

5.1.1 Mounting Configuration

Reference drawing NK38-D0S-65551-5532-Ux.

The existing fuses are installed in fuse holders that are mounted on DIN rails inside an enclosure as shown below. The individual fuse holders are mounted to vertical DIN rails that are mounted on horizontal Unistrut crossmembers. Unistrut crossmembers are vertically spaced 295mm between centres.

Replacement fuse holders shall be supplied with compatible mounting rail. The mounting rail is to be mounted to the existing Unistrut crossmembers. Mounting arrangements for replacement fuse/fuse holder/rail assembly shall be compatible with existing configuration to minimise efforts during installation. Ideally, the replacement fuse/fuse holder/rail assembly will bolt straight to the Unistrut rails allowing existing wiring to be connected (ref. §5.1.3.2 for connection requirements).

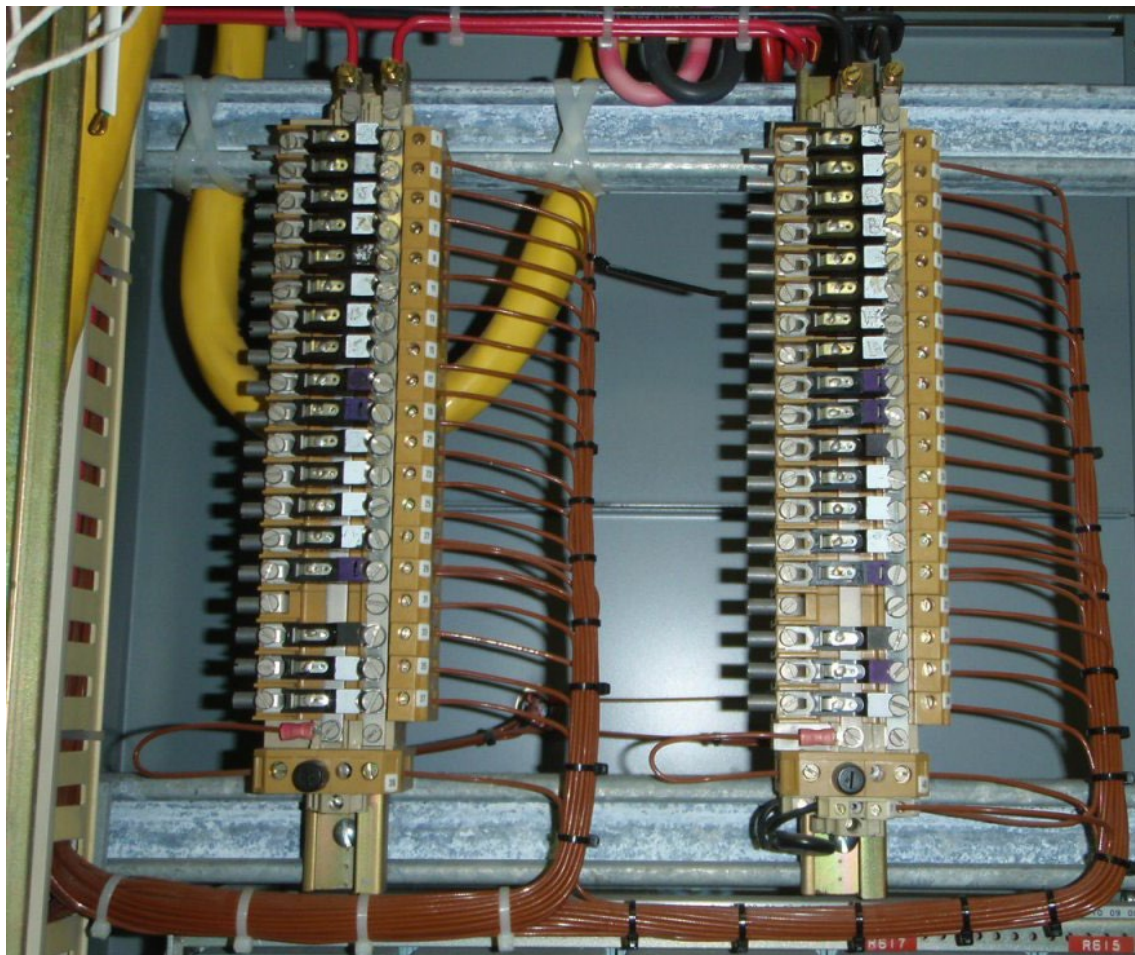


Fig. 1 Positive and Negative Fuse Rails

- (a) Mounting details (dimensions etc.) shown on drawings submitted for acceptance are preferred to be in metric as primary units (ref §4.2.2 re use of metric and conversion), but may be in inches if these are vendor's working units. Dimensions shall be clearly identified as metric or non-metric.
- (b) Studs, nuts and bolts are preferred to have metric threads wherever possible.

5.1.3 Electrical Details

5.1.3.1 Voltage Class

Fuses and holders are part of Darlington NGS 48VDC Class I power system. The 48VDC supply is provided from 48VDC rectifier with battery backup (24 C&D LCR-17 cells connected in series ref NK38-F0S-55510-0001-Ux (x=1,2,3, or 4)).

5.1.3.2 Connection Details

Replacement fuse holders shall have screwed terminals and be suitable for minimum wire size range of #10AWG to #16AWG.

5.1.3.3 Fuse Holders

New fuse holders shall be rail mounted in similar manner as the originals and be compatible with "grasshopper" type alarming fuses where blown fuse energises an alarm bus to provide remote notification of blown fuse in Main Control Room.

5.1.3.4 Fuse Type

Fuses to be "grasshopper" type incorporating failure alarm (i.e. when fuse blows, alarm rail energises to activate alarm circuit). Fuses shall be readily available and suitable for use with fuse holders identified in §5.1.3.3.

5.1.3.5 Fuse Ratings

Ratings of fuses to be installed in the fuse holders is as follows (vendor to supply fully assembled fuse rail with fuse holder attached to fuse rail and fuses installed).

Reference: NK38-D3S-65551-5069-Ux (x=1, 2, 3, or 4)

FU1 - FU16: 6A
FU17 - FU22: 2A
FU23 - FU28: 6A
FU29 - FU32: 2A
FU33 - FU34: 3A
FU35 - FU40: 2A

The design shall ensure the installation and removal of fuses is as simple as practicable to minimise chance of inadvertent contact with live electrical contacts (48VDC maximum voltage). Removal and installation of fuse holders to support rail should be as simple as practical.

5.1.5 Performance

Replacement fuses should have similar performance characteristics as the original fuses.

1. Voltage rating of replacement fuses shall be suitable for use on 48VDC circuits.
2. Short circuit rating of replacement fuses shall be comparable to existing fuses within $\pm 5\%$. In the event of a fault downstream of fuse, replacement fuse shall be capable of interrupting current supplied from battery bank (ref. §5.1.3.1).
3. Clearing time or replacement fuses shall be comparable to existing fuses as shown in Appendix D.

5.2 Responsibilities and Guarantees of Vendor

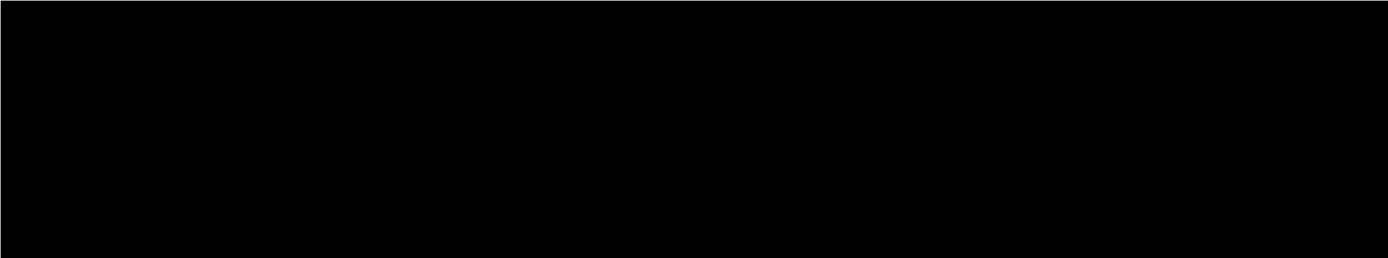
Vendor shall guarantee and be responsible for the following:

- (a) Rigid adherence to the design, arrangement and dimensions of parts and assemblies as shown on approved manufacturing drawings, unless deviations are specifically authorised in writing by [REDACTED] by approved Concession Application (N-FORM-10393).
- (b) Quality of all materials and workmanship entered into the complete work.
- (c) Suitability of all materials and apparatus for their respective requirements.

6.0 INSPECTION AND TEST REQUIREMENTS

The vendor shall maintain a quality control and inspection programme as outlined in CSA N299.4. Drawings detailing fuses, fuse holders and mounting rail complete with manufacturers' part numbers and fuse ratings shall be submitted to [REDACTED] for acceptance. Manufacturing of assembly shall not commence until vendor receives [REDACTED] acceptance submitted drawings.

Sacrificial testing shall be carried out on assembly using fuse ratings as shown in §5.1.3.5 to confirm every blown fuses will activate the alarm circuit. Blown fuses shall be replaced in the fuse holders in accordance with ratings listed in §5.1.3.5 prior to shipping.



7.0 SPECIAL PACKAGING AND SHIPPING, HANDLING AND STORAGE

Assemblies shall be packaged for shipping in a suitable manner so as to prevent damage from environment as well as shock/impact.



8.0 DOCUMENTATION REQUIREMENTS

Submission of drawings and data shall be in accordance with applicable contract standard specified in [REDACTED]. Each drawing to be provided with 77mm by 120 mm space for addition of [REDACTED] title block, preferably adjacent to vendor's for easy cross-reference.

Information giving details of design and requirements for maintenance of motor shall be supplied in English language as detailed in following subsections.

8.1 Information Required With Proposal

Information and drawings, in sufficient detail to enable [REDACTED] to make complete analysis of the RFP and shall include, but not limited to:

- (a) Make and model of fuses
- (b) Make and model of fuse holder(s)
- (c) Make and model of mounting rail.

8.2 Final Documentation:

Prior to shipment, vendor shall supply a set of as built drawings complete with Bill of Materials for [REDACTED] review and acceptance.

Appendix A: Fuse Rail Circuit Configuration

The existing fuse holder, fuses and support rail are shown in Fig.1 (§5.1.1). There are positive and negative supply busses with fused connections to each bus configured as shown below (ref. NK38-D1S-65551-5198-Ux; x=1,2,3 or 4).

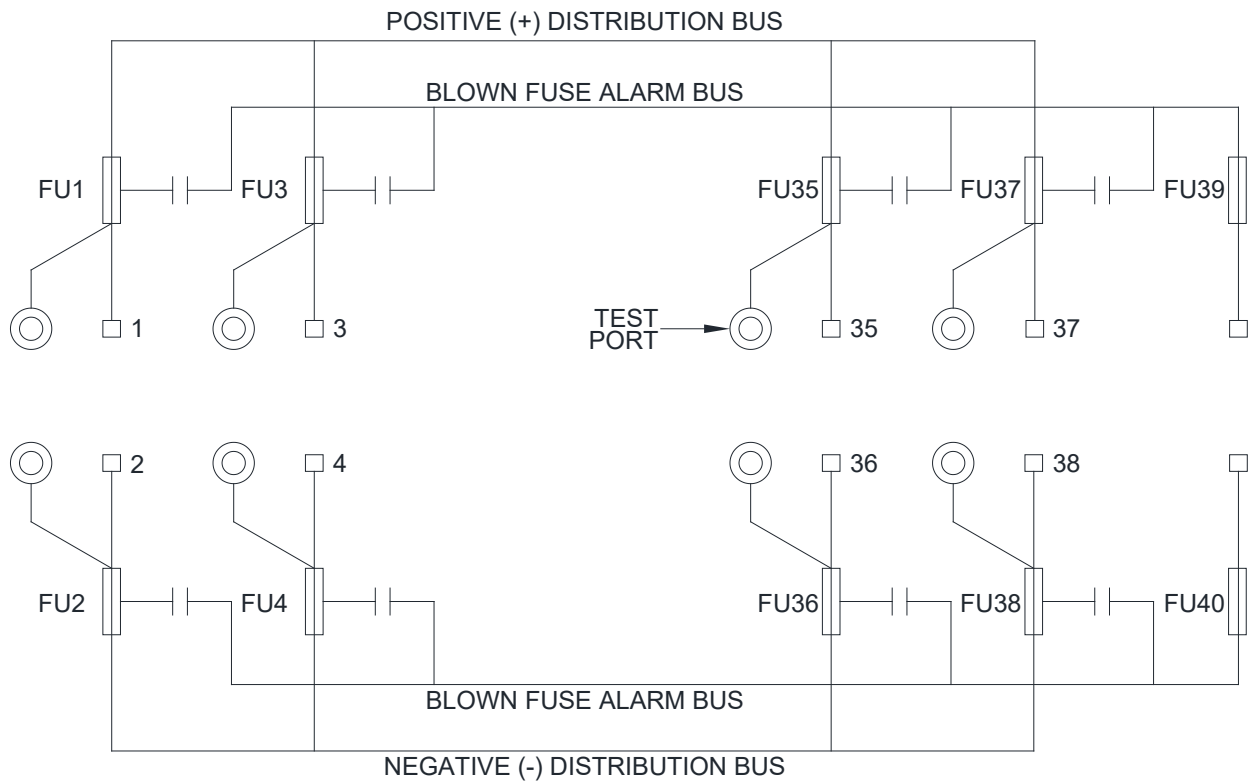


Fig. A1 Fuse Rail Configuration

Fuses FU1 to FU38 are fuse holders suitable for grasshopper type alarming fuses; FU39 and FU40 are non-alarming fuse holders suitable for Bussmann type mini fuses ($\frac{1}{4}$ " \varnothing x $1\frac{1}{4}$ " long).

FU5 to FU34 are not shown but are same configuration as FU1 to FU4 and FU35 to FU38.

Fuses FU1 to FU38 are connected to field loads.

Odd numbered fuse holders FU1 to FU37 are connected to a common positive (+) distribution bus and a common positive (+) alarm bus.

Even numbered fuse holders FU2 to FU38 are connected to a common negative (-) distribution bus and a common negative (-) alarm bus.

Alarm circuit fuses, FU39 and FU40, are connected between alarm buses and local relays for alarming purposes. Any fuse, FU1 to FU38, that blows will energise the alarm bus and activate alarm relays through fuses FU39 and FU40.

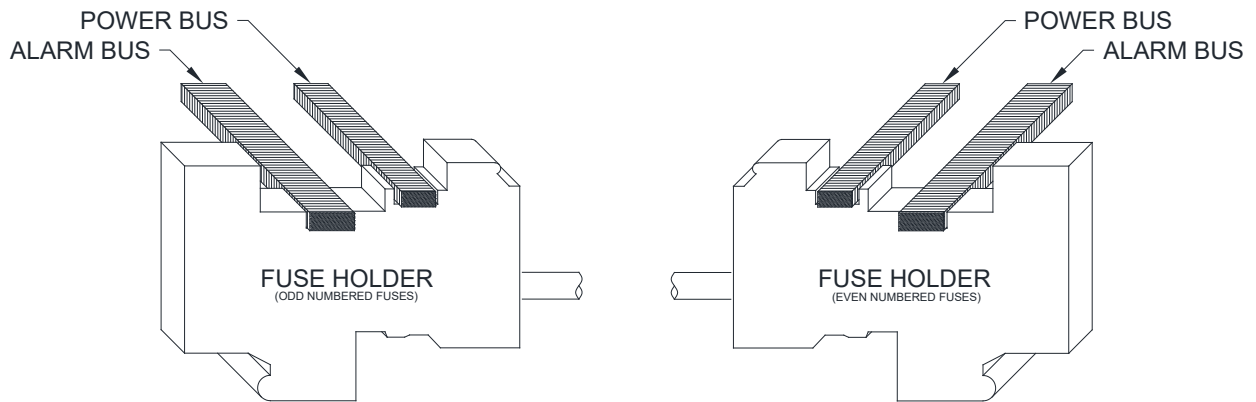


Fig. A2 Fuse holders showing alarm bus and power bus (fuse & test port not shown)

Figure A2 shows typical fuse holders used for fuses FU1 to FU38 (Weidmuller AFT 33322 Cat-ID 288452). Orientation of odd and even numbered fuse holders is shown.

Fuse holders for FU39 and FU40 do not have alarming capability. See Appendix B for additional details on fuses and fuse holders.

Appendix B: Fuses & Fuse Holders



Fig. B1 Fuse - Bussmann TDP Grasshopper Style

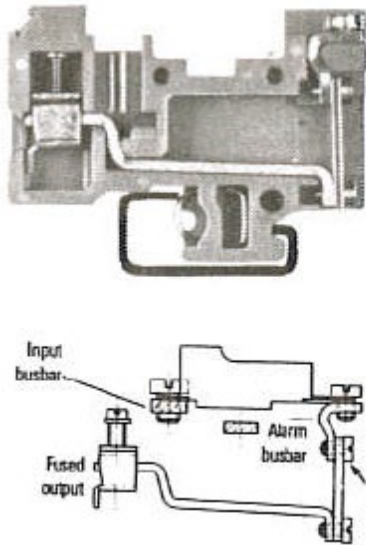


Fig. B2 Fuse Holder
Weidmuller AFT 33322
(Cat-ID 288452)
(typical for FU1 to FU38)
Bussmann TDP grasshopper fuse

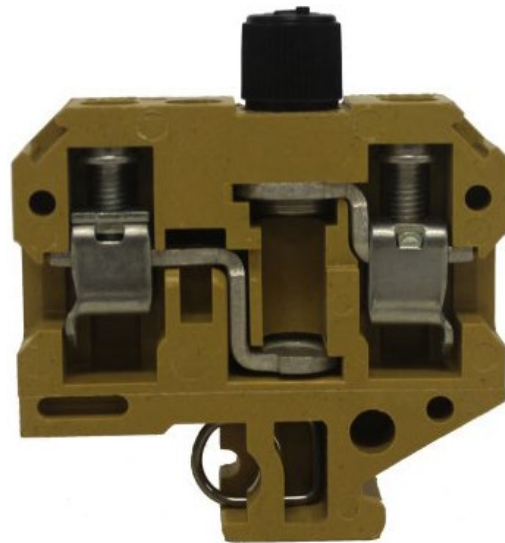


Fig. B3 Fuse Holder
Weidmuller 24892
(Cat-ID 286712)
(typical for FU39 and FU40)
Bussmann mini fuse 1/4"Ø x 1/4" lg

Appendix C: Panel Internals

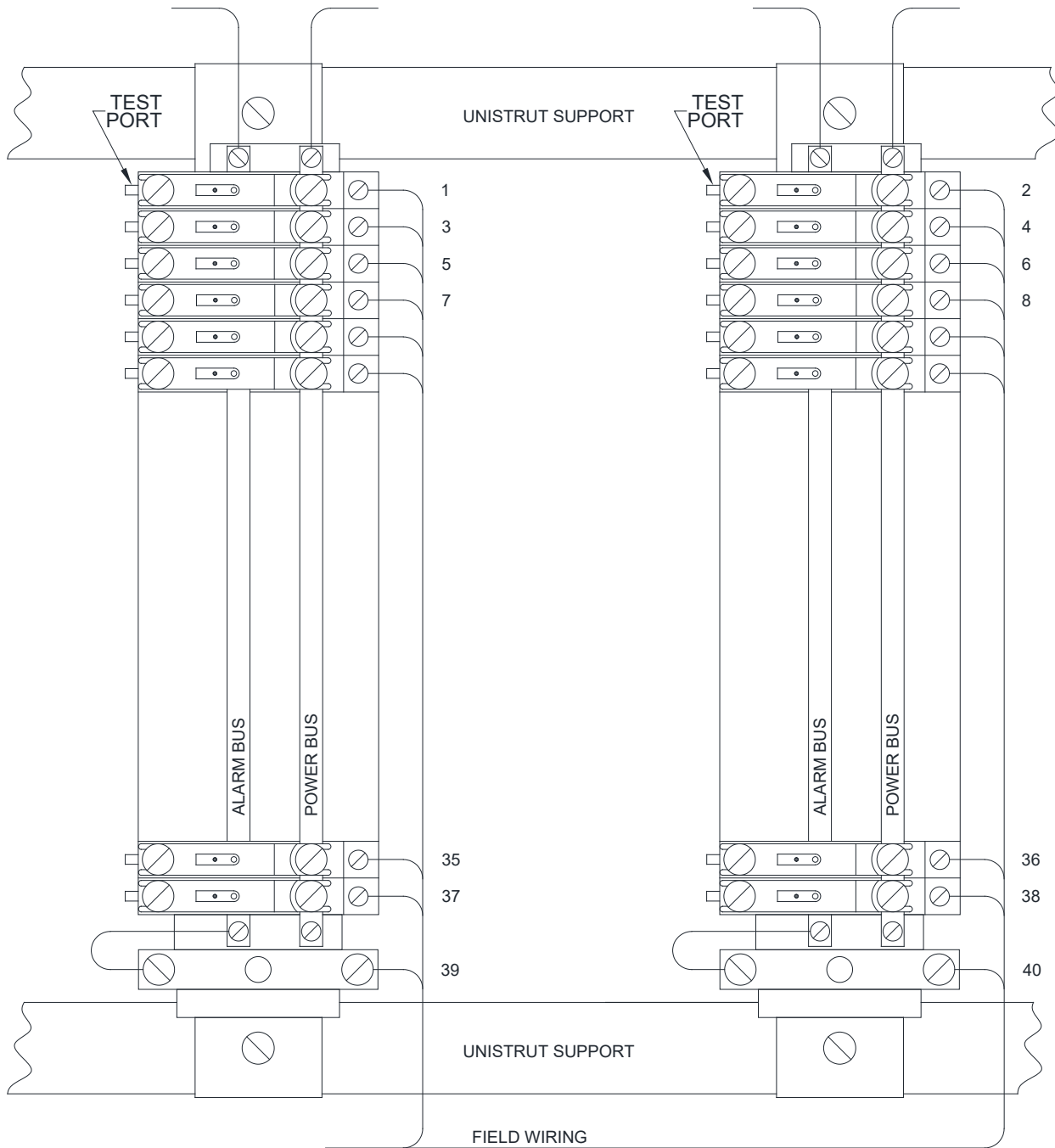
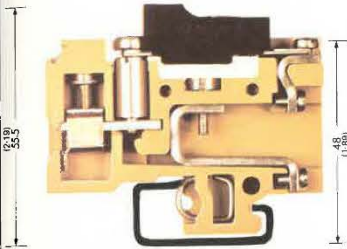


Fig. C1 Fuses/Fuse Holder Assembly c/w Field Wiring

AFT 3525.2
Individual Input/Individual Alarm
High Grade Melamine

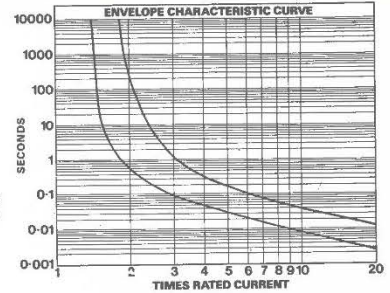
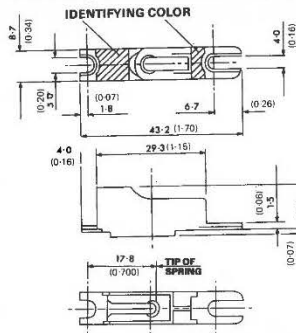


Main Bus Bar 100 amps when supplied from both ends
Terminal Thickness 12mm (0.472in)
Insulation Stripping Length 13mm (0.512in)

Amps	Volts*	AWG
9	50	20-10

Type	Cat. No.	Weight 100's Kg	100's lbs/ozs
TS 32	1228.0	142.00	313.1
SST 3	1527.0	5.50	12.2
AP	3330.2	0.45	1.0

Low voltage alarm and indicating lug mounting fuselink Phenolic mold body



With acknowledgement to Kenneth E. Beswick Ltd.

%RATED CURRENT	PERFORMANCE DATA					
	100		150		220	
	MIN	MAX	MIN	MAX	MIN	MAX
PERFORMANCE	1000 HRS	-	10 SEC	-	-	30 SEC

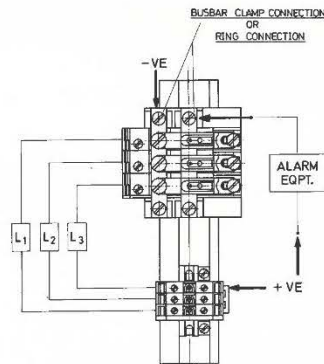
Standard Fuses

.25A	Brown	4342.0
.5A	lt. French Blue	4343.0
1A	Lemon	4344.0
1.5A	Red	4345.0
2A	Violet	4346.0
3A	Black	4347.0
4A	Grey	4348.0
5A	Green	4349.0
6A	White	4350.0

Cat. No

Non-standard Fuses
(coded to TDP44 and rating otherwise to PO specification)

Standard Fuses	Cat. No
.75A	Salmon Pink 4351.0
2.5A	Orange 4352.0
3.5A	Blue & Black 4353.0
4.5A	Dark Brown 4354.0
9A	Orange & White 4355.0



A typical 3-way assembly as illustrated would be built up as follows:—

- 3 Terminal Blocks
- 1 End Section
- 2 Support Brackets
- 1 Alarm Bus Bar
- 1 Main Bus Bar
- 2 Bus Bar Connections

AFT	3332.6
AP	3330.6
SBr	3331.0
ABB	3334.0
MBB	3333.0

Bus Bar connections can be made by ring crimps etc., or by screw clamp connector type BBC 3522.2
Alarm and Main Bus Bar is supplied to the number of poles specified—plus fixing, i.e. for 5 poles—a 7 pole length would be supplied. (Pole 1 and 7 used for fixing to support brackets.)

Plus 3 ways of SAKR, or SAK 2-5 if required, for return connection all mounted on a suitable length of TS 32 channel.