
Mainline Installation Manual

11 / 2010



INTRODUCTION

Welcome to Mainline

Mainline is a track based power distribution system which enables access to power at any point along its length. This product has been tested and complies with the relevant documented Safety and Technical Standards required for this market.

This installations manual provides a step-by-step guide on installing the **Mainline** System. It is recommended that this manual is readily available for easy reference during all installations.

This manual may also be referred to, and append to, any safe work method statements (SWMS) as part of any statutory requirements by principal contractors.

IMPORTANT NOTE: **Mainline** must only be installed by accredited installers. The connection and or termination of all **Mainline** circuits must be performed by a qualified electrician.

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CHAPTER 1: SAFETY

1) Safety at the Work Site

It is important that installers comply with local codes of practice, including wiring rules, Occupational Health and Safety (OH&S) and regulations that deal with minimum requirements on Construction Sites. Care must be taken to ensure the safety of other workers while working on site. It is important to minimise trip hazards and obstructions to emergency exits.

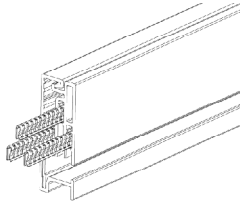
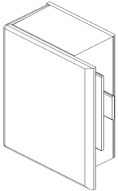
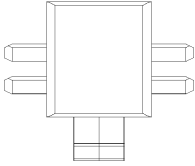
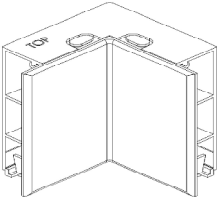
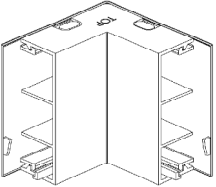
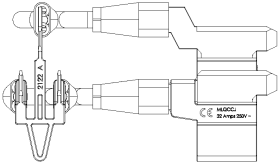
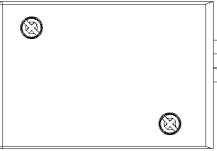
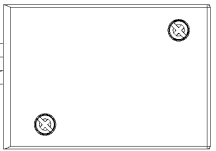
2) Personal Safety

Your safety and the safety of others must always be of highest importance. Basic safety measures should always be observed before and during the installation of **Mainline**, please adhere to the following:

- Appropriate Personal Protective Equipment (PPE) must be worn, including those used for respiratory protection.
- Installers are to ensure up-to-date Material Safety Data Sheets (MSDS) relevant to any hazardous compounds are available and referred to for guidance.
- Isolate power when connecting supply cables. **At no time should you work on energised electrical circuits.**
- Use safety goggles and a facemask when cutting **Mainline**,
- Use protective kneepads and or padding when installing **Mainline** at floor level,
- Be aware of embedded conduits, water pipes or power cables in wall cavities before drilling. Use a stud detector to find wall studs and a voltage tester to find any electrical cables.

CHAPTER 2: COMPONENTS OF THE SYSTEM

Mainline consists of a number of modular components designed for safe and easy installation - available in white (W) and black (B)

Part / Kit Name	Part / Kit Number	Part / Kit Name	Part / Kit Number	Part / Kit Name	Part / Kit Number
Power Track 	MLPT W/B	End Cap 	MLEND W/B	Straight Joiner 	MLQCSJ W/B
Internal Corner 	MLIC W/B	External Corner 	MLEC W/B	Quick Connect Corner 	MLQCC W/B
Terminal Block Left 	MLITL W/B	Terminal Block Right 	MLITR W/B	Adaptors* 	Variable

***Note:** Adaptors are supplied separately and will accommodate local plug configurations

CHAPTER 3: TOOLS REQUIRED FOR THE INSTALLATION OF MAINLINE

Basic tools:

<ul style="list-style-type: none"> • Drop saw - including a Multi Material blade (aluminium blade) with either 90, 100 or 120 teeth • Electric and cordless drill • Permanent markers and pencils • Insulated screwdrivers • Pliers - standard, long nose and side cutters • Utility knife • Drill bits (6+8mm) steel + masonry • Stud finder + voltage tester 	<ul style="list-style-type: none"> • Caulking gun • Liquid adhesive and or gap filler (colour match to track) • Nylon hammer • Knee pads • Masking + double sided + electrical tape • Tape measure, chalk line • Spirit level • Drop sheet • A clean rag and a small dry unused paint brush
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Fasteners, screws and plugs:

Mainline track	Recommended fastener
Brick and concrete walls	20/30mm self-tapping button head screws together with nylon or hollow wall anchors.
Timber walls	20/30mm self-tapping button head screws
Drywalls / Plasterboard	self-tapping button head screws together with nylon or hollow wall anchors - length depending on plasterboard thickness.
Mainline accessories	20/30mm self-tapping pan head screws

CHAPTER 4: PLANNING THE JOB

1. Planning the job

Circuit Protection

All installations of **Mainline** must adhere to the wiring rules which are applicable to the country in which **Mainline** is being installed. It is important that the circuit, to which the **Mainline** product is connected, incorporates an appropriate and adequate circuit protection device which will:-

- Limit the maximum current load on the **Mainline** system
- Protect users and equipment against faults
- By restricting the available load, limit the number of appliances which can be simultaneously connected to the **Mainline** system at one time

Each country has documented guidelines which stipulate the allowable limits of electrical circuits in residential and commercial environments. Installers of **Mainline** must adhere to the applicable guidelines for the country in which **Mainline** is being installed.

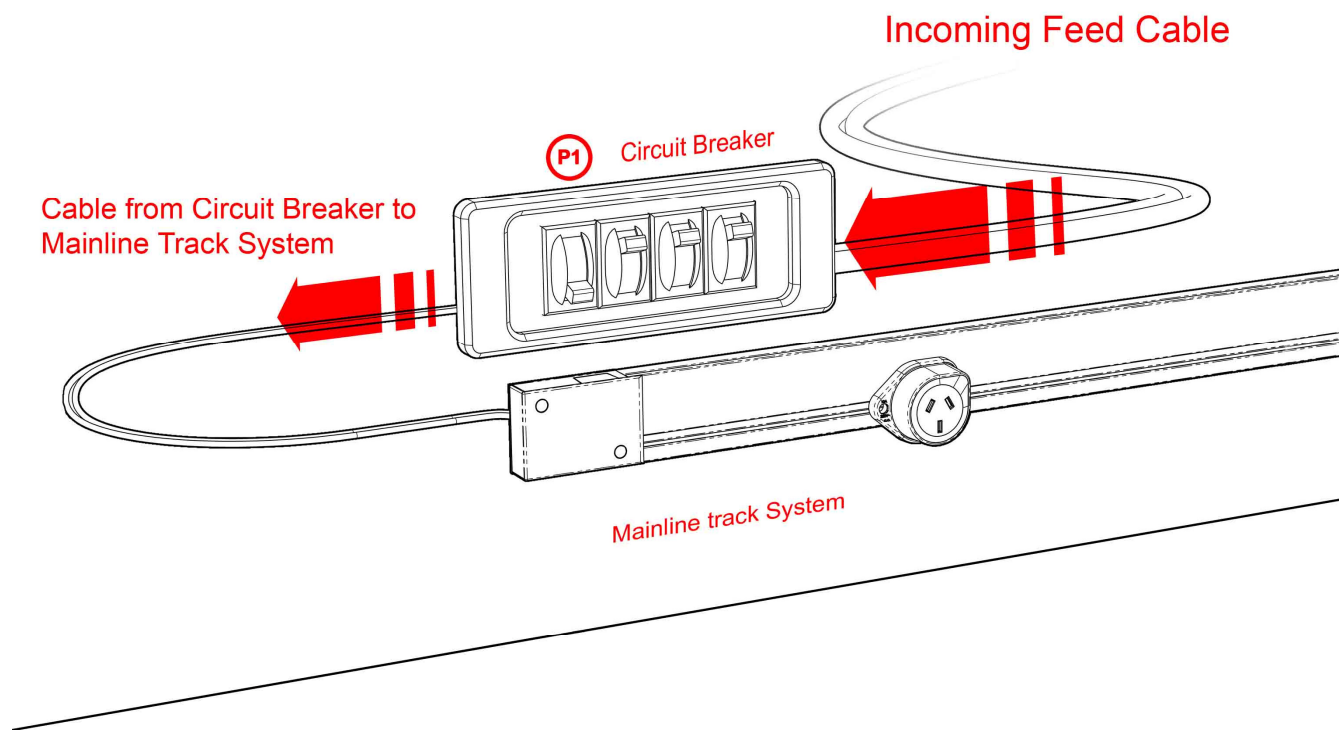
Supply Cable Requirements

The circuit breaker and the cable sizing requirements must be checked for conformance to the country and/or local installation requirements.

For connection of the Mainline track system to circuits incorporating protection devices rated at: 16A, 20A or 25A or lower, The track system shall be connected to a supply cable with a cross sectional area of 2.5mm² or greater.

For connection of the Mainline track system to circuits incorporating protection devices rated at: 32A or lower, The track system shall be connected to a supply cable with a cross sectional area of 4mm².

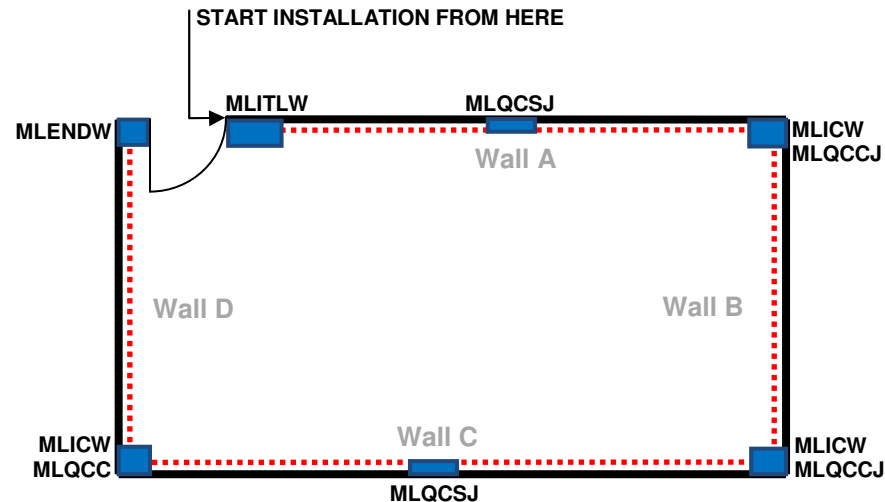
Circuit breaker wiring diagram as described on page 7.



2. Mapping out the job

Important: The number of adaptors able to be used on a single Mainline installation will depend on the rating of the circuit breaker governing that particular circuit.

Draw a rough plan of the installation area (example below). A plan provides a quick reference point for dimensions, product required and installation procedure



Installation requirements:

- **Wall A** - requires: 1 x inline terminal block kit- left + 1 x full length track + 1 x quick connect straight joiner + 1 x cut length of track (shortened to fit) + 1 x quick connect corner joiner + 1 x internal corner kit. (Note supply cable and start position of the installation)
- **Wall B** - requires: 1 x cut length of track (shortened to fit) + 1 x quick connect corner joiner + 1 x internal corner kit
- **Wall C** - requires: 1 x full length track+ 1 x quick connect straight joiner + 1 x cut length of track (shortened to fit) + 1 x quick connect corner joiner + 1 x internal corner kit
- **Wall D** - requires: 1 x cut length of track (shortened to fit) + 1 x end cap kit.

3. Supply Cables

The electrical supply cables must, at a minimum, be 2.5mm² twin & earth type cables. The supply cables must be installed at the correct height as specified in the building plans

4. Wiring Rules

The installation of **Mainline** must comply with local wiring rules. (Please refer to the local wiring rules for guidance)

5. Condition of walls and other surfaces

Mainline should only be installed on surfaces that provide firm support. It is recommended that all walls be checked prior to installation (Refer to the table below – Pre installation checks)

For all installation orientations, (including vertical mounting):

You must refer to the local wiring rules for verification of the minimum IP rating requirements

6. Determining circuit/track length

The maximum length of the **Mainline** circuit (including supply/patch cables) is to be determined by the:

- Rated current of the protective circuit breaker and or
- Size of the supply cable (mm²) and
- Impedance of the **Mainline** conductors

Important: Always refer to local requirements for electrical installations for guidance

7. Dressings

- Where Mainline is installed as a surface mount - it is important to ensure that the product is dressed top and bottom so as to prevent access to hazardous parts
- Dressings (top and bottom) must not protrude beyond the front face of the **Mainline** track (MUST not be wider than 19mm)
- **Note:** when **Mainline** is installed close to a surface (floor or bench top) the minimum height off that surface must be - 35mm)
- When **Mainline** is installed flush, the track must not be set deeper than the face of the wall

8. Pre-installation checks

The following must be performed:

Mainline system components	Job site
<p>Front surfaces of the track must be straight and parallel Adaptor insertion gap must be greater than 7mm The screw heads will be accommodated within the fixing cavities of all backplates All system components are colour matched and correspond with job specification The three conductors are inserted correctly in their respective cavities inside the track and are level with the ends of the track</p>	<p>Supply cables have been installed at the correct height– a minimum height of 35mm off the horizontal surface Inspect wall surfaces to ensure that there is no crumbling, moistness, uneven finish, hollowness and loose material The work area should be adequately cordoned off Wall boxes for termination of supply cables must be at least 40mm deep All safety checks (as outlined in Chapter 1) have been adhered to</p>

CHAPTER 5: INSTALLING MAINLINE

DISCONNECT ALL POWER TO SUPPLY CABLES BEFORE COMMENCING THE INSTALLATION OF MAINLINE.

Step 1: Fixing the Inline terminal block and terminating the supply cable

- a. Locate and tag the supply cable (image: 1)
- b. Pull the supply cable through the appropriate hole in the terminal block backplate (before fixing the backplate into position – image: 2)

Flat building supply cable should be fed through the upper aperture of the terminal block backplate (image: 2)
- c. According to the building plans and at a height of no less than 35mm off the floor, fix the inline terminal block backplate (right or left) into position using appropriate 20/30mm self-tapping pan head screws (image: 4)

Tip: Use double sided tape (thickness <1mm) or fast setting adhesive on the back of all backplates to correctly position them prior to permanently fixing with screws
- d. Fix the end cap backplate (using the central aperture) and any corner backplates using pan head screws (image: 3)
- e. Terminate supply cable using the appropriate terminal block (right or left – image 4)



Image: 1



Image: 2



Image: 3



Image: 4

Step 2: Measuring, cutting and fixing the Track backplate

- a. Starting from the supply cable, measure, number and document on your rough plan, the distance between the edges of the terminal block, corner and end cap backplates, which are now fixed in place (image: 5)
- b. While the track is still assembled (backplates and front covers clipped together), cut the required lengths and number each one on the back of the backplates (image: 6) in accordance with your rough plan

Important: When cutting Mainline:

- i. **Always use precise measurements and exact cutting procedures to ensure a flush fitting of track backplates between all other backplates.**
- ii. **Only use a saw with a blade as noted in Chapter 3: Tools required. A clean, sharp cut is required so as not to damage the ends of the copper conductors**
- iii. **It is vitally important that the conductors within the track are flush with the end of the track before any cutting is commenced and after the cutting has been completed**
- iv. **Once cut, clean the cut ends of the track to remove all sawdust, this is best done with a dry paint brush or clean rag**

- c. Remove the front covers from each of the numbered backplates by sliding the two pieces apart, and mark the number of the backplate on the back of the corresponding front cover (image: 7)
- d. In sequential order, fix the track backplate to the wall using button head screws at intervals of not more than 600mm using the fixing line as a guide (image: 8)

Tip: Re-write the number onto the inside face of the backplate (image: 8). Each length of track should now be numbered on all sides of the backplate and front cover

Important: *i.* each length of track must be firmly butted up against all other backplates (image: 8)
ii. The fixing of screws at the start and end of each length must be as close as possible to the track edge and adjacent corner, end cap and terminal block.

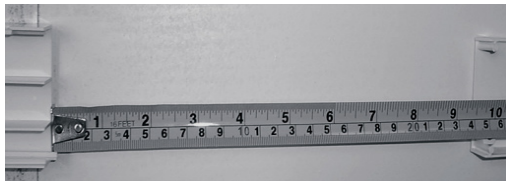


Image: 5



Image: 6

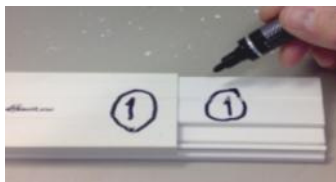


Image: 7



Image: 8

Step 3: Installing the Inline terminal block and Track front cover

***Note:** Before connecting the Inline terminal to the track conductors, find the insulating tape (image: A) in Inline terminal kit, peel and attach it at the joint location of the backplates of inline terminal kit and track (images: B & D)

The inline terminal installation shall not proceed any further if the installer could not see the figure of five 'V' ticks shown. The inline terminal block shall be separated to the backplate by this insulating tape. (Images: C & E)



Image : A



Image: B

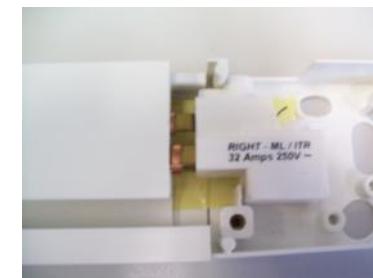


Image: C



Image: D

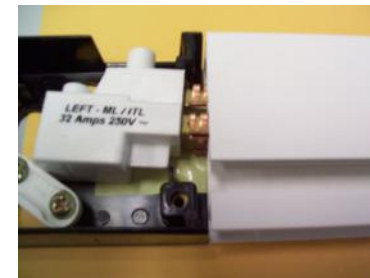


Image: E

- a. Beginning the installation from the power supply and already fitted inline terminal block backplate, lay the numbered track front cover in front of the corresponding numbered track backplate so each front cover is lined up with its corresponding numbered backplate

Important: Ensure that the conductors in the track are flush with both ends before the front covers are installed

- b. From the underside of the 1st numbered front cover on an upward 45° angle, engage the contacts of the terminal block into the conductors of the track (image: 9)

***Note:** Do not push the block contacts directly into the end of the track – engage the contacts of the block as mentioned above

- c. **Once the terminal block contacts have been properly engaged into the conductors, gently work the terminal block so that the terminal block firmly butts up against the front cover (images: 10, 11, 12, 13)**

Important: If the conductors have been forced out the tailing end of the front cover, gently work them back into the front cover until they are flush with the edge of the track. Ensure that they are not bent in the process. Re-work the terminal block back into the front cover so that it butts up to the edge of the track once again.

- d. Place the lower edge of the front cover into the channel of the backplate and align the leading edges of the front cover and backplate (image: 11)
- e. Exert pressure on the top edge of the front cover until the front cover and backplates are clipped together
- f. Continue to engage the front cover along its length stopping 40 - 50 cm from the end so as to allow the connection of the next joiner or corner (image: 12)

Important: It is important to ensure that the terminal block is firmly butted up against the front cover (image: 13)



Image: 9



Image: 10



Image: 11



Image: 12



Image: 13

Step 4: Joining two lengths of Track front cover with a Quick connect straight joiner

Important: Prior to reaching a corner or end cap (if a straight joiner has been used), the final length of front cover in that run must have 17mm cut off from its length for each joiner used before clipping together (see plan 4.1 - installation requirements)

- a. From the underside of the front cover, engage the contacts of a quick connect straight joiner into the conductors of the tailing end of front cover (image: 14). This is best done by using an upwards pushing motion keeping the joiner parallel to the track.

***Note:** Before engaging the joiner, partially pull back the protective foil (approx. 50mm) on both ends of the track where the joiner will be connected to

- b. When the contacts are properly engaged into the conductor, work the two parts together until they are butted against each other.

Important: If the conductors have been forced out the tailing end of the front cover, gently work them back into the front cover until they are **flush** with the edge of the track. Ensure that they are not bent in the process. Re-work the straight joiner back into the front cover so that it butts up to the edge of the track once again

- c. Taking the next sequential front cover, from above the joiner contacts, push the track gently downwards, again working the two parts together until they are butted up together (image: 15)

Important: Ensure that the 2 front covers and the joiner remain firmly butted together at all times (image: 16)

- d. **Ensuring that both front covers and joiner remain butted firmly together**, place the lower edges of the front cover into the channel of the backplate (image: 16)

- e. Evenly exert pressure on the top edges across all 3 joined parts (front cover + joiner + front cover), until they clip evenly into the backplate (images: 17 & 18)
- f. Continue to engage the front cover along its length stopping 40 – 50 cm from the end so as to allow for the connection of the next joiner or corner

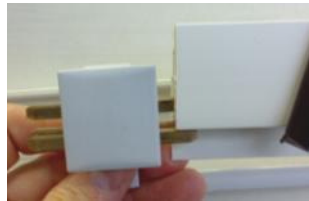


Image: 14

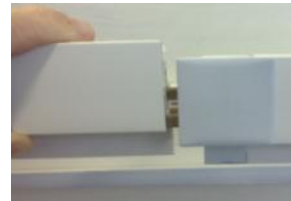


Image: 15



Image: 16



Image: 17



Image: 18

Step 5: Fitting an Internal/External corner with a Quick connect corner joiner

Important: Ensure that both of the track backplates are firmly butted up against both sides of the corner backplate (images: 23 & 24)

- a. From the underside of the front cover using your thumb, push the quick connect corner joiner up into the conductors of the track so that both of the lower plastic connector housings are butted up against the front cover (image: 19)
- b. Complete clipping the front cover and backplate together along the remaining 40-50cm tail end so the run to the corner is complete (images: 20 & 21)
- c. Taking the next sequential piece of front cover - repeat (steps a. & b. above), to complete the other half of the corner (images: 22 & 23)

Important: Check to ensure that the conductors have not been forced out the end of the front cover. If the conductors have been forced out the tailing end of the front cover, gently work them back into the front cover until they are flush with the edge of the track. Ensure that they are not bent in the process. Re-work the corner joiner back into position so that it is flush with the edge of the front cover.

- d. Arrange the 3 quick connect corner joiner cables into their respective receptacles of the corner backplate (image:24)
- e. Complete clipping together the front cover and backplate (step c. above) from the now completed corner
- f. Continue to engage the front cover along its length stopping 40 – 50 cm from the next joiner or corner



Image: 19



Image: 20

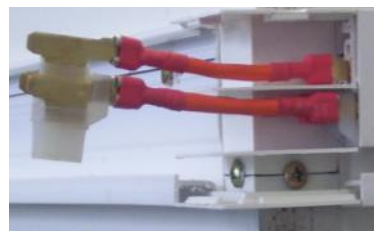


Image: 21

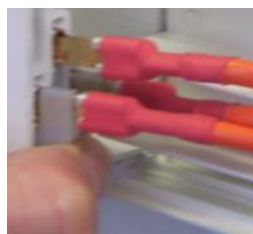


Image: 22



Image: 23



Image: 24

Step 6: Fitting the End cap

- a. Remove the end cap backplate from the wall (image: 25), and fit the end cap back plate into the end of the front cover (image: 29)

Important: Before the final piece of front cover is connected to the other components, the conductors (Active and Neutral) at the cap end, must be shortened by 5mm from the end of the track to allow the proper installation of the End Cap. As a guide 5mm = 2 ribs on the conductor. (image: 26). After shortening the conductors they should be pushed back into the front cover so as to ensure that the conductors are flush with the other end of the front cover (image: 27)

- b. Complete clipping the front cover into the backplate to the end of the run
- c. Re-fix the end cap backplate back on the wall (image: 28) ensuring the edge of the backplate is butted up tightly against the front cover, re- insert screw (image: 29)

Important: the end cap backplate must be firmly butted up against the front cover



Image: 25

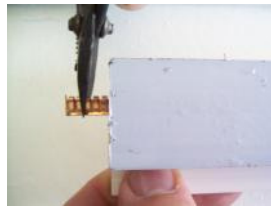


Image: 26



Image: 27



Image: 28



Image: 29

Step 7: Fitting Covers

Important: Before any of the accessory covers are applied, the system's installation should be checked by an **AUTHORISED ELECTRICIAN**

- Peel off protective lining from the track's front faces (image: 30)

a. Corner covers

- Align the corner cover with corner backplate and push until the cover and the backplate clip together(image: 31)
- Fit the retaining pins in the holes provided(image: 32)

***Note:**Retaining pins must always be fitted

b. End cap covers

- Press the end cap covers onto their respective backplates until cover and backplates are clipped together – no screws required (image: 33)

c. Inline terminal block covers

- Check that the inline terminal cover can fully support the inline terminal block. Adjust the terminal block backplate position if required
- With a screw driver fit the cover by using supplied screws, and fit flush cups (image: 34)



Image: 30



Image: 31



Image: 32



Image: 33



Image: 34

***Note:** It is recommended that a screwdriver and not a cordless drill be used to remove and fit all terminal block covers

CHAPTER 6: SYSTEM TESTING, FITTING OF DRESSINGS, PAINTING, CLEANING AND ENGAGING AN ADAPTOR

1. **System Testing: An AUTHORISED ELECTRICIAN** should perform the following:
 - a. All supply cable terminations should be appropriately labelled
 - b. Continuity of the electrical circuit
 - c. Correct polarity
 - d. Insulation resistance
 - e. Test of protective circuit

2. **Fitting of dressings**
 - a. When Mainline is surface mounted it must always be finished with a top and a bottom dressing to prevent access to hazardous parts
 - b. When a dressing is fitted it is important to ensure that no major pressure is applied to the track as this may deform **Mainline** and make the insertion of an adaptor difficult or impossible

3. **Painting**
 - a. If painting is required - prime surface with correct PVC primer and finish with the relative paint

4. Cleaning

- a. The track's access gap can be cleaned by a vacuum cleaner using an attachment for small gap cleaning
- b. The track's surface is easily cleaned using suitable cleaning products recommended for plastic parts. (Avoid use of aggressive detergents, paint thinners, acetone)

5. Engaging of an adaptor

- a. Engage an adaptor by inserting the adaptor's key guide into the track's access slot and then turning the adaptor **clockwise** (step 1) until a red tab of the key guide is shown through the indicator hole (steps 2 and 3)
- b. Insert appliance plug as required (step 4)



CHAPTER 7: TROUBLE SHOOTING

Issue	Possible Solution
An adaptor requires excessive force to enable engagement	Check the contacts alignment within the key guide
The access gap is too small and will not allow the adaptor to be inserted	The dressing is pushing on the track closing the access gap. Remove and refit the dressing
The front cover is not parallel with the backplate front edge	The dressing is pushing on the track closing the access gap. Remove and refit the dressing

CHAPTER 8: PRODUCT SPECIFICATIONS

Mainline Track			
Rated voltage		250V ~	
Rated current		Up to 32A	
Resistance to impact		Heavy impact (5J)	
Connection of adaptors (tap-off units)		Connected and disconnected when system is energised and load connected	
Degree of protection		IP2xD	
Degree of pollution		2 (Non-conductive pollution with temporary conductivity caused by condensation)	
Rated impulse withstand voltage		4000V	
Adaptor		Terminal Block	
Model	Various	Model	Inline terminal connector
		Rated voltage	250V
		Rated current	Up to 32A
		Rated connecting capacity	4mm ²
Rated voltage	250V ~	Type of external wire	Rigid (solid or stranded)
Max. Rated current	Up to 16A (socket-outlet contacts)	Number of wires connected to single terminal	Max 2 x 2.5mm ² Max 1 x 4 mm ²

Product Specification and Performance

Environment for use	Indoor, or enclosed cabinets outdoors with a minimum degree of protection of IP54 (IEC529)	Conductor resistance R_{20} (20°C)	5 milliohms/m
Allowable ambient temperature at maximum allowable current	-5°C to +40°C, the average value over a 24 hours period not exceeding 35°C	Conductor impedance Z_{20} (mean at 20°C)	5 milliohms/m
Maximum relative humidity	< 93% r.h. non-condensing	Insulation resistance at 500V d.c. for 1 min	>50 Mohms/m
Rated continuous current of track conductors at 20°C	Up to 32 Amps a.c.	Dielectric strength	3.5kV a.c. for 1 min
Track material	High Impact Rigid PVC Compound	Impulse strength	4kV at 1.2/50 μ sec
Flammability	Self-Extinguishing UL 94- 5VA	Voltage drop of track conductors at current load of: 20Amps 32Amps	< 11 mV/A.m < 11 mV/A.m
Conductor material	Special non-plated copper	IP designation	IP 2xD
Pollution degree	2	Adaptor	Can be connected and disconnected when the system is energised and with a load connected
Rated continuous current of adaptor at 25°C	16 Amps	Tap-off and track conductors contact resistance	< 0.4 m Ω