

Naming & Ordering Guide for The Mini 1U Power System



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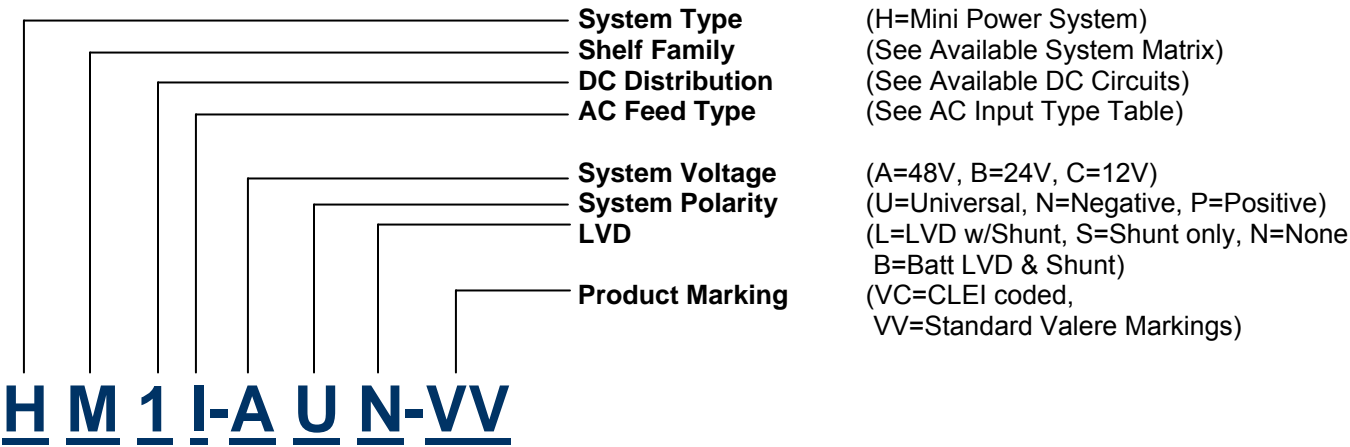
Mini Power System Description

The Mini Power System consists of several configurable items, plug in modules, and associated accessories that are designed to seamlessly work together. These items include,

- H Series 1U Compact Shelves
- H Series Rectifiers
- NIC Series Controllers
- H-TRIO-02
- HC Display
- Line Cords
- Alarm Cables
- Temperature Probes
- Fuses

Each of these items has a unique and structured part numbering scheme that is described in the proceeding sections.

Mini Power System Numbering Convention



There are currently several mini power system shelf configurations with different functionality. The family is constantly being updated and extended as more applications demand. Not every combination of options is available. For example, only certain DC distributions circuits are available for certain system configurations. More detail on this is included in the following sections.

AC Input Types

Several types of AC input connections are available on the Mini System. The following table provides details of the AC connection style and AC input compatibility of the various letter codes.

Table 1 – AC Input Types

| AC Type Letter Code | Termination Style | Input Type | Input Voltage |
|---------------------|-------------------------|---------------|---------------|
| S | Terminal Block or Strip | 1Φ Single | 120/208/240V |
| D | Terminal Block or Strip | 1Φ Dual | 120/208/240V |
| I | IEC 15A Receptacle | 1Φ Individual | 120/208/240V |
| B | Terminal Block | 1Φ Individual | 120/208/240V |

Shelf Family Letter Codes

Each shelf is identified by a unique letter code that defines a set of physical attributes as shown in the table below. A DC output circuit number is used to designate the DC output connection options that exist for that shelf letter code.

| Shelf Family | Width (inches) | Shelf Height (U) | Wire Direction | DC Distribution Width (inches) | Controller Type | Number of Rectifiers | DC Output Circuits | AC Input Types |
|--------------|----------------|------------------|----------------|--------------------------------|-----------------|----------------------|--------------------|----------------|
| M* | 19 | 1 | Rear | -- | NIC | 4 | 1,23 | I,B,D,S |
| K** | 19 | 1 | Rear | 5.25 | NIC,TRIO,HC | 3 | 31,25 | I,D,S |

Table 2 – Shelf Family Letter Codes

*Note: Uses opto-isolated for alarms

** Note: Uses form C relay contacts for alarms

Mini System Shelf and Distribution Concepts

The Mini System is available in two basic heights, 1U (1.75") and 2U (3.5"). 1U systems are designed to work with TRIO, NIC, and HC system controllers and 2U (Naming & Ordering Guide for the Mini 2U Power System) systems are designed to work with BC series controllers used in the Compact and Integrated Plants. The following table shows the existing Mini 1U System shelves and their attributes.



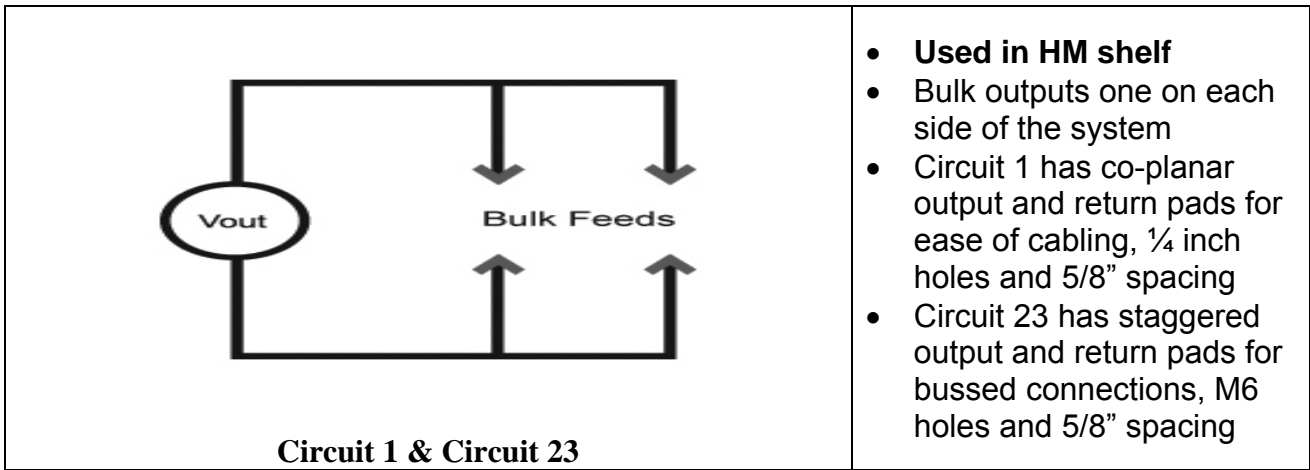
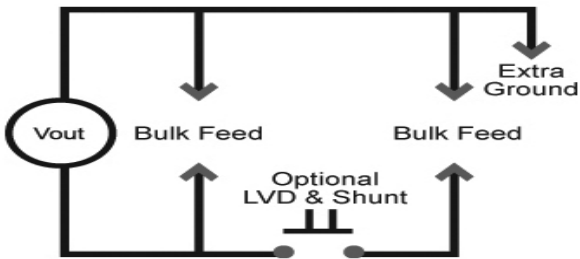
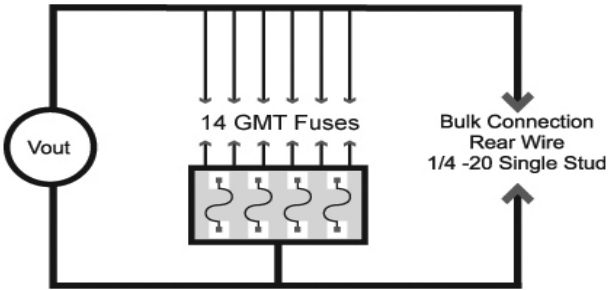
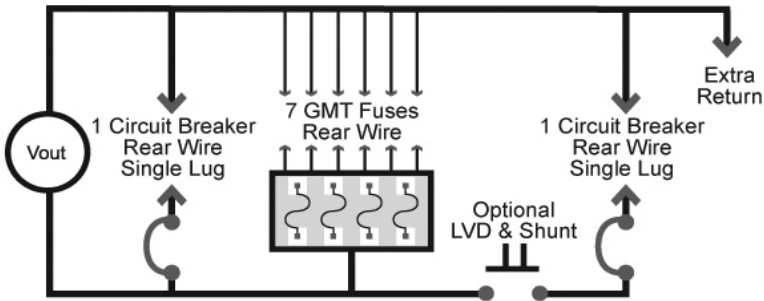
| 1U Mini Systems | 1U Mini System |
|---|--|
|  |  |
| HK – 19inch up to 3 rectifiers Single distribution slot | HM – 19inch up to 4 rectifiers Bulk outputs only |

Table 3 – Mini Shelf Distribution Concepts

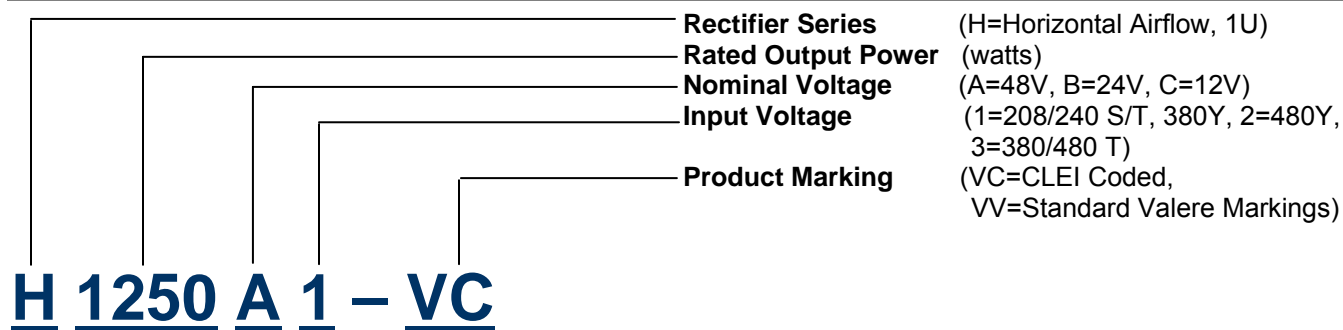
DC Distribution Circuits

The circuit diagrams below describe the available DC output Distributions configurations. CB positions are rated up to 60 amps each. Circuit Diagrams show available positions for breakers and GMT style fuse outputs. Actual devices are ordered separately. LVD is always optional – the circuit diagram shows position in the circuit if LVD or Shunt only is specified.



| | |
|---|---|
|  <p style="text-align: center;">Circuit 25</p> | <ul style="list-style-type: none"> • Used in HK shelf • Circuit 25 has, 1/4 inch holes and 5/8" spacing output and return pads for ease of cabling • Optional LVD and Shunt |
|  <p style="text-align: center;">Circuit 31</p> | <ul style="list-style-type: none"> • Used in HK shelf • 14 GMT positions - screw down terminal block • One 1/4-20 single stud bulk output / battery input |
|  <p style="text-align: center;">Circuit 32</p> | <ul style="list-style-type: none"> • Used in HK shelf • 7 GMT positions – screw down terminal block • Circuit 32 has two #8-32 studs with 5/8 centers • Optional LVD and Shunt through 1 circuit breaker |

H Series Rectifiers Numbering Convention



H Series Rectifiers Basic Models

| Model | Voltage | Current | AC Input | Temperature * |
|--------|---------|----------|-------------|---------------|
| H0500A | 48V | 10amps | 90-264 VAC | -40 to +70C |
| H0750A | 48V | 15amps | 90-264 VAC | -40 to +70C |
| H1000A | 48V | 20amps | 90-264 VAC | -40 to +70C |
| H1250A | 48V | 25 amps | 90-264 VAC | -40 to +70C |
| H1500A | 48V | 30amps | 180-264 VAC | -40 to +70C |
| H2000A | 48V | 40 amps | 180-264 VAC | -40 to +70C |
| H2500A | 48V | 50amps | 180-264 VAC | -40 to +70C |
| H1250B | 24V | 50 amps | 90-264 VAC | -40 to +70C |
| H1250C | 12V | 100 amps | 90-264 VAC | -40 to +70C |

Table 4 – H Series Rectifiers Basic Models

Note: Product marking characters not shown on above table.

* FULL POWER UP to +50C; DERATE ABOVE 50C BY 2% PER DEG C *

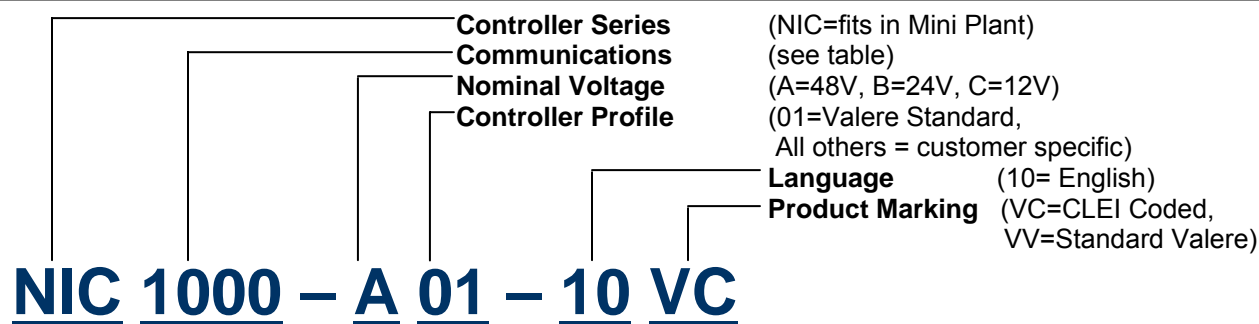
Mini System Alarm and Communication Options

Two system alarm and communication options are available on the Mini System. See Table 2 for shelf compatibility with alarm & communication options. The TRIO card is mounted on the rear of the shelf and provides temperature probe, relay alarm contact functions. The NIC provides communication ports and system operating parameter adjustments. More detail on these options and their interactions is provided in the following sections.

NIC (Network Interface Card)

The NIC provides various communication connections allowing power system access through a network, or on site communication via appropriate cable connections to a notebook/local computer. This connectivity provides the capability of logging onto the system to change various parameters and/or relay mappings if TRIO is installed. All parameters are field adjustable; including TRIO based form C alarm contacts see Table 6. For communication port types see Table 5.

NIC Naming Convention



NIC Basic Models

| Model | Description |
|---------|------------------------------------|
| NIC1000 | 10/100-Front Port, RS232-Rear Port |
| NIC1001 | RS232-Front Port, 10/100-Rear Port |

Table 5 – NIC Basic Models

Sample Operating Parameters

| System Parameters | Description | 12 Volt Nominal | 24 Volt Nominal | 48 Volt Nominal |
|--|--|-----------------------|----------------------|--------------------|
| Float Voltage | The voltage to which the rectifiers will regulate the plant during float mode | 13.5 V _{dc} | 27 V _{dc} | 54 V _{dc} |
| Batt CL Enabled* | Enables the battery current limit feature | Disabled | Disabled | Disabled |
| Batt CL Set point* | The controller will limit the current to the batteries at this set point | 40 A | 40 A | 40 A |
| Rect CL Enabled | Enables the system current limit feature | Disabled | Disabled | Disabled |
| Rect CL Set point | The controller will limit the current of the rectifiers to the value | 220 A | 220 A | 220 A |
| HVSD Set point | The controller will shut down the rectifiers if the plant voltage exceeds this set point. | 14.5 V _{dc} | 29 V _{dc} | 58 V _{dc} |
| HV Alarm Set point | The controller will issue a High Voltage Alarm (Major) if the plant voltage exceeds this set point | 14.25 V _{dc} | 28.5 V _{dc} | 57 V _{dc} |
| BD Alarm | The controller will issue a Battery-On-Discharge alarm if the plant voltage falls below this set point | 12 V _{dc} | 24 V _{dc} | 48 V _{dc} |
| Redundancy Alarm | A minor alarm is set if the number of installed rectifiers will not support N+1 redundancy required by the load. | Disabled | Disabled | Disabled |
| I Share Alarm | A minor alarm is set if the output current of any rectifier exceeds current sharing tolerances | Disabled | Disabled | Disabled |
| Power Dev Comm Fail / Dist Dev Comm Fail Alarm | A minor alarm, and (Power Dev Comm Fail, or Dist Dev Comm Fail) is set if any power module, or distribution module either stops communicating, or is removed from the shelf / panel. Comm Alarm need to be enabled for minor alarm | Disabled | Disabled | Disabled |
| Manual Boost Mode | Enables or Disables the manual boost mode feature | Disabled | Disabled | Disabled |
| Boost Voltage | The voltage at which the equalize / boost charge will begin | 14 V _{dc} | 28 V _{dc} | 56 V _{dc} |
| Boost State | Starts manual boost when manual boost mode is enabled, or stops manual, periodic, Auto Cur, or Opp Mode boost when active. | Stop | Stop | Stop |
| Boost Time | Duration of time the equalize/boost charge is active | 6 hours | 6 hours | 6 hours |
| Thermal Comp Status | Enables thermal compensation feature | Disabled | Disabled | Disabled |
| Hi Temp Thermal Comp Start Temp (Start Hi T) | The controller begins to reduce the float voltage when the highest measured battery temperature reaches this value | 35 °C | 35 °C | 35 °C |

| System Parameters | Description | 12 Volt Nominal | 24 Volt Nominal | 48 Volt Nominal |
|---|---|-----------------------|-----------------------|----------------------|
| Hi Temp Thermal Slope (Slope Hi) | If battery temperature is above the start High temperature (Start Hi T), the controller will linearly reduce the plant voltage by this slope | 18 mV/°C | 36 mV/°C | 72 mV/°C |
| Hi Temp Thermal Comp Stop Voltage (Stop Hi V) | The minimum voltage to which the controller will reduce plant voltage for thermal compensation | 12.62 V _{dc} | 25.25 V _{dc} | 50.5 V _{dc} |
| Lo Temp Thermal Comp Start Temp (Start Lo T) | The controller begins to increase the float voltage when the lowest measured battery temperature reaches this value | 15 °C | 15 °C | 15 °C |
| Lo Temp Thermal Slope. (Slope Lo) | If battery temperature is below the start Low temperature (Start Lo T), the controller will linearly increase the plant voltage by this slope | 18 mV/°C | 36 mV/°C | 72 mV/°C |
| Lo Temp Thermal Comp Stop Voltage (Stop Lo V) | The maximum voltage to which the controller will increase plant voltage for thermal compensation | 13.75 V _{dc} | 27.5 V _{dc} | 55 V _{dc} |
| Thermal Runaway Clamp Temperature (Runaway T) | The temperature at which the controller will reduce the Float Voltage to Runaway Clamp Voltage, and issue thermal runaway alarm | 60°C | 60°C | 60°C |
| Thermal Runaway Clamp Voltage (Runaway V) | The Float Voltage to which the controller will reduce for temperature above Runaway Clamp temperature | 12 V _{dc} | 24 V _{dc} | 48 V _{dc} |
| Thermal Sense | Selects temperature sensing device to use for battery temperature compensation; Internal sensor or External temp probes. | Internal | Internal | Internal |
| Temp. Units | Selects the units the temperature readings are given in. Either Celsius or Fahrenheit | Celsius | Celsius | Celsius |
| LV Alarm | The controller will issue a Low Voltage Alarm if the plant voltage falls below this set point | 11 V _{dc} | 22 V _{dc} | 44 V _{dc} |
| Battery Disconnect Voltage ** | Battery Disconnect contactor in the battery panel will open if the plant voltage falls below this set point | 10.5 V _{dc} | 21 V _{dc} | 42 V _{dc} |
| Battery Disconnect Delay Time** | The amount of time delayed after reaching the battery disconnect voltage set point, before opening the battery disconnect contactor | 5 sec | 5 sec | 5 sec |

| System Parameters | Description | 12 Volt Nominal | 24 Volt Nominal | 48 Volt Nominal |
|--------------------------------|--|-----------------------|----------------------|--------------------|
| Battery Reconnect Voltage** | The Battery Disconnect contactor in the battery panel will reconnect if the plant voltage exceeds this set point | 12.5 V _{dc} | 25 V _{dc} | 50 V _{dc} |
| Battery Reconnect Delay Time** | The amount of time delayed after reaching the battery reconnect voltage set point, before closing the battery disconnect contactor | 20 Sec | 20 Sec | 20 Sec |
| Load 1 Disconnect Voltage ** | The Load 1 Disconnect contactor in a distribution panel will open if the plant voltage falls below this set point | 10.75 V _{dc} | 21.5 V _{dc} | 43 V _{dc} |
| Load 1 Disconnect Delay Time** | The amount of time delayed after reaching the load 1 disconnect voltage set point, before opening the load 1 disconnect contactor | 5 sec | 5 sec | 5 sec |
| Load 1 Reconnect Voltage** | The Load 1 Disconnect contactor in the distribution panel will reconnect if the plant voltage exceeds this set point | 12.5 V _{dc} | 25 V _{dc} | 50 V _{dc} |
| Load 1 Reconnect Delay Time** | The amount of time delayed after reaching the load 1 reconnect voltage set point, before closing the load 1 disconnect contactor | 5 Sec | 5 Sec | 5 Sec |
| Load 2 Disconnect Voltage ** | The Load 2 Disconnect contactor in a distribution panel will open if the plant voltage falls below this set point | 11 V _{dc} | 22 V _{dc} | 44 V _{dc} |
| Load 2 Disconnect Delay Time** | The amount of time delayed after reaching the load 2 disconnect voltage set point, before opening the load 2 disconnect contactor | 5 sec | 5 sec | 5 sec |
| Load 2 Reconnect Voltage** | The Load 2 Disconnect contactor in the distribution panel will reconnect if the plant voltage exceeds this set point | 12.75 V _{dc} | 25.5 V _{dc} | 51 V _{dc} |
| Load 2 Reconnect Delay Time** | The amount of time delayed after reaching the load 2 reconnect voltage set point, before closing the load 2 disconnect contactor | 5 Sec | 5 Sec | 5 Sec |
| Load 3 Disconnect Voltage ** | The Load 3 Disconnect contactor in a distribution panel will open if the plant voltage falls below this set point | 11.25 V _{dc} | 22.5 V _{dc} | 45 V _{dc} |
| Load 3 Disconnect Delay Time** | The amount of time delayed after reaching the load 3 disconnect voltage set point, before opening the load 3 disconnect contactor | 5 sec | 5 sec | 5 sec |
| Load 3 Reconnect Voltage** | The Load 3 Disconnect contactor in the distribution panel will reconnect if the plant voltage exceeds this set point | 13 V _{dc} | 26 V _{dc} | 52 V _{dc} |

| System Parameters | Description | 12 Volt Nominal | 24 Volt Nominal | 48 Volt Nominal |
|-------------------------------|---|-----------------|-----------------|-----------------|
| Load 3 Reconnect Delay Time** | The amount of time delayed after reaching the load 3 reconnect voltage set point, before closing the load 3 disconnect contactor | 5 Sec | 5 Sec | 5 Sec |
| BDT Status | Enables or Disables the battery discharge test feature | Disabled | Disabled | Disabled |
| BD Time (Duration) | Sets the length of time that the battery discharge test will run. | 60 min | 60 min | 60 min |
| BDT Alarm (Alarm V) | Sets the voltage at which an alarm will be generated if the battery voltage falls below it during the Battery Discharge Test. This is a user adjustable value | 11.25 V | 22.5 V | 45 V |
| BDT Abort* (Abort V) | The voltage at which the battery discharge test will abort at when the system voltage drop below this point. This is a user settable value that should be at least 2V below BDT Alarm (Alarm V). | 10.75V | 21.5V | 43 V |
| T Comp BDT | Enabling T Comp BDT will take thermal compensation effects into account during Battery Discharge Test. Disabling T Comp BDT will disable Thermal Compensation effects during BDT. Both Thermal Compensation, and T Comp BDT have to be Enabled for thermal comp. effects to take place during BDT. | Disabled | Disabled | Disabled |
| BDT State | Starts or stops the battery discharge test when BDT Status is enabled. | Stop | Stop | Stop |
| Temp Alarm Thresh. (Int Max) | When internal temperature exceeds this set point, Temp Alarm (Minor) is issued | 90°C | 90°C | 90°C |
| Temp Alarm Thresh. (Int Min) | When internal temperature falls below this set point, Temp Alarm (Minor) is removed | 85°C | 85°C | 85°C |
| Temp Alarm Thresh. (Ext Max) | When external temperature exceeds this set point, Temp Alarm (Minor) is issued | 90°C | 90°C | 90°C |
| Temp Alarm Thresh. (Ext Min) | When external temperature falls below this set point, Temp Alarm (Minor) is removed | 85°C | 85°C | 85°C |
| HV Restart Enabled | When enabled, all the rectifiers in the plant will make up to 3 restart attempts before shutting down permanently | Enabled | Enabled | Enabled |
| | | | | |

| System Parameters | Description | 12 Volt Nominal | 24 Volt Nominal | 48 Volt Nominal |
|--|---|-----------------|-----------------|-----------------|
| Audible | When any alarm is selected, Audible alarm will sound if any alarm is present. When MJR or MNR is selected, audible alarm will sound if any MJR, or MNR alarm is present. When minor is selected, audible alarm will sound if any minor alarm is present. When major alarm is selected, audible alarm will sound if any major alarm is present. If disabled has been selected, audible alarm will not sound if any alarm is present. | | | |
| Relay Test | Enables or disables the Relay Test. When Enabled, Relays A- F can be tested, by setting the relay condition as active or inactive. | | Disabled | Disabled |
| Password | User Log In / Administrator Log In | 1001 / 5001 | 1001 / 5001 | 1001 / 5001 |
| * - Requires LVD & proper shunt ** - Requires LVD | | | | |

Table 6 – NIC Controller Parameters (Profile A01)

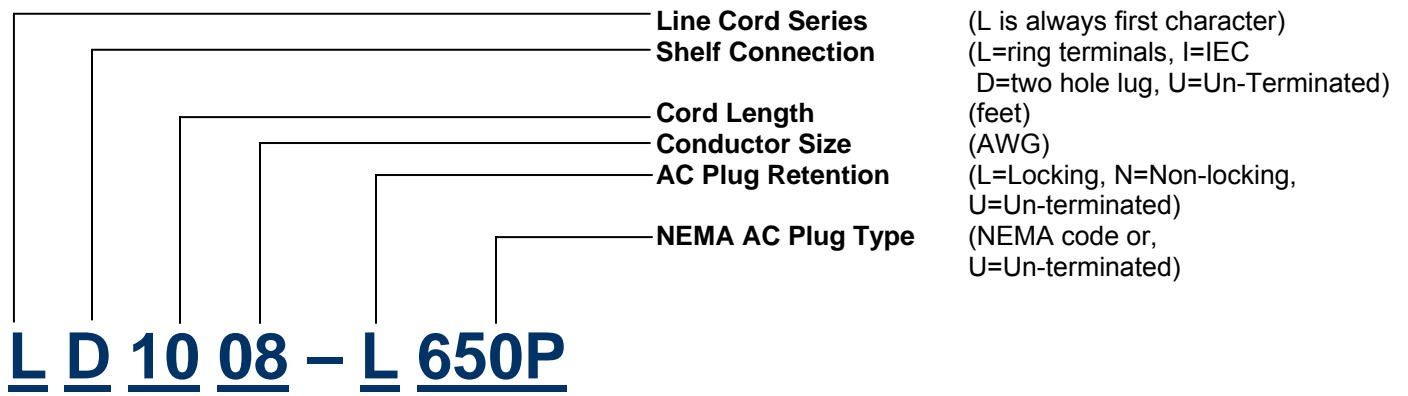
H-TRIO-02 (Thermal Relay Input/Output)

The H-TRIO-02 provides four form C alarm contacts and 4 temperature probes on a convenient rear shelf mounted single card. This option can work with or without the NIC. If only the H-TRIO-02 is equipped on the shelf without a NIC option, three alarms are available from the relay connector; DC Fail, AC Fail, and Fuse Alarm. In this configuration the temperature probes are inactive. When the H-TRIO-02 and the NIC are both installed in a system, 4 alarms are available on the relay connector and these may be mapped through the NIC in any configuration. Additionally the temperature probes will be active.

HC Display

For systems that are configured with a DC distribution door, a display function is available. This option will provide a convenient way to view and/or change set points, alarms, and thermal compensation. As noted in Table 2, the HC display option is currently available on the HK shelf family.

Line Cord Naming Convention



Line Cord Examples

| Valere Part # | Description |
|---------------|--|
| LU1008-UU | Line Cord, 10', 8 AWG, Un-Terminated to Un-Terminated |
| LU1010-UU | Line Cord, 10', 10 AWG, Un-Terminated to Un-Terminated |
| LU1010-L530P | Line Cord, 10', 10 AWG, Un-Terminated to NEMA L5-30P, 120 VAC, 30 Amp Locking Plug |
| LU1010-L630P | Line Cord, 10', 10 AWG, Un-Terminated to NEMA L6-30P, 240 VAC, 30 Amp Locking Plug |
| LI1014-UU | Line Cord, 10', 10 AWG, IEC320-C13 Plug to Un-Terminated |
| LI1010-N515P | Line Cord, 10', 10 AWG IEC320-C13 Plug to NEMA N515P, 120 VAC, 15 Amp Non Locking Plug |
| LU2010-UU | Line Cord, 20', 10 AWG, Un-Terminated to Un-Terminated |
| LU2010-L530P | Line Cord, 20', 10 AWG, Un-Terminated to NEMA L530P 120 VAC, 30 Amp Locking Plug |

Table 7 – Line Cord Naming Examples

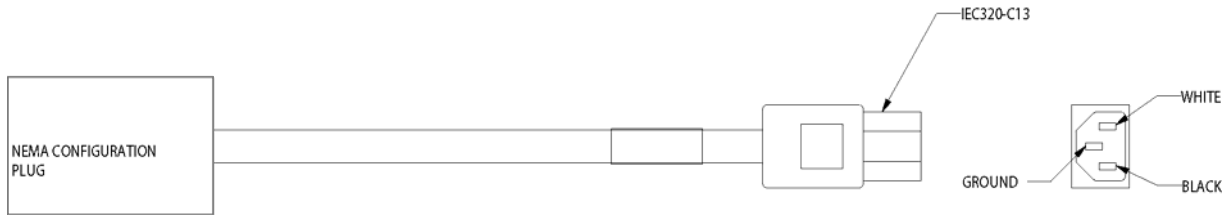
Notes on wire sizes:

LI type cords accept 14awg only wire sizes

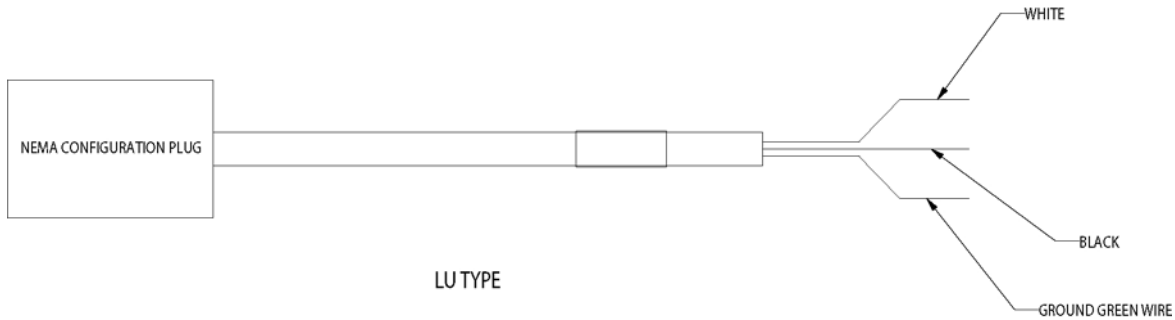
LU type cords accept 14awg through 4awg wire sizes

| Shelf Connection | Description | Available Shelf Family |
|------------------|---|-------------------------------|
| LI | Line cord with 15A IEC connector | D, I (individual feed option) |
| LU | Line cord with customer end Un-terminated | S,D,B (terminal block option) |

LI Type



LU Type



NEMA Plugs

Using wxyz (L650P) above

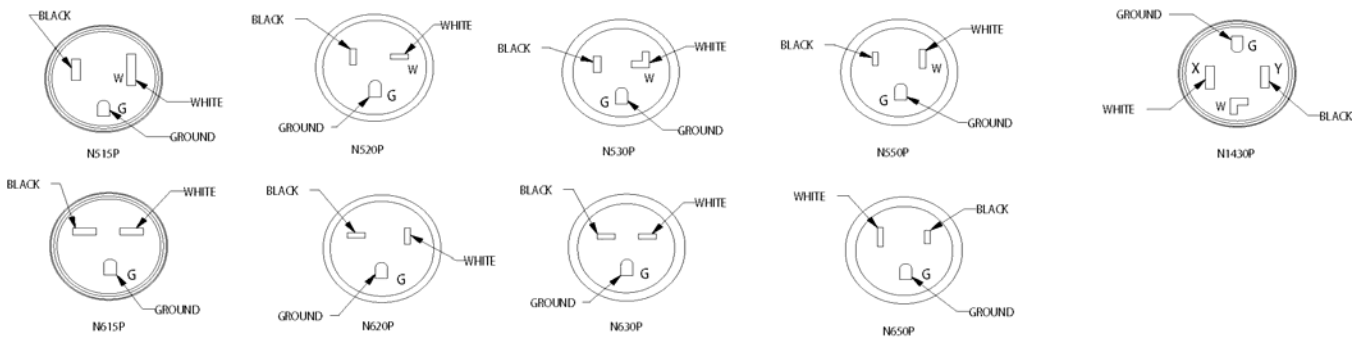
w – Locking(L)/Non-locking(N)

x - 5 is for 3 wire, low line AC/6 is for 3 wire, high line AC/14 is for 4 wire, high line

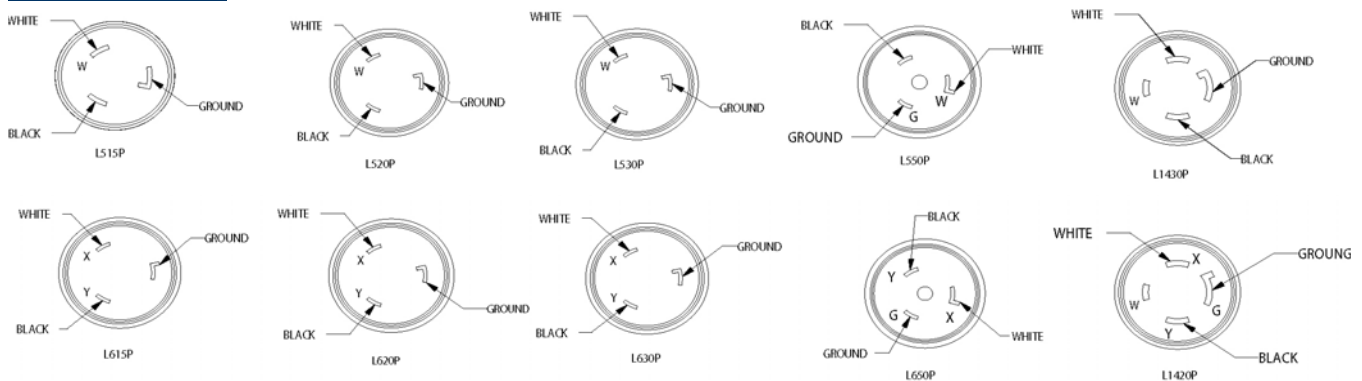
yy – Current rating of plug from 15 to 50 amps (see available plugs below)

z – Plug(P)

Non-Locking Plugs



Locking Plugs



Alarm Cables

Three standard length (10', 50', and 100') alarm cables are available for use with Compact DC Power Systems. The functionality of each cable is identical. Since the variability of these cables is low, part numbers do not have any set convention.

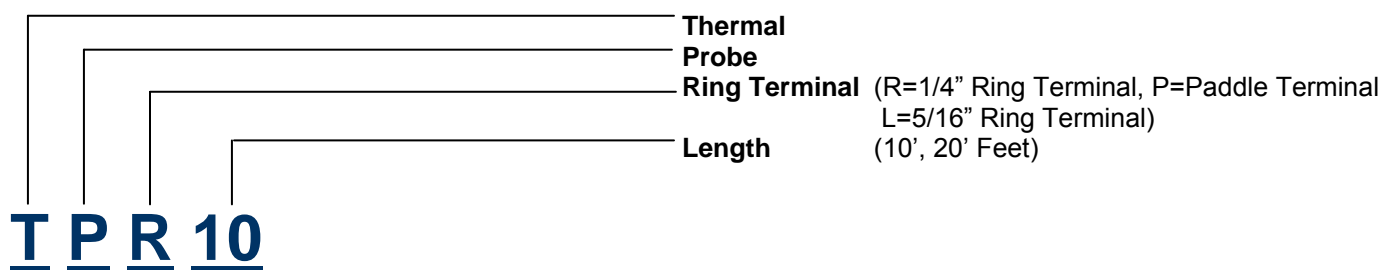
| Valere Part # | Description |
|----------------|--------------------------------|
| CA210203104* | Alarm Cable – Solid Wire, 10' |
| CA210203105* | Alarm Cable – Solid Wire, 50' |
| CA210203106* | Alarm Cable – Solid Wire, 100' |
| CA312181178 ** | Alarm Cable – Solid Wire, 10' |

Table 8 – Alarm Cables

* Note: Alarm cables used on systems with form C relay contacts

** Note: Alarm cables used on systems with opto-isolated alarms

Temperature Probes

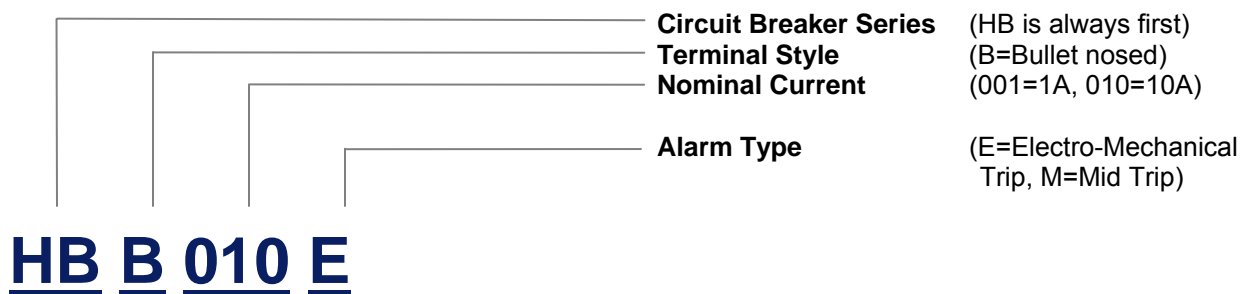


Temperature probes are available in two styles, ring terminal and paddle, and in two lengths, 10' and 20'.

| Valere Part # | Description |
|---------------|---|
| TPR10 | Thermal Probe, 1/4" Ring Terminal, 10' |
| TPR20 | Thermal Probe, 1/4" Ring Terminal, 20' |
| TPP10 | Thermal Probe, Paddle Terminal, 10' |
| TPP20 | Thermal Probe, Paddle Terminal, 20' |
| TPL10 | Thermal Probe, 5/16" Ring Terminal, 10' |
| TPL20 | Thermal Probe, 5/16" Ring Terminal, 20' |

Table 9 – Temperature Probes

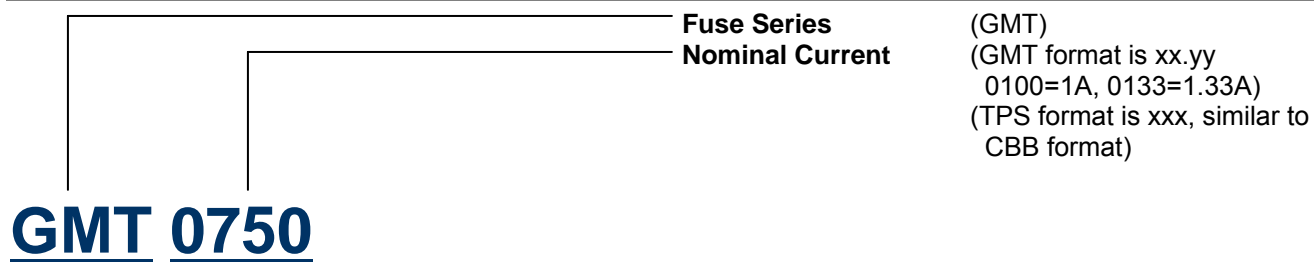
Circuit Breaker Naming Convention



Plug in circuit breakers with bullet nosed terminals are available as follows. E trip breakers have black handles. M trip breakers have white handles.

| Valere Part # | Description |
|---------------|--|
| HBB005E | Circuit Breaker, Bullet Style, Single Pole, 5 Amp Electro-Mechanical Trip |
| HBB010E | Circuit Breaker, Bullet Style, Single Pole, 10 Amp Electro-Mechanical Trip |
| HBB020E | Circuit Breaker, Bullet Style, Single Pole, 20 Amp Electro-Mechanical Trip |
| HBB030E | Circuit Breaker, Bullet Style, Single Pole, 30 Amp Electro-Mechanical Trip |
| HBB040E | Circuit Breaker, Bullet Style, Single Pole, 40 Amp Electro-Mechanical Trip |
| HBB050E | Circuit Breaker, Bullet Style, Single Pole, 50 Amp Electro-Mechanical Trip |
| HBB060E | Circuit Breaker, Bullet Style, Single Pole, 60 Amp Electro-Mechanical Trip |
| HBB005M | Circuit Breaker, Bullet Style, Single Pole, 5 Amp Mid-Trip |
| HBB010M | Circuit Breaker, Bullet Style, Single Pole, 10 Amp Mid-Trip |
| HBB020M | Circuit Breaker, Bullet Style, Single Pole, 20 Amp Mid-Trip |
| HBB030M | Circuit Breaker, Bullet Style, Single Pole, 30 Amp Mid-Trip |
| HBB040M | Circuit Breaker, Bullet Style, Single Pole, 40 Amp Mid-Trip |
| HBB050M | Circuit Breaker, Bullet Style, Single Pole, 50 Amp Mid-Trip |
| HBB060M | Circuit Breaker, Bullet Style, Single Pole, 60 Amp Mid-Trip |

Fuse Naming Convention



Fuse Examples

| Valere Part # | Description |
|---------------|--------------------------|
| GMT0100 | Fuse, GMT Style, 1 Amp |
| GMT0200 | Fuse, GMT Style, 2 Amp |
| GMT0500 | Fuse, GMT Style, 5 Amp |
| GMT0750 | Fuse, GMT Style, 7.5 Amp |
| GMT1000 | Fuse, GMT Style, 10 Amp |
| GMT1500 | Fuse, GMT Style, 15 Amp |

Table 10 – Fuse Naming Examples

How to Order

To order a complete working system, Select part numbers and quantity for the following items.

1. H Series Compact Shelves
 - H Series Rectifiers
 - NIC Series Controller
 - H-TRIO-02
 - Line Cords (make sure quantity of line cords matches number of AC shelf feeds)
 - Alarm cable (if desired)
 - Up to 4 temperature probes (if desired)
2. Fuses (if any)

How to Reach Valere for Assistance

| | |
|---|---------------|
| Valere Headquarters Main Number (Business hours are 8AM to 6PM Central US) | 1-877-Valere1 |
|---|---------------|

| | |
|------------------------------------|----------------|
| 24 Hour Technical Support Hot Line | 1-866-240-6614 |
|------------------------------------|----------------|