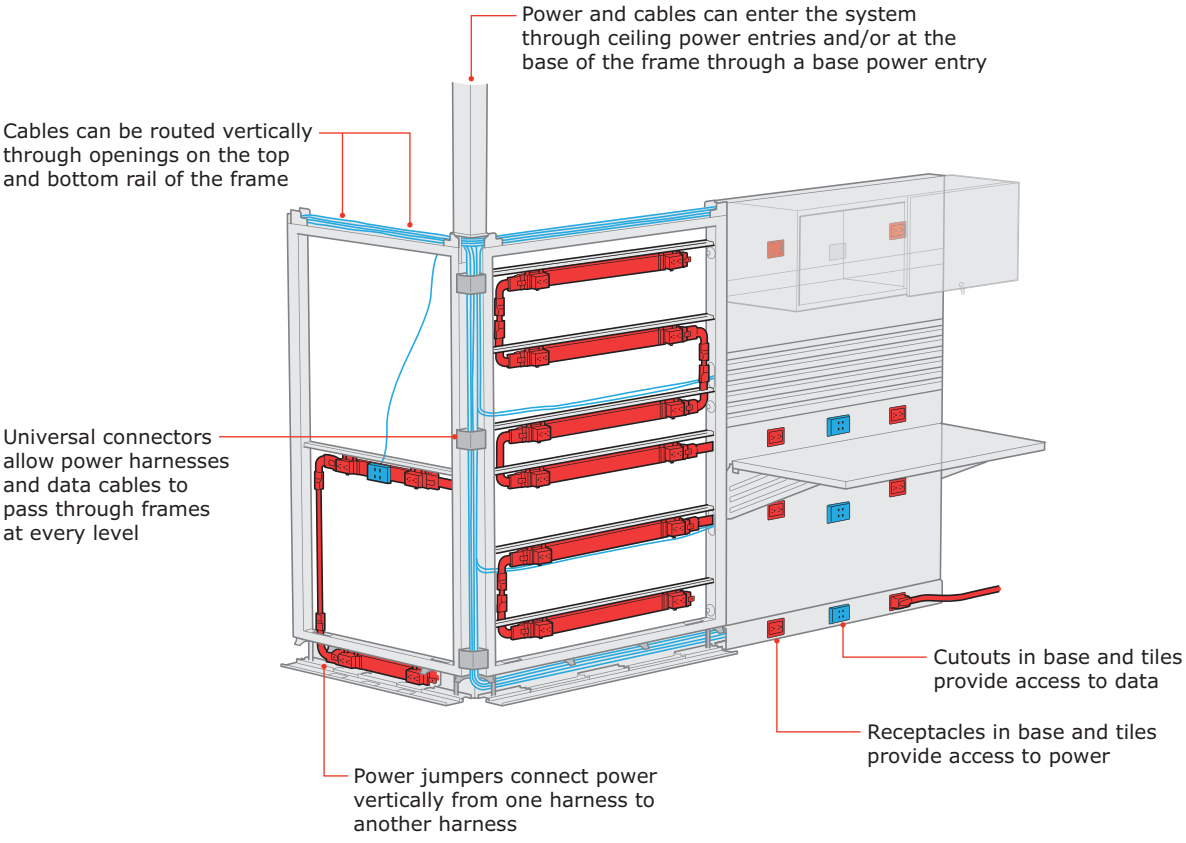
- The power system is an 8-wire, 4-circuit shared neutral modular system. Each circuit is rated 20 amps. Power can be distributed continuously through the base and at multiple locations within the frame.
- Frames are non-powered.
- Modular power harnesses are specified separately.
- Power harnesses are non-handed and available in 24"W, 30"W, 36"W, 42"W, or 48"W to match the width of the frame. Harnesses can be placed at the base or approximately every 11" vertically on the frame.
- Receptacles and data access can be located at the base, and at multiple locations above and below the work surface via power/data tiles.
- Underwriters' Laboratories (UL) listed and Canadian UL listed. Conformant with National Electric Code (NEC) and major local codes.
- For city of New York, specify power components and power entry for New York City (FT141.) separately. Power components to be installed by licensed electrician.
- For city of Chicago, specify frames with "R" base option and/or power/data tiles with "B" or "E" receptacle location for power/data knockouts that meet Chicago electrical code requirements. Power components to be supplied by a local Chicago contractor and installed by a licensed electrician. Standard modular power components are not allowed by city of Chicago code.



Remember to always check local codes for usage and approval.
Local and national electrical codes have precedence.

Attachment 4 _Canvas Office Landscape Planning Guide - Electrical

A basic understanding of electrical terms is critical to the planning process. The following terms are used throughout this planning information; for additional planning information, consult the NEC.

AMPS/Amperage – a unit of electrical current, in essence, a measure of how much electricity is flowing through the wire.

Continuous AMP Rating – although each circuit is rated at 20 amps for general use, for continuous use such as computers or lighting, the National Electric Code restricts the amperage to 16 amps for continuous use.

Voltage – measurement of electrical pressure required to move electrical current through a circuit. Most office equipment requires 120 volts. However, many large pieces of equipment, like copiers, require 240 volts.

Hardwired – a permanent electrical connection by physically joining individual wires together.
NOTE: Only a licensed electrician should install a hardwire power feed.

Circuit – a complete path or loop of electrical conductors that takes power from its source to an electrical device or a piece of equipment, then returns what is left to its original source. A simple circuit typically uses these three wires:
- Hot wire (delivers electrical current to the device)
- Neutral wire (returns electrical current to the power source)
- Ground wire (diverts short-circuit electricity to the earth)

Ground wire – a wire that protects users from shock or electrocution by diverting short-circuit electricity into the earth. For safety reasons, every circuit utilizes a ground wire that must be in contact with all exposed-metal parts that could be energized.

Branch circuit – a circuit that provides power from the circuit breaker panel to electrical outlets.

Isolated ground circuit – a circuit with an isolated ground wire that is totally separated from the general or system ground. The isolated ground can be used for sensitive computer equipment. To provide isolated circuits, the building's electrical must provide a second ground wire.

Dedicated circuit – a circuit that provides unshared power for computers or other sensitive electronic equipment; requires it's own hot, neutral, and ground wire.

Designated circuit – some planners prefer to designate circuits for particular types of equipment. For example, all task lights could be plugged into the b circuit and switched at the breaker box. This function is often automated on a timer so the b circuit could be programmed to shut off at 6:00 each night. Circuit designation does not require special wiring.

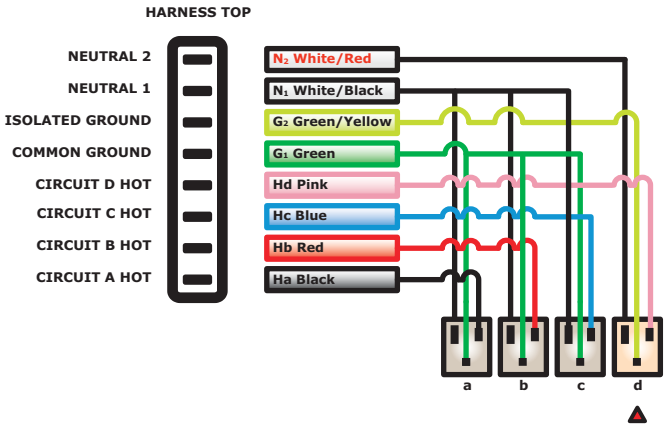
AWG – American Wire Gauge, the American standard for wire size specification.

Uninterrupted power system (UPS) – a system that provides an alternate power supply should the regular power supply be interrupted or disconnected. It should be electrically separate from the general purpose circuit.

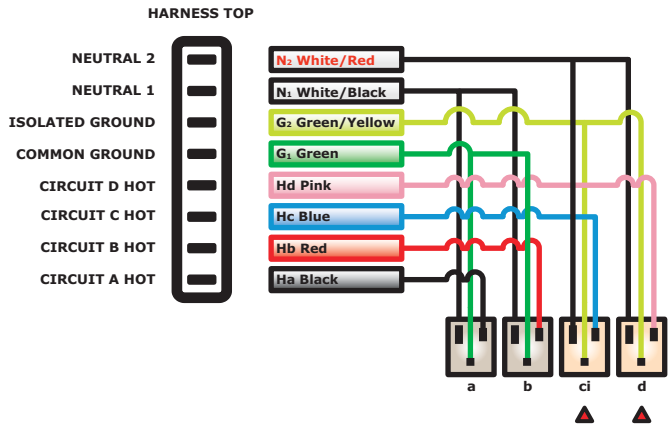
The Canvas 8–wire, 4-circuit system can be configured in several variations depending on need. The system includes 12-gauge phase conductors, 10-gauge neutral conductors, and 12-gauge ground conductors. The building's power supply is connected to a power harness in the frame through the use of an external or internal power entry or a ceiling power entry.

The following examples depict several basic circuit configurations. However, the system's 8 wires are always connected to the building in the same way. Determining a particular configuration is done through the selection of receptacles.

3 General Purpose + 1 Dedicated Circuit



2 General Purpose + 2 Isolated Circuits



3+1 Circuit Configuration

This configuration includes 4 hot wires that correspond to circuits a, b, c, and d. Circuits a, b, and c are general circuits that share a common neutral and ground. Circuit d is considered an isolated circuit because it has its own grounding source and wire that is not shared with other equipment. Circuit d is also considered dedicated because it has its own neutral wire.

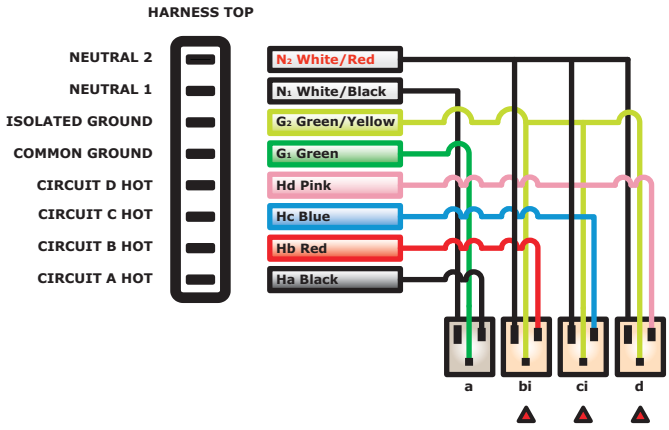
The purpose of having its own neutral and isolated ground is to prevent unwanted noise from other devices traveling through the system and potentially causing interruptions. Circuit d is typically reserved for computers. Because Circuit d has its own hot, neutral, and ground wires, it could have a separate source of power known as a UPS (Uninterrupted Power Source).

2+2 Circuit Configuration

This example includes 2 general circuits (a and b) and 2 isolated circuits (ci and d). The additional isolated circuit was created by replacing the c receptacle with a ci receptacle. Circuit d is no longer dedicated because ci shares the same ground and neutral.

The 2+2 is also suitable for UPS connection.

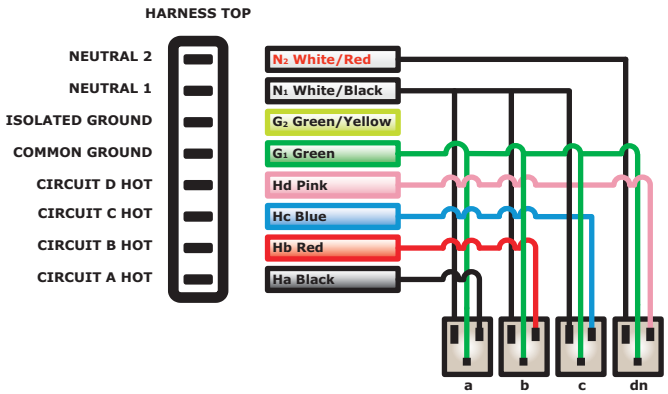
1 General Purpose + 3 Isolated Circuits



1+3 Circuit Configuration

One dedicated circuit (a) and 3 isolated circuits (bi, ci, and d). The additional isolated circuits were created by replacing the b receptacle with a bi receptacle and a c receptacle with a ci receptacle. Circuit d is no longer dedicated because bi and ci share the same neutral as the d circuit.

4 General Purpose Circuits

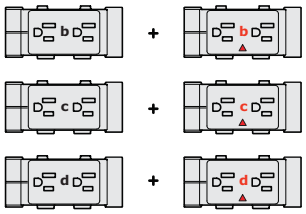


4 General Purpose Circuits

To create 4 general circuits, use receptacle a, b, c, and dn. Here circuit a, b, and c share neutral 1. Only the dn receptacle utilizes neutral 2 and is a dedicated circuit.

In order to keep the desired circuits electrically separate, isolated and non-isolated versions of the same circuit receptacles should not be mixed on the same power entry. In other words, do not use b and bi, c and ci, or d and dn receptacles on the same power entry.

Do not combine these receptacles on same power entry



The NEC and local codes affect electrical system planning. A few of the most critical ones follow; however, this listing is by no means exhaustive. All relevant codes (including local codes) should be reviewed thoroughly before planning the installation, and all work should be completed by a qualified contractor in accordance with those codes.

The building's electrical capacity and wiring configuration (single-phase, three phase, or special branch circuits) should also be checked in order to ensure the most effective application of these electrical systems.

"Derating" for Continuous Loading
For safety reasons, the NEC requires that a circuit be "derated" by 20 percent when used under a continuous load. In other words, the 20-amp rating for this circuit makes this, in effect, a 16-amp-rated circuit under continuous-load conditions.

Continuous load is defined as a load under which maximum current is expected to continue for three hours or more. Lighting and personal computers are usually considered continuous-load equipment. Printers, calculators, and other desktop equipment may or may not be; check the requirements of the individual workstation carefully before assigning an amp rating.

Maximum Number of Receptacles Allowed
According to the NEC, the maximum number of receptacles allowed per circuit is 13. However, when the circuit is derated by 20 percent for continuous loading, the number of receptacles per circuit is effectively reduced to 10. To ensure reserve capacity for future needs, the number should be further reduced.

Receptacle Ratings
Receptacles are rated for a 15- or 20-amp load and can supply a maximum single-device load of 12 or 16 amps. This 4-circuit, 8-wire system is designed to supply multiple receptacle loads per circuit as specified by the NEC.

Amperage Limitations on Single Devices
If any single device draws more than 80 percent of the available amperage of a circuit, it must be the only device connected to that circuit. For example, if a copy machine draws 16 amps, nothing else can be connected to the circuit.

Use of Dedicated Circuits
American National Standards Institute/Business and Institutional Furniture Manufacturers' Association (ANSI/BIFMA) guidelines define a dedicated circuit as one that consists of three conductors (hot, neutral, and ground) between the circuit breaker and the receptacle dedicated for use with that equipment. The neutral and hot conductors are not shared with other circuits and must also be fed from a dedicated building circuit.

Lighting Circuit Designation
Certain local codes may require that all lighting be designated to an assigned circuit.

Voltage Limitations
This 4-circuit, 8-wire system accommodates only 120-volt devices. This means that, for instance, a large office copier requiring 220 volts will have to be connected to an alternative electrical distribution system within the building.

Multiple Power Entries—WARNING
Powered harnesses that are electrically fed from different power entry points must never be electrically connected to each other. All power sources must be disconnected prior to servicing. No single circuit may be powered by more than one source. This office furnishings system may be connected to more than one source of supply. When more than one power entry is required to power a cluster of workstations, harnesses from the first infeed must never be electrically connected to harnesses from another infeed.

Use of Qualified Electrical Contractors
All electrical connections to the building power source must be made by a qualified electrician in accordance with all national and local codes.

Electrical System Compatibility
The electrical components of the Canvas electrical system is not compatible with any other system. However, some electrical components such as direct connect power entries can be used with other Herman Miller products such as Action Office Series 1 and 2, Prospects, Ethospace, My Studio, Resolve, Passage, and Abak.

Forward and Side Reach for Receptacles
In addition to local and national electrical codes, the Federal Register; Volume 56, No. 144; Friday, July 26, 1991, outlines rules and regulations for wheelchair-bound persons that apply to forward and side reach that can affect placement of receptacles. If the clear floor space allows only forward approach to an object, the maximum high forward reach allowed is 48". The minimum low forward reach is 15". If the high forward reach is over an obstruction, like a work surface, the maximum high forward reach is reduced to 44" over an obstruction that is a maximum of 25" wide. If the clear floor space allows parallel approach to an object, the maximum high side reach allowed is 54", and the low side reach is no less than 9" above the floor. If the side reach is over an obstruction, like a work surface, the maximum high side reach is reduced to 46" over an obstruction that is a maximum of 34" high and 24" wide.

Effective planning for the Canvas electrical distribution system requires four basic steps. Following these steps in the sequence outlined below will ensure that the system is designed to accommodate both present and future power needs.

Step One – Electrical Needs. This step involves listing all office equipment required in each workstation, along with appropriate amperages.

Finding the number of required circuits is determined by the equipment and amperage requirements of each individual workstation and then, of the total cluster. First, get the amperage information from all the electrical devices that will be used. Exact information on equipment amperage and voltage requirements can be found on the equipment itself (on the nameplate, usually with the UL listing) or on the equipment specifications sheets.

Step Two – Electrical Access. This step determines the type of circuits (designated, dedicated, and general) and quantity of receptacles needed to power each workstation and the total for all workstations. During this step, loads are balanced; based on special equipment needs, certain circuits are designated or dedicated.

Allocating Receptacles
The principal means of electrical access in the Canvas electrical distribution system is the receptacle. Remember that up to 16 amps or 10 receptacles are available per circuit.

Remember to allow for continuous loads and future growth.

Receptacle Locations
When installed in the base of a powered frame, receptacles permit access to power from either side of the frame through cutouts in the base cover. There is one receptacle location on each side of a 24”W base cover and two receptacle locations on each side of a 30"W – 48"W base cover. Additional receptacle locations can be added by using a power harness and power/data tile. In addition the duplex receptacles that are on a power/data tile can provide access to more than one circuit at various heights on the frame. Receptacles are duplex and are rated at 15 amps or 20 amps. When using Chicago “R” base option, a 24"W and 30"W have one receptacle location: and 36"W – 48"W have two receptacle locations.

Assessing the Building’s Circuit Capability
Before any circuit selection for an existing building is made, it is critical to know the building’s circuit capability. If the building currently can handle only two or three circuits from each power supply point, or if the building is not wired for extra neutral or isolated ground wires, then circuit selection will be limited accordingly. If, however, it is early enough in the planning process to have input concerning the building’s circuit capacity, specify the Canvas 8-wire system that will allow the user to take full advantage of the capabilities of this electrical system.

Determining the Need for Dedicated Circuits
Certain electronic devices – particularly computers – are sensitive to deviations in their power supply. Such power problems can be caused by operating other equipment on a circuit that “shares” neutral or ground wires with an electronic device. These problems can be cleared up by providing a dedicated circuit for use by sensitive equipment or providing isolated circuits that are shared only by other similar equipment.

To provide a dedicated circuit to a workstation – for example, to utilize the D circuit – both the systems furniture and the building itself must be wired for a dedicated circuit.

An uninterruptible power system (UPS) is a system that provides an alternate power supply should the regular power supply be interrupted or disconnected. If the building has a UPS system, its power should be brought to the workstation through the dedicated circuit. In fact, the dedicated circuit is most fully utilized and offers the most protection when it is hooked up to the UPS source.

The Canvas electrical system accommodates both dedicated and shared circuits.

Step Three – Electrical Distribution. This step involves calculating the total number of circuits required to meet each cluster's electrical requirements. Electrical power is transmitted from the building's point of supply through the furniture system via the electrical components.

Determining the Number of Circuits Needed

After listing all equipment and appropriate amperages, calculate the total number of amps required for each workstation cluster. To determine the number of circuits required, simply use the formula that follows. It is based on the maximum 20-amp rating for each circuit, but allows for future growth. To provide room for future electrical equipment, it is wise to plan initial circuit loads conservatively, well below the rated capacity. The example shown uses a 12-amp capacity per circuit, which was determined by derating the circuit to 16-amps (20 percent derating for continuous load requirement) and then allowing four amps for future growth. This allows for future growth on each of the general circuits; growth in the need for dedicated receptacles, however, will require additional dedicated circuits.

$$\frac{\text{TOTAL AMPS}}{16} = \text{Number of circuits needed}$$

To assure an allowance for growth, the total amps should be divided by 12 instead of 16.

$$\frac{\text{TOTAL AMPS}}{12} = \text{Number of circuits needed to allow for growth.}$$

Round up to the nearest whole number and you will have the number of circuits required to run the electronic equipment safely. If this number is greater than four (the maximum amount of circuits the systems can handle), you will need to decrease some of the power sources or start a new system with a new power feed.

Note: if you don't know the average amps required per worker, a general rule of thumb is plan for 3 users per circuit. Be aware, this number may vary significantly depending on equipment being used!

Always remember to consider any codes that require derating of circuit capacities. Local and National Electrical codes have precedence. Check with a licensed electrician to verify the number of circuits needed. (See "Key Regulations").

Step Four – Electrical Supply. This step determines the number of power entries required to supply power from the building's electrical source to the workstation cluster.

Power from the building's electrical supply points connects to the Canvas electrical system by means of power entry products. Power can be fed from a wall, floor, building column, or ceiling.

Planning for a Second Infeed
After determining the number of circuits needed, it may be necessary to plan for additional circuits. In many cases, only one power entry point is required, due to the small number of workstations in an isolated cluster. However, in another floor plan, the number of circuits required may be greater than four, in which case an additional power entry will be required.

Warning: Multiple Power Entries
All power sources must be disconnected prior to servicing. No single circuit may be powered by more than one source. When more than one power entry is required to power a cluster of workstations, circuits from the first infeed must never be electrically connected to circuits from a second infeed.

With the Canvas system and its capacity to use harnesses at both baseline and beltline, multiple power entries can be located within the system if additional circuits are needed.

Usually the most efficient way to access power is to run electricity through the central spine and pull power into workstations or branches of workstations where needed. The advantage in the use of spines is the ability to run/access power from both sides of the spine as needed. Not only is this usually most cost-effective, it can offer an additional advantage when planning for data and telecommunications cabling, which often shares the raceway with the electrical system. Because a spine often represents the shortest distance from entry point to workstation, it can be an important factor for certain types of cabling whose quality of transmission tends to deteriorate over long distances.

The capability of the Canvas system to provide power both at the baseline and at other heights in the frames also means it can provide more that four circuits. This allows the Canvas system to power additional workstations or to provide additional density of power from the same building source.

Keep these key points in mind when planning for a facility's electrical needs with the Canvas power system.

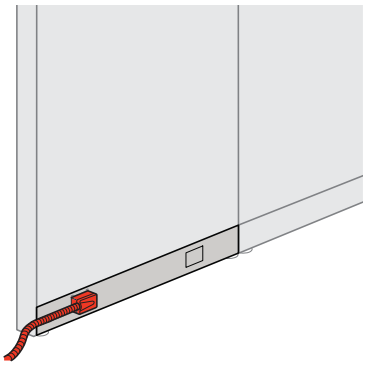
- Plan circuits based on the actual amperage draw, not on the maximum number of receptacles allowed.
- Accommodate future needs by being conservative in the initial circuit loading (10 to 12 amps per circuit on a 20-amp breaker, or fewer on a 15-amp breaker).
- Never exceed the maximum circuit capacities or local code limitations.
- Know your local codes! They always take precedence.
- Observe continuous-loading limitations (80 percent circuit capacity for devices with three-hour-plus continuous operation).
- Determine dedicated, isolated ground, and general circuit needs; plan accordingly for loads and infeeds.
- Try to balance loads between circuits.
- Never exceed the maximum number of receptacles allowed (10 duplexes/simplexes per circuit, or per appropriate local code restrictions – whichever is the lower number).
- If a single piece of equipment draws more than 80 percent of the available amperage, make sure it is the only device connected to that circuit.
- Always have electrical layout plans and installations reviewed by a licensed electrician or electrical inspector to ensure that they meet all code requirements.
- Never electrically connect a harness from one infeed to harness from another infeed.
- Remember to always check local codes for usage and approval. Local and national electrical codes have precedence. UL183 listed components are not approved for use in New York City and the city of Chicago.

Once electrical needs have been determined, energy must be brought from the building into the Canvas system for distribution through either the baseline or beltline. The planning considerations and the products to distribute energy horizontally and vertically through the system are covered in this section.

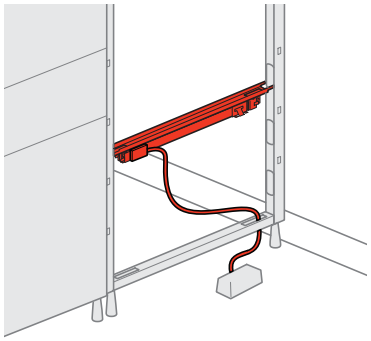
Power Entries

Power entries distribute electrical power from the building to the Canvas system. Power can enter the system via a base feed (directly or through a junction box) or a ceiling feed. The type of entry chosen depends on the site of interface between the building (floor, wall, column, or ceiling) and the Canvas products.

Direct connect power entries bring power from the floor, wall, or a column to a power harness in a frame.

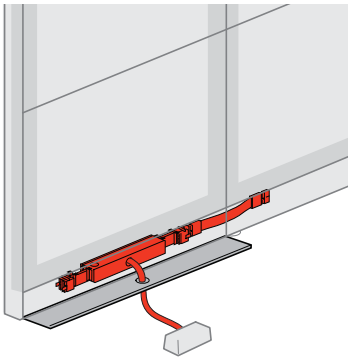


External direct connect



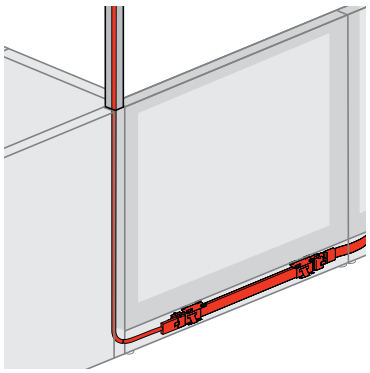
Internal direct connect

New York City power entries include a junction box to connect building power within a frame and distribute to adjacent power harnesses.



Power entry, New York City

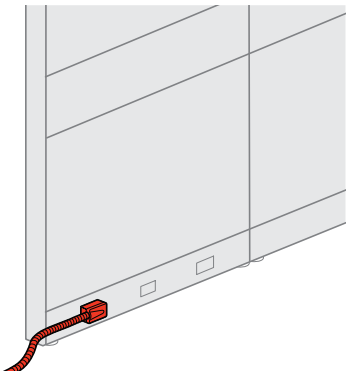
Ceiling power entries connect building power to a power harness in a frame at the end of a run, or through a connector.

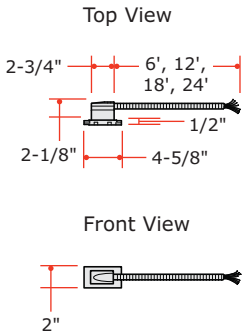


Ceiling power entry, end of run
OR
Connector attached

Power Entry, External Direct Connect (FT140.)

- Connects building's electrical supply from the floor, wall, or column to a powered frame. Plugs into a receptacle location of a frame base or any access tile and takes up one receptacle location.
- Pigtail is 1/2" trade flexible liquid tight conduit.
- Available in 6', 12', 18', and 24' lengths that can be field cut to appropriate lengths.
- Distributes up to (4) 20-amp circuits.
- UL and Canadian UL listed.
- A licensed electrician must connect the power entry to the building's power supply.
- For NYC, specify Base Power Entry (FT141.).
- Not approved for use in Chicago.





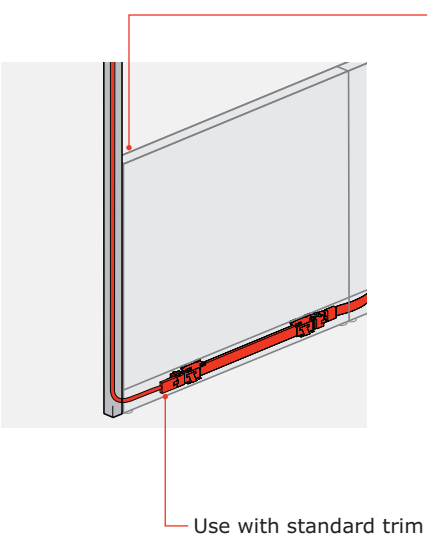
Use the retrofit base cover for power entry (FT162.) on base when the power entry has already been wired to the building.

Plugs into a receptacle location of a powered frame and takes up one receptacle location. Requires pigtail to be fed through knockout prior to connecting to building power source.

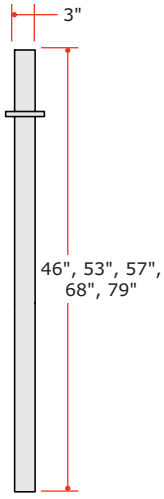
Power entry is manufactured in a right-hand direction but can be field converted to a left-hand direction.

Ceiling Power Entry, End of Run (FT142.)

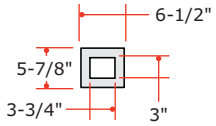
- This 10' high pole attaches to the end of a 46"H, 53"H, 57"H, 68"H, or 79"H frame or combined height of a frame and stacking frame with standard trim. It can be field cut to the appropriate length, and includes ceiling trim, connecting hardware, conduit, and factory installed electrical harness for powered option.
- Available powered or non-powered.
- Powered version connects building's electrical supply to an adjacent harness placed at the end of a frame run. It does not take up a receptacle location.
- When using open base with tapered foot or no base with architectural foot frame, specify base option (A). The power entry attaches to a lower power harness placed at the beltline tile location (A) only.
- When using base covers, specify base option (B). The power entry attaches to a lower power harness placed at the beltline tile location (A) or to a base harness (E) in the base.
- Licensed electrician must connect the power entry to the buildings power supply.
- Distributes up to (4) 20-amp circuits.
- UL and Canadian UL listed.
- To hardwire for Chicago code, specify non-powered ceiling entry for field wiring.
- For cable capacity, see Cable Charts in Kiosk.



Front View

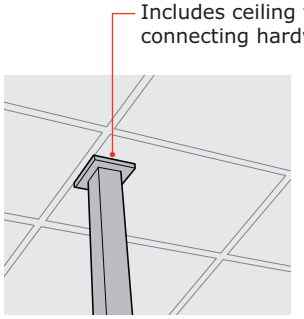


Top View



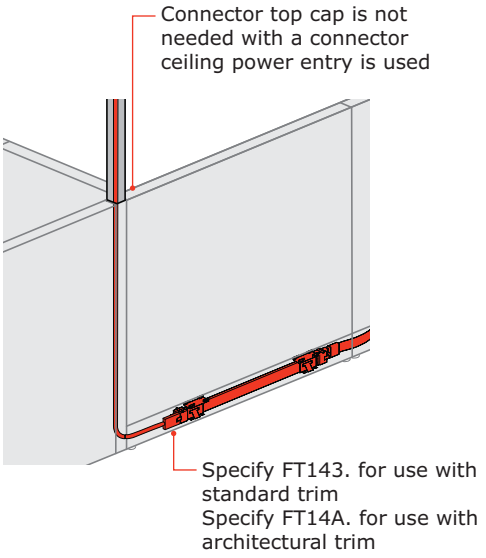
To connect power from pole to frame, a harness must be placed at matching location in connecting frame.

Power entry attaches to frames with a harness in the base, or to a lower power harness placed at the beltline tile location (A).

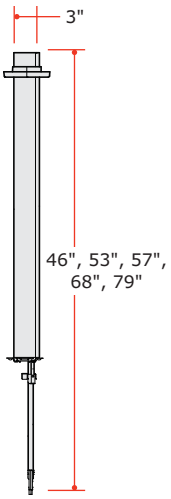


Ceiling Power Entry, Standard Trim, Connector (FT143.) and Ceiling Power Entry, Architectural Trim, Connector (FT14A.)

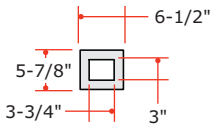
- This pole attaches to the top of a 90 degree universal connector and replaces the need for a top cap. It can be used with ceiling heights up to 10' and can be field cut to the appropriate length. It includes ceiling trim, connecting hardware, conduit and factory installed electrical harness for powered option. Use FT143. ceiling power entry on frames with standard trim, and FT14A. on frames with architectural trim.
- Available powered or non-powered.
- Powered version connects building's electrical supply to a power harness in matching location of adjacent frame. It does not take up a receptacle location.
- Specify frame height of power entry to match highest frame at the connection. Pole will connect to 46"H, 53"H, 57"H, 68"H, or 79"H connections.
- Distributes up to (4) 20-amp circuits.
- Licensed electrician must connect the power entry to the building power supply.
- UL and Canadian UL listed.
- To hardwire for Chicago code, specify non-powered ceiling entry for field wiring.
- For cable capacity, see Cable Charts in Kiosk.



Front Views

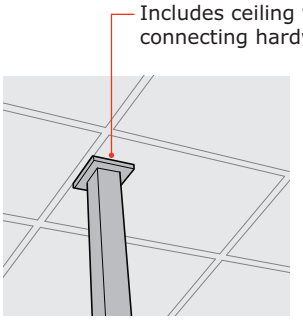


Top Views



To connect power from pole to frame, a harness must be placed at matching location in connecting frame.

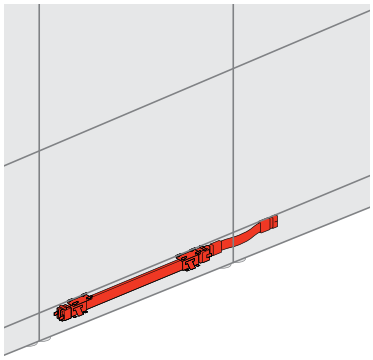
Power entry attaches to frames with a harness in the base, or to a lower power harness placed at the beltline tile location (A) or to a lower harness placed below the surface at tile location (C).



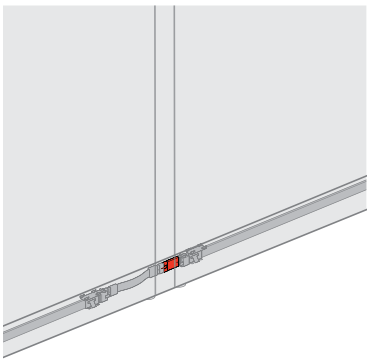
Baseline Distribution

The baseline can be used to transfer power from the point of power entry through the base to adjacent frames where power is needed. Distribution can be from a single building access point or from multiple access points.

Baseline power is distributed through the base of a frame using a base power harness. The base power harness is field installed and distributes power to the left and right or vertically via a power jumper to another harness above the base. Each baseline harness comes with a festoon that connects one harness to another. The festoon also makes all 90 degree 2-, 3-, or 4-way connections, and all 2- or 3-way 120 degree connections. A power harness extender (FT151.) is required when passing power in a straight line through a 90 degree connector. The base power harness is concealed behind the base cover of the frame. To access, specify a frame with "J" base option for base with power and data knockouts. When installed, receptacles provide access to power from either side of the frame. A 24"W frame can have one receptacle location on each side of the frame. 30"W – 48"W frames can have two receptacle locations on each side of the frame.



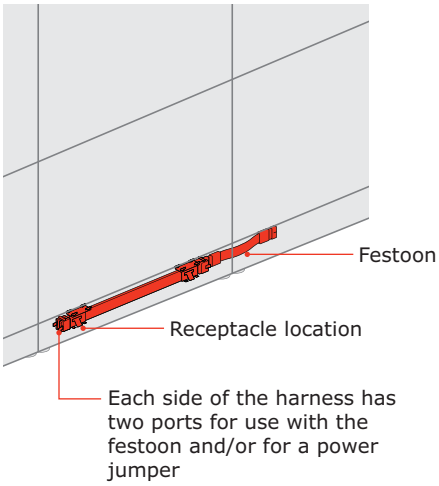
Base Power Harness (FT150.)
Adds power to the base of a non-powered frame.



Power Harness, Extender (FT151.)
Extends power from a power harness through a connector in a straight line to another harness placed at the same level.

Base Power Harness (FT150.)

- This harness converts a non-powered frame with a base to a powered frame.
- This harness is available to fit in a 24"W, 30"W, 36"W, 42"W, or 48"W to match width of frame.
- Specify base option (J) with cutouts if access is desired.
- 24"W provides 1 receptacle location per side.
- 30" – 48"W provides 2 receptacle locations per side.
- Specify 4 circuit receptacle (FT155. or FT156.) separately.
- Each harness comes with a festoon. The festoon connects one base harness to another in an adjacent frame or at 90 or 120 degrees through a universal connector.
- When routing power through a universal connector in a straight line, order power harness extender (FT151.) separately.
- Distributes up to (4) 20-amp circuits.
- UL and Canadian UL listed.



Front Views

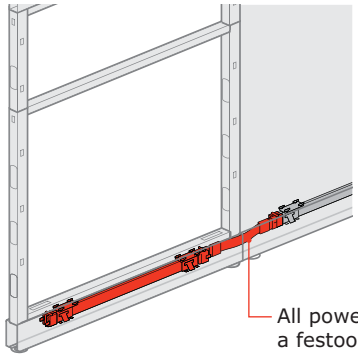
Harness for 24"W frame

Harness for 30", 36", 42" or 48"W frame

To access power in base, specify the frame with the "J" base option for base with power/data knockouts.

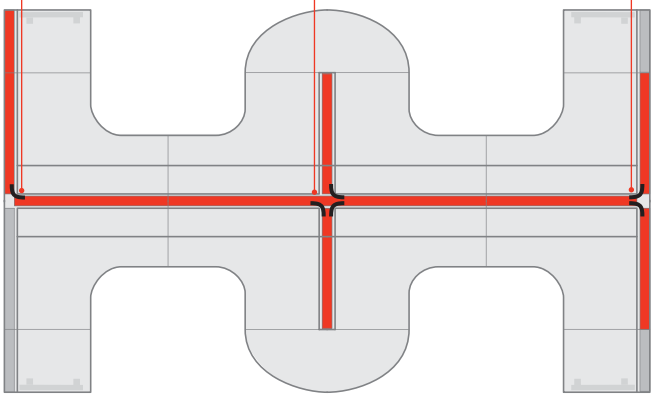
Specify receptacles separately.

Connecting Power Through Connectors



All power harnesses come with a festoon. The festoon connects one power harness to another and around 90 degree or 120 degree connectors

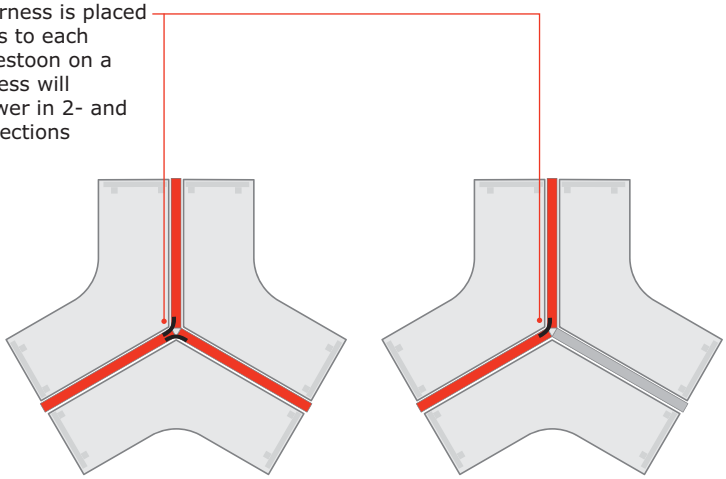
If power harness is placed 90 degrees to each other, the festoon on a power harness will connect power in 2-, 3-, and 4-way connections



No additional product is needed for these connections.

Festoons that come with the harnesses will make all of these connections.

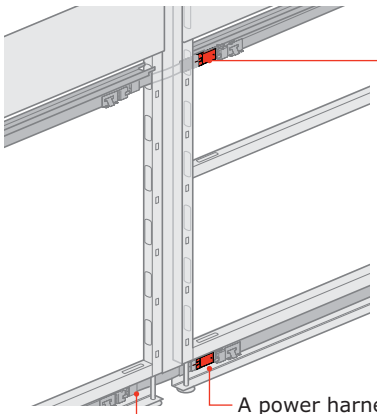
If power harness is placed 120 degrees to each other, the festoon on a power harness will connect power in 2- and 3-way connections



For 120 degree applications with power in the base, use frames with a base throughout the application.

Power Harness, Extender (FT151.)

- This power harness is used to route power through a connector in a straight line.
- Use at base or any height where power can be routed through a frame.
- Use connector base filler (FT165.) if blending base with open base tapered foot or architectural foot at connectors.
- Harness extender is not required when routing power harness through a connector at 90- or 120-degree angle.
- Distributes up to (4) 20-amp circuits.
- UL and Canadian UL listed.

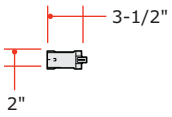


Power harness extender at beltline location

A power harness extender (FT151.) is required when passing power through a connector at 180 degrees in the base or any other level within the frame

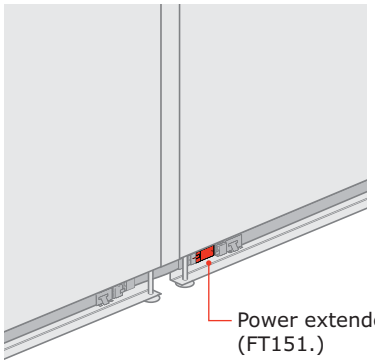
Base power harness with festoon

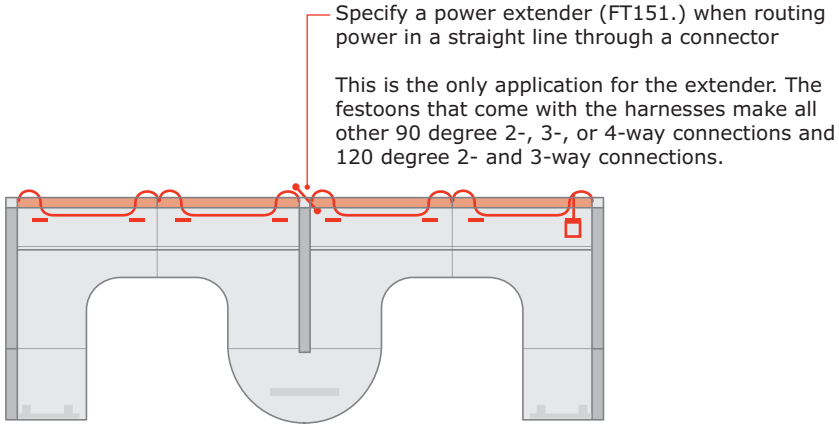
Front View

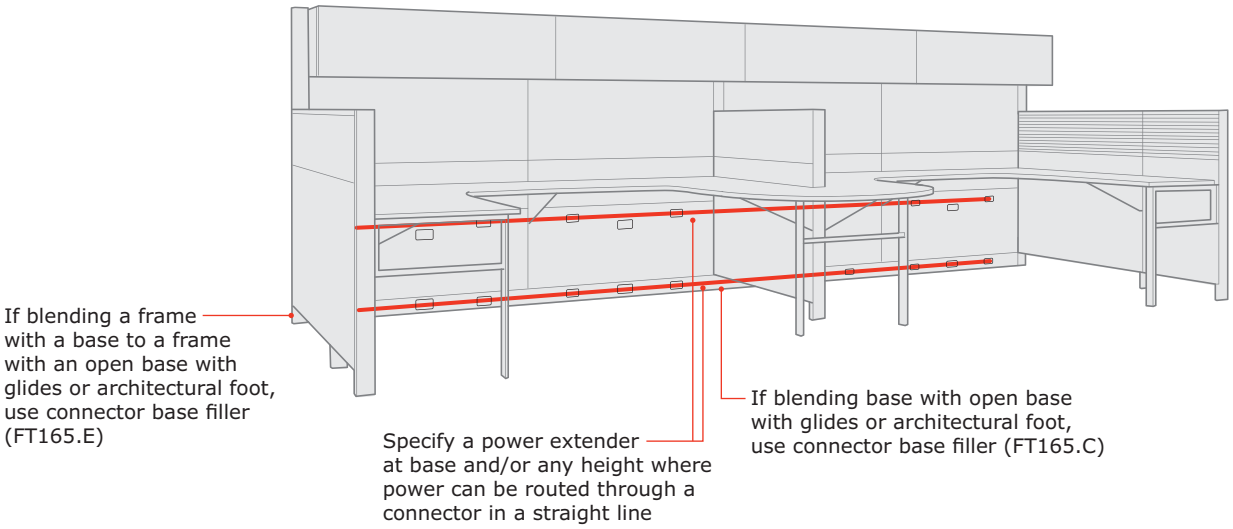


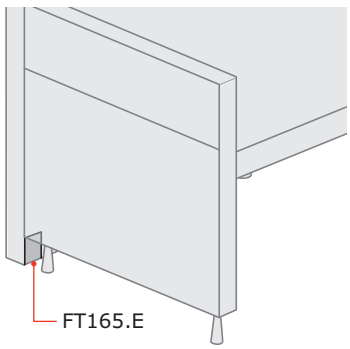
Continuing Power Through Connectors in a Straight Line

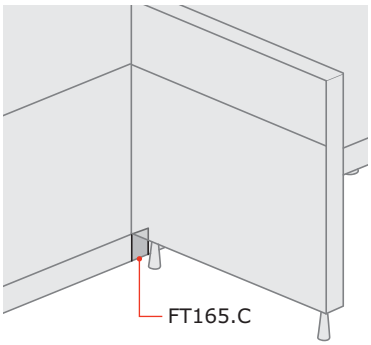
- A power harness extender is required when passing power in a straight line through a connector.
- Use at base or any height where power can be routed through a connector in a straight line.
- Use connector base filler (FT165.) when combining a base and open base with glides or architectural feet.
- FT165.C is used between two base covers in a 180 degree condition.
- FT165.E is used between a base cover and a 90 degree connector cover.







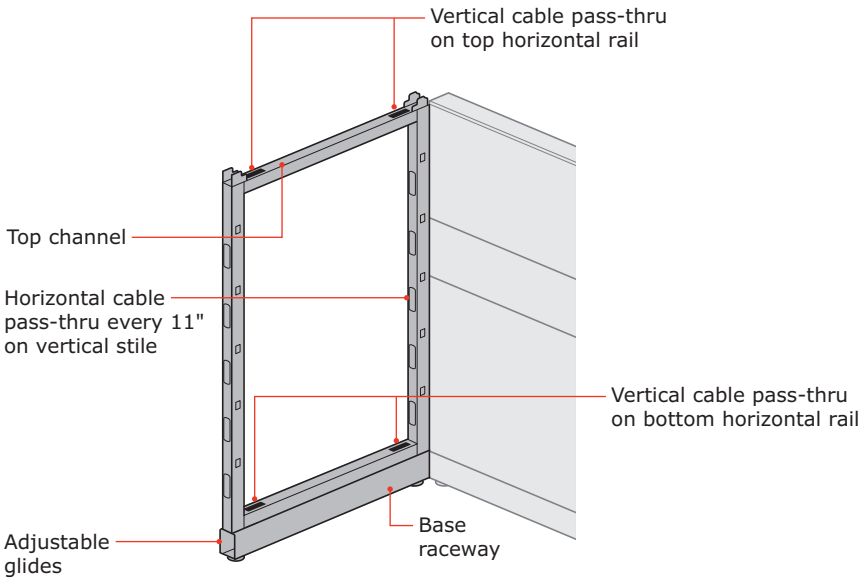




The primary distribution of data and telecommunications cables usually parallels the building's electrical system, but a separate system of chases, conduits, or raceways can be used to meet differences in codes, voltage and needs. Canvas frames and tiles provide an easy and attractive solution to managing cables. Cable can be lay-in at the top channel and the base. Cables can be fed through openings horizontally in the frame every 11" vertically on the frame.

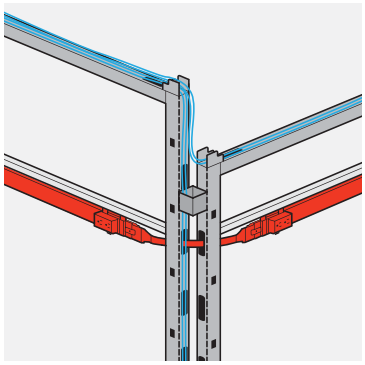
Power and cables route vertically within the frame and through the universal connectors. Each frame has two openings on the top and bottom horizontal rail to route cables vertically. To route cables horizontally, slots are located on the vertical stile of each frame.

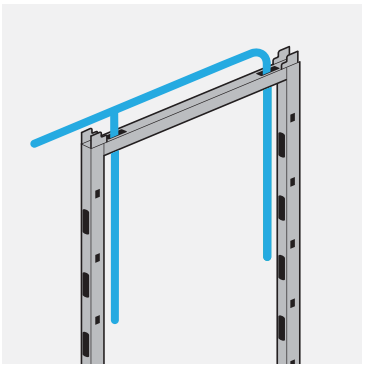
- Use cutouts located on vertical stiles to route cables horizontally.
- 35"H have two openings.
- 42"H and 46"H have three openings.
- 53"H and 57"H have four openings.
- 68"H have five openings.
- 79"H have six openings.
- To access data in base, specify base with knockouts.
- To access data below or above surface, specify power data tiles.
- For cable capacity, see cable capacity charts located on Kiosk.

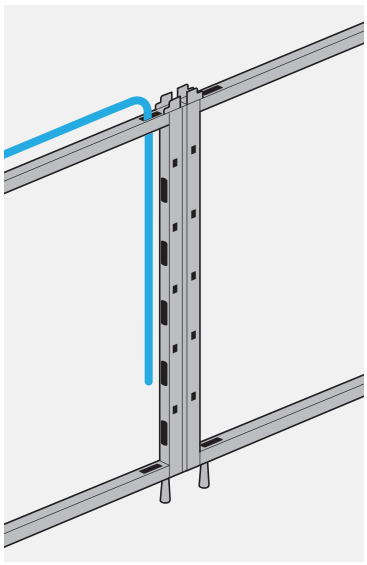


Product Information and Planning – Power and Data

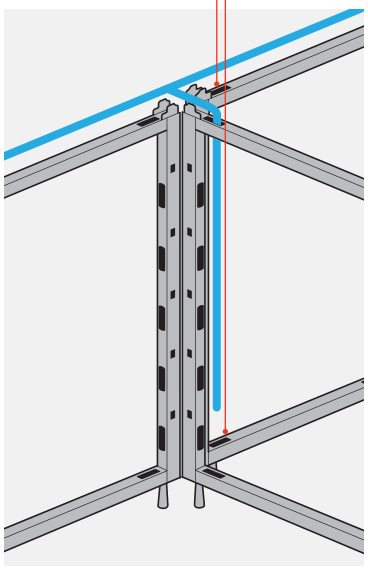
Cable Management, continued

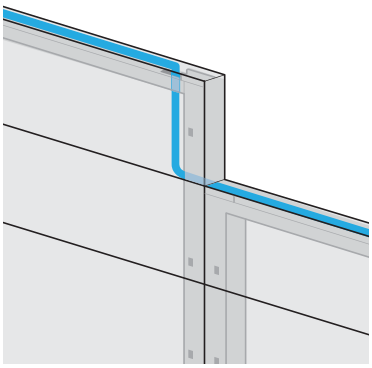




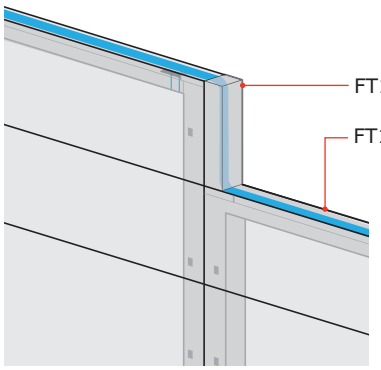


Cables can be routed vertically through openings on the top and bottom rail of the frame





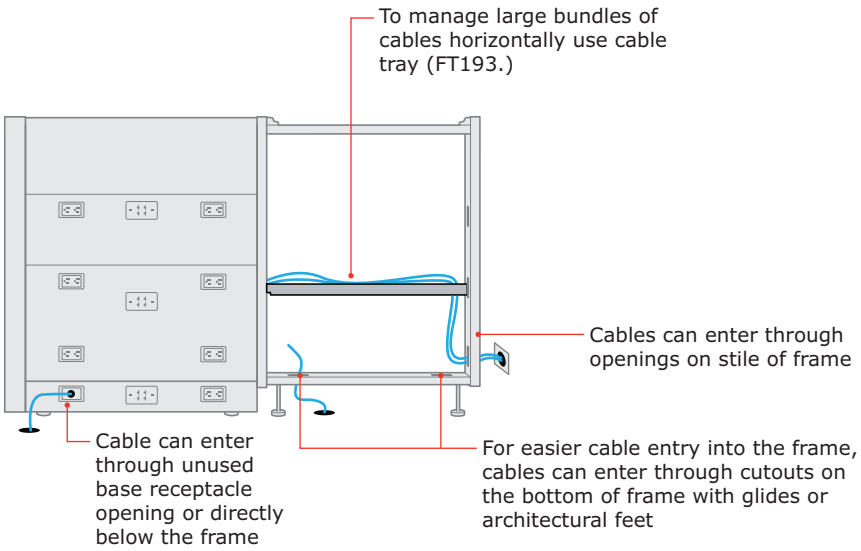
Standard
Cables can be fed through cutout in top of frame and drop vertically to horizontal cutout in adjacent frame. Cables are also fed through that cutout.



Cable routing
Cable routing version maintains lay-in cable routing at top of frame. When routing cables in a straight line at a standard change of height finished end, use cable routing version (FT161.B) and standard trim top cap with a cutout (FT112.C). Use only at inline conditions, not a connector.

For cable capacity, see cable capacity charts located on Kiosk.

- Cables can enter Canvas frames from the ceiling using a ceiling entry, the floor, a column, or wall. There are two cutouts in the bottom rail of the frame to allow cables to enter directly into the frame. This is ideal for open base frames with glides or architectural feet. Cables can also enter a frame with a base through these same cutouts in raised floor applications.
- Cables can also enter the frame through a hole drilled into an unused receptacle or faceplate opening in the base.
- Larger bundles of cables can be brought in directly from the wall through any opening on vertical stile of frame.



Locating Data Faceplates

- Standard sized single-gang faceplates supplied by an outside contractor screw into existing tapped holes in power data tiles or clip-to-base covers.
- Data faceplates can be placed in data knockouts in base or on tiles.