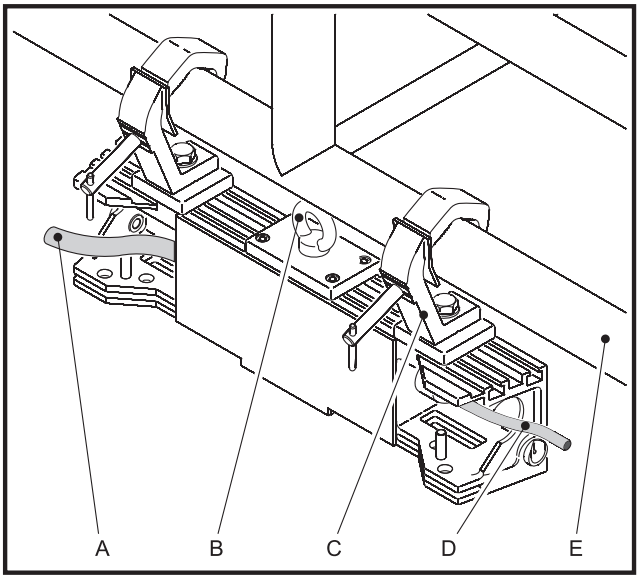
EC Series Headers Installation Guide

WARNING! Before installing an EC Series Header, Read "Safety Information" on page 3 of the EC Series Safety and Installation Guide supplied with EC Series flightcases and available for download free of charge from the EC-20 Support page on www.martin.com.

WARNING! The safety and suitability of lifting equipment, installation location, anchoring method, mounting hardware, suspension structures and electrical installation is the responsibility of the installer. All local safety regulations and legal requirements must be observed when installing and connecting the EC Series Headers.

WARNING! 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.

EC Series video panels must be suspended in columns from EC Series Headers. Each Header has inputs for power and P3 video data, and relays power and data to the panels suspended below it via integral connectors.



A - Header power input cable
Used to supply power to the Header and attached EC-20 panels. Hard-wired via an IP67-rated cable gland.
WARNING! A maximum of sixteen EC-20 panels in total may be connected to power in one chain that draws power through one Header.

B - Eyebolt (supplied)
Can be used to support a Header if two or more Headers are connected horizontally using Header Connection Brackets. This eyebolt has a nominal weight capacity of 800 kg.

C - Rigging clamps (not supplied)
Can be used to attach a Header to a truss **E** or similar supporting structure.

D - Header P3 data input cable
Used for bi-directional P3 system communication. Accepts an Amphenol IP67-rated Ethernet cable connector (or a standard Ethernet connector for indoor use only).

E - Truss (not supplied)

Figure 1: EC-20 Header

P/N 35000610, Rev. C

Unpacking

The **EC Series Single Header** in a cardboard box (P/N 90354240) contains:

- 1 x EC Series Header (P/N 90354220) with hard-wired power cable and eyebolt (installed)
- 1 x 5.0 m (16.4 ft.) Ethernet patch cable with IP67-rated RJ-45 connectors on both ends
- 1 x EC Series Header Installation & Safety Guide

The **EC Series Double Header in Flightcase** (P/N 90354250) contains:

- 2 x EC Series Headers (P/N 90354220), each with hard-wired power cable and eyebolt (installed)
- 1 x EC Series Header Connection Bracket two panels wide (installed)
- 2 x EC Series Bracket Joining Plate
- 20 x bolt M12x20
- 2 x 5.0 m (16.4 ft.) Ethernet patch cables with IP67-rated RJ-45 connectors on both ends
- Double Header Flightcase
- 1 x EC Series Header Installation & Safety Guide

This configuration is supplied in the Martin Double Header Flightcase as one assembled unit.

The **EC Series Triple Header in Flightcase** (P/N 90354260) contains:

- 3 x EC Series Headers (P/N 90354220), each with hard-wired power cable and eyebolt (installed)
- 1 x EC Series Header Connection Bracket three panels wide (installed)
- 2 x EC Series Bracket Joining Plate
- 22 x bolt M12x20
- 3 x 5.0 m (16.4 ft.) Ethernet patch cables with IP67-rated RJ-45 connectors on both ends
- Triple Header Flightcase
- 1 x EC Series Header Installation & Safety Guide

This configuration is supplied in the Martin Triple Header Flightcase as one assembled unit.

Suspension options

Various suspension methods can be used for the EC Series. If suspension points are provided as directed in this guide and the EC-20 Safety and Installation Guide, columns of panels maximum 16 panels high can be installed side-by-side to form any width display surface.

The suspension options are:

1. Single columns of panels, each column suspended from a Martin Single Header fastened to a truss with two rigging clamps per header.
2. Single columns of panels, each column suspended from a Martin Single Header fastened to steel cables, chains or hoists using two eyebolts per header.
3. Groups of 2 or 3 columns of panels suspended from a Martin Double or Triple Header respectively using minimum two eyebolts per Header from steel cables, chains or hoists (i.e. minimum two eyebolts and two suspension points per 2 or 3 columns of panels).
4. Groups of any number of columns of panels fastened into two or more Martin Double or Triple Headers that are fastened to each other horizontally using the Bracket Joining Plates supplied with the Double or Triple Headers. In this configuration, columns of panels can be suspended using a minimum of one eyebolt per Double or Triple Header from steel cables, chains or hoists (i.e. minimum one eyebolt and one suspension point per 2 or 3 columns of panels).

Creating an installation

WARNING!Read “Safety Information” on page 3 of the EC-20 Safety and Installation Guide carefully before installing an EC Series system.

WARNING! A vertical column of EC-20 panels suspended from one EC Series Header must be maximum sixteen panels high.

Before suspending panels

Before suspending a wall of EC-20 panels by any of the methods listed above:

1. Check that the cables, chains, hoist, rigging points or other supporting structure can bear at least 10 times the total weight (panels, clamps, cables, auxiliary equipment, etc.) that they will have to support.

2. Check that supporting structures will not flex under the weight of the panels. Hanging panels from a structure that is not straight will place a strain on panels and attachment hardware. Damage caused to Headers or panels by mechanical stress is not covered by the product warranty.
3. Check that Headers are isolated from power and that power cannot be applied accidentally.
4. Block access under the work area.
5. Remove the supplied rubber connector caps (see Figure 2) and store them safely for re-use.
6. Note that each Header is supplied with one large eyebolt (**B** in Figure 1) installed in the center of the top of the Header. Headers also have provision for fastening M12 rigging clamps or eyebolts (not supplied) near their outer ends.
7. Note that Headers have a male cone at one end and a female cone at the other end. Engaging male and female cones will ensure correct side-to-side alignment of the Headers.

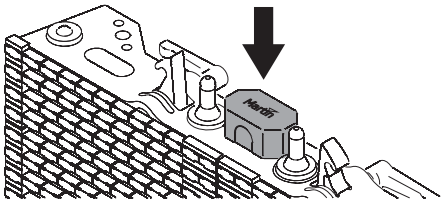


Figure 2: Connector cap

8. Similarly, note that EC-20 video panels have cones for correct side-to-side alignment.
9. Check that safety cables are approved by an official body such as TÜV as a safety attachment for the weight of all the equipment they secure.

Method 1: Suspending single columns of panels from a truss

If suspending single independent columns of panels one panel wide from a truss, see Figure 3:

1. See Figure 3. Obtain rigging clamps **C** that are approved for the total weight they will support. Fasten two clamps securely to each Header using M12 fasteners that are approved for the total weight they will support.
2. Use the rigging clamps to fasten the Header to the truss.
3. Loop an approved safety cable around the truss and through the central eyebolt **B**.
4. Add panels as described in the EC-20 Safety and Installation Guide.

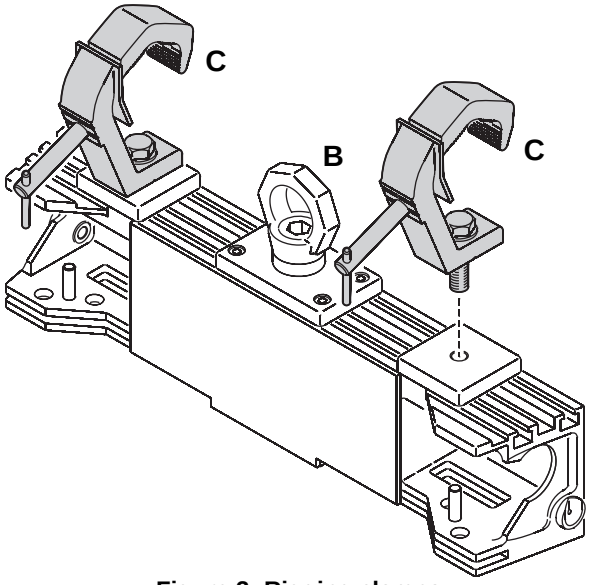


Figure 3: Rigging clamps

Method 2: Suspending single columns of panels from steel cables, chains or a hoist

If suspending single independent columns of panels one panel wide from steel cables, chains or a hoist:

1. See Figure 4. Obtain M12 threaded eyebolts **F** (not supplied) that are approved as a suspension point for the total weight they will have to support. Fasten two eyebolts securely into the threaded holes in each Header as illustrated and use these as suspension points for the Header.
2. Obtain a safety cable that is approved for the total weight it will secure. Loop it through the central eyebolt **B** of each Header and use it to attach the Header to a suitable support that can hold ten times the static weight that the safety cable secures.
3. Add panels as described in the EC-20 Safety and Installation Guide.

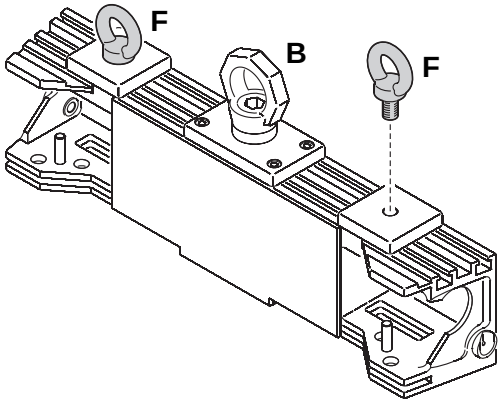


Figure 4: Additional eyebolts

Method 3: Suspending groups of columns 2 or 3 panels wide

WARNING!Use minimum two eyebolts and minimum two suspension points per Header when suspending one independent group 2 or 3 panels wide.

Martin Double and Triple Headers are supplied in flightcases with Header Connection Brackets installed (see Figure 5).

If using Martin EC Series Double or Triple Headers to suspend independent groups of columns 2 or 3 panels wide from steel cables, chains or a hoist:

1. Check that the Header Connection Bracket is firmly fastened to the Headers using the M12 bolts supplied. Do not use any other bolts than those supplied by Martin for this purpose.
2. Attach a steel cable, chain or hoist that is certified for the weight it will support to each of the two eyebolts in the tops of Double Headers or the two outer eyebolts in Triple Headers, and use these to suspend the group.
3. Add panels as described in the EC-20 Safety and Installation Guide.

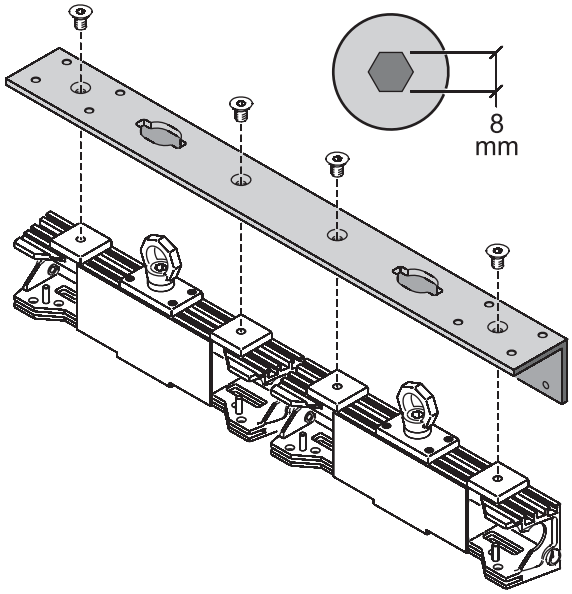


Figure 5: Header Connection Bracket (Double Header illustrated)

Method 4: Suspending groups of columns 4 or more panels wide

WARNING! Use minimum one eyebolt and minimum one suspension point per Header if two or more Double or Triple Headers are fastened together side-by-side in a group four or more panels wide.

If using Martin EC Series Double or Triple Headers fastened together with Joining Plates to suspend groups four or more panels wide from steel cables, chains or a hoist:

1. See Figure 6. Fasten Double or Triple Header to each other using two Joining Plates, one on the top and one on the front surfaces of the Headers, securing each plate with eight of the 8 mm Allen M12 bolts supplied with each Header (i.e. sixteen bolts in total). Do not use any other bolts than the ones supplied by Martin for this purpose.
2. Attach a steel cable, chain or hoist that is approved for the weight it will support to at least one panel eyebolt per Double or Triple Header, and use these to suspend the group of panels.
3. Add panels as described in the EC-20 Safety and Installation Guide.

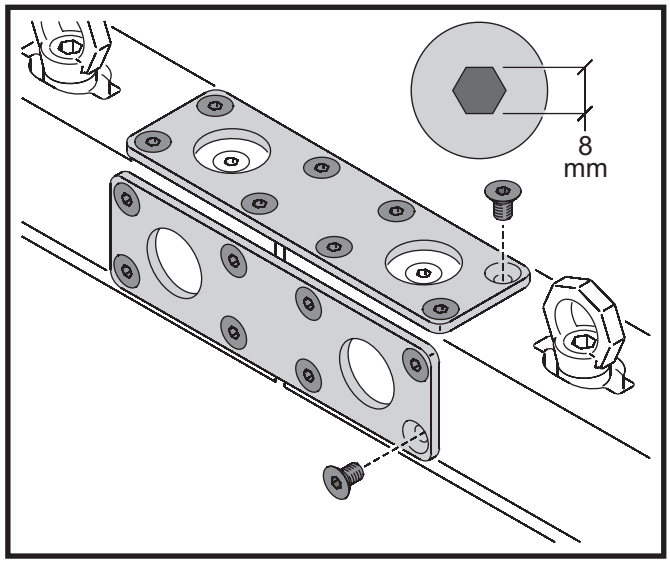
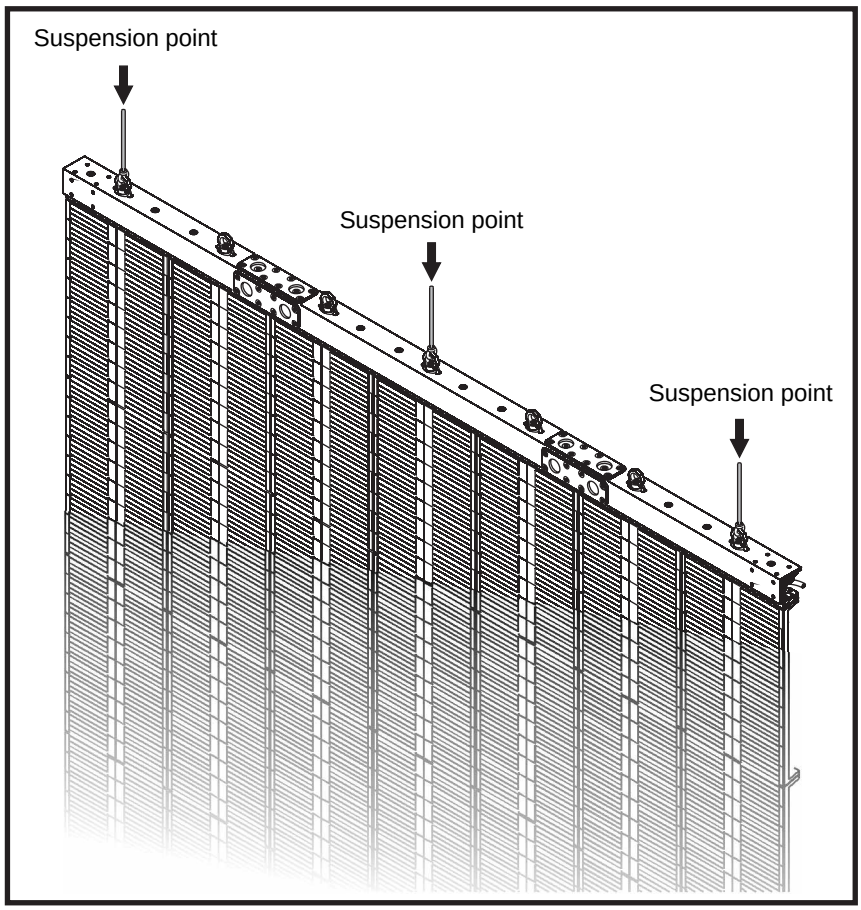


Figure 6: Joining Plates for Header Connection Brackets

The EC-20 Video Panel Installation and Safety Guide is supplied with EC-20 Flightcases and available for download from the EC-20 Product Support page at www.martin.com.

Example installation

The example below is a display screen seven EC-20 panels (7 x 24 = 168 pixels) wide.



Required items

•EC-20 Panels

•1 x EC Series Triple Header

•2 x EC Series Double Headers

Configuration

See Figure 7. The Triple Header is used in the center of the wall, and the two Double Headers are attached to each side of the Triple Header using the supplied Bracket Joining Plates.

The wall must be suspended using minimum one eyebolt per Single, Double or Triple Header.

Figure 7: Installation 7 panels wide

AC mains power

WARNING! Two-pole/neutral fusing.

WARNING! The supplied rubber caps must remain installed at all times on any unused power and data throughput connectors. Keep unused caps safely for re-installation as soon as a video wall is disassembled.

WARNING! Protect the power cables on the headers from water and rain.

Important! Connect the panels in the installation and the P3 System Controller to AC mains power at the same outlet point in the power distribution circuit, or you may experience ground/earth loop problems or create differences in potential that can damage devices. Damage caused by differences in potential if devices are incorrectly connected to power is not covered by the product warranty.

Voltage range

The EC-20 features an auto-sensing switch-mode power supply that accepts 200-240 V nominal AC mains power at 50 or 60 Hz. Connect the panel to AC mains power that is within this voltage range only.

The EC-20 can be supplied with AC mains power by connecting to one of the following three-wire systems:

- a single-phase 200-240 V system (live, neutral, ground/earth), or
- two phases of a 3-phase delta or split-phase mid-point neutral system (phase, phase, ground/earth) to obtain 200-240 V

Power figures are given in the EC-20 Safety and Installation Guide. Allow a sensible safety margin when calculating the current headroom required on AC mains power distribution circuits for an EC-20 installation.

Power input

The Header is supplied with a 1 m (3 ft. 3 in.) hard-wired power input cable (see **A** in Figure 1 on page 1). Protect this cable from water. If necessary, lengthen with an appropriate cable according to local building and electrical codes.

Power plugs and power outlet sockets

A power plug can be installed on the Header's power input cable to make it easier to connect panels to AC mains power outlets. Install an industrial grounding-type (earthed) 3-prong type B plug (see Figure 8) that complies with IEC 60309 or a comparable national standard and is rated 240 V, 32 A minimum. For outdoor or humid location use, the plug must also be IP67-rated. For indoor use, the plug may be IP44-rated.

Use corresponding power outlet sockets. Follow the plug and socket manufacturer's instructions and all locally applicable laws and electrical safety codes.

Figure 8: Industrial 32 A, 240 V IEC 60309 type B power plugs

When installing a power plug on the Header's power input cable for connection to a single-phase system at 200 - 240 VAC, 50/60 Hz:

- Connect the green/yellow ground (earth) conductor to the terminal marked ⏚ or ⏚ for connection to ground (earth)
- Connect the blue conductor to the terminal marked **N** for connection to neutral
- Connect the brown conductor to the terminal marked **L** for connection to live

When installing a plug on the Header's power input cable for connection to two phases of a 3-phase delta or split-phase mid-point neutral system to obtain 200-240 VAC, 50/60 Hz:

- Connect the green/yellow ground (earth) conductor to the terminal marked ⏚ or ⏚ for connection to ground (earth).
- Connect the blue conductor to the terminal marked **N** or **Phase 1** or **L1** for connection to one of the three phases in the system
- Connect the brown conductor to the terminal marked **L** or **Phase 2** or **L2** for connection to another of the three phases in the system

Table 1 gives details of standard wiring color codes and common pin identification symbols. If you have any doubts about proper installation, consult a qualified electrician.

Wire color (EU)	Wire color (US)	Pin (single-phase system)	Pin (3-phase system)	Symbol
blue	white	neutral	phase 1	**N**
brown	black	live	phase 2	**L**
yellow/green	green	ground (earth)	ground (earth)	⏚ or ⏚

Table 1: Wire colors and pin identification

Panel interconnection

Power input and throughput connectors on EC-20 panels are integral and engage automatically when panels are installed in columns.

Power is supplied to columns of panels via the Header power input cable (see **A** in Figure 1 on page 1). Power is relayed from the Header to the first EC-20 panel and then from one panel to the next via power throughput connectors (see **A**, **B** and **C** in Figure 9) and input connectors (see **E**, **G** and **H** in Figure 9).

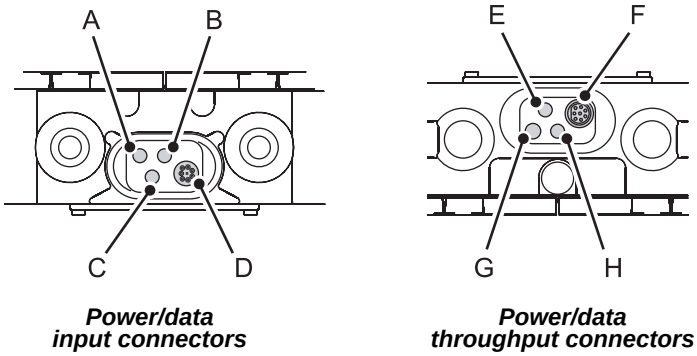


Figure 9: Power and data connectors

Do not power panels on or off by inserting or removing live power connectors or plugs, as this will cause arcing at the connector contacts that may damage devices and connectors.

P3 communication link

The Header has an integral data input tail and throughput connector, and EC-20 panels have integral P3 data input and throughput connectors (see **D** and **F** in Figure 9). P3 data is therefore connected automatically when panels are fastened together in a vertical column.

The Ethernet socket on the Header is mounted in an Amphenol IP67-rated reverse bayonet-mount housing. RJ-45 plugs installed in Amphenol RJF RB 6 housings (as supplied with the Headers) or in an indoor environment non-IP-rated standard RJ-45 Ethernet connectors and patch cables may be used as connectors on the link.

All unused connectors must be sealed with their supplied rubber caps at all times.

Suitable IP67-rated and non IP-rated patch cables in various lengths and suitable connector housings are available from Martin.

Connecting the P3 link

WARNING! For outdoor or humid environment use, use Amphenol RJF RB 6 housings (as supplied with the Headers) on all the RJ-45 plugs used for P3 signal input.

Important! Power all panels and devices off while making connections.

To connect the P3 link:

1. Connect an Ethernet patch cable from the P3-100 System Controller's P3 signal output socket to an input socket on a 1GB Ethernet Switch.
2. Plug an Ethernet output from the Ethernet Switch to the RJ-45 connector on the first Header. In outdoor or humid environments, an IP67-rated Amphenol RJF RB 6 housing must be installed on the RJ-45 plug.
3. Continue connecting Headers to the P3 link by running Ethernet patch cables from the Ethernet Switch outputs to the Headers, respecting the layout and guidelines given earlier in this section.
4. See Figure 2 on page 3. Any panel connectors that are not being used must be sealed with the supplied rubber caps (arrowed) at all times.
5. The system is now ready for power to be applied.
6. Set up the panels to display video as described in the P3-100 user manual.

Dismantling an installation

When tearing down an installation, remove single panels one by one starting at the bottom of the column and working upwards.

Reinstall all rubber connector caps.

Put headers back into their flightcases for storage or transport.