



# Modular Electric System Basics

Innovative Power + Data Solutions

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## ECA Modular Electric System Basics

Electrical Systems consist of a very few components:



- Power Feeds
- Power Modules
- Interconnecting Cables
- Pass Through
- Completed System



With a simple explanation of each part, you too can become an expert.

## Power Feeds

### Single Circuit

For single circuits the power feed has a cord and plug much the same as your computer at home. However, there is a slight difference. In commercial wiring there are two types of plugs: a 15 AMP 125 Volt plug and a 20 AMP 125 Volt plug. Figures 1 and 2 below demonstrate the differences between the two plugs. Therefore, when at a facility, it is important to learn how their wall outlets are configured. A 15 AMP plug will fit into a 20 AMP wall outlet. However, a 20 Amp plug will not fit into a 15 AMP wall outlet.

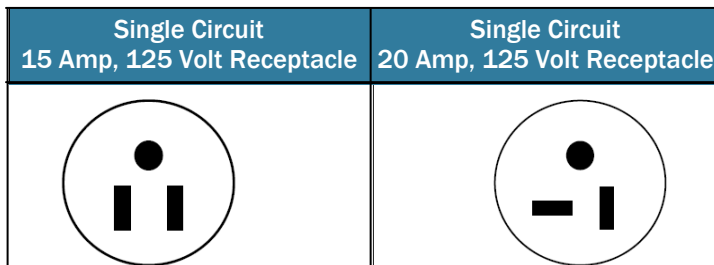
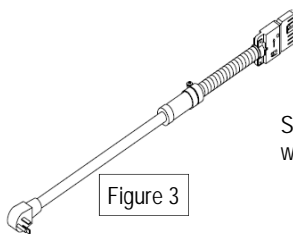


Figure 1

Figure 2

A single circuit power feed has the plugs molded on the end of an electrical cord in the same manner, as it would be on your computer. The opposite end has a length of metal flex cable with a Female connector specifically designed to mate with one of ECA's power modules. This power feed can also be obtained with a 15-AMP plug. Only one circuit is available with this type of power feed.



Single Circuit Power Feed with 20 AMP Molded Plug

Figure 3

### Multi-Circuit

Multi-circuit power feeds require an electrician to wire. There are three types of multiple circuits used in commercial office furniture:

- 7 wire 3 circuits — 3 hots, 2 neutrals, and 2 grounds —  
Electri-Pak System 73
- 8 wire 3 circuits — 3 hots, 3 neutrals and 2 grounds —  
Electri-Pak System 83
- 8 wire 4 circuits — 4 hots, 2 neutrals and 2 grounds —  
Electri-Pak System 84

A typical multi-circuit power feed has wires on one end, which an electrician uses to wire into the facilities power. The other end has a female multi-circuit plug that mates with one of ECA's power modules. The female plug is color coded and polarized so that they will only enter the power module one way. As a result continuity of the circuits are safely maintained. The two ends are joined together with grounded metal flex cable.

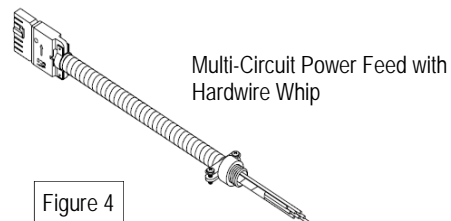


Figure 4

Multi-Circuit Power Feed with Hardwire Whip

## Power Modules



There are several types of power modules, some are used by themselves while others are used within wire management to facilitate separation of power and data lines. ECA's power modules are available in configurations that meet both single and multi-circuit needs.



### Single Sided Power Module Type "SA"

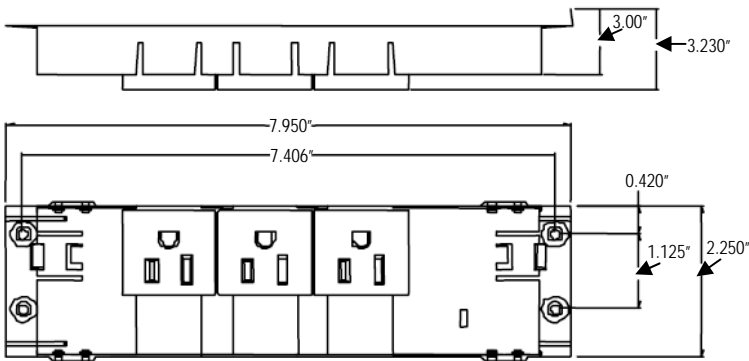


Figure 5

Power modules are also available in a Double Duplex (4 receptacles) for 8 wire systems. These modules are commonly used in a trough or mounted on a modesty panel. Receptacles for each circuit are ordered separately.

Dimensions:

- TriPlex Modules — 7.96" long
- Double Duplex — 9.30" long

### Data Power Pak

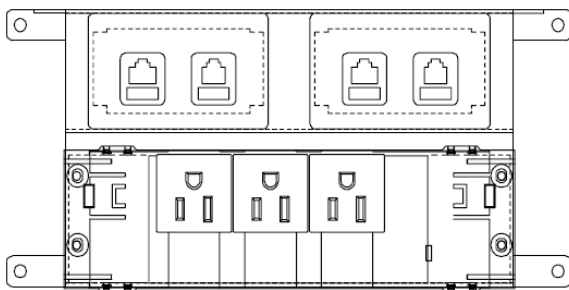


Figure 7

A Data Power Pak is a combination, power data unit, similar to an electrified J-Channel. The primary difference is, it has space for two customizable telecom plates and there is no space for storing excess cords. It too is used in modular furniture mounted on the modesty panel or can be employed in a trough.

### Electrified J-Channel

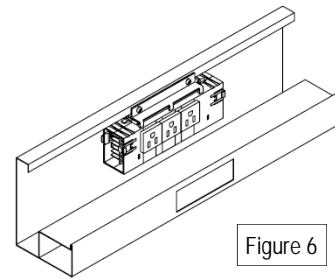


Figure 6

A J-Channel is a metal enclosure in which a power module can be mounted in the center. In the bottom of the J-Channel there is a rectangular section that runs the length of the channel with a rectangular hole in the front in which a customizable telecom plate can be inserted. This type of configuration is frequently used in study carrels and modular furniture. The space below the power module is used to coil excess power cords. Electrified J-Channels can be configured in sizes from 19" with 2 TriPlex power modules and from 29" with 2 Double Duplex power modules.

### PD Apron

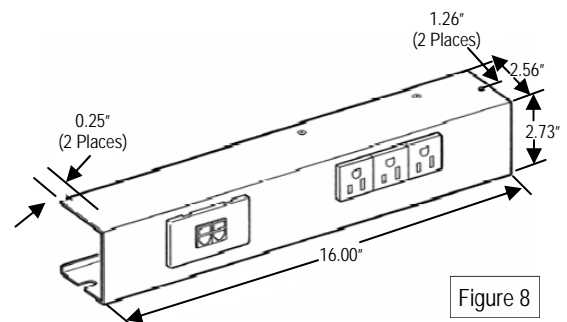


Figure 8

A PD Apron is a power module which is mounted within an enclosed "C" Channel and is mounted within the apron of a conference table.

## Interconnecting Cables

The components that connect one power module to the next are the interconnecting cables. Since all interconnecting cables can interface with either single circuit or multi-circuit systems wires for all circuits will be present. Figure 9 shows that the cables have Female connectors on each end, each is polarized, and color-coded. The Electri-Pak systems 73 and 83 interconnecting cables have black Female connectors; while the Electri-Pak System 84 connectors are gray. This color matches that of the interior male connector in the power modules for each system. The metal-flex cables provide separation from and electro-magnetic shielding for the low voltage wiring that may run near or next to them. Specifically telecommunication wiring like phone and data lines.

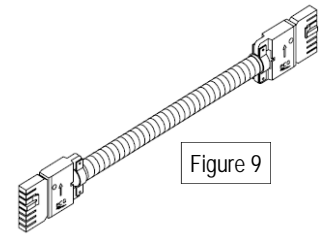


Figure 9

The critical piece of the design for interconnecting cables is to determine the length of the cable. This is done by determining the distance between the trailing edge of the first power module and the leading edge of the second power module. This is then repeated between the second and third power modules — until all have been determined. The chart below was constructed to assist in determining lengths between straight table runs each TriPlex power.

		Powered Table Connected To Powered Table								
		24	30	36	42	48	54	60	66	72
Powered Table Connected To Powered Table	24	17	20	23	26	29	32	35	38	41
	30	20	23	26	29	32	35	38	41	44
	36	23	26	29	32	35	38	41	44	47
	42	26	29	32	35	38	41	44	47	50
	48	29	32	35	38	41	44	47	50	53
	54	32	35	38	41	44	47	50	53	56
	60	35	38	41	44	47	50	53	56	59
	66	38	41	44	47	50	53	56	59	62
	72	41	44	47	50	53	56	59	62	65

Figure 10

## Pass Through

The above table may also be used to determine the cable lengths when a unit is not powered. In this case, a pass through having the same dimensions, as the power module is used and the cable lengths from above can be employed.

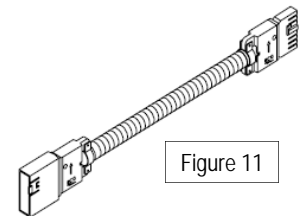


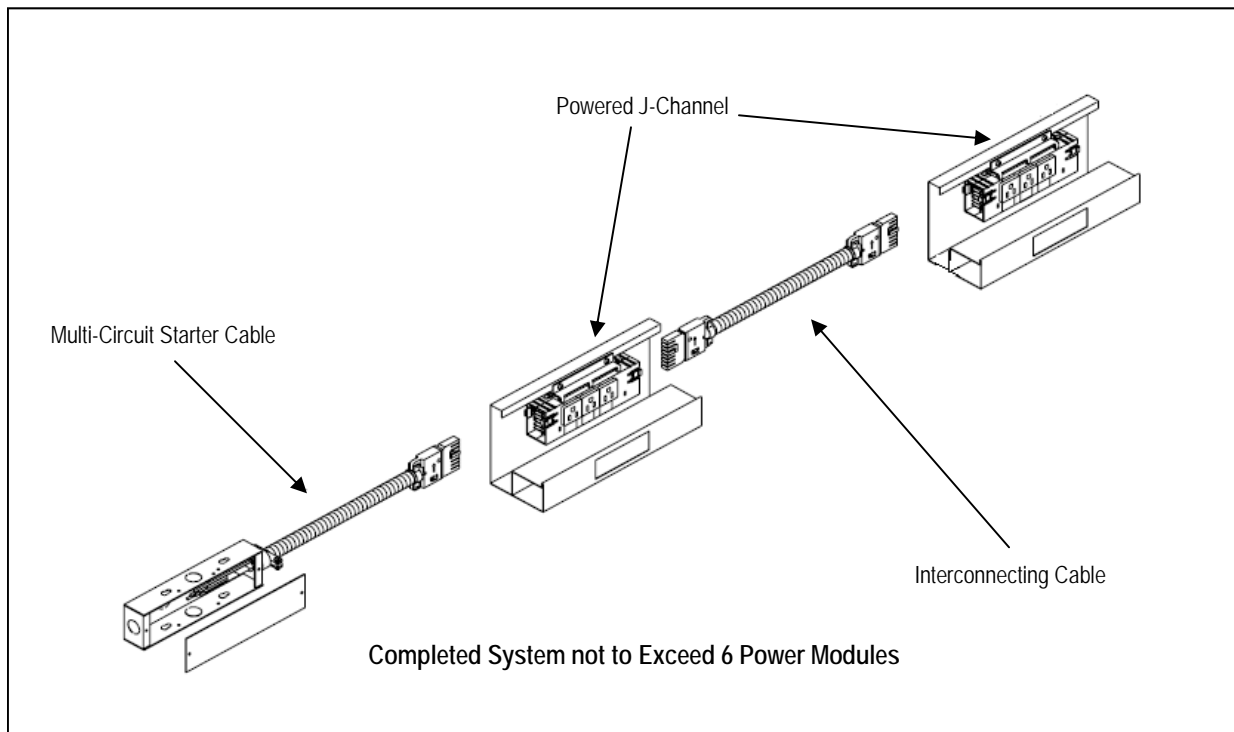
Figure 11

## Completed System

The completed system is simple and depicted below using:

- A multi-circuit feed as shown in Figure 4.
- A multi-circuit "J" Channel as shown in Figure 6.
- An interconnecting cable as shown in figure 9.

For simplicity, 6 power modules per circuit may be interconnected.  
This should be sufficient capacity to power a computer, print and a task light.





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