

Betrak® Powertrack

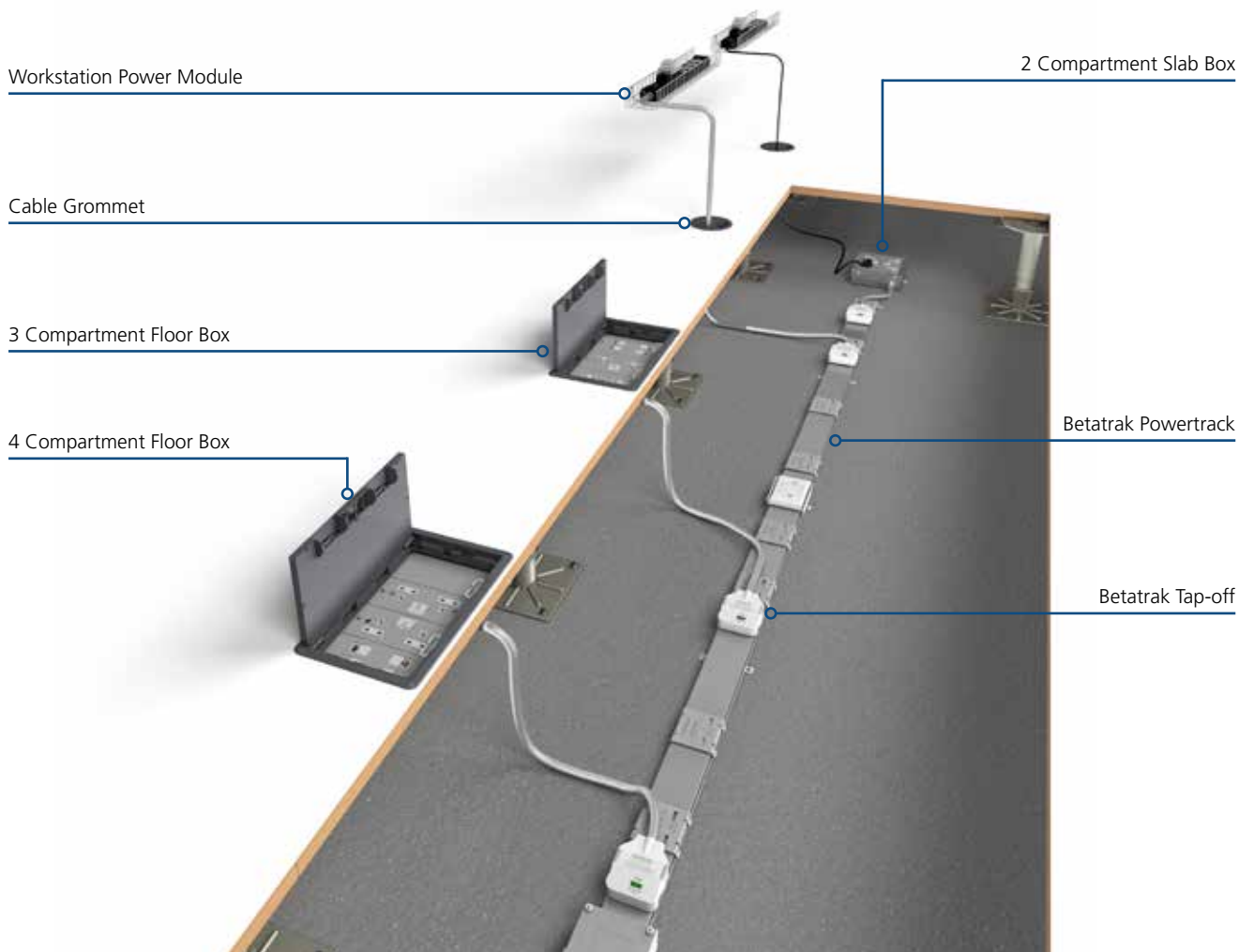
Betrak is CMD Ltd's underfloor powertrack solution and has been designed and manufactured in accordance with BS EN 61534-22 Powertrack systems. Betrak is an efficient, flexible solution to underfloor power distribution as it uses a click fit method for a fast-fit connection - reducing on-site labour costs and installation time. Our Betrak powertrack solution does not propagate flame and is very low maintenance and exceptionally reliable making it the perfect solution in today's modern construction world.

The 63A Betrak system caters for Standard Earth, Clean Earth (C/E) low noise, Auxiliary Earth, Dual Circuit or 3-Phase applications. Betrak is installed into raised access floors and there is an option for installation into ceiling areas. Betrak comes in lengths of 1.2m, 1.8m, 2.4m or 3.6m with tap-off positions provided at 300mm as standard and supplied with integral fixing brackets and sliding dust covers.

The Betrak system design ensures a safe on-site installation. This is achieved because all Betrak tap-off outlets are colour and key coded to avoid errors during assembly. For maximum safety each operates a shutter on insertion to ensure no accidental contact can be made to an energised powertrack.

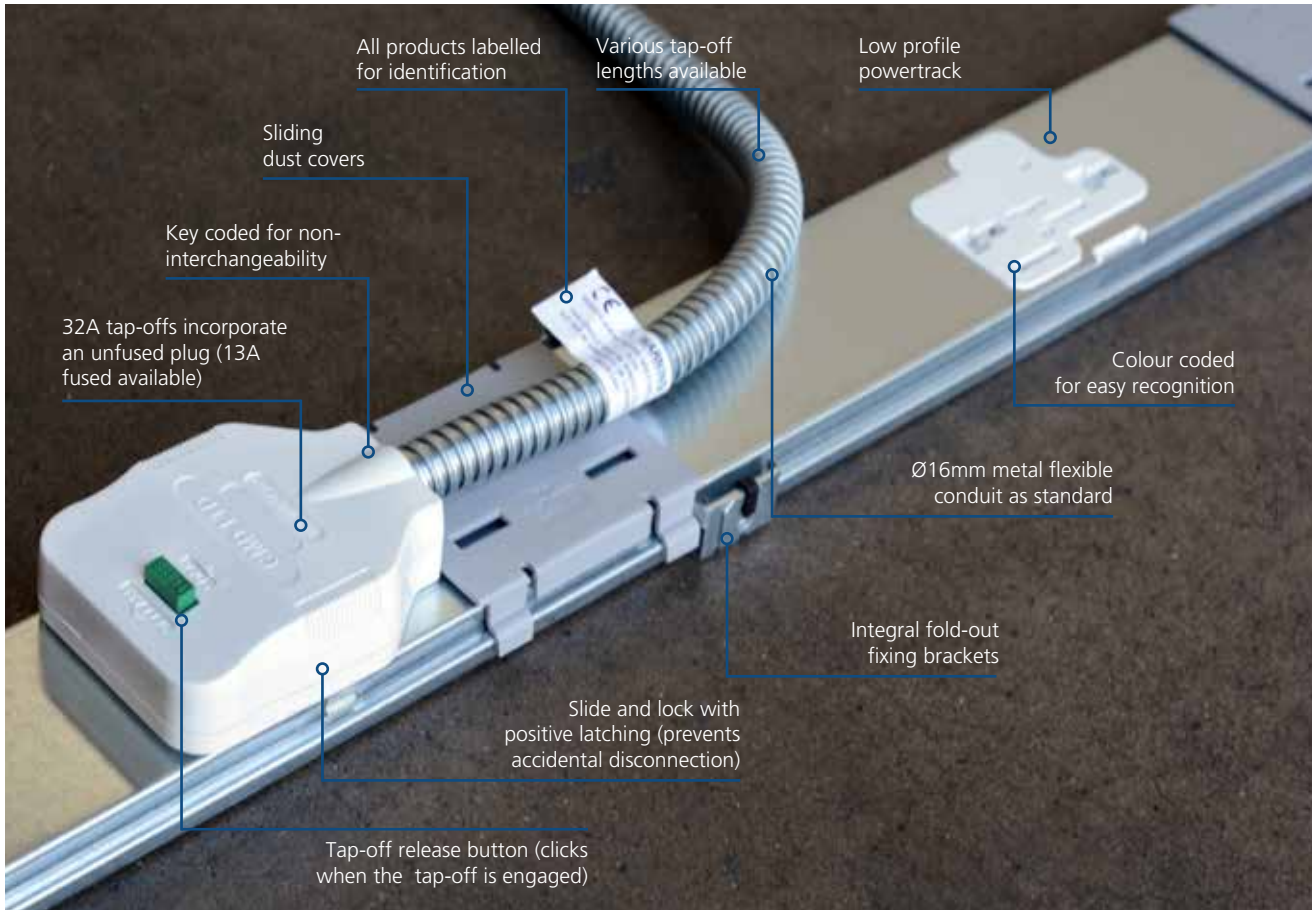
The benefits of using CMD's Betrak powertrack system:

- A comprehensive range of solutions independently certified to BS EN 61534-22.
- Each length of Betrak is fitted with fast-fit connection and fixing brackets.
- Feed units are supplied with a stop-end cap.
- Sockets are colour and key coded to avoid installation errors and to ensure a secure tap-off connection.
- Tap-off outlets are protected by integral sliding dust covers.



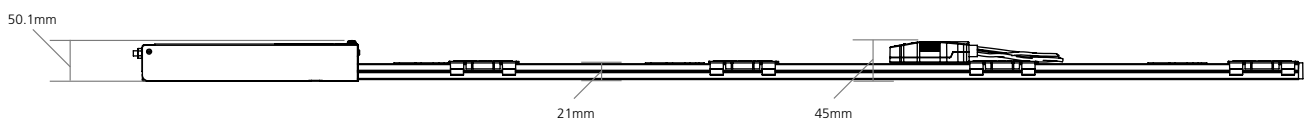
Betrak Powertrack

Features

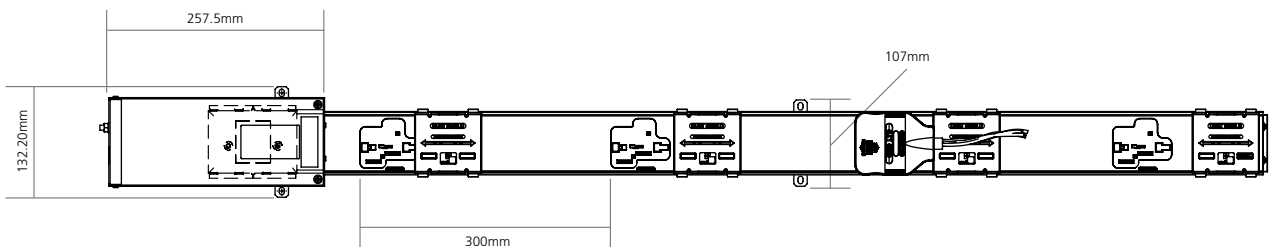


distribution
power

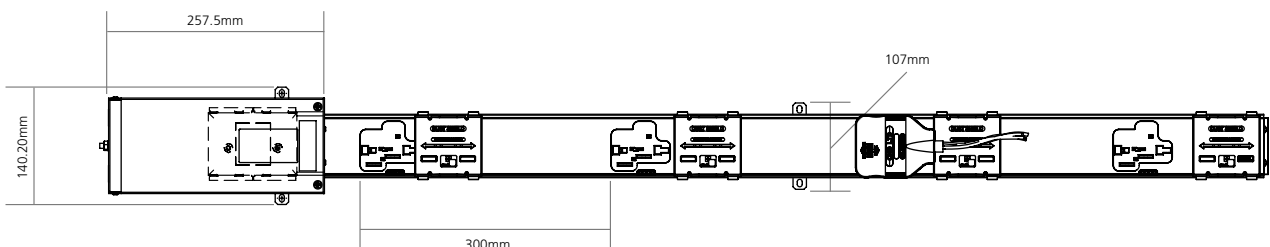
Dimensions



Standard Earth, Clean Earth (C/E) Low Noise and Auxiliary Earth.

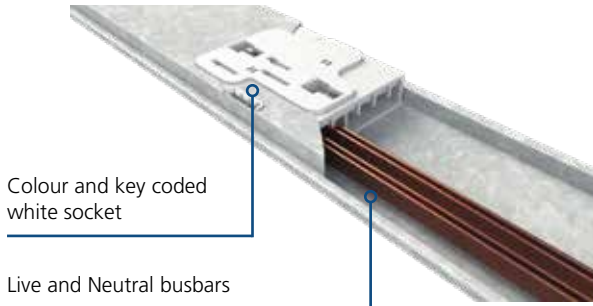


Dual Circuit and 3-Phase.

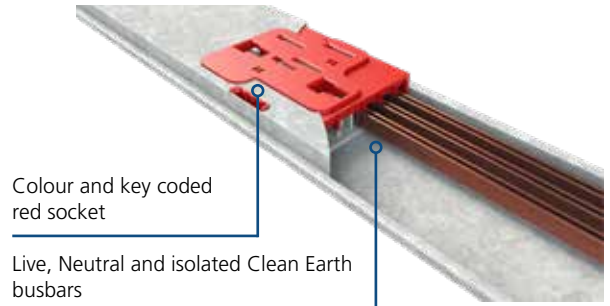


Betrak Technical Information

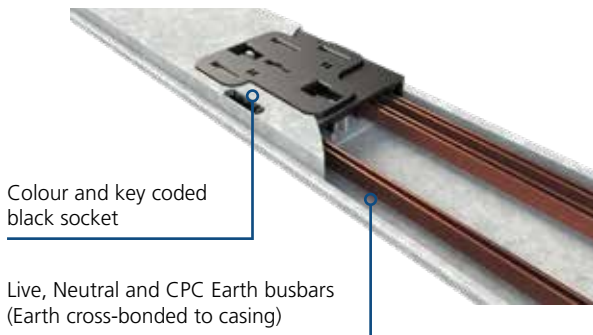
Standard Earth



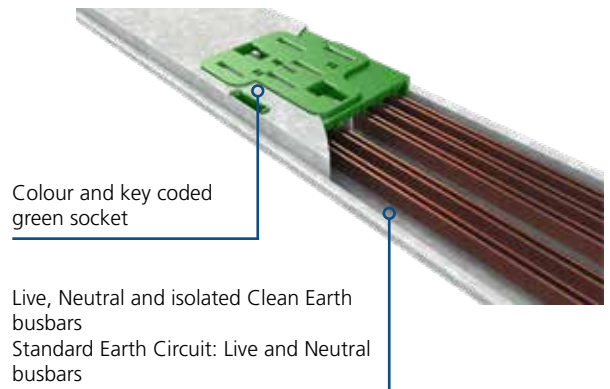
Clean Earth (C/E) Low Noise



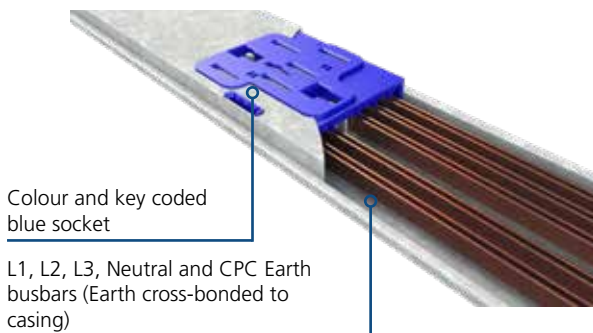
Auxiliary Earth



Dual Circuit



3-Phase



Common Features

- All internal copper busbars are 14mm²
- Outer steel casing used as CPC Earth path (equivalent to 14mm² copper)
- Colour coded and keyed connections to prevent different systems from being connected

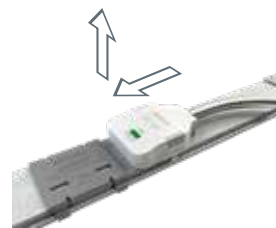
Betrak Tap-off Engagement/Release



1. Slide dust cover to expose the socket. Align tap-off pins with slots on socket. Push down to engage.



2. Press down and push backwards until button clicks upwards to lock.

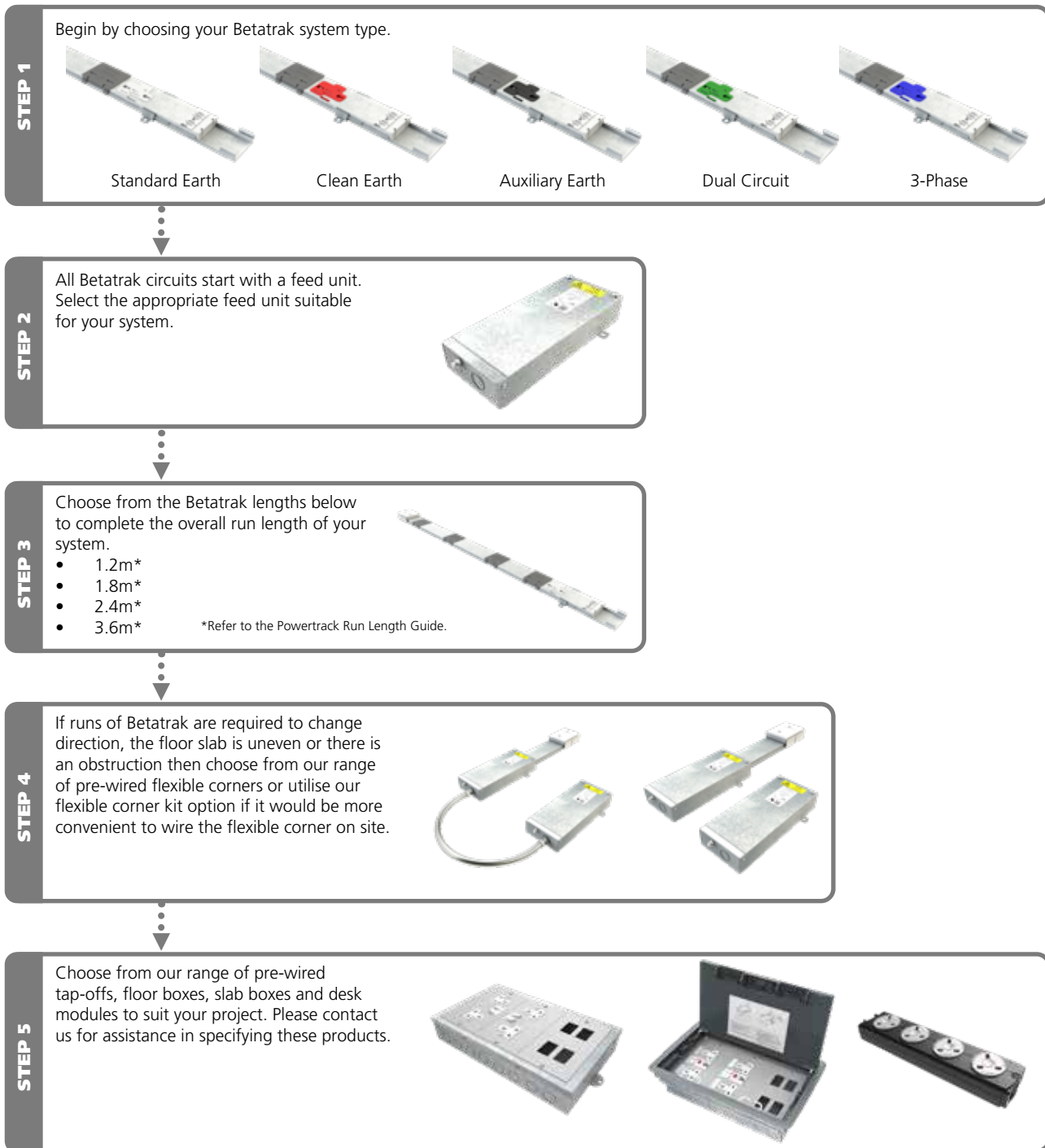


3. To remove, press button to disengage. Push forward and lift up to remove.



4. Slide dust cover to protect the socket.

Betrak Specification Guide



Betrak Run Length Guide

To ensure the most cost effective Powertrack run composition please use the following guide to select the standard lengths needed per run. To comply with BS 7671 Requirements for electrical installations, you must ensure that the maximum voltage drop and earth fault loop impedance is not exceeded when calculating the powertrack run lengths.

Run	Lengths				Run	Lengths			
	3.6m	2.4m	1.8m	1.2m		3.6m	2.4m	1.8m	1.2m
1.2m	-	-	-	1	19.2m	5	-	-	1
1.8m	-	-	1	-	19.8m	5	-	1	-
2.4m	-	1	-	-	20.4m	5	1	-	-
3.0m	-	-	1	1	21.0m	5	-	1	1
3.6m	1	-	-	-	21.6m	6	-	-	-
4.2m	-	1	1	-	22.2m	5	1	1	-
4.8m	1	-	-	1	22.8m	6	-	-	1
5.4m	1	-	1	-	23.4m	6	-	1	-
6.0m	1	1	-	-	24.0m	6	1	-	-
6.6m	1	-	1	1	24.6m	6	-	1	1
7.2m	2	-	-	-	25.2m	7	-	-	-
7.8m	1	1	1	-	25.8m	6	1	1	-
8.4m	2	-	-	1	26.4m	7	-	-	1
9.0m	2	-	1	-	27.0m	7	-	1	-
9.6m	2	1	-	-	27.6m	7	1	-	-
10.2m	2	-	1	1	28.2m	7	-	1	1
10.8m	3	-	-	-	28.8m	8	-	-	-
11.4m	2	1	1	-	29.4m	7	1	1	-
12.0m	3	-	-	1	30.0m	8	-	-	1
12.6m	3	-	1	-	30.6m	8	-	1	-
13.2m	3	1	-	-	31.2m	8	1	-	-
13.8m	3	-	1	1	31.8m	8	-	1	1
14.4m	4	-	-	-	32.4m	9	-	-	-
15.0m	3	1	1	-	33.0m	8	1	1	-
15.6m	4	-	-	1	33.6m	9	-	-	1
16.2m	4	-	1	-	34.2m	9	-	1	-
16.8m	4	1	-	-	34.8m	9	1	-	-
17.4m	4	-	1	1	35.4m	9	-	1	1
18.0m	5	-	-	-	36.0m	10	-	-	-
18.6m	4	1	1	-	36.6m	9	1	1	-

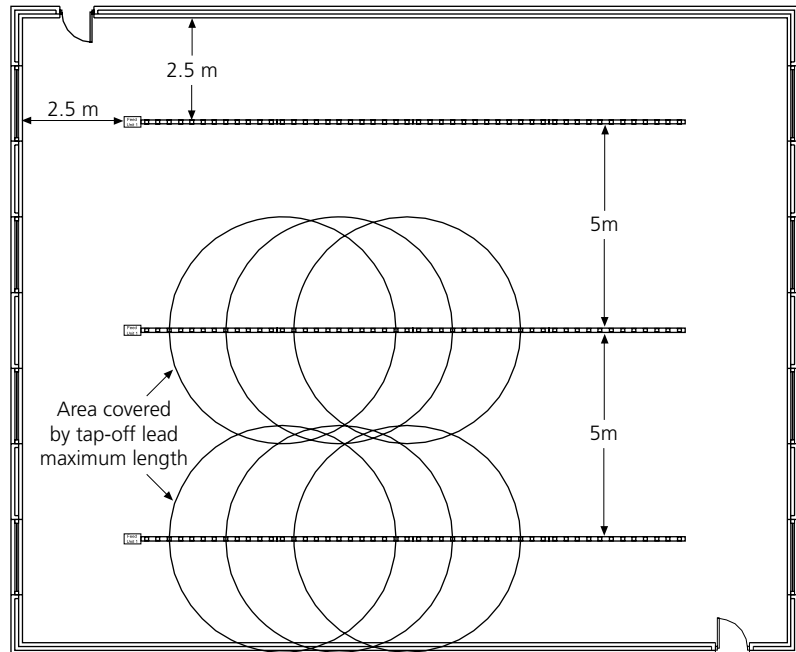
Betrak Layout Guidance

Betrak is normally arranged in parallel runs with the feed units orientated towards the incoming supply to ensure comprehensive coverage when using a standard 3m tap-off, spacing is recommended to be 5m between each parallel run of track and 2.5m from the perimeter.

Typical Floor Layouts:

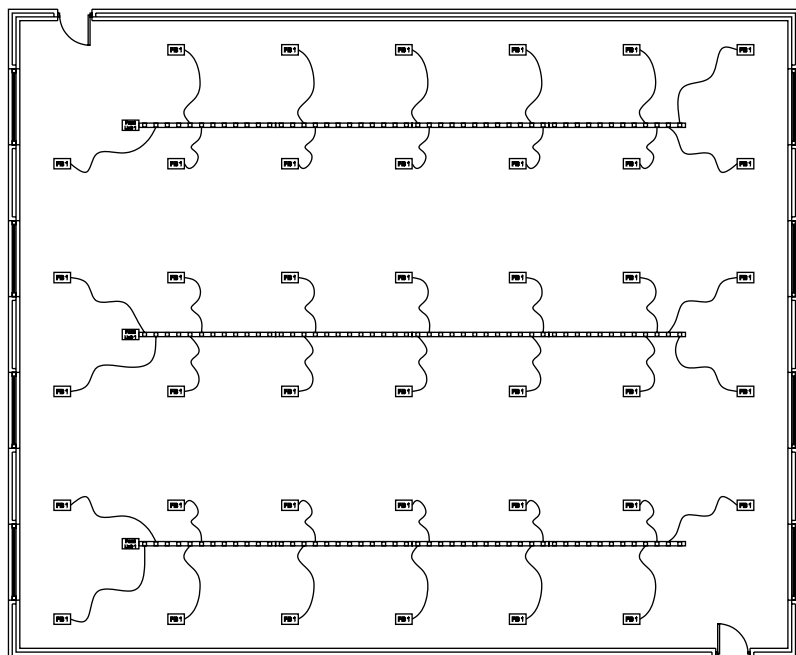
Powertrack

3m tap-offs provide full coverage when powertrack is laid out on 5m centres.



Floor Boxes

For general purposes, floor boxes shown are positioned 1 floor box for every 10m² (excluding doorways).



Betrak Earthing Explained

Betrak System Types

Standard Earth uses the outer galvanised metal casing for the standard earth path.

Clean Earth (C/E) low noise busbar, is for use in power distribution systems that require prevention of noise contamination from other power sources and induced interference from external sources e.g., air conditioning units. Clean Earth (C/E) low noise uses the outer galvanised metal casing for the standard earth path and an internal isolated busbar for the Clean Earth (C/E) low noise path.

Auxiliary Earth uses the outer galvanised metal casing for the standard earth path and is cross-bonded with an internal standard earth busbar. This provides improved earth loop impedance compared to standard earth powertrack.

Dual Circuit is also for use in power distribution systems that require prevention of noise contamination. Dual Circuit combines a Standard Earth and a Clean Earth (C/E) low noise circuit in one housing. Dual Circuit can be used to supply two separate circuits for areas where there is a requirement for both a standard and a clean supply.

3-Phase is used to distribute a balanced 3-Phase and neutral supply into single phase load applications. 3-Phase uses the outer galvanised metal casing for the standard earth path and is cross-bonded with an internal standard earth busbar. This provides improved earth loop impedance compared to Standard Earth powertrack.

Wiring Regulation 543.7.1.203, BS 7671 Earthing requirements for installations of equipment having high protective conductor currents

This wiring regulation has commonly become known as 'high integrity earthing' and is a requirement for electrical circuits that have an earth conductor current that exceeds 10mA. It allows for the safe connection and operation of circuits or equipment with the potential for excessive earth leakage. Every final circuit and distribution circuit in a fixed wiring electrical installation must comply with one of five options.

Betrak allows compliance with option (i), which states that the protective conductor shall not be less than 10mm². Betrak achieves this using 63A high conductive, 14mm² copper busbar. The metal housing, when used as the protective earth conductor, has a copper cross-sectional area equivalent to 14mm².

CMD Ltd's tap-off units allow compliance with option (ii) of the wiring regulation. Option (ii) states the protective conductor shall have a cross-sectional area of not less than 4mm² and be enclosed to provide mechanical protection. All CMD's tap-offs with an LSOH multi-strand single cable have a 4mm² protective conductor and are housed in flexible conduit.

Clean Earth compliance to 543.7.1.203, BS 7671

CMD's Clean Earth (C/E) low noise powertrack system is designed to allow electrical installations to comply with both wiring regulation 543.7.1.203 and the requirements of a Clean Earth (C/E) low noise powertrack system. A Clean Earth (C/E) low noise powertrack system prevents contamination of the clean earth path from other polluting sources on the standard earth path by creating a greater distance to travel from source. Pollution is encouraged to discharge down the main earth bar at the electrical services intake point.

Betrak Part Numbers

	Standard Earth	Clean Earth (C/E)	Auxiliary Earth	Dual Circuit	3-Phase
Feed Unit	PBSF3010/SM	PBCF4010/SM	PBAF3010/SM	PBDF6010/DM	PBTF5010/DM



Powertrack								
Length	No of Sockets	Centres (mm)	White Socket	Red Socket	Black Socket	Green Socket	Blue Socket	



3.6m	12	300	PBST3336	PBCT4336	PBAT3336	PBDT6336	PBTT5336	
2.4m	8	300	PBST3324	PBCT4324	PBAT3324	PBDT6324	PBTT5324	
1.8m	6	300	PBST3318	PBCT4318	PBAT3318	PBDT6318	PBTT5318	
1.2m	4	300	PBST3312	PBCT4312	PBAT3312	PBDT6312	PBTT5312	

Flexible Corner



1m Conduit	PBSB3031H/SM	PBCB4031H/SM	PBAB3031H/SM	PBDB6031H/DM	PBTB5031H/DM
2m Conduit	PBSB3032H/SM	PBCB4032H/SM	PBAB3032H/SM	PBDB6032H/DM	PBTB5032H/DM

Flexible Corner Kit (does not include conduit or cables)



PBSB3000/SM	PBCB4000/SM	PBAB3000/SM	PBDB6000/DM	PBTB5000/DM
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Betrak Tap-offs

CMD Ltd's tap-off units are for use with the Betrak powertrack system and are designed to ensure a safe on-site installation. They are non-interchangeable between the powertrack types, which are Standard Earth, Clean Earth (C/E) low noise, Auxiliary Earth, Dual Circuit (Standard Earth and Clean Earth) or 3-Phase. Tap-off units come in various lengths with fused and unfused options available.

Further key benefits include:

- Supplied with a slide locking and positive internal latching mechanism preventing accidental disconnection.
- Can be added to or removed from the Betrak powertrack system while the system is live.

The metal flexible conduit on all CMD Betrak Tap-offs are supplied at 225mm less than the 3m and 5m stated lengths to allow for electrical connections to components without stressing the electrical terminations. Therefore, a 3m tap-off will have a metallic flexible conduit length of 2775mm and a 5m tap-off will be 4775mm long.

CMD tap-off units allow compliance with option (ii) of wiring regulation 543.7.1.203, BS 7671 earthing requirements for installations of equipment having high protective conductor currents. This is achieved because the metal flexible conduit is 16mm diameter and encloses 4mm² protective conductor.

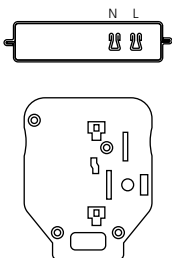
UK Regulation 434.2.1 of BS 7671:2018 (Fault Protection) states that the maximum length may not exceed 3m. This is because there will be a reduction in current-carrying capacity in a 63A powertrack system at the point where the 32A tap-off unit is required to supply other products in the powertrack system.

If your product solution requires you to exceed a length of 3m in a 63A powertrack system (where the circuit protective device is greater than 32A) then a 13A Fused tap-off unit should be used. CMD can supply unfused tap-offs that exceed 3m for use with powertrack systems rated at no more than 32A, but a suitable circuit protective device should be used to protect from overload and fault current. Extended guidance on unfused tap-off units exceeding 3m is available and should be referenced when specifying.

Betrak Tap-off Part Numbers

Standard Earth

- White plug and socket

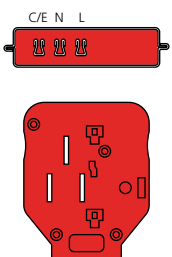


Code	Description
PBSX3323H	3m 32A Unfused Tap-off
PBSX3325H	5m 32A Unfused Tap-off
PBSX3133H	3m 13A Fused Tap-off
PBSX3135H	5m 13A Fused Tap-off



Clean Earth (C/E)

- Red plug and socket



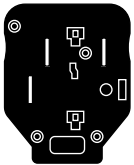
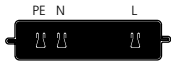
Code	Description
PBCX4323H	3m 32A Unfused Tap-off
PBCX4325H	5m 32A Unfused Tap-off
PBCX4133H	3m 13A Fused Tap-off
PBCX4135H	5m 13A Fused Tap-off



Betrak Tap-off Part Numbers

Auxiliary Earth

- Black plug and socket

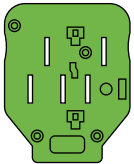


Code	Description
PBAX3323H	3m 32A Unfused Tap-off
PBAX3325H	5m 32A Unfused Tap-off
PBAX3133H	3m 13A Fused Tap-off
PBAX3135H	5m 13A Fused Tap-off



Dual Circuit

- Green plug and socket

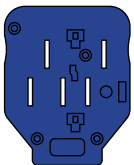


Code	Description
Dual Circuit Betrak is used with Standard Earth and Clean Earth tap-offs where two separate circuits are required in a single track system. Dual Circuit 25A unfused tap-offs are available on request.	



3-Phase

- Blue plug and socket



Code	Description
PBTX3323H*	3m 32A Unfused Tap-off
PBTX3325H*	5m 32A Unfused Tap-off
PBTX3133H*	3m 13A Fused Tap-off
PBTX3135H*	5m 13A Fused Tap-off



*Add suffix -1, -2 or -3 to indicate required phase configuration of the above 3-Phase tap-offs E.g., PBTX3323H-1.
NB: 3-Phase 28A unfused tap-offs with all three phases are available on request.

Betrak Neutrik Tap-offs

Code	Description
PPA8284/K	5m 32A Unfused Standard Earth Tap-off c/w 3-pole 32A Black Neutrik
PPA7842/K	5m 32A Unfused Standard Auxiliary Earth Tap-off c/w 3-pole 32A Black Neutrik
PPA8306	5m 32A Unfused Clean Earth Tap-off c/w 5-pole 32A Grey Neutrik



Alphatrak Tap-offs (CMD's Legacy Powertrack System)

Code	Description
PASX3323H	3m 32A Unfused Standard Earth Tap-off
PASX3325H	5m 32A Unfused Standard Earth Tap-off
PACX4323H	3m 32A Unfused Clean Earth Tap-off
PACX4325H	5m 32A Unfused Clean Earth Tap-off



Betrak Mechanical and Electrical Data

Electrical Characteristics						
Rated Current		63			Amps	
Rated Voltage		240/415			Volts	
Frequency		50			Hz	
Conditional Short Circuit Rating	(Protection devices IEC 60269/BS88 Fuse and IEC 60898 MCB)	16			kA	
Max withstand current		10			kA Peak	
Short time withstand current		1200			A for 0.4 Sec	
Volt Drops (Line and Neutral)	Busbars	3.2			mV/A/m	
	Feed Unit	0.4			mV/A	
	Track Coupler	0.6			mV/A/m	
	Tap-off Connection	0.5			mV/A	
	+4mm ² Cable	11.00			mV/A/m	
	+2.5mm ²	18.00			mV/A/m	
	Flexible Corner Unit	3.6			mV/A	
	+10mm ² Cable (1.2m)	4.7			mV/A/m	
	Earth Fault Loop Impedance	Line to Earth (Housing)	3.0			mΩ/m
		Line to Earth (Bar)	3.2			mΩ/m
Line to Earth (Bar + Housing)		2.5			mΩ/m	
Feed Unit		0.8			mΩ	
Track Coupler		0.6			mΩ	
Tap-off Connection		0.6			mΩ	
+4mm ² Cable		11.0			mΩ/m	
+2.5mm ² and 4mm ² Cable		14.5			mΩ/m	
Flexible Corner Unit		4.0			mΩ	
+10mm ² Cable		4.7			mΩ/m	
Mechanical Data						
Number of Copper Conductors		2, 3, or 5				
Busbar Cross-section Area		14			mm ²	
Betrak® Casing Copper Equivalent (Where casing is protective Earth)		14			mm ²	
Cable Termination Capacity		16			mm ²	
Tap-off Cable 32A (BS 7211)		4.0			mm ²	
Tap-off Cable 13A fused (BS 7211)		2.5 and 4.0 CPC			mm ²	
Tap-off Conduit Sizes		Ø16 or Ø20			mm	
Flexible Corner Unit Cable (BS 6231)		10			mm ²	
Flexible Interlink Conduit		Ø25			mm	
Feed Conduit Entry		1 or 2 x Ø25			mm	
IP Rating BS EN 60529		4X				
Material Specification						
Betrak® Casing		Galvanised Steel				
Busbars		High Conductivity Copper				
Busbar Insulators and Coupling Mould		Flame Retardant Polycarbonate				
Couple Contacts		Copper				
Feed Unit Terminals		Brass Silver Plated				
Tap-off Socket and Plug Mouldings		Flame Retardant Polycarbonate				
Tap-off Shutter		Polyester				
Tap-off Plug Ins		Brass				
Tap-off Cable		LSOH BS 7211				
Flexible Corner Cable		Tri Rated BS 6231				
Ambient Temperature Control Factors						
Temperature	25C	30C	35C	40C	50C	
Factor	1.13	1.07	1.0	0.93	0.75	

Betrak Compliance Standard

ASTA Certificate of Verification Tests

Laboratory Ref. No:	45673/1
APPARATUS:	Rated current 63A, rated voltage 240V/415V, rated impulse voltage 4kV, 50Hz, with a conditional short circuit rating of 16kA. A range of underfloor powertrack systems and associated tap-off units.
DESIGNATION:	Betrak system
MANUFACTURER:	CMD Limited, Sycamore Road, Eastwood Trading Estate, Rotherham, S65 1EN
TESTED BY:	kA Testing Facility, John Street, New Basford, Nottingham, NG7 7HL, UK Prof. Ir. Damstra Laboratory, P.O Box 23, 7550 AA, Hengelo, Europalaan 202, 7559 SC Hengelo, The Netherlands Exova (UK) Limited, 6 Coronet Way, Centenary Park, Salford, M50 1RE, UK Exova Warringtonfire, Holmesfield Road, Warrington, WA1 2DS, UK Exova (UK) Limited, Key Industrial Estate, Fernside Road, Willenhall, West Midlands, WV13 3YA, UK
DATE(S) OF TESTS:	26th February - 23rd August 2016

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this certificate has been subjected to the series of proving tests in accordance with:

IEC 61534-22 Edition 2.0, 2014-06 and BS EN 61534-22: 2014

Verifications with reference to the tests listed in Sub-Clause 5.3 of IEC 61534-1: Edition 2.1 2014-06

- | | |
|--|---|
| 1. Marking and Documentation, Clause 8. | 8. Insulation resistance test and dielectric strength test, Clause 15. |
| 2. Construction, Clause 9. | 9. Normal operation, Clause 16. |
| 3. Clearances, creepage distances and solid insulation, Clause 10. | 10. Temperature rise, Clause 17. |
| 4. Protection against electric shock, Clause 11. | 11. Short-circuit protection and short-circuit withstand strength, Clause 18. |
| 5. Terminals and Terminations, Clause 12. | 12. Resistance to heat, Clause 19. |
| 6. Screws, current carrying parts and connections, Clause 13. | 13. Fire hazard, Clause 20. |
| 7. Mechanical strength, Clause 14. | 14. External influences, Clause 21. |

This certificate applies only to the apparatus tested. Responsibility for conformity of any apparatus having the same or other designations rests with CMD Ltd.

Issued by Intertek, Centre Court, Meridian Business Park, Leicester, LE19 1WD.
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