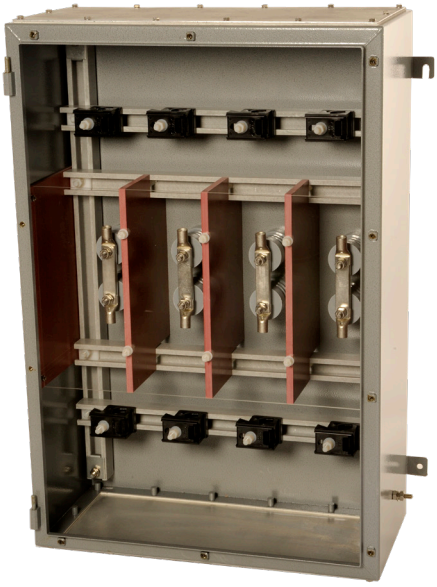
Installation, Operation, Maintenance:

HVJB RANGE



Certification Details		
ATEX:	ABTECH Ltd.	CML 20ATEX3009X
UKEX:	ABTECH Ltd.	CML 21UKEX3471X
IECEx:	ABTECH Ltd.	IECEx CML 20.0003X

UK CA 2503 ABTECH www.abtech.co.uk ABTECH Ltd SHEFFIELD S9 2QJ ENGLAND CE 2776

HVJB W kV
SERIAL No. /20
Ex eb IIC T4 Gb Ex tb IIIC T70°C Db
Ex I 2 GD - IP66 Tamb -20 + 40°C

CML 22UKEX3134X - CML 16ATEX3324X
IECEx CML 16.0100X

WARNING! ISOLATE ELSEWHERE BEFORE OPENING
CABLE ENTRY POINT CAN REACH 30°C ABOVE AMBIENT

Standard operating temperature
The maximum power dissipation and voltage permitted in this terminal box are marked on the label and identified as __W and __kV. The ambient temperature range for which this product is suitable is either–20°C to +40°C or –50°C to +55°C.

Where the narrower ambient range (shown left) is applicable it need not be included.

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HVJB W kV
SERIAL No. /20
Ex eb IIC T4 Gb Ex tb IIIC T70°C Db
Ex I 2 GD - IP66 Tamb -65 + 55°C

CML 22UKEX3134X - CML 16ATEX3324X
IECEx CML 16.0100X

WARNING! ISOLATE ELSEWHERE BEFORE OPENING
CABLE ENTRY POINT CAN REACH 30°C ABOVE AMBIENT

Very low ambient temperature
The maximum power dissipation and voltage permitted in this terminal box are marked on the label and identified as __W and __kV. The ambient temperature range for which this product is suitable is -65°C to +55°C, as shown.

This is an example marking and alternative upper ambient temperature marking may be as low as +40°C or as high as +60°C.

<u>WARNING!</u> Enclosures marked for -65°C MUST NOT BE OPENED until the temperature rises to -60°C

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HVJB W kV
SERIAL No. /20
Ex eb IIC T150°C Gb Ex tb IIIC T110°C Db
Ex II 2 GD - IP66 Tamb -50 + 55°C

CML 22UKEX3134X - CML 16ATEX3324X
IECEx CML 16.0100X

WARNING! ISOLATE ELSEWHERE BEFORE OPENING
CABLE ENTRY POINT CAN REACH 30°C ABOVE AMBIENT

High operating temperature
The maximum power dissipation and voltage permitted in this terminal box are marked on the label and identified as ***W and __kV. The ambient temperature range for which this product is suitable is –50°C to +55°C.

This is an example marking and alternative upper ambient temperature marking may be as low as +40°C or as high as +60°C.

The gas group IIC marking may be replaced by IIB marking. When marked IIC the maximum coating thickness is 200 microns. When marked IIB the maximum coating thickness is 2.0mm. If the coating is conductive these thickness limitations do not apply.

The IP rating may read IP66, IP67 or IP68.

Installation

NOTE: *When this product is to be used in high operating temperature mode the cable insulation material must be suitable for that operating temperature.*

1) Using the mounting dimensions provided, either in the product catalogue data sheets or on the drawings supplied (as part of the project documentation) mark out the positions for the mounting holes on the surface where installation is required.

2) Drill the mounting holes for M10 fixing studs.

3) Insert the top two studs leaving 8 to 10mm protruding and lift the enclosure into position using such assistance as may be necessary to avoid injury and hang the top fixing brackets of the box onto the studs.
Note: *When lifting eyebolts are provided note the limits given on the instruction document ABTQ-231.*
Ensuring that the box is secure, insert and tighten the bottom two studs. Now complete tightening the top two studs.

4) Unfasten the lid securing screws and remove the enclosure lid. Put the lid in a safe place.

5) Install and secure the cable glands in accordance with the manufacturer's instructions.

Main Power Cable Connections

6) Remove the top half on each power core cable clamp and put safely aside.

7) Remove the terminal post lock nuts, washers and the upper current bars and put safely aside.

8) Pull the cables into the box leaving trailing leads long enough to reach their respective crimp lugs after routing through the cable clamps.

9) Trim each cable core so that the conductor end will reach the inside stop of the crimp lug on which it is to be terminated.

10) Strip the insulation of each cable core by the length of the crimping barrel plus 2mm.

11) Remove each crimping lug in turn from the terminal post and place the securing nuts to one side.

12) Insert the conductor into the crimp lug barrel, ensuring that all strands of the conductor enter the barrel. This will ensure that minimum clearance distances are not compromised by stray strands.

13) Crimp each lug onto the respective conductor using Cembre die sets or equivalent. Ensure that the crimp die set used is suitable for the conductor size and is not damaged or excessively worn. The crimp die set may produce either a hexagon type crimp or an indent type crimp. With hexagon die sets execute at least two crimps on each lug.

14) Route the cable core through the appropriate cable clamp and place the hole in the palm of the now attached cable lug on to its respective terminal post, on top of the lower current bar.

15) Where the conductors to be connected are of different sizes the lugs will be of different thickness. Bring the thinner lug to the same thickness as the thicker lug buy using tinned or freshly cleaned copper washers.

16) Replace the upper current bar.

17) Apply a small amount of high temperature grease to the stud thread, just sufficient to wet the surface then secure the current bar and cable clamp assembly in place with the flat washer, spring washer and two locknuts provided. Ensure that the spring washer is fully compressed by the first lock nut then, using a spanner* to secure the locknut under the lower current bar, apply the torque detailed in the following table, applicable to the stud size being used:

Crimp Lug Screw Size	Torque (Nm)	
	Minimum	Maximum
M10	17.5	19.5
M12	30	34
M16	73	83
M20	142	162

* The spanner is to preven the tightening torque being transmitted through the insulating pillar.

Now tighten the second locknut to 50% of the above torque.

18) Check each cable lug to ensure that there are no stray strands from the conductor which might compromise the minimum clearance distances. If any are identified they must be cut off back to the conductor insulation.

19) When all the cable lugs have been attached and correctly tightened replace the top halves of the power core cable clamps and tighten each one to secure the cables. Finger tight + ⅛ to ¼ turn is usually adequate.

20) Replace the flat acrylic cover and secure in position using the nylon studs and washers provided.

21) If no field terminals are used proceed to point 35.

22) If spare conductors are installed refer to Spare Conductor Earthing.

23) If conductor screen terminals are installed refer to Conductor Screen Terminals.

Field Terminal Cable Connections (where fitted)

NOTE: *Consideration must be given to any use limitations or special conditions detailed on the certificates for the terminals fitted.*

24) Remove the top half on each field core cable clamp and put safely aside.

25) Remove the terminal covers and put safely aside.

26) Remove the terminal current bar connection studs and put safely aside.

27) Pull the cable(s) into the box leaving trailing leads long enough to reach their respective crimp lugs after routing through the cable clamps.

28) Trim each cable core so that the conductor end will reach the inside stop of the crimp lug on which it is to be terminated.

29) Using the crimp lugs provided, If the field cables are 10 mm2 or larger crimp each lug onto the respective conductor using Cembre die sets or equivalent. Ensure that the crimp die set used is suitable for the conductor size and is not damaged or excessively worn. The crimp die set may produce either a hexagon type crimp, (2 crimps per lug), or an indent type crimp.

30) If the field cables are smaller than 10 mm2 crimp each lug using a Newey & Eyre Crimpstar crimping tool or equivalent. Ensure that the crimping tool is not damaged or excessively worn.

NOTE: *If the crimp lug is damaged during installation a replacement should be purchased from either ABTECH, Cembre (+44 (0)1675 470440, or one of their stockists). If the site engineer requires to source from a local supplier, then that engineer will be responsible for ensuring that the crimp lug and its associated crimping tool comply with BS EN 31238-1:2003.*

31) Route the cable core through the appropriate cable clamp and place the hole in the palm of the now attached cable lug above the hole on its respective terminal current bar.

32) Retrieve the current bar connection stud and use it to secure the lug in place.

33) When all the cable lugs have been attached and correctly tightened replace the terminal covers.

34) Replace the top halves of the field core cable clamps and tighten each one to secure the cables.

35) Secure the lid by closing the lid and tightening the lid fixing screws and ensure that all gland plate securing screws are tightened to a torque of 1.5Nm minimum, 2.0Nm maximum. Threads for all fixing screws should be greased with EP2 Lithium Grease, or equivalent, to prevent galling.

36) Test the installation.

Earthing/Grounding
The HVJB unit is provided with an internal and external earthing/grounding facility. This must be connected to the appropriate earth bonding circuit before electrical power is connected to the contents of the enclosure. Any earth/ground conductor brought into the enclosure must be terminated onto the enclosure internal earth/ground stud.

Spare Conductor Earthing
When spare conductors are fed into the box, either for an alternative power supply or for a spare motor, earthing points may be fitted for the parking of those spare conductors to ensure that they are maintained at earth potential. Such earthing points are welded to the rear face of the enclosure. All spare conductors must be threaded underneath the cable clamping rail (if the cable is stiff it might be necessary to temporarily remove this rail) and the phase barrier support rail and be secured using the earthing point located in the appropriate phase bay of the enclosure. A nut and vibration resistant washer are provided and must be used. Apply torque to a minimum of 20Nm, maximum 25Nm.

Conductor Screen Terminals
Conductor screens are most often connected to local earth inside the enclosure. Where the intermediate connection of monitoring equipment is required additional terminals, isolated from earth, may be made available for the individual connection of cable screens. These terminals will be of the ABTECH MV type and be secured to an additional framework

of insulating rails, as shown below. The conductors used on these terminals whether between these terminals and the cable screens or the connecting cable to the monitoring equipment, shall be terminated on the appropriate MV terminal stud using Cembre single hole crimp lug with palm hole suitable for stud size M8. Refer to the MV terminal instructions ABTECH reference ABTQ-206 for further detail. The method of securing the other end to the cable screen shall be in accordance with site engineering practice and be suitably insulated from earth.

The return cable from the monitoring equipment shall be terminated to an appropriate earth either on or local to the HVJB enclosure to prevent circulating earth currents.

Operation

1) The lid must be secured using all the lid screws provided in order to maintain the IP rating.

2) No attempt must be made to remove the enclosure lid whilst electrical power is connected to the contents of the enclosure.

The earthing/grounding facility must be connected to the earth bonding circuit at all times when electrical power is connected to the enclosure.

Maintenance

The laws of the applicable country must be considered, and maintenance checks carried out accordingly.
Additional checks that are advisable to ensure the efficiency of ABTECH 'SX' range enclosures on which the HVJB is based are: -

Activity		Frequency
1	Check that the lid seal is not damaged and is in place	Each time the enclosure is opened
2	Check that all lid fixing screws are in place and secured	Each time the enclosure is opened
3	Check that the mounting bolts are tight and free of corrosion	Every 3 years
4	Check the security of all cable glands and entry devices	Every 3 years
5	Check the enclosure for damage	Every 3 years
6	Check that all screw clamp terminals are secure	As manufacturers recomendations
7	When the enclosure contains Ex op pr connections, check that the incoming fibre is not under any tensile stress, that the fibres are not damaged and that no escape of optical radiation can be detected inside the enclosure.	After one year intially, then every 3 years and each time the enclosure is opened.

Chemical Attack

The ABTECH HVJB is manufactured from 316 stainless steel. The following additional materials are also used:
Silicone rubber, Copper, Brass, Cast epoxy resin, Glass reinforced polyester, Nylon (polyamide),
Acrylic (polymethylmethacrylate).
Consideration should be given to the environment in which these enclosures are to be used to determine the suitability of these materials to withstand any corrosive agents that may be present.

Static Hazard

The HVJB range does not normally present a hazard from static discharge. Ensure that the marking is appropriate to the gas group as this may be affected by a client specified coating thickness.

Vibration

The HVJB is designed for use in areas subject to normal industrial levels of vibration. They are not designed for use in areas subject to intentional or extreme conditions of vibration.

Protection From Foreseeable Faults

Circuits connected in the enclosure must be externally protected using suitable circuit interruption devices to prevent overloading. Provided the enclosure is correctly installed, there should be no foreseeable faults.