



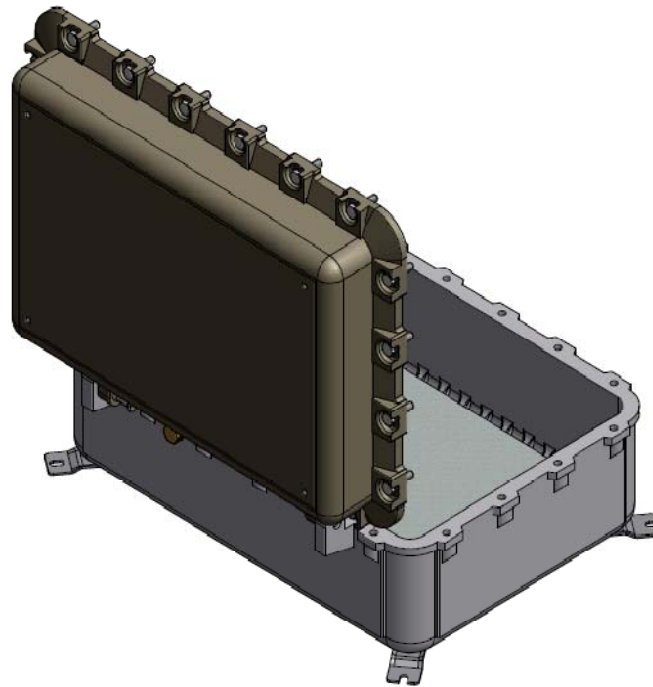
*SHOMAL Engineering & Manufacturing Co. (PIROOZ)*

ماشین سازی شمال پیروز

**Safety maintenance and operating instruction**

# **EJB 110, 120 & 241**

**CONTROL AND DISTRIBUTION JUNCTION BOX**



Document Number: WI-24(PCD-P-01)/00

According to directive 94/9/EC ATEX



THIS GUIDE SHOULD BE READ CAREFULLY BEFORE INSTALLATION.  
INCORRECT INSTALLATION AND USE OF THE JUNCTION BOXES CAN INVALIDATE THE GUARANTEE!

## IMPORTANT NOTES:

- i. THIS GUIDE SHOULD BE READ CAREFULLY BEFORE INSTALLATION,
- ii. INCORRECT INSTALLATION AND USE OF THE JUNCTION BOXES CAN INVALIDATE THE GUARANTEE

## Applications:

These explosion proof junction boxes are used as classified enclosures, pull box, splice box, control panel, equipment and device enclosure.

## Safety Instructions (!)

**For skilled electricians and instructed personnel in accordance with national regulation, including the relevant standard and, where applicable, in accordance with IEC 60079-17 on electrical apparatus for explosive atmospheres.**

- The boxes must not be operated in Zones 0 and 20.
- The apparatus shall not be used in dust layers > 50 mm to IEC 61241-1.
- The temperature class and gas group marked on the boxes shall be observed.
- The technical data indicated on the apparatus and technical documentation of products are to be observed.
- Changes of the design and modifications to the boxes are not permitted!
- The apparatus shall be operated as intended and only in undamaged and perfect conditions.
- Only genuine **SEMC** spare parts may be used for replacement.
- Repairs that affect the explosion protection may only be carried out by **SEMC** or a qualified "electrician" and will subsequently have to be checked by an "expert" in compliance with the respective national regulation.
- Prior to taking boxes into operation, they shall be checked in accordance with the "Taking into operation" of this manual.
- Before the initial operation, any foreign matter shall be removed from the boxes.
- Do not keep these operating instructions inside the boxes during operation.
- **The national safety rules and regulations for prevention of accidents and the following safety instructions which are marked with an (!) in these operating instructions will have to be observed.**

## Conformity with Standards:

This explosion protected apparatus meets the requirements of:

- IEC 60079-0
- IEC 60079-1
- IEC 60079-31
- IEC 60529
- It also complies with the EC Directive for "Apparatus and protective systems for use in explosive atmospheres" (94/9/EC).
- It has been designed, manufactured and tested in accordance to the state of the art and according to EN9001 (ISO9001 - 2008).
- The boxes are suitable for use in explosive atmospheres, Zone 1 and 2 acc. to IEC60079-10-1. And Zones 21 and 22 acc. IEC60079-10-2

The relevant code of practice is according to IEC60079-14

## Technical data

### Field of application

CAT II 2G for use in zone 1 or 2. Area as defined in IEC60079-10-1, IEC60079-14 and IEC60079-0  
 CAT II 2D for use in zone 21 or 22. Area as defined in IEC60079-10-2, IEC60079-14 and IEC60079-0

EC type examination certificate	n. 0F150609.SEMDD43
Marking acc to 94/9/EC directive	⊕ II 2 G D
Marking acc. to IEC	Ex d IIB T4, T5 & T6 Gb, Ex tb IIIB T85°C, 105°C & T135°C Db <sub>1</sub>
Ingress protection to IEC 60529	IP65 <sub>2</sub> )
Approval of production, QAN Number	n. 0F150609.SEMDD44
Permissible ambient temperature	-20°C to +40°C and -30°C to +55°C , See table 1
Material	aluminum alloy

- 1) See table 1, for other temperature classes, ambient temperatures and permissible dissipation power.
- 2) With flanged joints Exd perfectly greased.

Table 1- Maximum Permitted dissipation power(W)

Type of Enclosure	Tamb (-20°C to +40°C)			Tamb (-30°C to +55°C)			Max. Rated Current(A)	Max. Rated Voltage(V)
	T4, T135°C	T5, T105°C	T6, T85°C	T4, T135°C	T5, T105°C	T6, T85°C		
EJB 110	446 W	235 W	130 W	346W	130W	50W	160	690
EJB 120	396 W	278 W	187 W	296W	187W	107W	300	
EJB 241	793 W	400 W	295 W	693W	295W	215W	850	

### Feature:

- Bodies: made of aluminum alloy, 357.1 [AC][USA] and have thick walls so they can be factory drilled and taped to meet IEC requirement for zone 1, 2, 21, 22 for cable entries.
- Covers: made of aluminum alloy, EN AC-44400 acc. To BS EN 1706:2010 and have thick walls so they can be factory drilled and taped to meet IEC requirement for zone 1,2,21,22 for custom control equipment
- Base plates: to be used for component's mounting or terminal rail
- Internal earth: for earth continuity
- Fixing brackets: detachable wall mounting bracket, stainless steel sheet 3mm thick. Also utilizable for external earth connection.
- Standard finish: epoxy powder coat finish inside and outside. (*Body RAL 7032 & cover RAL 7043*)

### Options:

- Factory installed mounting plate for relays, terminal blocks, electrical devices, etc.
- Factory installed pushbuttons, signal lamps, switchgear, rotary handles, actuators, circular glass windows.
- Factory installed terminal blocks up to 240 sq mm.

**Dimension and weight:**

Figure 1

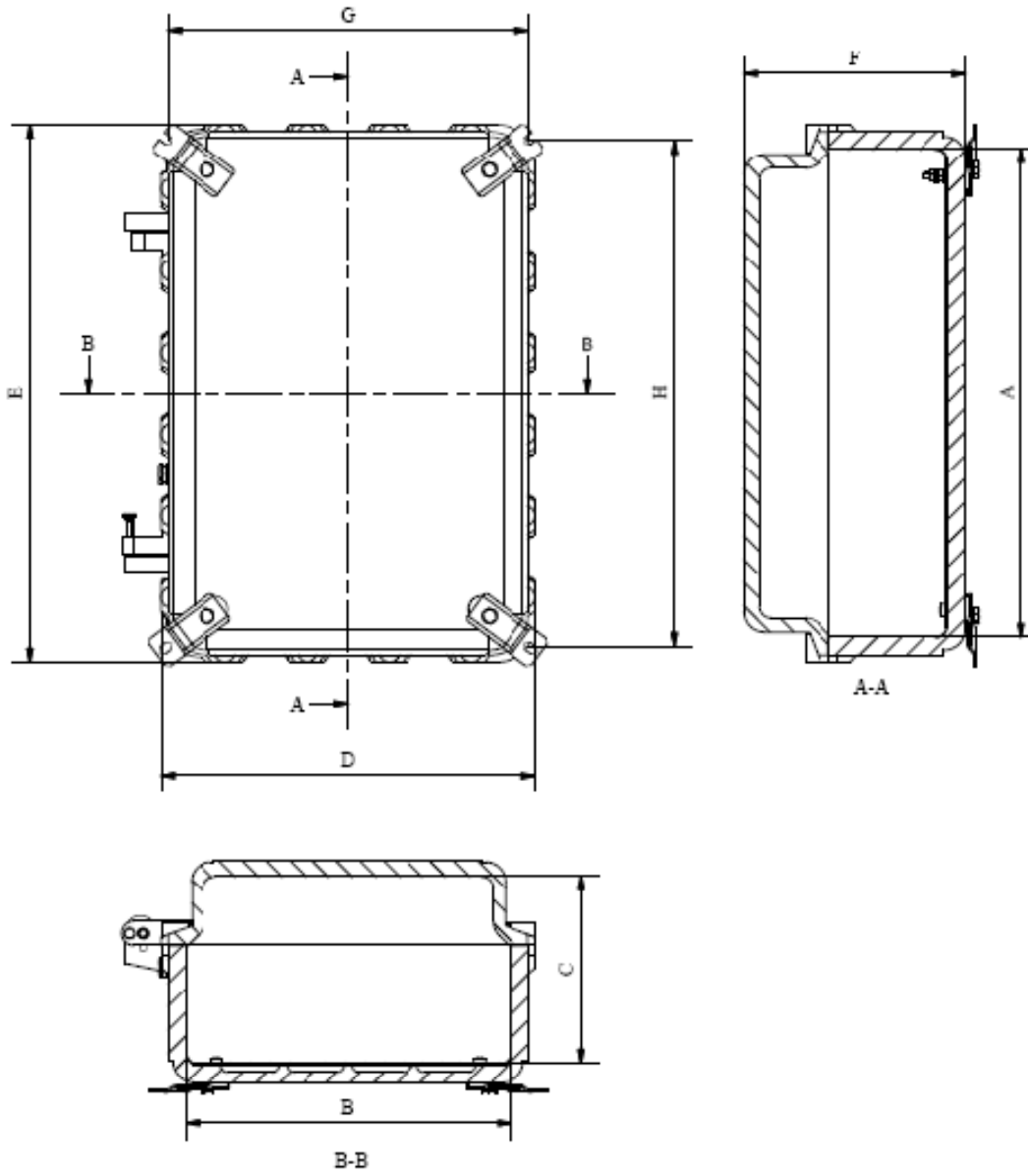


Table 2

Type	Inside Nominal Dimension(mm)			Overall Dimension(mm)			Mounting Dimension(mm)		Weight(Kg)
	A	B	C	D	E	F	G	H	
EJB110	311	311	178	382	382	228	347	347	22
EJB120	408	308	183	373	472	223	346	450	28.5
EJB241	622	415	288	483	689	240	454	646	56.8

Entries for cable gland on sides:

Figure 2

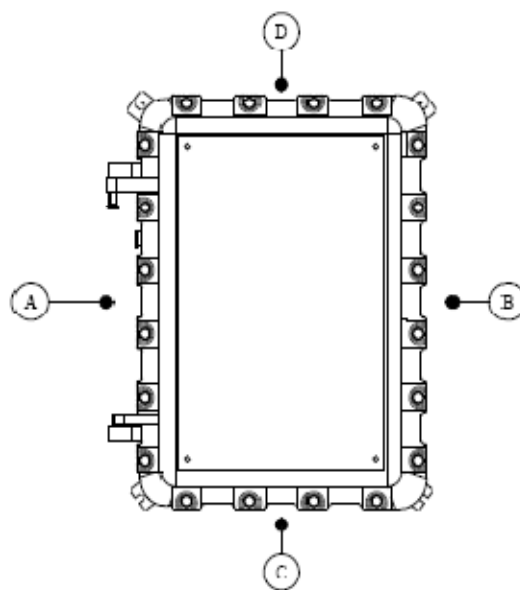
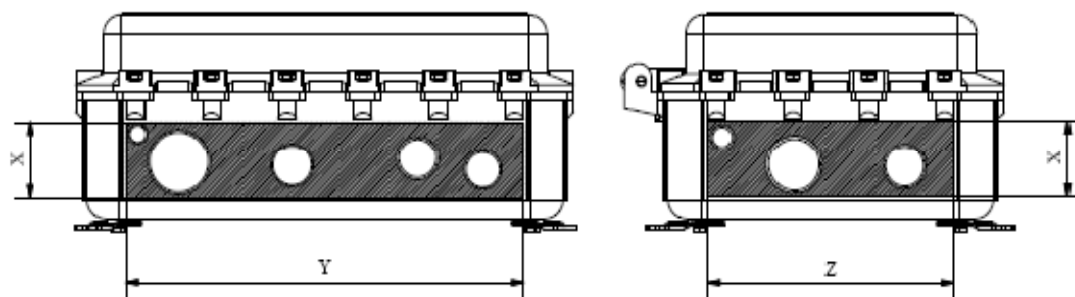


Table 3

TYPE OF EJB	Max. no. of Entries per side									Dimension		
	Entry Size	Metric	M16/M20	M25	M32	M40	M50	M63	M75	X	Y	Z
		NPT	1/2	3/4	1 - 1 1/4	1 1/4 - 1 1/2	2	2 1/2	3			
110	No. of Entries(s)/side(A,B)		21	14	8	4	3	2	2	77	230	
120			27	18	9	5	4	3	2	77	305	
240&241			42	29	15	9	7	5	4	76	522	
110	No. of Entries(s)/side(C,D)		21	14	8	4	3	2	2	77		230
120			21	14	8	4	3	2	2	77		230
240&241			27	18	9	5	4	3	2	76		305

**Entries for electrical component on covers:**

Table 4

Component characteristics and use
Terminal
Bus-bars
Low voltage transformers
Air circuit breakers
Automatic circuit breaker
Control and operating circuit
Starters and ballasts for discharge lamps
Electronic apparatus
Fuses
Servo motors without ventilation

**NOTE:** for no. / Size of terminal refers to document of supplement product.

Figure 3

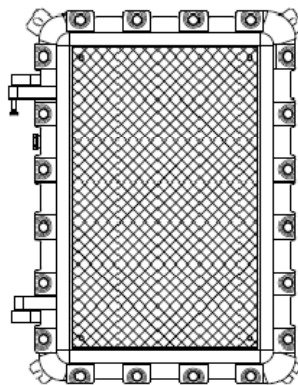


Table 5

Electrical components		Max. capacity			
		EJB110	EJB120	EJB240	EJB241
Pushbutton		16	24	54	50
signal lamp		16	24	54	50
Small-window(M130)		1	2	6	6
Big-window(M130)		1	1	2	2
Control switch - MCB	I Pole	6	9	20	20
	II Poles	6	9	20	20
	III Poles	6	9	20	20
	IV Poles	4	6	20	16
	II Poles + Vigi	4	6	20	16
	III Poles + Vigi	4	6	15	11
	IV Poles + Vigi	2	3	9	9
Control switch - MCCB	Up to 250A				6
	250 - 1000 A				1

## Admission

On apparatus reception it should be checked against the delivery notes and the following minimum controls should be made:

- **Visual inspection:** to ensure that apparatus has not suffered damages during delivery process.
- **Mechanical check:** to ensure all parts of the apparatus working properly.
- **Electrical check:** To ensure that all the electrical data like voltage, current, wiring diagrams, etc. are in accordance with the technical specification in the order.

## Installation

The respective national regulations as well as the general rules of engineering which apply to the installation and operation of explosion protected apparatus should be observed.

Transport and storage of the enclosures is permitted in original packaging only.

## Opening and closing the boxes (!)

The opening of boxes always shall be without voltage, the boxes are well closed when covers are completely threaded on the enclosure.

- 1- Furnished with or without drilled and tapped openings. Drilling and tapping of conduit openings and device openings in cover are subject to the limitations of maximum size and number of openings as well as spacing's. All machining must be done prior to installation by original manufacturer.
- 2- Select a mounting location that will provide suitable strength and rigidity for supporting all contained wiring and control devices. Figure 1 shows the mounting dimensions.
- 3- Securely fasten enclosure to the mounting location, then attach into cable or conduit system. Install approved conduit sealing fittings when required by the National Electrical Code plus any other applicable standards.
- 4- Remove cover bolts securing cover. Firmly grasp the bottom and right side of cover and carefully swing aside to prevent damage to the flanged joint surface. Avoid striking cover, or devices in cover, or neighboring enclosures or structures.
- 5- Pull wires into enclosure, making sure they are long enough to make the required connections. Make all electrical connections. The internal grounding terminal shall be used as equipment grounding means. The external terminal is only a supplemental bonding connection by using one of bottom fixing lug/brackets.
- 6- Test wiring for correctness with continuity checks and also for unwanted grounds with insulation resistance tester.
- 7- To install/close cover, make sure cover and body flanged joint surfaces are clean and not scratched. Lift cover to approximate position and line up bolt holes of cover with body. Avoid sliding flanged joint surface of cover over flanged joint surface of body. Cover/body bolt holes must match up. Hand start corner bolts. Fully tighten all cover bolts to torque value 30 N.M. the flameproof enclosures are well closed when all of cover screws closing the flanged Exd joints are perfectly tighten and their gaps are  $\leq 0.15$  mm.

## **Cable entries (!)**

**Mounting the selected cable entries e.g. cable glands or seals) according to type and dimensions of the main connection cable, following their manufacturer instructions. The cable entries devices have to be the same protection of the enclosure, where they are mounting “having minimum protection Exd IIB”.**

The cable entry holes must be fitted with suitably certified cable glands or suitably certified stopping plugs, which are capable of maintaining the IP66, 67 rating of the equipment.

**Thread engagement requirements for cable entries (!) 5 full threads and a minimum of 8 mm of thread engagement for cylindrical threads.**

**For taper threads, the threads shall conform to the NPT requirements of ANSI/ASME B1.20.1 and shall be made-up wrench tight.**

## **5. Taking into operation**

**Prior to taking the apparatus into operation, the test specified in the relevant national regulations should be carried out.**

**Apart from that, the correct functioning and installation of the apparatus in accordance with these operating instructions and other applicable regulations will have to be checked. Incorrect installation and use of the junction box can invalidate the guarantee.**

- The IP rating of the enclosure must be maintained for the area of use, by the use of correct arrangement of Cable /gland /sealing arrangements and in accordance with the installation codes as detailed in *IEC 60079-14*, and this operating instruction.
- Where other certified components are part of assembly, the user must take in to account any limitations listed on relevant certificates.
- The enclosure shall be maintained at IP 66/67 suitable sealing washer under the shoulder of the cable gland.
- All unused entry holes must be sealed by a suitable certified stopping plug with the same protection level of the enclosures.
- Only carry out insulation measurements between PE and conductors L1, L2 and L3, as well as between PE and N.
  - a. - measurement voltage:  $\leq 1$  kV AC/DC
  - b. - insulation:  $\geq 5$  M $\Omega$Then the enclosures have to be tightly closed.
- The apparatus must not be modified without reference to SEMC as this will invalidate certification.

## **7. Maintenance (!)**

**Observe the national rules applicable to maintenance, servicing, inspection and repairing of apparatus for explosive atmospheres, as well as the general rules of engineering.**

**For dust explosive application, pay special attention don't have present dust layers above 5mm on side of the apparatus.**



## **Servicing**

Before opening the enclosure make sure that the apparatus is disconnected from the supply voltage, or take appropriate protective measures.

The required maintenance intervals depend on the respective application and will therefore have to be determined by the user dependent on the conditions of use.

When servicing, in particular those components that affect the explosion protection, will have to be checked, e.g.:

- The flameproof joints have to be clean, undamaged, without corrosion and perfectly greased.
- Cable entries without corrosion.
- Terminals and blanking plugs for their firm fix.

If during servicing it proves that repairs are necessary, the Repair / Overhaul / Modification of this manual will have to be observed.

**The flame paths of these apparatus have to be greased permanently in order to ensure protection in front of the corrosion, water ingress and seize-up problems. Cleaning rest of grease and corrosion no using sharp metallic devices who can damage the surface of the joint, and greasing they using appropriate grease thermally and Chemically stable with a drop point > 200°C Inspection/ Repair / Overhaul / Modification (!)**

**The national's regulations have to be observed**

## **Repairing**

**The national's regulations have to be observed. The tasks of repairing have to be made by "qualified" personnel.**

Repairs may only be carried out with genuine **SEMC** spare parts.

Repairs that affect the explosion protection may only be carried out by **SEMC** or a qualified electrician in compliance with the applicable rules.

Modifications to the apparatus or changes of its design are not permitted.

## **DISPOSAL / RECYCLING**

SEMC cares for the environmental protection and recommends therefore disposing properly of the packing and wrapping of its goods, according to prescriptions and regulations in force in the destination country. The differential waste disposal strongly recommended. When the apparatus is disposed of, the respective national regulations on waste disposal will have to be observed.