GDS Pioneering Light
a Coemar Company

DRIVE Hub

Micro Pack

DHMP2

USER MANUAL

Processor Card Firmware: v2.1.24
API Version: v1.1.3

Electro-static discharge (ESD) precautions

While the Drive Hub system is designed and manufactured to be resilient and reliable, certain items of circuitry are susceptible to damage by electrostatic discharge if handled incorrectly. Drive cards are particularly at risk if incorrectly treated while being inserted or removed from the Micro Pack chassis.

To reduce the chance of damage being caused, please follow these guidelines:

- Keep drive cards within their anti-static protective bags until the last moment before installation, particularly when moving around.
- Ensure that you are properly grounded before opening anti-static protective bags and handling drive cards. For best practice, wear an ESD wrist band connected by a grounding wire to a nearby earth contact or the bare chassis of the Micro Pack.
- Always hold cards by their edges and never touch the contacts or the card components.

Technical support

+44 (0)117 325 0063

support@gds.uk.com

www.gds.uk.com

Contents

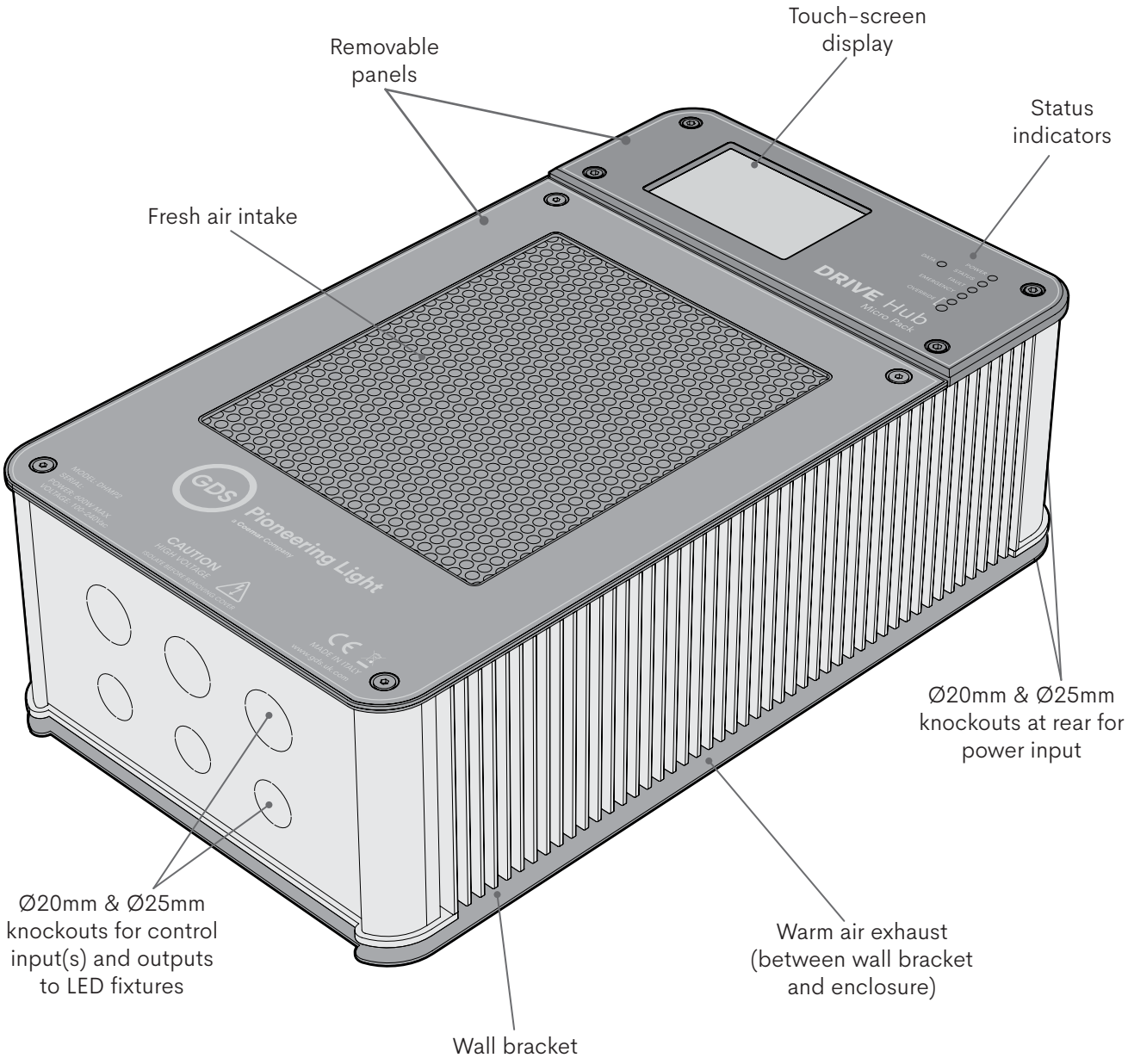
Introduction

Welcome

Thank you for choosing the Micro Pack from the GDS Drive Hub range. Micro Pack is the most compact driver option in the Drive Hub range, giving flexibility to smaller venues or where space is at a premium.

Micro Pack summary

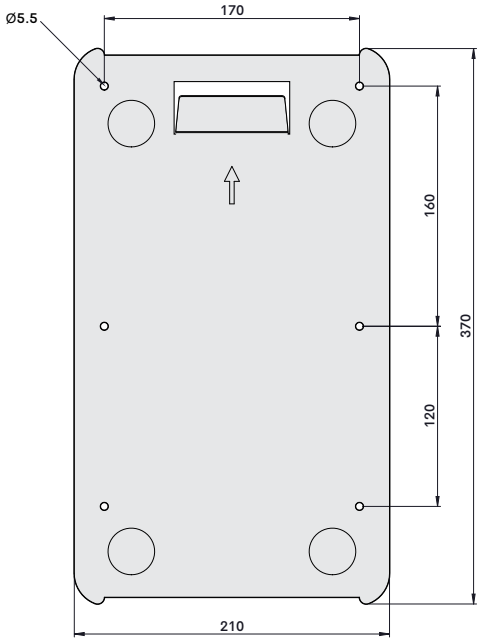
Micro Pack is a custom designed wall-mount enclosure with a single power rectifier. It has two card slots to accept the same Drive Hub Output Cards as used by the Card Frame, Mini Pack and Micro Pack to produce the necessary control/power feeds for connected LED lighting fixtures. Similarly to the Mini Pack & Card Frame, all aspects of Micro Pack operation are closely monitored to ensure consistent and reliable operation. The on-board touchscreen display allows quick and easy configuration at any time



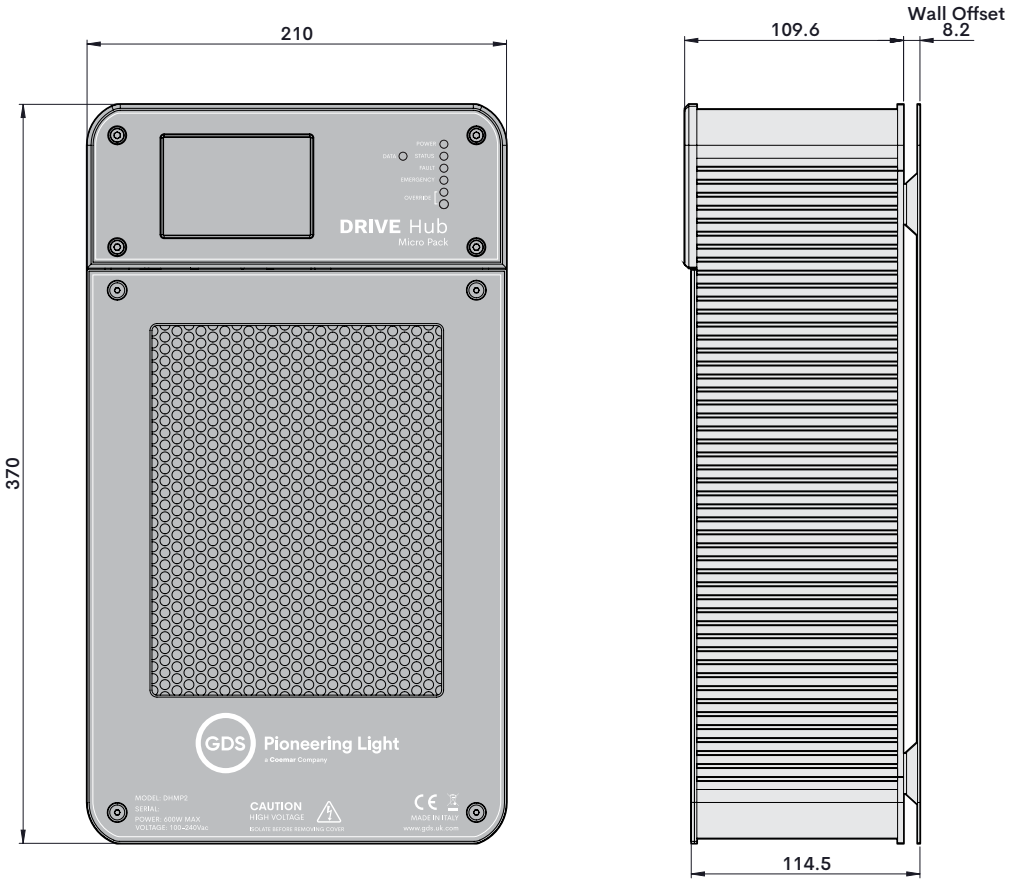
Installation

Wall bracket dimensions

Each Micro Pack is a fully self-contained unit designed primarily for wall mount applications, although it can also be mounted on a flat surface. A wall bracket is included to allow for easy installation, the Micro Pack will hang directly on its wall bracket, fixed with thumb screws and leaving a small gap behind to allow airflow through the enclosure. The wall bracket must also be used when mounting on a flat surface.



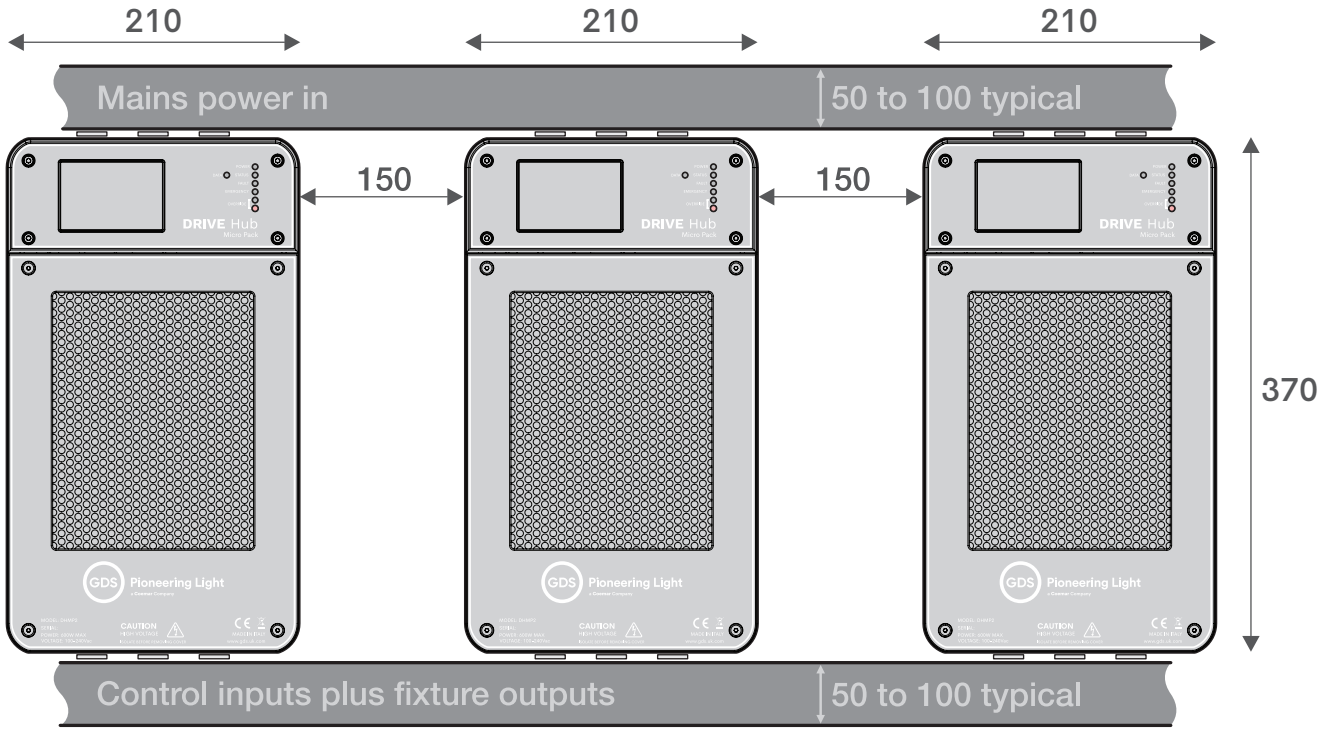
Mounted Enclosure dimensions



All dimensions in mm.

Mounting location

When units are wall mounted it is common to use cable trunking and/or conduit to enter/exit the enclosures. There are five Ø25.5mm knockouts running along the upper and lower surfaces of the base tray. Incoming power must be supplied into the upper surface, while control inputs and fixture outputs must exit from the lower surface.



Mounting procedure

To wall mount the MicroPack enclosure

1 Ensuring the wall bracket is in the correct orientation, use six suitable fixings to attach the bracket to the wall surface through the six mounting holes (see "wall bracket dimensions" on page 3).

2 Remove both front panels from the enclosure by removing the eight mounting screws on the front (see page 5).

3 Hang the enclosure on the angled plate of the mounting bracket, ensure the enclosure is central to the bracket (see page 6).

4 Secure the enclosure using the provided thumb screws.

5 Install all necessary conduit/cable trunking fixtures to the knockouts in the enclosure. For further details:

- Processor Card and drive card connections – see page 8.
- Mains power input – see page 18.

6 Replace the front panels once no further internal works are required.

Airflow

Warm air will flow out of the rear of the enclosure, between the enclosure and the mounting bracket. To ensure sufficient airflow around each enclosure, there must be a minimum of 150mm clear space between units. This will allow the warm air to flow out of the rear of the enclosure unobstructed.

All dimensions in mm.

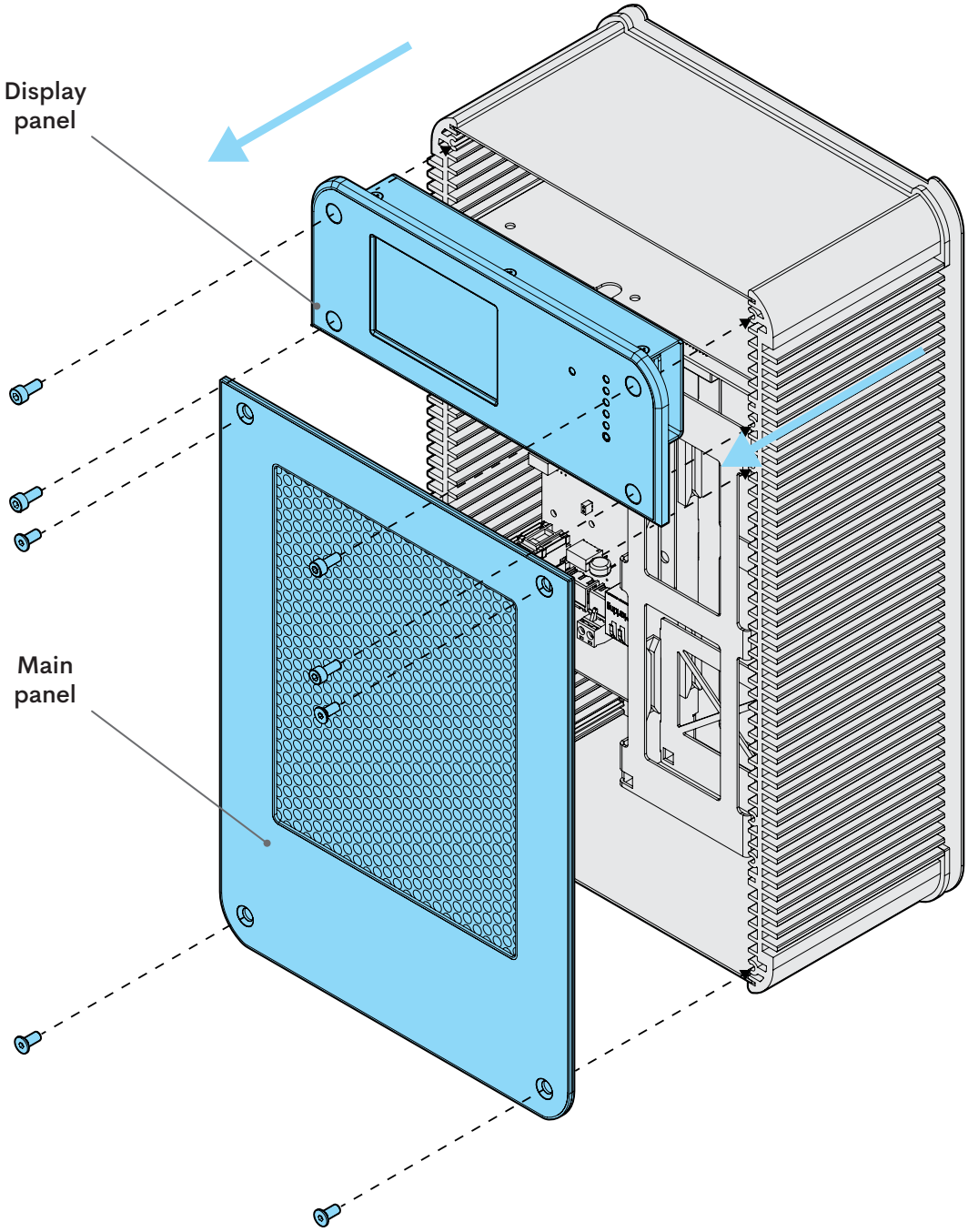
Removing the front panels

To open the enclosure

1 Remove the eight screws fixing both panels to the enclosure

2 Carefully remove the panels, ensuring that the RJ45 link for the display panel is disconnected

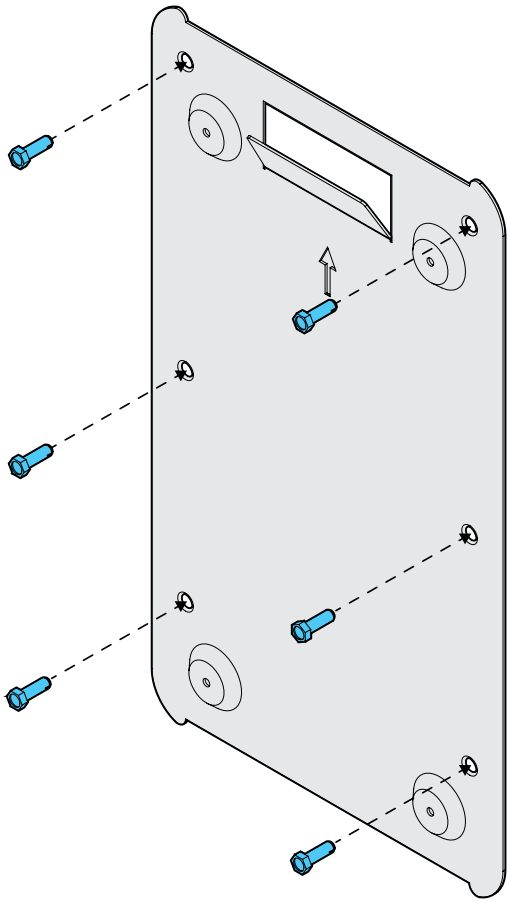
Note: Isolate mains before removing any panels from the enclosure. The top section contains high voltage, separated from the low voltage section behind the main panel.



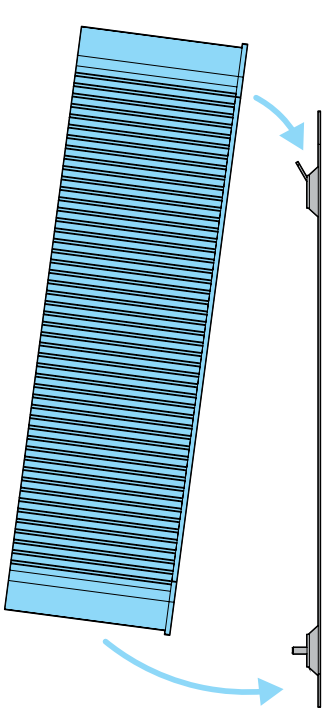
Mounting the enclosure

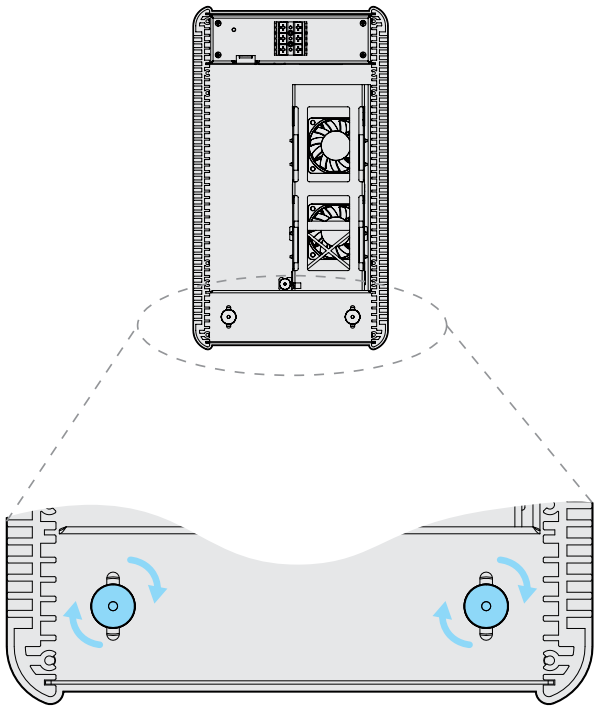
To fix the enclosure to the wall bracket

1 Mount the wall bracket to the wall using six suitable mounting screws



2 Hang the enclosure onto the angled plate of the wall bracket and fix in place using the provided thumb screws.





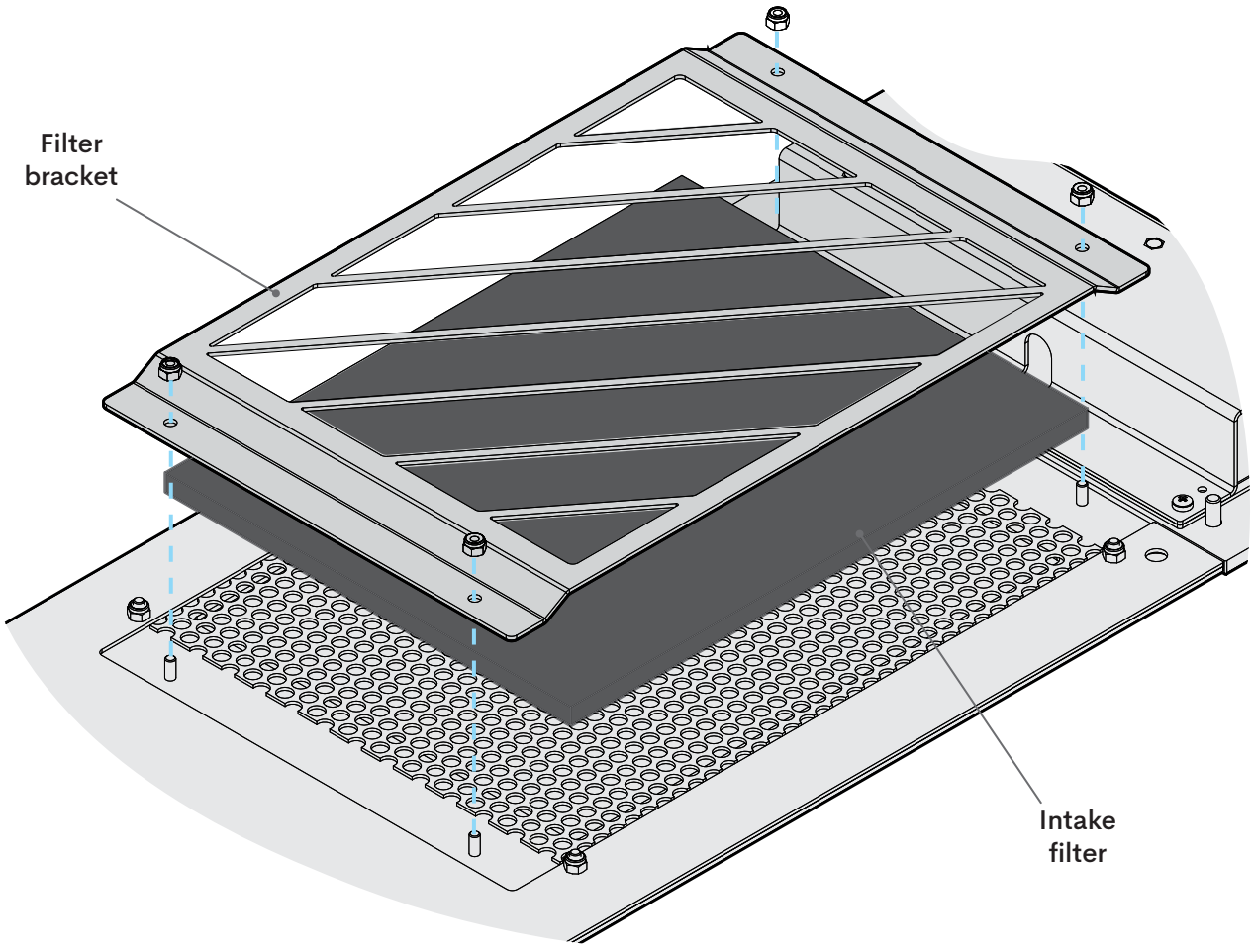
Intake filter cleaning

To minimise particulates entering the enclosure, a filter is located inside the main front panel. At intervals determined by the installation environment, the filter should be regularly removed, washed and replaced.

Note: For best practice, where an installation is required to run uninterrupted, keep a stock of spare intake filters so that they can be swapped out immediately (and the old filter washed later) while operation continues without leaving the chassis unprotected.

To remove and replace each intake filter

1 Remove the main front panel from the enclosure (see page 5).
2 Remove the four lock nuts holding the filter bracket in place.
3 Lift the filter bracket and remove the old filter.
4 Fit a replacement intake filter into the aperture.
5 Place the filter bracket back into position and fix in place.

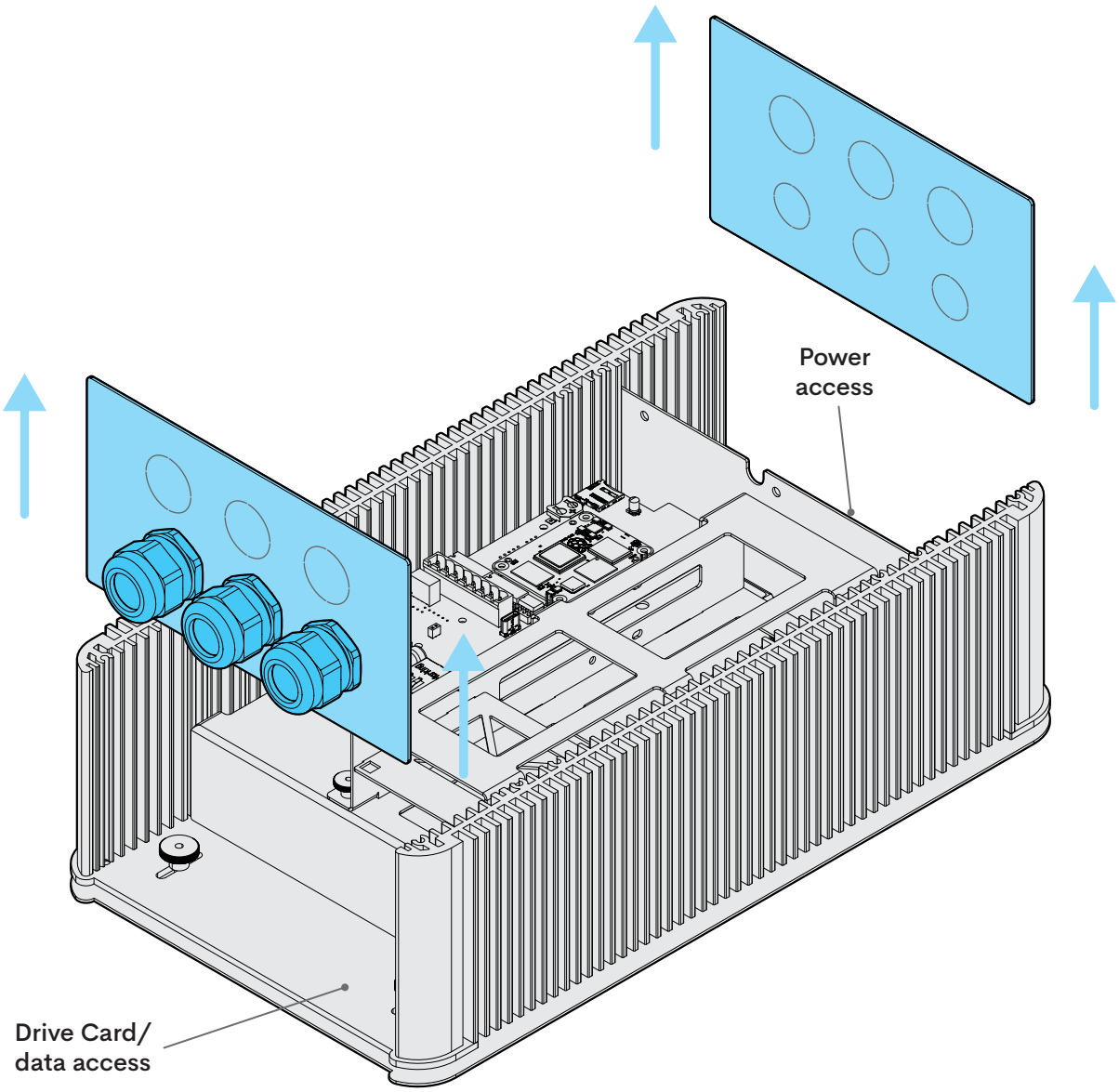


To wash the intake filter

- Wash the old filter in warm, soapy water.
- Dry thoroughly before re-installing.

Drive Card and power access

Open access to the Drive Cards, Processor Card and power input prior to installation can be achieved by removing the top (power) and bottom (Drive Cards, Processor Card) panels from the enclosure. Once all connections have been made, the correct conduit/cable trunking fixings can be installed and the enclosure can be re-assembled.



Drive Cards

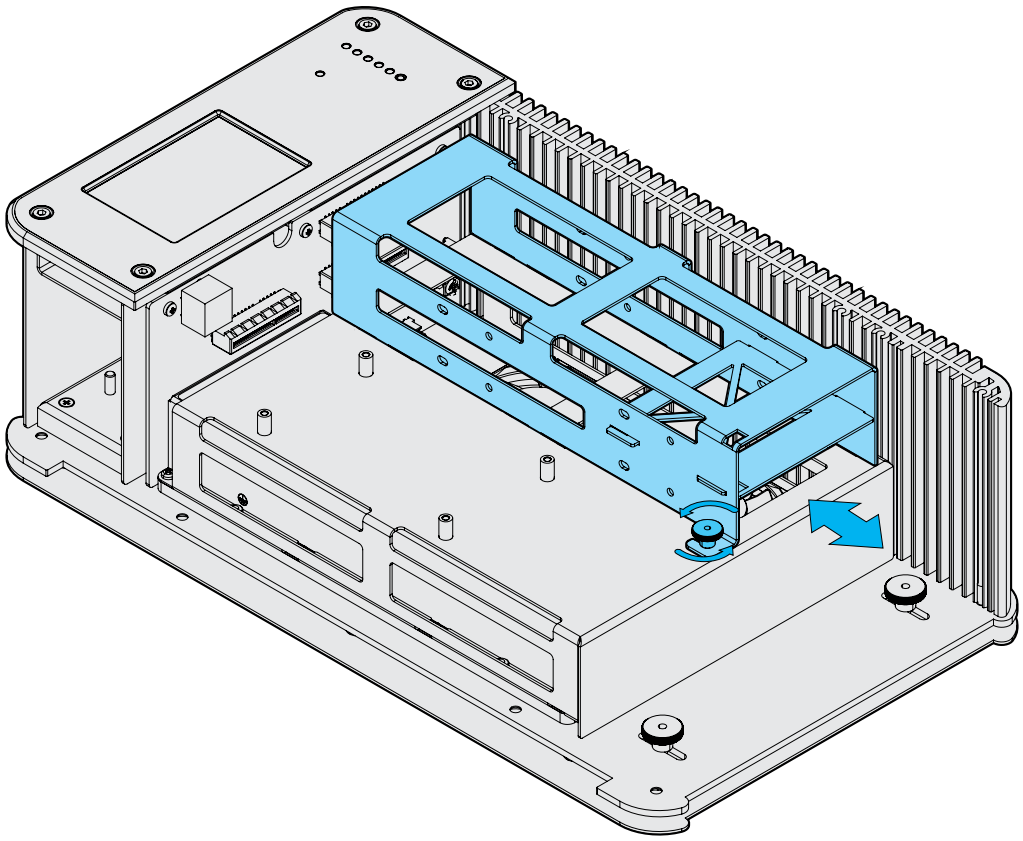
For specific details about each Drive Card, please refer to the dedicated manual for each

To insert a Drive Card

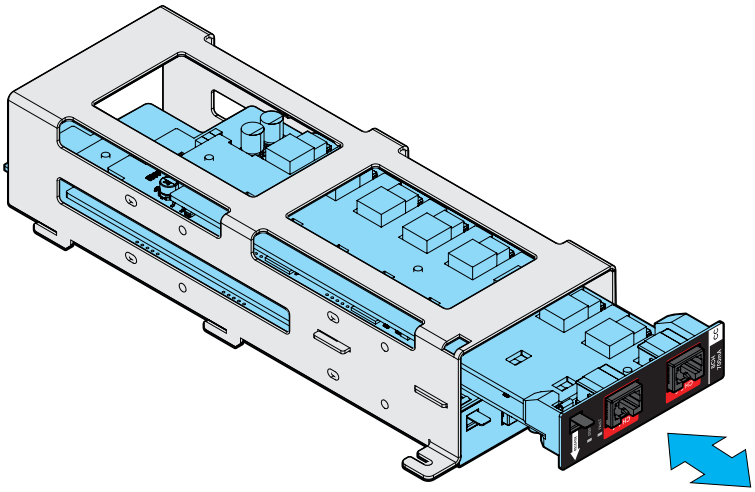
1 Isolate the power input to the Micro Pack.

2 Loosen the thumb screw holding the Drive Card frame in position.

3 Remove the Drive Card frame by sliding it away from the Backplane, disconnecting the Drive Cards in the process.



4 Align the Drive Card with the chosen slot and ensure that it engages with the corresponding card guide. Push the card fully into the slot so that the release lever locks into place.



5 Slide the Drive Card frame back into position, ensuring that the Drive Cards engage fully with the Backplane connectors.

6 Re-install the thumb screw to fix the Drive Card frame in place.

7 Attach the load connections to the sockets on each Drive Card.

Drive card, connection and fixture combinations

The various drive cards are designed to:

- satisfy the needs of differing LED fixture types, and
- provide differing cabling solutions to overcome installation limitations/difficulties.

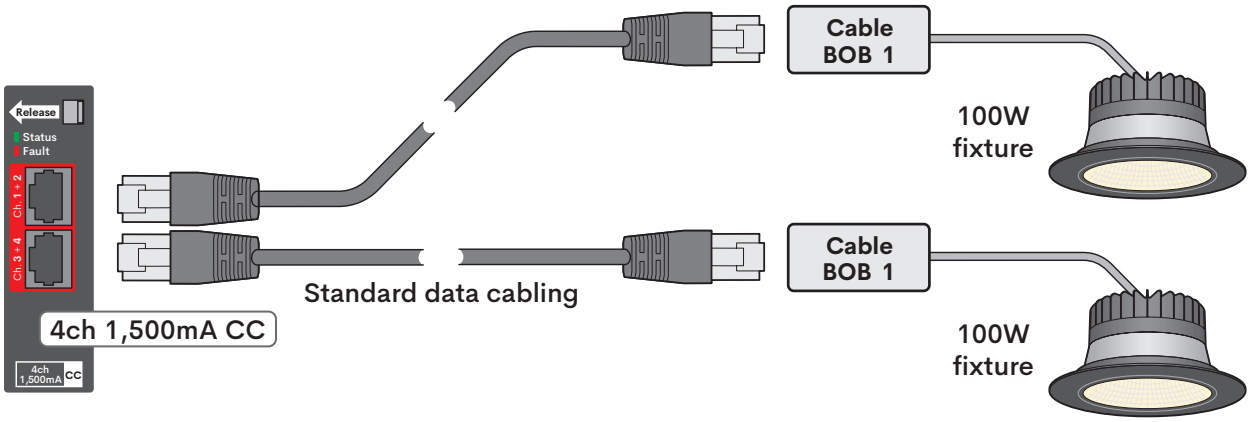
The appropriate cabling will depend firstly upon the type and quantity of fixtures being supplied, which will impact the choice of drive card (and accompanying Break Out Box, if required).

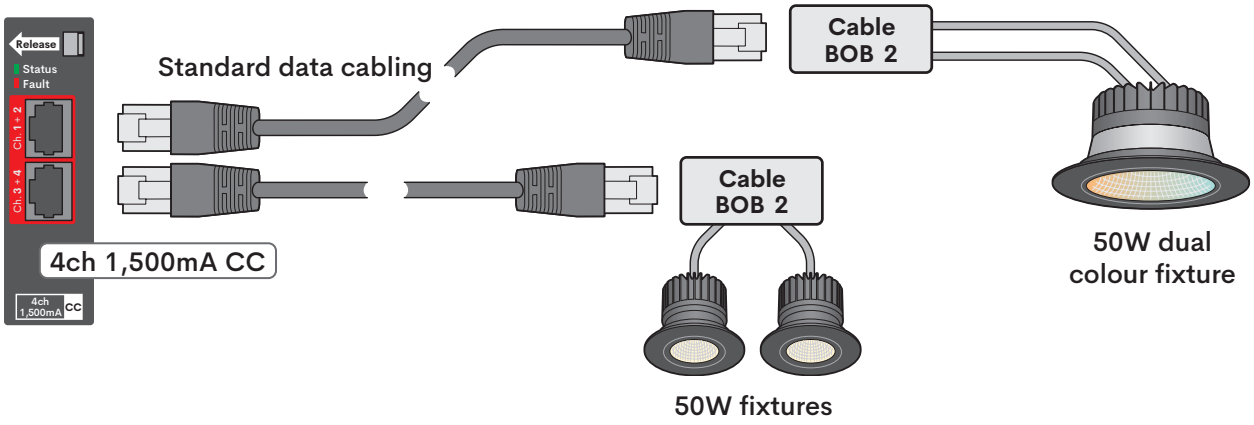
These four pages provide examples of how various installation challenges can be solved with certain combinations of drive cards, connection types and fixtures.

For full details about each drive card please refer to the dedicated manuals for each type.

High power and colour tune fixtures

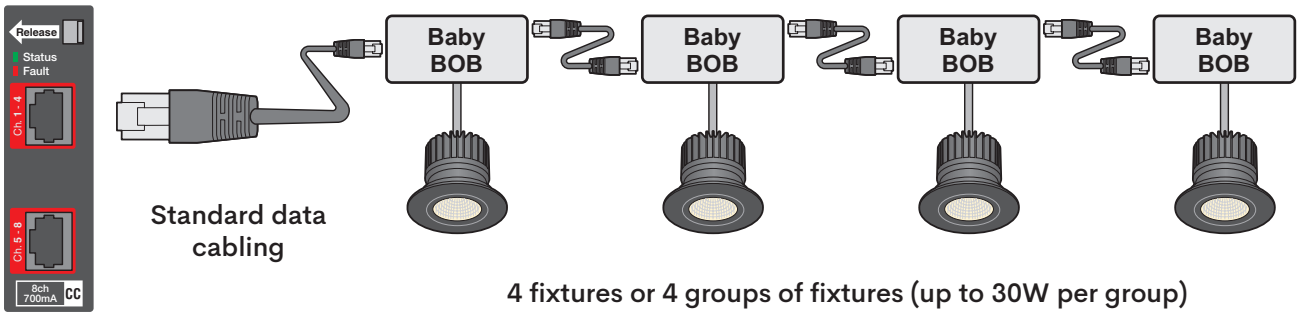
- **Drive card:** 4ch 1,500mA CC
- **Fixtures:** 1 x 100W or 2 x 50W per run also useful for Colour tune fixtures
- **Cabling:** CAT5e/6
- **Outlet:** Cable BOB 1 or Cable BOB 2

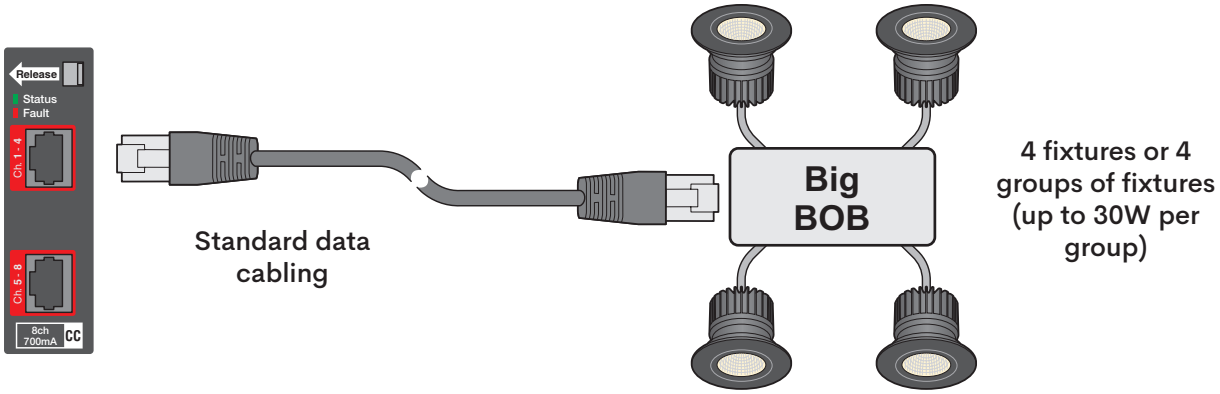




Multiple medium power fixtures

- **Drive card:** 8ch 700mA CC
- **Fixtures:** 8 x 30W (in total)
  4 x 30W per run
- **Cabling:** CAT5e/6
- **Outlet:** Baby BOB, Big BOB or Cable BOB 4





Notes:

Use Baby BOB where fixture groups are widely distributed.

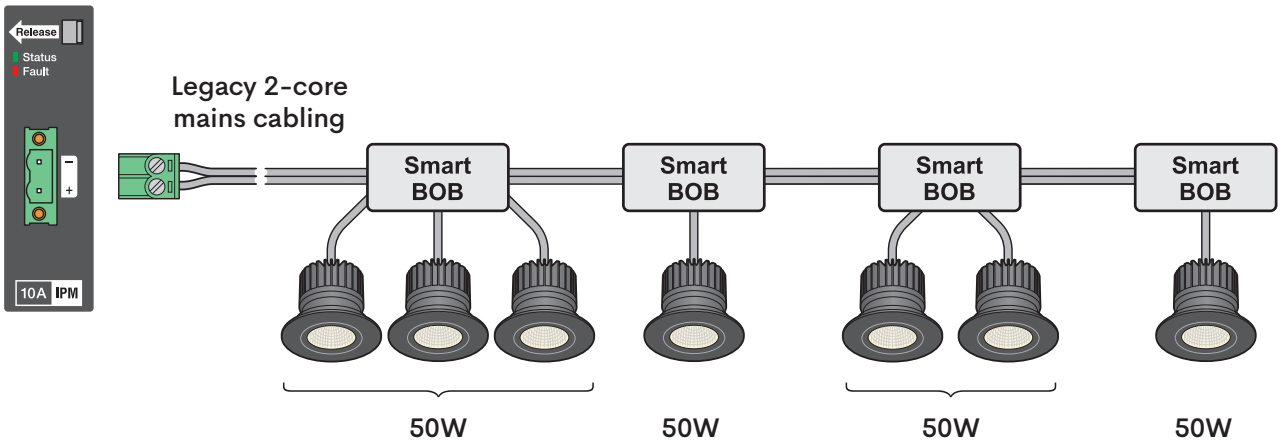
Use Big BOB where fixture groups are in the same vicinity.

'Group of fixtures' refers to a series-wired group of low-voltage fixtures, controlled on the same channel

Fixtures on legacy wiring (single colour)

- **Drive card:** IPM 10A
- **Total load:** Up to 500W
- **Cabling:** 2-core mains
- **Outlet:** IPM Smart BOB

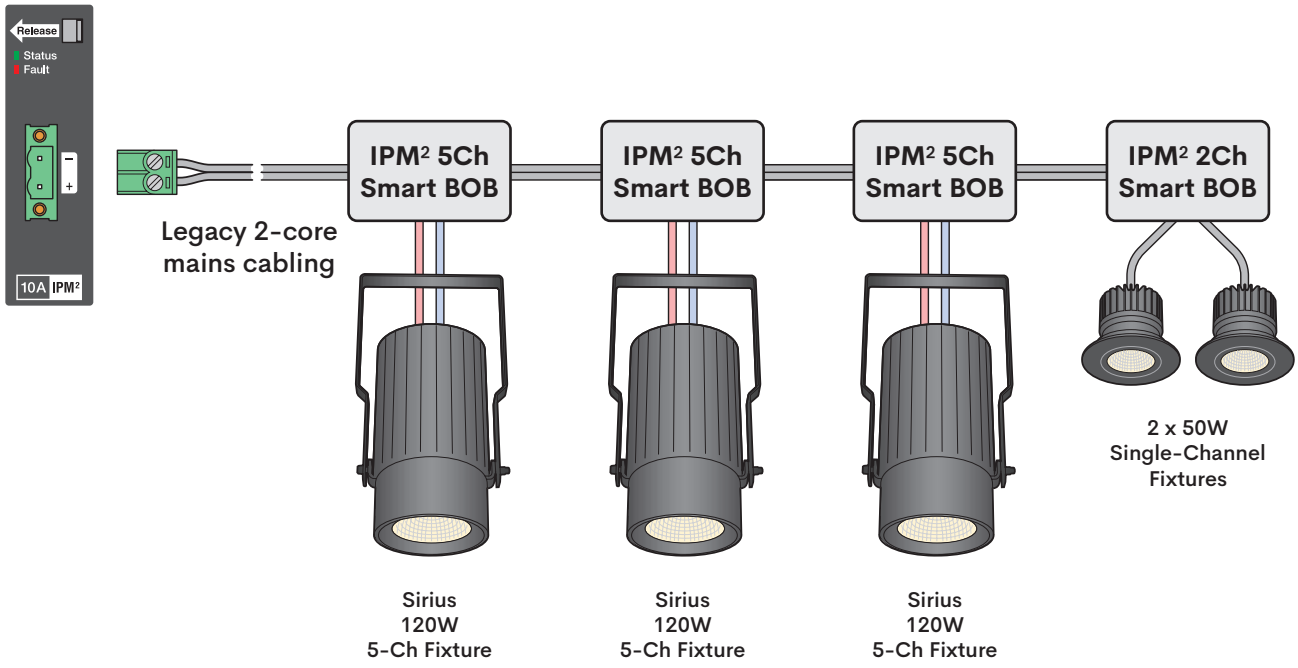
Note: A single channel provided on common 2-way legacy cable using encoded dimming signals.



Colour mixing fixtures and multi-channel control on legacy wiring

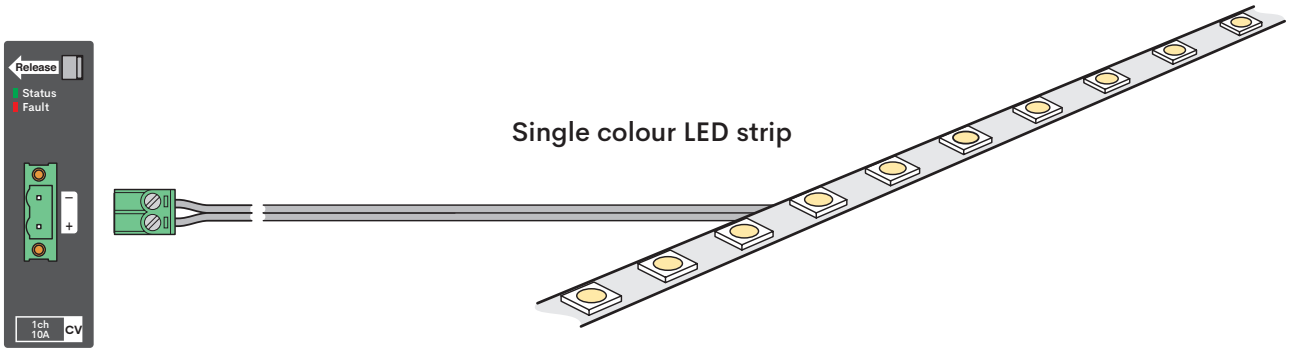
- **Drive card:** IPM2 10A
- **Total load:** Up to 500W
- **Cabling:** 2-core mains
- **Outlet:** IPM2 Smart BOB (2Ch or 5Ch)

Note: Full DMX universe and power provided on common 2-way legacy cable using encoded signals.



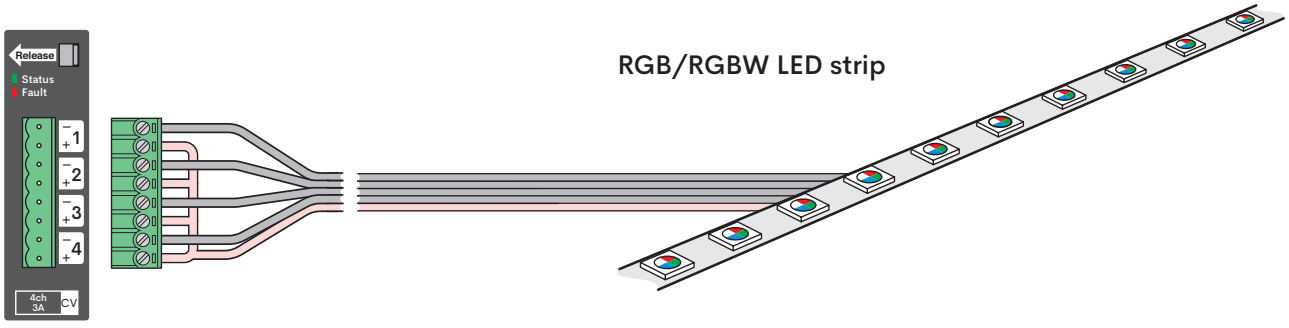
LED strip fixtures (single colour)

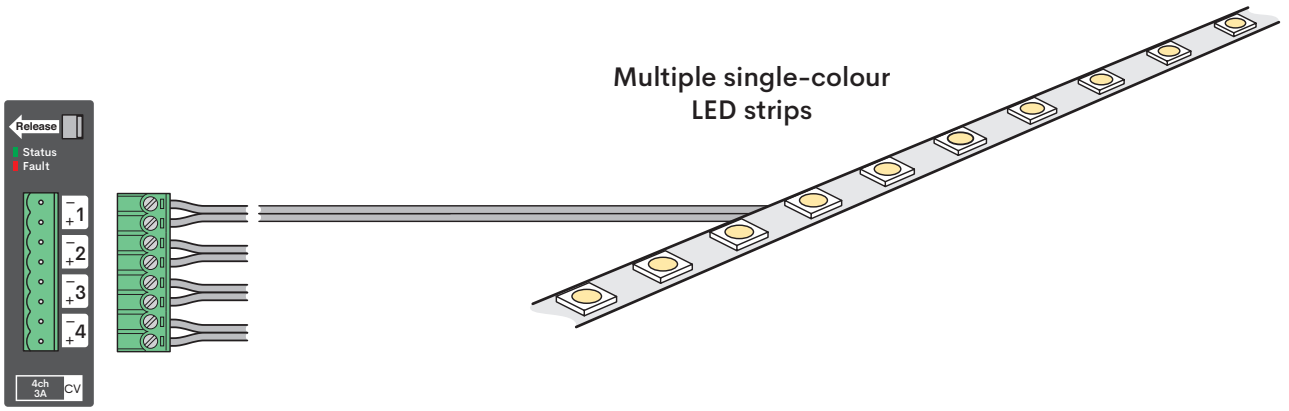
- **Drive card:** 1ch 10A CV
- **Total load:** Up to 10A
- **Cabling:** Standard 2-core cable
- **Outlet:** Direct to fixture



LED strip fixtures (RGB/W or multiple single colour)

- **Drive card:** 4ch 3A CV
- **Total load:** Up to 3A (x4)
- **Cabling:** Standard 2-core cable
- **Outlet:** Direct to fixture





Processor Cards

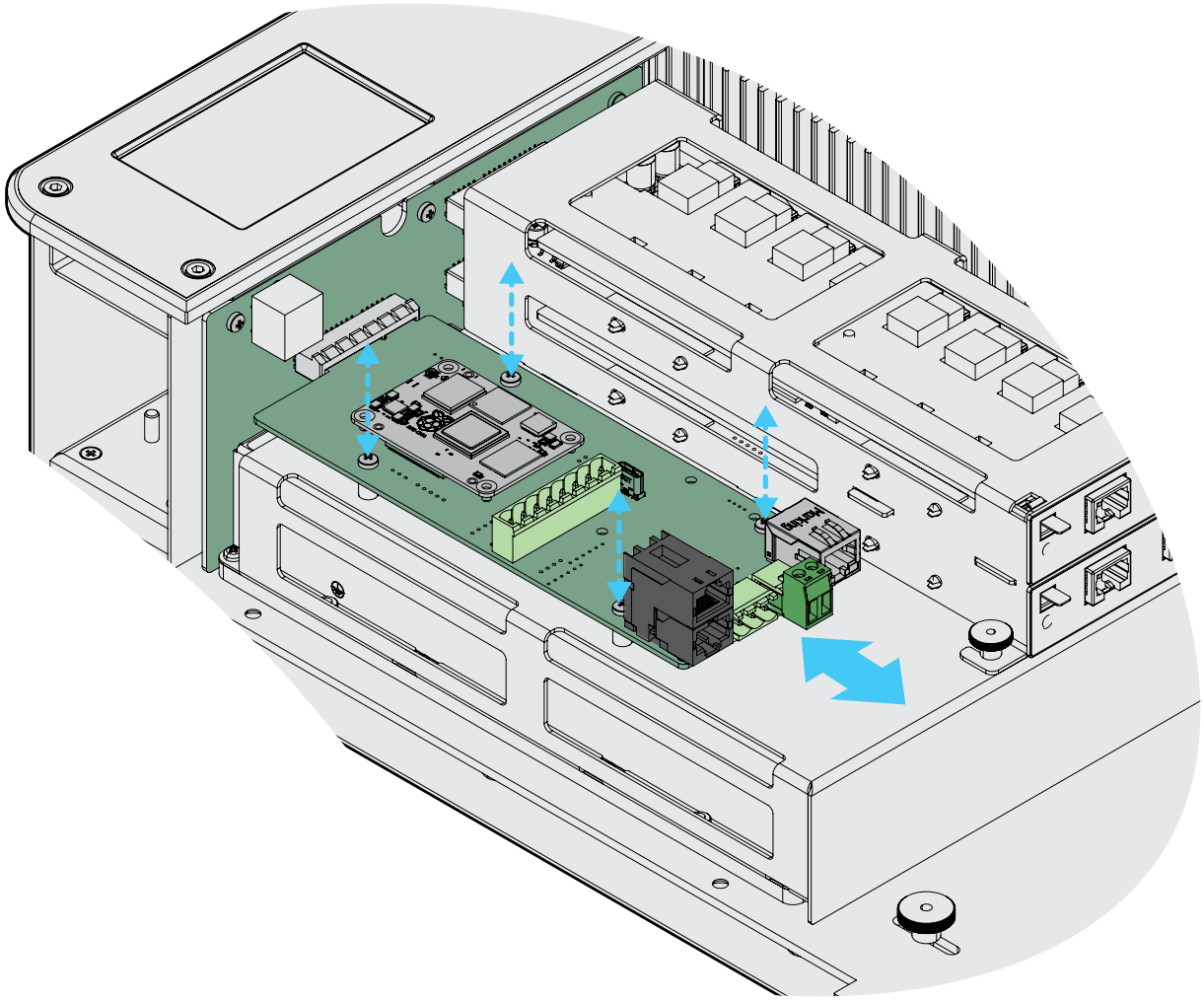
Each Micro Pack requires a Processor Card to handle all communication tasks and also provide auxiliary inputs/outputs for connection to external sensors and actuators. Two Processor Card models are available:

- **Local** - provides DMX/DHP input and thru, DALI input, single channel auxiliary input port, four channel auxiliary input/output ports and a USB-C connection for future firmware updates and diagnostics.
- **Network** - provides all of the above plus a network module and ethernet port for network configuration.

Processor Cards come pre-assembled in the Micro Pack, the type is dependant on the type of Micro Pack purchased. The Processor Cards are interchangeable:

To change a Processor Card

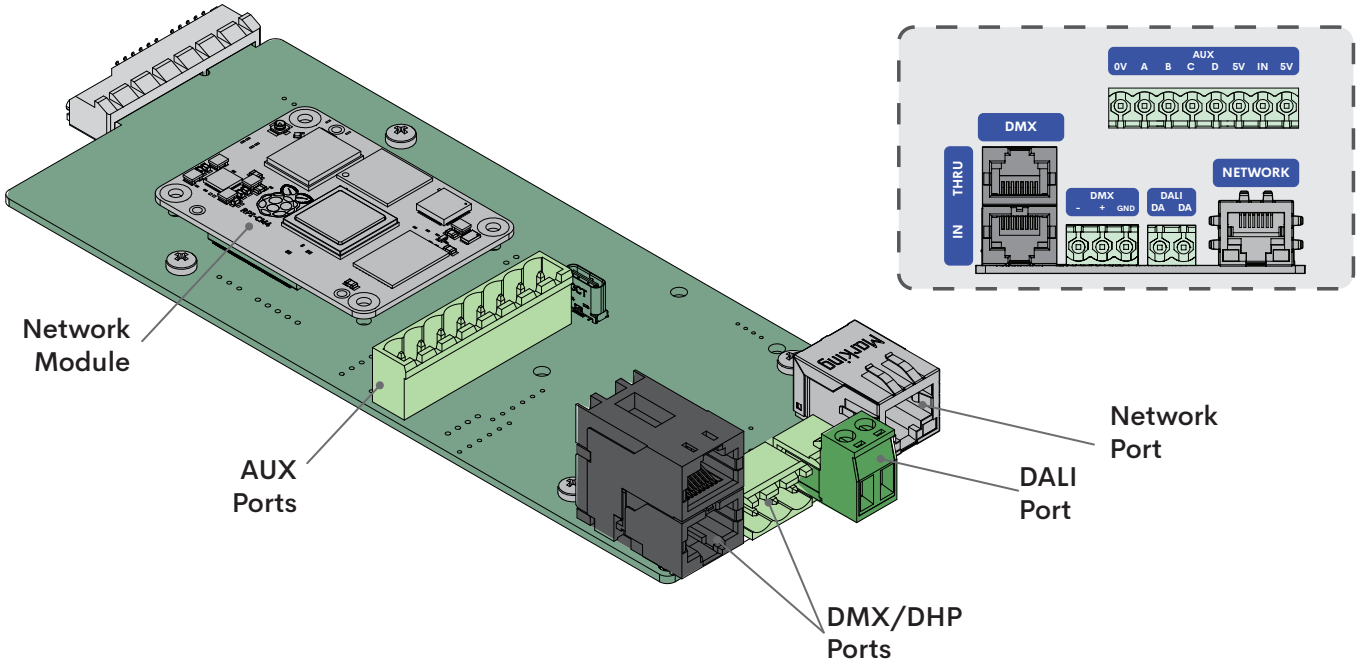
1. Isolate the power input to the Micro Pack
2. Remove the main front panel to gain access to the Processor Card (see page 5)
3. Remove the four mounting screws and carefuly pull the Processor Card from the Backplane.



Processor card connections

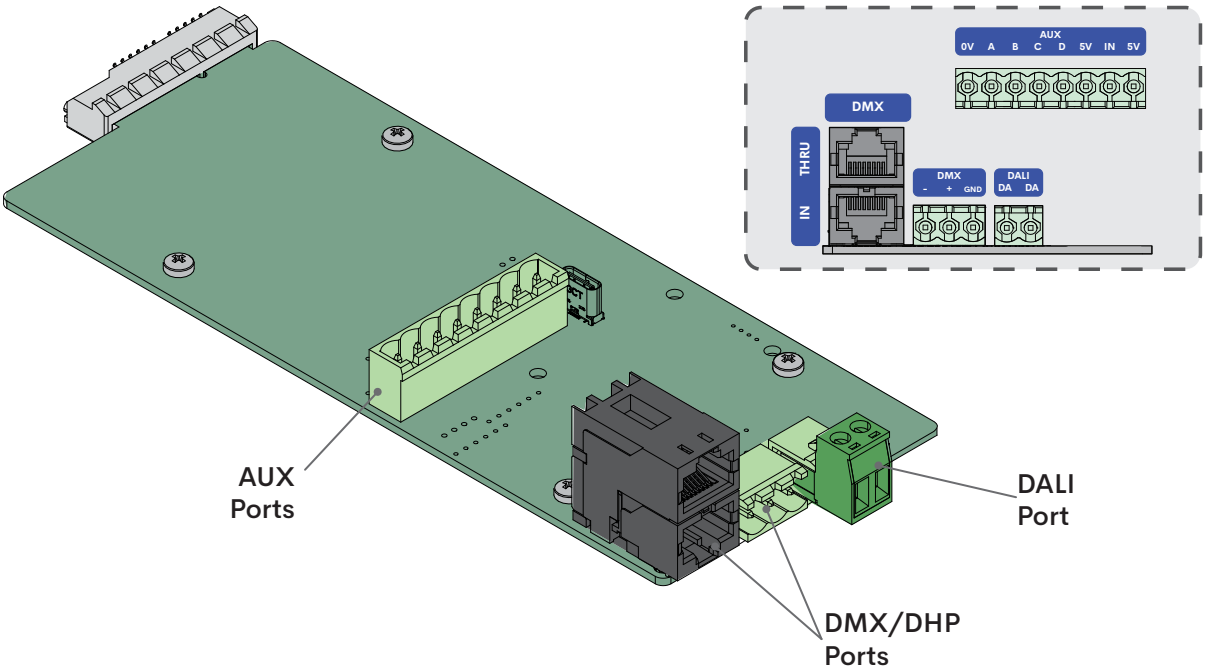
Network card

This Processor Card allows for network connectivity, providing easy remote configuration and diagnostics.



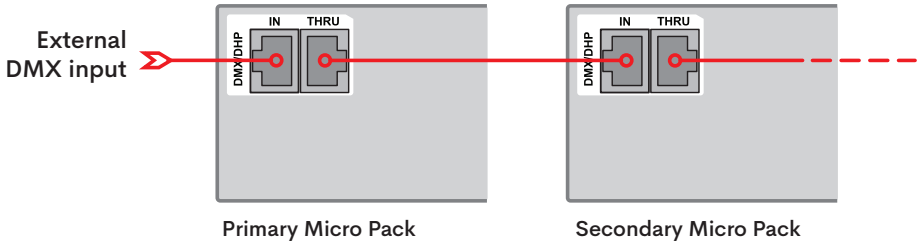
Local card

This card is generally used in Micro Packs that are assigned to a secondary role, or are the sole unit in a simple installation that does require network capabilities. This card lacks the network connection but provides all other connectivity.



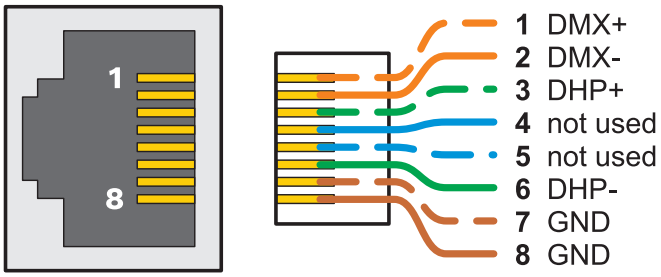
DMX/DHP

The DMX IN and THRU ports process two signal types: Incoming DMX from external lighting control systems as well as DHP (Drive Hub Protocol); an RS485-based link which allows DMX to be transferred between daisy-chained Micro Packs and also transfers device management data between multiple Micro Pack units.



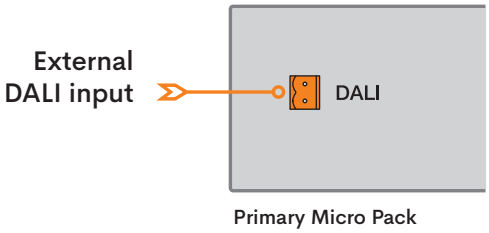
An external DMX control input is applied to the DMX/DHP IN port of the primary Micro Pack. This is used by the primary unit and also passed through to the next unit via the THRU port.

The DMX/DHP ports use RJ45 sockets and can accept standard Catx link cables. The signals are arranged as follows:



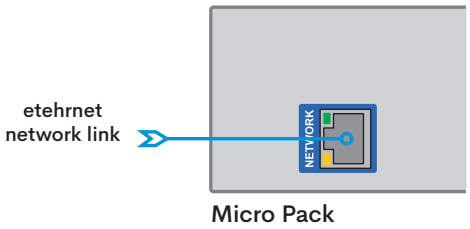
DALI

Allows DALI control systems to integrate with the Micro Pack. The 64 DALI channels can be patched to any of the Micro Pack channels. Requires a two-wire input via a Weidmüller® BLZ 5.08/2 connector. DALI lines are not polarity dependent.



Ethernet network port

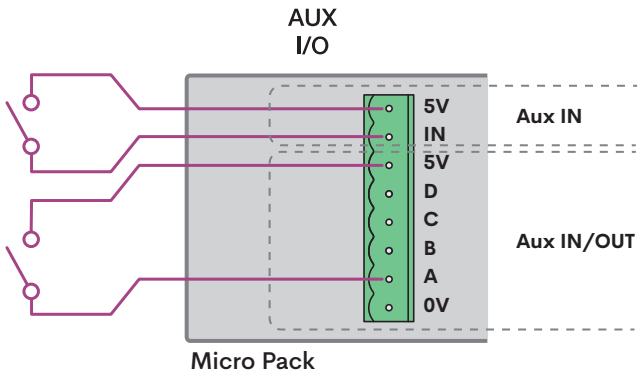
Present only on Network Processor Cards, this port allows the Micro Pack to be linked with an ethernet network via CATx cabling to allow configuration management and email reporting can be carried out remotely.



Auxiliary input/output ports

One auxiliary input is provided on all processor cards, there are four additional ports that can operate either as inputs or outputs. The auxiliary ports allow easy integration with external control systems, such as daylight sensors, HVAC and fire alarms.

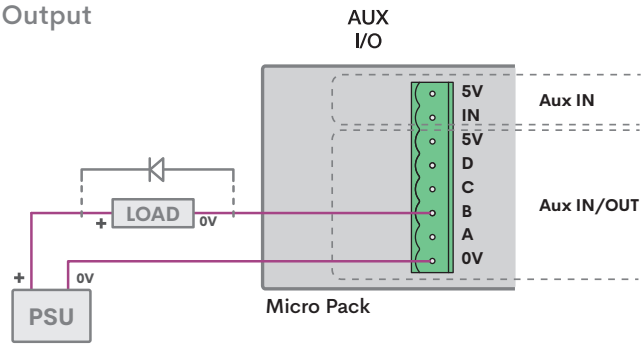
Input



The AUX IN port is a 'dry contact' type and supplies 5VDC on the lower pin. When the 5VDC pin is connected to the IN pin, an ON or logic 1 state is registered and the controller will act upon it, as configured through the menu. When the pins remain open contact, an OFF or logic 0 state is observed.

The AUX I/O ports ports (labelled A to D) can be individually configured to be either inputs or outputs. When a port is set as an input, it acts as a 'dry contact' type, as described above. This example shows AUX A being used as an input/

Output



If an AUX I/O is configured as an output it becomes an open collector switch. An external power supply, up to 30VDC maximum can be connected and a load which draws no more than 50mA can be used.

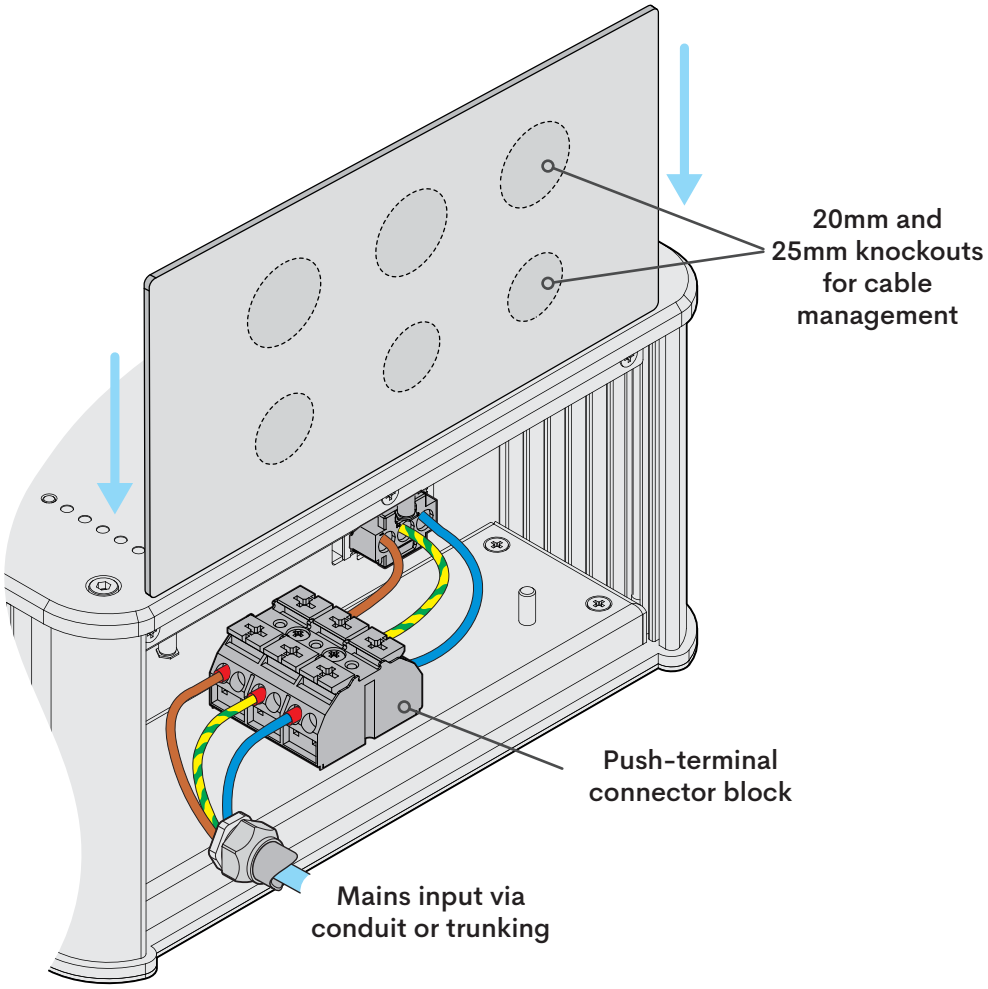
It is possible to attach a small relay to an output providing a reverse diode is fitted across the relay coil to prevent any back EMF damaging the output circuitry.

This example shows AUX B being used as an output.

IMPORTANT
Maximum PSU voltage: 30VDC
Maximum load current: 50mA

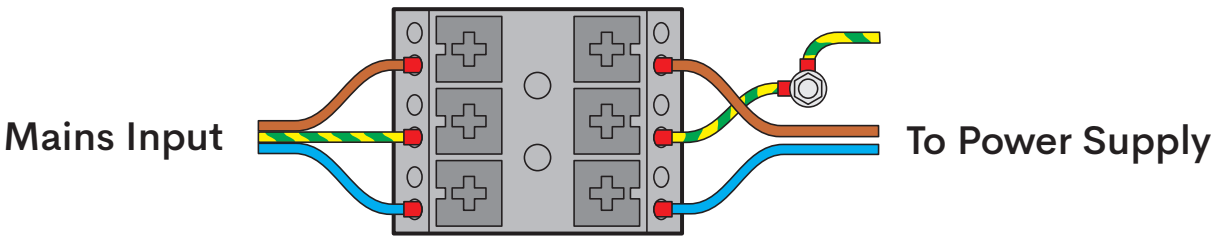
Mains power input

Each Micro Pack requires a stable mains AC supply applied, via a suitable isolator, to the upper section of the enclosure (when mounted upright).



Mains power connection

Mains inputs are made via a 3-way push-terminal connector block, allowing a single-phase input:



Specifications are subject to change without notice

Power supply ratings

Input Range	90-264 Vac (Safety rating: 100 - 240 Vac) 127 - 374 Vdc
Frequency	47 - 63 / 440 Hz (Safety rating: 50/60 Hz)
Input Fusing	Internal fuse on both L and N lines (12.5 A - U suffix; 7 A - H suffix)
EMI/RFI	FCC Class B, CISPR22/EN55022 Class B
MIL-STD-461F EMI	Compliance to CE101, 102; CS101, 114, 115, 116 (with external filter1)
Inrush Current	≤ 25 A peak
Power Factor	0.99 typical
Harmonics	Meets EN61000-3-2 Class A and Class C2
Input Current	< 10 Amps @ 100 Vac
Hold up Time	20 ms min for Main Output (230 Vac) @ 100% Load
Efficiency	93.3% typical @ 230 Vac; 100% Load; 28 Vdc
Leakage Current	115 µA typical (< 200 µA max per ANSI/ES60601-1 264 Vac split-phase / 60 Hz) 387 µA typical (< 500 µA max per IEC60601-1; 264 Vac / 50Hz)
Isolation voltage	PRI-SEC: 4,000 Vac (2X MOPP) PRI-Chassis: 1,500 Vac (1X MOPP) SEC-Chassis: 1,500 Vac (1X MOPP)

Operation

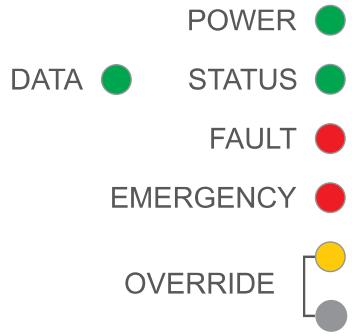
Switching on

Micro Packs have no internal power switches or breakers; operation begins as soon as mains power is applied.

Configuration

Micro Packs are configured via RDM through the DMX/DHP link, via the touchscreen display or by connecting to the web interface using a computer or tablet. A specialist application is available for discovery of the Drive Hub and Micro Pack devices, this is covered from page 21 onwards.

Micro Pack status indicators



POWER	Solid red when the unit is in standby; green when on.
STATUS	Flashes green when operating normally (heartbeat).
DATA	Solid green when a valid DMX or DALI signal is detected.
FAULT	Flashes red when a fault is detected.
EMERGENCY	Flashes red when emergency mode is engaged.
OVERRIDE	Solid yellow when override mode is engaged.

Emergency operation

Micro Pack emergency operation can be triggered by an external source (such as a fire alarm system) via the **Aux In** connector on the processor card (see page 15). The auxiliary input operation is fully configurable and the emergency state can be set to respond either to Open or Close states on the Aux In port. You are recommended to use "Emergency on Open" for fail-safe operation.

When the system is triggered into its emergency state the following will occur:

- All emergency enabled output channels will be set to 100% output.
- The front panel EMERGENCY indicator will flash red.
- An event log will be created, detailing the time and date of occurrence.

Override mode

Each Micro Pack features an Override function, located below the status indicators, which allows you to bring all output channels to full output. This feature can be useful during the commissioning process to ensure that all fixtures are behaving correctly.

To use override mode

- Press and hold the override button for roughly three seconds. All outputs will be taken to 100% and the adjacent override yellow indicator will illuminate.
- To cancel override mode, press the override button for three seconds.

Configuration (Network Processor Card only)

Power and Connections

Before proceeding with any of the following configuration steps, ensure that all Power Blocks, Processor Cards and Drive Cards and inserted securely and these hardware connections have been made. See the Drive Hub Application Note for details:

1. Mains power into to Micro Pack.
2. Ethernet connection to master Micro Pack (Network Processor).
3. DMX/DHP Link between Micro Packs (if more than one Micro Pack in the system).

Discovery App

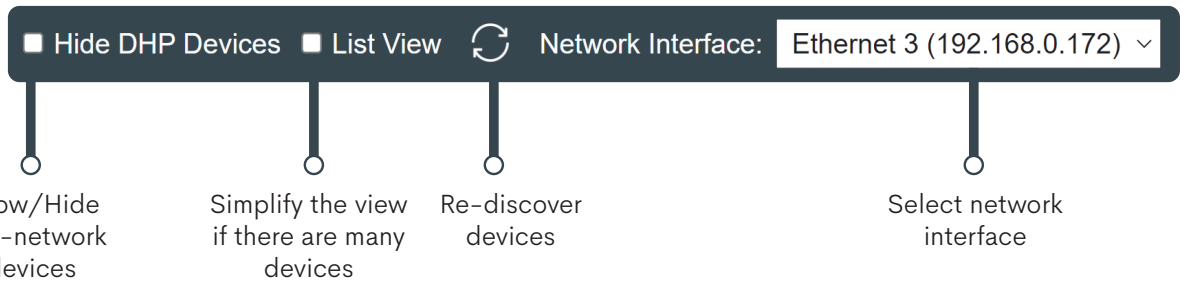
Once your system is connected and energised, you can use the Drive Hub Discovery App to find and configure all components of the system. This can be downloaded here:

https://www.gds.uk.com/dh-discovery-app

Device Discovery

The app will automatically dicover all the Drive Hub and Mini Pack and Micro Pack devices on your network, including all DHP devices (non-network devices connected to a master network device via DHP). If the app doesn't automatically populate all of your devices, try these troubleshooting tips:

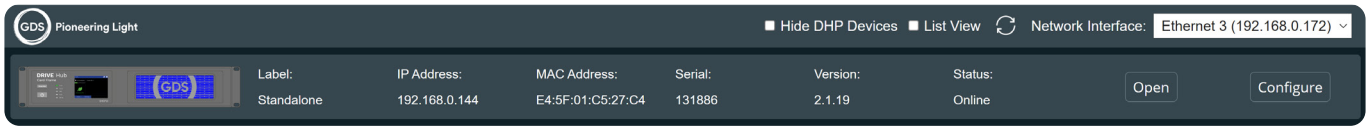
1. Ensure that your Micro Pack is running API V1.1.0 or higher. If your device is running older software or you are unsure, please contact GDS for assistance.
2. Ensure the Web App settings are configured correctly:



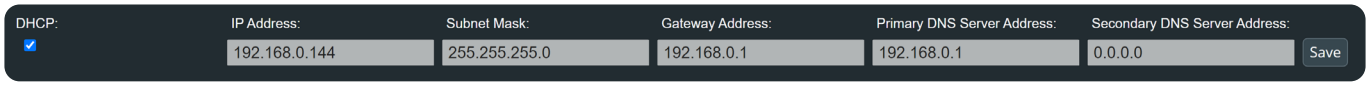
3. Ensure that your Drive Hub devices and PC are connected to the same network and all network switches are powered on.

Device Configuration

Once discovered, your devices will be shown on the interface and key information will be visible:



Configure will allow you to adjust network parameters directly from the interface:



*Please note that changing the IP address to a different subnet to your computer will mean that the Web App is inaccessible. In this instance, 'configure' will still be available for you to revert back to the correct subnet.

Open will load the Web App for that particular device.

Web App

The Web App is a configuration tool for your Drive Hub/Mini Pack/Micro Pack system. All of the settings and status' can be seen and adjusted here.

User Accounts and Login

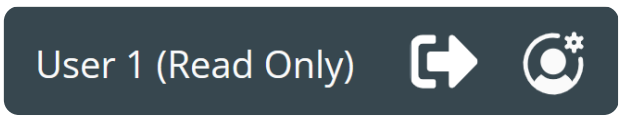
Once loaded, the Web App will prompt the user to input a user name and password. The defaults are as follows:

Username: admin
Password: admin

The default user account is automatically set as an *'Admin'* account, whereby all settings are available to the user. Accounts can be created as *'User'* accounts, whereby settings are read-only.

Admin Account

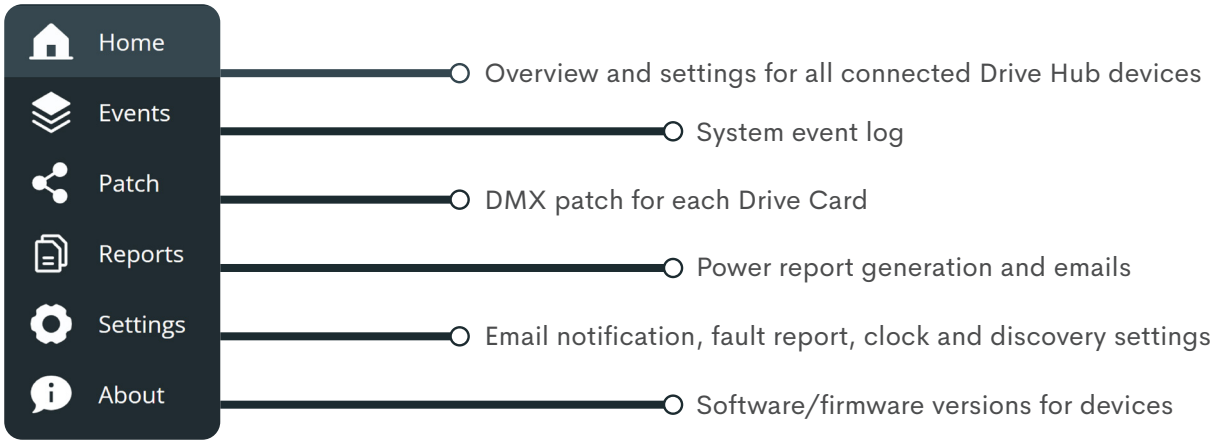
User Account



While logged in as an admin, new user accounts can be created by clicking 

Navigation

All pages of the Web App can be accessed via the navigation bar on the left:



Settings and Parameters

Home

All parameters of the connected Drive Hub devices can be viewed here. The graphic will show a live representation of the status of your Power Frames, Card Frames, Mini Packs and Micro Packs. Status LEDs on this page will mimic the physical device.

Power Frame

- Output voltage
- Power consumption
- Output switch status

Clicking individual Power blocks will reveal model number and serial. Graphs of power and temperature status can be viewed here.

Card Frame/Mini Pack/Micro Pack

- IP Address
- Status LEDs
- Auxiliary/Emerency Functions

Clicking View Rear will reveal the connected Drive Cards and allow you to view and adjust their individual parameters:

- Label
- Dimming Curve
- Modulation Frequency
- Output Response Time
- Minimum Level
- Maximum Level
- DMX Channel
- Output Drive Current

Events

A log of recent events, categorised into 3 levels; Information, Warning and Fault. Logs can be downloaded by clicking 

Patch

An overview of your system's DMX patch. Addresses can be changed here.

Reports

Reports for power consumption can be configured here. Reports will include the CO2 emissions along with the cost of power which can be adjusted as per the venue's price per unit. Reports can be sent daily, weekly or monthly to the specified email addresses or generated as and when required.

Settings

The settings for whichever network device you are logged in to can be adjusted here:

- **Email Server and Email Fault Notification**
- **Device Clock Settings**
- **Drive Hub Discovery** – decide whether to view other network Drive Hub devices in the same UI and whether to make this device visible to other network Drive Hub devices.
- **DH Connect Telemetry** – Enables Drive Hub to make a remote connection to GDS servers for remote support and monitoring.

Contact

GDS Pioneering Light Ltd
6 Monarch Court,
The Brooms, Emersons Green
Bristol
BS16 7FH
United Kingdom

+44 (0)117 325 0063
support@gds.uk.com
www.gds.uk.com

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