO, etc.) and all equipment conforming to the new directive will feature CE and Ex Marking.

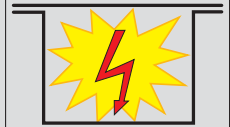
Zone Classification with the presence of GAS

Zone 1 (Category 2)	An area in which explosive gas is likely to be present during normal operation of the plant.
Zone 2 (Category 3)	An area in which explosive gas is not continuously present, but may exist for a short period of time.

Applicable EX protection

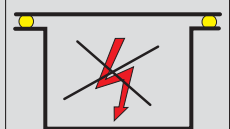
Ex d Protection

Parts, which can ignite a potentially explosive atmosphere, are surrounded by an enclosure, which are designed to withstand the pressure of an internal explosion and to prevent the propagation of the explosion to the atmosphere surrounding the enclosure.



Ex e Protection

for electrical components that do not spark under normal working conditions but where measures are applied to prevent high temperatures and the occurrence of arcs and sparks internally.





Control, regulating and display devices

Description

BARTEC offers two type series of explosion proof encapsulated enclosures for using electric components in hazardous (potentially explosive areas).

Within the scope of the EC model test certification, these can be fitted with industrial standard units, such as e.g. small-type motors, printed circuit boards and cameras.

The mounted parts are evaluated by BARTEC, fitted into a suitable housing and provided as a complete device with the corresponding ATEX marking.

This housing series offers optimum solution approaches for control, regulating and display devices in Zone 1 and zone 21 hazardous areas.

➔ Explosion protection

Ex protection type

Typ 07-61.1.. $V \leq 100 \text{ cm}^3$

Ex II 2G Ex de IIC T6/T5

Ex II 2D Ex tD A 21 IP 66

T 80 °C or T 95 °C

PTB 03 ATEX 1026

Typ 07-61.2.. $100 \text{ cm}^3 < V \leq 2750 \text{ cm}^3$

Ex II 2G Ex de [ia/ib] IIC T6, T5 or T4

Ex II 2D Ex tD [iaD/ibD] A21 IP 6X

T 80 °C or T 95 °C

PTB 03 ATEX 1051

➔ Technical data

Protection class

min. IP 54/IEC 60529

Enclosure material

Metall

Surface

bare, electro-plated or varnished












Description

The control, regulating- and display devices are assembled out of the following modules to suit the required function.

The size of the equipment depends on the components, power dissipation and the required housing volume.

Selection chart

Front flange	Enclosure	Rear flange
closed e. g. for vibration measuring instrument or printed circuit board installation 	\varnothing 30 mm to max. 25 cm ³ volume \varnothing 45 mm to max. 100 cm ³ volume \varnothing 60 mm to max. 200 cm ³ volume \varnothing 90 mm to max. 1000 cm ³ volume \varnothing 120 mm to max. 2750 cm ³ volume  	with multicore tube encapsulated directly in the housing only up to a maximum 60 mm housing diameter 
with shaft bushing e. g. for small motors, rotary encoders or switches 		with cable entry 
with inspection glass e. g. for cameras, optoelectronic units Displays 		with Ex d screwed cable gland not suitable for gas subgroup IIC when sparking parts have been fitted. 
		Flange with Ex e connection housing 



Potentiometer

Features

- High IP-protection class
- Small design
- Simple installation

Description

These up to 4 W potentiometers show that Ex potentiometers can be small and compact. The external dimensions are approximately the same as those of standard industrial potentiometer enclosures. Central fixing in a single hole and the standard size of shaft have been included. From the variety of resistors on the market we have chosen cemented wire-wound resistors and carbon film resistors and developed a standard-program range. The metal Ex d enclosures are tailored to the dimensions of the resistors and feature a standard 30 mm diameter. The potentiometers have been designed so that the stated nominal capacities can be fully exploited at temperature class T6 or T5 and be deployed in zones 1 and 2.

They can be fastened and secured against twisting in a number of ways. Two nuts are included in each consignment. At an extra charge BARTEC provides either threaded holes in the front panel of the enclosure or an antirotation pin. The length of the encapsulated numbered cores can be specified by the customer. The potentiometers are Ex-certified by means of a PTB component certificate.

If potentiometers have connecting wires, these must be laid with protection. We have developed terminals and enclosures especially for proper connection of the ends of the wires in explosive atmospheres. The most important data, such as resistance values, power ratings and dimensions can be found in the table on the right. We also supply accessories, such as rotary and pointer knobs, scales and slip couplings.

Explosion protection

Ex protection type

- II 2G Ex d IIC
- I M2 Ex d I

Certification

PTB 03 ATEX 1025 U

Temperature class

T6 to T4

Ambient temperature

-55 °C to +40 °C/+60 °C/+80 °C

Technical data

Protection class

min. IP 54/IEC 60529

Enclosure

nickel-plated brass (CuZn)

Tightning torque (for nuts)

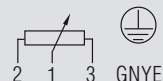
200 Ncm

Resistance characteristic

linear

Electrical connection

cores
4GAF - 0.75



■ Cemented wire-wound resistors:

Resistance values/power ratings

see selection chart

Resistance tolerance

± 5 %

Linearity tolerance

max. 3 % of final value

Insulation resistance

≥ 100 MΩ

Rotation

electr./mech. 250°/270°

End stop strength

30 Ncm

Weight with cores (0.5 m)

180 g

■ Carbon-film resistors on ceramic:

Resistance values/power ratings

see selection chart

Insulation resistance

≥ 100 MΩ

Rotation

electr./mech. 270°

End stop strength

100 Ncm

Weight with cores (0.5 m)

200 g

■ Precision wire-wound resistors:

Resistance values/power ratings

see selection chart

Insulation resistance

≥ 1000 MΩ

Resistance tolerance

± 5 %

Linearity tolerance

to 500 Ω ± 1 %
> 500 Ω ± 0.5 %

Rotation

electr./mech. 320°

End stop strength

100 Ncm

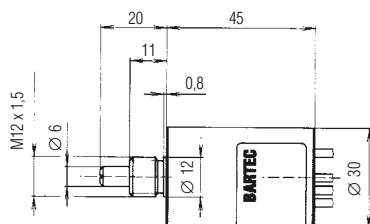
Weight with cores (0.5 m)

170 g

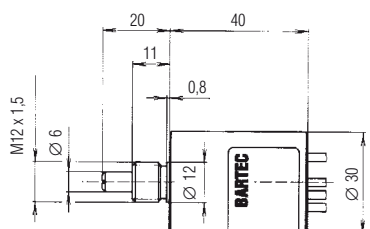


Dimensions in mm

Cemented wire-wound resistors for high power ratings



Carbon-film resistors
Precision wire-wound resistors



Selection chart

**Resistor type/
standard resistance values**
(stock items printed bold)

**Temperature
class/
power rating**

➔ **Complete
order no.**
(indicate resistance values
in plain text)

**Cemented wire-wound resistors
higher power ratings**

10 Ω	68 Ω	470 Ω	3.3 k Ω
12 Ω	82 Ω	560 Ω	3.9 k Ω
15 Ω	100 Ω	680 Ω	4.7 k Ω
18 Ω	120 Ω	820 Ω	5.6 k Ω
22 Ω	150 Ω	1 k Ω	6.8 k Ω
27 Ω	180 Ω	1.2 k Ω	8.2 k Ω
33 Ω	220 Ω	1.5 k Ω	10 k Ω
39 Ω	270 Ω	1.8 k Ω	
47 Ω	330 Ω	2.2 k Ω	
56 Ω	390 Ω	2.7 k Ω	

T6/2.5 W
resp.
T4/4 W

resp.

**Carbon film resistors**

100 Ω	1 k Ω	10 k Ω	100 k Ω
220 Ω	2.2 k Ω	22 k Ω	220 k Ω
470 Ω	4.7 Ω	47 k Ω	470 k Ω
			1 M Ω

T6/2 W

**Precision wire-wound resistors**

10 Ω	100 Ω	1 k Ω	10 k Ω
20 Ω	200 Ω	2 k Ω	20 k Ω
50 Ω	500 Ω	5 k Ω	

T6/1.2 W

Lead length:
100 mm up to 1000 mm
In 100-mm steps
5 = standard 500 mm

**Special versions - please indicate particulars in plain text**

- Anti-rotation pin on front of enclosure
- Side entry of leads
- Threaded holes on front of enclosure
- Other resistance values

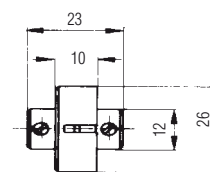
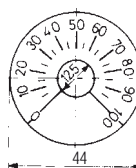
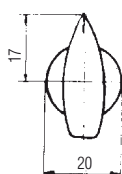
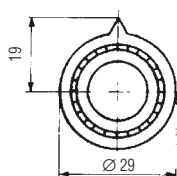
➔ **Accessories/Order no.**

Rotary knob shaft Ø 6 mm

Pointer knob shaft Ø 6 mm

Scale 0 - 100

Slip clutch adjustable
to 50 Ncm, shaft Ø 6 mm





Potentiometer

Features

- High IP-protection class
- Simple installation
- No further approvals required

Description

This standard range of up to 8 W potentiometers with wire-wound resistors show that Ex potentiometers can be small and compact.

The external dimensions are approximately the same as those of standard industrial potentiometer enclosures. Central fixing in a single hole and the standard size of shaft have been included.

From the variety of resistors on the market we have chosen the most commonly used types and developed a standard program range.

The metal Ex d enclosures are tailored to the dimensions of the resistors and feature a standard 30 mm diameter. The potentiometers have been designed so that the stated nominal capacities can be fully exploited at temperature class T6 or T5 and be deployed in zones 1 and 2.

They can be fixed and protected against turning in different ways. Two nuts are included in each consignment. At an extra charge BARTEC provides either threaded holes in the front panel of the enclosure or an antirotation pin.

For the correct connection of the cable ends we have developed special Ex terminals and enclosures. The most important data such as resistance values, power ratings and dimensions can be found in the table on the right. We also supply accessories such as rotary and pointer knobs, scales and slip clutches.

In addition to the standard models all other versions such as tandem potentiometers, potentiometers with microswitches, non-standard shafts or larger resistor diameters can be encapsulated in enclosures of up to 120 mm diameter.

Explosion protection

Ex protection type

Ex II 2G Ex d IIC T6 resp. T5

Certification

PTB 03 ATEX 1026

Ambient temperature

-20 °C to +70 °C

Technical data

Protection class

min. IP 54/IEC 60529

Enclosure

metal

Tightening torque (for nuts)

200 Ncm

Resistance characteristic

linear

Electrical connection

cable
H05VV-F4G 0.75



Cemented wire-wound resistors

Resistance values/power ratings

See selection chart

Resistance tolerance

± 5 %

Linearity tolerance

max. 3 % of final value

Insulation resistance

≥ 100 MΩ

Rotation

electr./mech. 250°/270°

End stop strength

30 Ncm

Weight with cable (1 m)

2.5 W	6 W	8 W
250 g	320 g	550 g

Carbon-film resistors on ceramic

Resistance values/power ratings

see selection chart

Insulation resistance

≥ 100 MΩ

Rotation

electr./mech. 270°

End stop strength

100 Ncm

Weight with cable (1 m)

240 g

Precision wire-wound resistors

Resistance values/power ratings

see selection chart

Resistance tolerance

1 turn ± 5 % / 10 turns > 50 Ω ± 3 %

Linearity tolerance

1 turn to 500 Ω ± 1 %
> 500 Ω ± 0.5 %

10 turns potentiometer ± 0.25 %

Insulation resistance

min. 1 000 MΩ

Rotation

electr./mech. 1 turn 320° ± 2°
10 turns 10 x 360° + 10°

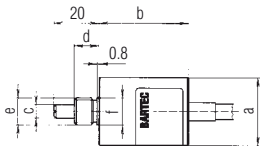
Weight with cable (1 m)

1 turn 210 g/10 turns 300 g

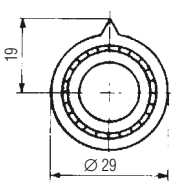
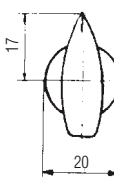
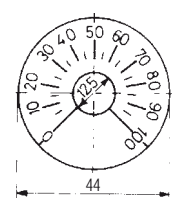
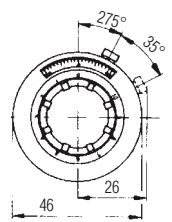
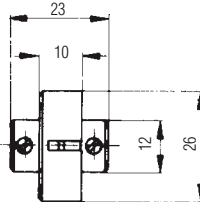
End stop strength

1 turn 100 Ncm/10 turns 30 Ncm



Dimensions in mm						Selection chart		
						Resistor type/ standard resistance values (stock items printed bold)	Temperature class/ power rating	
a	b	c	d	e	f	Cemented wire-wound resistors higher power ratings 10 Ω 180 Ω 3.3 k Ω 12 Ω 220 Ω 3.9 k Ω 15 Ω 270 Ω 4.7 k Ω 18 Ω 330 Ω 5.6 k Ω 22 Ω 390 Ω 6.8 k Ω 27 Ω 470 Ω 8.2 k Ω 33 Ω 560 Ω 10 k Ω 39 Ω 680 Ω 12 k Ω 47 Ω 820 Ω 15 k Ω 56 Ω 1 k Ω 18 k Ω 68 Ω 1.2 k Ω 20 k Ω 82 Ω 1.5 k Ω 22 k Ω 100 Ω 1.8 k Ω 27 k Ω 120 Ω 2.2 k Ω 30 k Ω 150 Ω 2.7 k Ω to 10 k Ω to 20 k Ω to 30 k Ω	T6/2.5 W resp. T5/3 W T6/5 W resp. T5/6 W T6/7 W resp. T5/8 W	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Ø 30	55	Ø 6	11	M12 x 1.5	Ø 12			
Ø 45	90	Ø 6	11	M12 x 1.5	Ø 12			
Ø 60	87	Ø 6	11	M12 x 1.5	Ø 12			
Ø 30	45	Ø 6	11	M12 x 1.5	Ø 12	Carbon-film resistors 100 Ω 1k Ω 10 k Ω 100 k Ω 220 Ω 2.2 k Ω 22 k Ω 220 k Ω 470 Ω 4.7 k Ω 47 k Ω 1 M Ω	T6/2 W	<input type="checkbox"/>
						Precision wire-wound resistors 10 Ω 100 Ω 1 k Ω 10 k Ω 20 Ω 200 Ω 2 k Ω 20 k Ω 50 Ω 500 Ω 5 k Ω		
Ø 38	50	Ø 6.35	8	3/8-32	Ø 10.3	10 turns potentiometer* 20 Ω 500 Ω 10 k Ω 50 Ω 1 k Ω 20 k Ω 100 Ω 2 k Ω 50 k Ω 200 Ω 5 k Ω 100 k Ω	T6/2 W	<input type="checkbox"/> Lead length: 5 = standard 500 mm 0 = length in plain text
						Special versions, Please indicate particulars in plain text ■ Anti-rotation pin on front of enclosure ■ Side entry of cable ■ Threaded holes on front of enclosure ■ Other resistance values		

Accessories/Order no.

Rotary knob shaft Ø 6 mm	Pointer knob shaft Ø 6 mm	scale 0 - 100	More turn drive* shaft Ø 6.35 mm	Slip clutch, adjustable to 50 Ncm, shaft Ø 6 mm
				

*Max. wall thickness for installing a switch panel = 2.5 mm



Standard Motor Control

Features

- Enclosure with Ex d type of protection with Ex e junction box enclosure
- Compact solution
- Short delivery periods
- Zones 1, 2 and 21, 22

Description

The standard motor controls consist of an enclosure in the "flameproof" type of protection and a junction box in the "increased safety" type of protection.

The motor starters are fitted into the enclosure with the "flameproof enclosure" type of protection. Depending on the order, controls are fitted into the junction box with the "increased safety" type of protection.



The motor control units are supplied with a main switch and controls as standard. The standard versions with control transformer conform to EN 60204 requirements.

However, it is also possible to order the motor controls without a control transformer, main switch or controls.

The contactor for switching ohmic consumers and motor starters is equipped with thermal overcurrent tripping. The nominal voltage must be specified separately if it deviates from 400 V. The transformer is adapted accordingly then.

➔ Explosion protection

Ex protection type

ATEX  II 2G Ex de IIC T6 Gb
 II 2G Ex tb IIIC T85 °C Db

Certification

KEMA 08 ATEX 0123

IECEx Ex de IIC T6 Gb

Ex tb IIIC T85 °C Db

Certification

IECEx DEK 13.0075

Further approvals:

INMETRO IEE 11.0230X
GOST-K-KZ 4710193.0101.00142

Ambient temperature

-20 °C to +50 °C

Approved for

zone 1, 2 and 21, 22

➔ Technical Data

Enclosure material

copper-free aluminium die casting

Surface

acrylic varnish, similar to RAL 7016

Electrical connection

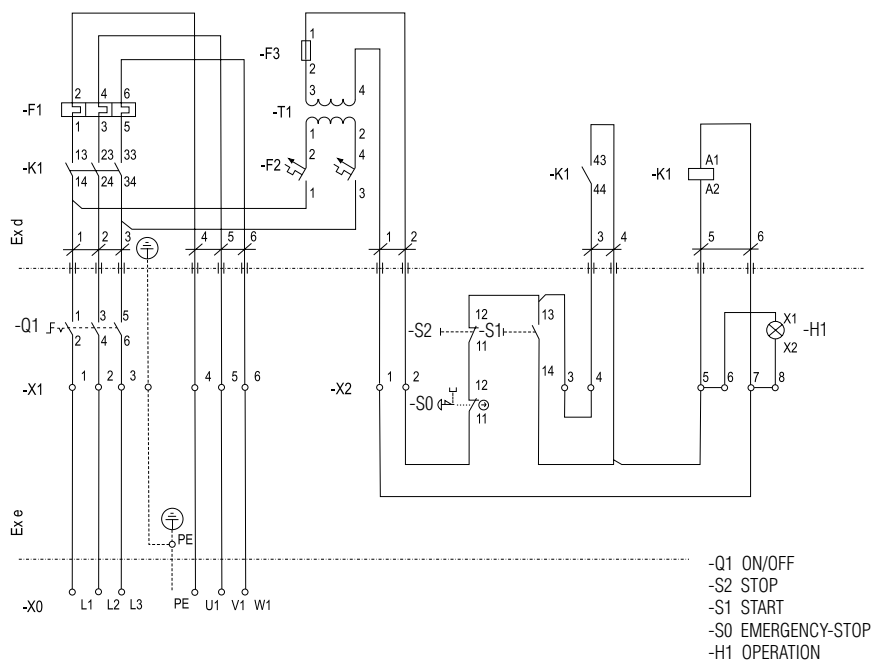
through cable glands into the
Ex e junction box

Protection class

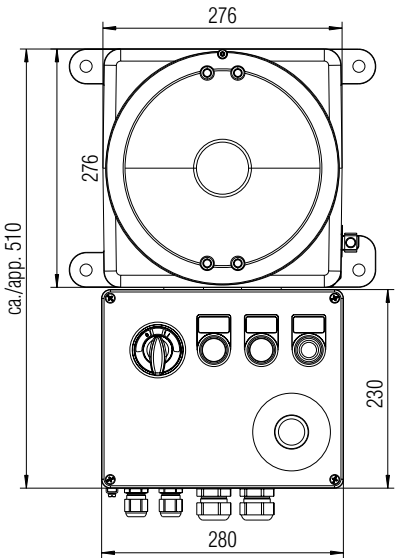
max. IP 66 (IEC 60529)



Wiring diagram/terminal assignment (by example)



Dimensions (mm)



Selection chart

Ex d enclosure with motor starter	Ex e junction box	Dimensions (mm) W x L x H	Code no.	Power variants	Code no.	Cable glands underneath	Code no.
Dimensions W x L x H 276 x 276 x 217 mm	with controls and main switch	280 x 230 x 110		4 kW		2 x M20	
	without controls and main switch	220 x 120 x 90		5,5 kW		2 x M25	
				7,5 kW		2 x M32	
	without control transformer, Controls and main switch	220 x 120 x 90		11 kW			



Contactor Ex d

Features

- 4 galvanically isolated switching contacts
- 2 redundant switching contacts
- Compact construction
- Switching capacity up to AC 690 V / 18 kW
- Disconnection of power from supply lines

Description


The Ex d contactor is used for the safe switching of currents greater than 5 A or for 3+N mains power supplies in hazardous areas.

The contactor is activated by a pressurised system (e. g. SILAS control, APEX control).

For this purpose it has four galvanically isolated switching contacts in a redundant version in the form of two switching contactors isolated from each other and connected in series. The four isolated switching contacts allow the connection of three-phase consumers also.

Explosion protection

Ex protection type

ATEX  II 2G Ex de IIC T6

Certification

PTB 03 ATEX 1138

PTB 03 ATEX 1024

See www.bartec.-group.com for more approvals and certification.

Ambient temperature

-20 °C to +40 °C

Guidelines/norms/certifications

Directive 2004/108/EC

Directive 94/9/EC

Technical data

Protection class

IP 65

Rated operating voltage U_e

690 V

Rated frequency range

50 - 60 Hz

Ambient temperature (operation)

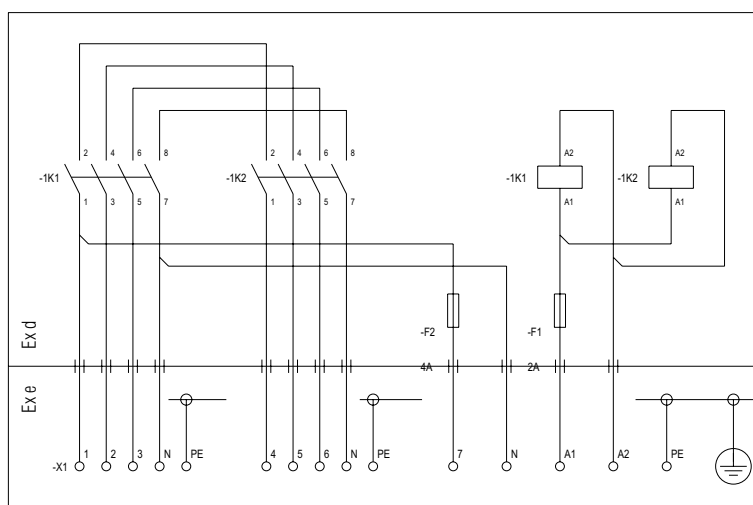
-20 °C to + 40 °C

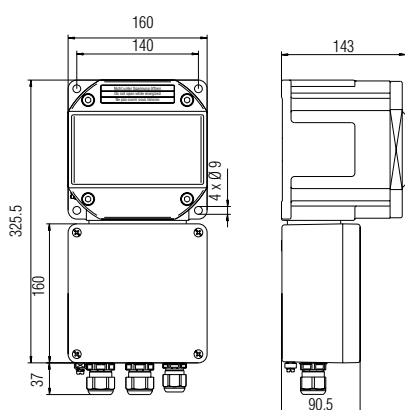
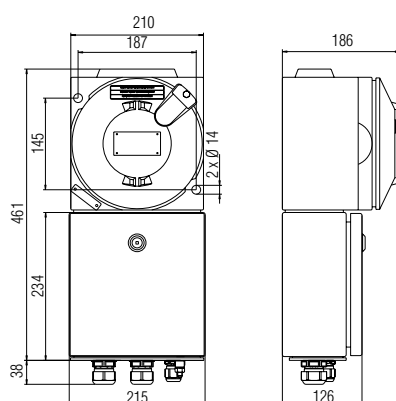
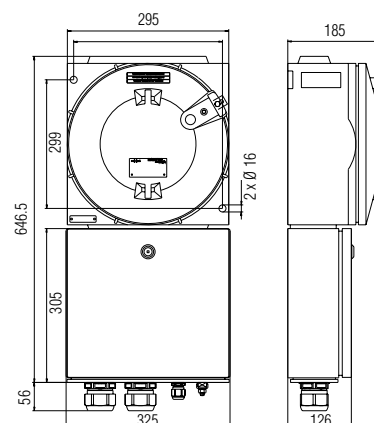
Coil voltage


AC 100 to 250 V/50/60 Hz or

DC 100 to 250 V

Wiring diagram



**Dimensions** Type 4 kW and 7.5 kW**Dimensions** Type 11 kW**Dimensions** Type 18 kW**Selection chart**

Variants	4 kW	7.5 kW	11 kW	18 kW
Max. Conductor cross-section/Connecting terminals	4 mm²	4 mm²	16 mm²	35 mm²
Cable glands	2 x M25, 2 x M20	2 x M25, 1 x M20	2 x M32, 1 x M20	2 x M50, 1 x M20
Rated operating current I _e /AC-1 U _e max. 690 V	20 A	20 A	30 A	50 A
Rated operating current I _e /AC-3 U _e 380–400 V	9 A	18 A	26 A	38 A
Rated operating power AC-3 220-230-240 V 380-400 V	2.2 kW 4 kW	4 kW 7.5 kW	6.5 kW 11 kW	11 kW 18 kW
Short-circuit protection in accordance with type 2 for contacts without thermal overload relay – without motor protection U _e < 500 V AC – gG fuse	20 A	20 A	25 A	50 A
Material Ex d enclosure Material Ex e junction box	Aluminium painted, similar to RAL 7016 Aluminium painted, similar to RAL 7001		Aluminium painted, similar to RAL 7032 Sheet steel painted, similar to RAL 7032	
Fuse contactor (F1) Fuse pressurisation (F2)	2.0 AT 4.0 AT			
				

Contactos/Contacts:

Comercial/Commercial:

Fernando Mena Costa

e-mail: fcosta@bhb.pt

Tel: (+351) 21 843 64 00

Fax: (+351) 21 843 64 09

Assistência/Service:

Patricia Costa

e-mail: ppcosta@bhb.pt

Tel: (+351) 21 843 64 00

