

WARNING!
**DO NOT REMOVE THE COVERS WITHOUT FIRST COMPLETELY DISCONNECTING
THE BETAPACK3 FROM THE MAINS SUPPLY**

To Remove The Cover

Isolate and disconnect the Betapack3 from the mains supply.

The mains supply terminals (and output terminals on the hardwire version) are located under the top cover. To remove the top cover, remove the four screws "A" in Diagram 5 from the side plates.

The Triacs (type BTA40-600A/B) are located under the bottom cover. To remove the bottom cover, remove the four screws "B" in Diagram 5 from the side plates.

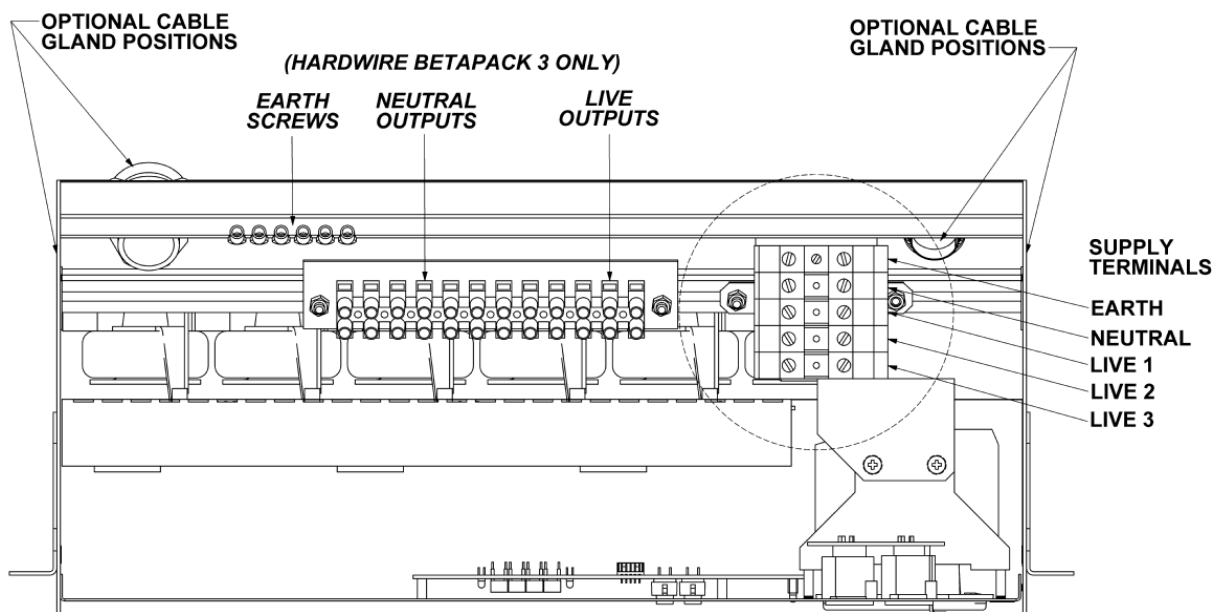
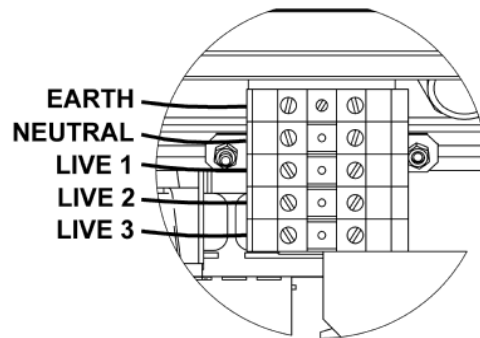


Diagram 1

Connecting The Mains

- A separate isolator and secure mains earth connection are required.
- Phase to Neutral voltage must not exceed 255VAC.
- All wiring entering the Betapack3 must be rated to +85°C, H07RN-F cable is recommended.
- Cut outs are provided on the ends and rear for PG21 glands; one is supplied.
- Supply terminals will accept wire sizes between 1.5mm² and 16mm². Tightening torque is between 1.2Nm and 2.4Nm.
- Hardwire Live/Neutral output terminals will accept wire sizes up to 6mm².
- Hardwire Earth output ring-tags (blue crimp) will accept wire sizes between 1.0mm² and 2.5mm². These may be replaced if larger diameter wiring is installed.

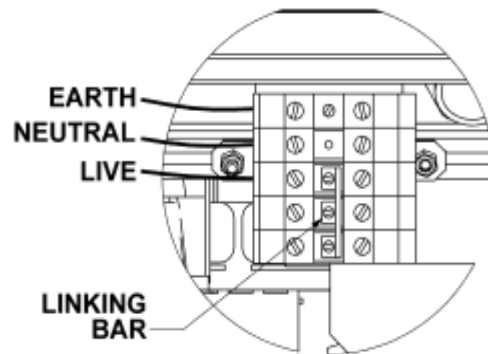
The Betapack3 is supplied configured for three-phase star operation as shown in Diagram 2:



THREE PHASE STAR

Diagram 2

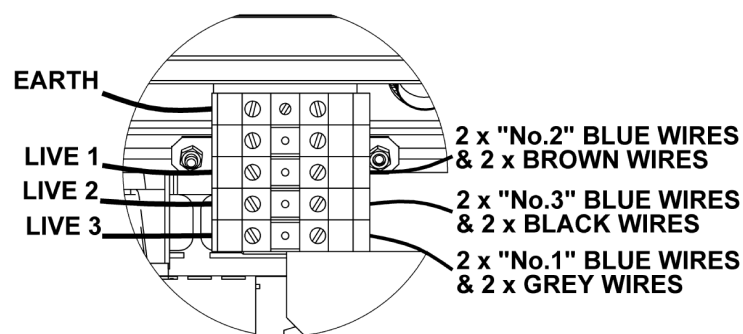
For single-phase operation, fit the supplied linking bar between the L1, L2 and L3 terminals as shown in Diagram 3:



SINGLE PHASE

Diagram 3

For three-phase delta operation, the 6 neutral wires must be removed from the terminal block, and the crimped ferrules must be cut off. Strip the ends of these 6 wires, and reconnect as shown in Diagram 4:



THREE PHASE DELTA

Diagram 4

Mounting/Installation

In a 19" Rack

The Betapack3 is supplied with side brackets fitted for rack mounting.

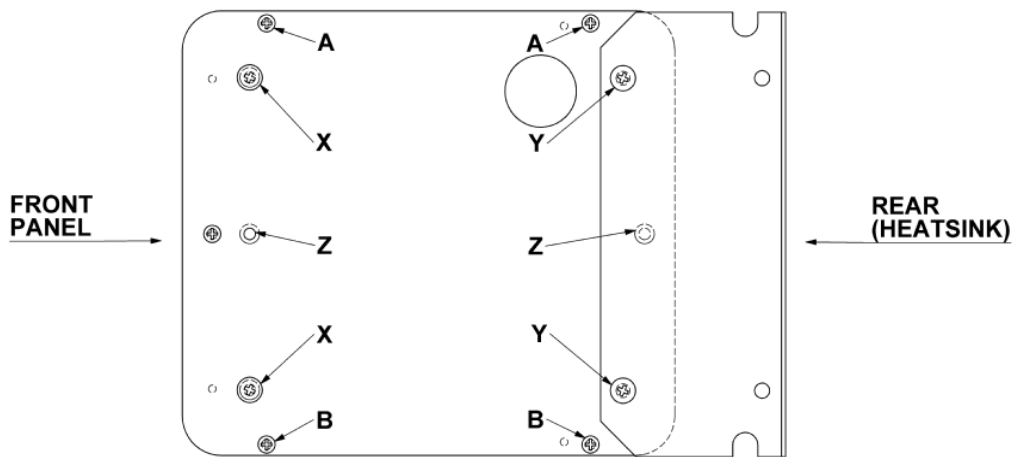
On a wall

Undo the four screws 'X' to remove the brackets, replace the screws in the holes for future use. Stand the Betapack3 on one end. Remove the two screws 'Y' (see Diagram 5), fit the brackets as shown and replace screws 'Y'. Fit the other bracket on the other end.

The wall drilling positions are shown in Diagram 6. **WARNING** Completely fit one bracket at a time. Removal of all four screws 'Y' at the same time can allow the heatsink assembly to fall out! Allow a minimum vertical spacing of 130mm between packs, and between packs and other equipment. A spacing of 180mm is recommended for ease of wiring and servicing.

For Portable Use

An 'Easicarry' Option Kit consisting of a handle and four feet is available (Stock No: 00-540-00). Contact your dealer for further details. To fit, remove the brackets. Fit the handle using the screws supplied and holes 'Z'. Fit the four feet to the other end using the holes 'X' and 'Y'. See Diagram 5.



BRACKET SHOWN IN WALL MOUNTING POSITION

Diagram 5



WALL DRILLING DIAGRAM

Diagram 6

Ventilation

The Betapack3 is convection cooled with air flowing over the rear mounted heatsink. When one or more Betapack3s are mounted in an enclosed rack, a fan **MUST** be fitted to ensure that adequate cool air is circulated. Up to three Betapack3s may be stacked in free air.



Specification Overview

The Betapack3 is a well specified versatile dimmer, offering six channels each capable of driving up to 10Amp loads.

The Betapack3 features breakers as standard, preheat, topset and 3 laws per channel, 12 memories, 3 99-step sequences, local control and DMX patch per channel.

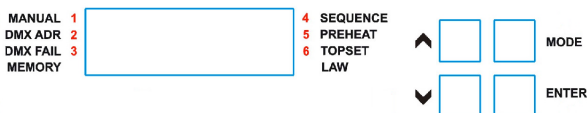
An isolated DMX512-A input and loop-through allow for remote operation. When the loop-through plug is not inserted, the DMX line is automatically terminated.

The DMX control port supports RDM (Remote Device Management) functionality (version 02.00 firmware onwards).

Control Interface

The main display consists of four seven-segment displays; the data displayed is dependent on the set-up mode of the Betapack3. Around the outside of these displays are eight red LEDs which indicate the current set-up mode of the Betapack3. An additional green LED is used for DMX indication.

The Betapack3 has a default mode, for operation. In this mode non of the set-up mode LEDs will be lit, and the main display will show the DMX address(es).



Mode Button

The Mode button is used to cycle through the different set-up modes. They are;

- Manual control
- DMX address
- DMX fail
- Memory
- Sequence
- Preheat
- Topset
- Law

Enter Button

The Enter button is used to confirm actions.

Up & Down Buttons

These are used to adjust the values shown in the main display. Pressing both buttons together will reset the display to the default values.

Default Mode

If a block patch has been set (see 'DMX Address' below), then the display will show the DMX start address of the block.

If individual DMX addresses have been set for each channel, then the 'Up & Down' Arrows can be used to select which DMX address to display, or alternatively if 'Auto' is selected, then the display will cycle through all six DMX addresses. In either case, the DMX address is prefixed by the channel number.

Holding down the 'Enter' button in default mode will change the display to 'Out', and the top 6 setup LEDs (numbered) will change to displaying an indication of the current output levels. Each LED will be lit if the current output level for that channel is greater than 20%.

Channel Test - While keeping the 'Enter' button held down in Default Mode, use the 'Up & Down' Arrows to set a level of 100% on a single channel. Release the 'Enter' button to remove this level.

Set-up Modes

Manual Control

The Manual Control Mode allows you to set-up a look on the Betapack3 without using an external controller.

Select **'Manual'** mode using the 'Mode' button. The display will show C.LLL, where C is the channel number and LLL is the level. Select the channel you require or 'A' for all channels, using the 'Up & Down' Arrows and press 'Enter'. Now set the level you require using the 'Up & Down' Arrows and press 'Enter' again to confirm and move back to the channel selection.

The Manual Control levels are reset to zero if power to the Betapack3 is lost.

DMX Address

There are 2 ways that the Betapack3 can be patched – a single DMX start address can be set for the block of 6 channels (block patch), or each channel can be given a different DMX start address.

For block patch, the range of DMX start addresses is 001 – 507. For individual patch, the range of DMX start addresses is 001 – 512

Select **'DMX ADR'** using the 'Mode' button, the display will show C.AAA, where C is the channel number and AAA is the current DMX address for that channel. Select the channel you require (1-6), or 'A' for all channels (block patch), using the 'Up & Down' Arrows and press 'Enter'. Now set the address you require using the 'Up & Down' Arrows and press 'Enter' again to confirm and move back to the channel selection.

DMX Fail

There are four DMX fail modes available – 'hold DMX', 'fade to black', 'fade to memory' and 'fade to sequence'.

Select **'DMX Fail'** using the 'Mode' button. Using the 'Up & Down' Arrows select your preferred choice from the list below;

Fail Mode	Main Display
Hold Last State	Hold
Fade to Zero	F 00
Fade to Memory 1 - 12	F 01 – F 12
Fade to Sequence 1 - 3	S 01 – S 03

If there is no DMX present, the selected memory/sequence will be re-called immediately.

Memories

The Betapack3 will store 12 memories for stand alone operation, these can only be re-called if there is no DMX present.

1. Set-up the scene using the **'Manual'** control function or a DMX controller.
2. Select **'Memory'** using the 'Mode' button.

Using the 'Up & Down' Arrows select the required memory number and press the 'Enter' button to confirm. A 'p' should appear next to the memory to signify that it has been programmed.

Holding both the 'Up & Down' Arrows for 1 second will clear the selected memory. If these buttons are held for 5 seconds, ALL memories will be cleared.

If memories are cleared which are used in sequences, they will be removed automatically from those sequences.

Sequences

The Betapack3 will store 3 sequences of up to 99-steps each. Each step is a link to one of the 12 programmed memories. Sequences can only be replayed if there is no DMX present.

Each sequence can have a fade time (0-60s) and dwell time (1-60s) programmed. It is only possible to add steps to or remove steps from the end of a sequence.

1. Program the required looks using the **'Memories'** function (see above).
2. Select **'Sequence'** using the 'Mode' button.
3. Use the 'Up & Down' Arrows to select the required sequence (the number of steps already programmed in each sequence is shown after the sequence number on the display), and press the 'Enter' button to confirm.
4. The display will now change to show the current step number, followed by the memory currently programmed in that step. Use the 'Up & Down' Arrows to select the required step number (or Fade time 'F' or dwell time 'd'), and press the 'Enter' button to confirm.
- 5.

For steps:

If there is no DMX present, the selected memory will be immediately re-called. Use the 'Up & Down' Arrows to select the memory for that step, and press the 'Enter' button to confirm. Only programmed memories may be selected. If the step is at the end of the sequence, then the step number will automatically increment and further steps may now be programmed in the same way. Otherwise the display will return to step number selection mode.

For fade and dwell times:

If there is no DMX present, the sequence will now run. Use the 'Up & Down' Arrows to change the time, and press the 'Enter' button to confirm.

When done, or to return to sequence selection mode (step 3 above) at any point, press and hold the 'Enter' button for 1s.

At step 3 above, holding both the 'Up & Down' Arrows for 1 second will clear the selected sequence. If these buttons are held for 5 seconds, ALL sequences will be cleared.

At step 5 above, if the selected step is at the end of the sequence, holding both the 'Up & Down' Arrows will clear the selected step.

Preheat

Preheat can be selected on a per channel or all channel basis. The preheat level is 5% and cannot be adjusted.

Select '**Preheat**' by cycling through the modes using the 'Mode' button.

Select required channel or 'A' for all channels, using the 'Up & Down' Arrows and press 'Enter', to confirm.

Now select on/off using the 'Up & Down' Arrows. Press 'Enter' to confirm and return to the channel selection.

Note that Preheat is only applied if there is a DMX input present, and the law is not set to 'Switch'.

Topset

Topset can be selected on a per channel or all channel basis. On the Betapack3, Topset is applied as a limiting (not scaling) value.

Select '**Topset**' by cycling through the modes using the 'Mode' button.

Select required channel or 'A' for all channels, using the 'Up & Down' Arrows and press 'Enter', to confirm.

Now select the topset level you require, again using the 'Up & Down' Arrows and press 'Enter' to confirm and return to the channel selection.

Note that if the law is set to 'Switch', the setting in Topset will instead be used to determine the switchpoint. The 'Topset' LED will flash in this case, to indicate the setting being made.

Dimmer Laws

Three dimmer laws are available, which can be selected per channel.

Select '**Law**' mode using the 'Mode' button. Using the 'Up & Down' Arrows select the channel required, or 'A' for all channels. Press 'Enter' to confirm. Now select the law you require, again using the 'Up & Down' Arrows and press 'Enter' to confirm and return to the channel selection.

Output Law	Main Display
Normal	n
Switch	S
Linear	L

Note that if the law is set to Switch, the switchpoint can be set in the 'Topset' menu.

Super User

The Betapack3 has a number of hidden functions, located in the Super User Menu. The super user menus can only be accessed from the **Default** mode (no LEDs lit). To enter Super User press and hold the 'Up & Down' Arrows together and press and hold the 'Mode' button for 5 seconds. All the mode LEDs will flash to indicate the Betapack3 is in super user mode.

The 'Up & Down' Arrows are used to cycle through the various super user functions. Pressing the 'Mode' button at any point will revert to normal operation. If no buttons are pressed after 20 seconds the unit will automatically revert to normal operation.

Dimmer Lock/Unlock

Press the 'Up & Down' Arrows until the display shows "**LOC**". Press 'Enter' to confirm this action. The Betapack3 will revert to the Default mode. Pressing the 'Mode' button now will only cycle between **Manual Control** and **Default Mode**.

If Super User is entered when the Betapack3 is locked, only the unlock function will be available. The display will show "**UNL**". To unlock the Betapack3, press and hold the 'Enter' button for 5 seconds. The Betapack3 will unlock and exit super user returning to the Default mode.

Resetting The Betapack3

Press the 'Up & Down' Arrows until the display shows "**rset**". Press 'Enter' to confirm. The display will flash briefly to confirm this action. The Betapack3 will be reset to its default settings, shown in the table below:

Set Up Parameter	State
Manual Control Levels	All Off
DMX Addresses	Block patch at 001
DMX Fail Mode	Hold Last State
Memory	All Memories Cleared
Sequence	All Sequences Cleared
Preheat	Off (0%) for all channels
Topset	100% for all channels
Law	Normal law for all channels
Switch law switchpoint	50% for all channels
RDM	Enabled

Firmware Version

To identify which version of firmware is loaded in the Betapack3, press the 'Up & Down' Arrows until the firmware version is shown in the display (e.g. **02.00**) Press and hold the 'Enter' button for 1s, and the Betapack3's CPU serial number will be displayed. Press the 'Enter' button again to return to the version display. Note that the firmware version will also be shown briefly on start up.

Internal Temperature

Press the 'Up & Down' Arrows until the temperature is shown in the display, shown as **xxxC**, where xxx is the temperature in Centigrade. The 'Enter' button has no function in this mode.

RDM Enable/Disable

To enable or disable RDM (Remote Device Management) functionality on the DMX control port, press the 'Up & Down' Arrows until "**ron**" or "**rof**" is displayed. The 'Enter' button toggles this setting between "**ron**" (RDM enable) and "**rof**" (RDM disabled).

Technical

WARNING
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Electrical

The Betapack3 is designed to operate on 230VAC +10% -15% at 50-60Hz (auto sensing). The pack may not operate satisfactorily outside this specification.

The packs may be wired:

- Single Phase: 60A 1 phase 2-wire 230V (255V max phase to neutral)
Earth leakage less than 1mA
- Three Phase Star: 20A 4-wire 230/380V (255V max phase to neutral)
Earth leakage less than 1mA
- Three Phase Delta: 30A 3-wire 230V (255V max phase to phase)
Earth leakage less than 4mA

- Max total load: 13.9kW @ 230V
- Load per channel: 0.1A Min; 10A Max
- No load consumption: 10W
- Rise Time: 80uS
- Triac Type: BTA40-600A/B

If used in conjunction with MCBs, to avoid nuisance tripping use high inrush current (Type K) MCBs.

Lighting loads may be resistive or inductive and include tungsten, transformer driven low voltage (e.g. pinspots), and quartz halogen. Electronic transformers must be suitable for leading edge dimming.

Portable Appliance Testing

WARNING The Betapack3 will fail the portable appliance high voltage test as it has capacitors connected between Live 1/2/3 and Earth, and between Neutral and Earth, to enable it to comply with CE regulations.

DMX Connections

Conforms to USITT DMX512-A (isolated).

One male and one female 5 pin XLR connector. DMX line is automatically terminated when the loop-through plug is not inserted. The pin assignment is:

- Pin 1 0V
- Pin 2 DMX- (RS485 B line)
- Pin 3 DMX+ (RS485 A line)
- Pin 4 Reserved
- Pin 5 Reserved

DMX Indication

On	DMX dimmer data (start byte of 00) being received OK.
Flash Fast	DMX data being received, but <u>not</u> dimmer data (start byte of 00)
Flash Slow	DMX data errors occurring.
Off	No DMX data being received.

RDM Support:

Protocol Version	1.0
Device Model ID	307 (0x0133)
Supported Parameters	DMX_START_ADDRESS, SENSOR_DEFINITION, SENSOR_VALUE, DEVICE_LABEL, MANUFACTURER_LABEL, DEVICE_MODEL_DESCRIPTION
Sub Devices	6 (one per channel)

Mechanical

- Height: 175mm
- Width: 440mm
- Depth: 195mm
- Weight: 8.0kg (17.6lb)

Cooling

Ambient Temperature: +5°C to +40°C.
 Relative Humidity: 5% to 95% non-condensing.

The Betapack3 is convection cooled, and includes a temperature sensor which monitors the internal temperature. If the temperature rises above the normal operating level the outputs are first reduced, then switched off altogether until the temperature falls back to a safe level.

The table below shows how the Betapack3 will react under these conditions. (Note: The temperature shown on the display will be the actual temperature not the rounded figures given below)

Temperature	Output Levels (% of control)	Main display
<75°C	100%	normal
75°C→80°C	100%	"075c"
80°C→85°C	80%	"080c"
85°C→90°C	60%	"085c"
90°C→95°C	40%	"090c"
>95°C	0%	"hot"
sensor fault	100%	"err"

Trouble Shooting Guide

Below is a list of common issues experienced by Betapack3 users.

If you are experiencing problems with your dimmer, please check the list below for common causes and solutions.

WARNING : These checks should ONLY be carried out by a qualified electrician.

If you are unsure how to make any of the checks please contact Cooper Controls technical support for advice or assistance.

Symptoms	Solutions
Dimmer does not power up when power is applied.	<ul style="list-style-type: none"> • Check there is a mains voltage on the incoming supply terminal. • Check the incoming supply terminals are all adequately tightened. • Check the link cable between the control PCB on the front panel and the power PCB has not been disconnected or damaged.
Dimmer is powering up but some or all of the channels are either not working or will not go to full output.	<ul style="list-style-type: none"> • Check the channel breakers are in the 'on' position. • Check the channels have not had a Topset applied to them. Please see Page 6 Topset for further details. • If dimmer is wired single phase check that the single phase link bar has been fitted. If it is fitted check the screws are adequately tightened. Please see Page 2 diagram 3 for further details.
Channels will switch on and off but are not able to be dimmed.	<ul style="list-style-type: none"> • The channel law has been set to switch. Please see Page 6 Dimmer Laws for further information.
The display is outputting a sequence of numbers after the dimmer has been powered up.	<ul style="list-style-type: none"> • Channels have been soft patched. • Please see page 4 & 5 DMX Address for further details.
Unable to access any of the dimmer functions.	<ul style="list-style-type: none"> • Dimmer has been locked. • Please see Page 6 Dimmer Lock/Unlock for further details.
Channel is remaining on all the time, even after disconnecting the controller and power cycling the dimmer.	<ul style="list-style-type: none"> • Triac has failed. Please contact your local service centre or contact Cooper Controls technical support for further information

Notes:

Cooper Controls Ltd reserves the right to make changes to the equipment described in this manual without prior notice.

This equipment is designed for professional stage lighting control, and is unsuitable for any other purpose. It should be used by, or under the supervision of, an appropriately qualified or trained person.

E&OE. Cooper Controls Ltd reserves the right to change the specification without prior notice.

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