

# MERLIN

## 100KW - 400KW Load Bank

### Description

Simplex Merlin Load Banks are the new standard for advanced design in Portable Load Banks spanning the capacity range of 100–400KW. The Merlin is a dual voltage (240/480v), fine load step resolution, fully instrumented Portable Load Bank intended for small-medium capacity shop or field use by engine generator dealers and service shops for maintenance, testing and performance proving of engine generator sets, UPS and other power systems in the 50–400KW range. The Merlin is available in discrete model sizes of 100KW, 150KW, 200KW, 250KW, 300KW, 350KW and 400KW.

The Merlin control panel includes test instrumentation, load application switches, operation indicator lights and fan/control power switch. The Load Bank includes rugged “Powr-Web” load elements, load control contactors, branch circuit fuse protection of the load elements, high temperature power wiring, cooling fan with circuit breaker, control power fuses. The Load Bank is protected against fan failure, high intake air temperature, high exhaust air temperature, and overvoltage. The unit includes a 12’ connection cable set.

Merlin Load Banks are built on a formed and welded steel chassis that is both rugged and lightweight. For flexible portability, the Merlin includes casters, lifting eyes and forklift channels. Airflow through the unit is horizontal with cooling provided by a cast aluminum airfoil type shrouded propeller fan.

### Features

- Exceptionally rugged, all welded, formed steel chassis
- Hinge-open control section door
- Lifting eyes, forklift channels and casters
- Moving handle
- “PowrWeb” Load Elements
- Branch circuit fuse protection



## Powr-Web Resistive Load Element

### Description

Simplex Load Banks utilize the “Powr-Web” Load Element (a UL Recognized Component). The “Powr-Web” is an advanced design, air-cooled power resistor specifically designed for application to load bank systems. The “Powr-Web” is conservatively operated at half the maximum temperature rating of the alloy and features a short-circuit-safe design based on continuous mechanical support of the resistor by high temperature, ceramic clad stainless steel rods.

### Construction

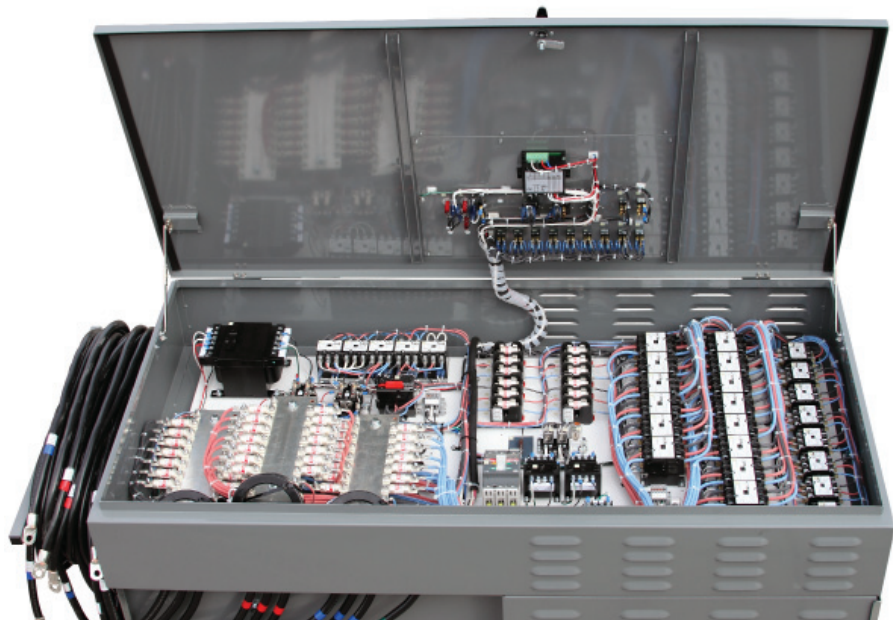
- Precision calibrated to specific ohmic value
- All load elements are continuously supported by vibration resistant, ceramic clad, stainless steel through-rods.

### Specifications

- Alloy: FeCrAl
- Maximum continuous temperature rating: 1920°F
- Maximum operating temperature as applied in Load Bank: 1080° F
- Cool down time from operating to ambient temperature is 10 seconds.

### Branch Circuit Fuse Protection

The load of a resistive load bank consists of a dense array of open, uninsulated power resistors mounted within a cooling air stream. Since the elements are electrically live, it is possible for a foreign object to penetrate the element array and create a short circuit of adjacent elements or a short to ground. Since the elements are densely packed, it is possible for a short circuit, once started, to rapidly propagate through the entire element array. As a load bank represents a relatively



large amount of power concentrated within a relatively small volume, a self-propagating, cascading short circuit would have catastrophic results.

Simplex virtually eliminates the dangers of short circuit through the

use of branch circuit fuse protection of the load elements. Per NEC 110-10, protective devices shall clear a fault without “extensive damage” to the circuit components. A Simplex Load Bank is divided into branch circuits of not more than 50 KW each.

| Model             | KW , 1.0 P.F.        |                      |                      |                  | COOLING FAN |                  |      | LOAD STEPS                       |
|-------------------|----------------------|----------------------|----------------------|------------------|-------------|------------------|------|----------------------------------|
|                   | 240/480V,<br>3-phase | 208/416V,<br>3-phase | 190/380V,<br>3-phase | 240V,<br>1-phase | HP          | Voltage          | CFM  | KW @ 240/480V, 3-phase           |
| <b>Merlin 100</b> | 100                  | 75                   | 63                   | 67               | 0.75        | 120V/240V, 1-ph. | 6000 | 5, 10, 10, 25, 50                |
| <b>Merlin 150</b> | 150                  | 112                  | 94                   | 100              | .75         | 120V/240V, 1-ph. | 6000 | 5, 10, 10, 25, 50, 50            |
| <b>Merlin 200</b> | 200                  | 150                  | 125                  | 134              | 1.5         | 120V/240V, 1-ph. | 6700 | 5, 10, 10, 25, 50, 100           |
| <b>Merlin 250</b> | 250                  | 188                  | 157                  | 167              | 1.5         | 120V/240V, 1-ph. | 6700 | 5, 10, 10, 25, 50, 50, 100       |
| <b>Merlin 300</b> | 300                  | 225                  | 188                  | 200              | 1.5         | 120V/240V, 1-ph. | 6700 | 5, 10, 10, 25, 50, 100, 100      |
| <b>Merlin 350</b> | 350                  | 262                  | 219                  | 233              | 3.0         | 240/480V, 3-ph.  | 8000 | 5, 10, 10, 25, 50, 50, 100, 100  |
| <b>Merlin 400</b> | 400                  | 300                  | 250                  | 267              | 3.0         | 240/480V, 3-ph.  | 8000 | 5, 10, 10, 25, 50, 100, 100, 100 |

### Fan/Control Power

User selectable, internal/external

### Internal Power

Merlin 100, Merlin 150:

120V, 1-ph, 2-wire, 60Hz

240V, 1-ph, 3-wire, 60Hz

208-240V, 3-ph, 4-wire, 60Hz

Optional: 416-480V, 3-ph, 3-wire, 60Hz

Optional: 50Hz Voltages

Merlin 200 through Merlin 300:

120V, 1-ph, 2-wire, 60Hz

240V, 1-ph, 3-wire, 60Hz

208-240V, 3-ph, 4-wire, 60Hz

416-480V, 3-ph, 3-wire, 60Hz

Optional: 50Hz Voltages

Merlin 350 through Merlin 400:

190-205V, 3-ph, 3-wire, 50Hz

208V-240V, 3-ph, 3-wire, 60Hz

380-416V, 3-ph, 3-wire, 50Hz

416-480V, 3-ph, 3-wire, 60Hz

### External Power

Merlin 100, Merlin 150:

115V, 1-ph, 60Hz, 15A

Merlin 200 through 300:

115V, 1-ph, 60Hz, 20A

Merlin 350, Merlin 400:

230/460V, 3-ph, 50/60Hz, 20A

### Voltage

High/Low Mode, operator selectable

High: 250-480VAC, 3-ph.

Low: to 240VAC, 3-ph.

Optional: 1-ph.

### Frequency

60Hz; Optional: 50, 400Hz

### Duty Cycle

Continuous

### Temperature Rating

125° F max intake air temp

Nominal 110° F rise

### Power Connection

Merlin 100 through Merlin 300:

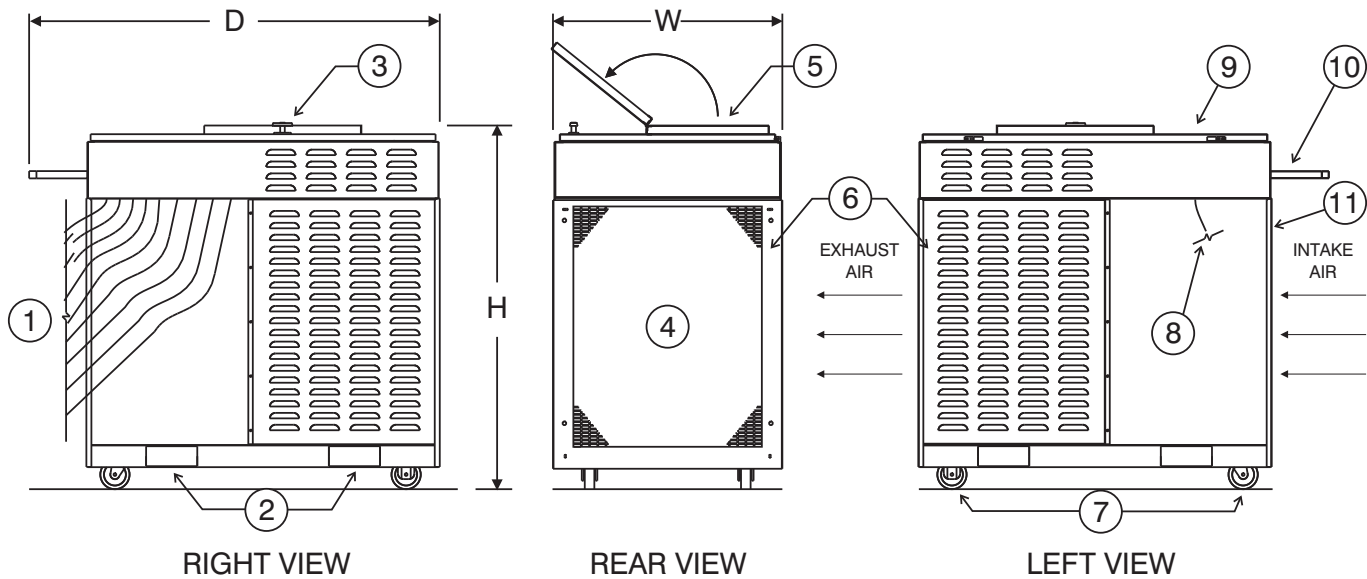
4-wire plus ground

Merlin 350, Merlin 400:

3-wire plus ground

## Dimensions and Key Features

| Model                      | W   | D   | H   |
|----------------------------|-----|-----|-----|
| Merlin 100KW, 150KW        | 31" | 47" | 43" |
| Merlin 200KW, 250KW, 300KW | 31" | 56" | 50" |
| Merlin 350KW, 400KW        | 31" | 69" | 50" |



Merlin 300 with optional Cam-Lok connectors

1. 12' Cable Set
2. Forklift Channels
3. Lockable Latch
4. Screened Intake and Exhaust
5. Hinged Access Door to Control Panel
6. Removeable Panel to Access Elements
7. Casters
8. External Control Power Cable
9. Hinged Access Door to Fuses and Contactors
10. Hand Grip for Moving and Cable Storage
11. Removeable Panel to Access Fan