RITTAL - The System

Faster – better – everywhere.

Empty Enclosure /
Terminal Enclosure/
Junction Box/
Remote I/O Enclosure
(RITTAL Small enclosure category)

Table of Contents:

1. Use

The empty enclosures/terminal enclosures/ Junction Box/Remote I/O Enclosure made of stainless steel are designed for the installation of Ex components and terminals.

2. Purpose of these instructions

When work is done in areas where there is a risk of explosion, the safety of persons and equipment depends on adherence to the relevant safety regulations. Consequently, the installation and maintenance personnel who work on such systems have a special responsibility. The prerequisite here is the exact knowledge of the applicable regulations and standards.
These instructions present a brief summary of the most important safety measures. It is intended as an enhancement to the appropriate regulations with which the responsible persons must comply. The instructions and other objects may not remain in the enclosure during operation.

3. Safety information
The empty enclosures/terminal enclosure/ Remote I/O enclosures are designed for permanent installation in explosion-endangered areas of zones 1 and 2 in accordance with IEC 60079-10-1:2020 or in zones 21 and 22 in accordance with IEC 60079-10-2 :2015. The above-mentioned enclosures are not to be used in zones 0 and 20.
The enclosures may not be operated in conditions subject to dust accumulations ≥ 5 mm thickness in accordance with IEC 60079-10-2:2015.
Inappropriate or unauthorized use or failure to comply with the information contained in these instructions voids any warranty on our part.
Modifications or changes to the empty enclosure / terminal enclosure Remote I/O enclosures that impair explosion protection are not allowed.
The empty enclosure / terminal enclosure must be clean and undamaged when it is installed.
In particular, the following must be observed:
+ national safety regulations
+ national workplace health and safety regulations
+ national installation and set-up regulations
+ generally accepted engineering standards
+ the safety information contained in these operating instructions
+ the data and rated operating conditions on the nameplate and rating plate
+ the EU prototype testing certificate

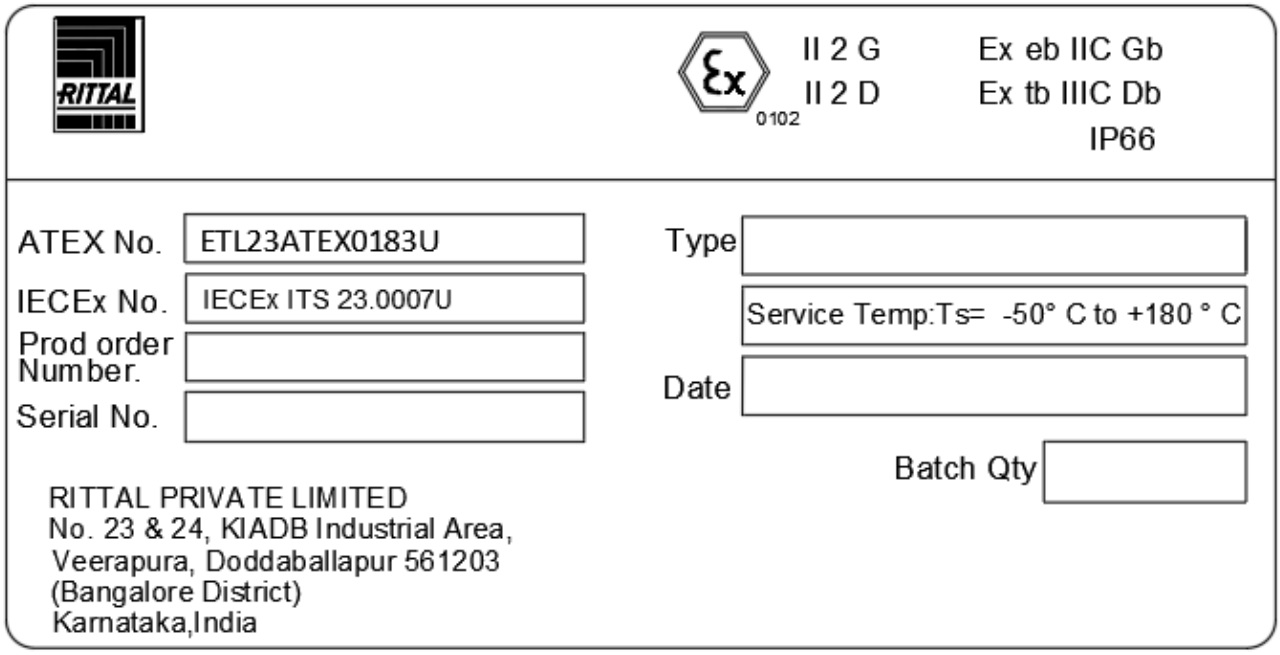
Non-compliance with these instructions will invalidate the warranty!

4. Conformance to standards
The empty enclosures/terminal enclosures /Remote I/O enclosures conform to the requirements of
IEC 60079-0 Ed 7.0: 2017 Explosive atmospheres- Part 0: Equipment – General requirements.
IEC 60079-7 Ed 5.1: 2017 Explosive atmospheres – part 7: Equipment protection by increased safety “e”,
IEC 60079 -31 Ed 3: 2022 Explosive atmospheres -Part 31: Equipment dust ignition protection by enclosure “t”.
IEC 60529 Ed 2.2 : 2013 Degrees of protection provided by the enclosure.
The enclosures are state-of-the-art at the time of manufacturing and conform to ISO 9001:2015 , EN ISO IEC 80079-34:2020 and as per ATEX Directive 2014/34/EU.

5. Technical data

Enclosure protection degree:

Protection category as per EN 60529: Contact, foreign body, and water protection IP66.



Dimensions

SS Small Enclosures

Article number for enclosure in 2 mm thick	Article number for enclosure in 1.5 mm thick	Descripton
9792101	9792121	EX - SS ENCL 200Wx300Hx150D
9792102	9792122	EX - SS ENCL 400Wx600Hx210D
9792103	9792123	EX - SS ENCL 400Wx800Hx300D
9792104	9792124	EX - SS ENCL 600Wx600Hx210D
9792105	9792125	EX - SS ENCL 600Wx1200Hx400D
9792106	9792126	EX - SS ENCL 800Wx1200Hx300D
9792107	9792127	EX - SS ENCL 800Wx1400Hx400D
9792108	9792128	EX - SS ENCL 800Wx1400Hx500D
9792110	9792130	EX - SS ENCL 1000Wx1500Hx500D
9792109	Ex - SS Small Enclosure - Special dimensions can be manufactured between 200W x 300H x 150D mm to 1000W x 1500 H x 500D mm in SS304 or SS316 L , with/without gland plates, with/without viewing window, and with/without gland holes.	

Note: 9792109 is Generic article for special dimensions. The special request for quotation will be reviewed by technical department (Ex representative) and Product Management.

Service temperature
Permitted service temperature -50°C to +180°C. The permitted operational temperature range must be considered for internal components.

Attention:
Empty enclosures with components certificates require an examination certificate of a notified body for overall approval.

6. Installation
For the installation and operation of explosion-protected enclosure variants, the recognized rules of technology in accordance with EN IEC 60079-14 "Configuring and selection", and EN IEC 60079-17 "Test and maintenance", and the accompanying installation and operating instructions must be observed.

Installation location
The installation location for explosion-protected enclosure variants must be chosen to prevent any damage caused by industrial trucks or forklift trucks.
Explosion-protected enclosure variants installed on support frameworks must be protected from falling over.

Service temperature
To maintain the determined surface temperature, the environment temperature limit values may not be undershot or overshot (-50°C to +180°C).
Any present external heat sources or solar radiation may cause additional heating of the enclosure. Appropriate measures should be considered during installation.

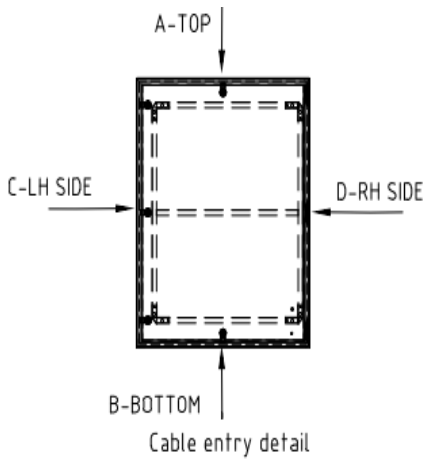
7. Cable and wire entries
Cable and wire entries as well as sealing plugs made of metal can be used. All cable and wire entries must have a separate EU prototype test certificate.

The maximum number of entries listed in the table for each side of the enclosure has been defined to avoid weakening of the side panels or degrading the stability of the enclosure.
All cable and wire entries must be installed using a metal counter nut.
The number of possible standard cable glands decreases if strain relief or cable guards are used.

Unused openings for cable and wire entries must be closed with metal plugs that have a separate EU prototype test certificate,
The cable and wire entries must be installed so that a self-loose ending is prevented and the permanent sealing of the cable and wire entry locations can be guaranteed.
The distances between the cable entries should be chosen so that a torque wrench can be used to tighten the cable and wire entries and the box nuts.
The tightening torques must be observed for the installation of the cable and wire entries

8. Maximum number of cable and wire entries

The maximum number of cable/wire entries on the Ex enclosures is as follows

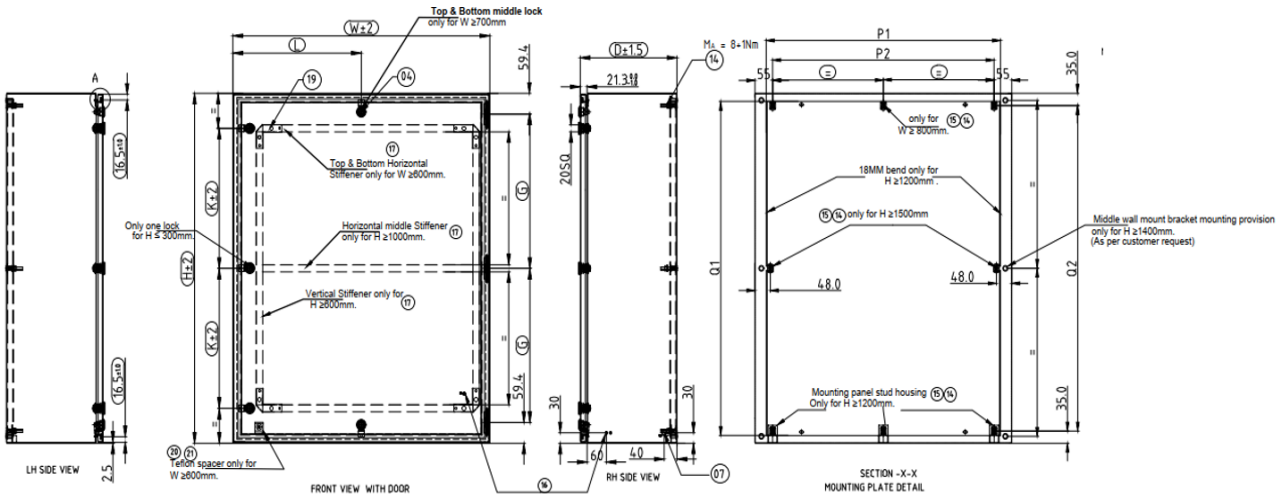


Cable entry detail

CABLE ENTRY SIZE	EX-9792101 &9792121 200X300X150				EX-9792102 & 9792122 400X600X210				EX-9792103 & 9792123 400X800X300				EX-9792104 & 9792124 600X600X210				EX-9792105 & 9792125 600X1200X400				EX-9792106 &9792126 800X1200X300				9792107 & 9792127 800X1400X400				9792108 & 9792128 800X1400X500				9792110 &9792130 1000X1500X500			
	WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE	
	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD	AB	CD
M 12	15	23	2	2	44	85	26	26	77	166	35	95	85	85	26	26	170	358	105	256	166	250	100	160	238	419	160	280	310	545	220	396	386	584	286	396
M 16	8	12	2	2	39	60	24	24	59	123	24	68	59	60	24	24	134	286	84	196	124	190	85	140	166	332	119	224	229	406	170	320	284	438	230	320
M 20	8	10	2	2	22	36	18	18	38	85	20	56	34	36	18	18	82	182	60	138	82	130	56	92	116	210	84	156	150	298	112	208	207	296	152	208
M 25	5	8	1	1	19	31	8	8	26	57	12	36	31	31	8	8	64	132	40	100	57	88	36	60	87	156	60	110	117	208	84	154	142	224	152	154
M 32	2	3	--	--	10	16	6	6	15	33	6	18	15	16	6	6	39	84	24	78	33	51	18	30	54	99	36	64	65	119	45	80	82	131	60	80
M 40	2	3	--	--	8	14	5	5	13	30	6	16	13	14	5	5	27	59	18	39	28	44	16	26	38	71	24	42	48	89	32	56	62	94	44	56
M 50	2	2	--	--	4	6	4	4	8	16	2	6	6	6	4	4	18	36	12	33	16	24	14	22	24	42	21	36	32	56	28	48	40	60	36	48
M63	--	--	--	--	3	5	--	--	6	14	2	6	5	5	--	--	15	33	8	20	14	22	6	10	21	39	12	20	28	52	18	30	35	56	24	30
M75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8	18	6	16	10	17	5	8	12	20	10	16	15	30	10	16	21	33	12	16
M90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8	16	3	7	5	8	4	7	10	18	4	8	14	27	8	12	18	20	10	16
M100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6	14	2	6	5	7	4	6	10	16	4	6	10	16	8	12	12	18	10	12

THE INFORMATION CONTAINED IN THE OPERATING INSTRUCTIONS PROVIDED BY THE MANUFACTURERS OF CABLE AND WIRE ENTRIES MUST BE OBSERVED!.

9. Enclosure attachment



SL NO.	ARTICLE NO.FOR 2mm THICKNESS	ARTICLE NO.FOR 1.5mm THICKNESS	ENCLOSURE SIZE	WIDTH	HEIGHT	DEPTH	NUMBER OF TOTAL CAM LOCK	DISTANCE B/W LOCK	NUMBER OF VERTICLE CAM	HORIZONTAL CAM LOCK DISTANCE	DISTANCE B/W HINGE	NUMBER OF TOTAL HINGE	MTG PLATE DETAILS			
			WXHXD	W	H	D		K	CAM	L	G	HINGE	P1	P2	Q1	Q2
1	9792101	9792121	200X300X150	200	300	150	1	0	1	0	181	2	139	100	260	235
2	9792102	9792122	400X600X210	400	600	210	2	400	2	0	481	2	339	300	560	535
3	9792103	9792123	400X800X300	400	800	300	3	300	3	0	341	3	339	300	760	735
4	9792104	9792124	600X600X210	600	600	210	2	400	2	0	481	2	539	500	560	535
5	9792105	9792125	600X1200X400	600	1200	400	4	333	4	0	360.4	4	530	490	1155	1130
6	9792106	9792126	800X1200X300	800	1200	300	6	333	4	400	360.4	4	730	690	1155	1130
7	9792107	9792127	800X1400X400	800	1400	400	6	400	4	400	320.3	5	730	690	1355	1330
8	9792108	9792128	800X1400X500	800	1400	500	6	400	4	400	320.3	5	730	690	1355	1330
9	9792110	9792130	1000X1500X500	1000	1500	500	7	325	5	500	345.3	5	930	890	1455	1430

10. PE conductor / equipotential bonding conductor (PA) connection

As a general rule, the outer protective conductor or an equipotential bonding conductor must be connected. An internal and external connection point located at the empty enclosures is provided for this purpose. The connection must be performed in agreement with EN 60079-0, Section 15.

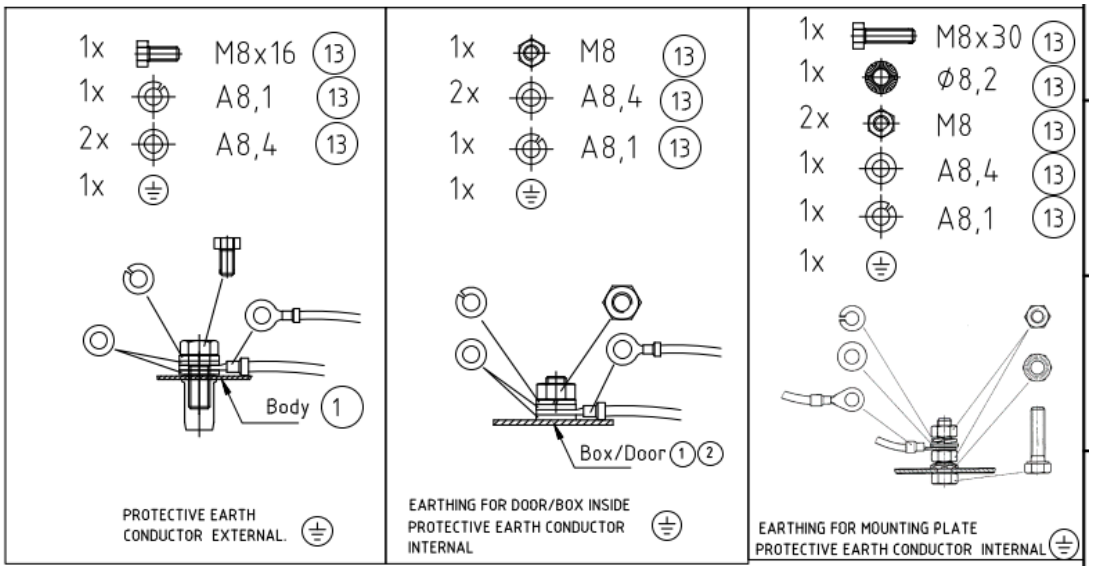
Connect the PE / equipotential bonding conductor as described on drawing **NO. IEC Ex N131300 00 EX A3 Sheet 3/5,** using the stainless steel screws, nuts, plain washers, and split washers that accompany the empty enclosure. Attach a standard cable lug with the appropriate cross-section and ring diameter to the PE / equipotential bonding conductor which is fed in from the outside. The cable lug you select should fulfill the requirements for ring cable lugs defined in the DIN 46234 standard or for spade-type cable lugs defined in the DIN 46235 standard.

The terminals for the protective earth and equipotential bonding conductor are designed to accept at least one conductor. The cross-sections must be selected as follows:

Cross sectional area of phase conductors , S mm^2	Minimum cross sectional area of the corresponding PE protective conductor Sp mm^2
S≤16 *16<S≤35* *s>35 mm^2*	S 16 0.5 S

The PE / equipotential bonding conductor terminal fittings are designed for a minimum cross-section of 4 mm². When you are installing the outer conductor / equipotential bonding conductor, be sure that you route the conductor properly in a fixed position near the enclosure's main body to ensure that the conductor will not rotate or become loose. Torque the screwed connection to 10 Nm to provide sufficient contact pressure using the split washer provided.
The SL / PA connection between the enclosure's main body and the door must be achieved with a flexible connector marked in green/yellow. Select the cross-section to match the heaviest installed gauge outer conductor but not less than 4 mm² if the cross-section table above does not apply.

Select materials for the protective conductor terminal that are not likely to be susceptible to electrochemical corrosion. Appropriate measures must be taken to protect protective earth conductors against mechanical, electro-dynamic, and thermodynamic stress. Mechanical protective earth connections must be accessible for inspection and testing.



11. Commissioning

Before you apply power for the first time, you must check the following items:

+ the enclosure must be properly installed.
+ the enclosure must not be damaged; this applies in particular to the seals.
+ there must not be any foreign objects in the enclosure.
+ the wiring space must be clean.
+ mounting and device screws must be securely fastened.
+ cable and wire entries must be securely fastened.
+ all cables and wires must be installed in the lead-throughs as required for the protection category.
+ unused cable and wire entries must be closed with certified plugs.
+ unused holes must be sealed with certified plugs.
+ the outer protective earth connection must be properly installed near the enclosure.

12. Repair, maintenance, and servicing

Repair and maintenance work on the enclosures listed above may be performed only by authorised personnel with the appropriate training. Maintenance and servicing is performed based on EN 60079-17. As part of the maintenance, in particular, parts that depend on the ignition safety must be inspected.

This includes, in particular, the seals, the fastening system, cable and wire entries.

The maintenance intervals must be chosen depending on the operating conditions and the operating time. When maintenance work is performed on the enclosure, care must be taken to ensure that no circuit-dependent dangerous remote effects can occur.

⚠ Warning – "**Enclosures must be cleaned with Damp Cloth only**"

APPLICABLE NATIONAL REGULATIONS MUST BE ADHERED TO DURING THE OPERATION OF THE ENCLOSURES LISTED ABOVE.

13. Schedule of Limitations

1. The service temperature range is -50°C to +180°C.
2. Installation of electrical components inside the empty enclosures requires a further assessment by an ExCB.
3. Enclosure backside cover and earthing screws need to be tightened with a suitable torque w.r.t to Bolt size.
4. The empty enclosure with painting (Coating thickness up to 0.18 mm) must not be used in areas affected by charge-producing processes, mechanical friction and separation processes, electron emission (e.g. in the vicinity of electrostatic coating equipment), and pneumatically conveyed dust.
5. All unused entry openings must be fitted with a suitable cable entry device of protection types Ex "eb" and Ex "tb" and must have a minimum IP66 rating.
6. Entry holes shall be perpendicular to the equipment face to ensure the correct sealing arrangement of an accessory. Plain holes shall be no larger than 0.7mm above the major diameter of the accessory thread.

14. Disposal

Please observe your national disposal regulations.

For queries pls contact

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