

RITTAL - The System

Faster – better – everywhere.



Empty Enclosure /
Remote I/O Enclosure
(RITTAL Large enclosure
range)



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES



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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.

				II 2 G II 2 D	Ex eb IIC Gb Ex tb IIIC Db IP66
ATEX No.	ETL23ATEX0183U	Type			
IECEX No.	IECEX ITS 23.0007U	Service Temp:Ts= -50° C to +180 ° C			
Prod order Number.		Date			
Serial No.		Batch Qty			
RITTAL PRIVATE LIMITED No. 23 & 24, KIADB Industrial Area, Veerapura, Doddaballapur 561203 (Bangalore District) Karnataka, India					

Dimensions

SS large enclosures

Article number for enclosure in 2 mm thick	Article number for enclosure in 1.5 mm thick	Description
9792111	9792131	EX - SS ENCL 600Wx1600Hx600D
9792112	9792132	EX - SS ENCL 600Wx1800Hx400D
9792113	9792133	EX - SS ENCL 600Wx1800Hx600D
9792115	9792135	EX - SS ENCL 800Wx1800Hx600D
9792114	9792134	EX - SS ENCL 600Wx2000Hx600D
9792116	9792136	EX - SS ENCL 800Wx2000Hx600D
9792117	9792137	EX - SS ENCL 800Wx2000Hx800D
9792118	9792138	EX - SS ENCL 800Wx2200Hx600D
9792120	9792140	EX - SS ENCL 1000Wx2200Hx1000D
9792148	9792144	EX - SS ENCL 800Wx900Hx600D
9792119	Ex - SS Large Enclosure - Special dimensions can be manufactured between 600W x 1600 H x 400D mm to 1000W x 2200 H x 1000D mm In SS304 or SS316 L, with/without gland plates, and with/without gland holes.	

Note: 9792119 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 component 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 60079-14 "Configuring and selection", and EN 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 overshoot (-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 the 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,

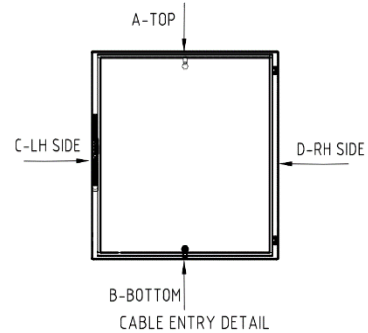
The cable and wire entries must be installed so that a self-loose ending is prevented, and the permanent sealing of the cable and wire entry locations can be guaranteed.

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/wires entries on the Ex-enclosures is as follows

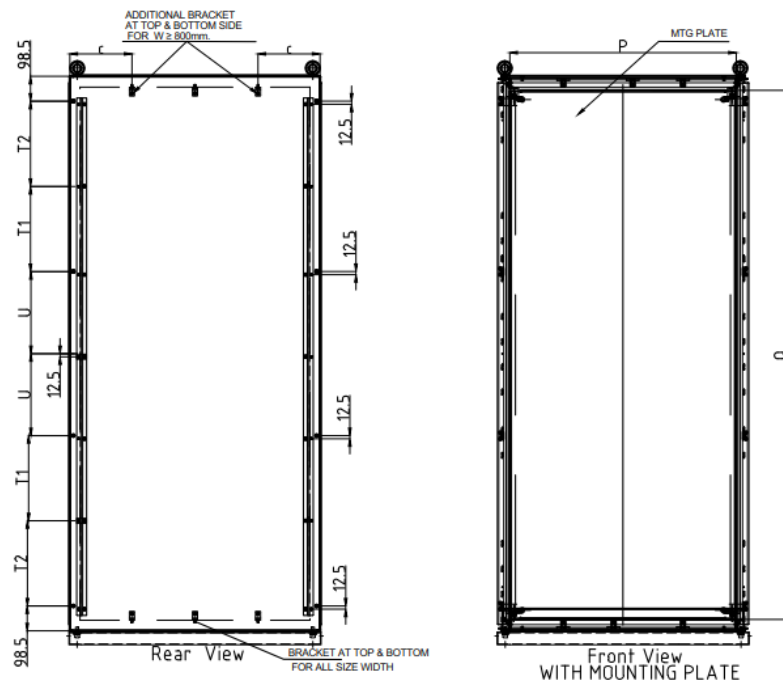


CABLE ENTRY SIZE	EX 9792111 & 9792131				EX 9792112&9792132				EX 9792113&9792133				EX 9792115&9792135				EX 9792114&9792134			
	600Wx1600HX600D				600x1800x400				600X1800X600				800X1800X600				600X2000X600			
	WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND PLATE		WITH GLAND PLATE		WITHOUT GLAND 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
M 12	143	324	42	240	77	120	35	72	143	360	42	240	221	360	84	240	143	432	42	240
M 16	99	224	30	180	54	96	24	60	99	224	30	180	165	224	60	180	99	280	30	180
M 20	64	144	20	112	32	56	15	32	64	144	20	112	96	144	40	112	64	192	20	112
M 25	42	100	16	96	21	48	8	32	42	120	16	96	70	120	32	96	42	120	16	96
M 32	25	64	9	48	10	40	6	24	25	80	9	48	40	80	18	48	25	80	9	48
M 40	20	48	6	32	8	16	6	8	20	64	6	32	35	64	10	32	20	64	6	32
M 50	12	36	4	24	6	12	3	8	12	36	4	24	24	36	8	24	12	48	4	24
M63	9	16	4	24	3	12	2	8	9	24	4	24	15	24	8	24	9	72	4	24
M75	6	16	2	8	2	8	1	4	6	16	2	8	8	16	3	8	6	16	2	8
M90	4	8	1	8	2	8	1	4	4	16	1	8	6	16	3	8	4	16	1	8
M100	4	8	1	8	2	8	1	--	4	16	1	8	6	16	2	8	4	16	1	8

CABLE ENTRY SIZE	EX 9792116&9792136				EX 9792117&9792137				EX 9792118&9792138				EX 9792120&9792140			
	800X2000X600				800X2000X800				800X2200X600				1000X2200X1000			
	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
M 12	221	432	84	240	323	720	156	360	221	468	84	240	575	1092	228	528
M 16	165	280	60	180	255	520	120	260	165	308	60	180	440	792	170	380
M 20	96	192	40	112	156	352	90	176	96	216	40	112	306	540	112	380
M 25	70	120	32	96	110	216	56	144	70	140	32	96	210	364	96	224
M 32	40	80	18	48	72	140	36	84	40	96	18	48	132	240	54	132
M 40	35	64	10	32	56	96	25	48	35	80	10	32	100	180	32	72
M 50	24	48	8	24	36	80	16	40	24	48	8	24	64	112	24	56
M63	15	72	8	24	25	48	12	32	15	48	8	24	49	96	24	48
M75	8	16	3	8	16	24	9	12	8	24	3	8	30	60	8	20
M90	6	16	3	8	12	24	6	12	6	16	3	8	25	32	8	16
M100	6	16	2	8	9	24	4	12	6	16	2	8	20	32	8	16

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

Ex large Enclosure: Instruction Manual – Ex Large Enclosure



SL NO.	ARTICLE NO.FOR 2mm THICKNESS	ARTICLE NO.FOR 1.5mm THICKNESS	ENCLOSURE SIZE WXHXD	WIDTH INCLUDING SIDE PANEL $\pm 3\text{mm}$	HEIGHT OF THE PANEL $\pm 3\text{mm}$	DEPTH INCLUDING REAR PANEL $\pm 3\text{mm}$	DISTANCE B/W LOCK CENTER & HINGE.	REAR PANEL FIXING PITCH $\pm 3\text{mm}$			SIDE PANEL FIXING PITCH $\pm 3\text{mm}$	REAR PANEL HOR.FIXING PITCH $\pm 4\text{mm}$
				W	H	D		T1	T2	U	K	C
1	9792111	9792131	600X1600X600	609	1608	609	250	237.5	237.5	225	312.5	0
2	9792112	9792132	600X1800X400	609	1808	409	300	262.5	262.5	275	362.5	0
3	9792113	9792133	600X1800X600	609	1808	609	300	262.5	262.5	275	362.5	0
4	9792115	9792135	800X1800X600	809	1808	609	300	262.5	262.5	275	362.5	196
5	9792114	9792134	600X2000X600	609	2008	609	350	287.5	312.5	300	412.5	0
6	9792116	9792136	800X2000X600	809	2008	609	350	287.5	312.5	300	412.5	196
7	9792117	9792137	800X2000X800	809	2008	809	350	287.5	312.5	300	412.5	196
8	9792118	9792138	800X2200X600	809	2208	609	400	337.5	337.5	325	462.5	196
9	9792120	9792140	1000X2200X1000	1009	2208	1009	400	337.5	337.5	325	462.5	246

SL NO.	SIDE PANEL HOR.FIXING PITCH $\pm 4\text{mm}$	WIDTHWISE FIXING DISTANCE FOR TOP&BOTTOM COVER $\pm 4\text{mm}$	DEPTHWISE FIXING DISTANCE FOR TOP&BOTTOM COVER $\pm 4\text{mm}$	MTG PLATE WIDTH & HEIGHT $\pm 3\text{mm}$	
	L	M	N	P	Q
1	0	0	0	499	1496
2	0	0	0	499	1696
3	0	0	0	499	1696
4	0	198	0	699	1696
5	0	0	0	499	1896
6	0	198	0	699	1896
7	181	198	198	699	1896
8	0	198	0	699	2096
9	231	248	248	899	2096

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 enclosure 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. **N131348 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.

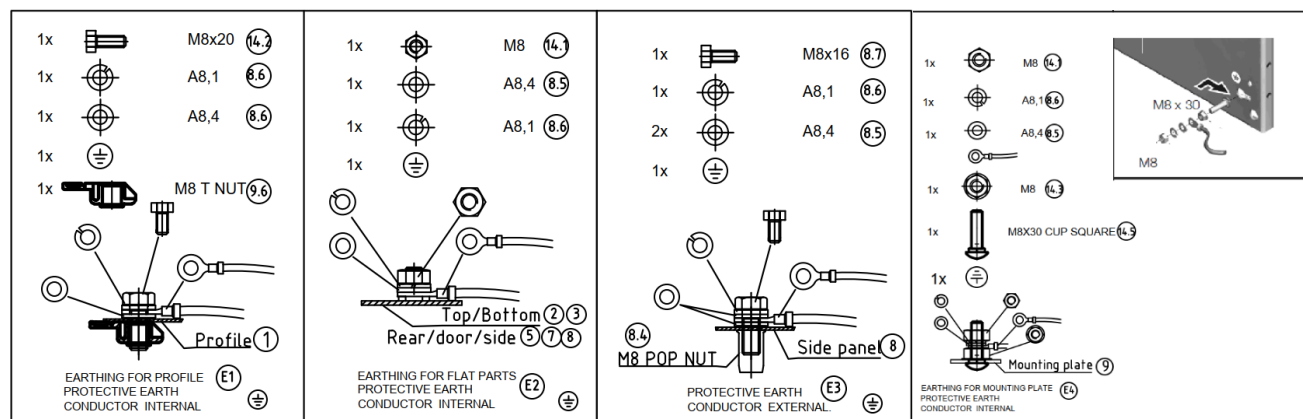
The terminals for the protective earth and equipotential bonding conductor are designed to accept at least one conductor. The cross-sections must be selected as follows:

Cross sectional area of phase conductors , S mm ²	Minimum cross sectional area of the corresponding PE protective conductor Sp mm ²
$S \leq 16$	S
$16 < S \leq 35$	16
$S > 35 \text{ mm}^2$	$0.5 S$

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 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.



Note:

- Earthing for (E1 & E2) top cover
- Earthing for (E1 & E2) bottom cover
- Earthing for (E1 & E2) rear cover
- Earthing for (E1 & E2) door
- Earthing for (E1 & E2) side panel-LH&RH
- Earthing for (E1 & E4) mounting plate
- External earthing for (E3) side panel LH & RH

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 authorized 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 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 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 0.18mm) 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 type 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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