

Instruction Manual for Power Distribution, Switchgear and Control Assembly –EJB Series



All work on this Ex-equipment must be carried out only by qualified Specialist personnel following EN/IEC 60079-14. Any subsequent Modification must be within framework of this operation manual

The operating permit expires in the event of non-compliance!

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1.0 Safety Instructions

1.1 Safety notes



The target group of these instructions is electrical operatives and instructed staff following EN/IEC 60079-14.

- ❖ Operating permit expires in event of non-compliance.



Use the devices only for their intended purpose!

- ❖ We cannot be held liable for damage caused by incorrect or unauthorized use or by non-compliance with these operating instructions.
- ❖ Use the device only if it is undamaged.

Serious risk of injury!

- ❖ Only original parts supplied by ROSE are permissible for spares and repair work. Other spare parts can invalidate explosion protection.



The explosion group, temperature class and ambient temperature marked on the enclosure must be observed!

- ❖ Please look at marking on enclosure, it should be installed in zone, explosion group, T Class & ambient temperature for which they are suitable.
- ❖ We cannot be held liable for damage caused by incorrect selection.

Any unauthorized work on the device is prohibited!

- ❖ Installation, maintenance, overhaul and repair may only be carried out by appropriately authorized and trained personnel.

Repairs affecting the explosion protection must only be carried out by ROSE or a qualified authorized person in accordance with EN/IEC 60079-19!



Do not allow combustible dust deposit to form on enclosure!

- ❖ Regular cleaning of dust deposit is recommended to avoid hot surface becoming ignition risk.

Observe the following information during installation and operation

- ❖ Remove all foreign bodies (e.g. uncertified plugs for transportation) from enclosure.
- ❖ Any damage may compromise the explosion protection
- ❖ National and local safety regulation
- ❖ National and local accident prevention regulations
- ❖ National and local assembly and installation regulations
- ❖ Generally recognized technical regulations
- ❖ Safety notes in this instruction manual
- ❖ Characteristic values and related operating conditions on the rating plates and data plates
- ❖ Additional information plates on the device

1.2 Modification and alterations



Alteration and modifications to the device are not permitted!

Do not add terminals and components without consultation to manufacture.
Do not make additional cable or conduit entries.

We shall not take any liability or warranty obligations for damage resulting from alterations and modifications.

2.0 Standard Conformity

The equipment is tested and approved for explosion hazard area to IEC 60079-0:2017 & EN IEC 60079-0:2018, IEC 60079-1:2014 & EN 60079-1:2014, IEC60079-31:2013 & EN 60079-31:2014, IEC 60529:2013 & EN 60529:1992/A2:2013 standards and ATEX Directive 2014/34/EU.

The recognized national conditions and stipulation concerning electrical equipment in hazardous area must be considered while installing and operating explosion proof electrical equipment.

These enclosures can be used in hazardous area in Zones 1, 2, 21, 22.

They are not certified for Zone 0, 20.

3.0 Function



- ❖ These enclosures are used as Power Distribution, Switchgear and Control assembly enclosures. The protection technique allows using standard electrical products having arcing or sparking components inside enclosure. These electrical components are mounted & wired according to customer specification.
- ❖ Use the device for its intended purpose only!
- ❖ Otherwise, the manufacturer's liability and warranty expires.
- ❖ Use the device under operating conditions described in instruction manual.
- ❖ The device can be used in areas subject to explosion hazards only according to this instruction manual.
- ❖ No changes to the device impairing their explosion protection are permitted.
- ❖ Install the device only if is undamaged, dry and clean.

4.0 Technical Data

Manufacturer: ROSE Systemtechnik GmbH
Erbeweg 13-15, 32457 Porta Westfalica,
GERMANY

Explosion Protection:

IECEx Gas: Ex db IIB+H₂ T6/T5/T4 Gb
Dust: Ex tb IIIC T85°C/T100°C/T135°C Db

ATEX Gas:  II 2 G Ex db IIB+H₂ T6/T5/T4 Gb
Dust:  II 2 D Ex tb IIIC T85°C/T100°C/T135°C Db

IECEx Certificate of Conformity No: IECEx DEK 18.0074 X
EC Type examination Certificate No: DEKRA 18ATEX0118 X

Electrical Data

Rated operation voltage: 1.1KV AC/DC (Declared voltage rating is nominal and item having higher voltage rating may be populated as required in consultation with manufacturer.)

TYPE NO	EJB 01	EJB 02	EJB 03	EJB 04	EJB 06	EJB 07	EJB 09	EJB 10
Max Rated Current (A)	76	125	232	269	415	850	935	1055
Max Conductor Size (mm ²)	16	35	95	120	240	500	630	1000
Max PE Conductor Size (mm ²)	16	16	50	70	120	240	300	500

Ambient Temperature

"-60°C* / -20°C ≤ Ta ≤ +40°C.....+110°C

*EJB 06, EJB 09 & EJB 10 are suitable for "-20°C" only, other types are suitable for both "-20°C and 60°C".

❖ Use equipment within ambient temperature marked on Ex label

Mechanical data

Enclosure: Marine grade copper free aluminum alloy
(Enclosures are available in stainless steel or cast iron on request)
O Ring: Silicone
Finish: RAL 7035
(Enclosures are available in natural finish or electroplated on request)
Earthing: 1No External and 1No Internal
Degree of protection: IP66 as per IEC 60529:2013 & EN 60529:1992+A2:2013
Installation: 4 mounting holes




Number, size & location of entries

Number, size & location of entries shall be in combination as required within max permissible limits in Metric as per ISO 965 or NPT as per ANSI/ASME B1.20.1 specified as per table. Generally, these entries will be from sides of base. However, entries from rear of base can be provided as required subject to

- Total area of entries from all sides and rear shall not exceed total area of entries allowed from all the four sides
- All reinforcement provided in the base shall remain intact and
- Min center to center distance shall be maintained as in case of entries from sides.

PERMISSIBLE ENTRIES FROM EACH SIDE									
SIZE	SIDE	EJB 01	EJB 02	EJB 03	EJB 04	EJB 06	EJB 07	EJB 09	EJB 10
M20 or 1/2"NPT	Short side	04	06	08	20	21	36	54	55
	Long side	06	08	10	25	24	46	84	90
M25 or 3/4"NPT	Short side	02	04	06	14	17	24	33	45
	Long side	04	05	08	20	20	30	54	75
M32 or 1"NPT	Short side	01	03	04	12	11	20	28	30
	Long side	02	04	05	14	12	26	43	50
M40 or 1.1/4"NPT	Short side	X	02	03	08	08	12	18	21
	Long side	X	03	03	11	10	15	28	33
M50 or 1.1/2"NPT or 2"NPT	Short side	X	X	02	06	04	09	12	18
	Long side	X	X	03	08	05	11	21	27
M63 or 2.1/2"NPT	Short side	X	X	X	03	03	05	11	12
	Long side	X	X	X	X	04	07	17	20
M75 or 3"NPT	Short side	X	X	X	02	03	04	06	08
	Long side	X	X	X	X	03	05	09	14
M90 or 3.1/2"NPT	Short side	X	X	X	X	X	X	05	07
	Long side	X	X	X	X	X	X	08	11
M100 or 4"NPT	Short side	X	X	X	X	X	X	05	04
	Long side	X	X	X	X	X	X	07	08

Marking

<div>  <div> ROSE Systemtechnik GmbH D-32457 Porta Westfalica </div>  </div> <div>  II 2 G D Ex db IIB+H2*[1] Gb -[3] ≤ Ta ≤ +[4] Ex tb IIIC [2] Db -[3] ≤ Ta ≤ +[4] IP66 Type : [5] [6] W DD.MM.YY DEKRA 18ATEX0118 X 000000000 IECEX DEK 18.0074 X <small>WARNING - DO NOT OPEN WHEN ENERGIZED CAUTION - USE FASTENERS WITH YIELD STRESS ≥ 450 MPa</small> </div>	<p>NOTE -:</p> <ol style="list-style-type: none"> Additional plate as under shall be affixed when option of ingress protection with silicon grease is used. WARNING - APPLY SILICONE GREASE BEFORE CLOSING TO MAINTAIN IP 66 Option of IP protection by silicon grease is not possible in case of dust marking. Name plate with dust or gas or dual gas + dust marking can be given as required. Name plate with IECEx or ATEX or dual IECEx + ATEX marking can be given as required.
<p>*Note- Equipment may be marked as IIB or IIB+H2 as required. Equipment marking shall be completed by using type of protection i, [i], m for certified equipment or component used for assembly and general arrangement drawing for assembly will refer to applicable certificates.</p>	

TYPE	T Class	T6			T5					T4				
	Dust Temp Marking	T85°C			T100°C					T135°C				
	Max ambient temp	+40°C	+50°C	+60°C	+40°C	+50°C	+55°C	+60°C	+75°C	+40°C	+50°C	+60°C	+90°C	+110°C
EJB 01	Max Watt Dissipation	60W	X	36W	X	X	60W	X	36W	X	X	X	60W	36W
EJB 02		76W	X	42W	X	X	76W	X	42W	X	X	X	76W	42W
EJB 03		87W	X	60W	X	X	87W	X	60W	X	X	X	87W	60W
EJB 04		190W	150W	105W	292W	230W	190W	185W	105W	530W	455W	390W	190W	105W
EJB 06		209W	166W	114W	338W	260W	209W	206W	114W	584W	514W	436W	209W	114W
EJB 07		365W	290W	205W	570W	440W	365W	320W	205W	1050W	890W	760W	365W	205W
EJB 09		467W	319W	236W	728W	555W	467W	353W	236W	1238W	1145W	956W	467W	236W
EJB 10		726W	568W	400W	1085W	864W	726W	712W	400W	2038W	1709W	1454W	726W	400W

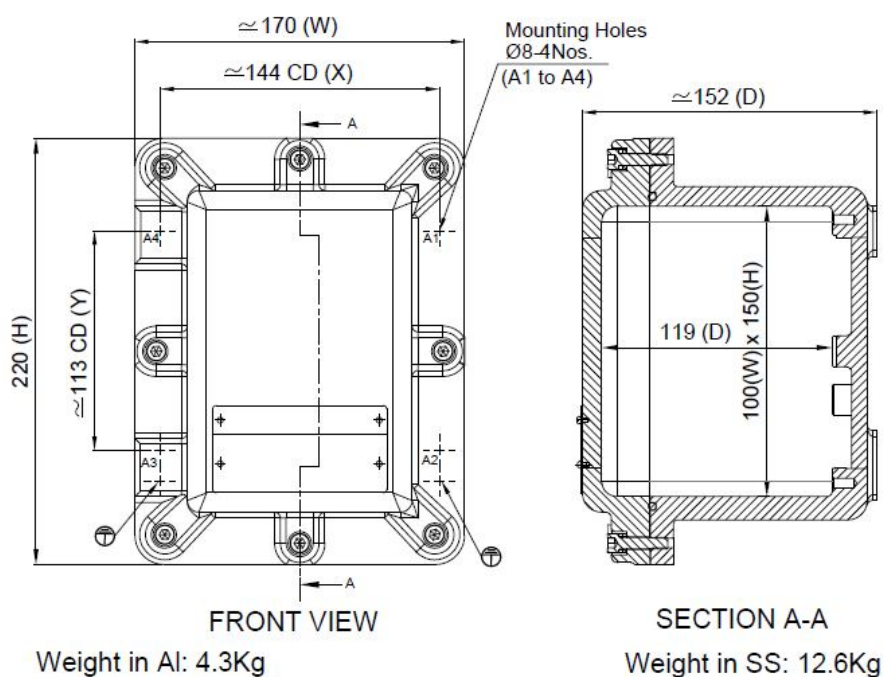
Note: EJB 06, EJB 09 and EJB 10 are suitable for "-20°C" only, other types are suitable for both "-20°C and -60°C".

Thread type i.e. Metric or NPT and size of threaded entry are marked on supplied enclosure by affixing suitable sticker near each entry.

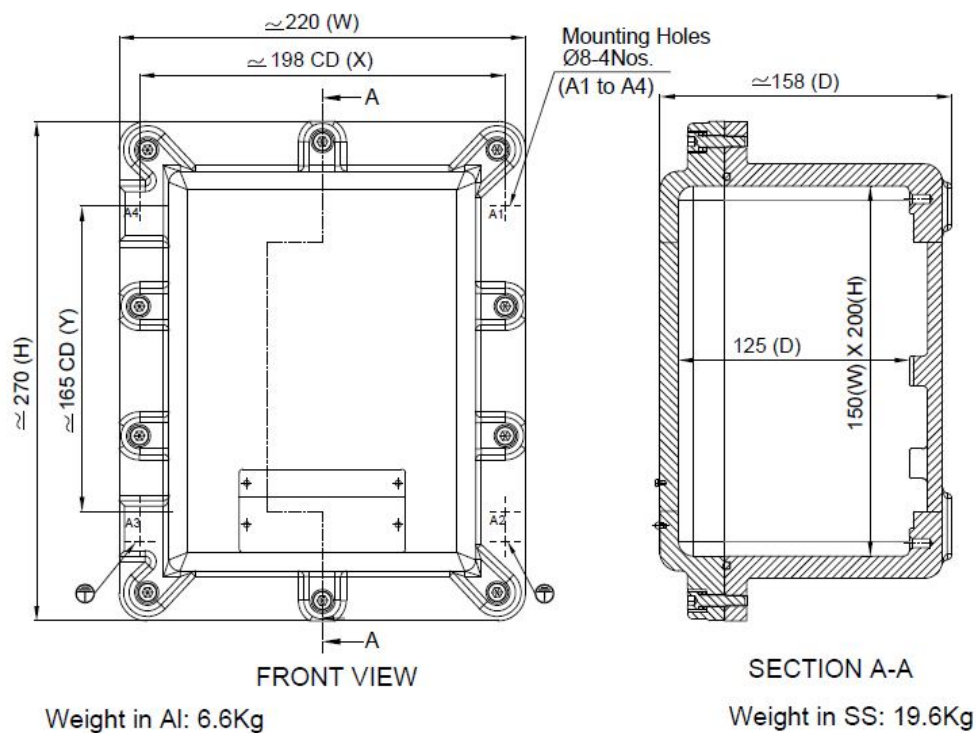
5.0 Installation

5.1 Dimensional drawings (All dimensions in mm) – subject to alterations

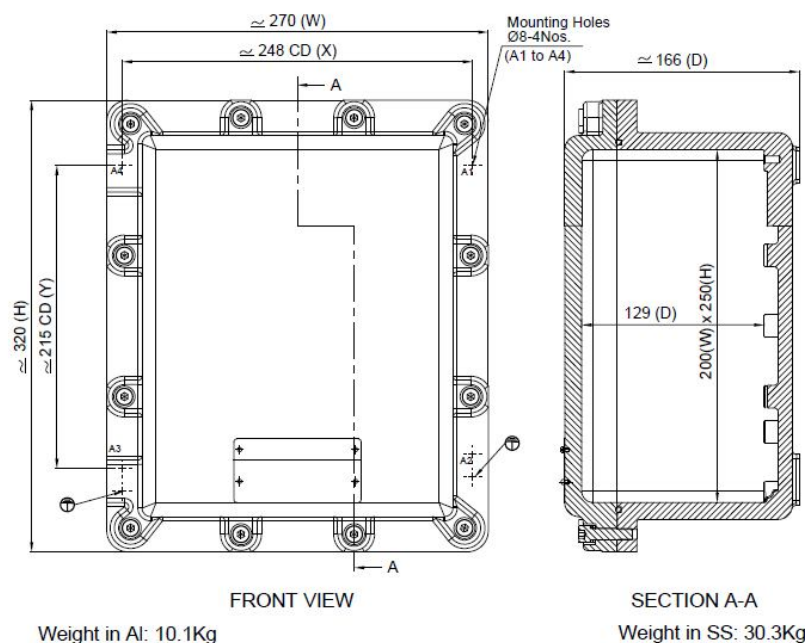
EJB 01



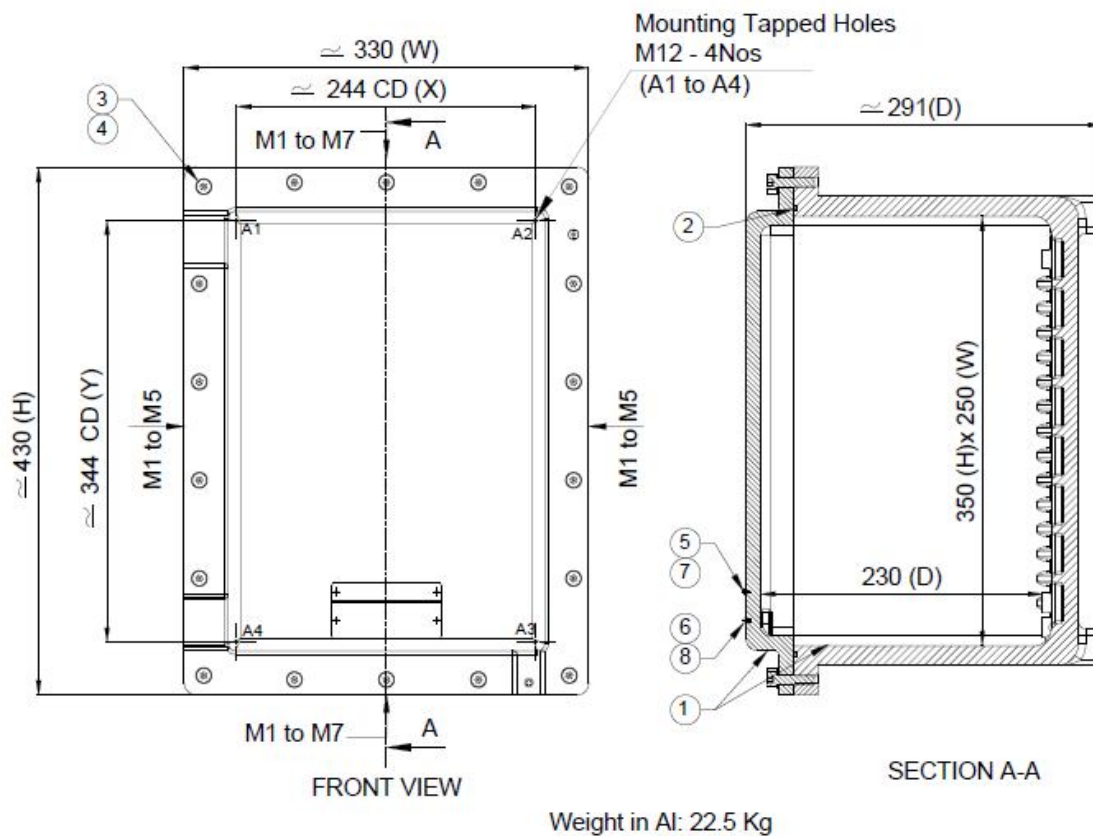
EJB 02



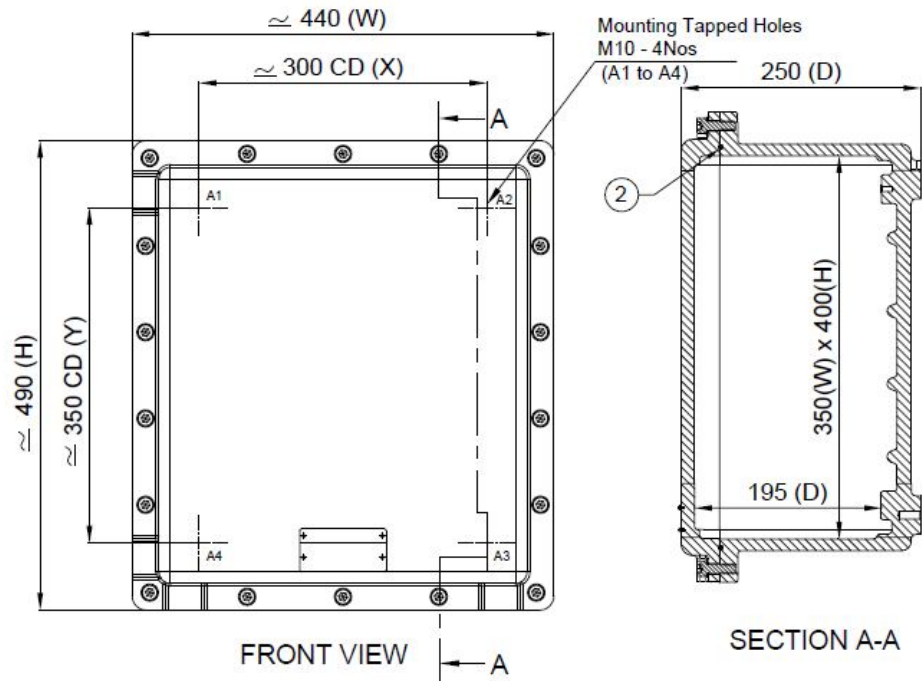
EJB 03



EJB 04

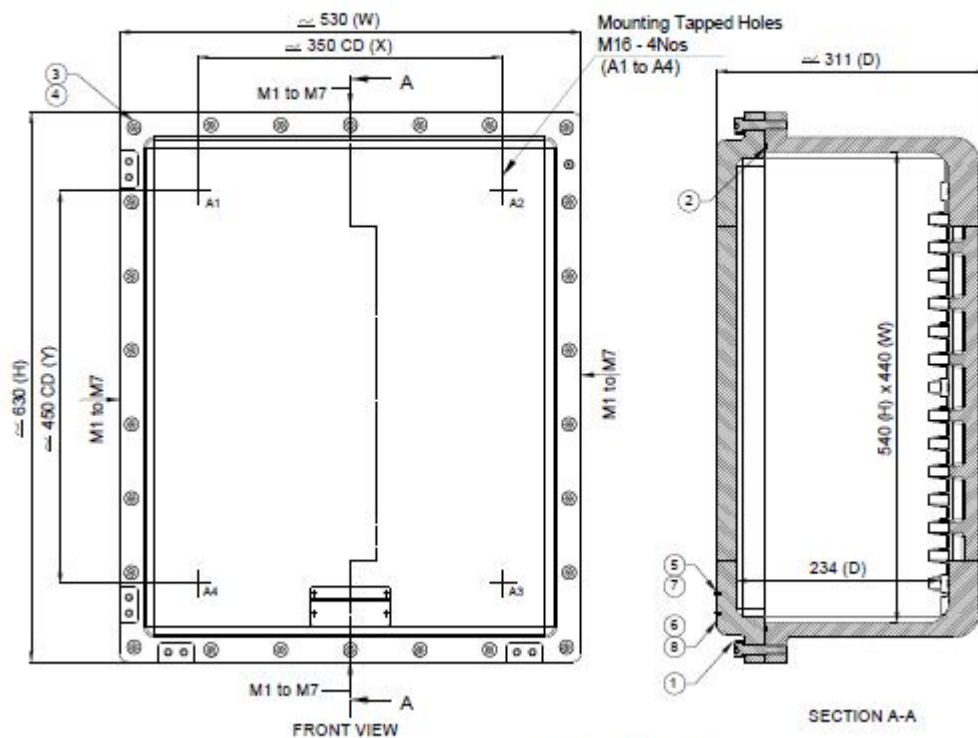


EJB 06



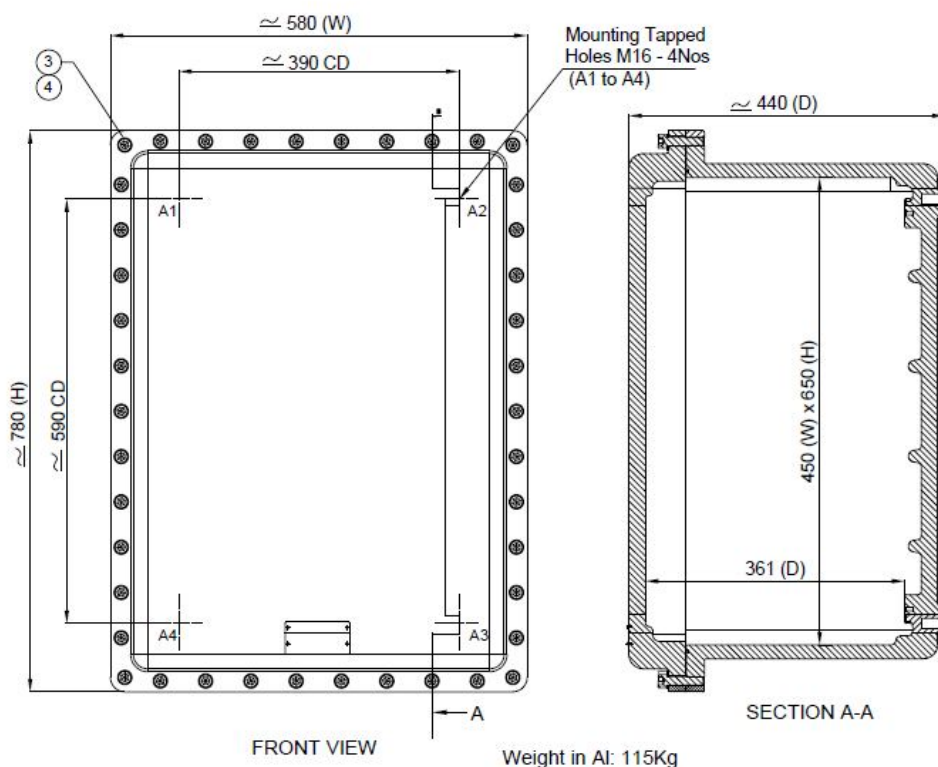
Weight in Al: 30.2Kg

EJB 07

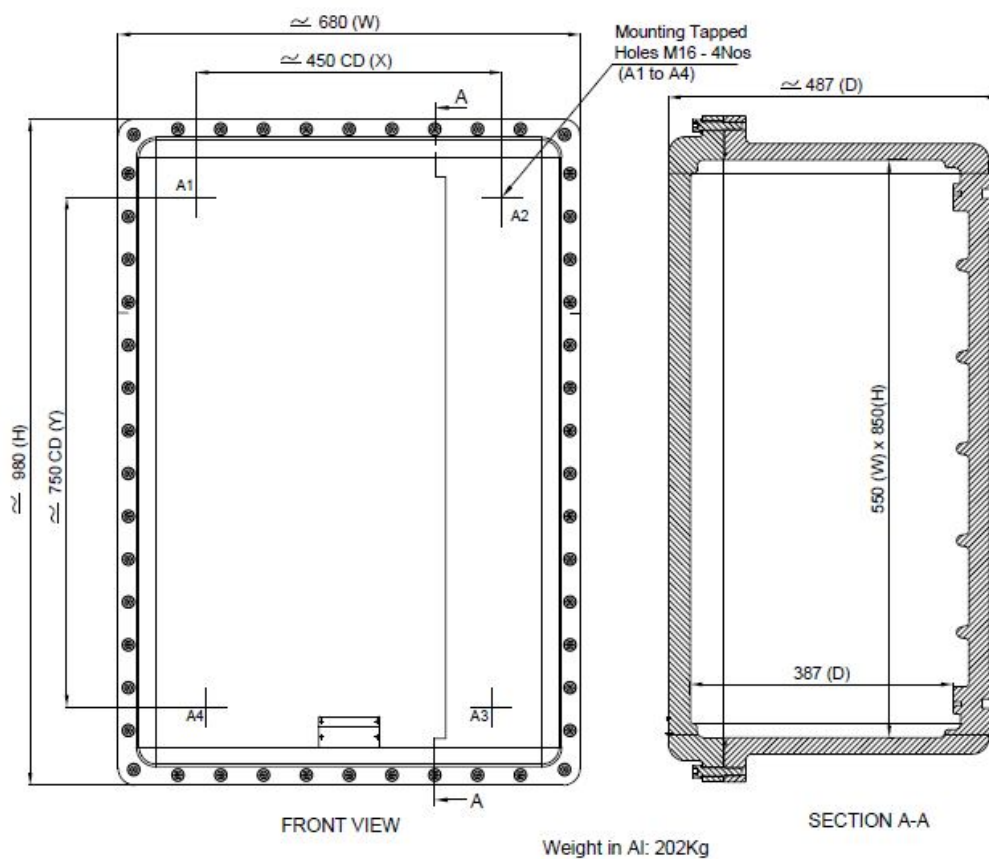


Weight in Al: 65.5 Kg

EJB 09



EJB 10



5.2 Installation conditions

Built in components

The T Class is dependent on power dissipation of components, wiring and Max ambient temperature. Refer Technical data. No batteries & fans are permitted.

Only replacement of components built inside the enclosure is permitted. Any addition or alternation without consultation to ROSE is not permitted and may lead to ignition risk. Replacement of Display window is not possible.

5.3 Mounting and operating position

Mounting the enclosure

- ❖ Mount the enclosure in vertical position by using four screws. Refer dimensional drawing for mounting holes & mounting dimension.
- ❖ Tighten the mounting screws properly.

Opening the enclosure

- ❖ The enclosure lid is bolted. Use Allen key of appropriate size to open lid bolts.

Closing the enclosure

- ❖ These enclosures are with/ without O ring in base. In case O ring is damaged, please replace with supplies from ROSE.
- ❖ In case O Ring is not provided, ingress protection is ensured by application of silicone grease Anabond 662 or equivalent (e.g. Fuchs Renolit Unitemp 2).
- ❖ To prevent corrosion of flange joint it is coated with silicone grease Anabond 662 or equivalent. (e.g. Fuchs Renolit Unitemp 2).
- ❖ Apply a coat of silicone grease Anabond 662 or equivalent (e.g. Fuchs Renolit Unitemp 2) on flange of lid & base before closing.
- ❖ Bolt the lid of enclosure and tighten the bolts using appropriate size of Allen keys. No bolts should be missing or loose.
- ❖ Lid bolts are of SS A2.70 grade. In case of replacement, replace by same size of same or higher strength.



Danger due to not approved cable glands & accessories!

- ❖ Only certified cable glands & accessories of required Ex protection shall be used.
- ❖ Each entry shall have no more than one thread adopter. A blanking element shall not be used with a thread adopter.
- ❖ In case of non-compliance explosion protection can no longer be guaranteed.

Danger due to open holes or unused cable entries on the enclosure!

- ❖ If holes or unused cable entry is left open, explosion protection can no longer be guaranteed.
- ❖ Close open holes using stopping plugs approved for required type of protection.

5.4 Electrical Connection

Internal wiring



Incorrect wiring inside enclosure!

- ❖ Strictly adhere to wire size and length for which heat loss dissipation are taken into account for permissible wattage for a given T Class. In case of non-compliance explosion protection can no longer be guaranteed.
- ❖ Strictly adhere to the creepage and clearance required.
- ❖ Use only insulated wires of suitable voltage grade.
- ❖ Mounting rails or components must be loosened and fastened properly.

External Wiring

Danger due to improper cables!

- ❖ The cables must comply with IEC/EN 60079-14 and relevant regulation and must have the required cross section.
- ❖ Strictly adhere to cable size and length for which heat loss dissipation are taken into account for permissible wattage for a given T Class and ambient temperature.
- ❖ In case of non-compliance explosion protection can no longer be guaranteed.

Danger due to improper cable glands!

- ❖ The cable glands shall be appropriate to cable type and size and with suitable approval as per IEC/EN 60079-14.
- ❖ Entry threads have been marked on enclosure by sticker, please use cable gland of appropriate size and type.
- ❖ In case of non-compliance explosion protection can no longer be guaranteed.

Protective Earth (PE) and equipotential (EP) bonding conductor connection

Always connect the protective earth (PE) and equipotential (EP) bonding conductor!

- ❖ The device is equipped with one internal and one external earthing stainless steel screw, 1 No. tooth (Anti-rotational) washer and 2 No. plain washers.
- ❖ Use ring type lug of suitable material and size to be affixed between 2 plain washers.
- ❖ The PE and EP conductor size shall be as under:

Cross-sectional area of phase Conductor S mm ²	Minimum cross-sectional area of PE conductor in mm ²	Minimum cross-sectional area of the EP conductor in mm ²
$S \leq 16$	S	Minimum 4mm ² or same as PE conductor if it is intended to serve as PE conductor also.
$16 < S \leq 35$	16	
$S > 35$	0.5 S	

6.0 Commissioning



Check the device before putting it into service!

To ensure proper operation the equipment must be checked prior to putting it in service.

If the enclosure is connected incorrectly, explosion protection is no longer guaranteed!

The device must be operated only with completely closed enclosures.

Before commissioning ensure that:

- ❖ No components are damaged.
- ❖ The equipment has been installed according to regulations.
- ❖ There are no foreign bodies inside the device.
- ❖ The specified tightening torques has been observed.

7.0 Inspection, Maintenance, Repair and Overhaul

7.1 Inspection and Maintenance:

- ❖ Consult the relevant national regulations (e.g. IEC/EN 60079-17) to determine the type and extent of inspections.
- ❖ Plan the intervals such that any expected defects are detected promptly.



Risk of Electric Shock!

Before opening the device, disconnect it from power supply and wait for some time to allow internal components to cool down.

7.2 Repair and Overhaul

Damaged enclosure cannot be repaired at site. Only control accessories, electrical components, cable glands & accessories can be changed. Please follow IEC/EN 60079-19 for repair of damaged enclosure. Only certified control accessories of Rose must be used.

8.0 Specific conditions of use:



- ❖ For enclosures provided with a powder coating, liquid painting or provided with a non-metallic nameplate and/or tagplate and intended for use in Group III applications, the user shall minimize the risk from electrostatic discharge by suitable selection and installation.
- ❖ The flanged flame path of the cover differs from the values stated in EN 60079-1. Contact the manufacturer for information on the dimensions of the flameproof joints.
- ❖ The M6, M8, M10 and M12 fasteners are of grade A2-70 with a yield stress of at least 450 MPa and shall be applied with a minimum torque value of 11 Nm (M6), 28 Nm (M8), 58 Nm (M10) and 95 Nm (M12).
- ❖ LED Indicating lamps, if assembled, are suitable for low risk of mechanical danger i.e., 2 Joules.
- ❖ Control Accessories i.e., indicating lamps, Push button and Rotary actuators, if assembled, may pose risk of electrostatic discharge hence clean with damp cloth only.

9.0 Technical Support:



Contact ROSE Systemtechnik GmbH, Erbeweg 13-15, D-32457 Porta Westfalica, GERMANY for technical support.