Installation & Maintenance Manual for EA/DA**** Terminal Enclosures & EA/DA**** Control Stations

Specifications

Types	EA/DA1608, 2020, 3030, & 7535 JB Terminal Enclosures EA/ DA1608, 2020, 3030, & 7535 LCS/LCU Control Stations EA 7535 – BUS (Bus-bar Enclosure)	
Hazardous Area		
ATEX certificate number	SIRA09ATEX3178X	
IECEx certificate number	IECEx SIM 08.0017X	
Certification coding for ATEX/IECEx		
EA/DA**** JB	Ⓔx II 2 GD	Ex e IIC T* Gb Ex tb IIIC T** Db Ex e II T* Ex tD A21 T**
EA/DA**** LCS/LCU	Ⓔx II 2 GD	Ex e IIC T* Gb (terminals/ meters fitted) Ex de IIC T* Gb (above plus terminals/ switches/indicator lamps) Ex dem IIC T* Gb (above plus indicator lamps/fuses/) Ex tb IIIC T** Db Ex e II T* (terminals/ meters fitted) Ex de II T* (above plus terminals/ switches/indicator lamps) Ex dem II T* (above plus indicator lamps/fuses/) Ex tD A21 T**
EA 7535 – BUS (Bus-bar Enclosure)	Ⓔx II 2 GD	Ex e IIC T* Gb Ex tb IIIC T** Db Ex e II T* Ex tD A21 T**
Gas/dust temperature class		
EA/DA**** JB	T6/T80°C @ Ta+40°C/+55°C T5/T95°C @ Ta+40°C/+55°C	
EA/DA**** LCS/LCU	T6/T80°C @ Ta+40°C/+55°C T5/T95°C @ Ta+40°C/+55°C	
Minimum ambient temperature		
EA/DA****JB/LCS/LCU	-20°C	
IP Rating		
EA/DA****JB/LCS/LCU	IP66	
Maximum internal power dissipation (MDP)	Dependent on enclosure size – see certification label	
Mechanical		
Material	Die-Cast Aluminium Alloy	
Finish	Painted/Powder Coated Grey	
Cover screw torque	4Nm (M6 Bolt) / 8.5 (M8 Bolt)	
Entry threadform	Refer to Customer Specific Drawing produced at time of ordering	
Electrical		
Maximum voltage	Dependent on terminals & equipment fitted – see certification label	
Maximum current	Dependent on terminals, cable & equipment fitted – see certification label	
Conformity	IEC/EN 60079-0 IEC/EN 60079-7 IEC/EN 61241-0 IEC/EN 61241-1 IEC/EN 60529	

Installation

To minimise the risk of ignition by electrical apparatus in hazardous areas efficient installation, inspection and maintenance of apparatus and systems is essential and the work should be carried out by suitably trained personnel in accordance with the prevailing code of practice.

1) The enclosure should be mounted via the through-holes that are in the body. The body of the enclosure mounting holes /fixing points should be used as a template when marking fixing points. Expanding bolts should be used when mounting on concrete, or suitably sized bolts, nuts and anti-vibration washers when mounting to a steel framework.
2) An assessment should be made to ensure that the amount of power being dissipated within the enclosure is lower than the figure stated on the certification label so that temperature classes can be guaranteed.
3) Cables should not be bunched together so as to create hot spots. This is especially important when using relatively high currents with cables of smaller cross section.
4) Only suitably certified Ex e terminals may be fitted.
5) Only one conductor should be inserted into each terminal.
6) All strands of each conductor must enter the terminal.
7) No cables should be left floating and un-terminated.
8) Cable insulation should extend to within 1mm of the metalwork of the terminal. Creepage and clearance distances given by EN 60079-7: 2007 are as follows:

Voltage (AC or DC)	Minimum creepage distance (mm)	Minimum clearance (mm)
≤250	8	8
≤500	16	8

9) All terminals should be tightened to the torque specified by their manufacturer.

10) Terminals Assembly and end Brackets:

- Assemble terminal strips from left to right.
- Closed side on the left, open on the right.
- Always close off the open side of a modular terminal with an end plate or partition plate (WAP/TW, ZAP/TW and IAP).
- Fit end brackets to both ends of a terminal strip.
- End brackets can be omitted adjacent to PE terminals, with exception of WDK/PE and ZPE + WPE1.5/R3.5.

Maintaining the rated insulation voltage:

The required stripping length is specified in mm for every Weidmuller product. These lengths, e.g. 6± 0,5mm, 10 ± 1mm, must be maintained. This also applies when using wire end ferrules. The outside dimensions of crimped wire end ferrules must comply with IEC 60947-1, 1999 edition.

Tightening torques for clamping screws:

Tightening the clamping screw with the appropriate torque guarantees:

- A secure and gas-tight connection
- No mechanical damage to the clamping parts
- A voltage drop well below the permissible limit

The test torque to IEC 60947-1 or the torque as specified by the manufacturer is the lower value of the permissible torque range. This ensures that all tests are satisfied.

The upper value of the permissible torque range is the maximum torque that may be applied by the user. An electric screwdriver should preferably be set to a torque in the middle of the range.

The values given in the table are general figures. Torques specific to the products have been specified directly for each product.

Products with screw with slotted head

Thread	Tightening torque Steel screws min. 8.8		Thread	Tightening torque Non-ferrous screws	
		A 2/A 4-80		Cu 2(CuZn)	Cu 2(CuNi 60)
	[Nm]	[Nm]		[Nm]	[Nm]
M 2	0.2….0.35	0.2...0.35	M 2	0.4….0.45	……
M 2.5	0.4….0.8	0.4…0.8	M 3	0.5….0.6	0.5…1.0
M 3	0.5…1.0	0.5…1.0	M 3.5	…..	0.8…1.6
M 3.5	0.8…1.6	0.8…1.6	M 4	1.2…1.9	1.2…2.4
M 4	1.2…2.4		M 5	2.0…3.0	2.5…5.0
M 5	2.0…4.0		M 6	….	
M 6	2.5…5.0				

Products with screw with hexagon socket

Thread	Tightening torque Steel screws
	[Nm]
M 4	1.2…2.4
M 5	2.0…4.0
M 6	2.5…6.0
M 8	6.0…12
M 10	10.0…20
M 12	14.0…31
M 16	25.0…60

Note: - Enclosure for Ex tD applications

Terminals for wire termination: Terminals complying with IEC 60947-7-1, IEC 60947-7-2, IEC 60999-1 or IEC 60999-2

11) Cable entries should be made only with suitably certified Ex e / Ex tb glands noting that this equipment is suitable for use with gas group IIC & dust group IIIC. IP ratings should be suitable for the intended area of installation. Metal cable glands shall be earthed.
12) All unused entries should be fitted with suitably certified Ex e / Ex tb stopping plugs.
13) Once the cover is fitted, ensure that all fasteners are fully tightened.
14) Ensure appropriate hardware and supports are used for mounting enclosure weight.
15) Remove cover by un-screwing or to screw cover back on to enclosure body Socket Hd. Cap screws. Tool requirement –Hex. Allen Key ensuring Gasket is positioned correctly and screws are tightened.

16) Install incoming and outgoing cables using appropriately certified cable glands.
17) Any unused cable entries are to be plugged using suitably certified stopping plugs.
18) Connect External Earth bonding and to internal earthing facility with suitably sized phase conductors, as to IEC 60079-0, Clause 15.4.
19) Installation of equipment to be in accordance with appropriate Installation & Maintenance.

Special conditions for safe use

1) Intrinsically safe and non-intrinsically safe circuits fitted within the same enclosure shall be separated as required by IEC/EN 60079-14.
2) Warning “ELECTROSTATIC HAZARD, CLEAN ONLY WITH A DAMP CLOTH” only applies when fitted with 108sq polycarbonate & round window.
3) Cable warning label only required for T5 application.

Maintenance

Electrical apparatus installed in hazardous locations has design features that make it operationally safe under normal conditions. In order to ensure that the apparatus remains serviceable the following points should be attended to on a periodical basis. The period between inspections is not fixed, but should be adjusted to suit the environmental conditions where the equipment is situated. An initial inspection after 12 months of use is suggested.

1) Ensure that all fasteners are present.
2) Ensure that the enclosure or control functions are not damaged or distorted so as to prevent proper functioning of the gaskets.
3) Ensure that the enclosure is not corroded such as to affect its IP rating.
4) Ensure external earth bonding connections are in place and in good condition.
5) Ensure that all entry devices are in good condition and securely tightened.
6) Ensure that the certification label is present and legible.

Ensure that the location where the equipment is fitted is free from flammable gas or dust. With the enclosure open:

7) Ensure that the cover gasket remains in place and is in good condition. Replacement gaskets are available from Pepperl+Fuchs.
8) Ensure that all terminals are in good condition i.e. no cracks or breakage.
9) Ensure that all terminals are tightened to the manufacturer’s specified torque.
10) Ensure that no conductors have moved such as to reduce creepage and clearance distances.
11) Ensure that any modifications that have been performed are in accordance with the previous section, making reference to the certification if necessary.
12) With the cover refitted, ensure that all fasteners are fully tightened.

MAINTENANCE OF INTERNAL ELECTRICAL EQUIPMENT:

1) The replacement of faulty components is to be done using components having exactly the same physical and electrical parameters with preservation of the existing layout configuration and watts dissipation of components should to taken into consideration.
2) Installation of equipment to be in accordance with appropriate Installation & Maintenance Standards.
3) If Applicable- In the occurrences of window assembly Glass breakage, the cover assembly is to be replaced by parts available P+F.

Maintenance :

a. Isolate elsewhere before opening. b. Dis-assemble as stated in Installation Procedure.
c. Main Visual checks:- Gasket condition, Corrosion of securing screws, Integrity of housings.
d. Wire terminations are secure.
e. Assemble as per installation procedure.

Refer to Appropriate Selection Installation & Maintenance Standards for,
a) General Requirements. b) Increased Safety ‘e’ c) Combustible dust ‘tD’