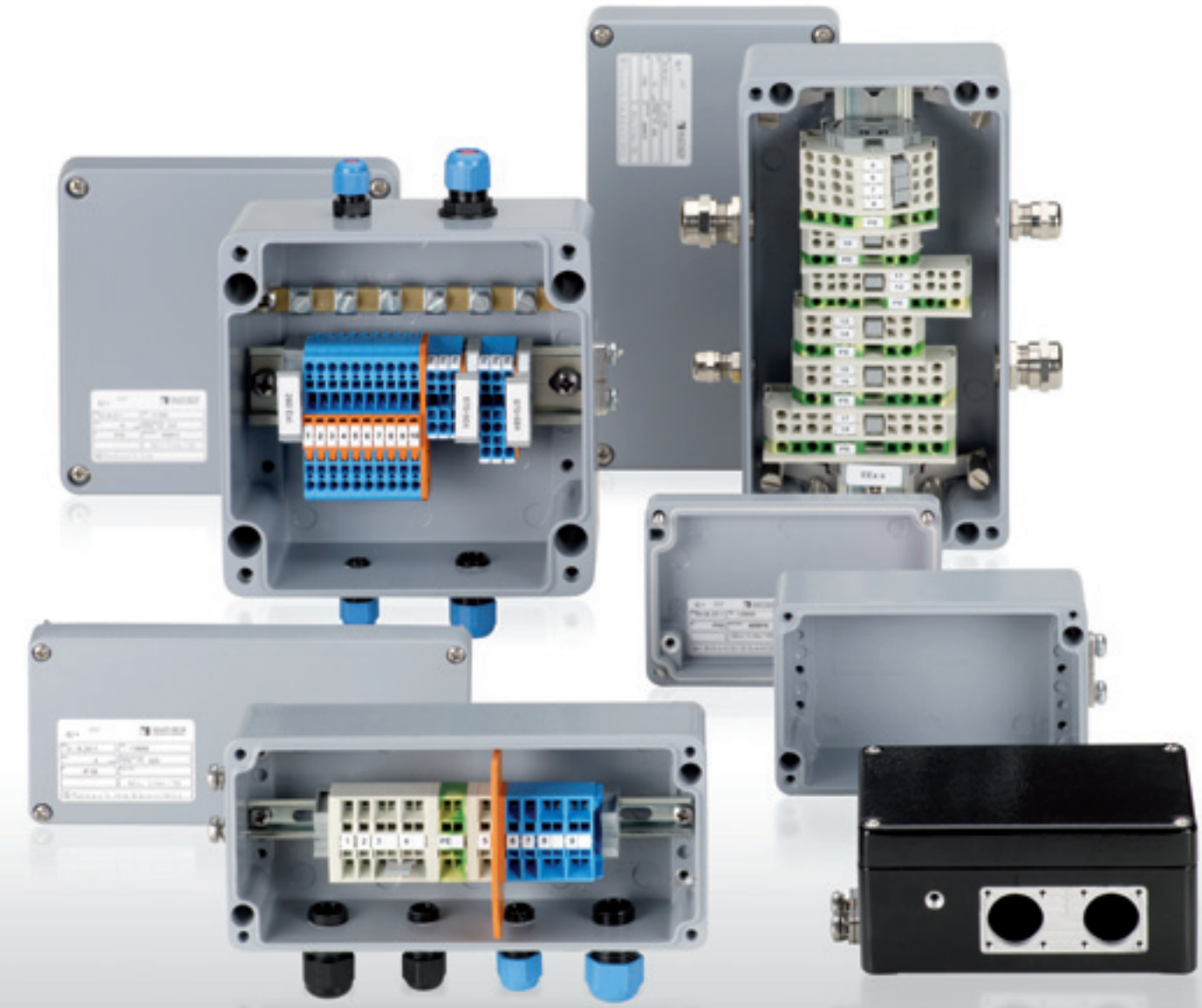
MULTI-BOX
THE BOX COMPANY



Ex-Enclosures

Overview & Information

IBExU 10 ATEX 1159 / 1158U

Year

Type approval number

„Atmosphère explosible“
EC Directive

Ex identification according to standard (example)

Relevant equipment [ ]	Use outside of potentially explosive areas that effects the Ex area	EN 60079-0 (2006)	**[Ex ib] IIB**
		EN 60079-0 (as of Edition 5.0)	**[Ex ib Ga] IIB**
Equipment	Use within the potentially explosive areas	EN 60079-0 (2006)	**Ex ib IIB T4**
		EN 60079-0 (as of Edition 5.0)	**Ex ib IIB T4 Ga**

EC type examination certificate

Identification no.	Notified body / Official testing authority (example)	Country
0044	TÜV Nord	Germany
0102	PTB	Germany
0158	EXAM	Germany
0637	IBExU	Germany
0080	INERIS	France
0081	LCIE	France
0344	KEMA	Netherlands
0402	SP	Sweden
0163	LOM	Spain
0600	EECS (BASEEFA)	United Kingdom
0518	SCS	United Kingdom

Additional requirements

Conditions	Marking
Equipment usable without restrictions	-
Observe special requirements for use	X
Ex component with partial certification, alone not fit for use; CE conformity is certified when installed as part of a complete system	U

CE 0637 Ex II (2)G

Ex marking according to directive 94 / 9 / EC (ATEX)

Conditions in potentially explosive areas ATEX 94 / 9 / EC

Combustible material	Temporary occurrence of potentially explosive material	Classification of explosion hazard areas	Marking required for usable equipment - according to CENELEC		IEC 600079-0 (as of Edition 5.0)
			Equipment group	Category	Equipment protection level (EPL)
Gas, Mist, Liquid	Continuously, long term, frequently	Zone 0	II	1G, (1)G	Ga, [Ga]
	Occasionally	Zone 1	II	2G, (2)G	Gb, [Gb]
	Not normally, only short term	Zone 2	II	3G, (3)G	Gc, [Gc]
Dust	Continuously, long term, frequently	Zone 20	II III (IEC 600079-0, as of Edition 5.0	1D, (1)D	Da, [Da]
	Occasionally	Zone 21	II III (IEC 600079-0, as of Edition 5.0	2D, (2)D	Db, [Db]
	Not normally, only short term	Zone 22	II III (IEC 600079-0, as of Edition 5.0	3D, (3)D	Dc, [Dc]
Methane, Coal dust	Continuously	Coal mining	I	M1	Ma
Methane, Coal dust	Frequently	Coal mining	I	M2	Mb

Category	
1G	-
(1)G	X

[Ex ia] IIC T4

Gas group / Ignition energy

CENELEC-marking	Typical gas	Ignition energy µJ
I	Methane	280
II A	Propane	> 180
II B	Ethylene	60 ... 180
II C	Hydrogen	> 40

Dust group

IEC 60079-0 (as of Edition 5.0)

CENELEC-marking	Typical dusts
III A	Combustible fluff
III B	Non-conductive dust
III C	Conductive dust

Permitted surface temp. according to IEC 505

Ignition temperature of gas		Group II
Ammonia	630 °C	T1 = 450 °C
Methane	595 °C	
Hydrogen	560 °C	T2 = 300 °C
Propane	470 °C	
Ethylene	425 °C	T3 = 200 °C
Butane	365 °C	T4 = 135 °C
Acetylene	305 °C	T5 = 100 °C
Cyclohexane	259 °C	T6 = 85 °C
Diethylether	170 °C	
Carbon disulphide	95 °C	

Gas	Conditions		Group I
Methane	Explosion hazard mines (coal mining)	150 °C	With deposits of coal dust on equipment
		450 °C	Without deposits of coal dust on equipment

Intrinsic safety, simple electrical equipment

Passive components	Energy storage devices	Energy sources*
Pt 100	Capacitors	Thermocouples
Switches	Coils	Photocells
Distribution boxes		* Specifications U ≤ 1,5 V; I ≤ 100 mA; P ≤ 25 mW
Resistors	Values must be determined exactly and taken into account when determining thewhole safety of the system.	

Ignition protection type

Ignition protection type for electrical equipment in explosion hazardous areas			Protection principle	Zone	Standard EN	Standard IEC	Standard UL	Class / Zone	Application
o	Oil immersion encapsulation		Exclusion of Ex atmosphere	1 or 2	EN 60079-6	IEC 60079-6	UL 60079-6	Class I, Zone I	Transformers, starting resistors, switching devices
q	Powder filling encapsulation		Sparking prevention	1 or 2	EN 60079-5	IEC 60079-5	UL 60079-5		Transformers, relays, equipment fuses, switches
ma mb	Grouting encapsulation		Exclusion of Ex atmosphere	0,1,2 1,2	EN 60079-18	IEC 60079-18	UL 60079-18		Relays, sensors, solenoid valves
px py pz	Excess-pressure encapsulation		Exclusion of Ex atmosphere	0,1,2 1,2 2	EN 60079-2	IEC 60079-2	UL 60079-2	Class I, Div. 1/2	Switch and control cabinets
d	Pressure-resistant encapsulation		Dispersal prevention	1 or 2	EN 60079-1	IEC 60079-1	UL 60079-1		Switch and command systems, heating equipment, light fittings
e	Increased safety		Sparking prevention	1 or 2	EN 60079-7	IEC 60079-7	UL 60079-7	Class I, Zone I	Terminal and connection boxes, casings, terminals
ia ib ic	Intrinsic safety		Ignition energy limitation	0,1,2 1,2 2	EN 60079-11	IEC 60079-11	UL 60079-11	Class I, Div. 1	Instrumentation and control systems, sensors and actuators
					EN 60079-25	IEC 60079-25	UL 60079-25		Intrinsically safe systems
					EN 60079-27	IEC 60079-27	UL 60079-27		Intrinsically safe field bus systems (FISCO)
nA	Non-sparking equipment		Analogous to Ex e	2	EN 60079-15	IEC 60079-15	UL 60079-15	Class I, Zone 2	Approved for Zone 2
nC	Sparking equipment		Analogous to Ex d	2					
nR	Vapour-proof equipment		Casing protection	2					
op is op pr op sh	Optical radiation		Intrinsically safe Protected Closed off "	1 2 3	EN 60079-28	IEC 60079-28	UL 60079-28		Optoelectronic devices
Ignition protection type for electrical equipment in areas with combustible dust			**Protection principle**	**Zone**	**Standard EN**	**Standard IEC**	**Standard UL**	**Class / Zone**	**Application**
tD	Protection using enclosure		Exclusion of explosive atmosphere	21 or 22	EN 61241-1	IEC 61241-1		Class II, Div. 1	Terminal and connection boxes, switching devices and switching systems, light fittings
iaD, ibD	Intrinsic safety		Energy limitation of sparks and temperatures	20, 21 or 22	EN 61241-11	IEC 61241-11	UL 913	Class II, Div. 1	Instrumentation and control systems, sensors, actuators
pD	Excess-pressure encapsulation		Exclusion of explosive atmosphere	21 or 22	EN 61241-4	IEC 61241-4	NFPA 496	Class II, Div. 1/2	Switch, control cabinets, motors
maD, mbD	Grouting encapsulation		Exclusion of explosive atmosphere	20, 21 or 22	EN 61241-18	IEC 61241-18			Command, message and display systems, sensors

Ex-Enclosures
Types and Dimensions



Dimensions Enclosure			MBA Ex-empty		MBA Ex-e		MBA Ex-i	
L (mm)	B (mm)	H (mm)	TYPE	Article No.	TYPE	Article No.	TYPE	Article No.
58	64	34	MBA-Ex leer 606030	3111100200	MBA-Ex e 606030	3121100200	MBA-Ex i 606030	3131100200
98	64	35	MBA-Ex leer 906030	3111100400	MBA-Ex e 906030	3121100400	MBA-Ex i 906030	3131100400
150	64	34	MBA-Ex leer 156030	3111100600	MBA-Ex e 156030	3121100600	MBA-Ex i 156030	3131100600
75	80	57	MBA-Ex leer 708055	3111100900	MBA-Ex e 708055	3121100900	MBA-Ex i 708055	3131100900
125	80	57	MBA-Ex leer 128055	3111101100	MBA-Ex e 128055	3121101100	MBA-Ex i 128055	3131101100
175	80	57	MBA-Ex leer 178055	3111101300	MBA-Ex e 178055	3121101300	MBA-Ex i 178055	3131101300
250	80	54	MBA-Ex leer 258055	3111101400	MBA-Ex e 258055	3121101400	MBA-Ex i 258055	3131101400
100	100	80	MBA-Ex leer 101080	3111105500	MBA-Ex e 101080	3121105500	MBA-Ex i 101080	3131105500
122	120	65	MBA-Ex leer 121265	3111101600	MBA-Ex e 121265	3121101600	MBA-Ex i 121265	3131101600
122	120	80	MBA-Ex leer 121280	3111101800	MBA-Ex e 121280	3121101800	MBA-Ex i 121280	3131101800
122	120	90	MBA-Ex leer 121290	3111101900	MBA-Ex e 121290	3121101900	MBA-Ex i 121290	3131101900
220	120	65	MBA-Ex leer 221265	3111102000	MBA-Ex e 221265	3121102000	MBA-Ex i 221265	3131102000
220	120	80	MBA-Ex leer 221280	3111102200	MBA-Ex e 221280	3121102200	MBA-Ex i 221280	3131102200
220	120	90	MBA-Ex leer 221290	3111102300	MBA-Ex e 221290	3121102300	MBA-Ex i 221290	3131102300
360	122	80	MBA-Ex leer 361280	3111102400	MBA-Ex e 361280	3121102400	MBA-Ex i 361280	3131102400
140	140	90	MBA-Ex leer 141490	3111104500	MBA-Ex e 141490	3121104500	MBA-Ex i 141490	3131104500
160	160	90	MBA-Ex leer 161690	3111102500	MBA-Ex e 161690	3121102500	MBA-Ex i 161690	3131102500
260	160	65	MBA-Ex leer 261665	3111104000	MBA-Ex e 261665	3121104000	MBA-Ex i 261665	3131104000
260	160	90	MBA-Ex leer 261690	3111102600	MBA-Ex e 261690	3121102600	MBA-Ex i 261690	3131102600
360	160	90	MBA-Ex leer 361690	3111102800	MBA-Ex e 361690	3121102800	MBA-Ex i 361690	3131102800
560	160	90	MBA-Ex leer 561690	3111029000	MBA-Ex e 561690	3121029000	MBA-Ex i 561690	3131029000
200	230	110	MBA-Ex leer 202311	3111103000	MBA-Ex e 202311	3121103000	MBA-Ex i 202311	3131103000
280	230	110	MBA-Ex leer 282311	3111103100	MBA-Ex e 282311	3121103100	MBA-Ex i 282311	3131103100
330	230	110	MBA-Ex leer 332311	3111103202	MBA-Ex e 332311	3121103202	MBA-Ex i 332311	3131103202
330	230	180	MBA-Ex leer 332318	3111103300	MBA-Ex e 332318	3121103300	MBA-Ex i 332318	3131103300
400	230	110	MBA-Ex leer 402311	3111103400	MBA-Ex e 402311	3121103400	MBA-Ex i 402311	3131103400
400	310	110	MBA-Ex leer 403111	3111103500	MBA-Ex e 403111	3121103500	MBA-Ex i 403111	3131103500
400	310	180	MBA-Ex leer 403118	3111103600	MBA-Ex e 403118	3121103600	MBA-Ex i 403118	3131103600
600	230	110	MBA-Ex leer 602311	3111103700	MBA-Ex e 602311	3121103700	MBA-Ex i 602311	3131103700
600	310	110	MBA-Ex leer 603111	3111103800	MBA-Ex e 603111	3121103800	MBA-Ex i 603111	3131103800
600	310	180	MBA-Ex leer 603118	3111103900	MBA-Ex e 603118	3121103900	MBA-Ex i 603118	3131103900

Ex-Empty
Enclosures

MULTI-BOX Ex empty enclosures made of aluminium are conform to all requirements for installation sectors where explosive concentrations of gases, steams and dusts can appear (zones 1 and 2 as well as 21 and 22).

MBA-Ex-enclosures have a components certificate confirming constructive security to the mechanical component 'enclosure'. Thus, the enclosure specific parameter does not have to be retested and reapproved when registering a new Ex-product which simplifies the approval process considerably.

After installing approved electrical and electrotechnical components into the enclosure, the complete unit has to be retested followed by a proof of heating.

Data and Facts:

- Test report no. : IB-10-3-248 according to ATEX for zones 1 and 2 as well as 21 and 22
- EC-Prototype Examination Certificate IBExU 10 ATEX 1158U according to directive 94/9/EC
- Continuous operation temperature from -55°C up to +135°C
- Protection classification IP 66 according to EN 60529
- Examinations and standards EN60079-0, EN60079-7 and EN60079-31

Accessories on demand:

- Earthing busbars and earthing bolts
- Mounting plates made of galvanised steel sheet
- Wall mounting brackets made of steel
- External hinges for the lid made of aluminium
- Ex-tested cable glands and sealing plugs made of steel, brass or polyamide

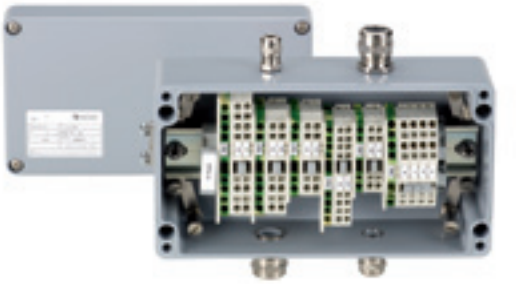
Standard equipment:

- Lid screws made of 1.4301 which cannot be lost
- Silicone lid seal glued as o-ring
- Exterior earthing connection from 2,5 mm² up to 120 mm²
- Earthing connection points in the interior
- Type plate on the inner side of the lid marked with a «U» standing for incomplete equipment
- Markings Ex II 2G Exe II C Gb and Ex II 2D Ex tb III C Db
- Powder-coating similar to RAL 7001

Processing on demand:

- All metric threads, PG-threads and special threads (with a minimum distance of 2-5 mm up to the sealing edge of the enclosure in order not to impact the stability of the enclosure construction)
- Pass drillings, cavities and millings (with a minimum distance of 2-5 mm up to the sealing edge of the enclosure in order not to impact the stability of the enclosure construction)
- Recesses and millings for inspection glasses in the enclosure lid
- Deepening and recesses for foils and film keypads
- Special colours and markings in silk-screen printing or pad printing

Exe
Enclosures



MULTI-BOX Ex e-junction boxes are conform to all requirements for installation sectors where explosive concentrations of gases, steams and dusts can appear (zones 1 and 2 as well as 21 and 22).

MBA-Exe-enclosures can be used in the temperature classes T4 up to T6.

Temperature class 6 signifies that – even in case of the maximum assembly of terminals – the maximum temperature does not exceed 85°C neither inside nor outside the enclosure.
Thus, combustible gases, steams and dusts cannot be fired.

By the exterior earthing, the enclosures are included in the potential compensation.
This completely avoids electrostatic charging and sparks resulting from it.

If the premises permit, the Ex-junction boxes of protection type increased safety « e » can be combined with intrinsically safe « i » power circuits.
The minimum clearance and creepage distance between the terminals of both power circuits must then be 50 mm.
Even in this case there is no heating of the intrinsically safe power circuit.

Data and Facts:

- Test report no. : IB-10-3-248 according to ATEX for zones 1 and 2 as well as 21 and 22
- EC-Prototype Examination Certificate IBExU 10ATEX1159 according to directive 94/9/EC
- Continuous operation temperature from -55°C up to +135°C
- Protection classification IP 66 according to EN 60529
- Examinations and standards EN 60079-0:2009, EN 60079-7:2007, EN 60079-11:2007 and EN 60079-31:2009

Accessories on demand:

- Certified PE-terminals and series terminals (according to acceptance)
- Ex-tested cable glands and sealing plugs made of steel, brass or polyamide
- Earthing busbars and earthing bolts
- Mounting plates made of galvanised steel sheet
- Wall mounting brackets made of steel
- External hinges for the lid made of aluminium

Standard equipment:

- Lid screws made of 1.4301 which cannot be lost
- Silicone lid seal glued as o-ring
- Exterior earthing connection from 2,5 mm² up to 120 mm²
- Mounting rail TS 15/7,5 or TS 35/7,5
- Earthing connection points in the interior optionally by busbars for protective conductors, by holding angles for protective conductors or by PE-terminals
- Markings Ex II 2G Ex e II C T6 to T4 Gb or Ex II 2D Ex tb III C T 85°C Db
- Type plate on the outer side of the lid indicating the maximum voltage
- Powder-coating similar to RAL 7001

Processing on demand:

- All metric threads, PG-threads, pass drillings and special threads (minimum distance between the single threads and the sealing edge of the enclosure according to the certificate of acceptance)
- Special colours according to RAL-specification
- Silk-screen printing or engraving for marking the enclosure
- Description plates made of plastic

Exi
Enclosures

MULTI-BOX Ex i-junction boxes are conform to all requirements for installation sectors where explosive concentrations of gases, steams and dusts can appear (zones 1 and as well as 21 and 22).

MBA-Ex i-enclosures can be used in the temperature classes T4 up to T6.

The explosion protection of so-called intrinsically safe enclosures « i » is based upon the low voltage and electricity connected in the enclosure (e.g. data or telephone lines). Thanks to the limit of ignition energy, the occurrence of a spark is absolutely impossible. Even rising the temperature or heating our Ex i-junction boxes assembled with the maximum amount of series terminals cannot cause any explosion.

By the exterior earthing, the enclosures are included in the potential compensation. This completely avoids electrostatic charging and sparks resulting from it.

In order to make visible an intrinsically safe power circuit when installing Ex i-enclosures, once has to choose blue or blue marked cable glands and blue terminals.

Data and Facts:

- Test report no. : IB-10-3-248 according to ATEX for zones 1 and 2 as well as 21 and 22
- EC-Prototype Examination Certificate IBExU 10ATEX1159 according to directive 94/9/EC
- Continuous operation temperature from -55°C up to +135°C
- Protection classification IP 66 according to EN 60529
- Examinations and standards EN 60079-0:2009, EN 60079-7:2007, EN 60079-11:2007 and EN 60079-31:2009

Accessories on demand:

- Certified PE-terminals and series terminals (according to acceptance)
- Ex-tested cable glands and sealing plugs made of steel, brass or polyamide
- Earthing busbars and earthing bolts
- Mounting plates made of galvanised steel sheet
- Wall mounting brackets made of steel
- External hinges for the lid made of aluminium

Standard equipment:

- Lid screws made of 1.4301 which cannot be lost
- Silicone lid seal glued as o-ring
- Exterior earthing connection from 2,5 mm² up to 120 mm²
- Mounting rail TS 15/7,5 or TS 35/7,5
- Earthing connection points in the interior optionally by busbars for protective conductors, by holding angles for protective conductors or by PE-terminals
- Markings Ex II 2G Ex ia II C T6 to T4 Gb or Ex II 2D Ex tb III C T 85°C Db
- Type plate on the outer side of the lid
- Powder-coating similar to RAL 7001

Processing on demand:

- All metric threads, PG-threads, pass drillings and special threads (minimum distance between the single threads and the sealing edge of the enclosure according to the certificate of acceptance)
- Special colours according to RAL-specification
- Silk-screen printing or engraving for marking the enclosure
- Description plates made of plastic

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