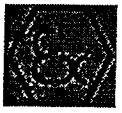


GB-160 Terminal Box With Weidmuller SAK Terminals and Optional Earth Continuity Plate

Installation Instructions and Conditions For Safe Use

This terminal box carries the following Hazardous Area approvals :-



II 2GD T85°C EExe II T6
BAS98ATEX3090X

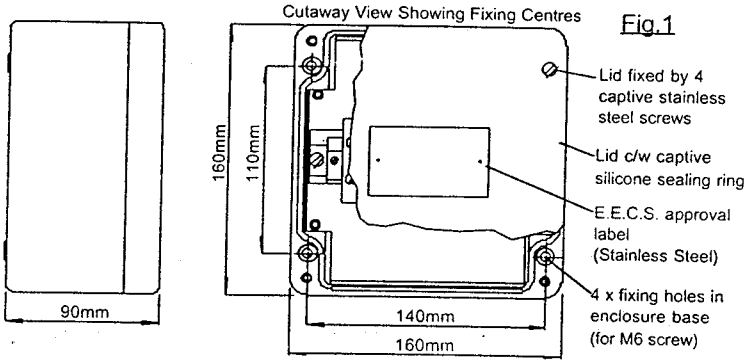
This terminal box has been designated as Group II Category 2 Equipment and is suitable for installation in Zone 1 and Zone 2 Gas Hazardous Areas , and Zone 21 and Zone 22 Combustible Dust Hazardous Areas providing that **ALL** installation requirements are complied with. The terminal box and its contents carry a Temperature Classification (T Rating) of T6 , which means that no surface temperature of the enclosure or its contents will exceed 85°C when in service.

1. General Installation Requirements

1.1 The terminal box lid **MUST NOT** be removed whilst the connected circuits are energised.

1.2 The enclosure is manufactured from a high impact glass filled polyester material and has a silicone sealing ring. The installer/user must ensure that these materials are suitable for use in the environment in which the terminal box is installed , and also that the Explosion Protection Concept of the terminal box is not invalidated.

1.3 Enclosures in colours other than black must have a static electricity hazard label attached in a visible position. These enclosures may only be cleaned with a damp cloth.



2. Cable Entry Provision

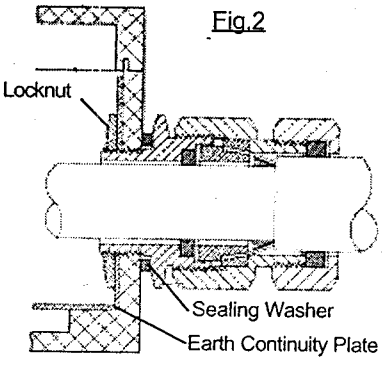
2.1 This terminal box has been proof tested to IP66. The installer shall use an appropriate method to ensure a minimum ingress protection of IP66 at each cable entry. A lower level of ingress protection may be maintained at each cable entry if required , with a minimum rating of IP54. Cable entry devices must be chosen in accordance with the relevant harmonized standard e.g. EN 60079-14. When the terminal box is used in Dust Hazardous Areas , special requirements for ingress protection apply - see Note 3.4.

2.2 (See Fig.2 also) Where earth continuity is required , via cable entry devices , either :-
i) The entry device shall be screwed into a tapped hole in the wall of the enclosure and the locknut shall be securely tightened against the 'dimples' provided around the clearance hole in the earth continuity plate
or
ii) In the event that the hole in the enclosure wall is a clearance hole and/or the clearance hole in the earth continuity plate is not provided with 'dimples' (e.g. if the holes are drilled by the installer) then the installer shall provide a resilient washer for installation between the earth continuity plate and the locknut.The installer is responsible for ensuring that the resilient washer is suitable for the conditions of use , noting particularly that any earth fault current must pass via the washer.

2.3 Unused entry holes must have any self adhesive label removed and the appropriate stopping plug with the required ingress protection (see note 2.1) fitted prior to commissioning.

2.4 The installer shall only drill cable entry holes in the recognised positions according to the General Arrangement drawings listed in the Certificate BAS98ATEX3090X.

2.5 **COSHH - DRILLING THIS PRODUCT MAY CONSTITUTE TOXIC DUST** - Under normal conditions this would not be seen as a risk to health. However when working in a confined or poorly ventilated area , or when large volumes of dust are liberated , it may present a risk to health (further information available on request).



3. Special Installation Requirements for Dust Hazardous Areas

3.1 The terminal box is suitable for installation in **Zone 21** and **Zone 22** areas.
In both cases the dust may be conductive or non-conductive.

3.2 **Any dust present shall be in the general form of dust clouds in air , which may settle to form dust deposits or layers on the top surface of the terminal box only. Any dust layers must not exceed 5mm in thickness.**

3.3 The terminal box and its contents have a maximum surface temperature , **Tmax** , not exceeding **85°C** when in service. The ignition temperature of any dust cloud or layer formed shall be taken into account by ensuring that Tmax does not exceed the lower of the following temperatures :-

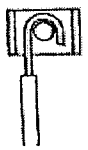
When dust clouds in air are present:
Tmax shall not exceed two-thirds of the ignition temperature in °C of the dust/air mixture concerned.

When dust layers up to 5mm thickness are present:
Tmax shall not exceed a value of 75K below the minimum ignition temperature for a 5mm layer thickness of the dust concerned.

3.4 At each cable entry , the minimum level of dust ingress protection shall be **'6'**, and the level for water ingress protection a minimum of **'4'** (i.e. **minimum IP64**). Cable entry devices must be chosen in accordance with the relevant harmonized standard e.g. EN 50281-1-2.

CABLE FASTENING DETAILS FOR THE QS4 EARTH BAR

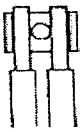
Fig.3



SOLID OR STRANDED CONDUCTORS ARE MADE INTO A RADIUSED HOOK FOR FITTING AROUND THE SCREW



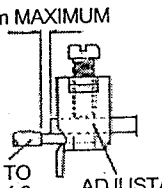
A FINE STRANDED CONDUCTOR IS EQUALLY SPREAD EITHER SIDE OF THE SADDLE SCREW



TWO CONDUCTORS CAN BE FITTED PROVIDING THEY ARE OF EQUAL CROSS SECTIONAL AREA

ALTERNATIVELY A SUITABLE INSULATED CRIMP MAY BE USED FOR JOINING MULTIPLE CONDUCTORS TO FORM A SINGLE COHESIVE ITEM.

Fig.4



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Terminal Schedule

TERMINAL TYPE	MAX VOLTAGE	MAX CURRENT	RATED CONDUCTOR SIZE	MAXIMUM QUANTITY	INSULATION STRIPPING LENGTH
WEIDMULLER SAK2.5	550V	15A	2.5mm²	15+EARTH	9mm
WEIDMULLER SAK4	550V	21A	4mm²	14+EARTH	12mm
WEIDMULLER SAK6N	550V	26A	6mm²	11+EARTH	12mm
WEIDMULLER SAK10	550V	37A	10mm²	8+EARTH	12mm
WEIDMULLER SAK16	726V	47A	16mm²	7+EARTH	16mm
WEIDMULLER BK3 or BK4 or BK6 or BK12	275V	21A	4mm²	1 +EARTH	8mm
WEIDMULLER BK12 with BK4	275V	21A	4mm²	1 +EARTH	8mm
EARTH TERMINALS	CONDUCTOR SIZE (mm²)				
	MIN	MAX			
WEIDMULLER EK2.5N	0.5	2.5	-	-	9mm
WEIDMULLER EK4	0.5	4	-	-	12mm
WEIDMULLER EK10	2.5	10	-	-	12mm
WEIDMULLER EK16	6	16	-	-	16mm
BARTEC BET2	0.5	16	-	4	14mm
BARTEC QS4 (4 WAY)	0.5	4 (6 solid)	-	2	

4. Terminals

4.1 All terminal screws , used and unused , shall be fully tightened down by the installer.

4.2 The use of cross-connection devices between adjacent terminal ways shall be in accordance with the requirements given in BASEEFA Component Certificate No.s Ex813092U , Ex823112U or Ex813094U for the Weidmuller SAK melamine , SAK polyamide and BK terminals respectively.

4.3 Only one conductor shall be connected to each terminal way , unless multiple conductors have previously been joined in a suitable manner (for example with an insulated crimped boot-lace ferrule) such that they form a single cohesive item for insertion into the terminal way , except for QS4 earth bars (see Fig.3) and BET2 terminals. For BET2 terminals , up to 4 conductors of equal size and form may be connected , provided that the combined cross-sectional area does not exceed 26mm².

4.4 Conductor insulation shall extend to within 1mm of the metal in the terminal throat (see Fig. 4) except for QS4 earth bars and BET2 terminals , where the connected leads shall be insulated for the appropriate voltage , and this insulation shall extend to within 3mm of the metal of the terminal throat or saddle clamp. The bared end of each lead shall not extend beyond the other side of the slot or saddle by more than 2mm. The conductors and their terminations shall not be subjected to unecessary mechanical stress or bending.

4.5 The installer shall ensure that creepage and clearance distances are not reduced.

4.6 The SAK type terminals can be supplied in either melamine (fitted as standard) or polyamide materials. For polyamide terminals the maximum voltage is reduced to 418V for the SAK4 , SAK6N and SAK10 types.

4.7 When used as a general purpose junction box or marshalling box , the circuits carrying currents ≥ 1A shall be individually protected against overcurrent such that the protective device operates effectively at no more than 1.45 times the current carrying capacity of the smallest conductor used in that circuit.

4.8 The terminal box is suitable for use in the ambient temperature range -55°C to +65°C , however use of the terminal box at ambient temperatures below -20°C is dependent upon the minimum service temperature of the fitted terminals. In this case the minimum permitted ambient temperature will be shown by the approval label.

4.9 When used in ambient temperatures up to +40°C , the total power dissipated within the terminal box shall not exceed 7W. All terminal arrangements shown on the terminal schedule may be used in ambient temperatures up to +40°C.
For ambient temperatures higher than +40°C , the level of power dissipated within the terminal box must be reduced for all terminal arrangements as follows:
For ambient temperatures not exceeding +55°C , maximum power dissipated = 3.5W.
For ambient temperatures not exceeding +65°C , maximum power dissipation = 1.75W.

4.10 When XE-1 or XE-2 earth connection facilities are fitted , the installer shall ensure that the end locknut(s) are fully tightened against the saddle clamp(s) when in service.