

Electrak® powertrack / underfloor busbar

design and installation

General installation notes

Electrak power track is a compact system that can be installed in floor voids as low as 48 mm

Feed units are provided with one or two 25 mm diameter holes suitable for MICC, armoured cables or single core cables in conduit
Track lengths connect together and to feed units using the integral connectors on each length

Lengths should always be secured using the integral floor fixing brackets ; three on the 3-6 m length and two on 2-4 m, 1-8 m or 1-2 m lengths

Access to power is provided along the busbar length by simply plugging tap-off units into shuttered socket outlets. These tap-off units feed all types of conventional floor service outlet boxes or feed workstations directly through the floor via insulated conductors contained in flexible metal or VO rated nylon conduit. When connecting tap-offs directly through the floor via grommet outlets to workstations care must be taken to ensure that the tap-off length is adequate

The dual system has both standard and low noise / clean earth systems incorporated. As well as dual tap-offs, both standard and low noise / clean earth tap-offs can be plugged into any socket outlet along the busbar length. The dual tap-off incorporates both standard and low noise cables

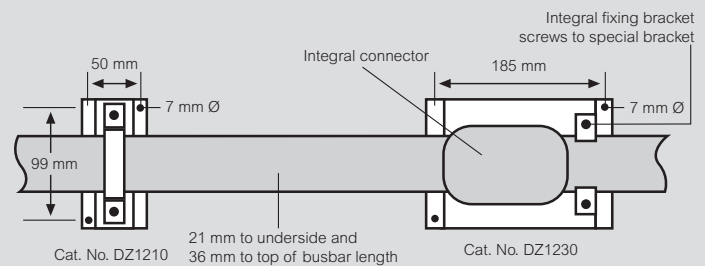
Optimum layout flexibility is achieved by positioning busbar lengths a maximum of 5.2 m apart and 2.5 m from the wall, and by connecting the 3 m tap-off units to floor outlet boxes. This means every part of the floor area can be served. Flexible interlinks can be used to overcome obstructions or used as corners if required

Special fixing brackets

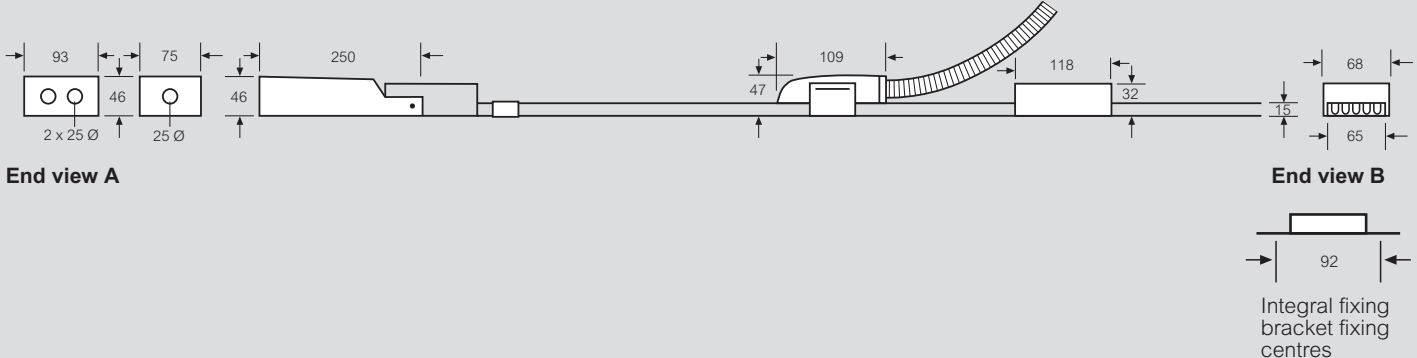
Electrak special fixing brackets are available to raise the system by 21 mm. Ensure brackets are spaced 600 mm apart and always have support under the integral connectors and feed units. Failure to do so may undermine the integrity of the system

Cat. No. DZ1210 raised off-floor fixing brackets are spaced at 600 mm centres along the busbar run. Also use bottom half of bracket under feed unit and flexible interlink

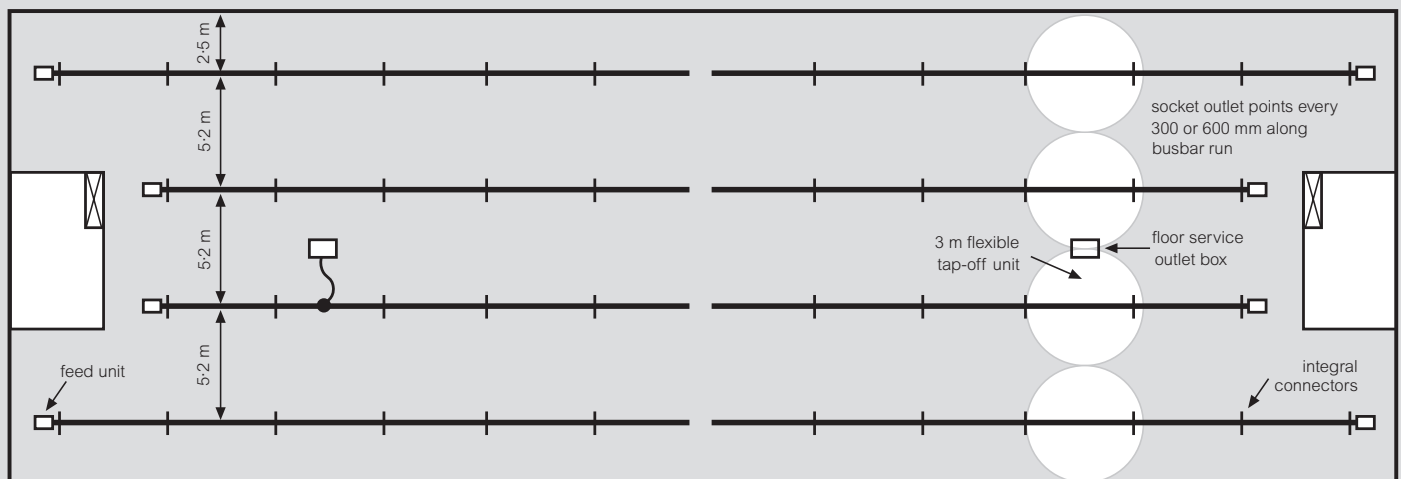
Cat. No. DZ1230 raised off-floor fixing brackets are always used under integral connectors. Busbar is secured to raised brackets using the integral fixing bracket



Dimensions



Example floor layout



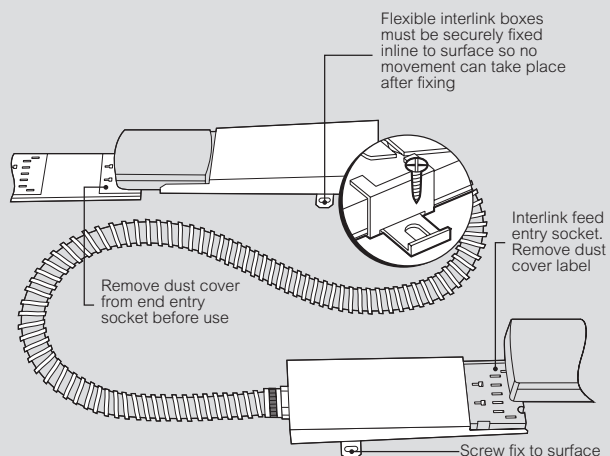
All dimensions (mm) are nominal

Electrak® powertrack / underfloor busbar system

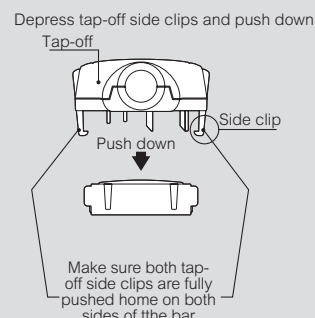
design and installation (continued)

Product configuration

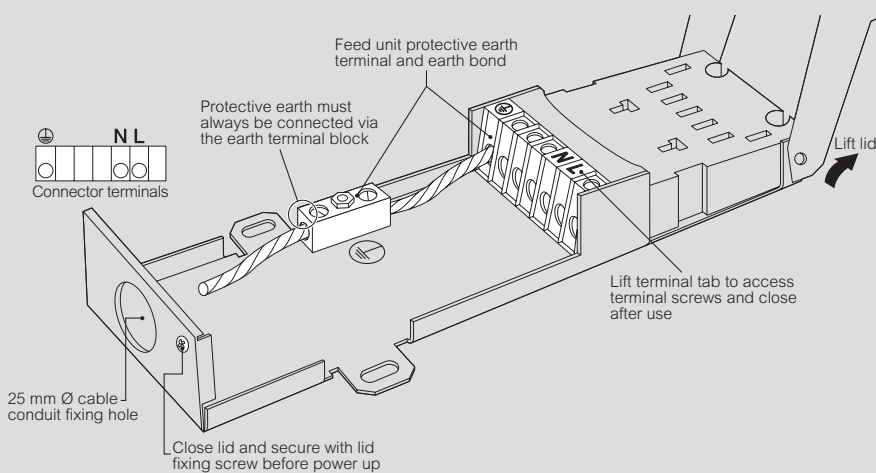
Flexible interlink



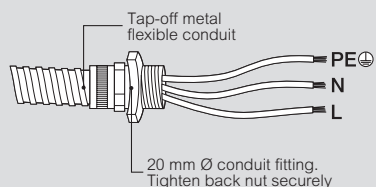
Tap-off connection



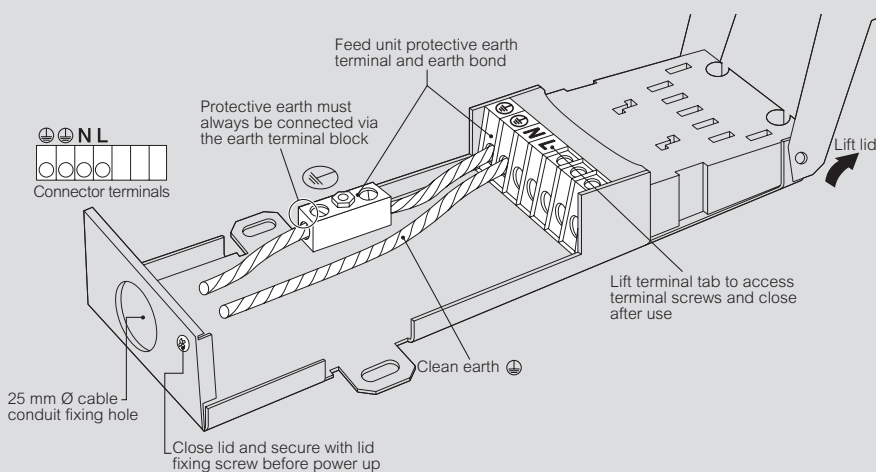
Feed unit (Cat. No. DF1010) Sub-cabing



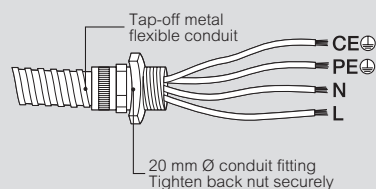
Tap-off connection



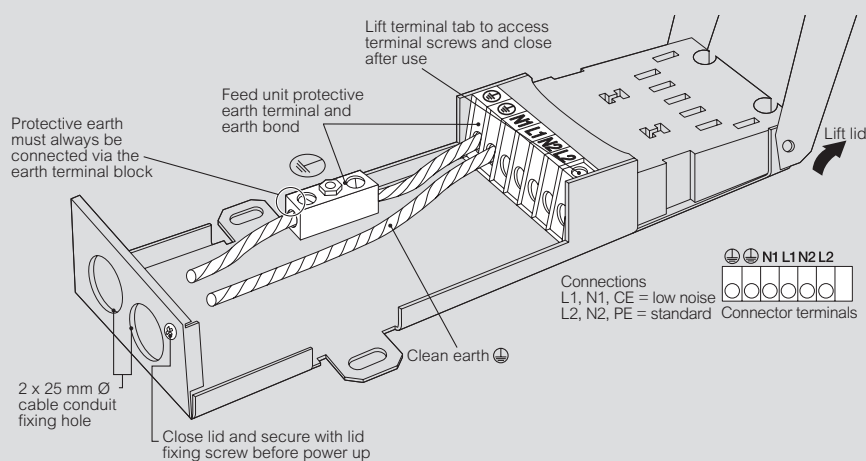
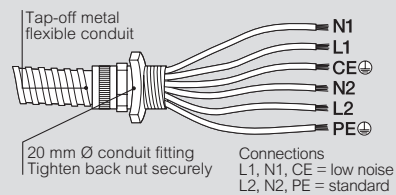
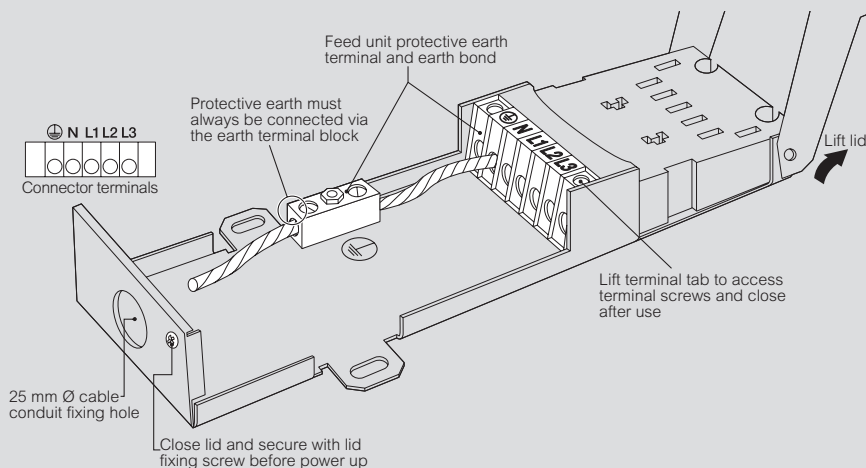
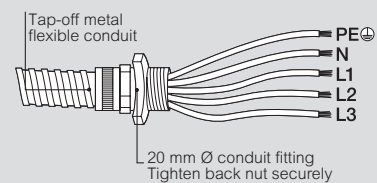
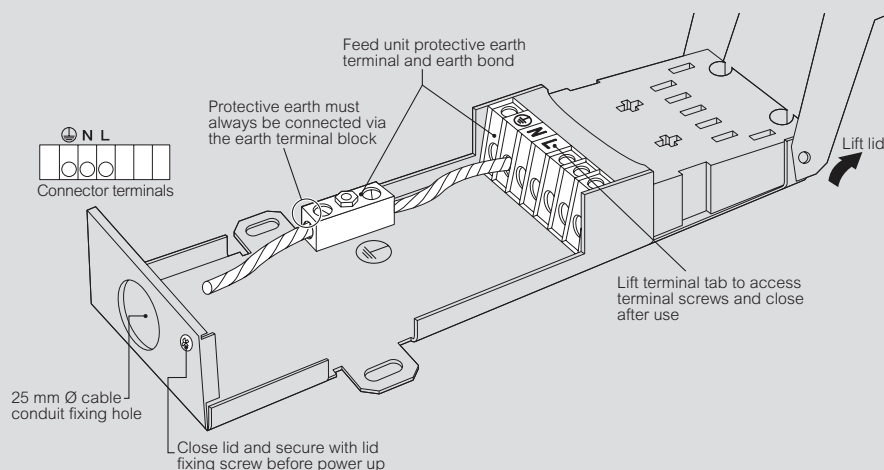
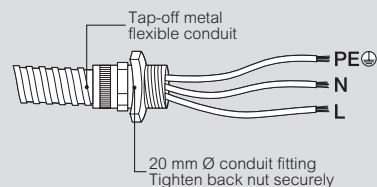
Feed unit (Cat. No. JF2010) Sub-cabing



Tap-off connection



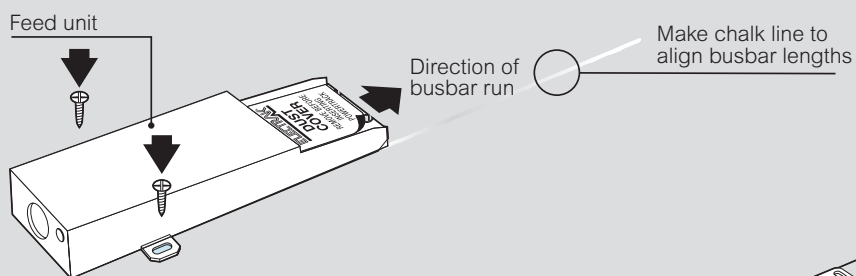
All dimensions (mm) are nominal

Feed unit (Cat. No. KF3010) Sub-cabling**Dual tap-off connection (dark green)****Feed unit (Cat. No. NF4010) Sub-cabling****3 phase tap-off connection****Feed unit (Cat. No. YF5010 and YF5010R) Sub-cabling****Tap-off connection**

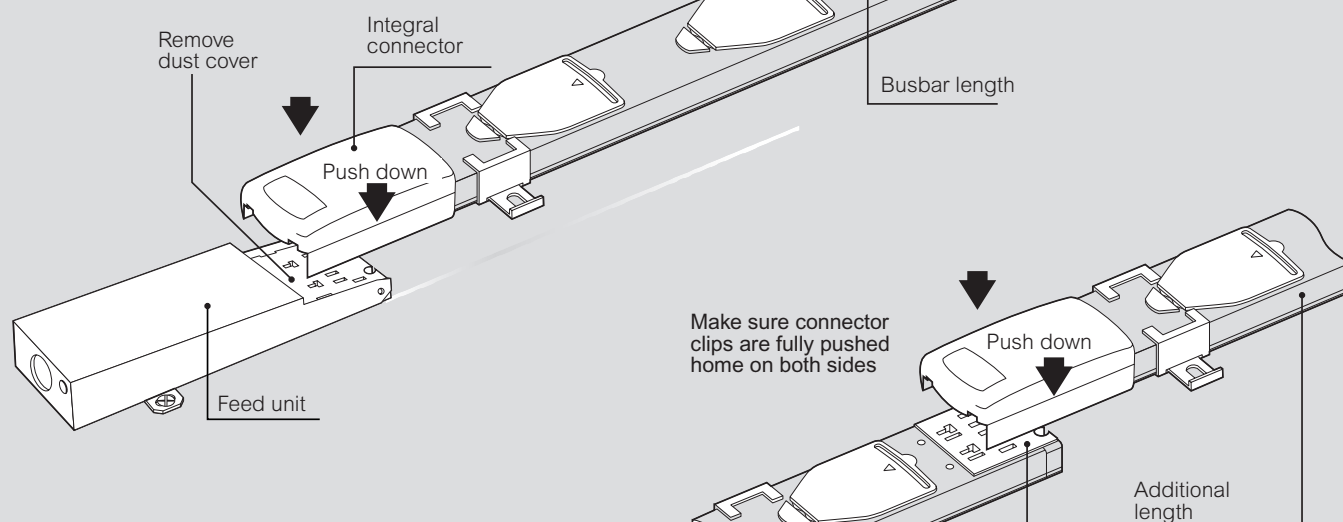
Electrak® powertrack / underfloor busbar system

installation (continued)

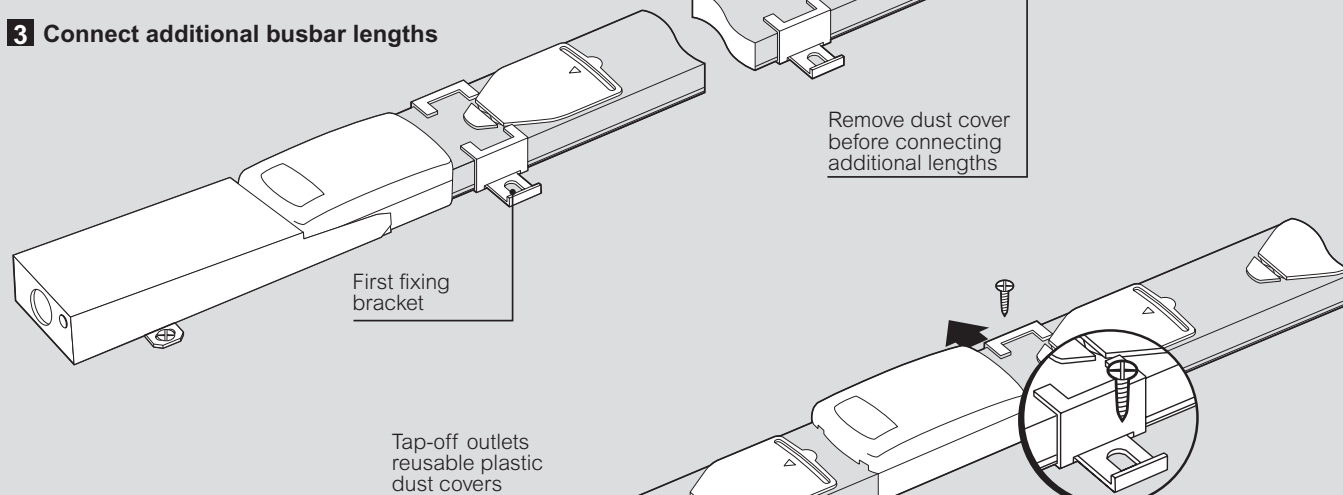
1 Fix feed unit to surface



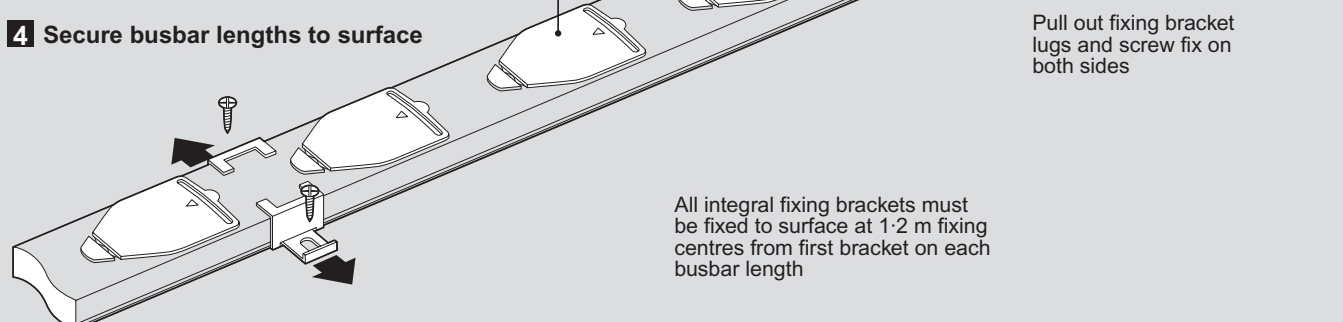
2 Connect busbar length to feed unit



3 Connect additional busbar lengths



4 Secure busbar lengths to surface



All dimensions (mm) are nominal

Electrak® powertrack / underfloor busbar system

technical data

Standards



Approved to ASTA Standard 138

BS EN 60439-2 : 2000, BS EN 61534-22 : 2009
and IEC 61534-22 : 2009

Manufactured within an approved ISO 9001 : 2008 and ISO 14001 : 2004 facility
Assessed Quality Assurance Certificate No. 2029

Electrak powertrack / underfloor busbar fully complies with the requirements of
BS 7671 : 2008 + A1 : 2011 (IET Wiring Regulations)

Ambient temperature rating factors

The current carrying capacity for a powertrack / underfloor busbar (I_n) is affected
by the ambient temperature

For Electrak powertrack / underfloor busbar the ambient rating factor K_α is equal
to 1 for ambient temperatures up to and including 35° C

$$I_z = K_\alpha I_n$$

Where :

I_z = effective current carrying capacity for continuous service under particular
installation conditions

K_α = ambient temperature factor

I_n = nominal current carrying capacity

For ambient temperatures exceeding 35° C the values of K_α and I_z are given in
the following tables

Powertrack / underfloor busbar system							
Ambient	20°C	25°C	30°C	35°C	40°C	45°C	50°C
K_α			1		0.95	0.85	0.80
I_z			63 A		59 A	53 A	50 A

32 A unfused tap-off (using thermosetting 90°C cables)							
Ambient	20°C	25°C	30°C	35°C	40°C	45°C	50°C
K_α			1		0.95	0.85	0.80
I_z			32 A		30 A	27 A	25 A

13 A fused tap-off (using 2.5 mm² thermosetting 90°C cables)							
Ambient	20°C	25°C	30°C	35°C	40°C	45°C	50°C
K_α			1				
I_z			13 A				

References :

BS 7671 : 2008 incorporating amendment No. 1 : 2011

Appendix 8 – Current carrying capacity for powertrack systems

Appendix 4 – Table 4B1 Rating factors for thermosetting cables

Appendix 4 – Table 4E1A – Single core 90°C thermosetting insulated cables
(non-armoured)

Earth fault loop impedance

BS 7671 : 2008 + A1 : 2011 IET Wiring Regulations require accurate
determination of the total earth loop impedance, which must be sufficiently low to
allow the protective device to operate within the specified time, which for socket
outlets is 0.4 seconds. The values relevant to Electrak for calculating the earth
fault loop impedance are shown in the electrical test data table, see opposite

Durability

Electrak systems are superbly designed and extremely robust. They can
be expected to stand up to all normal site conditions. Electrak powertrack /
underfloor busbar has been short circuit strength tested by ASTA

Installations with high protective conductor currents

All unfused tap-offs comply with Regulation 543.7 without the need for additional
earth conductors. Regulation 543.7.1.103 (ii) states "a single copper protective
conductor having a cross-sectional area of not less than 4 mm², complying
with the requirements of Regulations 543.2 and 543.3, the protective conductor
being enclosed to provide additional protection against mechanical damage, for
example, within a flexible conduit"

For installations with high protective conductor currents requiring
fused tap-offs, a 543.7 compliant tap-off must be used. Normally fused tap-offs
incorporate 1.5 m² (2.5 m² for tinned system) conductors, however in the fused
543.7 tap-offs, the 1.5 m² (2.5 m² for tinned system) earth conductor is replaced
with a 4 mm² conductor and therefore complies with Section 543.7.1.103 (ii)

32 A tap-off unit

The 3 m 32 A tap-off unit comprises an unfused tap-off with 2.6 m of flexible
metal conduit with integral 4 mm² LSOH conductors

These units are designed to comply with regulation 434.2.1 of the
IET Wiring Regulations by virtue of the following :

- maximum length of cable is 3 m
- it is factory assembled and fully tested item with cable installed in high quality
flexible conduit

Fault condition protection for the tap-off assembly and the floor box socket outlets
is delivered by the circuit protection device

Disconnection time for socket outlets is 0.4 seconds (Regulation 411.3.2.2). The
Electrak system meets this requirement

Tap-off units in excess of 3 m should only be used if they contain a fuse
or the busbar run is protected by a protective device not exceeding 32 A

Volt drops (live and neutral)

Busbars	3.0 mV/A/m
Cable connector	0.4 mV/A
Integral connector	0.4 mV/A
32 A tap-off	0.4 mV/A
+ 4 mm² cable	11 mV/A/m
Flexible corner assembly	1.5 mV/A
+ 10 mm² cable	4.0 mV/A/m

Mechanical data	E24 – E28	E28R
Number of conductors	3-6	3
Busbar conductor cross sectional area	13 mm²	13 mm²
Housing cross sectional area (copper equivalent)	13 mm²	13 mm²
Cable terminal capacity	16 mm²	16 mm²
Tap-off cable 32 A	4 mm²	4 mm²
Tap-off cable 13 A fused	1.5 mm²	2.5 mm²
Tap-off conduit, up to 4 conductors	16 mmØ	20 mmØ
Tap-off conduit, 5 and 6 conductors	20 mm²	N/A
Flexible corner cable (tri-rated, high temperature)	10 mm²	10 mm²
Flexible corner conduit	25 mmØ	25 mmØ
IP rating	40	40

Material specifications

Housing - busbar lengths	Galvanised steel, natural finish
Busbars	High conductivity copper (Tinned version is electro-tin plated)
Busbar insulator	PTFE
Integral connectors / Tap-off outlets	Flame retardant polycarbonate
Tap-off outlet entry shutter	Acetal
Tap-off housing	Flame retardant polycarbonate
Integral connector blades	Copper (Tinned version is plated)
Tap-off blades	Copper (Tinned version is plated)
Tap-off/flexible corner conduit, metal	Electro-galvanised steel
Tap-off cable	LSOH to BS 7211
Flexible interlink cable	Tri-rated to BS 6231
Feed box/flexible interlink boxes	Galvanised steel
Feed connector terminals/earth block	Brass (Tinned version is plated)
Fixing brackets	Galvanised steel
13 A tap-off, fuse	To BS 1362, ASTA approved

Earth fault loop impedance

Phase busbar	1.5 mΩ/m
Earth busbar	1.5 mΩ/m
Earth housing	1.1 mΩ/m
Earth busbar and housing	0.8 mΩ/m
Cable connector	0.4 mΩ
Integral connector	0.6 mΩ
32 A tap-off	0.6 mΩ
+ 4 mm² cable	11 mΩ/m
Flexible corner assembly	1.5 mΩ
+ 10 mm² cable	4.0 mΩ/m
Rated conditional short-circuit current	16 KA
Ambient temperature	25°C

Electrical test data

Rated current	63 A
Rated voltage	230/400 V~
Frequency	50/60 Hz
Conductor resistance - live and neutral	3.0 mΩ/m
Conductor impedance	1.5 mΩ/m

All dimensions (mm) are nominal