

Marway Standard Products

Power Distribution Units Remote EPO Panels



March 2016

Providing power distribution for multiple industries and applications.

Defense • Aerospace • Test Automation • Communications • IT • OEM • VAR



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Standard Product Summary



Optima™ Power Distribution Units

520 Series Single Phase (1U)

- 120 Vac, 200–240 Vac, or 110–240 Vac 1 ϕ .
- 12 A, 15 A, and 24 A continuous duty ratings (15 A, 20 A, 30 A max).
- 5-15, 5-20, or high-tension C13 outlets (2 on front, 10 on back).
- Standard main power circuit breaker, indicator, and surge suppression.
- Options include current and voltage meter, remote switching and EPO interface, sequencing of two groups of four outlets, and an EMI filter.

532/533 Series Three Phase (2U/3U)

- All models are 120/208 Vac 3 ϕ Wye, 24/30 A, with an L21-30 inlet.
- Standard main power circuit breaker, phase power indicator, surge suppression, EMI filtering, and remote EPO control.
- Options for location of the inlet on the front or rear panel and a variety of outlets (5-20, 6-20, L5-20, L5-30, L6-20, L6-30, L21-30).

529/539 Series Single or Three Phase (0U)

- Single-phase in 120 Vac, 200–240 Vac, or 110–240 Vac.
- Three-phase in 120/208 Vac 3 ϕ Wye.
- 12 A, 15 A, and 24 A continuous duty ratings (15 A, 20 A, 30 A max).
- Full-rack and half-rack models.
- Outlet types including C13/C19 combinations, 5-15R, and 5-20R.



Commander™ Remote Control and EPO Panels

- Connects to one or multiple PDUs.
- On/Off power control to connected PDUs.
- EPO for all connected PDUs.
- UCP 3500 includes local lamp indicating UCP has power, and 5-15R convenience outlets on front and back.



Other Products (visit our web site at www.marway.com)

Optima Custom Power Distribution Units 

TwinPower Auto-transfer Switches

PowerPlus Intergrated Rack Services

Optima™ 520 Series

Single-Phase PDUs





Optima™ 520 Series

Standard Single Phase PDUs for General Purpose Applications

Custom Features in Standard Packages

Marway's Optima 520 Series consolidates several popular features from our custom products, and packages them into a standardized product line. These systems provide the high build quality of Marway's custom PDUs, with a focus on general-purpose industrial applications.

Feature Highlights

- 1U chassis with removable/relocatable mounting brackets.
- 12 outlets (2 on front, 10 on back).
- 120 Vac, 200–240 Vac, or 110–240 Vac 1 ϕ power sources.
- 12 A, 16 A, or 24 A continuous-duty capacity (15 A, 20 A, or 30 A maximum capacity).
- 5-15R, 5-20R, or high-tension C13 outlets.
- Straight blade or locking inlet connectors.
- Standard main power circuit breaker with On indicator.
- Standard surge suppression.
- Optional multi-function current and voltage meter.
- Optional remote switching / remote EPO interface.
- Optional sequencing of outlets (two groups of four outlets).
- Optional EMI filter.
- Certified to UL 62368-1.

A Solid Power Foundation

All models feature 12 outlets, a two-pole main circuit breaker, a thermally protected varistor for surge suppression, and a power on indicator. Most models are fitted with a 9-foot cable and choice of straight blade or locking plug. A group of universal 110–240 Vac systems feature a C20 inlet connector with a variety of optional cables.

A Sturdy Industrial Chassis

All chassis are 18 gauge steel and finished with a black powder coat. Mounting brackets are removable allowing for five chassis configurations. The typical front-forward flush position, and front forward recessed positions would likely be used in closed cabinets. However, a rear-forward flush position, and a rear forward, recessed position can be convenient for some open-frame installations. The brackets can be left off for table-top use, or for custom user-provided mounting. An optional cable bracket for the rear panel provides support for heavy cable bundles and a means to secure cables from unintentional loosening or removal.



Nearly 100 configurations provide options for outlet connectors, inlet connectors, power range, power conditioning, and control features. IEC outlets feature a unique, high-tension design providing similar pull-out resistance as NEMA outlets, thereby eliminating the need for proprietary locking systems or cumbersome retention clips.



Mounting brackets are movable allowing for different mounting positions. A front-forward recessed position as shown above is often used to decrease the reach from the back of the rack. Brackets can also be positioned to allow rear-facing flush or rear-facing recessed positions as well.

Remote Switching/EPO Option

In some applications, particularly those with machinery connected to a PDU, an Emergency Power Off (EPO) may be required. An EPO is a large, prominently placed push button used to disconnect power to all devices connected to the PDU. These buttons are intended to be easy to find and press in an emergency scenario.

The EPO button, and on/off buttons are often located on a remote panel. Marway's Commander UCP 3500 and UCP 100 products are remote EPO panels for exactly this purpose.

The Optima 520 remote switching/EPO option is primarily designed for use with Marway's Commander remote EPO panels. A Commander panel may be connected to one or more PDUs and thereby provide remote on/off and EPO functionality for several racks in unison. Whereas the Commander panel provides the on/off/EPO control, the remote option for the Optima 520 provides the machine-to-machine interfacing to enable that control from the Commander panel.

The Optima 520 remote switching/EPO option provides the ability for a remotely located panel to control eight of the Optima 520 outlets. The four Group A outlets are always on. The Group B and Group C outlets are subject to the remote switching system.

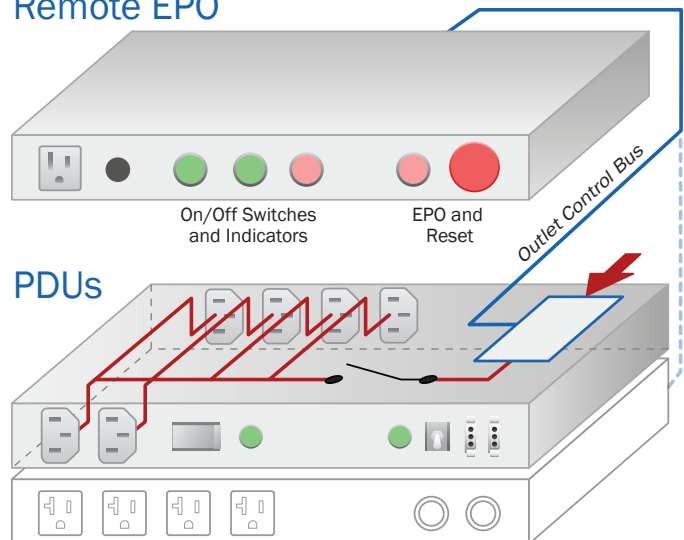
A mode switch on the PDU allows an operator to choose whether the switched outlets are forced on (cannot be turned off by the Commander except by the EPO), are forced off (cannot be turned on by the Commander), or are controlled remotely.

Whenever the main circuit breaker is On, the Powered indicator is illuminated to indicate that power is *available* to the switched outlets. That is, the remote panel may have the controlled outlets on or off, but the local Powered indicator will be lit in either case to indicate power is capable of being applied to Groups B and C outlets.



The remote switching/EPO option includes control bus connectors to match Marway's Commander UCP 3500 remote EPO panel, along with a manual override switch to force outlets either on or off.

Remote EPO



Commander UCP Remote EPO Panels



The Commander UCP 3500 (top) and UCP 100 (bottom) are standard Marway remote EPO panels suitable for controlling the Optima 520 series remote switching feature.

The UCP 3500 features on/off/EPO controls along with status indicators

and a number of connectors to provide flexibility in interfacing to multiple PDUs.

The UCP 100-001 includes a basic on/off switch with an EPO mushroom button in a blanking-plate-like open frame chassis.

Power Meter Option

The power meter is a useful option for several purposes, but two commonly used values are amperes and watts. The built-in circuit breaker will protect wiring from an overload, but how do you know if your equipment is close to tripping the circuit breaker? The meter's display of amps provides the information you need. Watts is a measure of how much power is actually being used. This can be useful for monitoring the equipment capacity for backup battery systems or generators.

The power meter option provides digital display of voltage, total unit current, total unit active power, and total unit power factor. Any measurement can be displayed on demand or set for continuous rotation through all four. Additionally, the display is easily configured to power up with any one of the measurements as the default value, or with continuous rotation as the default mode.



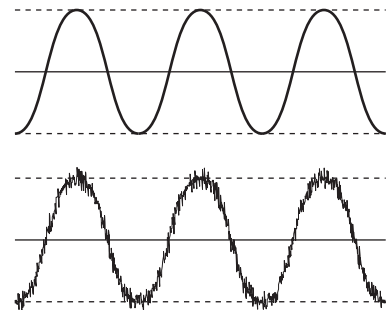
The power meter option displays volts, amps, watts, and power factor. It's a very useful tool for understanding how much of the PDU's capacity is being used. Additionally, for energy conscious environments, it can be used to measure the power consumption of attached equipment.

EMI Filter Option

Modern electronic equipment such as computers, security systems, communications hardware, data acquisition systems, and others require clean, stable power free of noise in order to perform their functions optimally and reliably. Electromagnetic interference (EMI) is noise added to power lines in buildings by a variety of commonly used electrical equipment such as air conditioning, office equipment, power tools, factory machinery, and more.

The EMI filter option includes a broad-spectrum EMI filter on the incoming ac power signal. The helps eliminate noise outside of the 60 Hz power signal range. In short, it helps ensure equipment attached to the PDU gets a good, clean power signal.

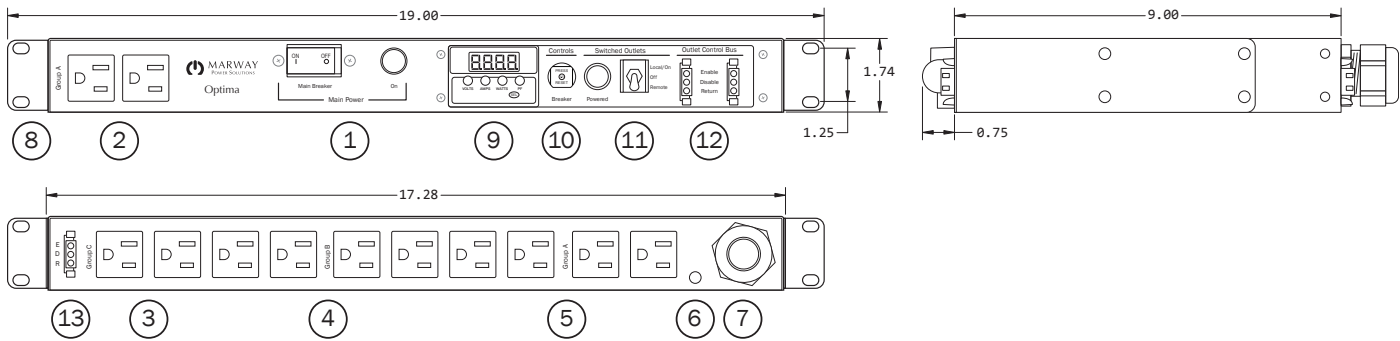
Signal conditioning of ac power seeks to ensure as close to a perfect sine wave in the voltage signal as possible. The upper waveform has no noise, where the lower one (conceptual illustration) is quite noisy. An EMI filter helps to significantly reduce many causes of noise.



Outlet Sequencing Option

This option is dependent on first having the remote switching/EPO option. The sequencing option adds timers to provide a delay between powering Group B and Group C outlets. When the system is powered, all Group A outlets are immediately powered. When the remote Power On (a.k.a. remote Enable) signal is actuated, Group B outlets are powered. After a delay of about two seconds, Group C outlets are powered. The delay is fixed internally, and is intended primarily to reduce inrush current and prevent breaker trips, and not for controlling the startup sequence of connected equipment.

Optima 520 Series PDUs



Map of Features

Standard Features

- (1) Main Power breaker and indicator. The breaker will have a 15, 20, or 30 A maximum-duty rating (de-rated to 80% for continuous duty). Indicator is amber.
- (2) Front-panel Group A outlets. These outlets are always powered—that is, they are never switched or sequenced even when those options are included.
- (3) Rear-panel Group A outlets. These outlets are always powered—that is, they are never switched or sequenced even when those options are included.
- (4) Rear panel Group B outlets. These outlets are controlled by remote switching/EPO *when that option is included*. Otherwise, they are always powered like Group A. When the sequencing option is included, all four Group B outlets are powered together before Group C outlets.
- (5) Rear panel Group C outlets. These outlets are controlled by remote switching/EPO *when that option is included*. Otherwise, they are always powered like Group A. When the sequencing option is included, all four Group C outlets are powered together after Group B outlets.
- (6) Threaded ground lug.
- (7) Power inlet. Most models include a strain-relieved cable as shown. The plug will vary by model. Some models include a panel-mounted C20 connector.
- (8) Mounting brackets. May be mounted in one of three locations to yield a “flush,” recessed, or rear-facing position of the chassis relative to the rack’s mounting flanges. May also be removed for table top operation, or adaptation of end user’s own custom brackets.

Optional Features

- (9) Optional power meter can display volts, amperes, watts, and power factor. When item 9 is included, item 10 is also included.
- (10) Circuit breaker for internal control circuitry. Included when either the optional meter is included, or when the optional remote switching/EPO circuit is included.
- (11) Optional Remote Switching/EPO mode switch and indicator. The remote switching package always includes items 10, 11, 12, and 13. The three-position toggle provides manual control over the remote switching mode. When Local/On, all outlets are powered, and only remote EPO will have impact. When Off, Groups B and C outlets are disabled, and any remote circuit will have no impact. When Remote, Groups B and C outlets are subject to the remote/EPO control bus. Group A outlets are always powered regardless of remote mode. Whenever the main circuit breaker is On, the Powered indicator is illuminated to indicate that power is *available* to the switched outlets.
- (12) Optional front panel Remote Switching/EPO control bus interface. Two connectors allow the PDU to be daisy chained between a Remote EPO panel (such as Marway’s UCP 3500) and another PDU, or even between two PDU’s (when one of the others is connected to a remote EPO panel). Either connector can be used for either connection.
- (13) Optional rear panel Remote Switching/EPO control bus interface. This is a third connector provided for when a rear connection is more convenient. It always accompanies the remote switching/EPO option package of items 10, 11, and 12.

Not shown are the sequencing and filter options which have no outwardly visible elements.

Summary of Specifications

Inlet Voltage Options

- 120 Vac, 50/60 Hz, single phase
- 200–240 Vac, 50/60 Hz, single phase
- 110–240 Vac, 50/60 Hz, single phase
- All voltages are listed as nominal input sources.

Current Capacity Options

- 12 A continuous load / 15 A maximum
- 16 A continuous load / 20 A maximum
- 24 A continuous load / 30 A maximum
- Based on modern NEC regulations, traditional load ratings are de-rated to 80% for continuous duty. For example, a traditional 30 A maximum rating is now interpreted and labeled as a 24 A continuous duty rating. Optima current ratings are shown with continuous/maximum rating values.

Overload Protection (standard)

- All models include a two-pole UL 489 circuit breaker.
- 12/15 A models are wired with both line and neutral passing through the circuit breaker.
- 16/20 A models are wired with both line and neutral passing through the circuit breaker.
- 24/30 A models in Groups 6 and 8 use a 15 A breaker with the main line branched to each pole of the breaker (creating two 15 A sub-circuits).
- 24/30 A models in Group 7 use a 20 A breaker with the main line branched to each pole of the breaker (creating two 20 A sub-circuits).

Surge Suppression (standard)

- All models include a thermally protected varistor.
- 120 Vac models have a single-pulse energy rating of 100 joules.
- 240 Vac models have a single-pulse energy rating of 170 joules.
- All models have a peak surge current rating of 10,000 A for a single pulse 8x20 μ s wave.

Outlet Sequencing (optional)

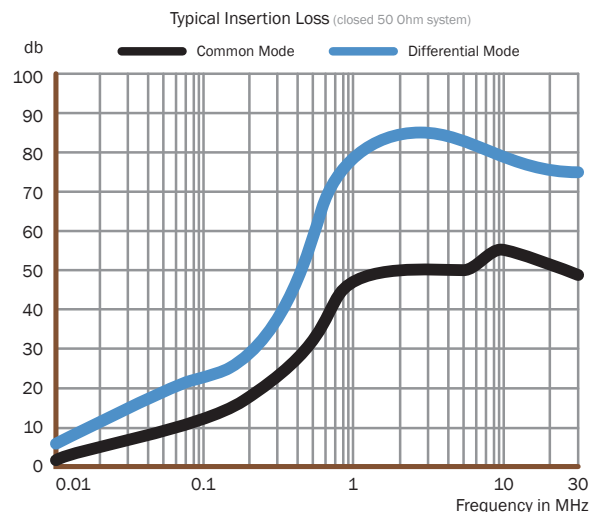
- Requires the Remote Switching option described above.
- Group A outlets are powered at startup.
- Group B outlets are powered upon Remote Power On.
- Group C outlets are powered about 2 seconds after Group B.

Power Meter (optional)

Display Value	Min	Max	Accuracy
Voltage (volts RMS)	85.0	264.0	$\pm 1\%$
Current (amperes RMS)	0.00	32.00	$\pm 1\%$
Active Power (watts RMS)	0.0	9999	$\pm 2\%$
Power Factor	0.00	1.00	$\pm 3\%$
Sample Rate (per second)	2	3	—

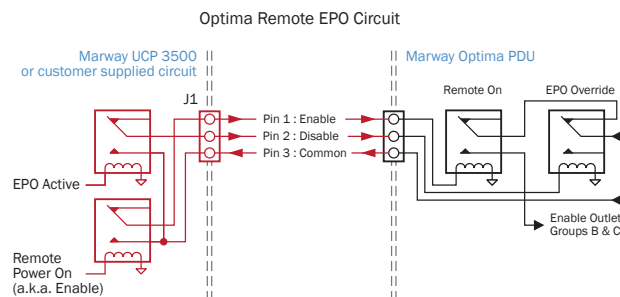
EMI Filter (optional)

- 120 Vac models have < 0.5 mA leakage.
- 240 Vac models have < 1.0 mA leakage.



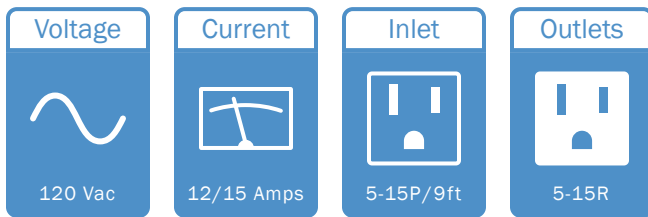
Remote Switching/EPO (optional)

- Panel connector: AMP #1-480304-0, 250 Vac, 4 A maximum
- Mating cable connector: AMP #1-480305-0
- All three bus connectors (2 front, 1 rear) are wired in parallel.
- Group A outlets (2 front, 2 rear) are always powered.
- Groups B and C outlets are managed by the Remote Control Bus.

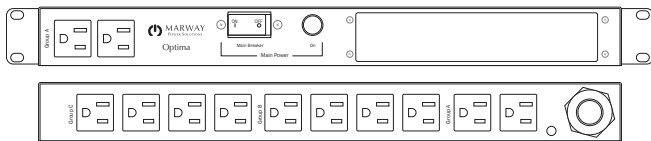


Optima 520 Series PDUs

Model Numbers: Group 1



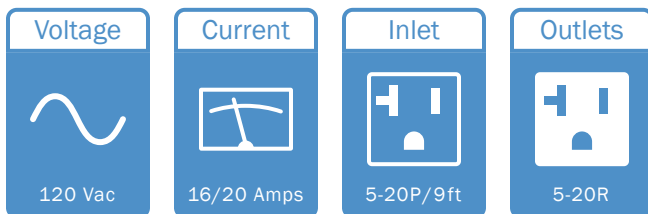
All models include circuit breaker, power indicator, and surge suppressor. Specifications and availability subject to change without notice. General chassis style shown below without options.



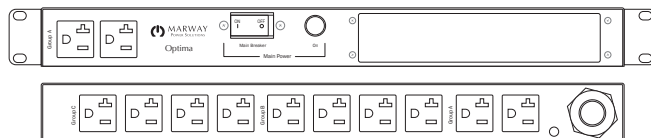
Model Number	Meter	Filter	Remote	Seq'd
MPD 520001-000	—	—	—	—
MPD 520002-000	—	—	YES	—
MPD 520003-000	—	—	YES	YES
MPD 520004-000	—	YES	—	—
MPD 520005-000	—	YES	YES	—
MPD 520006-000	—	YES	YES	YES
MPD 520007-000	YES	—	—	—
MPD 520008-000	YES	—	YES	—
MPD 520009-000	YES	—	YES	YES
MPD 520010-000	YES	YES	—	—
MPD 520011-000	YES	YES	YES	—
MPD 520012-000	YES	YES	YES	YES

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.

Model Numbers: Group 2



All models include circuit breaker, power indicator, and surge suppressor. Specifications and availability subject to change without notice. General chassis style shown below without options.



Model Number	Meter	Filter	Remote	Seq'd
MPD 520013-000	—	—	—	—
MPD 520014-000	—	—	YES	—
MPD 520015-000	—	—	YES	YES
MPD 520016-000	—	YES	—	—
MPD 520017-000	—	YES	YES	—
MPD 520018-000	—	YES	YES	YES
MPD 520019-000	YES	—	—	—
MPD 520020-000	YES	—	YES	—
MPD 520021-000	YES	—	YES	YES
MPD 520022-000	YES	YES	—	—
MPD 520023-000	YES	YES	YES	—
MPD 520024-000	YES	YES	YES	YES

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.

Optima 520 Series PDUs

Model Numbers: Group 3

Voltage

120 Vac

Current

16/20 Amps

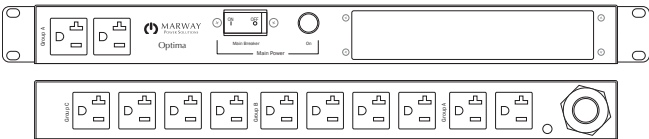
Inlet

L5-20P/9ft

Outlets

5-20R

All models include circuit breaker, power indicator, and surge suppressor. Specifications and availability subject to change without notice. General chassis style shown below without options.



Model Number	Meter	Filter	Remote	Seq'd
MPD 520025-000	—	—	—	—
MPD 520026-000	—	—	YES	—
MPD 520027-000	—	—	YES	YES
MPD 520028-000	—	YES	—	—
MPD 520029-000	—	YES	YES	—
MPD 520030-000	—	YES	YES	YES
MPD 520031-000	YES	—	—	—
MPD 520032-000	YES	—	YES	—
MPD 520033-000	YES	—	YES	YES
MPD 520034-000	YES	YES	—	—
MPD 520035-000	YES	YES	YES	—
MPD 520036-000	YES	YES	YES	YES

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.

Model Numbers: Group 4

Voltage

200-240 Vac

Current

16/20 Amps

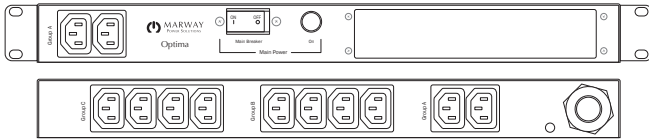
Inlet

L6-20P/9ft

Outlets

C13

All models include circuit breaker, power indicator, and surge suppressor. Specifications and availability subject to change without notice. General chassis style shown below without options.

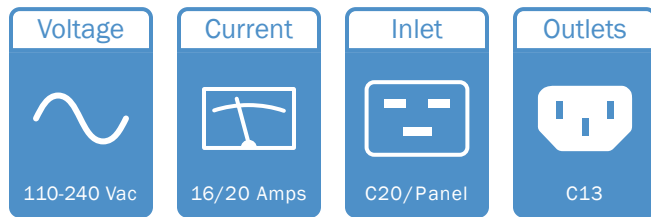


Model Number	Meter	Filter	Remote	Seq'd
MPD 520037-000	—	—	—	—
MPD 520038-000	—	—	YES	—
MPD 520039-000	—	—	YES	YES
MPD 520040-000	—	YES	—	—
MPD 520041-000	—	YES	YES	—
MPD 520042-000	—	YES	YES	YES
MPD 520043-000	YES	—	—	—
MPD 520044-000	YES	—	YES	—
MPD 520045-000	YES	—	YES	YES
MPD 520046-000	YES	YES	—	—
MPD 520047-000	YES	YES	YES	—
MPD 520048-000	YES	YES	YES	YES

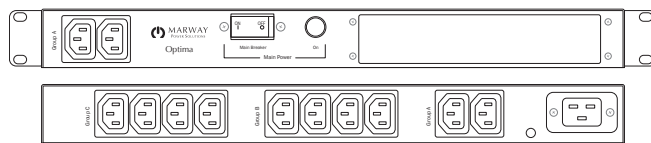
All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.

Optima 520 Series PDUs

Model Numbers: Group 5



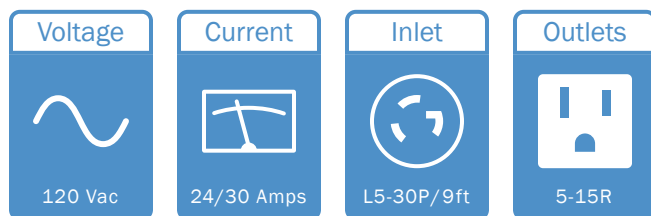
All models include circuit breaker, power indicator, and surge suppressor. Specifications and availability subject to change without notice. General chassis style shown below without options.



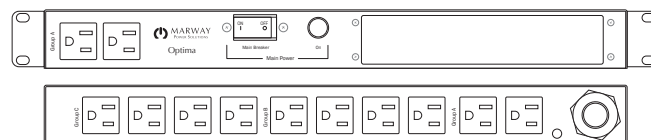
Model Number	Meter	Filter	Remote	Seq'd
MPD 520049-000	—	—	—	—
MPD 520050-000	—	—	YES	—
MPD 520051-000	—	—	YES	YES
MPD 520052-000	—	YES	—	—
MPD 520053-000	—	YES	YES	—
MPD 520054-000	—	YES	YES	YES
MPD 520055-000	YES	—	—	—
MPD 520056-000	YES	—	YES	—
MPD 520057-000	YES	—	YES	YES
MPD 520058-000	YES	YES	—	—
MPD 520059-000	YES	YES	YES	—
MPD 520060-000	YES	YES	YES	YES

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.

Model Numbers: Group 6



All models include circuit breaker, power indicator, and surge suppressor. Specifications and availability subject to change without notice. General chassis style shown below without options.



Model Number	Meter	Filter	Remote	Seq'd
MPD 520061-000	—	—	—	—
MPD 520062-000	—	—	YES	—
MPD 520063-000	—	—	YES	YES
MPD 520064-000	—	YES	—	—
MPD 520065-000	—	YES	YES	—
MPD 520066-000	—	YES	YES	YES
MPD 520067-000	YES	—	—	—
MPD 520068-000	YES	—	YES	—
MPD 520069-000	YES	—	YES	YES
MPD 520070-000	YES	YES	—	—
MPD 520071-000	YES	YES	YES	—
MPD 520072-000	YES	YES	YES	YES

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.

Optima 520 Series PDUs

Model Numbers: Group 7

Voltage

120 Vac

Current

24/30 Amps

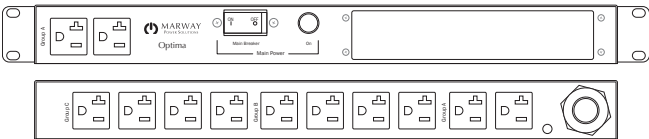
Inlet

L5-30P/9ft

Outlets

5-20R

All models include circuit breaker, power indicator, and surge suppressor. Specifications and availability subject to change without notice. General chassis style shown below without options.



Model Number	Meter	Filter	Remote	Seq'd
MPD 520073-000	—	—	—	—
MPD 520074-000	—	—	YES	—
MPD 520075-000	—	—	YES	YES
MPD 520076-000	—	YES	—	—
MPD 520077-000	—	YES	YES	—
MPD 520078-000	—	YES	YES	YES
MPD 520079-000	YES	—	—	—
MPD 520080-000	YES	—	YES	—
MPD 520081-000	YES	—	YES	YES
MPD 520082-000	YES	YES	—	—
MPD 520083-000	YES	YES	YES	—
MPD 520084-000	YES	YES	YES	YES

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.

Model Numbers: Group 8

Voltage

200-240 Vac

Current

24/30 Amps

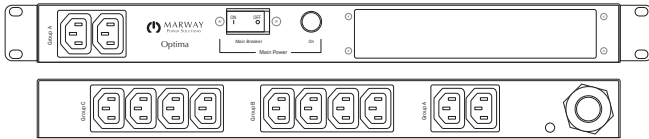
Inlet

L6-30P/9ft

Outlets

C13

All models include circuit breaker, power indicator, and surge suppressor. Specifications and availability subject to change without notice. General chassis style shown below without options.



Model Number	Meter	Filter	Remote	Seq'd
MPD 520085-000	—	—	—	—
MPD 520086-000	—	—	YES	—
MPD 520087-000	—	—	YES	YES
MPD 520088-000	—	YES	—	—
MPD 520089-000	—	YES	YES	—
MPD 520090-000	—	YES	YES	YES
MPD 520091-000	YES	—	—	—
MPD 520092-000	YES	—	YES	—
MPD 520093-000	YES	—	YES	YES
MPD 520094-000	YES	YES	—	—
MPD 520095-000	YES	YES	YES	—
MPD 520096-000	YES	YES	YES	YES

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.

Optima 520 Series PDUs

Power Cables

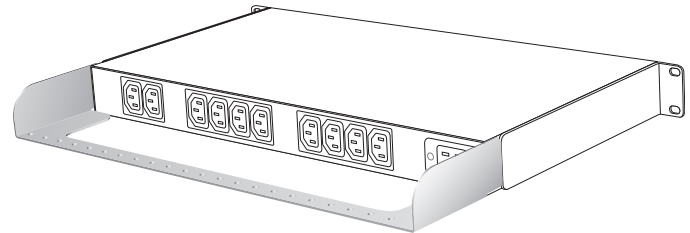
These power cables are for Group 5 models which have the recessed, male C20 connector.

Part Number	PDU	Facility	Length
311114-001	C19	C20	8 feet
311114-002	C19	L6-20P	8 feet
311114-003	C19	6-20P	8 feet
311114-004	C19	L5-20P	8 feet
311114-005	C19	5-20P	8 feet
311114-000	C19	Wire Leads	8 feet

Cable Bracket

Steel bracket, powder coated black. Fits onto the back of any Optima 520 model. Adds approximately 3.5" to the back of the PDU.

Part Number 113286-000



Remote Bus Cables

These cables are for the Remote Control Bus. Note that the UCP 3500 products include a 10-ft. cable (400062-120).

Part Number	PDU Connector	Cable Connector A	Cable Connector B	Remote Connector	Length
400075-120	AMP 1-480304-0	AMP 1-480305-0	AMP 1-480305-0	AMP 1-480304-0	10 feet
400062-120	AMP 1-480304-0	AMP 1-480305-0	Molex 03-09-3032	Molex 03-09-1081	10 feet

Optima™ 532 Series

Three-Phase PDUs





Optima™ 532 Series

Standard 2U Three Phase PDUs for General Purpose Applications

Custom Features in Standard Packages

Marway's Optima 532 Series consolidates several popular features from our custom products, and packages them into a standardized product line. These systems provide the high build quality of Marway's custom PDUs, with a focus on general-purpose industrial applications.

Feature Highlights

- 2U chassis with removable/relocatable mounting brackets.
- 120/208 Vac 3 ϕ wye, 50/60 Hz, 24 A continuous duty (30 A maximum), L21-30P inlet.
- Inlet available on rear panel or front panel (swaps position with one 5-20R duplex). Front inlet can be straight or right-angled strain relief connector (with the cable passing through an access hole in the recessed mounting bracket).
- Standard main power four-pole circuit breaker with a power on indicator for each phase.
- Standard surge suppression.
- Standard remote switching / remote EPO interface.
- Standard EMI filter.
- Standard 16/20 A utility circuit with one 5-20R duplex (not subject to the EPO system).
- Three 16/20 A circuits:
 - having either one 5-20R duplex or 6-20R duplex, and
 - one twist-lock outlet.
 - Subject to the remote EPO system.
 - All three circuits have the same twist-lock type with a choice of L5-20R, L5-30R, L6-20R, L6-30R, or L21-30R connectors. The 20 A connectors are subject to the branch breakers, but the 30 A connectors are subject only to the main breaker.
- Designed and manufactured to UL 62368-1.

A Sturdy Industrial Chassis

All chassis are 18-gauge steel and finished with a black powder coat. Mounting brackets are removable allowing for five chassis configurations. The typical front-forward flush position, and front forward recessed positions would likely be used in closed cabinets. A rear-forward flush position, and a rear-forward recessed position can be convenient for some open-frame installations. The brackets can be left off for table-top use, or to allow for user-provided mounting.



There are 30 configurations of 532 models. All are 120/208 Vac, 24/30 A capacity. All models include one 5-20R utility duplex. Outlet options include a choice of three additional 5-20R (top) or 6-20R (bottom) duplexes, and a choice of twist-lock connector types. The inlet location may be on the front or rear panel, with the front-mount option allowing for either a straight or right-angled strain relief.



Mounting brackets (shown here on a 520 series 1U model) are relocatable to allow for different mounting positions. The 532 series brackets also feature a large opening to direct the inlet cable to the interior of the rack when the brackets are mounted for a recessed-chassis position. Brackets can also be positioned to allow rear-facing positions as well.

A Solid Power Foundation

All models feature a four-pole UL recognized main circuit breaker, a thermally protected varistor on each phase for surge suppression, and an integral three-phase EMI filter. Each phase also has its own power on indicator. All models are fitted with a 9-foot cable and L21-30 twist-lock plug.

EMI Filter

Modern electronic equipment such as computers, security systems, communications hardware, data acquisition systems, and others require clean, stable power free of noise in order to perform their functions optimally and reliably. Electromagnetic interference (EMI) is noise added to power lines in buildings by a variety of commonly used electrical equipment such as air conditioning, office equipment, power tools, factory machinery, and more.

The EMI filter option includes a broad-spectrum EMI filter on the incoming ac power signal. The helps eliminate noise outside of the 60 Hz power signal range. In short, it helps ensure equipment attached to the PDU gets a good, clean power signal.

Remote EPO

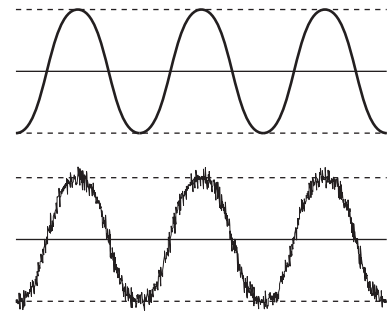
In some applications, particularly those with machinery connected to a PDU, an Emergency Power Off (EPO) may be required. An EPO is a large, prominently placed push button used to disconnect power to all devices connected to the PDU. These buttons are intended to be easy to find and press in an emergency scenario.

The EPO button, and on/off buttons are often located on a remote panel. Marway's Commander UCP 3500 and UCP 100 products are remote EPO panels for this purpose.

The Optima remote switching/EPO feature is primarily designed for use with Marway's Commander panels. A Commander panel may be connected to one or more PDUs, and thereby provide remote on/off and EPO functionality for several racks in unison. Whereas the Commander panel provides the on/off/EPO control, the remote connectors of the Optima PDU provides the machine-to-machine interfacing to enable that control from the Commander panel.

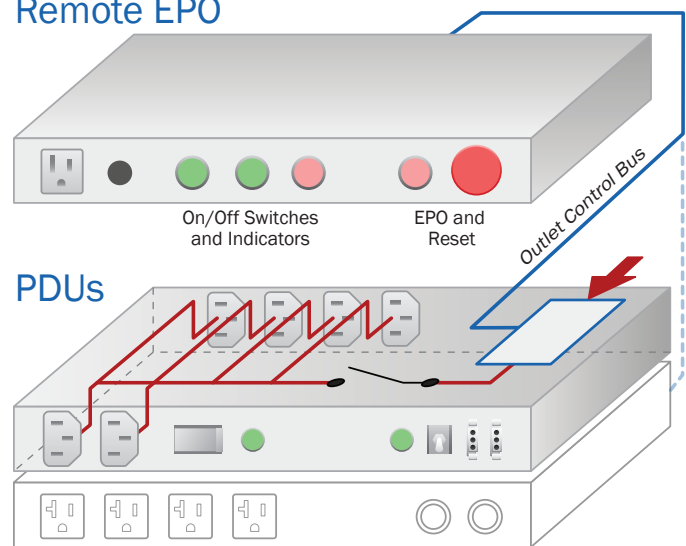
In the 532 Series products, the remote EPO feature enables remote control of all the outlets except for the duplex labeled J1.

Signal conditioning of ac power seeks to ensure as close to a perfect sine wave in the voltage signal as possible. The upper waveform has no noise, where the lower one (conceptual illustration) is quite noisy. An EMI filter helps to significantly reduce many causes of noise.



The remote switching/EPO option includes control bus connectors to match Marway's Commander UCP 3500 remote EPO panel, along with a manual override switch to force outlets either on or off.

Remote EPO



Optima 532 Series 2U PDUs

A mode switch on the PDU allows an operator to choose whether the outlets are forced on (cannot be turned off by the Commander except by the EPO), are forced off (cannot be turned on by the Commander), or are fully controlled from the remote panel.

Whenever the main circuit breaker is On, the phase power indicators illuminate to indicate that power is *available* to the switched outlets. That is, the remote panel may have the controlled outlets on or off, but the local indicators will be lit in either case to indicate power is capable of being applied to all outlets.

Commander UCP Remote EPO Panels



The Commander UCP 3500 (top) and UCP 100 (bottom) are standard Marway remote EPO panels suitable for controlling the Optima 520 series remote switching feature.

The UCP 3500 features on/off/EPO controls along with status indicators

and a number of connectors to provide flexibility in interfacing to multiple PDUs.

The UCP 100-001 includes a basic on/off switch with an EPO mushroom button in a blanking-plate-like open frame chassis.

Summary of Specifications

Inlet Voltage and Current

- All models 120/208 Vac, 50/60 Hz, three-phase wye
- All models 24 A continuous load / 30 A maximum

Overload Protection (standard)

- All models include a four-pole main circuit breaker wired with all three phases and neutral passing through the breaker.
- All branch breakers are UL 489, 16 A continuous load / 24 A max.
- Based on modern NEC regulations, traditional load ratings are de-rated to 80% for continuous duty. For example, a traditional 30 A maximum rating is now interpreted and labeled as a 24 A continuous duty rating. Optima current ratings are shown with continuous/maximum rating values.

Surge Suppression (standard)

- All models include a thermally protected varistor on each phase with a single-pulse energy rating of 120 joules
- All models have a peak surge current rating of 10,000 A for a single pulse 8x20µs wave.

EMI Filter (standard)

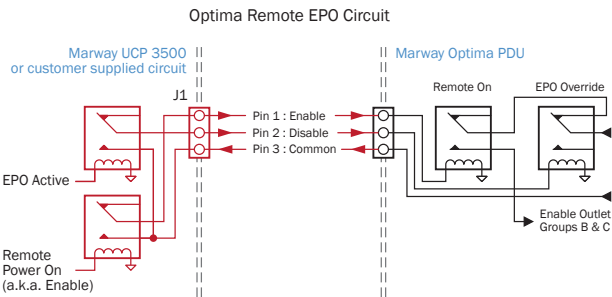
- All models have < 1.0 mA leakage.

Typical Insertion Loss (closed 50 Ohm system)

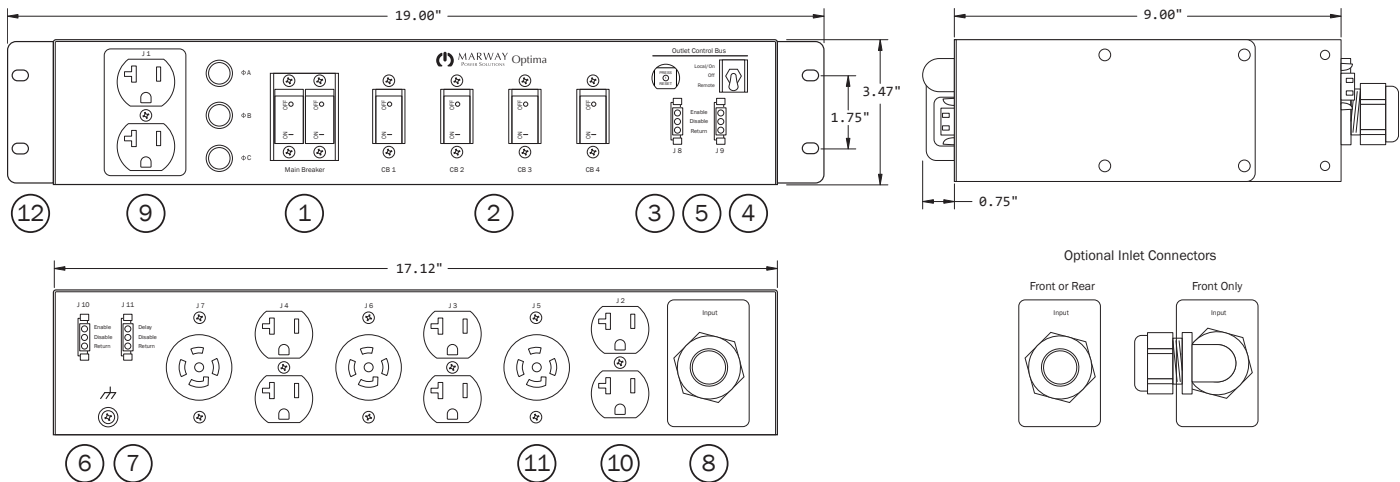
Frequency (MHz)	0.15	0.5	1	10	30
Common Mode (dB)	55	62	65	50	45
Differential Mode (dB)	36	55	60	60	50

Remote EPO (standard)

- Panel connector: AMP #1-480304-0, 250 Vac, 4 A maximum.
- Mating cable connector: AMP #1-480305-0.
- All bus connectors (2 front, 2 rear) are wired in parallel.
- All outlets other than J1 are managed by the Remote Control Bus.
- J1 outlets are always powered relative to the Main Breaker state.



Optima 532 Series 2U PDUs



532 Series Map of Features

Standard Features

- (1) Main 24/30 A breaker and phase-power indicators.
- (2) Branch 16/20 A circuit breakers for outlets. CB1 is for J1. CB2 is for J2 and J3. CB3 is for J4 and J5. CB4 is for J6 and J7.
- (3) Internal controls 1 A, push-type breaker.
- (4) Remote EPO mode switch. A three-position toggle provides manual control over the remote EPO mode. The Local/On position forces all outlets powered on, and only the remote EPO button will have affect (not the remote on/off). The Off position forces all outlets off, and the remote panel has no affect. The Remote position allows full control of the outlets by the remote panel.
- (5) Front panel remote EPO control bus interface. Two connectors enable the PDU to be daisy chained between a remote EPO panel (such as Marway's UCP 3500) and another PDU, or between two PDUs.
- (6) Rear panel remote EPO interface. A third connector for when a rear connection is more convenient.
- (7) Rear panel remote EPO delay interface. When the Enable signal of a remote panel is triggered, the signal is propagated immediately to all downstream devices through the connectors identified by (5) and (6). This connector (7) introduces a delay of 2 seconds before forwarding the Enable signal. By daisy chaining PDUs with the delay connectors, a staggered start can be created between each downstream PDU.

- (12) Mounting brackets. May be mounted to yield a "flush," front-recessed, rear-facing, or rear-recessed position of the chassis relative to the rack's mounting flanges. The brackets include a cutout to allow an inlet cable to be directed into the interior of the rack when the brackets are mounted for a recessed-chassis position. The brackets may also be removed for table top operation, or adaptation of the end user's own brackets.


Optional Configurations

- (8) Power inlet. All models include a strain-relieved 9-foot cable with an L21-30 plug. Some models include a straight connector as shown. Some models include a right-angled connector. See the description of the mounting brackets (12).
- (9) A 5-20R duplex at J1 is standard on all models. The location of the J1 duplex and the Inlet connector (8) are swapped on some models. Therefore, the inlet can be located on the rear panel or the front panel.
- (10) All models include 5-20R or 6-20R duplexes at J2, J3, and J4 on the rear panel.
- (11) All models include twist-lock connectors at J5, J6, and J7. All three will be of the same type with a choice from L5-20, L5-30, L6-20, L6-30, and L21-30.

Optima 532 Series 2U PDUs


Model Numbers: Group 1

Voltage




120/208 Vac

Current




24/30 Amps

Inlet



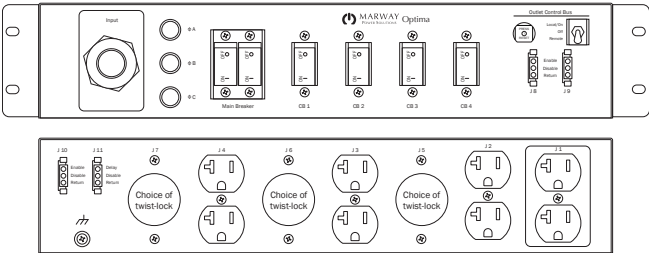
Front / Straight

Outlets



5-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.




Model Number	Inlet	J5, J6, J7 Outlets
MPD 532000-000	L21-30P / 9 ft.	L5-20R
MPD 532001-000	L21-30P / 9 ft.	L5-30R
MPD 532002-000	L21-30P / 9 ft.	L6-20R
MPD 532003-000	L21-30P / 9 ft.	L6-30R
MPD 532004-000	L21-30P / 9 ft.	L21-30R

All -000 models have N.O. EPO. Specify -001 for N.C. EPO.


Model Numbers: Group 2

Voltage




120/208 Vac

Current




24/30 Amps

Inlet



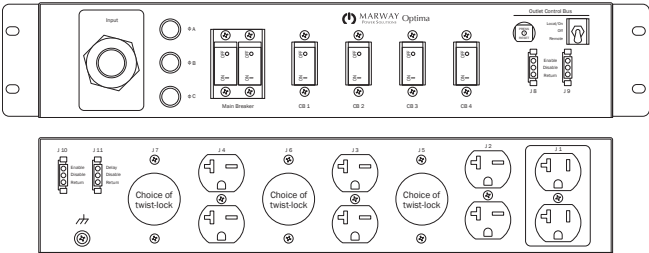
Front / Straight

Outlets



6-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.



Model Number	Inlet	J5, J6, J7 Outlets
MPD 532005-000	L21-30P / 9 ft.	L5-20R
MPD 532006-000	L21-30P / 9 ft.	L5-30R
MPD 532007-000	L21-30P / 9 ft.	L6-20R
MPD 532008-000	L21-30P / 9 ft.	L6-30R
MPD 532009-000	L21-30P / 9 ft.	L21-30R

All -000 models have N.O. EPO. Specify -001 for N.C. EPO.

Optima 532 Series 2U PDUs

Model Numbers: Group 3

Voltage

120/208 Vac

Current

24/30 Amps

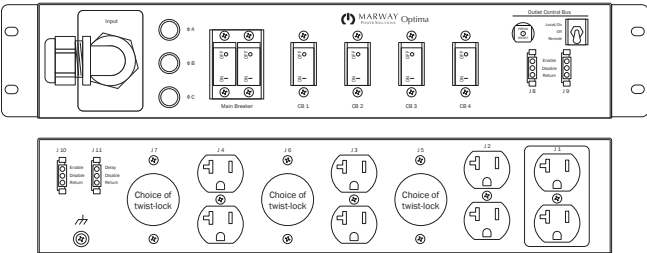
Inlet

Front / Angled

Outlets

5-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.



Model Number	Inlet	J5, J6, J7 Outlets
MPD 532010-000	L21-30P / 9 ft.	L5-20R
MPD 532011-000	L21-30P / 9 ft.	L5-30R
MPD 532012-000	L21-30P / 9 ft.	L6-20R
MPD 532013-000	L21-30P / 9 ft.	L6-30R
MPD 532014-000	L21-30P / 9 ft.	L21-30R

All -000 models have N.O. EPO. Specify -001 for N.C. EPO.

Model Numbers: Group 4

Voltage

120/208 Vac

Current

24/30 Amps

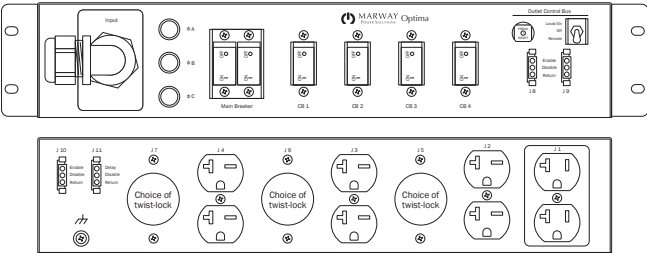
Inlet

Front / Angled

Outlets

6-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.




Model Number	Inlet	J5, J6, J7 Outlets
MPD 532015-000	L21-30P / 9 ft.	L5-20R
MPD 532016-000	L21-30P / 9 ft.	L5-30R
MPD 532017-000	L21-30P / 9 ft.	L6-20R
MPD 532018-000	L21-30P / 9 ft.	L6-30R
MPD 532019-000	L21-30P / 9 ft.	L21-30R

All -000 models have N.O. EPO. Specify -001 for N.C. EPO.

Optima 532 Series 2U PDUs


Model Numbers: Group 5

Voltage




120/208 Vac

Current




24/30 Amps

Inlet



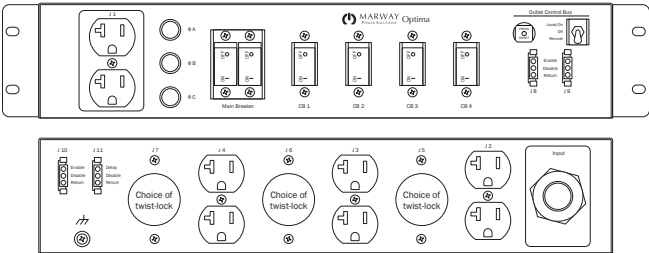
Rear / Straight

Outlets



5-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.




Model Number	Inlet	J5, J6, J7 Outlets
MPD 532020-000	L21-30P / 9 ft.	L5-20R
MPD 532021-000	L21-30P / 9 ft.	L5-30R
MPD 532022-000	L21-30P / 9 ft.	L6-20R
MPD 532023-000	L21-30P / 9 ft.	L6-30R
MPD 532024-000	L21-30P / 9 ft.	L21-30R

All -000 models have N.O. EPO. Specify -001 for N.C. EPO.


Model Numbers: Group 6

Voltage




120/208 Vac

Current




24/30 Amps

Inlet



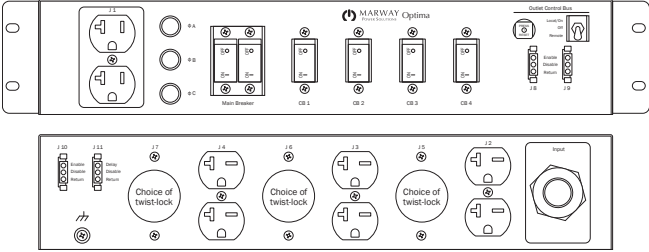
Rear / Straight

Outlets



6-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.



Model Number	Inlet	J5, J6, J7 Outlets
MPD 532025-000	L21-30P / 9 ft.	L5-20R
MPD 532026-000	L21-30P / 9 ft.	L5-30R
MPD 532027-000	L21-30P / 9 ft.	L6-20R
MPD 532028-000	L21-30P / 9 ft.	L6-30R
MPD 532029-000	L21-30P / 9 ft.	L21-30R

All -000 models have N.O. EPO. Specify -001 for N.C. EPO.

Optima 532 Series 2U PDUs

Remote Bus Cables

These cables are for the Remote Control Bus. Note that the UCP 3500 products include a 10-ft. cable (400062-120).

Part Number	PDU Connector	Cable Connector A	Cable Connector B	Remote Connector	Length
400075-120	AMP 1-480304-0	AMP 1-480305-0	AMP 1-480305-0	AMP 1-480304-0	10 feet
400062-120	AMP 1-480304-0	AMP 1-480305-0	Molex 03-09-3032	Molex 03-09-1081	10 feet

Optima™ 533 Series

Three-Phase PDUs





Optima™ 533 Series

Standard 3U Three Phase PDUs for General Purpose Applications

Custom Features in Standard Packages

Marway's Optima 533 Series consolidates several popular features from our custom products, and packages them into a standardized product line. These systems provide the high build quality of Marway's custom PDUs, with a focus on general-purpose industrial applications.

Shared Feature Highlights

- 3U chassis with removable/relocatable mounting brackets.
- 120/208 Vac 3 ϕ wye, 50/60 Hz, 24 A continuous duty (30 A maximum), L21-30P inlet.
- Inlet available on rear panel or front panel (swaps position with the J1 5-20R duplex). The front panel inlet connector can be either a recessed male or a strain-relieved cable. The rear panel inlet connector is always a strain-relieved cable. Cables are 9 feet long with an L21-30 plug.
- Standard main power four-pole circuit breaker with a power on indicator for each phase.
- Standard surge suppression.
- Standard remote switching / remote EPO interface.
- Standard EMI filter.
- Standard 16/20 A utility circuit with one 5-20R duplex (not subject to the EPO system).
- One set of models includes eight 16/20 A circuits, each having one 5-20R duplex. These eight-duplex models do not include additional twist-lock connectors.
- All other models include six 16/20 A circuits, each with one 5-20R duplex. These six-duplex models also have three twist-lock connectors as described below.
- The six-duplex models include two 16/20 A circuits each with a twist-lock outlet. Both have the same twist-lock type with a choice of L5-20R, L5-30R, L6-20R, or L6-30R.
- The six-duplex models also include one 24/30 A pass-through off the main breaker with one L21-30R connector.
- Designed and manufactured to UL 62368-1.

A Sturdy Industrial Chassis

All chassis are 18-gauge steel and finished with a black powder coat. Mounting brackets are removable allowing for five chassis configurations. The typical front-forward flush position, and front forward recessed positions would likely be used in closed cabinets. A rear-forward flush position, and a rear-forward recessed position can be convenient for some open-frame installations. The brackets can be left off for table-top use, or to allow for user-provided mounting.



There are 15 configurations of 533 models providing options for outlet twist-lock connector types, and location of the inlet on the front or rear panel. Shown are two configurations of back panels where one set of models includes all 5-20R duplexes, and all other models include six duplexes and three twist lock connectors.



Mounting brackets (shown here on a 520 series 1U model) are relocatable to allow for different mounting positions. The 533 series brackets also feature a large opening to direct the inlet cable to the interior of the rack when the brackets are mounted for a recessed-chassis position. Brackets can also be positioned to allow rear-facing positions as well.

A Solid Power Foundation

All models feature a four-pole UL recognized main circuit breaker, a thermally protected varistor on each phase for surge suppression, and an integral three-phase EMI filter. Each phase also has its own power on indicator. All models are fitted with either an L21-30 twist-lock plug and 9 foot cable or L21-30 recessed male connector.

EMI Filter

Modern electronic equipment such as computers, security systems, communications hardware, data acquisition systems, and others require clean, stable power free of noise in order to perform their functions optimally and reliably. Electromagnetic interference (EMI) is noise added to power lines in buildings by a variety of commonly used electrical equipment such as air conditioning, office equipment, power tools, factory machinery, and more.

The EMI filter option includes a broad-spectrum EMI filter on the incoming ac power signal. The helps eliminate noise outside of the 60 Hz power signal range. In short, it helps ensure equipment attached to the PDU gets a good, clean power signal.

Remote EPO

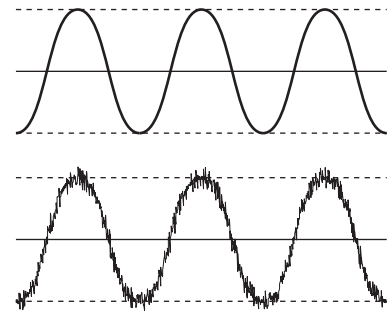
In some applications, particularly those with machinery connected to a PDU, an Emergency Power Off (EPO) may be required. An EPO is a large, prominently placed push button used to disconnect power to all devices connected to the PDU. These buttons are intended to be easy to find and press in an emergency scenario.

The EPO button, and on/off buttons are often located on a remote panel. Marway's Commander UCP 3500 and UCP 100 products are remote EPO panels for this purpose.

The Optima remote switching/EPO feature is primarily designed for use with Marway's Commander panels. A Commander panel may be connected to one or more PDUs, and thereby provide remote on/off and EPO functionality for several racks in unison. Whereas the Commander panel provides the on/off/EPO control, the remote connectors of the Optima PDU provides the machine-to-machine interfacing to enable that control from the Commander panel.

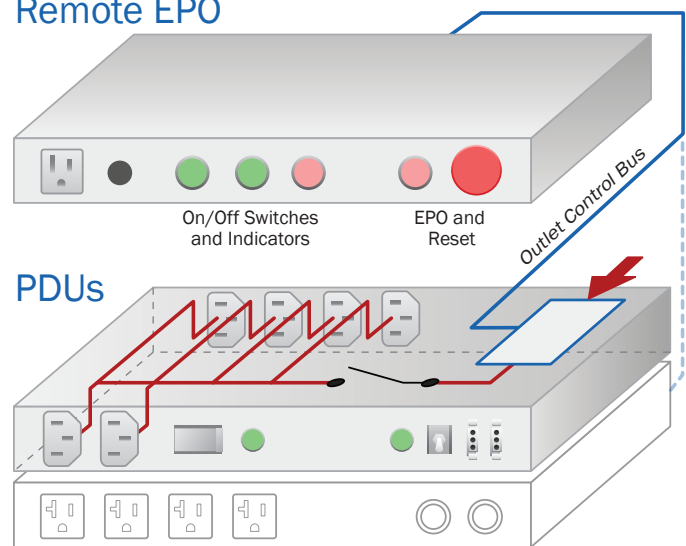
In the 533 Series products, the remote EPO feature enables remote control of all the outlets except for the duplex labeled J1.

Signal conditioning of ac power seeks to ensure as close to a perfect sine wave in the voltage signal as possible. The upper waveform has no noise, where the lower one (conceptual illustration) is quite noisy. An EMI filter helps to significantly reduce many causes of noise.



The remote switching/EPO option includes control bus connectors to match Marway's Commander UCP 3500 remote EPO panel, along with a manual override switch to force outlets either on or off.

Remote EPO



Optima 533 Series 3U PDUs

A mode switch on the PDU allows an operator to choose whether the outlets are forced on (cannot be turned off by the Commander except by the EPO), are forced off (cannot be turned on by the Commander), or are fully controlled from the remote panel.

Whenever the main circuit breaker is On, the phase power indicators illuminate to indicate that power is *available* to the switched outlets. That is, the remote panel may have the controlled outlets on or off, but the local indicators will be lit in either case to indicate power is capable of being applied to all outlets.

Commander UCP Remote EPO Panels



The Commander UCP 3500 (top) and UCP 100 (bottom) are standard Marway remote EPO panels suitable for controlling the Optima 520 series remote switching feature.

The UCP 3500 features on/off/EPO controls along with status indicators

and a number of connectors to provide flexibility in interfacing to multiple PDUs.

The UCP 100-001 includes a basic on/off switch with an EPO mushroom button in a blanking-plate-like open frame chassis.

Summary of Specifications

Inlet Voltage and Current

- All models 120/208 Vac, 50/60 Hz, three-phase wye
- All models 24 A continuous load / 30 A maximum

Overload Protection (standard)

- All models include a four-pole main circuit breaker wired with all three phases and neutral passing through the breaker.
- All branch breakers are UL 489, 16 A continuous load / 24 A max.
- Based on modern NEC regulations, traditional load ratings are de-rated to 80% for continuous duty. For example, a traditional 30 A maximum rating is now interpreted and labeled as a 24 A continuous duty rating. Optima current ratings are shown with continuous/maximum rating values.

Surge Suppression (standard)

- All models include a thermally protected varistor on each phase with a single-pulse energy rating of 120 joules
- All models have a peak surge current rating of 10,000 A for a single pulse 8x20µs wave.

EMI Filter (standard)

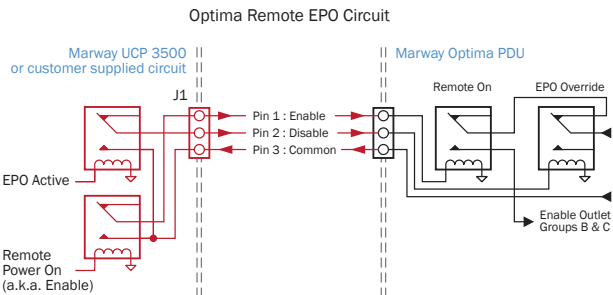
- All models have < 1.0 mA leakage.

Typical Insertion Loss (closed 50 Ohm system)

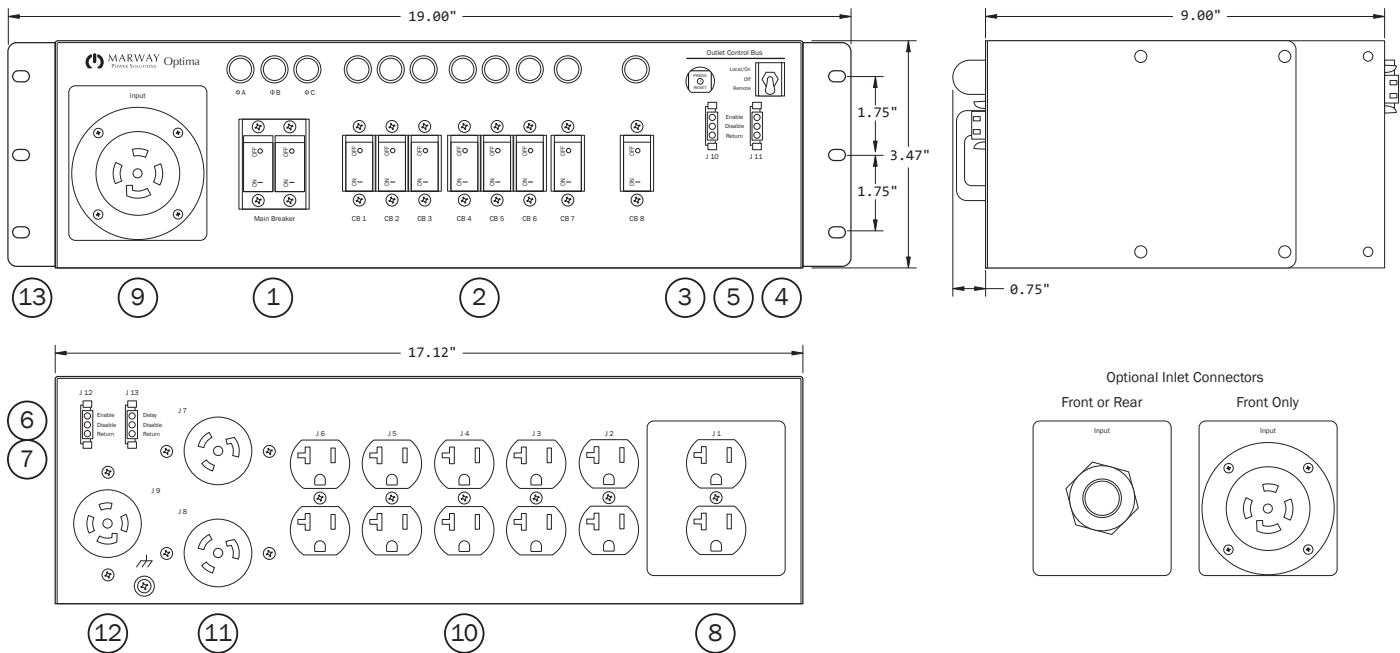
Frequency (MHz)	0.15	0.5	1	10	30
Common Mode (dB)	55	62	65	50	45
Differential Mode (dB)	36	55	60	60	50

Remote EPO (standard)

- Panel connector: AMP #1-480304-0, 250 Vac, 4 A maximum.
- Mating cable connector: AMP #1-480305-0.
- All bus connectors (2 front, 2 rear) are wired in parallel.
- All outlets other than J1 are managed by the Remote Control Bus.
- J1 outlets (and J9 if present) are always powered relative to the Main Breaker state.



Optima 533 Series 3U PDUs



533 Series Map of Features

Standard Features

- (1) Main 24/30 A breaker and phase-power indicators.
- (2) Branch 16/20 A circuit breakers for outlets. CB1 is for J1. CB2 is for J2, et cetera. There is no breaker for J9 on the models where J9 is included.
- (3) Internal controls 1 A, push-type breaker.
- (4) Remote EPO mode switch. A three-position toggle provides manual control over the remote EPO mode. The Local/On position forces all outlets powered on, and only the remote EPO button will have affect (not the remote on/off). The Off position forces all outlets off, and the remote panel has no affect. The Remote position allows full control of the outlets by the remote panel.
- (5) Front panel remote EPO control bus interface. Two connectors enable the PDU to be daisy chained between a remote EPO panel (such as Marway's UCP 3500) and another PDU, or between two PDUs.
- (6) Rear panel remote EPO interface. A third connector for when a rear connection is more convenient.
- (7) Rear panel remote EPO delay interface. When the Enable signal of a remote panel is triggered, the signal is propagated immediately to all downstream devices through the connectors identified by (5) and (6). This connector (7) introduces a delay of 2 seconds before forwarding the Enable signal. By daisy chaining

PDUs with the delay connectors, a staggered start can be created between each downstream PDU.


- (13) Mounting brackets. May be mounted to yield a "flush," front-recessed, rear-facing, or rear-recessed position of the chassis relative to the rack's mounting flanges. The brackets include a cutout to allow an inlet cable to be directed into the interior of the rack when the brackets are mounted for a recessed-chassis position. The brackets may also be removed for table top operation, or adaptation of the end user's own brackets.


Optional Configurations


- (8) A 5-20R duplex at J1 is standard on all models. The location of the J1 duplex and the Inlet connector (9) are swapped on some models. Therefore, the inlet can be located on the rear panel or the front panel.
- (9) Power inlet. Some models include a recessed male connector as shown. Some models include a strain-relieved 9-foot cable with an L21-30 plug.
- (10) All models include at least six 5-20R duplexes.
- (11) On some models, J7 and J8 are twist lock connectors (with a choice of L5-20, L5-30, L6-20, L6-30 where both are the same). On other models, J7 and J8 are 5-20R duplexes.
- (12) Models which include twist locks for J7 and J8 will also include J9 which is always an L21-30 providing pass-through power from the main breaker.


Optima 533 Series 3U PDUs

Model Numbers: Group 1

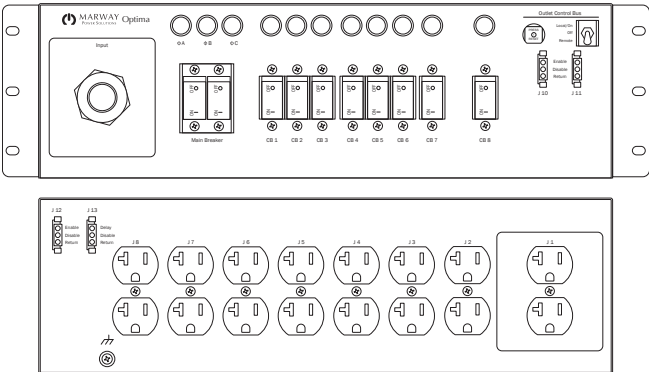
Voltage

120/208 Vac

Current

24/30 Amps

Inlet

Front / Straight

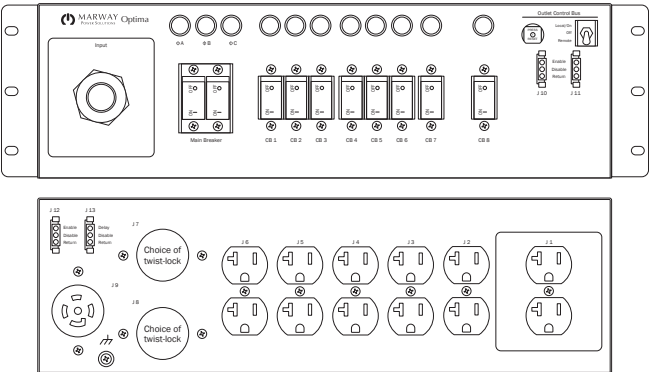
Outlets

5-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.





Model Number	Inlet	J7, J8 Outlets	J9 Outlet
MPD 533000-000	L21-30P / 9 ft.	5-20R	None
MPD 533001-000	L21-30P / 9 ft.	L5-20R	L21-30R
MPD 533002-000	L21-30P / 9 ft.	L5-30R	L21-30R
MPD 533003-000	L21-30P / 9 ft.	L6-20R	L21-30R
MPD 533004-000	L21-30P / 9 ft.	L6-30R	L21-30R


All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.




Model Numbers: Group 2

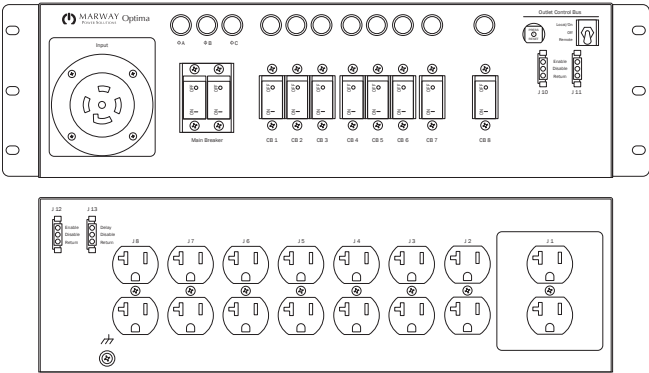
Voltage

120/208 Vac

Current

24/30 Amps

Inlet

Front / Recessed

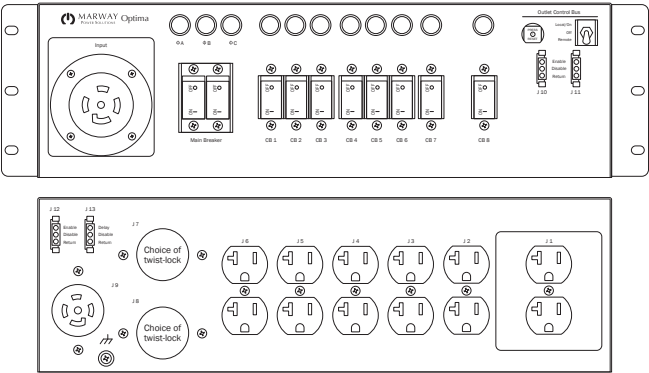
Outlets

5-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.



Model Number	Inlet	J7, J8 Outlets	J9 Outlet
MPD 533005-000	L21-30 RM	5-20R	None
MPD 533006-000	L21-30 RM	L5-20R	L21-30R
MPD 533007-000	L21-30 RM	L5-30R	L21-30R
MPD 533008-000	L21-30 RM	L6-20R	L21-30R
MPD 533009-000	L21-30 RM	L6-30R	L21-30R

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.



Optima 533 Series 3U PDUs

Model Numbers: Group 3

Voltage

120/208 Vac

Current

24/30 Amps

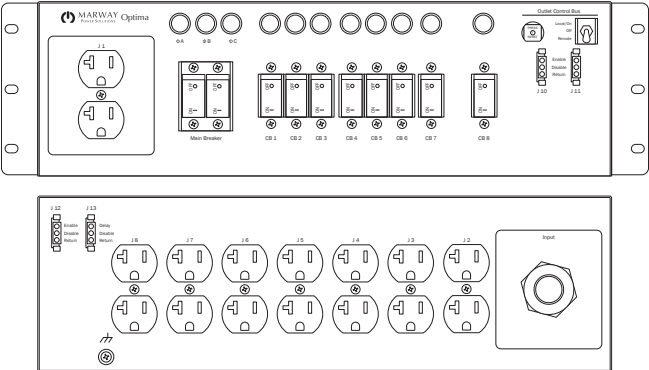
Inlet

Rear / Straight

Outlets

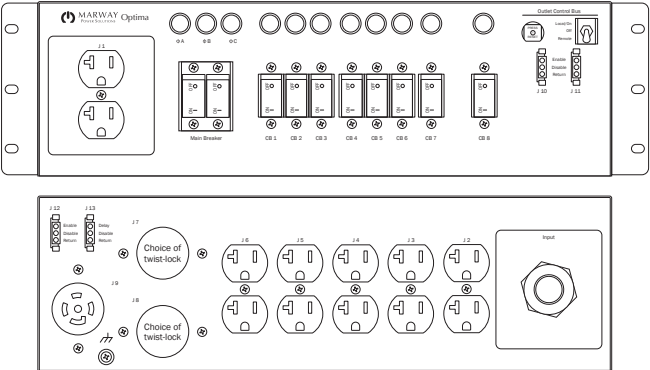
5-20R

All models include surge suppressor, EMI filter, and remote EPO interface. All models include one 5-20R duplex at J1. Specifications and availability subject to change without notice. General chassis style shown below without specific twist-lock style.



Model Number	Inlet	J7, J8 Outlets	J9 Outlet
MPD 533010-000	L21-30P / 9 ft.	5-20R	None
MPD 533011-000	L21-30P / 9 ft.	L5-20R	L21-30R
MPD 533012-000	L21-30P / 9 ft.	L5-30R	L21-30R
MPD 533013-000	L21-30P / 9 ft.	L6-20R	L21-30R
MPD 533014-000	L21-30P / 9 ft.	L6-30R	L21-30R

All -000 models have N.O. EPO. Specify -001 for N.C. EPO functionality.



Remote Bus Cables

These cables are for the Remote Control Bus. Note that the UCP 3500 products include a 10-ft. cable (400062-120).

Part Number	PDU Connector	Cable Connector A	Cable Connector B	Remote Connector	Length
400075-120	AMP 1-480304-0	AMP 1-480305-0	AMP 1-480305-0	AMP 1-480304-0	10 feet
400062-120	AMP 1-480304-0	AMP 1-480305-0	Molex 03-09-3032	Molex 03-09-1081	10 feet

Optima™ 529/539 Series

Single-Phase and Three-Phase Basic PDUs





Optima™ 529/539 Series

Standard 0U Single-Phase and Three-Phase Basic PDUs

Economical Industrial Solutions

Marway's Optima 529/39 Series basic 0U PDUs are designed for industrial environments. These systems provide the same high build quality Marway's PDUs are known for, but with a focus on the needs of economical, general-purpose applications. A variety of power options, inlet connectors, and outlet connectors provides 24 models to choose from.

Feature Highlights

- 0U chassis in full-rack (66") and half-rack (40") sizes.
- End, side, and tool-less mounting options.
- Multiple inlet power options including:
 - 100-120 Vac single phase, 50/60 Hz, 12/15 A
 - 100-120 Vac single phase, 50/60 Hz, 16/20 A
 - 100-120 Vac single phase, 50/60 Hz, 24/30 A
 - 100-240 Vac single phase, 50/60 Hz, 16/20 A
 - 200-240 Vac single phase, 50/60 Hz, 16/20 A
 - 200-240 Vac single phase, 50/60 Hz, 24/30 A
 - 120/208 Vac three phase, 50/60 Hz, 16/20 A
 - 120/208 Vac three phase, 50/60 Hz, 24/30 A
- Standard UL 489 circuit breakers with power on indicator.
- A variety of inlet connector types including:
 - 5-15P, 5-20P,
 - L5-20P, L5-30P,
 - L6-20P, L6-30P,
 - L21-20P, L21-30P,
 - C20 chassis, and C20 cable.
- A variety of outlet connector types including:
 - 5-15R, 5-20R,
 - C13, and C19.
- Designed and manufactured to UL 62368-1.

A Sturdy Industrial Chassis


All chassis are 18-gauge steel and finished with a black powder coat. Mounting options include removable brackets which can be positioned for left, right, or end mounting. Additionally, rear-mounting "buttons" are included for slotted, tool-less mounting enclosures.



Optima 529/539 Series 0U PDUs


Model Numbers: Group 1

Outlets



C13 / C19

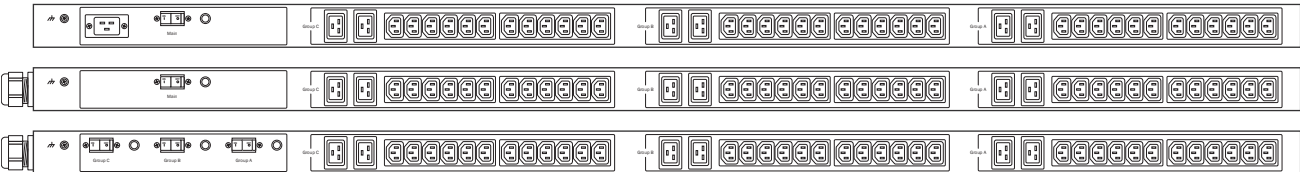
Enclosure



Full Rack


Specifications and availability subject to change without notice. General enclosure style shown below. Actual model-specific appearance may vary from these illustrations.

Model Number	Inlet	Current ^[1]	Circuit Breakers	Outlet Volts	Outlets
MPD 529001-000	100-240 Vac 1 ϕ C20 chassis	16/20 A	1 @ 20 A	100-240 Vac	(36) C13 (6) C19
MPD 529002-000	100-240 Vac 1 ϕ C20 / 15 ft.	16/20 A	1 @ 20 A	100-240 Vac	(36) C13 (6) C19
MPD 529003-000	200-240 Vac 1 ϕ L6-20P / 15 ft.	16/20 A	1 @ 20 A	200-240 Vac	(36) C13 (6) C19
MPD 529004-000	200-240 Vac 1 ϕ L6-30P / 15 ft.	16/20 A	3 @ 20 A	200-240 Vac	(36) C13 (6) C19
MPD 539001-000	120/208 Vac 3 ϕ L21-20P / 15 ft.	16/20 A	3 @ 20 A	208 Vac	(36) C13 (6) C19
MPD 539002-000	120/208 Vac 3 ϕ L21-30P / 15 ft.	16/20 A	3 @ 20 A	208 Vac	(36) C13 (6) C19




Model Numbers: Group 2

Outlets



C13 / C19

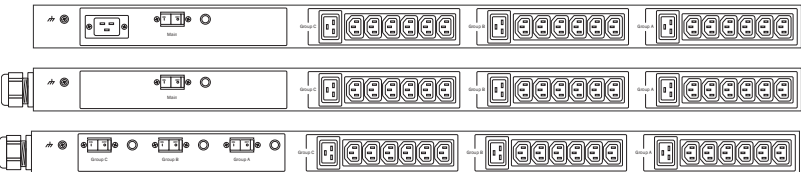
Enclosure



Half Rack

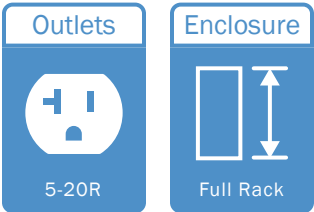
Specifications and availability subject to change without notice. General enclosure style shown below. Actual model-specific appearance may vary from these illustrations.

Model Number	Inlet	Current ^[1]	Circuit Breakers	Outlet Volts	Outlets
MPD 529009-000	100-240 Vac 1 ϕ C20 chassis	16/20 A	1 @ 20 A	100-240 Vac	(18) C13 (3) C19
MPD 529010-000	100-240 Vac 1 ϕ C20 / 15 ft.	16/20 A	1 @ 20 A	100-240 Vac	(18) C13 (3) C19
MPD 529011-000	200-240 Vac 1 ϕ L6-20P / 15 ft.	16/20 A	1 @ 20 A	200-240 Vac	(18) C13 (3) C19
MPD 529012-000	200-240 Vac 1 ϕ L6-30P / 15 ft.	24/30 A	3 @ 20 A	200-240 Vac	(18) C13 (3) C19
MPD 539005-000	120/208 Vac 3 ϕ L21-20P / 15 ft.	16/20 A	3 @ 20 A	208 Vac	(18) C13 (3) C19
MPD 539006-000	120/208 Vac 3 ϕ L21-30P / 15 ft.	24/30 A	3 @ 20 A	208 Vac	(18) C13 (3) C19



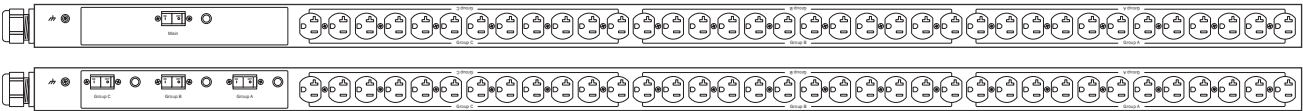
Optima 529/539 Series 0U PDUs

Model Numbers: Group 3

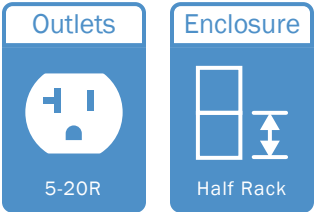


Specifications and availability subject to change without notice. General enclosure style shown below. Actual model-specific appearance may vary from these illustrations.

Model Number	Inlet	Current ^[1]	Circuit Breakers	Outlet Volts	Outlets
MPD 529006-000	100-120 Vac 1 ϕ 5-20P / 15 ft.	16/20 A	1 @ 20 A	100-120 Vac	(36) 5-20R
MPD 529007-000	100-120 Vac 1 ϕ L5-20P / 15 ft.	16/20 A	1 @ 20 A	100-120 Vac	(36) 5-20R
MPD 529008-000	100-120 Vac 1 ϕ L5-30P / 15 ft.	24/30 A	3 @ 20 A	100-120 Vac	(36) 5-20R
MPD 539003-000	120/208 Vac 3 ϕ L21-20P / 15 ft.	16/20 A	3 @ 20 A	120 Vac	(36) 5-20R
MPD 539004-000	120/208 Vac 3 ϕ L21-30P / 15 ft.	24/30 A	3 @ 20 A	120 Vac	(36) 5-20R

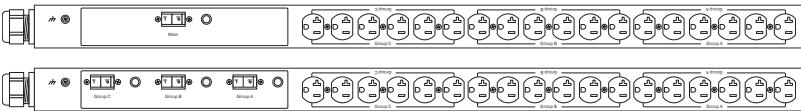


Model Numbers: Group 4



Specifications and availability subject to change without notice. General enclosure style shown below. Actual model-specific appearance may vary from these illustrations.


Model Number	Inlet	Current ^[1]	Circuit Breakers	Outlet Volts	Outlets
MPD 529014-000	100-120 Vac 1 ϕ 5-20P / 15 ft.	16/20 A	1 @ 20 A	100-120 Vac	(18) 5-20R
MPD 529015-000	100-120 Vac 1 ϕ L5-20P / 15 ft.	16/20 A	1 @ 20 A	100-120 Vac	(18) 5-20R
MPD 529016-000	100-120 Vac 1 ϕ L5-30P / 15 ft.	24/30 A	3 @ 20 A	100-120 Vac	(18) 5-20R
MPD 539007-000	120/208 Vac 3 ϕ L21-20P / 15 ft.	16/20 A	3 @ 20 A	120 Vac	(18) 5-20R
MPD 539008-000	120/208 Vac 3 ϕ L21-30P / 15 ft.	24/30 A	3 @ 20 A	120 Vac	(18) 5-20R



Optima 529/539 Series 0U PDUs


Model Numbers: Group 5

Outlets



5-15R

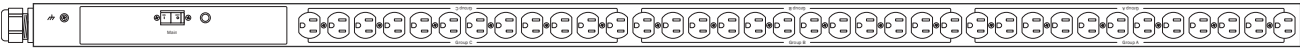
Enclosure



Full Rack


Model Number	Inlet	Current ^[1]	Circuit Breakers	Outlet Volts	Outlets
MPD 529005-000	100-120 Vac 1Φ 5-15P / 15 ft.	12/15 A	1 @ 15 A	100-120 Vac	(36) 5-15R

Specifications and availability subject to change without notice. General enclosure style shown below. Actual model-specific appearance may vary from these illustrations.




Model Numbers: Group 6

Outlets



5-15R

Enclosure



Half Rack

Model Number	Inlet	Current ^[1]	Circuit Breakers	Outlet Volts	Outlets
MPD 529013-000	100-120 Vac 1Φ 5-15P / 15 ft.	12/15 A	1 @ 15 A	100-120 Vac	(18) 5-15R

Specifications and availability subject to change without notice. General enclosure style shown below. Actual model-specific appearance may vary from these illustrations.

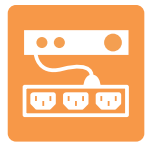


Notes:

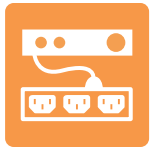
[1] Based on modern NEC regulations, traditional load ratings are de-rated to 80% for continuous duty. For example, a traditional 30A maximum rating is now interpreted and labeled as a 24A continuous duty rating. Optima current ratings are shown with continuous/maximum rating values.

Commander™ UCP 3500

Remote EPO Panel



Commander
3500



Commander™ UCP 3500

Universal Control Panel for On/Off/EPO

Consolidated Control

Marway's UCP 3500 consolidates into a single control panel the on, off, and EPO control features to manage one or more power distribution units. PDUs with remotely switchable outlets can therefore provide power on/off of downstream equipment switched in unison. Additionally, the EPO circuit improves safety of the combined power system.

Feature Highlights

- Connects to one or multiple PDUs.
- On/Off power control to connected PDUs.
- EPO for all connected PDUs.
- EPO reset/silence button.
- Built-in lamp test button.
- Local "Breaker On" lamp indicates UCP has power.
- Local circuit breaker protects UCP circuitry.
- Front panel 125 Vac, 5-15R convenience outlet.
- Back panel 125 Vac, 5-15R convenience outlet.
- UL Listed.

On/Off Circuit

The power on/off circuit is the primary feature of the UCP 3500. Lighted on/off switches provide easily recognized status on the UCP, and connections on the back of the chassis allow for remote indication as well. Dry contacts, connected at the back panel, provide two channels of on/off control (each can be of a unique power spec), which can be externally branched, to provide a power on signal to as much downstream equipment as needed.

EPO Circuit

In some applications, particularly those with machinery connected to a PDU, an Emergency Power Off (EPO) may be required. An EPO is a large, prominently placed push button used to disconnect power to all devices connected to the PDU. These buttons are intended to be easy to find and press in an emergency scenario, such as when a person identifies a hazardous condition not handled by the end-point equipment itself. The UCP 3500 provides this EPO circuit including remote capabilities to allow additional EPO buttons to trigger the same shutdown.

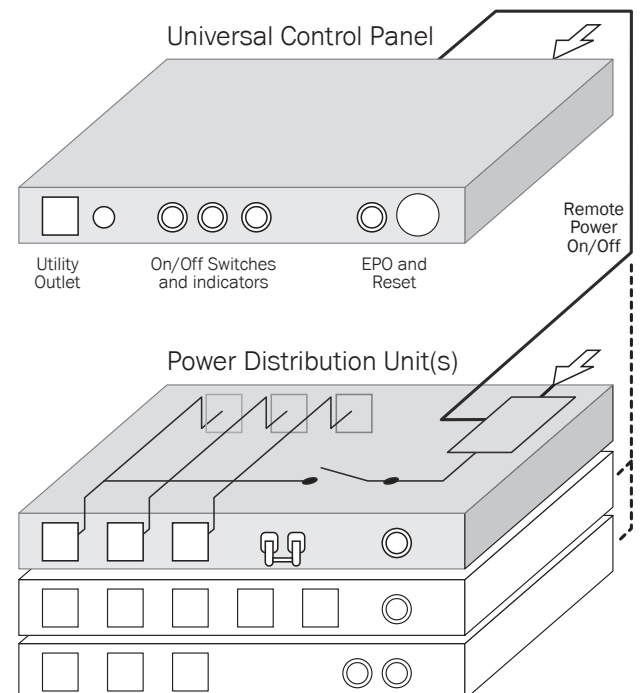
Model Number	Color
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UCP 3500-000	Black
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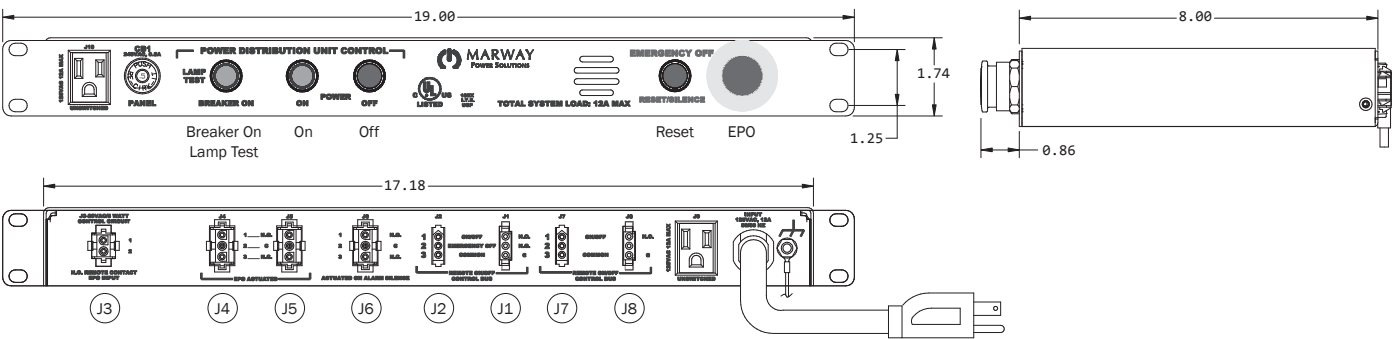
UCP 3500-000	Gray
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Universal control panels (UCPs) provide on, off, and EPO control for one or more PDUs to consolidate control of up to an entire rack of application-specific equipment.



Commander UCP 3500 Universal Control Panel



When Switched Off

The front panel:

- Breaker On lamp will be lit.
- Power On lamp will *not* be lit.
- Power Off lamp will be lit.
- Reset lamp will *not* be lit.*
- J10 will have facility power.

The back panel:

- J3 has 20 Vac power.
- J2 common is not returned.
- J1 common is not returned.
- J7 common is not returned.
- J8 common is not returned.
- J9 will have facility power.
- J4, J5, J6 are unused.

When Switched On

The front panel:

- Breaker On lamp will be lit.
- Power On lamp will be lit.
- Power Off lamp will *not* be lit.
- Reset lamp will *not* be lit.
- J10 will have facility power.

The back panel:

- J3 has 20 Vac power.
- J2 common is returned to pin 1.
- J1 common is returned to pin 1.
- J7 common is returned to pin 1.
- J8 common is returned to pin 1.
- J9 will have facility power.
- J4, J5, J6 are unused.

When EPO is Activated

The front panel:

- Breaker On lamp will be lit.
- Power On lamp will *not* be lit.
- Power Off lamp will be lit.
- Reset lamp will be lit.
- J10 will have facility power.
- On/Off are ineffective until after the Reset switch is pressed.

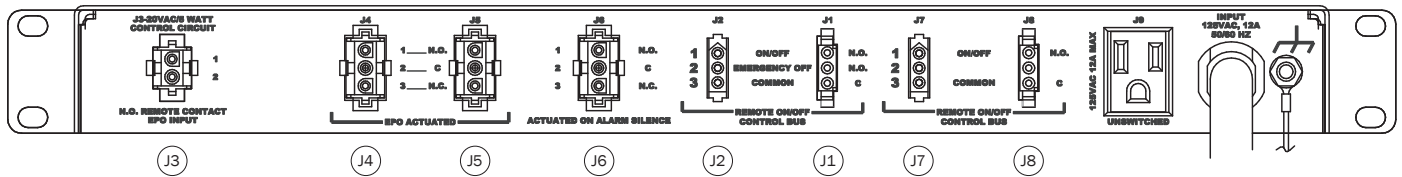
The back panel:

- J3 has 20 Vac power.
- J2 common is returned to pin 2.
- J1 common is returned to pin 2.
- J7 common is not returned.
- J8 common is not returned.
- J9 will have facility power.
- J4, J5, J6 are unused.

* The Reset circuit will be in effect when the UCP is first powered. The lamp will be lit, and the Reset button must be pressed. After that, when the unit is switched off, the Reset lamp will not be lit.

Dimensions	Electrical	Environment
1U Rack-mount chassis Weight: 9.0 lbs Front Width: 19.00" Chassis Width: 17.18" Chassis Height: 1.74" Chassis Depth 8.00"	Input power rating: 125 Vac, 50/60 Hz Current Load: 12 A continuous / 15 A maximum J1: AMP #1-480304-0, 250 Vac, 4 A max. J2: Molex #03-09-1081, 250 Vac, 4 A max. J3: AMP #1-480699-0, 20 Vac, no load J4, J5, J6: populated, but unused J7: Molex #03-09-1081, 250 Vac, 4 A max. J8: AMP #1-480304-0, 250 Vac, 4 A max. J9: NEMA 5-15R, 125 Vac ** J10: NEMA 5-15R, 125 Vac ** ** combined load of J9 and J10 is subject to the 12/15 A rating	Operating Temperature: 32°F to 122°F Maximum Altitude: 25,000 feet Relative Humidity: 5% to 85% non-condensing

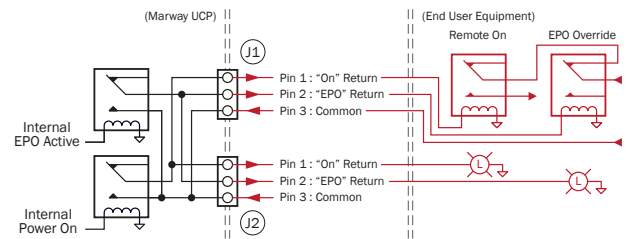
Commander UCP 3500 Universal Control Panel



Using J1 / J2 for Remote On/Off/EPO Control

Connectors J1 and J2 are wired in parallel. They are effectively identical except that they are physically different types of connectors. Pin 1 becomes activated when the UCP is On, and pin 2 becomes activated when the UCP is in an EPO state. Pin 3 is the remote power input ("common" to both pins 1 and 2). Use these connectors to drive Marway PDU's and other equipment.

- J1 Connector: AMP #1-480304-0, mating #1-480305-0
- J2 Connector: Molex #03-09-1081, mating #03-09-2032
- Voltage 250 Vac maximum
- Current 4.0 amps maximum

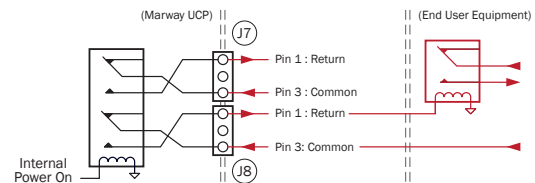


This diagram shows conceptually what's inside the UCP, and a simplified example of how to use the J1 and J2 connectors for remote control of Marway PDU's, other equipment, or indicators.

Using J7 / J8 for Auxiliary Power On

Connectors J7 and J8 are independent (not wired in parallel), but operate in exactly the same way. Pin 1 on each connector becomes active when the UCP is On. Pin 2 is unused. Pin 3 is the remote power input. Use these connectors to generate remote power on signals to PDU's or other downstream equipment.

- J7 Connector: Molex #03-09-1081, mating #03-09-2032
- J8 Connector: AMP #1-480304-0, mating #1-480305-0
- Voltage 250 Vac maximum
- Current 4.0 amps maximum

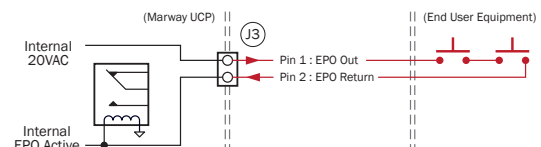


This diagram shows conceptually what's inside the UCP, and a simplified example of how to use the J7 and J8 connectors for auxiliary power on signals.

Using J3 for Remote EPO

Connector J3 is used to provide one or more remote EPO switches. Each switch, if there is more than one, would be wired in series. Shorting J3 pin 1 to pin 2 returns the 20 Vac signal, and creates an EPO Activated state. There is no remote reset. For safety, there is only the one reset at the UCP.

- J3 Connector: AMP #1-480699-0, mating #1-480698-0



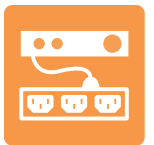
This diagram shows conceptually what's inside the UCP, and how to use the J3 connector to attach one or more external EPO buttons.

Using J9 / J10 Outlets

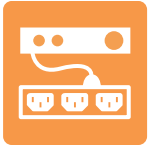
These two outlets are wired directly to the input power, and are always powered. They are not subject to the On/Off/EPO controls of the UCP, nor are they subject to the front panel circuit breaker. The combined load of J9 and J10 is subject to the 12/15A rating.

Commander™ UCP 100

Remote EPO Panel



Commander
100



Commander™ UCP 100

Universal Control Panel for On/Off/EPO

Consolidated Control

Marway's UCP 100 consolidates into a single control panel the on, off, and EPO controls to manage one or more power distribution units. PDUs with remotely switchable outlets can therefore provide power on/off of downstream equipment switched in unison. Additionally, the EPO circuit improves safety of the combined power system.

Feature Highlights

- Simple, dry-contact operation for compatibility with Marway and third-party PDUs.
- Connects to one or multiple PDUs.
- On/Off power control to connected PDUs.
- EPO for all connected PDUs.

On/Off Circuit

The power on/off circuit is the primary feature of the UCP 100. A self-indicating on/off switch provides easily recognized status on the UCP. A 15-foot cable terminating in a Molex connector can be used to connect to a single PDU. Multiple PDUs can be controlled if the PDU provides daisy chained connectors, or if the UCP connector is first connected to a junction providing multiple parallel outputs. Dry contacts provide compatibility with both ac and dc voltage.

EPO Circuit

In some applications, particularly those with machinery connected to a PDU, an Emergency Power Off (EPO) may be required. An EPO is a large, prominently placed push button used to disconnect power to all devices connected to the PDU. These buttons are intended to be easy to find and press in an emergency scenario, such as when a person identifies a hazardous condition not handled by the end-point equipment itself. The UCP 100 provides this EPO button to trigger a shutdown of the PDU(s).

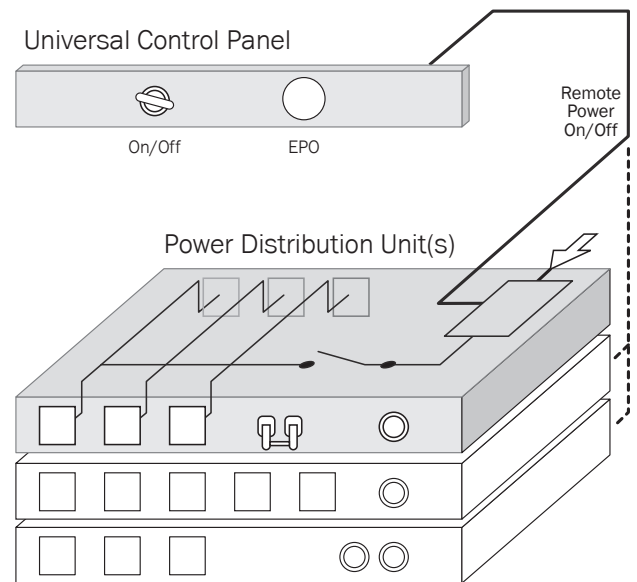
There are two options for the EPO button: a normally-open type, and a normally-closed type. The normally-open type is compatible with the majority of Marway's legacy PDUs. The normally-closed type can be opted for with newer equipment, or reconfigured legacy part numbers for improved safety.

Model Number	Color	EPO Action
UCP 100-001	Black	Normally Open (*)
UCP 100-003	Black	Normally Closed

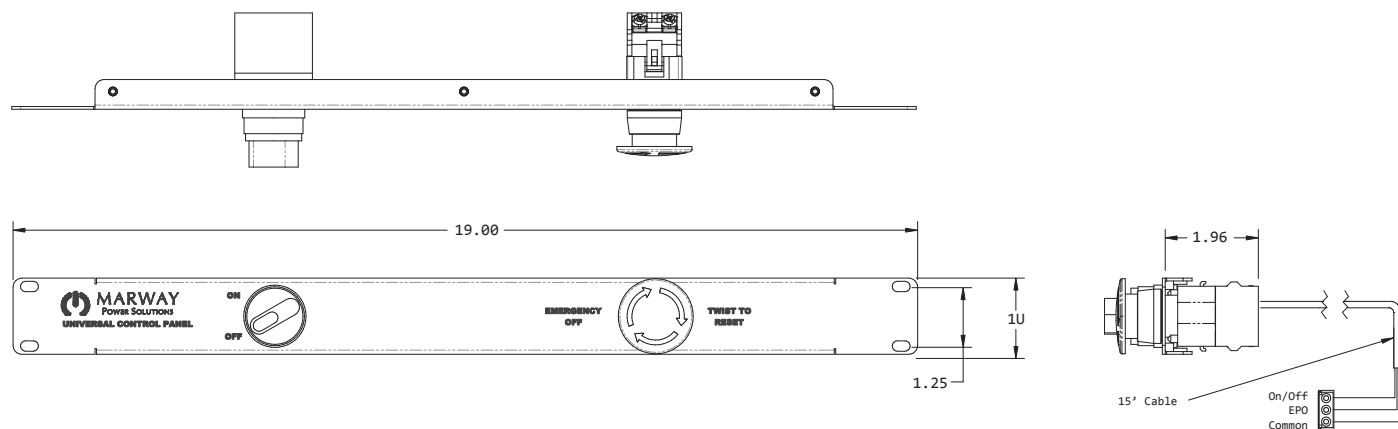
* The 100-001 model is compatible with "normally-open EPO" Marway and third-party PDU designs. The 100-003 model better meets modern safety standards, but requires the PDU to be compatible with normally-closed EPO circuits. All Marway 520, 532, 533 series PDUs are N.O. by default (the -000 version of the models). Order the -001 version of any model to get N.C. EPO functionality.



The 100 series of Universal control panels (UCPs) provide basic on, off, and EPO control for one or more PDUs to consolidate control of up to an entire rack of application-specific equipment.



Commander UCP 100 Universal Control Panel



Dimensions

1U Rack-mount chassis

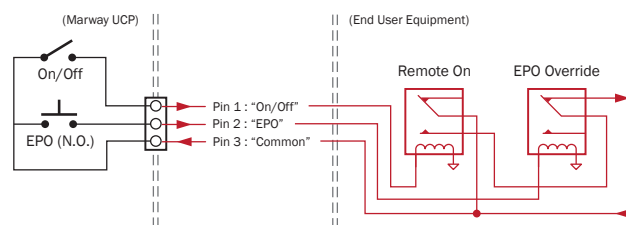
Front Width: 19.00"

Chassis Height: 1.74"

Chassis Depth 1.96"

Chassis is "open frame" and provides top and bottom tabs with #6-32 threads to allow an end-user provided enclosure.

When mated to a Marway PDU remote connector, no further work is needed. This diagram shows conceptually what's inside the UCP, and a simplified example of how to use the available connections for remote control of non-Marway PDUs or other equipment.



Electrical

Interface: two dry-contact signals

Connector: AMP #1-480305-0, 250 Vac, 3 A max.

Remote cable: 15 feet, 3 A max.

Environment

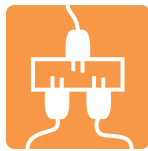
Operating Temperature: 32°F to 122°F

Maximum Altitude: 25,000 feet

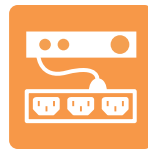
Relative Humidity: 5% to 85% non-condensing



Optima™ PDUs
Standard and Custom
for Ac, Dc, 400Hz



TwinPower™ ATs
Auto Transfer Switches
for power redundancy



Commander™ UCPs
Remote and EPO
control panels



PowerPlus™
Turn-key rack
power integration