

Active Junction Box Power-DMX-Ethernet to PDE
Passive Junction Box Power-DMX-Ethernet to PDE
Break-In Cable Power-DMX-Ethernet to PDE
Break-Out Cable PDE to Power-DMX-Ethernet
User Guide

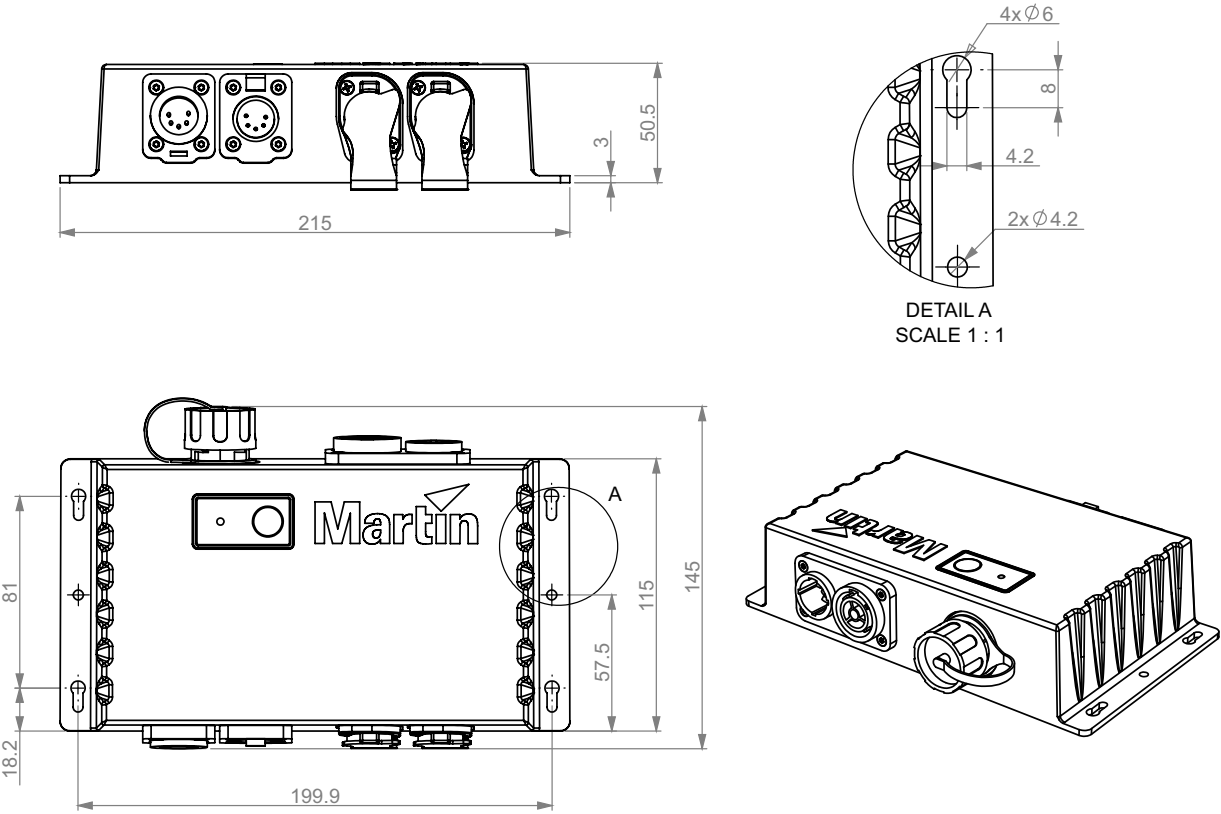


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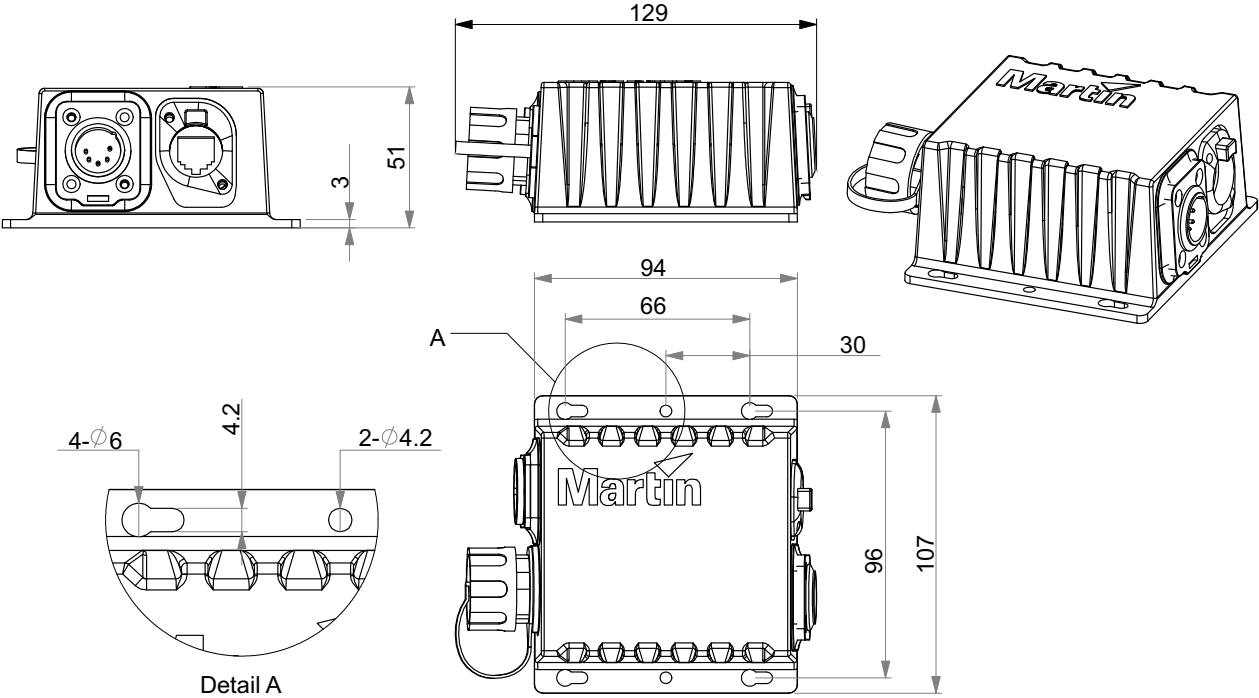
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Dimensions

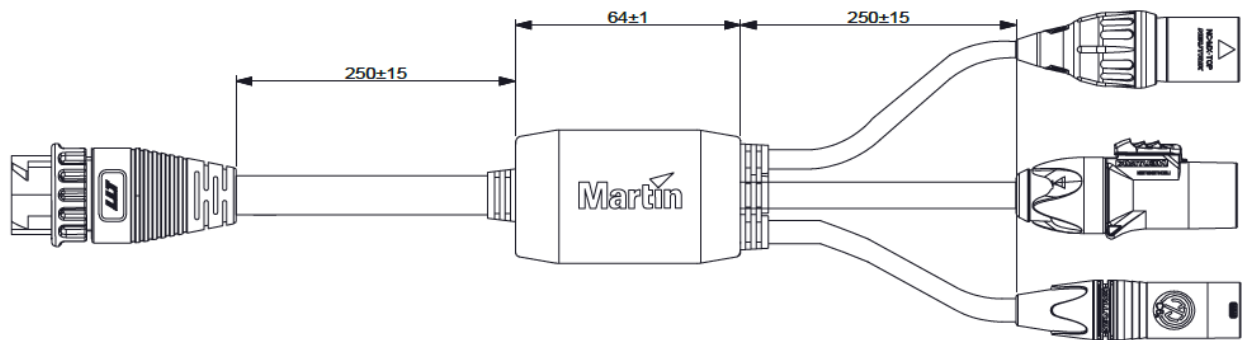
Active Junction Box Power-DMX-Ethernet to PDE



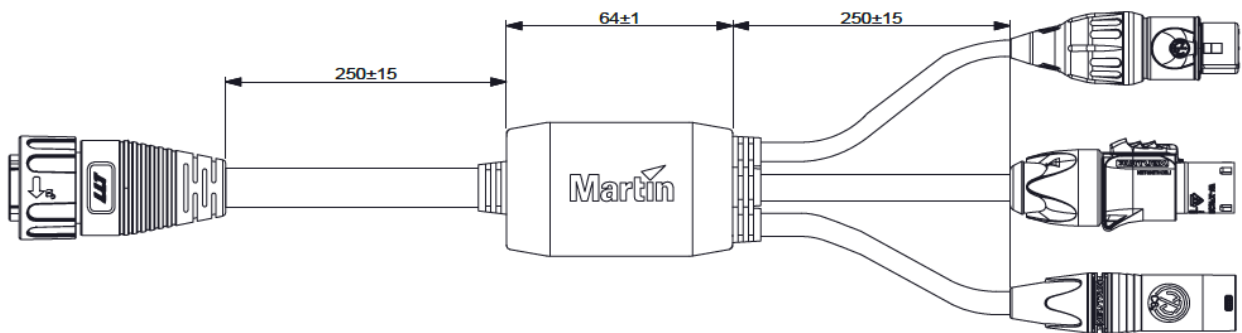
Passive Junction Box Power-DMX-Ethernet to PDE



Break-In Cable Power-DMX-Ethernet to PDE



Break-Out Cable PDE to Power-DMX-Ethernet



All dimensions are given in millimeters.

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www.martin.com

PDE Active/Passive Junction Box, Break-In/Out Cable User Guide Revision A

Safety information



WARNING!

Read the safety precautions in this manual before installing, operating or servicing this product.

The following symbols are used to identify important safety information on the product and in this manual:



Warning!

Safety hazard. Risk of severe injury or death.



Warning!

See user manual for important safety information.



Warning!

Hazardous voltage. Risk of lethal or severe electric shock.



Warning!

Fire hazard.



Warning!

Hot surfaces.



This lighting product is for professional use only and must be installed by a qualified technician. It is not for household use. It presents risks of severe injury or death due to fire hazards, electric shock and falls.



Install, operate and service Martin® products only as directed in their user manuals, or you may create a safety hazard or cause damage that is not covered by product warranties. Follow the safety precautions listed below and observe all warnings in this manual and printed on the product. Keep this user manual for future use.

For the latest user documentation and other information about this and all Martin® products, please visit the Martin® website at <http://www.martin.com>

If you have any questions about how to install, operate or service the product safely, please contact your Martin® distributor (see www.martin.com/distributors for details) or in the USA on 1-844-776-4899.

Respect all locally applicable laws, codes and regulations when installing, operating or servicing the product.



Protection from electric shock

Ensure that the product is electrically connected to ground (earth).

Disconnect the product from AC power when not in use.

Do not open the product or remove any cover. Refer any service operation not described in this manual to an authorized Martin Service partner.

Shut down power to the entire installation at the main power distribution board and lock out power before carrying out any installation or maintenance work.

Use only a source of AC power that complies with local building and electrical codes and has both overload and ground-fault (earth-fault) protection.

Isolate the product from power immediately if any seal, cover, cable, or other component is damaged, defective, deformed or showing signs of overheating. Do

not reapply power until repairs have been completed

Before using the product, check that all power distribution equipment and cables are in perfect condition and are of suitable type for the location (including water, pollution, temperature and UV resistance).

Do not immerse the product in water or any other fluid, or install it in a location where flooding may occur.

When connecting multiple products in a daisy chain, observe the safety limits in section "Safety limits for connecting devices" on page 12.



Protection from burns and fire

Do not operate the product if the ambient temperature (T_a) exceeds 40° C (104° F).



The surface of the product can reach up to 55° C (131° F) if the product is operated at the maximum permitted ambient temperature. Allow the product to cool for at least 5 minutes before handling.

Install the product on a non-combustible surface (brick, concrete, plaster etc.) only.

Allow at least 0.1 m (4 in.) free space around the product.

Do not attempt to bypass thermostatic switches or fuses.

Do not modify the product in any way not described in this manual or install other than genuine Martin® parts.



Protection from injury

Fasten the product securely to a fixed surface or structure when in use. The product is not portable when installed.

Ensure that all supporting structures, surfaces, fasteners and lifting equipment can bear the weight of all the devices they are intended to support plus an adequate safety margin, and that they conform to local building and safety regulations.

Block access below the work area and work from a stable platform whenever installing, setting, adjusting, or cleaning the product.

Do not operate the product with missing or damaged covers or shields.

If an operating problem occurs, stop using the product immediately and disconnect it from power. Do not attempt to use a product that is obviously damaged.

Introduction

The Junction Boxes and Adapter Cables described in this document provide power and data to Martin products using the hybrid PDE connector and cabling system. This system carries line voltage, DMX and Ethernet data over a single hybrid cable, enabling easy cabling and daisy-chaining of products.

The **Active Junction Box** contains a DMX/RDM splitter and 3-port Ethernet switch with fail-safe bypass mechanism, and provides following connections:

- Power Input
- Power Thru (for daisy-chaining to following junction box or other product)
- DMX/RDM Input
- DMX/RDM Thru (for daisy-chaining to following junction box or other product)
- Ethernet Input
- Ethernet Thru (for daisy-chaining to following junction box or other product)
- Hybrid PDE Output towards a daisy-chain of compatible products

The **Passive Junction Box** is a more compact unit without any electronics inside, and provides following connections:

- Power Input
- DMX/RDM Input
- Ethernet Input
- Hybrid PDE Output towards a daisy-chain of compatible products

The **Break-In Cable** offers the same functionality as the Passive Junction Box in the form of a cable, and provides following connections:

- Power Input
- DMX/RDM Input
- Ethernet Input
- Hybrid PDE Output towards a daisy-chain of compatible products

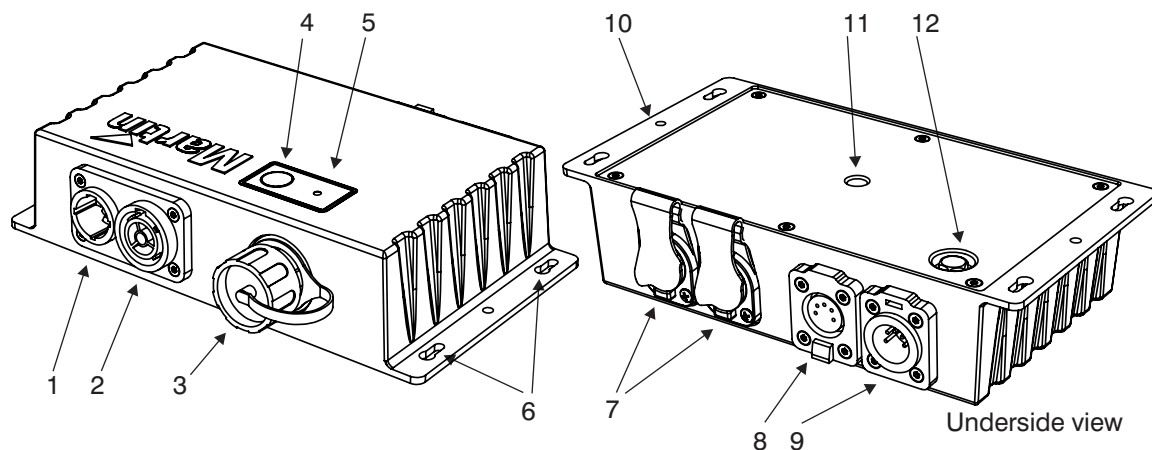
The **Break-Out Cable** can be used to extract power and/or data from the end of a chain of compatible products, and provides following connections:

- Hybrid PDE Input from a daisy-chain of compatible products
- Power Output
- DMX/RDM Output
- Ethernet Output

Before using the product for the first time

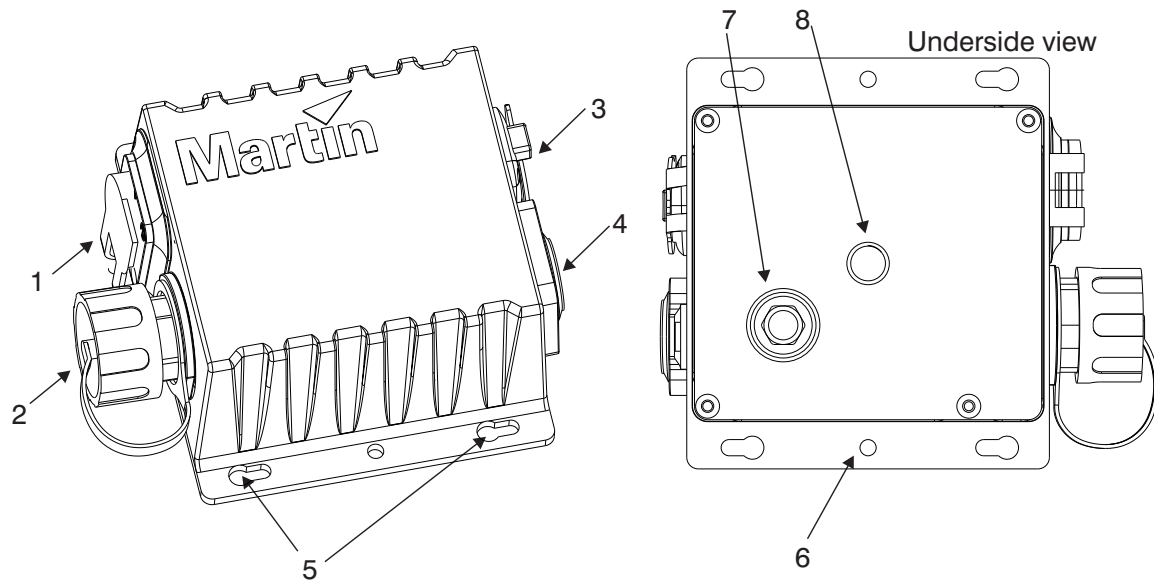
1. Read 'Safety information' on page 5 before installing, operating or servicing the product.
2. Unpack and ensure that there is no transportation damage before using the product. Do not attempt to operate a damaged product.
3. Before operating, ensure that the voltage and frequency of the power supply match the power requirements of the product.
4. Obtain a power cable fitted with Neutrik powerCON TRUE1 connector. Cables are available from Martin (see Accessories list on page 27).
5. Check the support pages on the Martin® website at www.martin.com for the most recent user documentation and technical information about the product. Martin® user manual revisions are identified by the revision letter at the bottom of the inside cover.

Active Junction Box overview



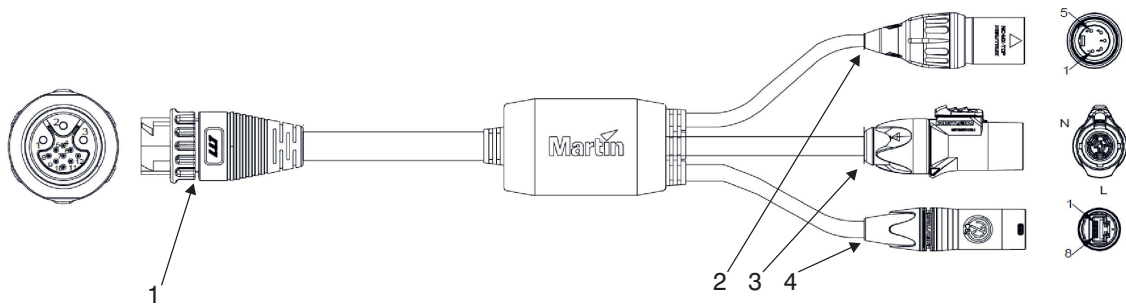
- 1 – Neutrik powerCON TRUE1 input
- 2 – Neutrik powerCON TRUE1 link through
- 3 – Hybrid PDE output connector
- 4 – Test / Reset button
- 5 – Status LED
- 6 – Keyhole slots for mounting to wall / surface (both sides)
- 7 – Neutrik etherCON input / link through
- 8 – Neutrik XLR-5 DMX link through
- 9 – Neutrik XLR-5 DMX input
- 10 – Safety bond attachment point (both sides)
- 11 – M10 hole for adding clamp (on underside of box) maximum bolt length 22mm
- 12 – Goretex valve for pressure regulation

Passive Junction Box overview



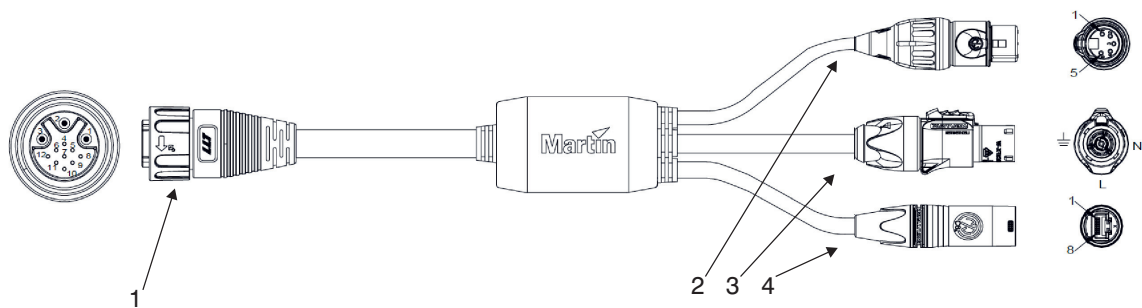
- 1 – Neutrik PowerCON TRUE1 input
- 2 – Hybrid PDE output connector
- 3 – Neutrik etherCON input
- 4 – Neutrik XLR5 DMX input
- 5 – Keyhole slots for mounting to wall / surface (both sides)
- 6 – Safety bond attachment point (both sides)
- 7 – Goretex valve for pressure regulation
- 8 – M10 hole for adding clamp (on underside of box) maximum bolt length 22mm

Break-In Cable overview



- 1 – Hybrid PDE output connector to daisy chain of compatible fixtures
- 2 – DMX/RDM input (Neutrik XLR5)
- 3 – Power input (Neutrik powerCON TRUE1)
- 4 – Ethernet input (Neutrik etherCON)

Break-Out Cable overview



- 1 – Hybrid PDE input connector from daisy chain of compatible fixtures
- 2 – DMX/RDM output (Neutrik XLR5)
- 3 – Power output (Neutrik powerCON TRUE1)
- 4 – Ethernet output (Neutrik etherCON)

Physical installation (Junction Boxes)



Warning! Read 'Safety information' on page 5 before installing the product.

Warning! The safety and suitability of lifting equipment, installation location, anchoring method, mounting hardware and electrical installation are the responsibility of the installer. All local safety regulations and legal requirements must be observed when installing and connecting the PDE Junction Box. Installation must be carried out by qualified professionals only.

Contact your Martin supplier for assistance if you have any questions about how to install this product safely.

Product location

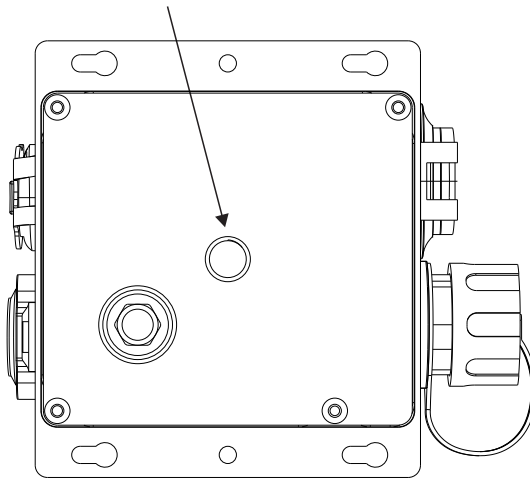
The PDE Junction Box is fully IP65 rated and may be used indoors or in a temporary outdoor location.

Observe the following limitations in selecting a location:

- Respect the limitations listed under 'Safety information' on page 5.

Mounting the junction box

The junction box may be mounted directly to a surface using the holes provided on the side flanges, or a rigging clamp (such as the Super Lightweight Half Coupler Rigging Clamp black: P/N 91602018, listed in the accessories) may be attached to the rear side using an M10 bolt, maximum depth into box 22mm.



(this picture shows the Passive Junction Box but the Active Junction Box is similar)

- If the Junction Box is rigged to a truss or mounted where it could cause injury by falling, a safety cable bond must be fitted to it using the 6 mm safety bond attachment points on the side flanges. The safety cable must comply with EN/IEC 60598-2-17:2018 Section 17.7.4 or BGV C1 / DGUV 17, and must be capable of bearing a static suspended load at least six times (or more if required by locally applicable regulations) the weight that it secures.

AC power and data connection to Active Junction Box



Warning! Read 'Safety information' on page 5 before installing the product.

For protection from electric shock, the power input to the Junction Box must be grounded (earthed). The power distribution circuit must be equipped with a 16A (EU) / 20A (US) fuse or circuit breaker and ground-fault (earth-fault) protection.



AC power and control data are connected to the Junction Box. Fixtures may then be connected in a daisy chain to each junction box using a hybrid PDE cable which carries both power and data. The quantity of fixtures which may be connected in a single daisy chain is described in the user manual for each type of fixture, but is always limited to a maximum load of 16 A.

Safety limits for connecting devices

As the fixtures are connected in a chain, there is a limit to how many fixtures you can link together and how far apart they can be.

- Maximum fixture loading of 16A connected in a chain (see individual fixture's user manual).
- When DMX is being used as control protocol, the total length of Hybrid PDE cable must not exceed 300 m (measured between active junction box and last fixture on the chain).
- When Art-Net, sACN or P3 is being used as control protocol, the total length of hybrid PDE cable between active junction box and first fixture must not exceed 90 m. The length of hybrid PDE cable between any two daisy-chained products may also not exceed 90 m.
- Install the sealing cap on the thru connector of the last product in the chain.

AC power connection to Junction Box

Do not use an external dimming system to supply power to the Active Junction Box, as this may cause damage to the products that is not covered by the product warranty.

Socket outlets or external power switches used to supply the system with power must be located near the system and easily accessible so that the system can easily be disconnected from power.

If you install a power plug on the power cable, install a grounding type (earthed) plug with integral cable grip that is suitable for your local mains voltage at a current of 16A. Follow the plug manufacturer's instructions and connect the wires in the power cable as shown in this table:

| | Live or L | Neutral or N | Earth, Ground or ⊕ |
|------------------|-----------|--------------|--------------------|
| US system | Black | White | Green |
| EU system | Brown | Blue | Yellow/green |

If you need to install a Neutrik powerCON TRUE1 connector on a power cable, follow the instructions on the Neutrik website at www.neutrik.com.

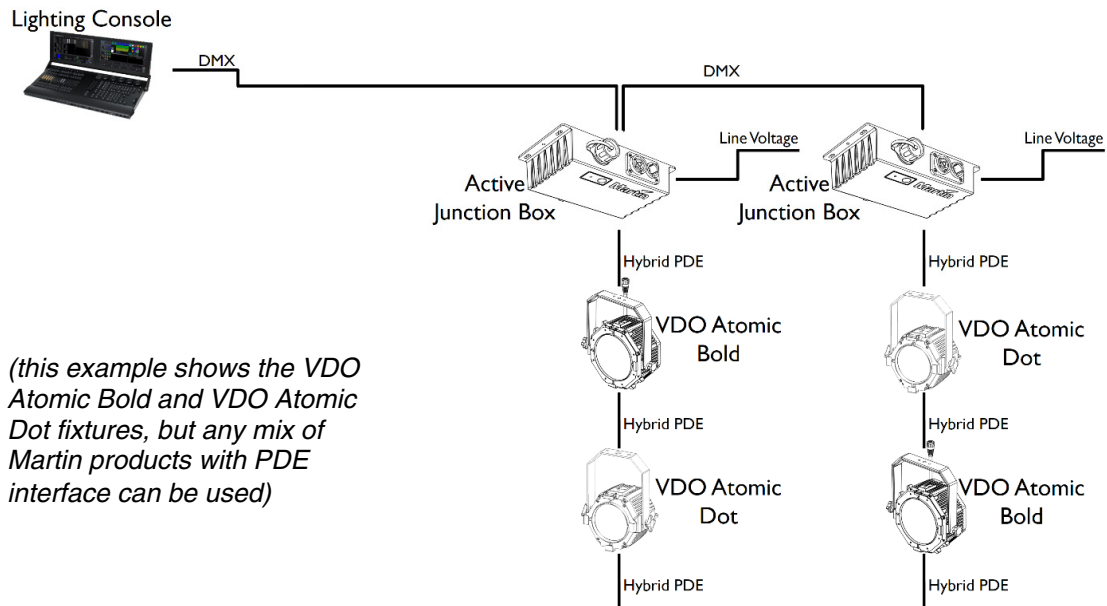
The product has an auto-ranging power supply that accepts AC mains power at 100-240 V at 50/60 Hz. Do not apply AC mains power at any other voltage or frequency to the product.

Data connection to Active Junction Box using DMX512

In a DMX-controlled system, an RDM-compliant DMX lighting controller sends a DMX control data signal over a DMX link to the Junction Boxes of the system, and then over the hybrid link to the fixtures.

The Active Junction box contains an active DMX/RDM splitter, so the Hybrid PDE output is completely isolated from the DMX In & Thru ports. This means that the Active Junction box counts as a single DMX/RDM device on the DMX line coming from the lighting console, regardless the amount of fixtures connected to its PDE output.

The DMX In & Thru ports are hardwired to each other. So even if the Active Junction Box loses power, it will relay data between the two XLR connectors.



The DMX link requires DMX cable. It can be a maximum 300 m (1000 ft.) in length (measured between lighting console, DMX node or DMX splitter and last Active Junction Box on the chain) and must run in one single daisy-chain, but it can be extended or split into branches using an RDM-compliant amplifier/splitter. Alternatively, you can run the DMX signal from the controller over Ethernet cable using Art-Net protocol and convert it to a DMX-compliant signal with an Art-Net to DMX converter.

For reliable DMX and RDM data transfer, it is recommended to terminate each branch with a termination plug – this contains a 120 ohm resistor between the cold and hot DMX data lines (pins 2 and 3 on XLR5, pins 4 and 7 on PDE connector). This means that both an unused DMX thru port on the Active Junction Box as well as the female PDE connector of the last fixture on a chain need to be fitted with such a termination plug.

The total length of Hybrid PDE cables combined must not exceed 300 m (measured between Active Junction Box and last fixture on the chain).

If you would like assistance with creating a DMX link, your Martin® supplier will be glad to advise.

The number of fixtures that you can control on one DMX link is limited by the number of DMX channels each fixture will use and the 512 DMX channels available in one DMX universe at the DMX controller. Each time you have used 512 channels, you must create a new DMX link that is connected to a new DMX universe on the controller. Note that this limit applies to the DMX link. The maximum safety limits that apply to the chain of fixtures and cable (see “Safety limits for connecting devices” on page 12) take priority and must be respected in all cases.

DMX512 data is connected to the junction box using the XLR5 connector. The pin-out is:

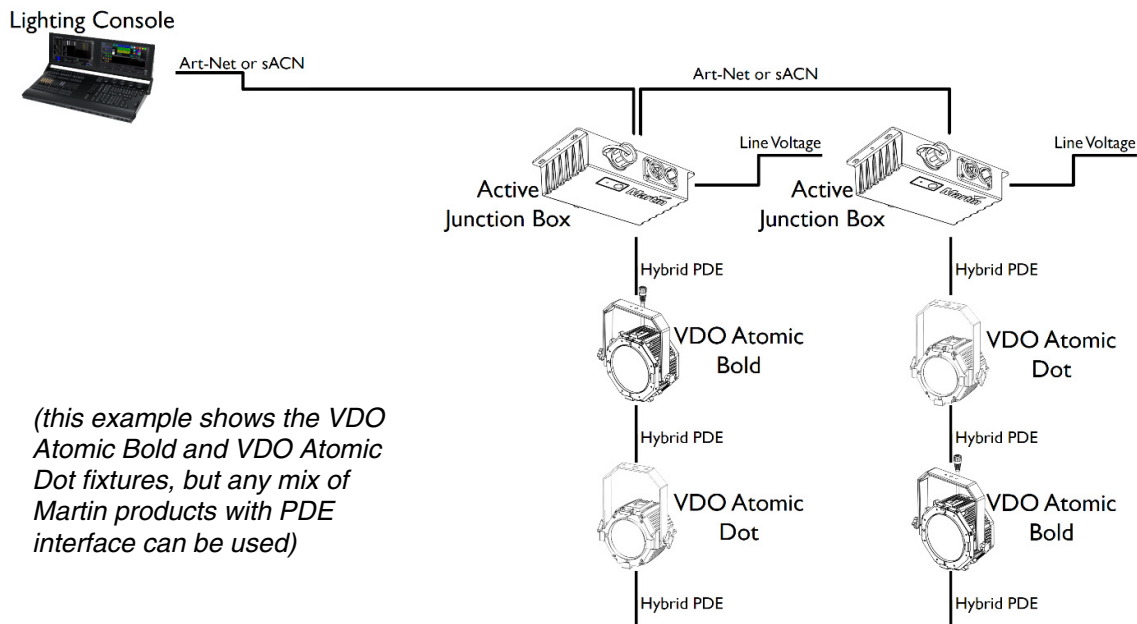
- pin 1 = shield
- pin 2 = cold (-)
- pin 3 = hot (+)

Pins 4 and 5 in the XLR connectors are not used.

Data connection to Active Junction Box using Art-Net or sACN

Art-Net or sACN data is connected to the system using either of the two etherCON sockets on the Active Junction Box. The other etherCON socket can then be used to daisy-chain the signal to another Active Junction Box or other equipment compatible with Art-Net or sACN.

- The two etherCON ports on the Active Junction Box can operate at 100Mbit/s or 1Gbit/s link speed, so they will adjust to the highest speed supported by the console or network switch.
- The Active Junction Box features a fail-safe bypass mechanism between the two etherCON ports. So even if the Active Junction Box loses power, it will relay data between the two etherCON ports.
- The length of Ethernet cable between the console (or network switch) and the Active Junction Box must not exceed 90 m.
- The length of Ethernet cable between an Active Junction Box and the next daisy-chained Active Junction Box must not exceed 90 m.
- A shielded Ethernet cable must be used between the console (or network switch) and the Active Junction Box. Use shielded twisted-pair Ethernet cable of type S/UTP, SF/UTP, S/STP or SF/STP only. The cable must be rated Cat 5e or better. The cable shield must be electrically connected to connector housings, and the other devices on the data link must also support shielded connections.
- The Hybrid PDE output port on the Active Junction Box will always operate at 100Mbit/s link speed towards the fixtures.
- The total length of Hybrid PDE cables between the Active Junction Box and the first fixture must not exceed 90 m.
- The length of hybrid PDE cable between any two daisy-chained fixtures may also not exceed 90 m.

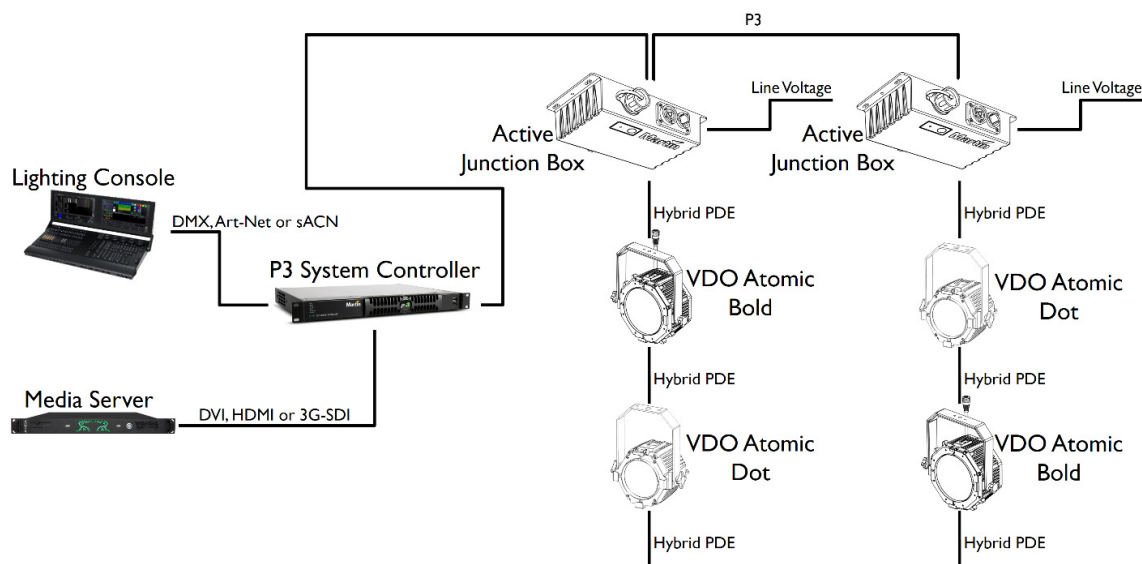


- **Caution:** To avoid ground loops and damage of equipment, make sure the Ethernet is galvanically isolated when linked between equipment of different potentials or power sources.

Data connection to Active Junction Box using P3

The Martin P3 System Controller combines control information from the lighting console with a video feed from a media server. This is then distributed to the fixtures using the P3 protocol. The P3 signal is connected to the system using any of the two etherCON sockets on the Active Junction Box. The other etherCON socket can then be used to daisy-chain the signal to another Active Junction Box or other equipment compatible with P3.

- The two etherCON ports on the Active Junction Box can operate at 100Mbit/s or 1Gbit/s link speed, so they will adjust to the highest speed supported by the P3 System Controller or network switch.
- The Active Junction Box features a fail-safe bypass mechanism between the two etherCON ports. So even if the Active Junction Box loses power, it will relay data between the two etherCON ports.
- The length of Ethernet cable between the P3 System Controller (or network switch) and the Active Junction Box must not exceed 90 m.
- The length of Ethernet cable between an Active Junction Box and the next daisy-chained Active Junction Box must not exceed 90 m.
- A shielded Ethernet cable must be used between the P3 System Controller (or network switch) and the Active Junction Box. Use shielded twisted-pair Ethernet cable of type S/UTP, SF/UTP, S/STP or SF/STP only. The cable must be rated Cat 5e or better. The cable shield must be electrically connected to connector housings, and the other devices on the data link must also support shielded connections.
- The Hybrid PDE output port on the Active Junction Box will always operate at 100Mbit/s link speed towards the fixtures.
- The total length of Hybrid PDE cables between the Active Junction Box and the first fixture must not exceed 90 m.
- The length of hybrid PDE cable between any two daisy-chained fixtures may also not exceed 90 m.



(the example above shows the VDO Atomic Bold and VDO Atomic Dot fixtures, but any mix of Martin products with PDE interface can be used)

- **Caution:** To avoid ground loops and damage of equipment, make sure the Ethernet is galvanically isolated when linked between equipment of different potentials or power sources.

AC power and data connection to Passive Junction Box or Break-In Cable



Warning! Read 'Safety information' on page 5 before installing the product.



For protection from electric shock, the power input to the Junction Box or Break-In cable must be grounded (earthed). The power distribution circuit must be equipped with a 16A (EU) / 20A (US) fuse or circuit breaker and ground-fault (earth-fault) protection.

AC power and control data are connected to the Junction Box or Break-In Cable. Fixtures may then be connected in a daisy chain to each junction box or break-in cable using a hybrid PDE cable which carries both power and data. The quantity of fixtures which may be connected in a single daisy chain is described in the user manual for each type of fixture, but is always limited to a maximum load of 16 A.

Safety limits for connecting devices

As the fixtures are connected in a chain, there is a limit to how many fixtures you can link together and how far apart they can be.

- Maximum fixture loading of 16A connected in a chain (see individual fixture's user manual).
- When DMX is being used as control protocol, the total length of DMX cable and Hybrid PDE cable combined must not exceed 300 m (measured between lighting console, DMX node or DMX splitter and last fixture on the chain).
- When Art-Net, sACN or P3 is being used as control protocol, the combined length of Ethernet cable (between network switch and junction box) and hybrid PDE cable to first fixture must not exceed 90 m. The length of hybrid PDE cable between any two daisy-chained fixtures may also not exceed 90 m.
- Install the sealing cap on the thru connector of the last fixture in the chain.

AC power connection to Junction Box or Break-In Cable

Do not use an external dimming system to supply power to the Junction Box or Break-In cable, as this may cause damage to the fixtures that is not covered by the product warranty.

Socket outlets or external power switches used to supply the system with power must be located near the system and easily accessible so that the system can easily be disconnected from power.

If you install a power plug on the power cable, install a grounding type (earthed) plug with integral cable grip that is suitable for your local mains voltage at a current of 16A. Follow the plug manufacturer's instructions and connect the wires in the power cable as shown in this table:

| | Live or L | Neutral or N | Earth, Ground or ⊕ |
|------------------|-----------|--------------|--------------------|
| US system | Black | White | Green |
| EU system | Brown | Blue | Yellow/green |

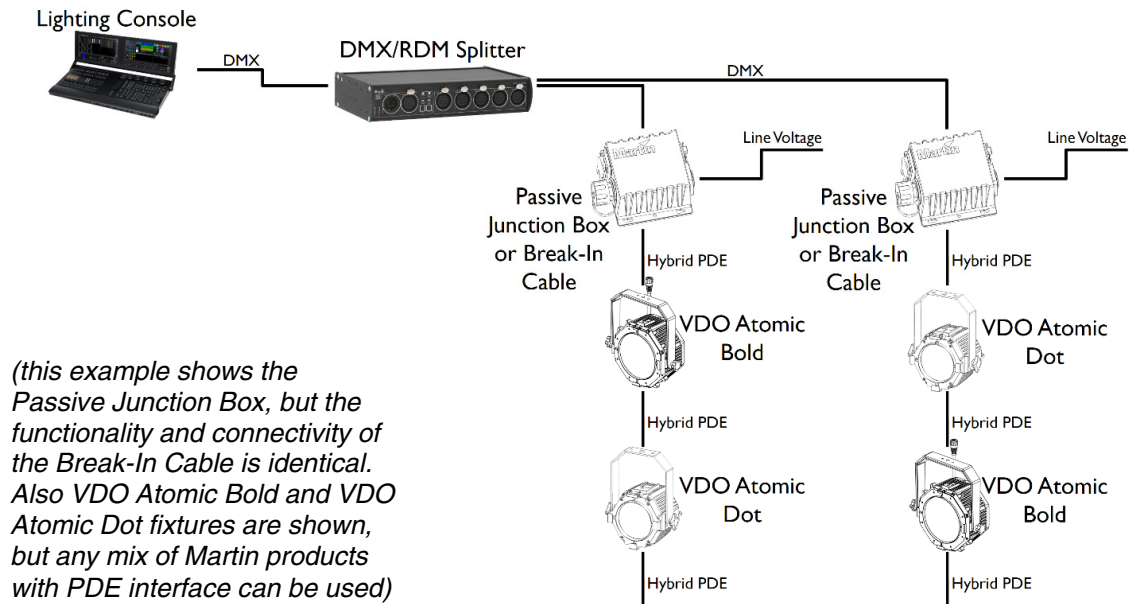
If you need to install a Neutrik powerCON TRUE1 connector on a power cable, follow the instructions on the Neutrik website at www.neutrik.com.

The fixtures have an auto-ranging power supply that accepts AC mains power at 100-240 V at 50/60 Hz. Do not apply AC mains power at any other voltage or frequency to the product.

Data connection to Passive Junction Box or Break-In Cable using DMX512

In a DMX-controlled system, an RDM-compliant DMX lighting controller sends a DMX control data signal over a DMX link to the junction boxes or break-in cables, and then over the hybrid link to the fixtures.

A DMX pass – through connector is not provided. If you need to connect multiple Junction Boxes or Break-In cables to the same DMX line, you must use an RDM-compliant splitter as described below.



The DMX link requires DMX cable. It can be maximum 300 m (1000 ft.) in length and must run in one single daisy-chain, but it can be extended or split into branches using an RDM-compliant amplifier/splitter. Alternatively, you can run the DMX signal from the controller over Ethernet cable using Art-Net protocol and convert it to a DMX-compliant signal with an Art-Net to DMX converter.

For reliable DMX and RDM data transfer, it is recommended to terminate each branch with a termination plug – this contains a 120 ohm resistor between the cold and hot DMX data lines (pins 2 and 3 on XLR5, pins 4 and 7 on PDE connector). This means that the female PDE connector of the last fixture on a chain need to be fitted with such a termination plug.

The total length of DMX cable and Hybrid PDE cable combined must not exceed 300 m (measured between lighting console, DMX node or DMX splitter and last fixture on the chain).

If you would like assistance with creating a DMX link, your Martin® supplier will be glad to advise.

The number of fixtures that you can control on one DMX link is limited by the number of DMX channels each fixture will use and the 512 DMX channels available in one DMX universe at the DMX controller. Each time you have used 512 channels, you must create a new DMX link that is connected to a new DMX universe on the controller. Note that this limit applies to the *DMX link*. The maximum safety limits that apply to the chain of fixtures and cable (see “Safety limits for connecting devices” on page 12) take priority and must be respected in all cases.

DMX512 data is connected to the junction box using the XLR5 connector. The pin-out is:

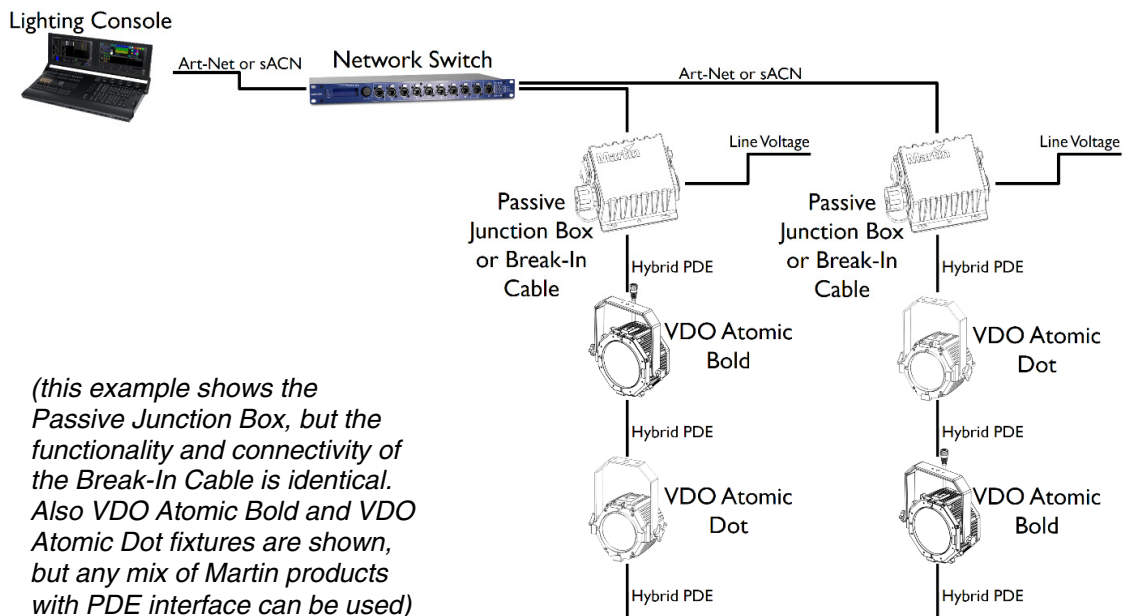
- pin 1 = shield
- pin 2 = cold (-)
- pin 3 = hot (+).

Pins 4 and 5 in the XLR connectors are not used.

Data connection to Passive Junction Box or Break-In Cable using Art-Net or sACN

Art-Net or sACN data is connected to the system using the etherCON socket on the Passive Junction Box or Break-In Cable. Each Junction Box / Break-In Cable must have its own Ethernet connection from a network switch.

- Please ensure that network switch can operate at 100Mbit Ethernet link speed towards the junction boxes, as the PDE hybrid fixtures can only operate at that link speed.
- The combined length of Ethernet cable (between network switch and passive junction box / break-in cable) and hybrid PDE cable to first fixture must not exceed 90 m.
- The length of hybrid PDE cable between any two daisy-chained fixtures may also not exceed 90 m.
- A shielded Ethernet cable must be used between the Network Switch and the Passive Junction Box / Break-In Cable. Use shielded twisted-pair Ethernet cable of type S/UTP, SF/UTP, S/STP or SF/STP only. The cable must be rated Cat 5e or better. The cable shield must be electrically connected to connector housings, and the other devices on the data link must also support shielded connections.

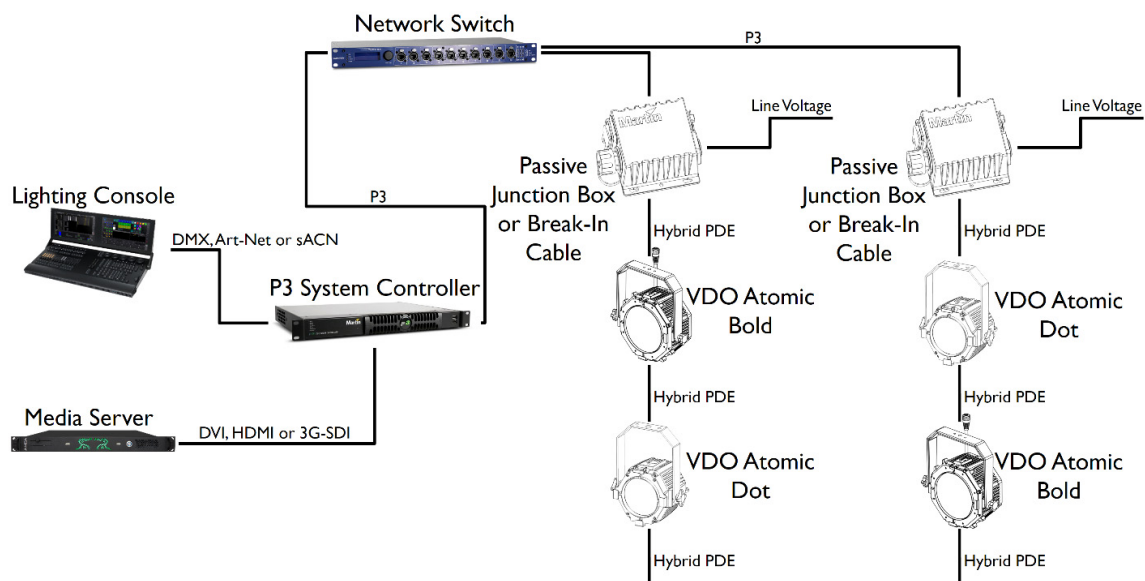


- **Caution:** To avoid ground loops and damage of equipment, make sure the Ethernet is galvanically isolated when linked between equipment of different potentials or power sources.

Data connection to Passive Junction Box or Break-In Cable using P3

The Martin P3 System Controller combines control information from the lighting console with a video feed from a media server. This is distributed to the fixtures using the P3 protocol. Each Junction Box or Break-In Cable must have its own Ethernet connection from the network switch.

- Please ensure that network switch can operate at 100Mbit Ethernet link speed towards the Passive Junction Box / Break-In Cable, as the PDE Hybrid fixtures can only operate at that link speed.
- Please ensure that network switch can operate at 1Gbit Ethernet link speed towards the P3 System Controller, as it can only operate at that link speed.
- The combined length of Ethernet cable (between network switch and junction box) and hybrid PDE cable to first fixture must not exceed 90 m.
- The length of hybrid PDE cable between any two daisy-chained fixture may also not exceed 90 m.
- A shielded Ethernet cable must be used between the between the Network Switch and the Passive Junction Box / Break-In Cable. Use shielded twisted-pair Ethernet cable of type S/UTP, SF/UTP, S/STP or SF/STP only. The cable must be rated Cat 5e or better. The cable shield must be electrically connected to connector housings, and the other devices on the data link must also support shielded connections.
- Other P3-compatible products such as the MAC Aura PXL and P3 PowerPort 1500 can be connected to the same network switch to operate all together from the same P3 System Controller.



(The example above shows the Passive Junction Box, but the functionality and connectivity of the Break-In Cable is identical. Also VDO Atomic Bold and VDO Atomic Dot fixtures are shown, but any mix of Martin products with PDE interface can be used)

- **Caution:** To avoid ground loops and damage of equipment, make sure the Ethernet is galvanically isolated when linked between equipment of different potentials or power sources.

AC power and data connection using Break-Out Cable



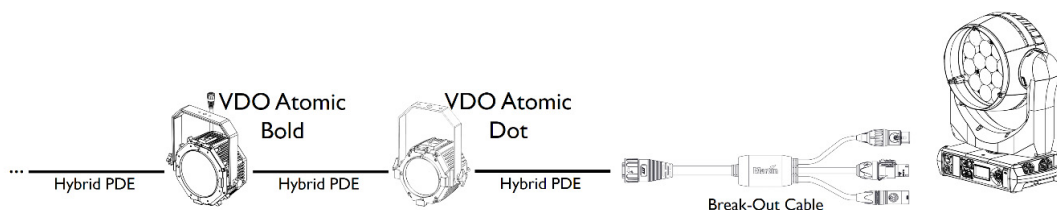
Warning! Read 'Safety information' on page 5 before installing the product.

AC power and control data can be extracted from the end of a daisy-chain of Hybrid PDE products using the Break-Out Cable.

Safety limits for connecting devices

When extracting power using the Break-Out Cable, care must be taken to not exceed a load of 16 A for the entire chain. Always calculate the load consumed by the Hybrid PDE products on the chain to determine how much additional load can be connected using the Break-Out Cable, without exceeding 16 A total load.

AC Power and Data connection



(the example above shows the VDO Atomic Bold and VDO Atomic Dot fixtures, but any mix of Martin products with PDE interface can be used. After the Break-Out Cable the example above shows the MAC Aura PXL, but any other lighting product can be used)

The Break-Out Cable can also be used to extract only data or only power. It is not mandatory to use all 3 outputs of the Break-Out Cable.

Be aware that the Hybrid PDE products do not perform any protocol conversion, meaning:

- You can only extract DMX using the Break-Out Cable, if DMX was injected at the start of the daisy-chain
- You can only extract Art-Net using the Break-Out Cable, if Art-Net was injected at the start of the daisy-chain
- You can only extract sACN using the Break-Out Cable, if sACN was injected at the start of the daisy-chain
- You can only extract P3 using the Break-Out Cable, if P3 was injected at the start of the daisy-chain

System Setup

The Passive Junction Box, Break-In Cable and Break-Out Cable do not contain any electronics inside, and hence do not require any configuration. Configuration of the products connected to them is described in the corresponding product user manual.

The Active Junction Box has a few parameters which can be configured using RDM, RDM over Art-Net or P3:

- Status LED ON/OFF
- Activate Test patterns on all products in the daisy-chain
- Add label
- Add ID

Setting options by RDM

The Active Junction Box is remotely configured over the DMX line using RDM.

A full list of the RDM functions that the Active Junction Box supports is given at the end of this chapter. These functions are generally referred to using the more specific term 'PIDs' or 'Parameter IDs'.

Scanning for RDM devices on the data link

Before you can communicate with products using RDM, you must send a scan command (also called a device discovery command) to all the devices on the data link so that the RDM controller can identify them. It does this by retrieving each device's factory-set unique identifier (UID). This process can take some time depending on the number of devices on the link.

To identify the products on the link:

1. Check that the products are correctly connected to the RDM controller on the data link and that power is applied to all products.
2. Give the controller time to identify the devices on the link and prepare for communication with the devices.

Getting status and setting options by RDM

The status and options listed in the table below can be read and set by RDM.

You can set an option on one product by sending a unicast RDM command to that one product only, or you can set the same option on all the products on the data link by sending a broadcast RDM command to all the devices on the link.

For status reading, you can only use unicast RDM to read information from an individual product.

RDM

As a minimum, the Active Junction Box supports the following RDM functions:

| |
|----------------------|
| RDM DISCOVERY |
| DISC_UNIQUE_BRANCH |
| DISC_MUTE |
| DISC_UN_MUTE |

| | | |
|--------------------------|------------|------------|
| STATUS COLLECTION | GET | SET |
| QUEUED_MESSAGE | ✓ | |
| STATUS_MESSAGES | ✓ | |
| STATUS_ID_DESCRIPTION | ✓ | |
| CLEAR_STATUS_ID | | ✓ |

| | | |
|------------------------|------------|------------|
| RDM INFORMATION | GET | SET |
| SUPPORTED_PARAMETERS | ✓ | |
| PARAMETER_DESCRIPTION | ✓ | |

| | | |
|----------------------------|------------|------------|
| PRODUCT INFORMATION | GET | SET |
| DEVICE_INFO | ✓ | |
| DEVICE_MODEL_DESCRIPTION | ✓ | |
| MANUFACTURER_LABEL | ✓ | |
| DEVICE_LABEL | ✓ | ✓ |
| FACTORY_DEFAULTS | ✓ | ✓ |
| SOFTWARE_VERSION_LABEL | ✓ | |

| | | |
|-------------------|------------|------------|
| DMX SETUP | GET | SET |
| DMX_START_ADDRESS | ✓ | ✓ |

| | | |
|-------------------|------------|------------|
| SENSORS | GET | SET |
| SENSOR_DEFINITION | ✓ | |
| SENSOR_VALUE | ✓ | ✓ |

| | | |
|--------------------------|------------|------------|
| USAGE INFORMATION | GET | SET |
| DEVICE_HOURS | ✓ | |
| DEVICE_POWER_CYCLES | ✓ | |

| CONTROL | GET | SET |
|-----------------|------------|------------|
| IDENTIFY_DEVICE | ✓ | ✓ |
| RESET_DEVICE | | ✓ |

| NETWORK CONFIGURATION | GET | SET |
|----------------------------------|------------|------------|
| LIST_INTERFACES | ✓ | |
| INTERFACE_LABEL | ✓ | |
| INTERFACE_HARDWARE_ADDRESS_TYPE1 | ✓ | |
| IPV4_DHCP_MODE | ✓ | |
| IPV4_CURRENT_ADDRESS | ✓ | |
| IPV4_STATIC_ADDRESS | ✓ | ✓ |
| INTERFACE_APPLY_CONFIGURATION | | ✓ |

| MARTIN CUSTOM | GET | SET |
|----------------------|------------|------------|
| FIXTURE_ID | ✓ | ✓ |
| SERIAL_NUMBER | ✓ | |

Using the Active Junction Box



Warning! Read 'Safety information' on page 5 before applying power to the Active Junction Box.

Do not use the Active Junction Box if the ambient temperature exceeds 40° C (104° F) or falls below 0° C (32° F).

Status LED

The only user controls on the Active Junction Box are a status LED and a pushbutton. The function of these is described below.

| LED indication | Meaning |
|------------------|--|
| Blue Constant | Busy (e.g. booting up or writing to flash memory) |
| Red Constant | Error. The product has encountered a fatal error and cannot run. |
| Red Flashing | No control source detected (no protocols detected on DMX or Ethernet). |
| Green Constant | P3 protocol detected. |
| Cyan Constant | DMX detected. |
| Magenta Constant | Art-Net or sACN detected. |
| Fast RGB Cycling | Test Pattern being sent to connected products. |

Pushbutton functions

The pushbutton can be used to activate internal test patterns on all products in the daisy chain, perform a product reboot or perform a factory reset of the Active Junction Box (just like other Martin Creative LED products).

If the pushbutton is given a short press, the first internal test pattern is activated on the connected products. If the pushbutton is then given another short press, the next internal test pattern is activated. This way the user can "step" through the different internal test patterns on all connected products.

Press once: all products to White test pattern

Press once: all products to Red test pattern

Press again: all products to Green test pattern

Press again: all products to Blue test pattern

Press again: all products to Mixed White test pattern

Press again: Test patterns stopped, all products return to normal operation

If the button is pressed, and kept held in for 5 seconds, the Status LED will turn blue. If the user then releases the button, the Active Junction Box will perform a normal reboot.

If the button is pressed, and kept held in for 8 seconds, the Status LED will turn white. If the user then releases the button, the Active Junction Box will perform a factory reset (return to factory default/backup firmware image).

Maintenance



Read Safety information on page 6 before maintaining the product. Always comply with the safety instructions.

Refer any service operation not described in this user manual to a qualified service technician.

Excessive dust, smoke fluid, and particle buildup degrades performance, causes overheating and will damage the product. Damage caused by inadequate cleaning or maintenance is not covered by the product warranty.

Disconnect mains power before cleaning or servicing the product.

Products must be serviced in an area where there is no risk of anyone being injured by failing parts, tools or other materials.

Cleaning

Cleaning schedules vary depending on the operating environment. It is therefore impossible to specify precise cleaning intervals for the product. Environmental factors that may result in a need for frequent cleaning include airborne dust and pollution.

Inspect products frequently to see whether cleaning is necessary. If in doubt, consult your Martin® dealer about a suitable maintenance schedule.

To clean the product, use warm water and a soft brush or a low-pressure or medium-pressure water jet. Use car shampoo to help remove dirt and grease. If possible, dry with a soft cloth to avoid streaking. Do not use a stiff brush or scouring pad. Do not use solvents or abrasives.

Installing new software

The Passive Junction Box, Break-In Cable and Break-Out Cable do not contain any software, but the Active Junction Box contains software and you may need to upload new software (i.e. device firmware) if it appears to have a software-related fault or if you want to update to a newer software version.

Software for Martin® products is available via the Martin Companion application, which can be downloaded free of charge from the Martin® website.

The software can be installed from the P3 System Controller over the P3 data link. See the P3 System Controller user manual for software installation instructions.

Alternatively software may be installed over the DMX data link using the Martin Companion cable and Martin Companion application.

Troubleshooting

This section describes a few common problems that may occur during operation and provides some suggestions for easy troubleshooting:

| Symptom | Potential cause | Remedies |
|---|---|---|
| No status light on product. | Power supply issue, such as blown fuse, faulty connector or damaged cable. | Ensure that the mains supply is connected to the junction box and supplying power to the product. Check all power connections and cables. |
| Connected fixtures do not respond to control. | Fault in the control network due to wiring problem, connector or cable damaged, or incorrect DMX addressing, or potential interference from proximity to a high voltage installation. | Check if the product status LED is flashing red to show that control data is not being received, and if so, check all DMX cables and connections to ensure the integrity of the physical network. Ensure that the DMX network is terminated. Check that the components in the DMX network all use standard DMX polarity. Ensure that the fixtures are set to the correct DMX address, one that matches that set on the DMX control device. Check the pins on the connectors from the previous product in the DMX network. Attempt to control the product with another DMX control device. Move the product if it is being operated very close to an unshielded high-voltage installation. |

Specifications

Active Junction Box Power-DMX-Ethernet to PDE

Physical

| | |
|--------------|---|
| Length | 215 mm (8.5 in.) (incl. mounting flanges) |
| Width | 115 mm (4.5 in.) |
| Height..... | 51mm (2.0 in.) |
| Weight..... | 1 kg (2.2 lb.) |

Control and Programming

| | |
|-----------------------------------|---|
| Control Protocols | DMX, RDM, Art-Net, RDM over Art-Net, sACN and P3 |
| Protocol Detection..... | Automatic |
| Configuration..... | RDM, RDM over Art-Net or P3 |
| Fixture identification..... | User-settable ID number |
| DMX Compliance | USITT DMX512-A |
| RDM Compliance | ANSI/ESTA E1.20 |
| Art-Net Compliance..... | Art-Net 1, 2, 3 and 4; including RDM over Art-Net |
| sACN Compliance..... | ANSI E1.31 - 2016 |
| Martin P3 Compliance | P3 System Controller Software 5.1.0 or newer |
| DMX/RDM Transceiver IN/THRU | Opto-Isolated RS-485 |
| DMX/RDM Transceiver OUT | Opto-Isolated RS-485 |
| Ethernet Transceiver IN..... | 100/1000Mbit (with fail-safe bypass to Ethernet THRU) |
| Ethernet Transceiver THRU | 100/1000Mbit (with fail-safe bypass to Ethernet IN) |
| Ethernet Transceiver OUT | 10/100Mbit |
| Firmware Update | via DMX using Martin Companion |
| | or via Ethernet using P3 System Controller |

Control/User Interface

| | |
|--------------------|--|
| Device Status..... | Multi-color status LED |
| Fixture Test..... | Pushbutton to call up test pattern on fixtures connected to PDE output |

Construction

| | |
|-------------------------|-----------|
| Color | Black |
| Housing Material | Aluminium |
| Protection Rating | IP 65 |
| RoHS | Compliant |
| REACH | Compliant |

Installation

| | |
|-------------------|---|
| Orientation | Any |
| Wallmount..... | Using mounting flanges |
| Trussmount..... | Using half-coupler clamp in M10 threaded hole, max. bolt length 22 mm |
| Location | indoor or temporary outdoor use |

Connections

| | |
|---|--------------------------------------|
| AC Power input..... | Neutrik powerCON TRUE1 TOP (IP 65) |
| AC Power thru..... | Neutrik powerCON TRUE1 TOP (IP 65) |
| DMX input | Neutrik XLR 5-pin Male TOP (IP 65) |
| DMX thru..... | Neutrik XLR 5-pin Female TOP (IP 65) |
| Ethernet input..... | Neutrik etherCON TOP (IP 65) |
| Ethernet thru | Neutrik etherCON TOP (IP 65) |
| AC Power, DMX and Network out | PDE hybrid connector (IP65) |
| All connections hot plugging compatible | |

Electrical

| | |
|---------------------------------|-------------------------------------|
| AC power | 100-240 V AC nominal, 50/60Hz |
| Power Supply Unit | Auto-ranging electronic switch mode |
| Maximum power consumption | 6 W |

Typical half-cycle RMS inrush current at 230 V, 50 Hz 1.5 A
 Typical earth-leakage current 0.25 mA

Typical Power and current

100 V, 60 Hz 5.1 W, 0.089 A, PF 0.58
 120 V, 60 Hz 5.1 W, 0.078 A, PF 0.56
 208 V, 60 Hz 5.5 W, 0.048 A, PF 0.55
 230 V, 50 Hz 5.7 W, 0.046 A, PF 0.55
 240 V, 50 Hz 5.9 W, 0.046 A, PF 0.55

Measurements made at nominal voltage. Allow for a deviation of +/- 10%.

PF = power factor.

Thermal

Cooling Convection
 Maximum Ambient Temperature (Ta max) 40 C
 Minimum Ambient Temperature (Ta min) 0 C
 Typical Heat Dissipation (calculated, +/- 10%) 20 BTU/hr

Approvals

Global CB Certification/IECEE IEC 61347-2-11
 EU Safety EN 61347-2-11, EN 62493
 EU EMC EN 55015, EN 55032, EN 55103-2, EN 61000-3-2, EN 61000-3-3, EN 61547
 US Safety UL1573
 US EMC 47 CRF §15 Class B
 Canadian Safety CSA 22.2 No. 166
 Canadian EMC ICES-003 Class B, ICES-005 Class B
 Australia/NZ RCM
 United Kingdom UKCA

Passive Junction Box Power-DMX-Ethernet to PDE

Physical

Length 107 mm (4.2 in.) (incl. mounting flanges)
 Width 94mm (3.7 in.)
 Height 51mm (2.0 in.)
 Weight 0.5 kg (1.1 lb.)

Construction

Color Black
 Housing Material Aluminium
 Protection Rating IP 65
 RoHS Compliant
 REACH Compliant

Installation

Orientation Any
 Wallmount Using mounting flanges
 Trussmount Using half-coupler clamp in M10 threaded hole, max. bolt length 22 mm
 Location indoor or temporary outdoor use

Connections

AC Power input Neutrik powerCON TRUE1 TOP (IP 65)
 DMX input Neutrik XLR 5-pin Male TOP (IP 65)
 Ethernet input Neutrik etherCON TOP (IP 65)
 AC Power, DMX and Network out PDE hybrid connector (IP 65)
 All connections hot plugging compatible

Electrical

AC power 100-240 V AC nominal, 50/60Hz

Thermal

Maximum Ambient Temperature (Ta max) 75 C
 Minimum Ambient Temperature (Ta min) -15 C

Approvals

EU safety EN 60598-2-17
 US safety UL 1573
 Canadian safety CSA 22.2 No. 166
 Australia/NZ RCM
 United Kingdom UKCA

Break-In Cable Power-DMX-Ethernet to PDE**Physical**

Length 500 mm (19.7 in.)
 Weight 325 g (11.5 oz.)

Construction

Housing PVC
 Cable Jacket PVC
 Color Black
 Protection Rating IP 65
 RoHS Compliant
 REACH Compliant

Connections

AC Power input Neutrik powerCON TRUE1 TOP (IP 65)
 DMX input Neutrik XLR 5-pin Male TOP (IP 65)
 Ethernet input Neutrik etherCON TOP (IP 65)
 AC Power, DMX and Network out PDE hybrid connector (IP 65)
 All connections hot plugging compatible

Electrical

AC power 100-240 V AC nominal, 50/60Hz

Thermal

Maximum Ambient Temperature (Ta max) 75 C
 Minimum Ambient Temperature (Ta min) -15 C

Break-Out Cable PDE to Power-DMX-Ethernet**Physical**

Length 500 mm (19.7 in.)
 Weight 325 g (11.5 oz.)

Construction

Housing PVC
 Cable Jacket PVC
 Color Black
 Protection Rating IP 65
 RoHS Compliant
 REACH Compliant

Connections

AC Power, DMX and Network input PDE hybrid connector (IP 65)
 AC Power thru Neutrik powerCON TRUE1 TOP (IP 65)

DMX thru Neutrik XLR 5-pin Male TOP (IP 65)
Ethernet thru Neutrik etherCON TOP (IP 65)
All connections hot plugging compatible

Electrical

AC power 100-240 V AC nominal, 50/60Hz

Thermal

Maximum Ambient Temperature (Ta max) 75 C
Minimum Ambient Temperature (Ta min) -15 C

Accessories

Mechanical

Super Lightweight Half Coupler Rigging Clamp, black P/N 91602018

Pre-Assembled Hybrid PDE Cables

Power+Data Cable Rental PDE-PDE 1m P/N 91616001
Power+Data Cable Rental PDE-PDE 2,5m P/N 91616002
Power+Data Cable Rental PDE-PDE 5m P/N 91616003
Power+Data Cable Rental PDE-PDE 10m P/N 91616004
Power+Data Cable Rental PDE-PDE 25m P/N 91616005

Bulk Hybrid PDE Cable and Connectors

Power+Data Connector PDE Male P/N 91611701
Power+Data Connector PDE Female P/N 91611702
Power+Data Cable Power-DMX-Ethernet Rental 100m P/N 91616006

Power cables

Power Input Cable, H07RN-F, 2.5 mm², bare ends to TRUE1, 1.5 m (4.9 ft.) . P/N 91611797
Power Input Cable, H07RN-F, 2.5 mm², bare ends to TRUE1, 5 m (16.4 ft.) .. P/N 91611786
Power Input Cable, SJOOW, 12 AWG, bare ends to TRUE1, 1.5 m (4.9 ft.) P/N 91610173
Power Input Cable, SJOOW, 12 AWG, bare ends to TRUE1, 5 m (16.4 ft.) P/N 91610174
Power Relay Cable, H07RN-F, 2.5 mm², TRUE1 to TRUE1, 0.45 m (1.5 ft.) ... P/N 91611784
Power Relay Cable, H07RN-F, 2.5 mm², TRUE1 to TRUE1, 1.2 m (3.9 ft.) P/N 91611785
Power Relay Cable, H07RN-F, 2.5 mm², TRUE1 to TRUE1, 2.5 m (8.2 ft.) P/N 91611796
Power Relay Cable, SJOOW, 12 AWG, TRUE1 to TRUE1, 0.45 m (1.5 ft.) P/N 91610170
Power Relay Cable, SJOOW, 12 AWG, TRUE1 to TRUE1, 1.2 m (3.9 ft.) P/N 91610171
Power Relay Cable, SJOOW, 12 AWG, TRUE1 to TRUE1, 2.5 m (8.2 ft.) P/N 91610172
Cable Connector, Neutrik powerCON TRUE1 Female P/N 91611789HU
Cable Connector, Neutrik powerCON TRUE1 Male P/N 91611788HU

Related items

VDO Atomic Dot CLD in cardboard P/N 90357701
VDO Atomic Dot WRM in cardboard P/N 90357702
VDO Atomic Bold in cardboard P/N MAR-90357703
Martin Companion Cable (for firmware update over DMX) P/N 91616091

Ordering information

Active Junction Box Power-DMX-Ethernet to PDE P/N MAR-91700002
Passive Junction Box Power-DMX-Ethernet to PDE P/N 91610001
Break-In Cable Power-DMX-Ethernet to PDE P/N MAR-91700000
Break-Out Cable PDE to Power-DMX-Ethernet P/N MAR-91700001



Disposing of this product

Martin™ products are supplied in compliance with Directive 2012/19/EC of the European Parliament and of the Council of the European Union on WEEE (Waste Electrical and Electronic Equipment), where applicable. Help preserve the environment! Ensure that this product is recycled at the end of its life. Your supplier can give details of local arrangements for the disposal of Martin products

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Supplier's Declaration of Conformity

Harman Professional, Inc. have issued an FCC Supplier's Declaration of Conformity for this product. The Declaration of Conformity is available for download from the Active Junction Box area of the Martin website at www.martin.com

Canadian Interference-Causing Equipment Regulations - *Règlement sur le Matériel Brouilleur du Canada*

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations CAN ICES-3 (B)/NMB-3(B) and CAN ICES-005 (B) / NMB-005 (B).

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le Matériel Brouilleur du Canada.

EU EMC

Not for use in a computer room as defined in the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.

Ne peut être utilisé dans une salle d'ordinateurs telle que définie dans la norme ANSI/NFPA 75 Standard for the Protection of Information Technology Equipment.



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