

SIMPLEX[®]

Load Banks and Load Testing Accessories Rentals





Who We Are

Simplex is a fourth generation, privately held, independent family business in continuous operation since 1938. Unlike most of our competitors, we are truly independent, have never been sold/purchased and trace our ownership and management directly to the founder. At Simplex our customers receive the personal service and attention to quality and performance that only a true family organization can deliver.

Rent Direct

Our motto is **RENT  DIRECT**. Only from Simplex can you rent product **directly from the manufacturer** and realize the cost and performance benefits of direct rentals. **We at Simplex know how to design, build, apply and service load banks.**

Custom / Build Rent

Being the manufacturer, Simplex is uniquely able to **Build-to-Rent**. If what you need is not in our large fleet of rental products, we can **Build-to-Rent**. **In addition, we can customize to your requirements.** We are not restricted to inventory.



Services

Simplex rentals draws upon the extensive engineering / manufacturing capabilities and service network of Simplex. We offer extensive engineering services to design rental systems and technical services to oversee setup and assure proper operation.

Fleet

Simplex owns one of the largest and most diverse fleets of rental load banks and accessories in the U.S. with inventory maintained at both factory and regional rental and service centers.



Load Bank Testing of Electrical Power Sources

Any device which generates electricity may require load testing. This can be for product development, production line testing, product demonstration, commissioning of a new installation or for periodic service, maintenance or trouble shooting. Although the most common use of load banks for testing is with engine generator sets, in fact, any device which generates electricity may require a load bank for testing, service or calibration. This includes UPS, batteries, power supplies, fuel cells, solar cells, wind turbines, hydro generators, etc. A load bank provides a stable, known, controllable and relatively "harmless" load for these purposes. That is, if the performance of the generator is not known, it is better to evaluate the performance with a load bank than with critical facility loads.

Load Bank Overview

Load banks simulate the "real world" loads that the power source will experience. Electrical load can be broadly classified as resistive, magnetic and capacitive. In the real world, these components are mixed, as they are with a load bank, except with the load bank, full control of the component loads is possible. Resistive loads comprise incandescent lighting, electric heating and other loads in which electrical energy is largely converted to heat. Magnetic loads comprise motors, and other devices which convert electrical energy to mechanical force and transformers which "step-up" / "step-down" power from transmission to utilization voltages. Capacitive loads comprise electronic loads. Although both AC and DC systems power similar loads, most of this discussion will involve AC systems. The most common load bank and the load bank which is suitable for general load testing is the resistive load bank. A resistive load bank converts electrical energy to heat. Within the load bank, the load is divided into discrete circuits or "steps" capable of stepwise, controlled application. The load bank includes a means of cooling, most commonly forced air, but also water. The load bank also includes protective sensors, circuit protection devices, instrumentation, an operator interface and a means of connection to the generator. To simulate magnetic or motor loads, an inductive load bank is added to the resistive load bank. This can take the form of an integrated, all-in-one package, or separate units. Likewise, a capacitive load bank can be added. Inductive and capacitive load banks are always used in conjunction with a resistive load bank-- there is generally no reason to use one alone. Inductive and capacitive load banks, also known collectively as "reactive" load banks, are only used on AC systems and result in lagging or leading power factor for inductive or capacitive loads respectively.

Load Test Capacity

The desired capacity of the load test is expressed in kilowatts (KW). KW corresponds directly to engine HP (.746 HP = KW) and is developed exclusively by the resistive load bank. Adding reactive load changes the total KVA of the load, but does not alter the KW or HP load. A purely resistive load bank provides a realistic and effective test of the prime mover and causes full load currents to be developed by the generator. The engine will develop full rated HP, operating pressures and temperatures, and the performance of the governor will be fully evaluated. Adding inductive load allows for the full KVA capacity of the generator to be developed for a full functional test of temperature rise, waveform quality, voltage regulator response and reactive load sharing.

Voltage

Low voltage AC systems are rated 120/240v, single-phase, 2 or 3 wire; 208-240/416-480/575-600/690vAC, 3 or 4 wire. Medium voltage systems are in the 5kV or 15kV class. DC systems can range from battery voltages of 12/24/32v, 125/250v, or 350/700v, typically. Keep in mind that the AC load banks in this catalog are generally 3-phase, 3-wire loads, meaning that a neutral is not required and that loads are applied in 3-phase balanced steps

Current

Current, expressed in amperes, is found by the following formula:

$$3ph. A = \frac{KW \times 1000}{(V \times 1.73 \times P.F.)}$$

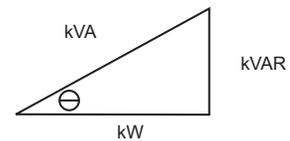
Current must be known in order to size connection cables. Keep in mind that connection cables have a certain small resistance, and that a small voltage drop will be seen across the cable set and at the terminals of the load bank. Therefore, although the generator instrumentation may indicate 480v, the load bank instrumentation will measure the terminal voltage at the load bank, for example, 473v.

KW as a Function of Voltage

KW varies as the square of the voltage: therefore, in the preceding example, if the load bank terminal voltage is reduced to 473v, then the resultant KW will be 97% of the rated KW. Where did that power go? It is lost as heat in the connection cables.

Low Power Factor Testing

By adding an inductive load to the resistive load, lagging power factor can be obtained. Commercial loads, as well as generator sets, are rated at the nominal power factor of 0.8 lagging. This number is the cosine of the angle made between the KW and the KVA in the diagram below:



$$\text{COS } \Theta = \text{Power Factor}$$

$$\text{PF} = \frac{\text{KW}}{\text{KVA}}$$

$$\text{TAN } \Theta \times \text{KW} = \text{KVAR}$$

$$\text{KVA} = \sqrt{\text{KW}^2 + \text{KVAR}^2}$$

The magnitude of inductive load required to obtain 0.8 power factor is 0.75 X the KW (1000kw + 750kvar = 1250kva at 0.8 lagging power factor). As a point of interest, 0.75 is the tangent of the aforementioned angle. Keep in mind when sizing cables that the full load current at the rated KVA must be calculated.

Leading Power Factor Testing

The same rationale as above applies to leading power factor, except capacitive load is added. Leading power factor testing is rare and specialized. Most engine generator sets cannot tolerate more than a very small degree of leading power factor.

Portability and Site Conditions

When designing a load bank rental, considerations must be given to site space, access and set up. All rental load banks listed herein can be networked in groups and connected in parallel to provide a total, aggregate load. It may be more workable to network 10 Powerstar Load Banks to obtain 1000kw than rent a single 1000kw Load Bank.

Networking and Paralleling

Most rental load banks can be networked and paralleled to form larger systems. Powerstar and Infinity Load Banks can only be networked with other Powerstar and Infinity Load Banks. All other digital models can be networked and paralleled in any mix and match combination up to a maximum number of units. All control is centralized in a single operator interface. All data is likewise totalized to the operator interface. Networking is via data cables provided with the load banks. Power cables are paralleled to the power source.

Sizing and Running Cables

Rental cables listed in this catalog should be operated at approximately 85% maximum of their open air current rating. Ampere ratings listed are the NEC free air ratings. Cables listed are suitable for wet or dry aboveground use and should be run in a well ventilated area. Keep cable splice points out of water. 3-phase cables must be of absolutely equal length, especially when multiple cables are run per phase. Run 3-phase cables in 3-phase groupings, ideally arrayed in a triangle, but at least side-by-side. Never separate phases into A-B-C clusters as this can lead to electromagnetically induced current imbalances, voltage drops and cable overheating.

Ground Cables

Run at least 33% ground capacity. Connect ground cables to ground terminals or ground bar in the load bank. Connect the other end to the generator ground. Be sure that the generator is solidly grounded to earth ground. Avoid multiple earth grounds as this can lead to potential differences among the ground points with resultant circulating ground currents.

Heat and Airflow

The user needs to appreciate how hot a load bank gets and how much hot air is produced. As a guide, temp rise (F) = KW x 3000/CFM. Load banks are heat producing devices and must be ventilated. Observe the CFM capacity of the load bank and be certain that equivalent air intake is provided. If operated indoors, be cautious to prevent recirculation of exhaust air and observe ambient temperatures. Do not operate vertical airflow load banks under a close ceiling. Maintain a max ambient of no more than 125°F. Load banks greater than 110kw (Powerstar 110) are ideally operated outdoors and extreme caution should be exercised in the 100-700kw range. Above 700kw, an indoor space would have to be voluminous and well ventilated. Indoors, note the presence of sprinkler heads as the load bank WILL ACTIVATE sprinklers very quickly. Outdoors, be observant of adjacent equipment, buildings, plantings. Operate in an area with clear sky above. Avoid putting the load bank in a virtual pit by surrounding it with tall walls or buildings. Space multiple load banks 4-6 feet apart, greater with larger units.

Safety

Load banks are not inherently dangerous but there are dangers that exist with operation of load banks. This is a technical, industrial product and should only be set-up and operated by trained, technical personnel who are specifically authorized by the renter. Be certain that all equipment is properly grounded. Carefully check cables for wear and tear, insulation damage. Check all cam-lock connectors that connections are made sound and tight including both connector mating (the connector twist-tightens) and the cable within the connector. Be certain that cables are phased correctly. A circuit breaker or fuse set is required at the power source sized appropriately for the conductor run. Be sure to run adequate ampacity of cables. Check that generator voltage corresponds to load bank voltage. Check correct airflow direction and if it is necessary to reverse cooling fan direction, allow fan to fully stop before reversing. Provide the CFM required at an ambient not to exceed 125°F. Be observant of airflow restrictions and recirculation of airflow. Be careful that foreign objects are not drawn into cooling intakes. Do not operate indoor load banks in the rain. Observe common and accepted practices when operated high voltage electrical equipment. Note that load bank exterior, exhaust screens and other sheet metal parts can be very hot. Wear hearing protection as required.



Rental Load Bank Considerations

1. Capacity required for the test: KW, power factor, Voltage
2. Rental Load Bank System
Architecture: one unit or multiple networked units
3. Site conditions for the test: indoor/outdoor, ventilation and access limitations, environmental conditions
4. Duration of test, if system is to remain set-up for long periods
5. Control requirements: local/remote, manual/automatic
6. Data acquisition requirements
7. Connection cable requirements
8. Technician/operator requirements
9. Other accessories needed

Quick Guide

Load Bank Rentals & Technical Services

SIMPLEX®

RACK MOUNT

Microstar-R



17.5kw, 240-1v; 13.15kw, 208-1v

AIR-COOLED, PORTABLE

Infinity-200R



200kw, 240v/480v; 150kw, 208/416v;
133kw, 240-1v

AIR-COOLED, TRAILER

Trident-1250R



1250kw, 240v/480v; 1250kw, 600v;
938kw, 208/416v

RACK MOUNT

Microstar-R Network



Digital PC Networkable

AIR-COOLED, PORTABLE

dynaMITE-400R



400kw, 240v/480v; 300kw, 208/416v;
267kw, 240-1v

AIR-COOLED, TRAILER

Trident-2500R



2500kw, 240v/480v; 2500kw, 600v;
1875kw, 208/416v

AIR-COOLED, HAND CARRY

Swift-e-R



15kw, 120/240v, 1-ph.

AIR-COOLED, PORTABLE

Merlin-500R



500kw, 416/480v

AIR-COOLED, FORK-CRANE-SEMI

Titan-600R



750kva, 0.8 p.f.; 600kw, 450kvar,
240/480v

AIR-COOLED, PORTABLE

PowerStar-110R



110kw, 240v/480v; 82.5kw, 208/416v;
73.4kw, 240-1v

AIR-COOLED, PORTABLE

Electra-700R



700kw, 240/480v; 525kw, 208/416v

AIR-COOLED, FORK-CRANE-SEMI

Mini Load Cube-R



1563kva, 0.8 p.f., 1250kw, 937.5kvar,
480/600/690v

AIR-COOLED, FORK-CRANE-SEMI

Load Cube-R



3125kva, 0.8 p.f., 2500kw, 1875kvar,
480/600/690v

AIR-COOLED, SEMI-TRAILER

Ultra-Large Systems



3-63MVA, 0.8 p.f., 2.4-51MW,
1.8-38MVAR to 15kV

TRANSFORMERS



3500KVA, Tapped Primary

AIR-COOLED, FORK-CRANE-SEMI

Saturn-R



3200kw, 600v; 2720kw, 480v

AIR-COOLED, SEMI-TRAILER

Vulcan-5R



5-100 MW, to 34.5 kV

CABLES & ACCESSORIES



Low voltage and medium voltage cable sets, breakers, disconnects, taps boxes

AIR-COOLED, FORK-CRANE-SEMI

Load Ranger-R/IR



3000kw, 480/600v; 2250kvar, 480/600v

WATER-COOLED, PORTABLE

Nautilus-250R



250kw, 480v; 187.5kw, 416v

SOFTWARE



Automation, data acquisition, large systems intergration

AIR-COOLED, FORK-CRANE-SEMI

Solar-5R



5.0MVA, 0.8 p.f.; 4.0MW, 3.0MVAR,
480/600/690v

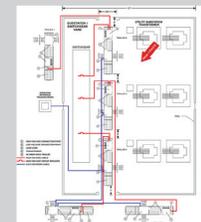
WATER-COOLED, PORTABLE

Atlantis-500R



500kw, 480v; 375kw, 416v

SERVICES



Nationwide field services:
start-up, set-up consultation, operator oversight, system design

Don't See What You Need?

SIMPLEX®

Simplex will customize or build-to-rent and more.
If you can imagine it, we can Build-to-Rent.



- High Voltage DC Load Banks
- Capacitive Load Banks
- Aerospace Applications
- Data Acquisition and Networking Requirements
- Automation
- Voltage and Frequency Regulation
- Wind Farm Testing
- Naval Testing
- And More



Description

Simplex MicroStar Precision Air Heaters (Load Banks) enable comprehensive testing of data center hot aisle/cold aisle cooling systems. The MicroStar is a 19-inch rack mountable device (10U high) that can be easily installed into a wide range of standard server racks. Precision heat generation is possible via the integration of adjustable heat levels (load steps) and adjustable airflow (velocity and CFM). The MicroStar is designed and manufactured by Simplex, the leading manufacturer of data center load banks and OEM Generator Production Test Cells.

The MicroStar is rated up to 17.5kw at 240vAC, single-phase, and connects to the rack power distribution bus via standard C19 plugs.

Weighing only 45 pounds, the Microstar can be easily rack mounted by a single person. With its exclusive quarter-turn, key-lockable mounting tabs, the Microstar can be installed in any standard rack, including square-hole rails, non-threaded round hole or threaded hole (#10, #12, M6) rails.

The MicroStar Precision Heater features six (6) independent heater circuits, each powered from a plug/power inlet. A Master Control function allows simultaneous on-off control of all selected circuits, as well as remote master on/off control, via a 24vDC input.

The single 10-inch cooling fan has a solid-state variable speed control with safety override to allow precision adjustment of heat rejection/temperature rise/airflow. An AC current sensor functions to automatically switch the cooling fan to a higher rate in the event of operator selection of low airflow versus high heat.



Rental Duty Rack Mount



Buy or Rent

- Available to purchase or rent

Design Features

- Precision thermal control of heat load, temp rise and airflow via step control and fan speed control
- Standard unit can be installed in any standard server rack
- Exclusive quarter-turn, key lockable mounting tabs
- Light weight (45 pounds)
- Automatic overload protection: fan reverts to higher speed above a preset power level
- Over temperature sensor with master disconnect and alarm
- Internal fuse protection of heat circuits
- Master control of all steps
- Remote master control input (24v)
- All 24vDC control circuits via internal power supply
- An industrial-duty product by Simplex, the leading manufacturer of load banks

• Intertek ETL Listed (Canada & USA)

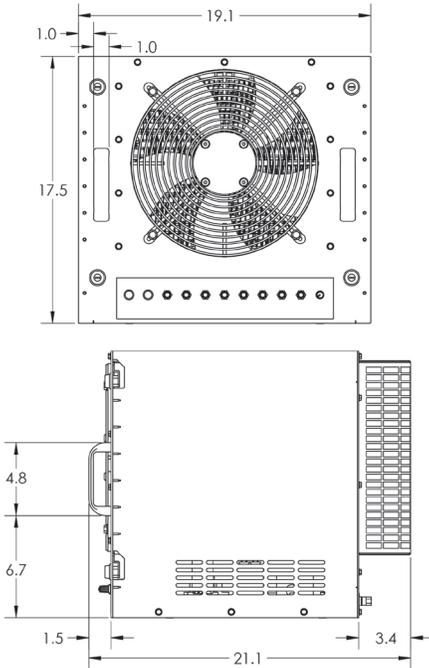


MicroStar R

Precision Air Heater (Load Bank)

for Hot Aisle/Cold Aisle Testing of Data Center Cooling Systems

SIMPLEX®



Rentals supplied packaged in one, two, and three unit cases.

Ratings

240vAC, 1-ph	Capacity		Max Amps at 240v
	230vAC, 1-ph	208vAC, 1-ph	
17.5kw	16.1kw	13.15kw	74a

Thermal Steps

Section 1*	1.50kw	1.38kw	1.13kw	13.4a
	1.50kw	1.38kw	1.13kw	
Section 2	2.5kw	2.3kw	1.88kw	10.4a
Section 3	2.5kw	2.3kw	1.88kw	10.4a
Section 4	2.5kw	2.3kw	1.88kw	10.4a
Section 5	3.5kw	3.21kw	2.63kw	14.58a
Section 6	3.5kw	3.21kw	2.63kw	14.58a

*Section 1 includes .9A control/fan load

Airflow

MicroStar: Solid-state speed control, 400-1520 cfm

Connection

Each section above connected via C19 power inlet/plug

Control

24vDC control via internal power supply

Unit face mounted controls:

- Master on-off switch, controls all selected steps, as noted above
- Individual step switches, rated as noted above
- Fan speed control dial
- Fan speed control and high power override (selects higher fan speed above a preset thermal level (ampere level))
- "On" green LED
- "Overtemperature" red LED (with master control disconnect)

Dimensions and Mounting

Height	10U (17.5 inches)
Width	Fits 19-inch server rack
Depth	19 inches
Weight	45 pounds
Mounting	Quarter-turn, key lockable tabs Adaptor pins for square hole, non-threaded round hole and threaded round hole (#10, #12, M6)

Description

Simplex MicroStar Precision Air Heaters (Load Banks) enable comprehensive testing of data center hot aisle/cold aisle cooling systems. The MicroStar is a 19-inch rack mountable device (10U high) that can be easily installed into a wide range of standard server racks. Precision heat generation is possible via the integration of adjustable heat levels (load steps) and adjustable airflow (velocity and CFM). The MicroStar is designed and manufactured by Simplex, the leading manufacturer of data center load banks and OEM Generator Production Test Cells.

The MicroStar is rated up to 17.5kw at 240vAC, single-phase, and connects to the rack power distribution bus via standard C19 plugs.

Weighing only 45 pounds, the Microstar can be easily rack mounted by a single person. With its exclusive quarter-turn, key-lockable mounting tabs, the Microstar can be installed in any standard rack, including square-hole rails, non-threaded round hole or threaded hole (#10, #12, M6) rails.

The MicroStar Precision Heater features six (6) independent heater circuits, each powered from a plug/power inlet.

A rack of up to three load banks is locally controlled and monitored from a control "Hub" mounted in the same rack. Up to 66 of these hubs can be networked for central control from a PC.

The single 10-inch cooling fan has a solid-state variable speed control with safety override to allow precision adjustment of heat rejection/temperature rise/airflow.

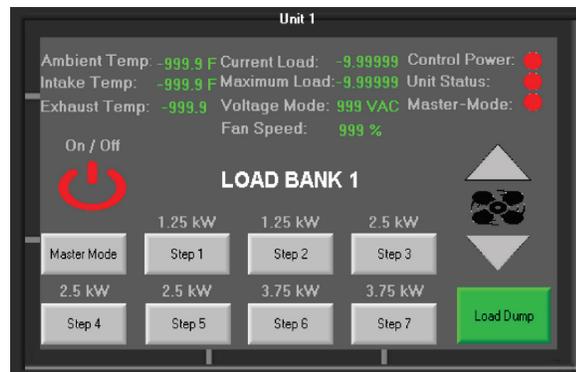
The controlling PLC sets a minimum fan speed based on the load selected. Above the minimum, fan speed may be varied as desired.

Buy or Rent

- Available to purchase or rent



Rental Duty Rack Mount



Local HMI Control

Design Features

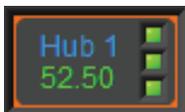
- Precision thermal control of heat load, temp rise and airflow via step control and fan speed control
- Standard unit can be installed in any standard server rack
- Exclusive quarter-turn, key lockable mounting tabs
- Light weight (45 pounds)
- Automatic overload protection: fan reverts to higher speed above a preset power level
- Over temperature sensor with master disconnect and alarm
- Internal fuse protection of heat circuits
- Master control of all steps
- Remote master control input (24v)
- All 24vDC control circuits via internal power supply
- An industrial-duty product by Simplex, the leading manufacturer of load banks



System Status At A Glance

A Microstar Network is controlled from a central laptop, tablet or PC. As seen above, the control screen conveys all essential system information.

The left 2/3 of the control screen (the Overview Field) displays a system overview for a quick heads up status report. Each rack of up to three MicroStar load banks is represented by a rectangular icon:



The individual status of each load bank and the total KW applied on the rack are displayed in the interior of the icon, surrounded by a color ring indicating the ambient temperature measured at the rack.

These icons are arranged on the screen by the operator to reflect the physical layout of the racks in the data center. At the top of this field on the screen is a user defined "landmark" indication to help orient users to the representation on the screen.

Control Flexibility

Each of the icons is also a selector button that will bring up the controls and detailed indications for that rack in the Control Field at the right of the screen. In this control mode, "Hub Control," all three load banks in the rack are controlled as one. Any requested load will be divided as evenly as possible among the three.

Each load bank's indication field within the Hub control field can also be touched to bring up individual controls and details for that load bank.

In addition to selecting individual hubs for control, entire rows or columns of hubs may be selected with the arrow shaped buttons to the left and along the bottom of the Overview Field. In this mode the same load and fan speed will be applied to all hubs within the selected row or column.

In Broadcast Control Mode, all hubs in the system are controlled together.

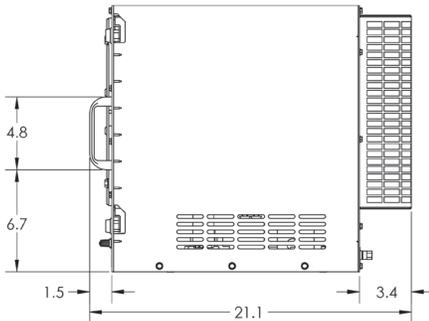
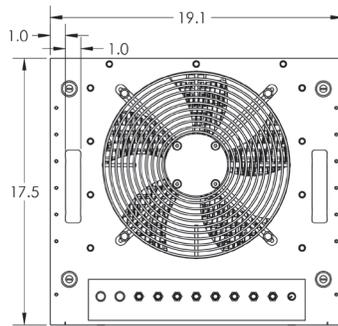
User Configurability

In addition to all of the previously described control modes, a Group Control mode is also available. Operators can pre define an unlimited number of saved control groups that can then be called up for control.

As mentioned, the Overview Field is completely user configured. The Hub icons can be custom arranged within a 12 x 12 field to reflect the physical layout of the server racks or in any way that makes sense to the operator.

Ambient temperature is indicated in the overview screen on a user defined color scale and alarms based on measured ambient temperatures are completely user defined.

The PC controls have been designed with either mouse or touchscreen control in mind for complete operator flexibility with today's technology options.



One, two, and three unit cases available for purchase or rental.

Ratings

240vAC, 1-ph	Capacity		Max Amps at 240v
	230vAC, 1-ph	208vAC, 1-ph	
17.5kw	16.1kw	13.15kw	74a

Thermal Steps

Section 1	1.25kw	1.15kw	0.9kw	5.2a
Section 2	1.25kw	1.15kw	0.9kw	5.2a
Section 3	2.5kw	2.3kw	1.88kw	10.4a
Section 4	2.5kw	2.3kw	1.88kw	10.4a
Section 5	2.5kw	2.3kw	1.88kw	10.4a
Section 6	3.75kw	3.21kw	2.81kw	15.62a
Section 7	3.75kw	3.21kw	2.81kw	15.62a

Airflow

Solid-state speed control, 400-1520 cfm

Connection

Each section above connected via C19 power inlet/plug

Control

24vDC control via internal power supply

Locally control up to 3 load banks via touchscreen

Remotely control up to 198 networked load banks via laptop, tablet or PC

Control discrete load steps

Control fan speed beyond minimum required for load level applied

Dimensions and Mounting

Height	10U (17.5 inches)
Width	Fits 19-inch server rack
Depth	19 inches
Weight	45 pounds
Mounting	Quarter-turn, key lockable tabs Adaptor pins for square hole, non-threaded round hole and threaded round hole (#10, #12, M6)



Overview

10kw, 15kw, 20kw
 120/240vAC, 2/3-wire, single-phase
 250w resolution

Description

Quick and easy testing of small generators and AC power sources is possible with the Simplex *Swift-e*.

Portable, fully self-contained, lightweight and hand transportable, the *Swift-e* can be used to test and maintain small engine generators:

- Residential standby
- Contractor generators
- Marine generators
- RV generators
- Small wind turbines

The *Swift-e* is also suitable for other AC power sources:

- 120/240v panelboards and distribution
- Inverters
- Small UPS

Swift-e's are available in three versions:

- *Swift-e*: 10kw
- *Swift-e+*: 15kw
- *Swift-e Ultra*: 20kw

All versions are:

- Switchable in 250w steps
- 120/240vAC re-connectable

All control and cooling circuits operate from the source under test. Digital test instrumentation and connections cables are included.

Instrument/Control Panel

Digital Power Meter:

- AC Voltage, 1/2%, + 1 digit
- AC Amperes, 1/2%, + 1 digit
- Frequency, 1/2%. + 1 digit
- KW, 1%, + 2 digits
- Power Factor, 2%, + 2 digits

Master load switch, applies all load preset with load step toggle switches

Load step toggle switches

Fan/control power toggle switch



**Rental Duty
 for RV, Marine, and
 Other Small Generators**

Ratings

Swift-e: 10,000 watts, 120/240V AC, single-phase

Swift-e+: 15,000 watts, 120/240V AC, single-phase

Swift-e Ultra: 20,000 watts, 120/240V AC, single-phase

Features

Load elements: Sealed, tubular-type element consisting of nichrome resistance wire sealed within an incolloy sheath (nickel alloy). Electrically dead exterior of element reduces hazard of electric shock and short circuit of elements.

Element is rustproof, vibration and shock proof.

Load control: Panel mounted toggle switches for each load step and master load control. Main contactor for master load control/block loading.

Load element circuit protection: Main circuit breaker with overload/short circuit trips.

Overtemperature sensor to trip main contactor and activate alarm indicator.

Overvoltage sensor to protect against incorrect connection of load bank (connection of 240V to 120V circuits). Trips main contactor and activates alarm indicator.

Connection cable set, 10', with ring lug terminations.

NEMA type 1 enclosure, aluminum construction, powder coated nickel-metallic. Includes rubber feet, combination carry handles and cable wrap.

Swift-e R

Portable Load Bank
10KW - 20KW

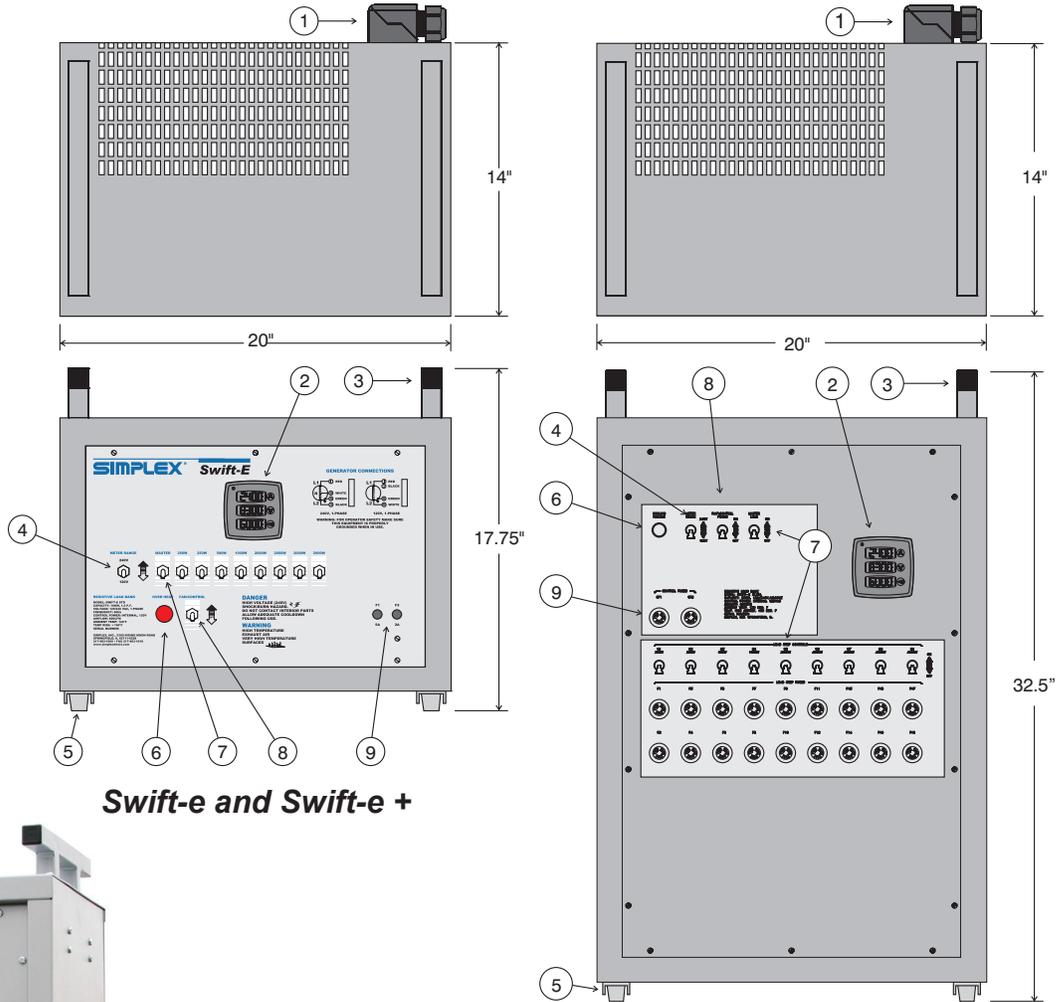


Dimensions and Key Features:

1. Cable Exit, Strain Relief
2. Digital Power Meter
3. Handles, Cable Wrap
4. Meter Range Selector Switch
5. Rubber Feet
6. Over Heat Indicator Lamp
7. Master Load and Load Step Toggle Switches
8. Fan/Control Power Toggle Switch
9. Control Fuses

Connection Options

- NEMA Plugs
- Cam-Type Connectors
- Clamps



Swift-e and Swift-e +

Swift-e Ultra



Ratings:

Swift-e	10KW	120/240vAC, Single-Phase, 250W Step Resolution
Swift-e+	15KW	120/240vAC, Single-Phase, 250W Step Resolution
Swift-e Ultra	20KW	120/240vAC, Single-Phase, 250W Step Resolution

- Cooling** On board fans, 500CFM
- Control Power** Internal, from power source
Under test
- Weight** 40-50 pounds
(Ultra - 120 pounds)

**Rental Duty
Dual-Voltage Load Bank**
208-240/416-480v, 3-phase;
240v, 1-phase

Overview

- Rugged, portable workhorse
- Parallel/network up to 40 units
- Single point control, data acquisition
- Includes slip over aluminum storage, transport cover

Description

The Simplex PowerStar Portable Load Bank is an ultra-compact, lightweight, versatile test instrument specially designed for manufacturers, dealers and users of small AC power systems, to 110KW nominal. It is suitable for testing engine generators, wind generators, UPS systems, ground power units, auxiliary power units, static inverters or virtually any other AC power source on the production line, in the service shop or in the field. It can be applied at all common AC voltages to 480V maximum, 50-60 Hertz, single or 3-phase.

The Powerstar is a digitally controlled load bank with network capability. All control is via a hand-held touchscreen controller connected to the load bank via a supplied RS-232 network cable. The load bank includes a digital power transducer with meter displays on the touchscreen. Load applied via a touchscreen keypad in manual steps or an auto-jog function. Any number of Powerstar Load Banks can be networked together via RS-232 cables connected from the "out" connector on the first unit to the "in" connector on the next, and then "out-to-in" in succession until the desired number of units are connected. All control and metering is provided from a single hand-held controller. All instrumentation values for the total network are summed and displayed on the master controller.

The PowerStar is highly portable and easily transported to the job site. The Load Bank includes casters, lifting and moving handles. Power connections are plug-in to Cam-Lok connectors. Control and cooling fan power is obtained from a common 115v, 15A outlet via the included connection cord.



Parallel and network up to 40 Powerstar Load Banks with control and data acquisition from a single controller. When networked, load is proportioned equally across all load banks. System automatically sequesters failed unit.

Features

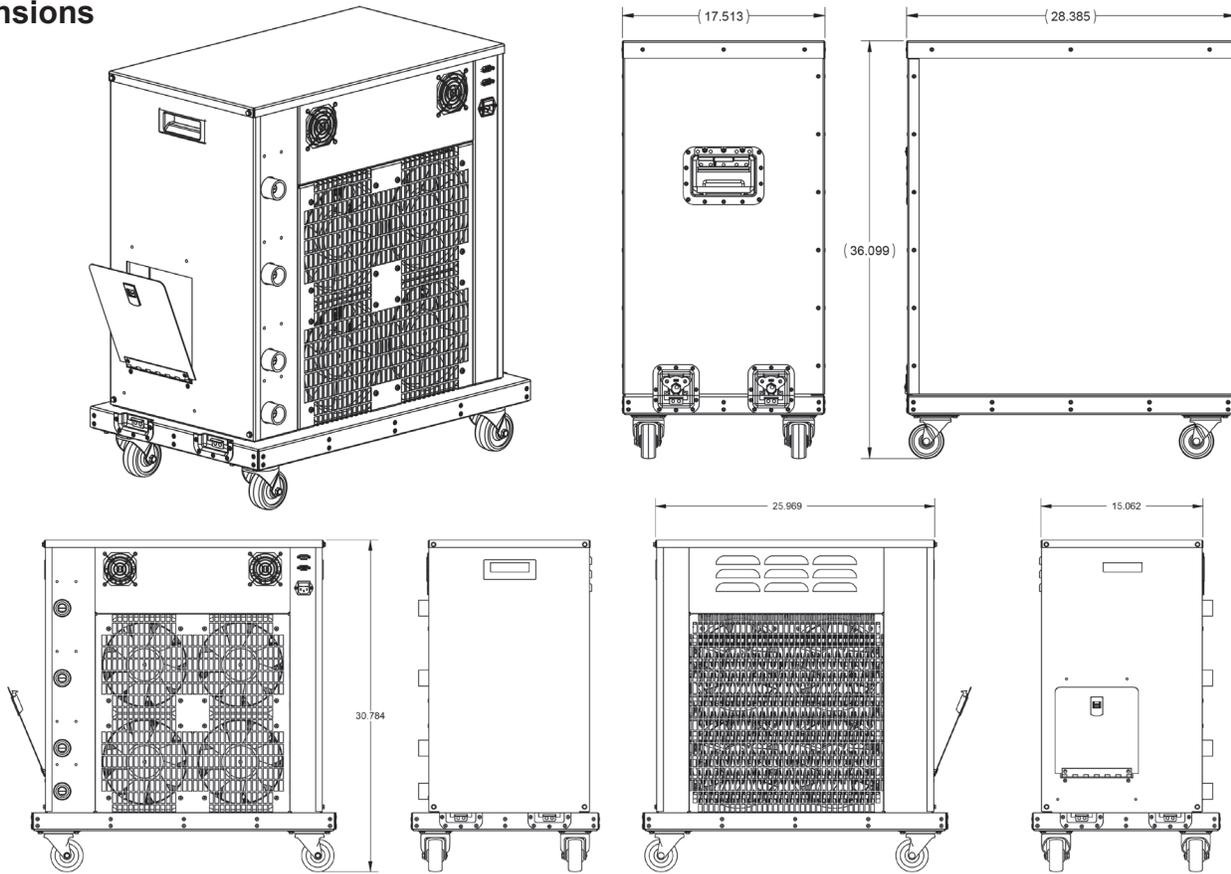
- Increased capacity to 110KW
- UL Listed, United States and Canada
- Lightweight and compact
- Portable, self-contained
- "Powr-Web" elements
- Branch circuit fuse protection of load
- Digital Load Control: Manual –or– Auto-Jog feature
- Use at all common 50 or 60 Hertz voltages, to 480V AC
- Digital Power Transducer, standard: Volts, Amps, Frequency, Kw
- Cam-Lok power connectors
- Operate fans and controls from 120v wall outlet, 15' cord provided
- Forced air cooled
- Comprehensive malfunction detection system:
 - Overtemperature, fan failure, overvoltage protection and alarms
- Continuous duty
- Aluminum "slip-over" cover with handles for added protection while transporting

PowerStar-110R

110 KW Digital Load Bank
with Network Capability



Dimensions



PowerStar 110 with aluminum "slip-over" cover with handles for added protection while transporting.

Capacity Detail

Model	FLA		KW DETAIL		
	240V	480V	240V/480V	208/416V	240V, 1-ph
PowerStar	264	132	110	82.5	73.3

Fan/Control Power

External, 115V, 1-ph., 60Hz, 15A service, 15' cord with plug provided

Voltage

Dual Voltage, nominal 240/480V AC, 3-phase
208-240/416-480V AC, 3-phase, 60Hz
190-220/380-460V AC, 3-phase, 50Hz
110-240V AC, 1-phase, 50-60Hz

Load Steps

Digital load control, 5kw resolution

Frequency

50-60Hz

Duty Cycle

Continuous
Temp Rating
125° F max intake air temp
Nominal 110° F rise

Weight

125 lbs.



Rental Duty Dual Voltage Load Bank 208-240/416-480vAC

Overview

- Infinitely variable: 0-200kw, 208-480v
- Infinitely flexible: compact, lightweight, flush sides, 360-degree casters
- Infinitely expandable: digitally network to as many as 40 Infinity or Powerstar load banks

Description

The new Simplex Infinity 200 is simply the most advanced factory-standard load bank available anywhere. Digitally controlled infinite loads—simply enter any value from zero to max, and the load bank goes there. Ramp-up, ramp-down, infinitely. Roll-in, roll-out, 360-degree casters, forkliftable, connect up to 2 x 4/0 per phase. Daisy chain up to 40 units (that's 8000kw- maybe not infinite capacity, but who's counting at that point). Single-point control of the chain of load banks. Single-point data acquisition of the chain. 200kw at 240 and 480v, 3-phase; 150kw at 208 and 416v, 3-phase, 133kw at 240v, single-phase, all in the smallest and lightest package available.

Upon initial start-up, the Infinity controller measures the applied voltage and calibrates the loads to that voltage. Therefore, at intermediate voltages, such as 440v, 416v, 220v, 208v, the load bank controller calibrates for the reduced capacity. Within the capacity of the load bank, the load requested is the load applied.

Also, the Infinity-200 is compatible with the Simplex Powerstar-110—daisy chain any combination of Infinities and Powerstars.

The Infinity-200 is a digitally controlled load bank with network capability. All control is via a hand-held touchscreen controller connected to the load bank via a supplied RS-232 network cable. The load bank includes a digital power transducer with meter displays on the touchscreen. Load is applied via a screen keypad. Any number of



Infinity-200 or Powerstar Load Banks can be networked together via RS-232 cables connected from the “out” connector on the first unit to the “in” connector on the next, and then “out-to-in” in succession until the desired number of units are connected. All control and metering is provided from a single hand-held controller. All instrumentation values for the total network are summed and displayed on the master controller.

The Infinity-200 is highly portable and easily transported to the job site. The Load Bank includes casters, lifting and moving handles. Power connections are plug-in to Cam-Type connectors. Control and cooling fan power is obtained from a common 115v, 15A outlet via the included connection cord.

Features

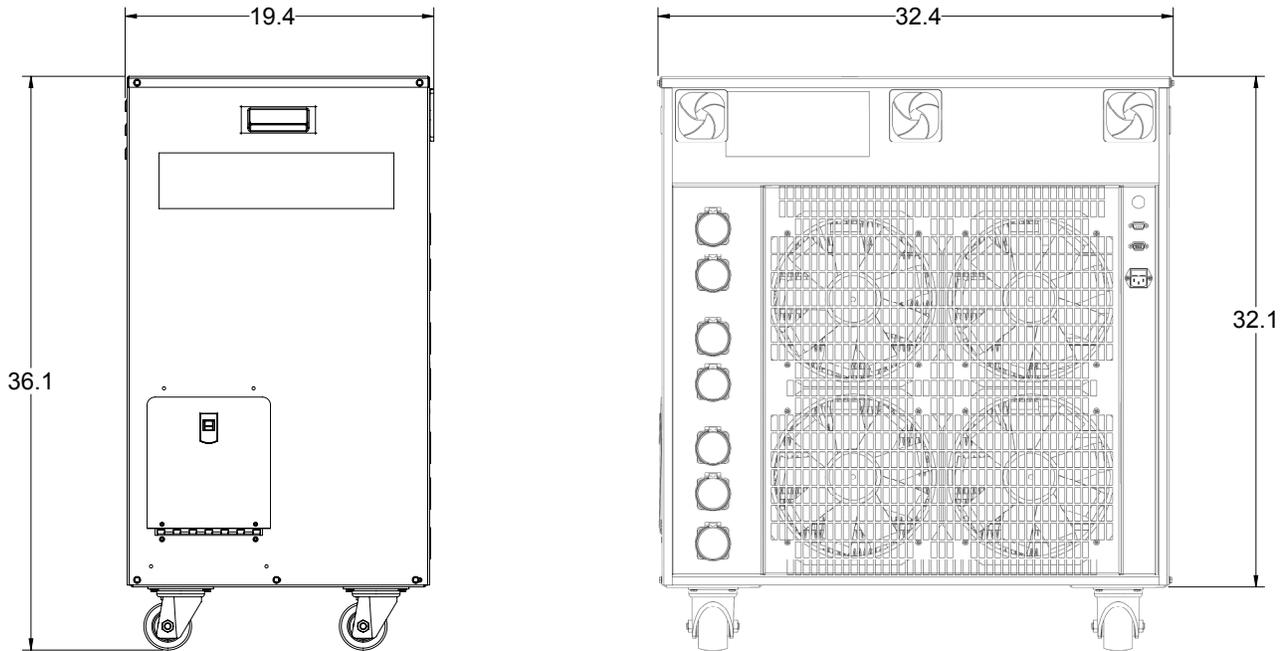
- Unique compact 200kw load bank
- Lightweight and compact
- Portable, self-contained
- “Powr-Web” elements
- Branch circuit fuse protection of load elements
- Magnetic contactor control of load
- Digital load control
- Use at all common 50 or 60 Hertz voltages, to 480V AC
- Digital Power Transducer, standard: Volts, Amps, Frequency, Kw
- 150°C XLP insulated power wiring
- Cam-Type power connectors
- Operate fan and control circuits from a common 120V wall outlet, 15' cord provided
- Forced air cooled, integral cooling fans
- Fan motors protected by fuses
- Control circuits fused
- Comprehensive malfunction detection system:
 - Overtemperature and fan failure protection
 - Overvoltage protection
- Continuous duty
- NEMA-1 enclosure
- Casters and handles provided

INFINITY-200R

200 KW Digital Load Bank with Network Capability



Dimensions



Capacity Detail

Model	FLA		KW DETAIL		
	240V	480V	240V/480V	208/416V	240V, 1-ph
Infinity	481	241	200	150	133

Fan/Control Power

External, 115V, 1-ph., 60Hz, 15A service, 15' cord with plug provided

Voltage

Dual Voltage, nominal 240/480V AC, 3-phase

208-240/416-480V AC, 3-phase, 60Hz

190-220/380-460V AC, 3-phase, 50Hz

110-240V AC, 1-phase, 50-60Hz

Load Steps

Infinitely variable load control

Frequency

50-60-400Hz

Duty Cycle

Continuous

Temp Rating

125° F max intake air temp

Nominal 110° F rise

Weight

200 lbs.

Options

- Vinyl Cover
- Hard transport and storage case with handles and casters

Overview

- High capacity, 400kw
- Dual voltage: 208-240/416-480vAC
- Digital load control, 5 kw resolution
- Touchscreen operator interface
- Data acquisition and recording
- Network units to form large systems

Description

The Simplex dynaMITE is a large capacity, high performance Portable Load Bank designed to provide the manufacturers, distributors and users of large AC generators and UPS systems with sophisticated testing capability. dynaMITE Load Banks feature digital controllers with network control and data acquisition capability. Operator interface is via touchscreen. Load control is via screen keypad. All electrical values display on the screen and are recorded by the system for future data retrieval. Any number of dynaMITE and Electra Load Banks can be combined for large system capacities and networked for central control and data acquisition.

The dynaMITE is rated 400kw of resistive load at both 240V and 480V, 3-phase. It can be applied at any AC voltage to 480V AC, 50-60 Hertz standard, single or 3-phase. Load step resolution is 5KW.

Features

UL/CUL Listed

Digital Control: PLC based control with 8-inch color TFT touchscreen interface. MODBUS over RS-485 network communication. See page 3.

Instrumentation: Digital power transducer with Ethernet communication to digital controller. Data display on touchscreen. Data acquisition and recording. See page 3.

Load Elements: Simplex "Powr-Web" chromium alloy, open wire, continuously supported, power resistor.

Load Control: 3-Pole contactors.



Rental Duty
Dual-Voltage Load Bank
208-240/416-480v



Load Element Circuit Protection: Branch circuit fuses. One set of fuses each 50KW branch. Fuses are current limiting type, 200KAIC, 600V.

Cooling System: 3-phase, direct-drive fan, 10,500 CFM.

Malfunction Detection System: Protection against fan failure, high exhaust air temperature, high intake air temperature, overvoltage and fan reversal. Exhaust air temperature displays on screen.

Control Power Supply: Dual voltage control power transformer with supply power switchable to internal (generator) or external.

Touch Screen: Easily removable from panel.

Connection: Cam-Type power connections.



Options

- Network control cables, 25-foot basic length
- 400Hz modification
- Remote control cable extensions
- Simplex AUTO-TEST software for full automation of testing with data acquisition and report generation
- 12' connection cable set including 3-phase power cables, ground cable, stored in rear compartment
- Weather resistant enclosure
- Auxiliary inductive load banks with network control and data capability

Capacity Detail

Model	KW (1.0pf)	FLA		KW DETAIL			
		240V	480V	240V/480V	208/416V	380V	240V, 1-ph
dynaMITE 400R	400	961	481	400	300	251	267

Cooling System

Model	HP	CFM	ΔT , Nom.	ΔT , Max.
dynaMITE 400R	3.0	10,500	115°F	300°F

Voltage: Dual Voltage: 240/480V AC, 3-phase Operational at any voltage to 480V AC maximum, single or 3-phase

Frequency: 50, 60 Hertz standard

Connection: Cam-Type

Time Rating: Continuous

Ambient Air Temperature: 120°F max

Fault Rating: 200KAIC

Insulation Rating: 600V, 302°F

Net Weight:

1,000 lbs.

Control/Fan Power:

- Internal 208-240/416-480V, 3-phase, 60hz
- Internal 220/380-416V, 3-phase, 50Hz
- External 208-230/460V, 3-phase, 60Hz, 11/5.5A
- External 220/380-416V, 3-phase, 50Hz

Digital Load Step Control

Nominal 5.0 kw resolution: direct enter any load value and controller will apply load within nominal 5kw resolution

Digital Load Calibration Versus Voltage

Controller automatically calibrates loads for reduced voltage operation.

Digital Control and Data Acquisition System

PLC based digital control with 8-inch color TFT touchscreen operator interface.

Functions

- Control power source and voltage level detection
- Malfunction detection and protection
- Direct access (keypad) load control
- Alternate mimic panel load control
- Basic automation of load control
- Field adjustable exhaust temperature limits with temperature display
- Built-in control from customer supplied computer

Instrumentation

Digital power transducer to digital controller and meter displays on touchscreen:

- 3-phase voltage (each, L-L)
- 3-phase current (each line)
- Frequency
- KW

Data Acquisition

- Captures and records all electrical values
- Start recording/stop recording screen buttons
- One second sample rate
- Exports text file to detachable flash drive which plugs into USB port

Outputs

MODBUS (standard) or BacNet (optional):

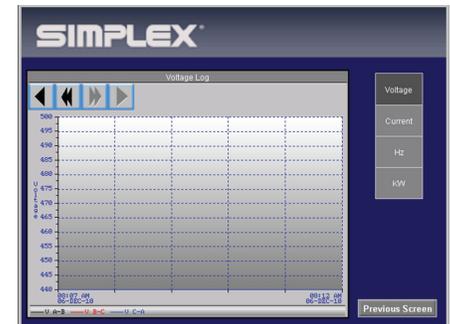
- Load applied
- Each electrical value as above



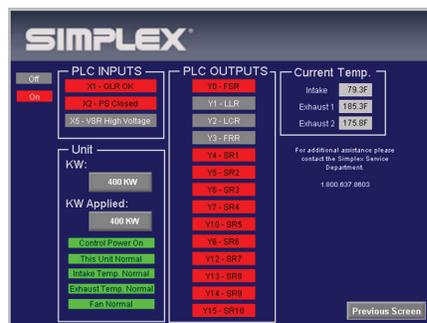
Main Screen



Monitoring Screen



Metering Trends Screen



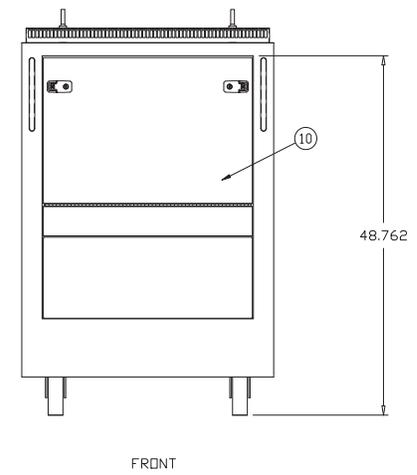
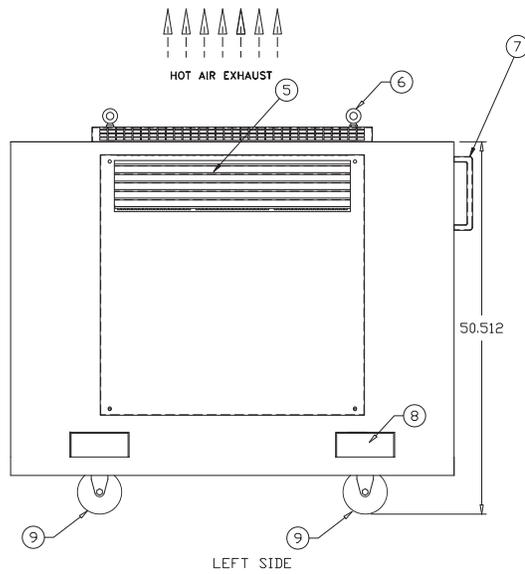
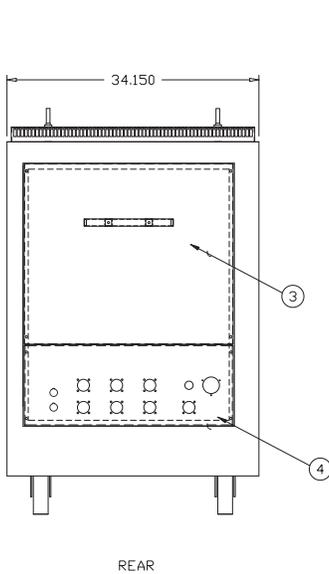
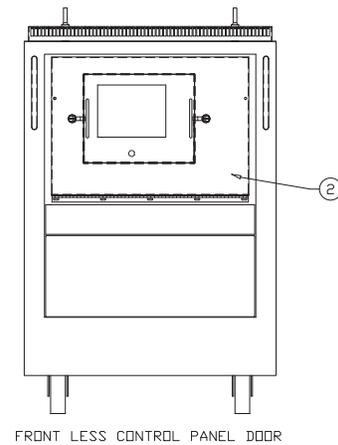
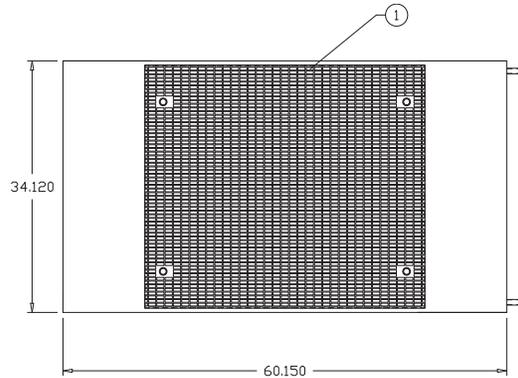
Diagnostics Screen



Maintenance Screen

Dimensions and Key Features

- | | | |
|---|--|--|
| 1. Screened Hot Air Exhaust | 4. Cam-Lok Type Power Connections | 8. Fork Lift Channels |
| 2. Removable 8-inch Color TFT Touchscreen Controller | 5. Ventilation Louver (one on each side) | 9. Rubber Tired Casters, 6" (two front swivel, two rear fixed) |
| 3. Behind Connections Compartment: Removable Access Panel to Rear Distribution Bus, Fuses, Contactors | 6. Lifting Eyes (four) | 10. Control Panel Door |
| | 7. Pull Handle | |



Overview

- Rental Duty Portable Load Bank
- 500kw Resistive
- Re-connectable 416v, 480v 100% rated both voltages
- Analog Load Control

Description

The Simplex MERLIN-500R, is a RENTAL-DUTY Portable Load Bank designed specifically for data center application in the commissioning and testing of chiller plants, generator systems and UPS systems. The Merlin is a medium capacity, fully portable, resistive load bank system. Loads are arranged and stepped, manual application. Unique to the Merlin-500R is the 100%, 500kw rating at both 416v and 480v via user toggle switch.

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.

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.



**Rental Duty
Dual-Voltage Load Bank
416-480v**

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
- Horizontal airflow
- Cam-Type Connections

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
	416/480V, 3-phase	HP	Voltage	CFM	KW @ 416/480V, 3-phase
Merlin 500R	500	3.0	416/480V, 3-ph.	8000	5, 10, 10, 25, 50, 100, 100, 100, 100



Fan/Control Power

User selectable, internal/external

Internal Power

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

External Power

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

Voltage

High/Low Mode, operator selectable
416/480v, 3-ph

Frequency

60Hz

Duty Cycle

Continuous

Temperature Rating

125° F max intake air temp
Nominal 110° F rise

Power Connection

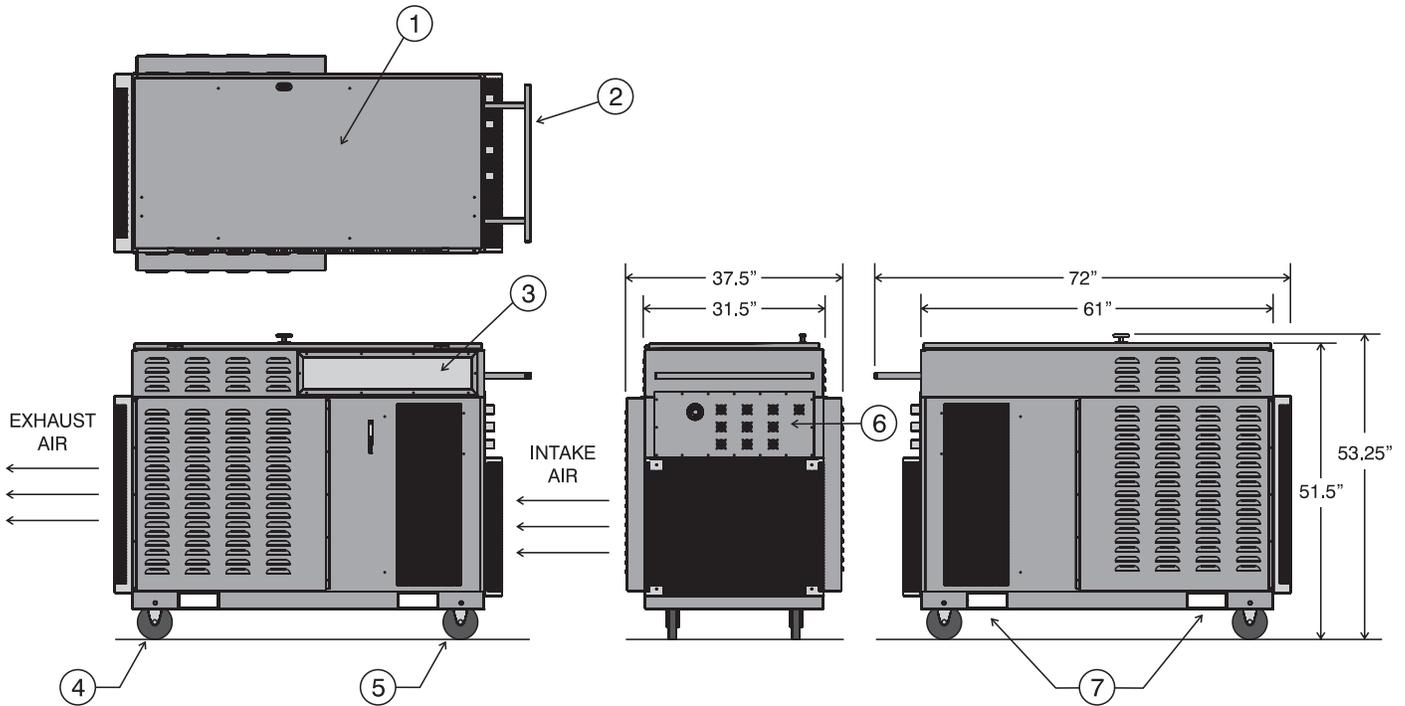
Cam-Type Connector
Qty 3 400A rated 4/0 per pahase
Qty 1 4/0 ground

MERLIN 500R

500KW Resistive Load Bank

SIMPLEX®

Dimensions and Key Features



1. Hinged Top Panel for Access to Subpanel
2. Pull Handle also used for Cable Storage
3. Control Panel
4. Fixed Caster
5. Swivel Caster with Brake
6. Internal Control Power Receptacle and Cam-Type Connectors
7. Fork Lift Channels

Shipping Weight: 1050 lbs.

Overview

- High capacity, 700kw
- Dual voltage: 208-240/416-480vAC
- Digital load control, 5 kw resolution
- Touchscreen operator interface
- Data acquisition and recording
- Network units to form large systems

Description

The Simplex Electra is a very large capacity, high performance Portable Load Bank designed to provide the manufacturers, distributors and users of large AC generators and UPS systems with sophisticated testing capability. Electra Load Banks feature digital controllers with network control and data acquisition capability. Operator interface is via touchscreen. Load control is via screen keypad. All electrical values display on the screen and are recorded by the system for future data retrieval. Any number of Electra and dynaMITE Load Banks can be combined for large system capacities and networked for central control and data acquisition.

The Electra Series is rated 700kw of resistive load at both 240V and 480V, 3-phase. It can be applied at any AC voltage to 480V AC, 50-60 Hertz standard, single or 3-phase. Load step resolution is 5KW.

Features

UL/CUL Listed

Digital Control: PLC based control with 8-inch color TFT touchscreen interface. MODBUS over RS-485 network communication. See page 3.

Instrumentation: Digital power transducer with Ethernet communication to digital controller. Data display on touchscreen. Data acquisition and recording. See page 3.



**Rental Duty
Dual-Voltage Load Bank
208-240/416-480v**

Load Elements: Simplex "Powr-Web" chromium alloy, open wire, continuously supported, power resistor.

Load Control: 3-Pole contactors.

Load Element Circuit Protection: Branch circuit fuses. One set of fuses each 50KW branch. Fuses are current limiting type, 200KAIC, 600V.

Cooling System: 3-phase, direct-drive fan, 10,500 CFM.

Malfunction Detection System: Protection against fan failure, high exhaust air temperature, high intake air temperature, overvoltage and fan reversal. Exhaust air temperature displays on screen.

Control Power Supply: Dual voltage control power transformer with supply power switchable to internal (generator) or external.



Touch Screen: Easily removable from panel.

Connection: Cam-Type power connections.

Electra 700R

700KW Digital Load Bank with Data Acquisition



Options

- Network control cables, 25-foot basic length
- 400Hz modification
- Remote control cable extensions
- Simplex AUTO-TEST software for full automation of testing with data acquisition and report generation
- 12' connection cable set including 3-phase power cables, ground cable, stored in rear compartment
- Weather resistant enclosure
- Auxiliary inductive load banks with network control and data capability

Capacity Detail

Model	KW (1.0pf)	FLA		KW DETAIL			
		240V	480V	240V/480V	208/416V	380V	240V, 1-ph
Electra 700R	700	1683	842	700	525	439	467

Cooling System

Model	HP	CFM	ΔT , Nom.	ΔT , Max.
Electra 700R	5.0	12,500	158°F	350°F

Voltage: Dual Voltage: 240/480V AC, 3-phase Operational at any voltage to 480V AC maximum, single or 3-phase

Frequency: 50, 60 Hertz standard

Connection: Cam-Type

Time Rating: Continuous

Ambient Air Temperature: 120°F max

Fault Rating: 200KAIC

Insulation Rating: 600V, 302°F

Control/Fan Power:

- 230/460V, 3-phase, 60 Hertz
- 190/380V, 3-phase, 50 Hertz
- Switchable internal (generator)-external
- 230/460-115V control power transformer internal to Load Bank.
- 15' external power cord

Net Weight: 1675 lbs.

Digital Load Step Control

Nominal 5.0 kw resolution: direct enter any load value and controller will apply load within nominal 5kw resolution

Digital Load Calibration Versus Voltage

Controller automatically calibrates loads for reduced voltage operation.

Digital Control and Data Acquisition System

PLC based digital control with 8-inch color TFT touchscreen operator interface.

Functions

- Control power source and voltage level detection
- Malfunction detection and protection
- Direct access (keypad) load control
- Alternate mimic panel load control
- Basic automation of load control
- Field adjustable exhaust temperature limits with temperature display
- Built-in control from customer supplied computer

Instrumentation

Digital power transducer to digital controller and meter displays on touchscreen:

- 3-phase voltage (each, L-L)
- 3-phase current (each line)
- Frequency
- KW

Data Acquisition

- Captures and records all electrical values
- Start recording/stop recording screen buttons
- One second sample rate
- Exports text file to detachable flash drive which plugs into USB port

Outputs

MODBUS (standard) or BacNet (optional):

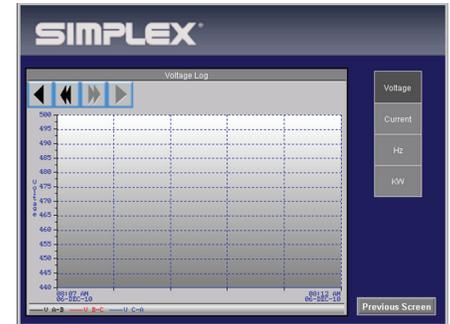
- Load applied
- Each electrical value as above



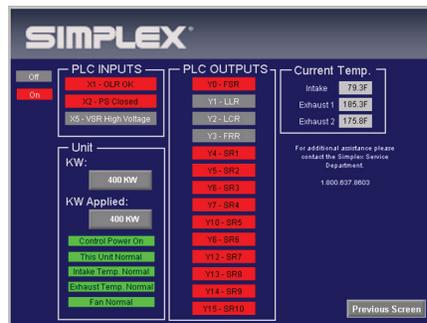
Main Screen



Monitoring Screen



Metering Trends Screen



Diagnostics Screen



Maintenance Screen

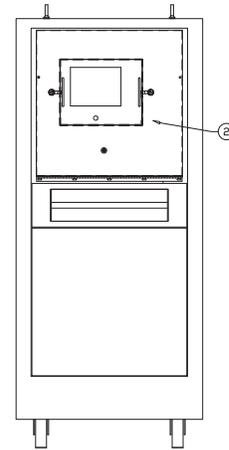
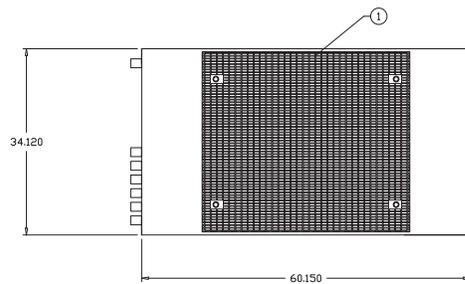
Electra 700R

700KW Digital Load Bank with Data Acquisition

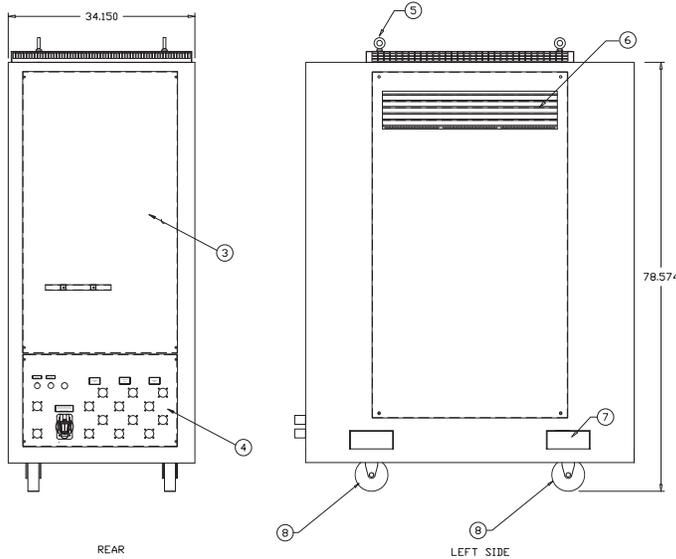


Dimensions and Key Features

- | | | |
|---|--|--|
| 1. Screened Hot Air Exhaust | 4. Cam-Lok Type Power Connections | 8. Rubber Tired Casters, 6" (two front swivel, two rear fixed) |
| 2. Removable 8-inch Color TFT Touchscreen Controller | 5. Lifting Eyes (four) | 9. Recessed Handle Pocket |
| 3. Behind Connections Compartment: Removable Access Panel to Rear Distribution Bus, Fuses, Contactors | 6. Ventilation Louver (one on each side) | |
| | 7. Fork Lift Channels | |

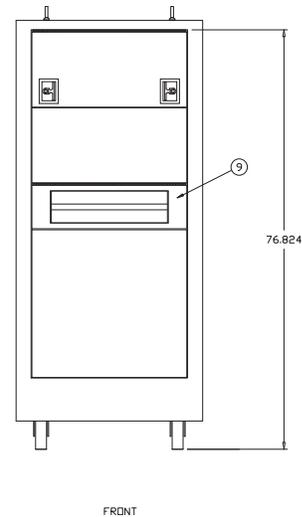


FRONT LESS CONTROL PANEL DOOR



REAR

LEFT SIDE



FRONT



**Rental Duty
Dual-Voltage Load Bank
208-240/416-480vAC**

Overview

- Integrated design, load module, trailer, reels, cam-lock style connections, digital control
- High capacity, 600-1250kw
- Dual voltage: 208-240/416-480vAC
- Digital load control, 5 kw resolution
- Touchscreen operator interface
- Remote and/or local control
- Data acquisition and recording
- Network units to form large systems

Description

The Simplex Trident-1250 is a fully integrated design trailer load bank including:

- Resistive Load Bank, 600-1250kw
- Heavy duty, purpose built, tandem axle highway trailer
- Cables reels
- CAM-LOCK style connection panel
- Storage locker
- Integrated digital controller suitable for local and/or remote control

The Trident Trailer Load Bank is ideal for field testing in the performance of start-up and commissioning activities, service contracts and engine generator maintenance.

Trident Load Bank Systems feature highly standardized digital controllers with data acquisition capability. Trident Load Banks can be networked to other Trident units or to any Simplex Load Bank (except Powerstar and Infinity product lines) for totalized, single point control and data acquisition. In fact, any number of Simplex load Banks can be networked to form large, integrated aggregate systems. Operator interface is via touchscreen. Load control is via screen keypad. All electrical values display on-screen and are capable of being recorded for future data retrieval.

The Trident family comprises load modules from 600-1250kw integrated with trailers, cable storage and connection accessories and digital controls. The Trident-1250 is a single load module product. The Trident 2500 is a two load module product, 1500-2500kw rated. Refer to the Trident 2500 Brochure for further details.

Features

NRTL Listed: CSA-US or CSA-Canada.

Digital Control: PLC based control with 8-inch color TFT touchscreen interface. MODBUS over RS-485 network communication.

Instrumentation: Digital power transducer with Ethernet communication to digital controller. Data display on touchscreen. Data acquisition and recording.

Load Elements: Simplex "Powr-Web" chromium alloy, open wire, continuously supported, power resistor.

Load Control: 3-Pole contactors.

Load Element Circuit Protection: Branch circuit fuses. One set of fuses each 50KW branch. Fuses are current limiting type, 200KAIC, 600V.

Cooling System: 3-phase, direct-drive fan, 21,000 CFM.

Malfunction Detection System: Protection against fan failure, high exhaust air temperature, high intake air temperature, overvoltage and fan reversal. Exhaust air temperature displays on screen.

Control Power Supply: Dual voltage control power transformer with supply power switchable to internal (generator) or external.

Touch Screen: Easily removable from panel.

Connection: "Cam-Lock" type power connections.



Trident 1250-R

Digital Load Bank with Data Acquisition
Rental Duty 600KW - 1250KW

SIMPLEX®



Capacity Detail

Model	KW (1.0pf)	FLA			KW DETAIL		
		240V	480V	240V/480V	208/416V	380V	240V, 1-ph*
Trident 600	600	1444	722	600	450	376	300
Trident 750	750	1806	903	750	563	470	300
Trident 800	800	1926	963	800	600	500	300
Trident 900	900	2166	1083	900	675	564	300
Trident 1000	1000	2406	1203	1000	750	627	300
Trident 1250	1250	3008	1504	1250	938	783	300

*Requires external 3-phase fan/control power. Capacity limited to 1250 FLA.

Voltage: Dual Voltage: 240/480V AC, 3-phase Operational at any voltage to 480V AC maximum, single or 3-phase

Optional Voltages: Instead of 240/480v dual voltage:

- a. Any 50hz or 60hz single voltage to 690v
- b. 600v, single voltage
- c. 600/480v, dual voltage
- d. 600/300v, dual voltage
- e. 480/416v, dual voltage
- f. 208/416v, dual voltage

Frequency: 50, 60 Hertz standard

Connection: 3-wire plus ground

Time Rating: Continuous

Ambient Air Temperature: 120°F max

Airflow: 21,000 CFM

Temperature Rise: 180°F nominal

Control/Fan Power:

- 230/460V, 3-phase, 60 Hertz
- 190/380V, 3-phase, 50 Hertz
- Switchable internal (generator)-external
- External fan/control power requirements: 240/480vAC, 3-phase, 60 Hertz, 40 / 20 amps service (7.5HP motor)
- 230/460-115V control power transformer internal to Load Bank.

Net Weight: Approx. 9500 lbs., including load module, trailer, three reels, 2000' 4/0 cable, cam-lock style connectors

Digital Load Control

Nominal 5.0 kw resolution: direct enter any load value and controller will apply load within nominal 5kw resolution

Digital Load Calibration Versus Voltage

Controller automatically calibrates loads for reduced voltage operation.

Standard Cable Reels



**Cam-Lock Cable Style
Connection Panel**



**Standard Trident
Remoteable Digital
Touchscreen Controller**



Trident 1250-R

Digital Load Bank with Data Acquisition
Rental Duty 600KW - 1250KW

SIMPLEX[®]

Trailers

Heavy-duty, purpose-built for the application, tandem axle trailer:

Construction: Structural steel chassis, steel deck, all welded, built to DOT specification, NTM DOT certification label

Capacity: 8,000-10,400 GVWR

Axles: Tandem

Hitch: 2-5/16" ball hitch OR 3" pintle ring

Tires: (4) 225/75R15, load range D

Brakes: Electric with breakaway system or hydraulic surge, mechanical parking brake

Suspension: Leaf springs

Features: Safety chains, DOT LED lighting with connector, reflectors, tie down rings, rear stabilizers, front lift jack, mud deflectors

Standard Finish: Dark gray polyurethane with epoxy primer.

Optional Finishes: Customer selected color. Undercoating. LINE-X overall protective coating. Hot dip galvanizing.



Cable Connections

Cam-Lock style cable connectors behind hinged door. 4/0, 400A. Snap-back protective covers. Also available orange-brown-yellow.



Cable Storage

Trident-1250 Trailer Load Banks normally supplied with 3 cable reels:

Capacity:

- 900-feet x 4/0 (1" cable), perfect wrap
- 750-feet x 4/0 (1" cable), nominal wrap

Standard Reel Features:

- Manual, gear driven, crank rewind
- Pinion brake
- 2" steel channel frame, powder coated

Other Cable Storage Options: Cable storage racks or totes.

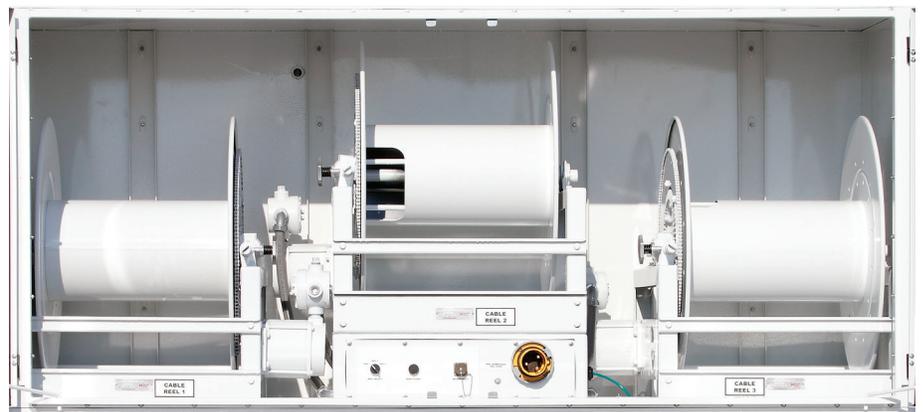
Cable Options

- 4/0, extra-flex, portable power cable
- Type W
- 2000v
- 90C EPDM insulation
- Polyester braid reinforcement between insulation and outer jacket
- 2062 strand copper
- "CAM-LOCK" type connector, each end, standard
- Crimp-on ring lugs on generator end option
- 5 foot "Pigtails" available with "CAM-LOCK" type connections on one end and opposite end lugged, bare or otherwise terminated

Top Photo: Optional 12 or 24vDC electric rewind reels with control box shown.

Middle Photo: Optional full enclosure with lockable doors for cable reels.

Bottom Photo: Optional cable storage locker in lieu of reels



Trident 1250-R

Digital Load Bank with Data Acquisition
Rental Duty 600KW - 1250KW

SIMPLEX[®]

Digital Controller

Trident Load Banks are digitally controlled via PLC.

Top Photo: Standard Trident equipped with local, on-board, 8-inch Touchscreen operator interface behind hinged, lockable door. Fan/control power circuit breakers with internal/external interlock and control power circuit breakers are conveniently located on the control panel.

Middle Photo: Local operator interface is removable for remote operation.

Bottom Photo: Optional "suitcase style" remote controller, with Cat-5/Ethernet remote control cable.



Digital Control and Data Acquisition System

PLC based digital control with 8-inch color TFT touchscreen operator interface.

Functions

- Control power source and voltage level detection
- Malfunction detection and protection
- Direct access (keypad) load control
- Alternate mimic panel load control
- Basic automation of load control
- Field adjustable exhaust temperature limits with temperature display
- Built-in control from customer supplied computer

Instrumentation

Digital power transducer to digital controller and meter displays on touchscreen:

- 3-phase voltage (each, L-L)
- 3-phase current (each line)
- Frequency
- KW

Data Acquisition

- Captures and records all electrical values
- Start recording/stop recording screen buttons
- One second sample rate
- Exports text file to detachable flash drive which plugs into USB port

Outputs

MODBUS (standard) or BacNet (optional):

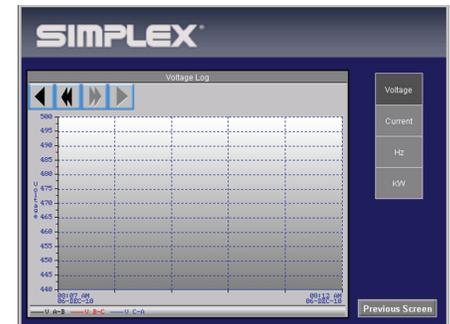
- Load applied
- Each electrical value as above



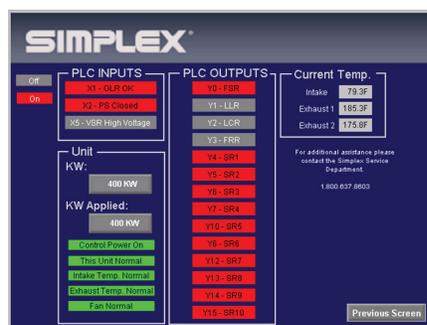
Main Screen



Monitoring Screen



Metering Trends Screen



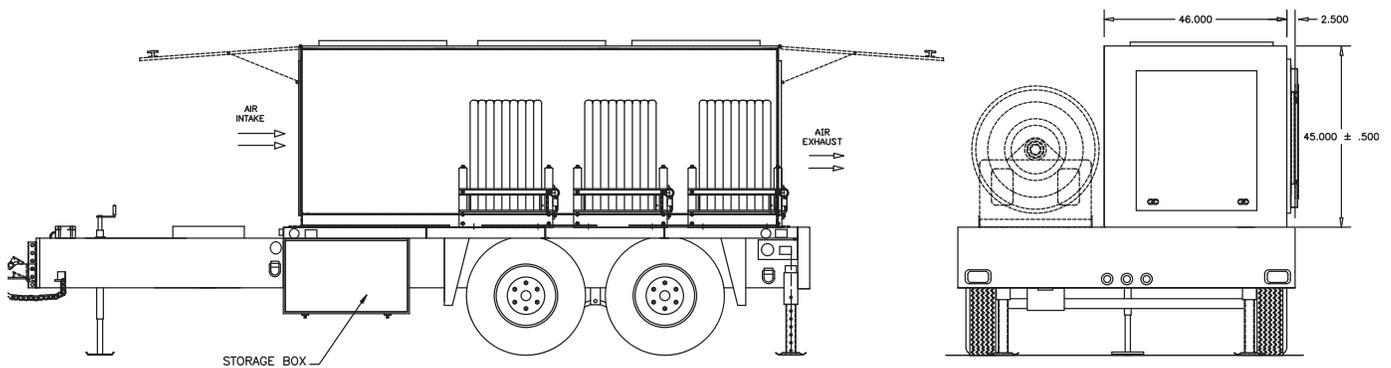
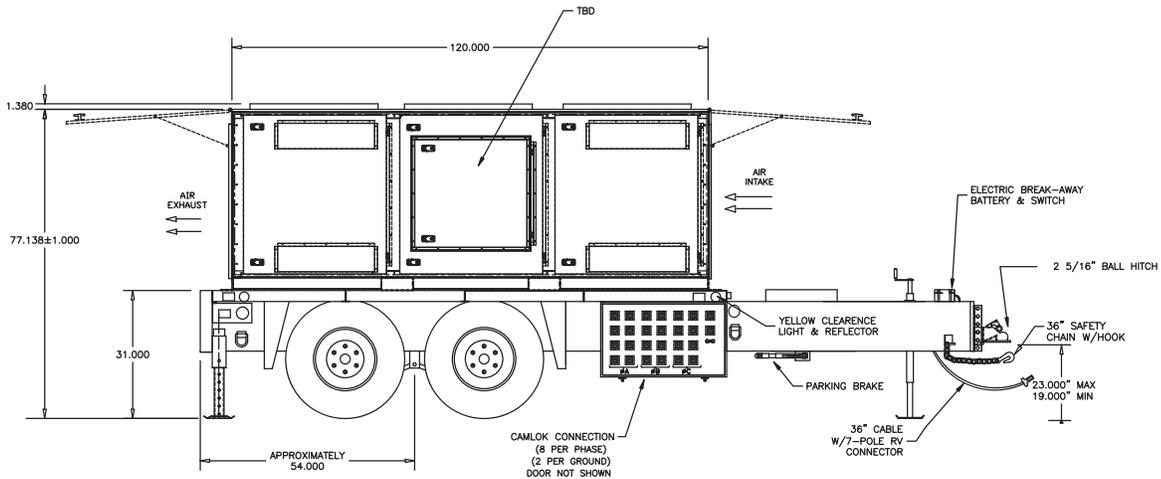
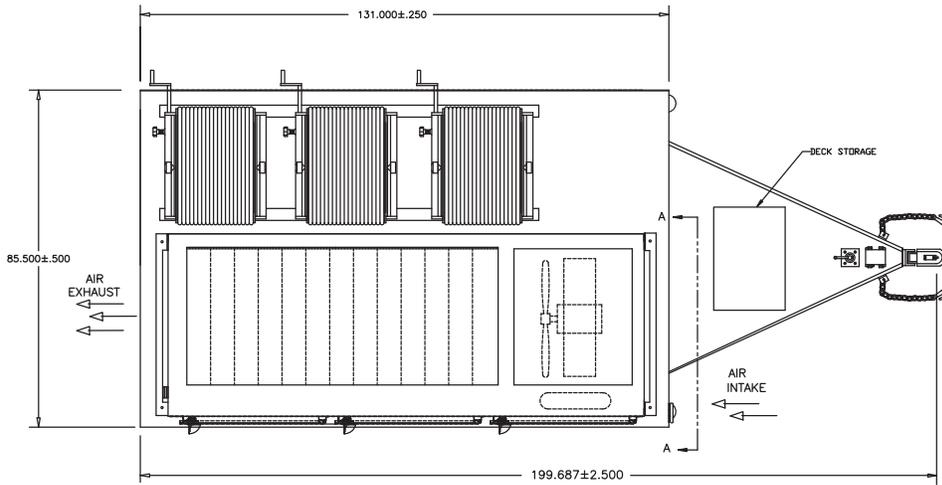
Diagnostics Screen



Maintenance Screen

Trident 1250-R

Digital Load Bank with Data Acquisition
Rental Duty 600KW - 1250KW



VIEW SHOWN WITH DOORS CLOSED

Rental Duty Trailer Load Bank 1500-2500KW



Overview

- Integrated design, load module, trailer, reels, cam-lock style connections, digital control
- Very high capacity, 1500-2500kw
- Dual voltage: 208-240/416-480vAC
- Digital load control, 5 kw resolution
- Touchscreen operator interface
- Remote and/or local control
- Data acquisition and recording
- Network units to form large systems

Description

The Simplex Trident 2500 is a fully integrated design trailer load bank including:

- Resistive Load Bank, 1500-2500kw
- Heavy duty, purpose built, tandem axle highway trailer
- Cables reels
- CAM-LOCK style connection panel
- Storage locker
- Integrated digital controller suitable for local and/or remote control

The Trident Trailer Load Bank is ideal for field testing in the performance of start-up and commissioning activities, service contracts and engine generator maintenance.

Trident Load Bank Systems feature highly standardized digital controllers with data acquisition capability. Trident Load Banks can be networked to other Trident units or to any Simplex Load Bank (except Powerstar and Infinity product lines) for totalized, single point control and data acquisition. In fact, any number of Simplex Load Banks can be networked to form large, integrated aggregate systems. Operator interface is via touchscreen. Load control is via screen keypad. All electrical values display on-screen and are capable of being recorded for future data retrieval.

The Trident family comprises load modules from 600-1250kw integrated with trailers, cable storage and connection accessories and digital controls. The Trident 2500 is a dual load module product. The Trident 1250 is a single load module product, 600-1250kw rated. Refer to the Trident 1250 Brochure for further details.

Features

NRTL Listed: CSA-US or CSA-Canada.

Trailer: NTM DOT Certification.

Digital Control: PLC based control with 8-inch color TFT touchscreen interface. MODBUS communication.

Instrumentation: Digital power transducer with Ethernet communication to digital controller. Data display on touchscreen. Data acquisition and recording.

Load Elements: Simplex "Powr-Web" chromium alloy, open wire, continuously supported, power resistor.

Load Control: 3-Pole contactors.

Load Element Circuit Protection: Branch circuit fuses. One set of fuses each 50KW branch. Fuses are current limiting type, 200KAIC, 600V.

Cooling System: 2 x 3-phase, direct-drive fan, 21,000 CFM.

Malfunction Detection System: Protection against fan failure, high exhaust air temperature, high intake air temperature, overvoltage and fan reversal. Exhaust air temperature displays on screen.

Control Power Supply: Dual voltage control power transformer with supply power switchable to internal (generator) or external.

Touch Screen: Easily removable from panel.

Connection: "Cam-Lock" type power connections.



Trident 2500R

Digital Load Bank with Data Acquisition
1500KW - 2500KW

SIMPLEX®



Capacity Detail

Model	TOTAL KW (1.0pf)	KW DETAIL					
		480V	416V	380V	240V	208V	240V, 1-ph*
Trident 1500	1500	1500	1125	940	1000	750	300
Trident 1800	1800	1800	1350	1128	1000	750	300
Trident 2000	2000	2000	1500	1253	1000	750	300
Trident 2250	2250	2250	1688	1410	1000	750	300
Trident 2500	2500	2500	1875	1567	1000	750	300

*Requires external 3-phase fan/control power. Capacity limited to 1250 FLA.

Voltage: Dual Voltage: 240/480V AC, 3-phase Operational at any voltage to 480V AC maximum, single or 3-phase

Optional Voltages: Instead of 240/480v dual voltage:

- a. Any 50hz or 60hz single voltage to 690v
- b. 600v, single voltage
- c. 600/480v, dual voltage
- d. 600/300v, dual voltage
- e. 480/416v, dual voltage
- f. 208/416v, dual voltage

Frequency: 50, 60 Hertz standard

Connection: 3-wire plus ground

Time Rating: Continuous

Ambient Air Temperature: 120°F max

Airflow: 42,000 CFM

Temperature Rise: 180°F nominal

Control/Fan Power:

- 230/460V, 3-phase, 60 Hertz
- 190/380V, 3-phase, 50 Hertz
- Switchable internal (generator)-external
- External fan/control power requirements: 240/480vAC, 3-phase, 60 Hertz, 80 / 40 amps service (7.5HP motor)
- 230/460-115V control power transformer internal to Load Bank.

Net Weight: Approx. 12,500 lbs., including load module, trailer, three reels, 2000' 4/0 cable, cam-lock style connectors

Digital Load Control

Nominal 5.0 kw resolution: direct enter any load value and controller will apply load within nominal 5kw resolution

Digital Load Calibration Versus Voltage

Controller automatically calibrates loads for reduced voltage operation.



Standard Cable Reels



**Cam-Lock Cable Style
Connection Panel**



**Standard Trident
Remoteable Digital
Touchscreen Controller**



Trident 2500R

Digital Load Bank with Data Acquisition
1500KW - 2500KW

SIMPLEX[®]

Trailers

Heavy-duty, purpose-built for the application, tandem axle trailer:

Construction: Structural steel chassis, steel deck, all welded, built to DOT specification, NTM DOT certification label

Capacity: 12,500-14,000 GVWR

Axles: Tandem

Hitch: 2-5/16" ball hitch OR 3" pintle ring

Tires: (4) ST235/80R16, load range E

Brakes: Electric with breakaway system or hydraulic surge, mechanical parking brake

Suspension: Leaf springs

Features: Safety chains, DOT LED lighting with connector, reflectors, tie down rings, rear stabilizers, front lift jack, mud deflectors

Standard Finish: Dark gray polyurethane with epoxy primer.

Optional Finishes: Customer selected color. Undercoating. LINE-X overall protective coating. Hot dip galvanizing.



Cable Connections

Cam-Lock style cable connectors behind hinged door. 4/0, 400A. Snap-back protective covers. Also available orange-brown-yellow.



Cable Storage

Trident 2500 Trailer Load Banks normally supplied with 3 cable reels:

Capacity:

- 900-feet x 4/0 (1" cable), perfect wrap
- 750-feet x 4/0 (1" cable), nominal wrap

Standard Reel Features:

- Manual, gear driven, crank rewind
- Pinion brake
- 2" steel channel frame, powder coated

Other Cable Storage Options: Cable storage racks or totes.

Cable Options

- 4/0, extra-flex, portable power cable
- Type W
- 2000v
- 90C EPDM insulation
- Polyester braid reinforcement between insulation and outer jacket
- 2062 strand copper
- "CAM-LOCK" type connector, each end, standard
- Crimp-on ring lugs on generator end option
- 5 foot "Pigtails" available with "CAM-LOCK" type connections on one end and opposite end lugged, bare or otherwise terminated

Top Photo: Standard manual cable reels.

Middle Photo: Optional 12 or 24vDC electric rewind reels.

Bottom Photo: Optional full enclosure with lockable doors for cable reels.



Trident 2500R

Digital Load Bank with Data Acquisition
1500KW - 2500KW

SIMPLEX®

Digital Controller

Trident Load Banks are digitally controlled via PLC.

Top Photo: Standard Trident equipped with local, on-board, 8-inch Touchscreen operator interface behind hinged, lockable door. Fan/control power circuit breakers with internal/external interlock and control power circuit breakers are conveniently located on the control panel.

Middle Photo: Local operator interface is removable for remote operation.

Bottom Photo: Optional "suitcase style" remote controller, with Cat-5/Ethernet remote control cable.



Digital Control and Data Acquisition System

PLC based digital control with 8-inch color TFT touchscreen operator interface.

Functions

- Control power source and voltage level detection
- Malfunction detection and protection
- Direct access (keypad) load control
- Alternate mimic panel load control
- Basic automation of load control
- Field adjustable exhaust temperature limits with temperature display
- Built-in control from customer supplied computer

Instrumentation

Digital power transducer to digital controller and meter displays on touchscreen:

- 3-phase voltage (each, L-L)
- 3-phase current (each line)
- Frequency
- KW

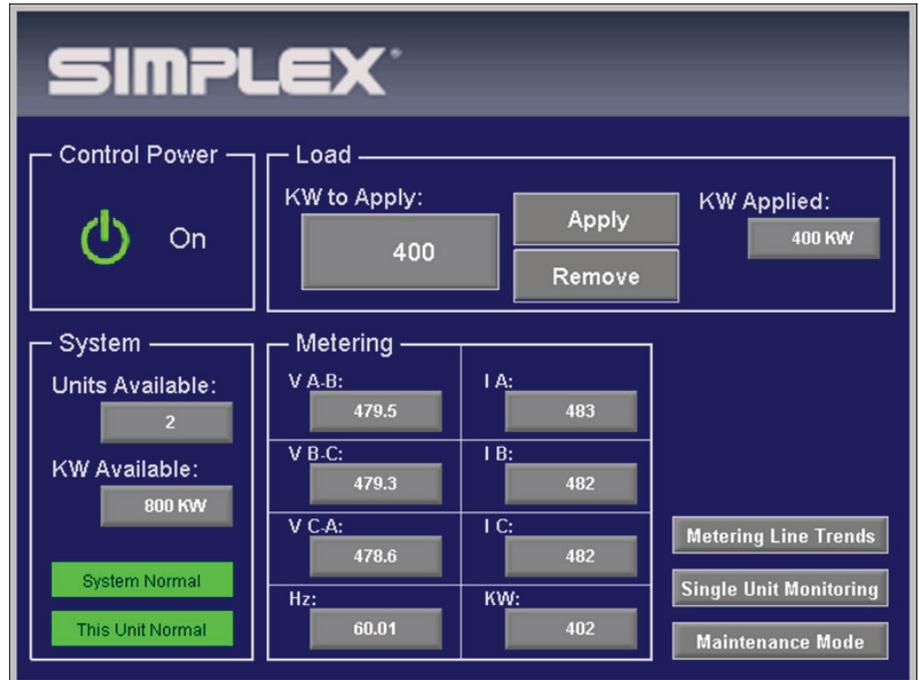
Data Acquisition

- Captures and records all electrical values
- Start recording/stop recording screen buttons
- One second sample rate
- Exports text file to detachable flash drive which plugs into USB port

Outputs

MODBUS (standard) or BacNet (optional):

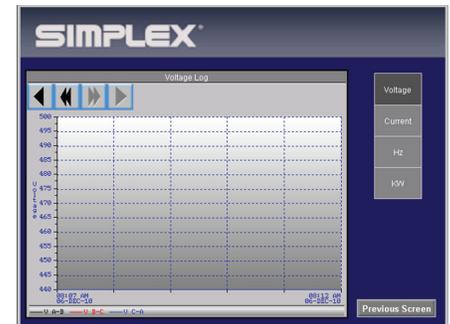
- Load applied
- Each electrical value as above



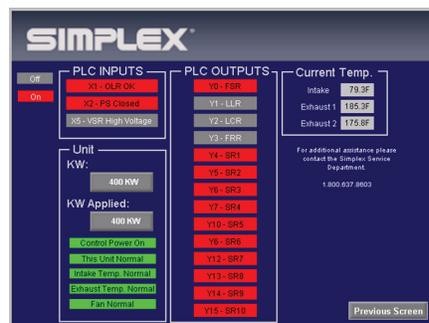
Main Screen



Monitoring Screen



Metering Trends Screen



Diagnostics Screen

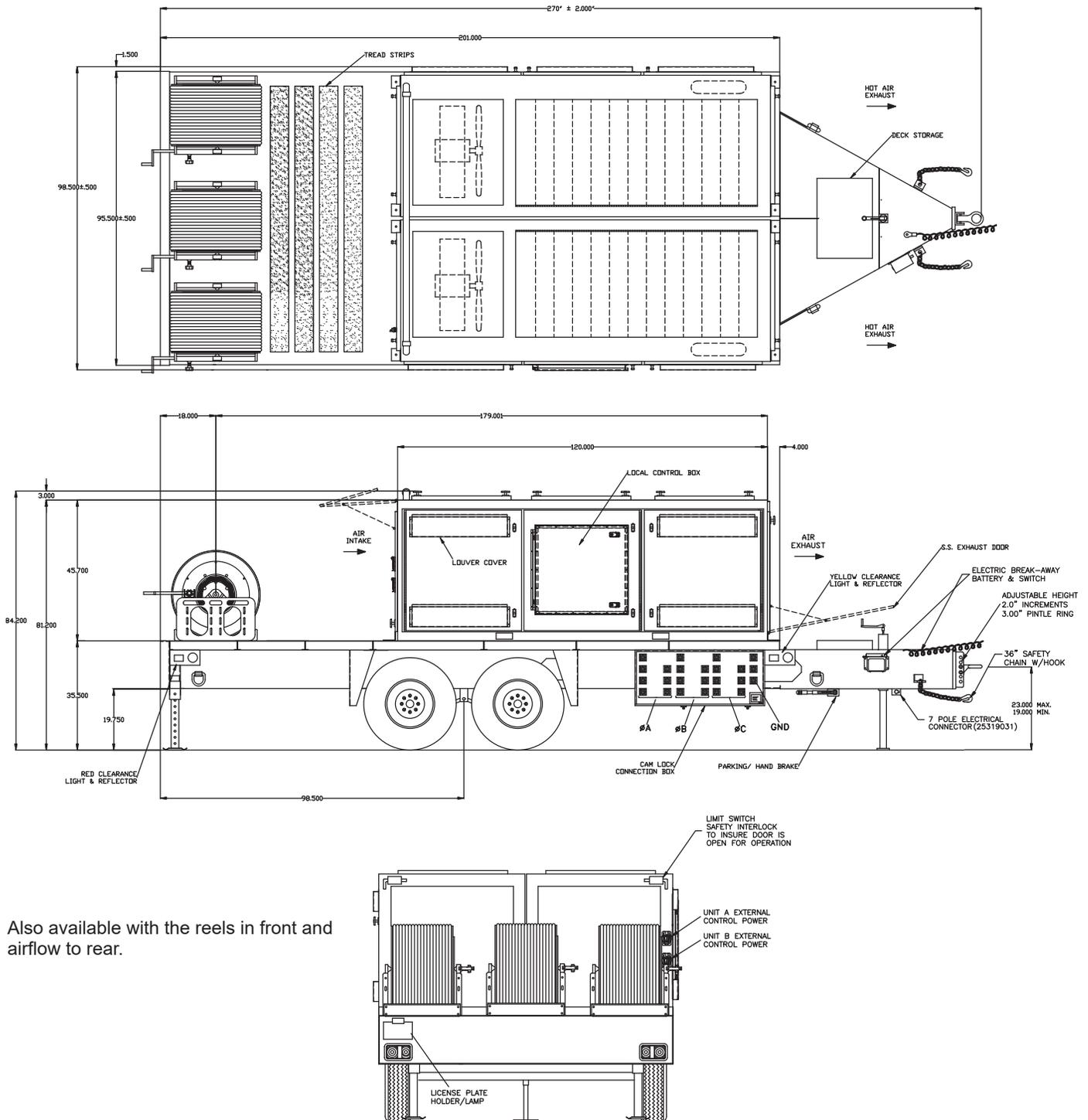


Maintenance Screen

Trident 2500R

Digital Load Bank with Data Acquisition

1500KW - 2500KW



Also available with the reels in front and airflow to rear.

Overview

- Rental Duty Portable Load Bank
- 750kva, 0.8 Power Factor
- 600kw Resistive
- 450kvar Inductive
- Adjustable Power Factor
- Internally re-connectable dual voltage, 240/480Vac, 3-phase
- Digital Load Control
- Capable of Parallel Operation and Control to Form Large Systems

Description

The Simplex Titan-600 R is a large capacity, fully portable, resistive/reactive Load Bank System intended for field use in testing, maintenance and performance proving of large generating systems. The Titan-600 R is rated 600kw, 450kvar and is user configurable for operation at 240/480v. The Titan-600R is typically used to test large diesel generators, turbines, paralleled generators and shipboard generators.

The Titan-600R is an extremely rugged, compact portable design featuring 4-sided hinged door access, monolithic welded frame, heavy duty skid base with forklift channels. Air intakes are via louvered inlets with hinged storage/transport covers and motorized top mounted exhaust louver.

Airflow is vertical. The Titan-600R is suitable for all-weather operation, transport and storage. The enclosure is equipped with forklift channel, lifting eyes and tie-down D rings.

The Titan digital controller allows for local or remote operation and includes a digital power transducer for display of volts-amps-hertz-kw-kvar-power factor. Data acquisition and recording capability is included. The Titan can be networked to any number of other Titan load banks, or to any other large Simplex Load Bank, including the Load Cube, Load Ranger, Solar-5 or Vulcan. Networking allows the formation of very large load bank systems with centralized, single-point operator control and data acquisition.

All power connections are to Cam-Lock style connectors.



Rental Duty Dual Voltage Load Bank 240-480v

CAPACITY:	240/480v, 3-phase, 60 hertz: 750kva, 0.8 power factor 600kw resistive, 450kvar inductive, 1803/901A 208/416v, 3-phase, 60 hertz: 562.5kva, 0.8 power factor 450kw resistive, 337.5kvar inductive, 1563/781A
VOLTAGE:	240/480v, 3-phase, 60 Hertz
FREQUENCY:	60 Hertz, 50 Hertz at reduced voltage
LOAD STEPS:	Digital load control, 5 kw, 3.75 kvar resolution
DUTY CYCLE:	Continuous
AMBIENT TEMP.:	125°F
EXHAUST RISE:	220°F
AIRFLOW:	Approx 25,000 cfm divided between two cooling fans
CONTROL	Internal, derived from power source under load, 240/480v, 3-phase, 60 Hertz. Control circuits at 120v via internal isolation transformer. Fan motor load: 2 x 5hp, 26/13A. Control power load: 3.0 kva, 6.25A.

Principle Systems

The Load Bank is a completely self-contained, freestanding unit which includes all load elements, load control devices, load element branch circuit fuse protection, main load bus and terminals, cooling system, control power supply, digital controller with data acquisition and malfunction detection system and weatherproof enclosure.

Resistive Load Elements: Simplex Powr Web: Open wire, helically wound, chromium alloy, load element thermally derated to 60%. 5% tolerance, 2% balance. .995 p.f. Element wire mechanically supported over entire length such that if a wire should break, the broken wire segments will not short to adjacent conductors or to ground. UL Recognized

Inductive Load Elements: Iron-core, non-saturable air-gap type, with aluminum windings, varnish/epoxy coated. 150C rise. 220C insulation

Load Control: Branch circuit contactors, each 50 KW resistive circuit max, each 75 KVAR inductive circuit max. Contactors have enclosed silver surfaced contacts, 120V coils; electrically operated and electrically held.

Element Circuit Protection: Branch circuit fuses, each 50KW resistive branch circuit max, 75KVAR inductive circuit max. , 600v, 200kAIC, current limiting type.

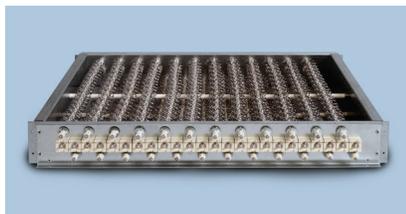
Power Wiring: 150°C insulated; color-coded and numbered.

Control Wiring: 105°C numbered

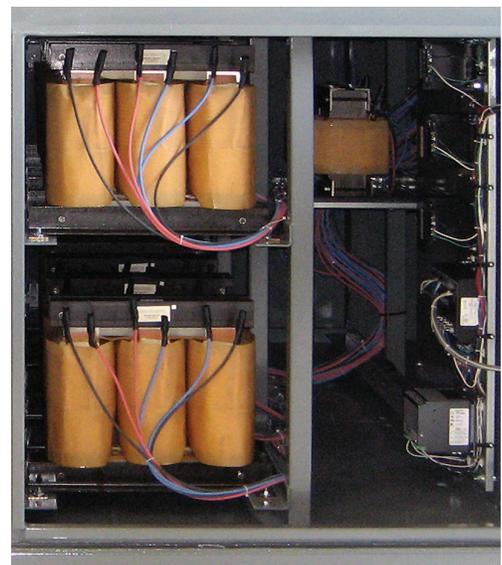
Power Connection: Cam-Lock style plug-in connectors, bulkhead mounted behind hinged door. 400A, 4/0 connectors.

Cooling: Forced air, vertical airflow, top exhaust. 2 x 5HP, 3-phase, TEFC motor direct driving cast aluminum fan blades. Circuit breaker combination motor starters. Electrically powered exhaust louvers, via linear actuator, with position indicating output. Manual air intake doors with door limit switches

System Protection: Sensors, alarms, lock-outs as appropriate, for the following: Fan Failure, High Exhaust Temperature, High Intake Temperature, Exhaust Louver Open/Closed, Intake Door Open/Closed



Resistive Elements



Inductive Elements

Digital Control and Data Acquisition System

PLC based digital control with 8-inch color TFT touchscreen operator interface.

Functions

- Control power source and voltage level detection
- Malfunction detection and protection
- Direct access (keypad) load control
- Alternate mimic panel load control
- Basic automation of load control
- Field adjustable exhaust temperature limits with temperature display
- Built-in control from customer supplied computer

Instrumentation

Digital power transducer to digital controller and meter displays on touchscreen:

- 3-phase voltage (each, L-L)
- 3-phase current (each line)
- Frequency
- KW
- KVAR
- Power-factor

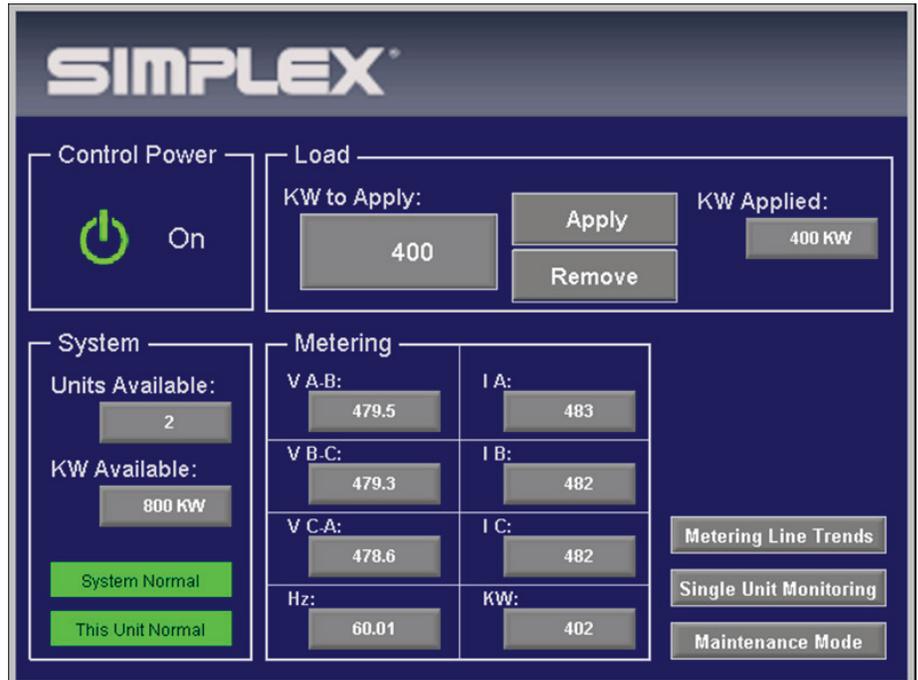
Data Acquisition

- Captures and records all electrical values
- Start recording/stop recording screen buttons
- One second sample rate
- Exports text file to detachable flash drive which plugs into USB port

Outputs

MODBUS (standard) or BacNet (optional):

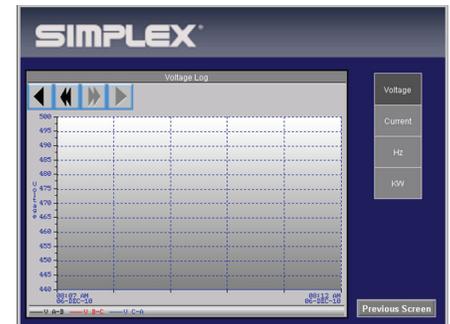
- Load applied
- Each electrical value as above



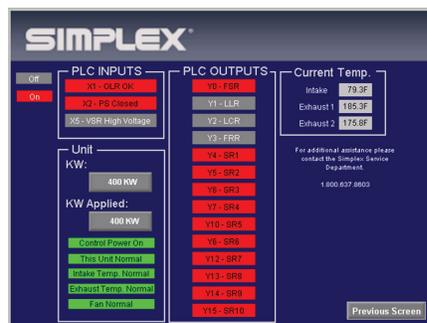
Main Screen



Monitoring Screen



Metering Trends Screen



Diagnostics Screen



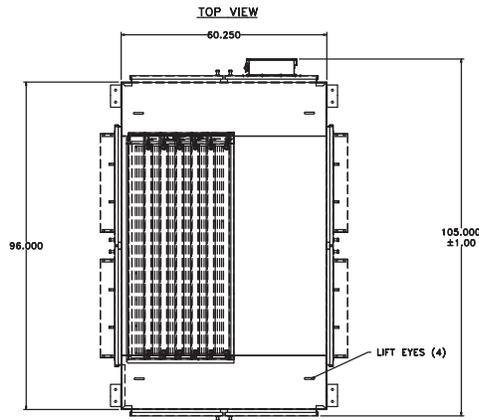
Maintenance Screen

TITAN-600R

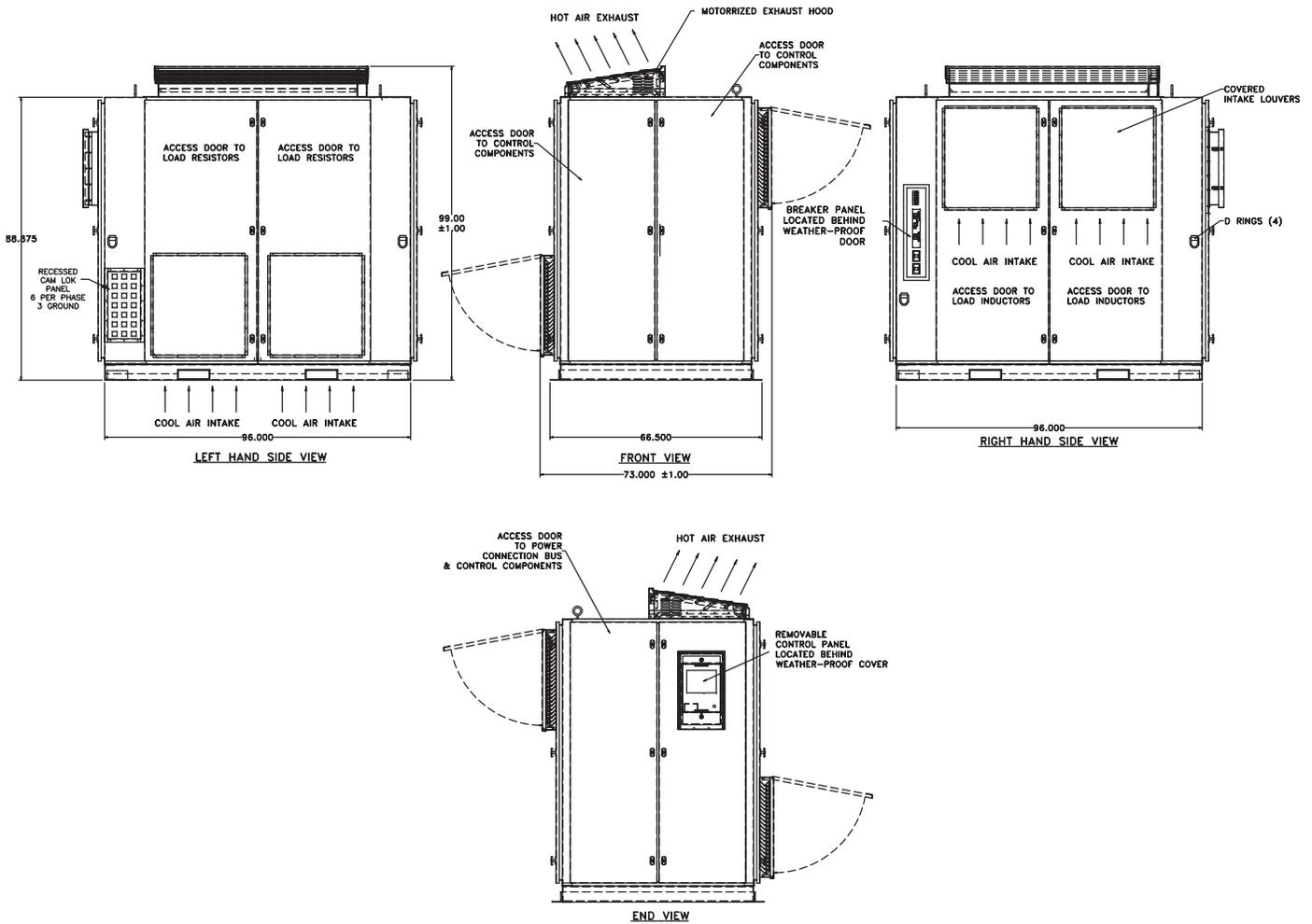
750KVA, 0.8 P.F. Load Bank

SIMPLEX®

Dimensions and Key Features



NOTE:
APPROXIMATE WEIGHT: 7,500 LBS.



Overview

- Rental Duty Portable Load Bank
- 1563kva, 0.8 Power Factor
- 1250kw Resistive
- 937.5kvar Inductive
- Adjustable Power Factor
- Configurable for 480v, 600v, 690v
- Digital Load Control
- Capable of Parallel Operation and Control to Form Large Systems

Description

The Simplex Mini-Load Cube is an very large capacity, fully portable, resistive/ reactive Load Bank System intended for field use in testing, maintenance and performance proving of large generating systems. The Mini-Load Cube is rated 1250kw, 937.5kvar and is configurable at the Rental Center for operation at 480v, 600v, or 690v. The Mini-Load Cube is typically used to test diesel generators, turbines, paralleled generators and shipboard generators.

With a purpose-built design consisting of rugged, all-welded, tubular steel frame, heavy gauge steel sides, guarded hinged doors, power-operated ventilation louvers, the Mini-Load Cube is far superior to designs which use refurbished and modified ISO shipping containers. Four-sided access allows ready service of all components and facilitates the ultra-compact design.

Compact and easily transportable, the Mini-Load Cube is ideal for rental use. With a footprint of only 6 x 8 feet and a height of less than 9 feet, the Mini-Load Cube is easily transportable by drop-deck flat bed trailer. Lifting eyes and forklift channels simplify site movement.

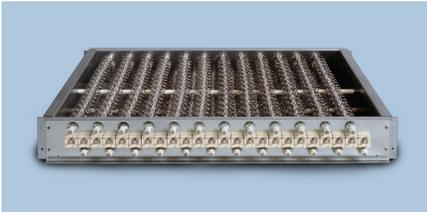
The Mini-Load Cube utilizes digital load control for direct access of load values, block transitions, and user programmable automation. A selection of digital power meters and data acquisition software is available.

The Simplex Mini-Load Cube represents the ultimate technology in large generator load testing performance.



Rental Duty Multi-Voltage Load Bank 480-600-690v

CAPACITY:	1563 kva, 0.8 power factor; 1250kw, resistive; 937.5 kvar, inductive
VOLTAGE:	Rental Center Configurable: 480v, 600v, 690v, 3-phase, 60 Hertz
FREQUENCY:	60 Hertz, 50 Hertz at reduced voltage
LOAD STEPS:	Digital load control, 10 kw, 7.5 kvar resolution. Circuits of 10–20–20–50–100–100–200–250–500 kw 7.5–15–15–37.5–75–75–150–187.5–375 kvar
DUTY CYCLE:	Continuous
AMBIENT TEMP.:	125°F
EXHAUST RISE:	220°F
AIRFLOW:	Approx 30,000 cfm
CONTROL POWER:	Internal, derived from power source under load. Rental Center Configurable: 480v, 600v, 690v, 3-phase, 60 Hertz. Control circuits at 120v via internal isolation transformer. Fan motor load: 1 x 10hp, 13A. Control power load: 1.5 kva, 3.125A.



Powr-Web Resistive Load Element

Description

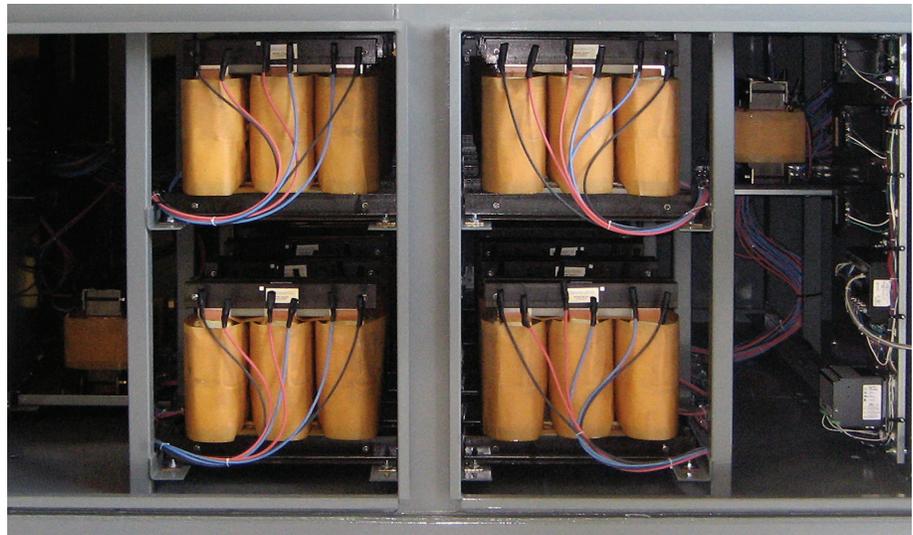
Simplex Load Banks utilize “Powr-Web” load elements. The “Powr-Web” is an advanced design, air-cooled power resistor specifically designed for application to Load Bank systems. The “Powr-Web” is conservatively operated at half the maximum temperature rating of the alloy and features a short-circuit-safe design based on continuous mechanical support of the element by high temperature, ceramic clad stainless steel rods. The “Power Webs” are assembled into discrete trays which are assembled in a vertical “stack.” Each tray in the “stack” is independently serviceable without disturbing adjacent trays.

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.

Construction

- Ceramic clad, stainless steel through-rods.
- UL Recognized



Inductive Load Elements

The Simplex inductive load banks consist of discrete iron-core load elements. These are non-saturable, air gap calibrated, air cooled devices and are field replaceable. Standard elements have a temperature sensor embedded in the windings to detect element overheating and through the module malfunction detection system, disconnect the load elements and activate an alarm. Standard elements are varnish coated; epoxy coatings are available for severe environments.

Specifications

Tolerance:	5%
Maximum Harmonic Distortion:	1%
Power Factor:	.05
Insulation:	220°C
Cooling:	Air

The Load Bank is a completely self-contained, freestanding unit which includes all resistive load elements, load control devices, load element branch circuit fuse protection, main load bus and terminals, cooling system, control power supply, unit controller and malfunction detection system and type enclosure.

System Protection

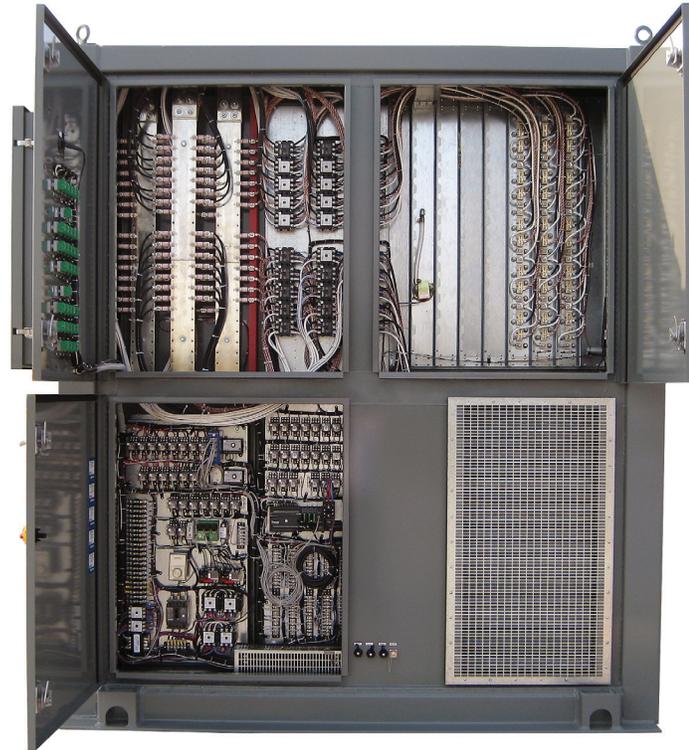
Sensors, alarms (alarm message on remote operator interface terminal), lock-outs as appropriate, for the following:

- Fan failure, each of two fans
- High exhaust temperature, each of two fans
- High intake temperature
- High interior temperature, sensed at three points
- Louver open/closed, each of eight louvers

Load Elements

Simplex Powr-Web: Open wire, helically wound, chromium alloy, load element thermally derated to 60%. 5% tolerance, 2% balance. .995 p.f. Element wire mechanically supported over entire length such that if a wire should break, the broken wire segments will not short to adjacent conductors or to ground. Load elements are individually serviceable and replaceable in the field without major disassembly of the load bank. The load elements are installed in slide-out, removable trays such that any element is easily accessed without disturbing any other elements.

All materials used in the mounting and installation of the load elements are suitable for the temperatures encountered, in both normal operation and under fault conditions. Materials in direct contact with the element wire are ceramic. Other materials which structurally support the load elements and/or which form the hot air duct within which the elements are mounted are steel, stainless steel or aluminum. Plastics and glass reinforced plastic materials and flammable materials are not used for installation, support and mounting of load elements or in the construction of the load bank hot air duct.



Inductive elements: Non-saturable, air-gap type, iron-core power inductors. 5% tolerance, 1% waveform distortion, 0.05 power factor, 150°C rise, 220°C insulation.

Basic Dimensions

96.5"W x 108"H x 74"D.

Load Control

Branch circuit contactors, each 50 KW resistive circuit max or each 75kvar inductive circuit max. Inductive circuits are double-break. Contactors have enclosed silver surfaced contacts, 120V coils; electrically operated and electrically held.

Element Circuit Protection

Branch circuit fuses, each 50KW resistive branch circuit max, each 75kvar inductive branch circuit max. 600v, 200kAIC, current limiting type.

Power Wiring

150°C insulated; color-coded and numbered.

Control Wiring

105°C

Power Connection

Plated bus bar behind hinge-up access door.

Control Connection

Connector plugs with recessed protective well.

Cooling

Forced air, horizontal airflow. 1 x 10HP, 3-phase, TEFC motor direct driving cast aluminum fan blades. Circuit breaker combination motor starter.

Enclosure

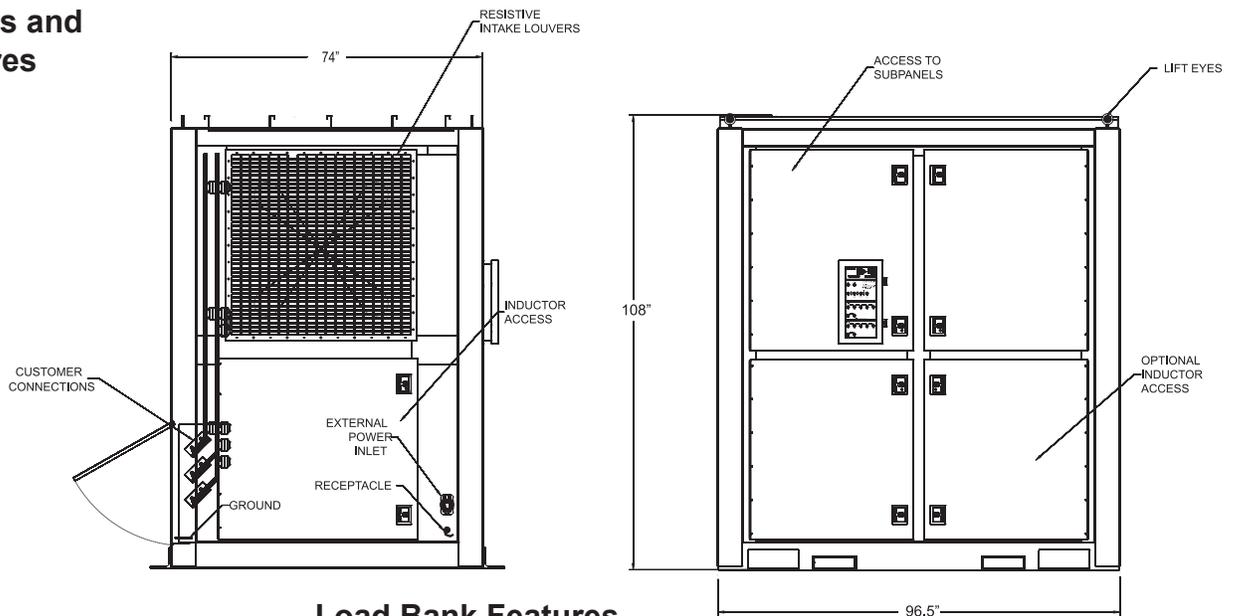
Type 3R control section; Type 3R power section. Epoxy primed, polyurethane finish coating, dark gray. Power operated ventilation louvers. Lifting eyes, forklift channels, hinged, lockable, access doors with flush latches.

MINI-LOAD CUBE R

1250KW Load Bank System, 0.8 p.f.

SIMPLEX®

Dimensions and Key Features



Load Bank Features

1. Portable, self-contained
 - a. Lifting eyes
 - b. Forklift channels
 - c. Heavy skid base
 - d. Suitable for direct transport by standard flat bed truck
2. Horizontal airflow
3. Intake and exhaust louvers with linear actuator power operator and protective screen
4. Four-sided service access via hinged doors with lockable, flush latches
5. Power cable connection behind hinge-up door. Cables connect to full rated copper bus bar
6. Control connection to plug-in connectors located within recessed side well
7. Type 3R weatherproof construction suitable for all-weather transport and use
8. PLC based digital control with remote operator interface terminal
 - a. Direct access digital load control
 - b. User programmable automatic load control
9. Data acquisition system
 - a. Digital Power Meter
 - b. Data acquisition software for use with user supplied PC
10. Tray mounted resistive load elements
11. Rack mounted inductive load elements
12. Forced air interior cooling

Load Bank Control

- Remote digital load control and data acquisition.
- PLC based load control with remote operator interface control.
- Direct access digital load control in increments of 10kw, 7.5 kvar.
- Operator programmable automatic test routines.
- Digital Power Meter with data acquisition software.

Optional Equipment

- Data acquisition systems
- Remote controller, suitcase-style or panel mount
- Cam-Lok quick connection panels
- Non-standard voltage ratings
- Multi-unit control



Overview

- Rental Duty Portable Load Bank
- 3125kva, 0.8 Power Factor
- 2500kw Resistive
- 1875kvar Inductive
- Adjustable Power Factor
- Configurable for 480v, 600v, 690v
- Digital Load Control
- Capable of Parallel Operation and Control to Form Large Systems

Description

The Simplex Load Cube is an ultra-large capacity, fully portable, resistive/reactive Load Bank System intended for field use in testing, maintenance and performance proving of large generating systems. The Load Cube is rated 2500kw, 1875kvar and is configurable at the Rental Center for operation at 480v, 600v, or 690v. The Load Cube is typically used to test large diesel generators, turbines, paralleled generators and shipboard generators.

With a purpose-built design consisting of rugged, all-welded, tubular steel frame, heavy gauge steel sides, guarded hinged doors, power-operated ventilation louvers, the Load Cube is far superior to designs which use refurbished and modified ISO shipping containers. Four-sided access allows ready service of all components and facilitates the ultra-compact design.

Compact and easily transportable, the Load Cube is ideal for rental use. With a footprint of only 8 x 10 feet and a height of less than 9 feet, the Load Cube is easily transportable by drop-deck flat bed trailer. Lifting eyes and forklift channels simplify site movement.

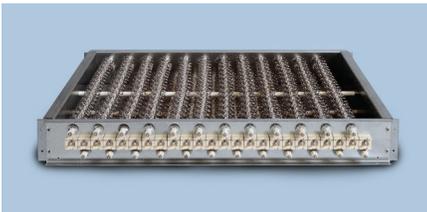
The Load Cube utilizes digital load control for direct access of load values, block transitions, and user programmable automation. A selection of digital power meters and data acquisition software is available.

The Simplex Load Cube represents the ultimate technology in large generator load testing performance.



**Rental Duty
Multi-Voltage Load Bank
480-600-690v**

CAPACITY:	3125 kva, 0.8 power factor; 2500kw, resistive; 1875 kvar, inductive
VOLTAGE:	Rental Center Configurable: 480v, 600v, 690v, 3-phase, 60 Hertz
FREQUENCY:	60 Hertz, 50 Hertz at reduced voltage
LOAD STEPS:	Digital load control, 10 kw, 7.5 kvar resolution. Circuits of 10–20–20–50–100–100–200–250–250–500–1000 kw 7.5–15–15–37.5–75–75–150–187.5–187.5–375–750 kvar
DUTY CYCLE:	Continuous
AMBIENT TEMP.:	125°F
EXHAUST RISE:	220°F
AIRFLOW:	Approx 60,000 cfm divided between two cooling fans
CONTROL POWER:	Internal, derived from power source under load. Rental Center Configurable: 480v, 600v, 690v, 3-phase, 60 Hertz. Control circuits at 120v via internal isolation transformer. Fan motor load: 2 x 10hp, 13A. Control power load: 3.0 kva, 6.25A.



Powr-Web Resistive Load Element

Description

Simplex Load Banks utilize “Powr-Web” load elements. 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 element by high temperature, ceramic clad stainless steel rods. The “Power Webs” are assembled into discrete trays which are assembled in a vertical “stack.” Each tray in the “stack” is independently serviceable without disturbing adjacent trays.

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.

Construction

- Ceramic clad, stainless steel through-rods.
- UL Recognized



Inductive Load Elements

The Simplex inductive load banks consist of discrete iron-core load elements. These are non-saturable, air gap calibrated, air cooled devices and are field replaceable. Standard elements have a temperature sensor embedded in the windings to detect element overheating and through the module malfunction detection system, disconnect the load elements and activate an alarm. Standard elements are varnish coated; epoxy coatings are available for severe environments.

Specifications

Tolerance:	5%
Maximum Harmonic Distortion:	1%
Power Factor:	.05
Insulation:	220°C
Cooling:	Air

The Load Bank is a completely self-contained, freestanding unit which includes all resistive load elements, load control devices, load element branch circuit fuse protection, main load bus and terminals, cooling system, control power supply, unit controller and malfunction detection system and type enclosure.

System Protection

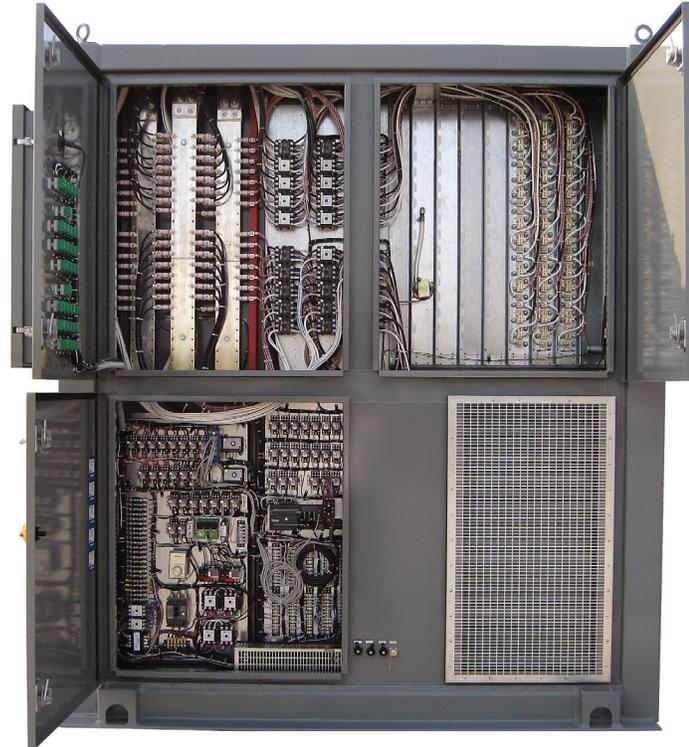
Sensors, alarms (alarm message on remote operator interface terminal), lock-outs as appropriate, for the following:

- Fan failure, each of two fans
- High exhaust temperature, each of two fans
- High intake temperature
- High interior temperature, sensed at three points
- Louver open/closed, each of eight louvers

Load Elements

Simplex Powr-Web: Open wire, helically wound, chromium alloy, load element thermally derated to 60%. 5% tolerance, 2% balance. .995 p.f. Element wire mechanically supported over entire length such that if a wire should break, the broken wire segments will not short to adjacent conductors or to ground. Load elements are individually serviceable and replaceable in the field without major disassembly of the load bank. The load elements are installed in slide-out, removable trays such that any element is easily accessed without disturbing any other elements.

All materials used in the mounting and installation of the load elements are suitable for the temperatures encountered, in both normal operation and under fault conditions. Materials in direct contact with the element wire are ceramic. Other materials which structurally support the load elements and/or which form the hot air duct within which the elements are mounted are steel, stainless steel or aluminum. Plastics and glass reinforced plastic materials and flammable materials are not used for installation, support and mounting of load elements or in the construction of the load bank hot air duct.



Inductive elements: Non-saturable, air-gap type, iron-core power inductors. 5% tolerance, 1% waveform distortion, 0.05 power factor, 150°C rise, 220°C insulation.

Basic Dimensions

96.5"W x 110.25"H x 130"D.

Load Control

Branch circuit contactors, each 50 KW resistive circuit max or each 75kvar inductive circuit max. Inductive circuits are double-break. Contactors have enclosed silver surfaced contacts, 120V coils; electrically operated and electrically held.

Element Circuit Protection

Branch circuit fuses, each 50KW resistive branch circuit max, each 75kvar inductive branch circuit max. 600v, 200kAIC, current limiting type.

Power Wiring

150°C insulated; color-coded and numbered.

Control Wiring

105°C

Power Connection

Plated bus bar behind hinge-up access door.

Control Connection

Connector plugs with recessed protective well.

Cooling

Forced air, horizontal airflow. 2 x 10HP, 3-phase, TEFC motor direct driving cast aluminum fan blades. Circuit breaker combination motor starter.

Enclosure

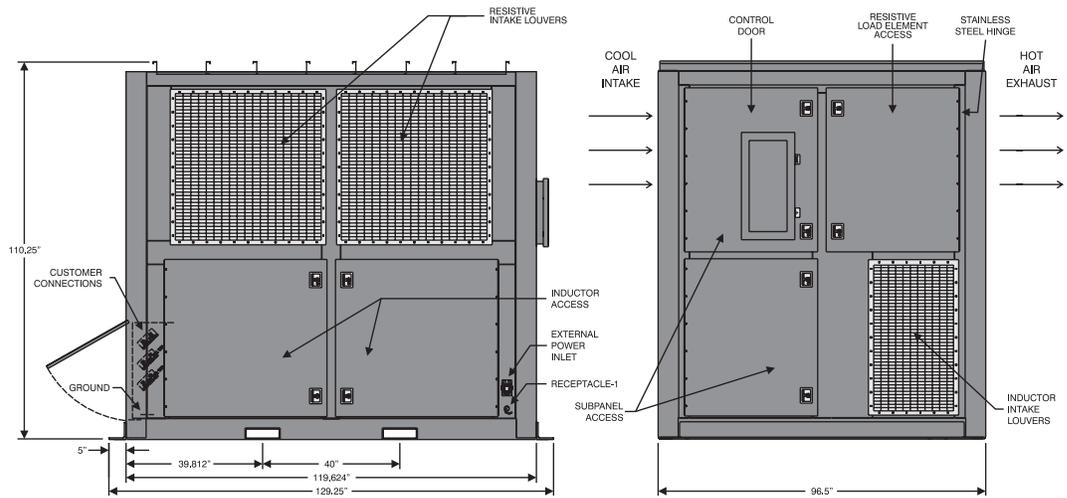
Type 3R control section; Type 3R power section. Epoxy primed, polyurethane finish coating, dark gray. Power operated ventilation louvers. Lifting eyes, forklift channels, hinged, lockable, access doors with flush latches.

LOAD CUBE R

2500KW Load Bank System

SIMPLEX[®]

Dimensions and Key Features



Load Bank Features

1. Portable, self-contained
 - a. Lifting eyes
 - b. Forklift channels
 - c. Heavy skid base
 - d. Suitable for direct transport by standard flat bed truck
2. Horizontal airflow
3. Intake and exhaust louvers with linear actuator power operator and protective screen
4. Four-sided service access via hinged doors with lockable, flush latches
5. Power cable connection behind hinge-up door. Cables connect to full rated copper bus bar
6. Control connection to plug-in connectors located within recessed side well
7. Type 3R weatherproof construction suitable for all-weather transport and use
8. PLC based digital control with remote operator interface terminal
 - a. Direct access digital load control
 - b. User programmable automatic load control
9. Data acquisition system
 - a. Digital Power Meter
 - b. Data acquisition software for use with user supplied PC
10. Tray mounted resistive load elements
11. Rack mounted inductive load elements
12. Forced air interior cooling

Load Bank Control

- Remote digital load control and data acquisition.
- PLC based load control with remote operator interface control.
- Direct access digital load control in increments of 10kw, 7.5 kvar.
- Operator programmable automatic test routines.
- Digital Power Meter with data acquisition software.

Optional Equipment

- Data acquisition systems
- Remote controller, suitcase-style or panel mount
- Cam-Lok quick connection panels
- Non-standard voltage ratings
- Multi-unit control



Overview

- Rental Duty Portable Load Bank
- 3200kw Resistive at 600vAC
- 2720kw Resistive at 480vAC
- Configurable for 480v, 600v
- Digital Load Control
- Capable of Parallel Operation and Control to Form Large Systems

Description

A versatile and capable test instrument, the Simplex SATURN-R Rental Duty Load Bank provides high power, dual voltage capability in a compact, rugged and portable package. A UL/CUL Listed Product, the Saturn-R hits the high power mark at 3200kw/600v or 2720kw/480v. Digital load control provides the user with direct, keypad entry load control and allows networking of multiple units. All power connections are via Cam-Type connectors. Pass-through bus bar design with Cam-Type connectors on both sides allow the paralleling of an inductive load bank with totalized instrumentation and single-station digital load control. Electrically operated exhaust louvers plus hinge-open inlet doors allow the load bank to be closed up tight for transport then operated outdoors in all-weather conditions. Control is digital with touchscreen operator interface. Operator controller can be local or remote. Multiple units are easily networked.

The enclosure is skidded and includes forklift channels and lifting eyes. Floors are solid permitting placement in non-paved areas.



**Rental Duty
Dual-Voltage Load Bank
480-600v**

CAPACITY:	3200kw Resistive at 600vAC; 2720kw Resistive at 480vAC
VOLTAGE:	Reconnectable: 480v, 600v, 3-phase, 60 Hertz
FREQUENCY:	60 Hertz, 50 Hertz at reduced voltage
LOAD STEPS:	Digital load control, 25 kw resolution. Circuits of 25-25-25-25-100-100-200-250-250-500-1000 kw
DUTY CYCLE:	Continuous
AMBIENT TEMP.:	125°F
EXHAUST RISE:	220°F
AIRFLOW:	Approx 60,000 cfm
CONTROL POWER:	Internal, 600/480V, 3-phase. Control circuits at 120V via transformer and 24vDC via power supply. Cooling fan motor at line voltage. Control circuits fused, 100,000 A.I.C. current limiting type, 600V fuses. Includes on-board autotransformer to enable dual 480/600v operation
COOLING FAN:	30.0 HP, 480v, 36.0a, 60 hertz; 600:480v autotransformer
CONTROL LOAD:	Approx 750VA, 460v, 1.5a
HEATER LOAD:	2000w, 16.6a, External, 120v, 20A service for heaters and including power inlet

SATURN-R

3200/2720KW Load Bank System

SIMPLEX®



Right Side View with Cam-Type Connectors and Fan Intake Doors Open



Right Side View with Load Section Doors Open

The Load Bank is a completely self-contained, freestanding unit which includes all resistive load elements, load control devices, load element branch circuit fuse protection, main load bus and terminals, cooling system, control power supply, unit controller and malfunction detection system and type enclosure.

System Protection

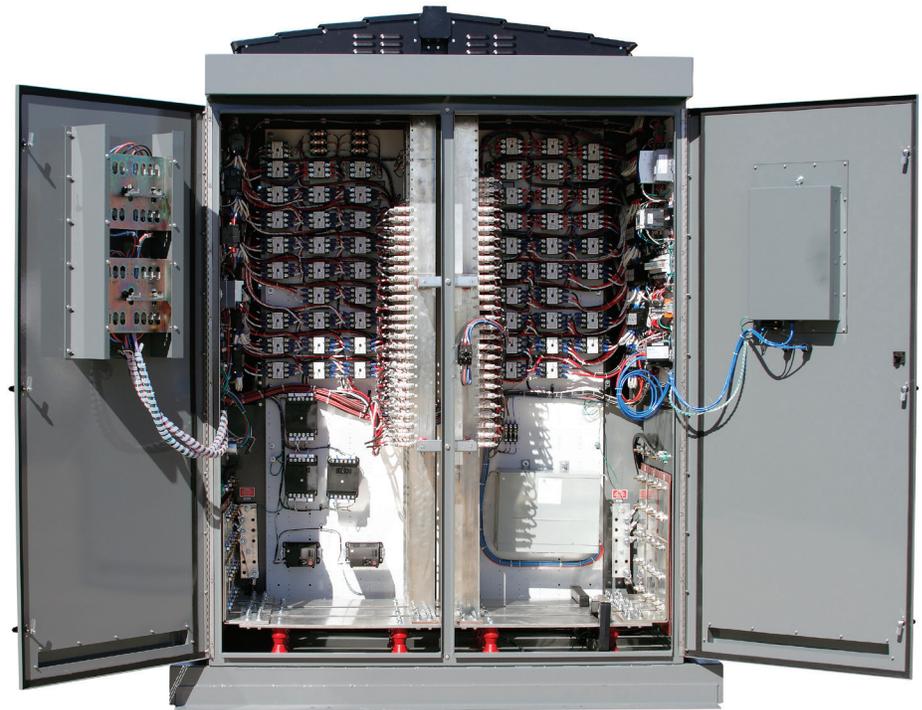
Sensors, alarms (alarm message on remote operator interface terminal), lock-outs as appropriate, for the following:

- Fan failure
- High exhaust temperature
- High intake temperature
- Louver/door open/closed

Load Elements

Simplex Powr-Web: Open wire, helically wound, chromium alloy, load element thermally derated to 60%. 5% tolerance, 2% balance. .995 p.f. Element wire mechanically supported over entire length such that if a wire should break, the broken wire segments will not short to adjacent conductors or to ground. Load elements are individually serviceable and replaceable in the field without major disassembly of the load bank. The load elements are installed in slide-out, removable trays such that any element is easily accessed without disturbing any other elements.

All materials used in the mounting and installation of the load elements are suitable for the temperatures encountered, in both normal operation and under fault conditions. Materials in direct contact with the element wire are ceramic. Other materials which structurally support the load elements and/or which form the hot air duct within which the elements are mounted are steel, stainless steel or aluminum. Plastics and glass reinforced plastic materials and flammable materials are not used for installation, support and mounting of load elements or in the construction of the load bank hot air duct.



Basic Dimensions

84"W x 109"H x 114"D.

Load Control

Branch circuit contactors, each 50 KW resistive circuit max. Contactors have enclosed silver surfaced contacts, 120V coils; electrically operated and electrically held.

Element Circuit Protection

Branch circuit fuses, each 50KW resistive branch circuit max. 600v, 200kAIC, current limiting type.

Power Wiring

150°C insulated; color-coded and numbered.

Control Wiring

105°C

Power Connection

Plated bus bar behind hinge-up access door.

Control Connection

Connector plugs with recessed protective well.

Cooling

Forced air, vertical airflow. 1 x 30HP, 3-phase, TEFC motor direct driving cast aluminum fan blades. Circuit breaker combination motor starter.

Enclosure

Type 3R control section; Type 3R power section. Epoxy primed, polyurethane finish coating, dark gray. Power operated ventilation louvers. Lifting eyes, forklift channels, hinged, lockable, access doors with flush latches.

Weight

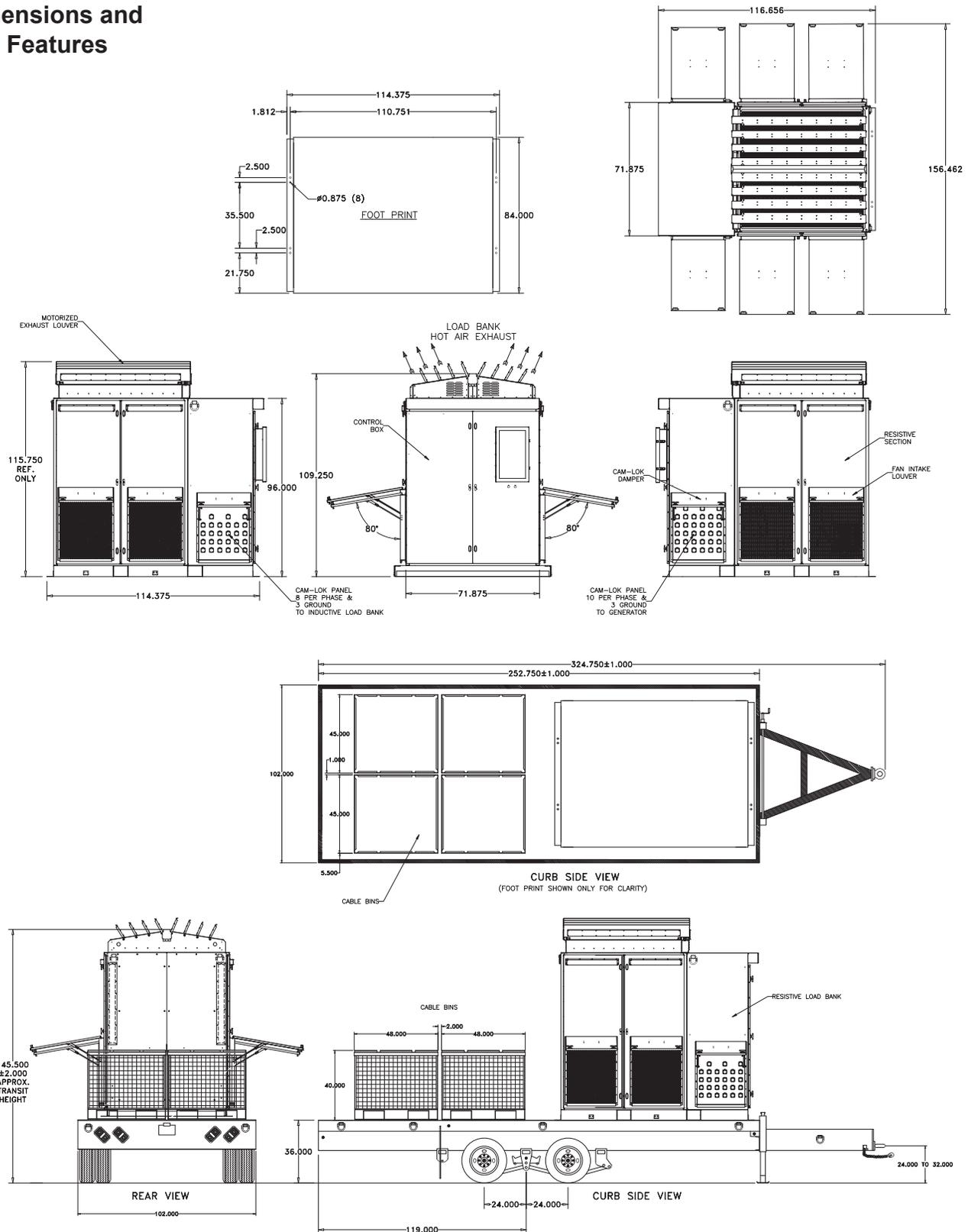
7,400 lbs.

SATURN-R

3200/2720KW Load Bank System



Dimensions and Key Features



Overview

- Rental Duty Portable Load Bank
- 2250kvar Inductive
- Configurable for 480v or 600v
- Digital Load Control
- Capable of Parallel Operation and Control to Form Large Systems
- Use with resistive load bank to obtain 0.8 p.f.

Description

The Simplex Inductive Load Ranger-R is a very large capacity, fully portable, inductive Load Bank System intended for use with the resistive Load Ranger-R or Saturn-R for 0.8 p.f. testing. The Inductive Load Ranger-R is rated 2250kvar and is configurable at the Rental Center for operation at 480v or 600v. The Inductive Load Ranger-R is typically used to test large diesel generators, turbines, paralleled generators and shipboard generators.

With a purpose-built design consisting of rugged, all-welded, monolithic steel frame, heavy gauge steel sides, guarded hinged doors, power-operated ventilation louvers, the Inductive Load Ranger-R is far superior to designs which use refurbished and modified ISO shipping containers. Multi-sided access allows ready service of all components and facilitates the ultra-compact design.

Compact and easily transportable, the Inductive Load Ranger-R is ideal for rental use. With a footprint of only 8 x 10 feet and a height of less than 8 feet, the Inductive Load Ranger-R is easily transportable by drop-deck flat bed trailer. Lifting eyes and forklift channels simplify site movement.

The Inductive Load Ranger-R utilizes digital load control for direct access of load values, block transitions, and user programmable automation. The Inductive Load Ranger-R networks to the resistive Load Ranger-R for single point control.

The Simplex Inductive Load Ranger-R represents the ultimate technology in large generator load testing performance. They can be digitally networked to the resistive Load Rangers for single point control.



**Rental Duty
Dual Voltage Load Bank
480-600v**

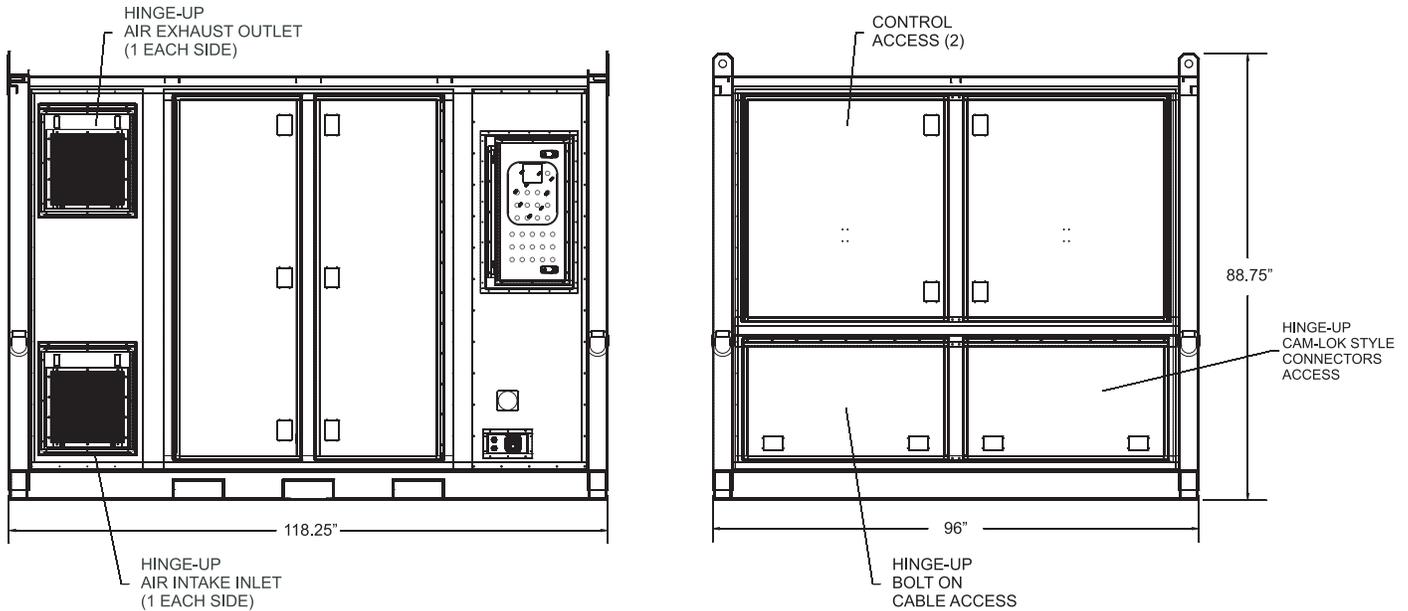
CAPACITY:	2250kvar, inductive
VOLTAGE:	Rental Center Configurable: 480v, 600v, 3-phase, 60 Hertz
FREQUENCY:	60 Hertz, 50 Hertz at reduced voltage
LOAD STEPS:	Digital load control, 3.75 kvar resolution
DUTY CYCLE:	Continuous
AMBIENT TEMP.:	125°F
EXHAUST RISE:	60°F
AIRFLOW:	Approx 1,000 cfm
CONTROL POWER:	Internal, derived from power source under load. Rental Center Configurable: 480v, 600v, 3-phase, 60 Hertz. Control circuits at 120v via internal isolation transformer. Control power load: 3.0 kva, 6.25A.

INDUCTIVE LOAD RANGER-R

2250KVAR Load Bank System

SIMPLEX[®]

Dimensions and Key Features

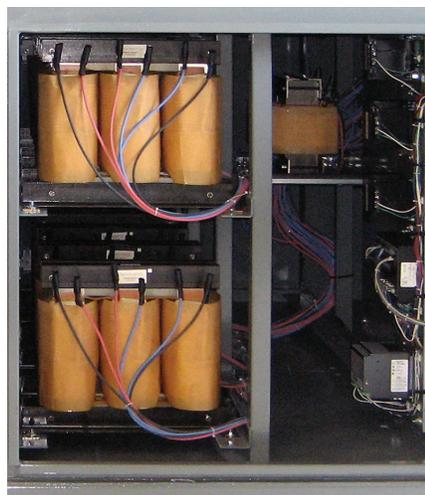


The Load Bank is a completely self-contained, freestanding unit which includes all inductive load elements, load control devices, load element branch circuit fuse protection, main load bus and terminals, cooling system, control power supply, unit controller and malfunction detection system.

System Protection

Sensors, alarms (alarm message on operator interface terminal), lock-outs as appropriate, for the following:

- Fan failure, each of two fans
- High exhaust temperature
- High intake temperature
- High interior temperature
- Louver open/closed



Load Elements

Inductive elements: Non-saturable, air-gap type, iron-core power inductors. 5% tolerance, 1% waveform distortion, 0.05 power factor, 150°C rise, 220°C insulation.

Power Connection

Bolt on bus bar and cam-lock style connectors behind hinge-up access door.

Cooling

Forced air, ducted blowers.

Enclosure

Type 3R control section; Type 3R power section. Epoxy primed, polyurethane finish coating, dark gray and transport, storage D-rings. Lifting eyes, forklift channels, hinged, lockable, access doors with flush latches.

Overview

- Rental Duty Portable Load Bank
- 3000kw Resistive
- Configurable for 480v or 600v
- Digital Load Control
- Capable of Parallel Operation and Control to Form Large Systems

Description

The Simplex Load Ranger-R is a very large capacity, fully portable, resistive Load Bank System intended for field use in testing, maintenance and performance proving of large generating systems. The Load Ranger-R is rated 3000kw and is configurable at the Rental Center for operation at 480v or 600v. The Load Ranger-R is typically used to test large diesel generators, turbines, paralleled generators and shipboard generators. For 0.8 power factor testing, combine the Load Ranger-R with the Inductive Load Ranger-R.

With a purpose-built design consisting of rugged, all-welded, monolithic steel frame, heavy gauge steel sides, guarded hinged doors, power-operated ventilation louvers, the Load Ranger-R is far superior to designs which use refurbished and modified ISO shipping containers. Three-sided access allows ready service of all components and facilitates the ultra-compact design.

Compact and easily transportable, the Load Ranger-R is ideal for rental use. With a footprint of only 8 x 7 feet and a height of less than 8 feet, the Load Ranger-R is easily transportable by drop-deck flat bed trailer. Lifting eyes and forklift channels simplify site movement.

The Load Ranger-R utilizes digital load control for direct access of load values, block transitions, and user programmable automation.

The Simplex Load Ranger-R represents the ultimate technology in large generator load testing performance. They can be digitally networked to other Load Rangers or to any large Simplex rental load bank to form ultra-large systems.



**Rental Duty
Dual Voltage Load Bank
480-600v**

CAPACITY:	3000kw, resistive
VOLTAGE:	Rental Center Configurable: 480v, 600v, 3-phase, 60 Hertz
FREQUENCY:	60 Hertz, 50 Hertz
LOAD STEPS:	Digital load control, 5 kw resolution
DUTY CYCLE:	Continuous
AMBIENT TEMP.:	125°F
EXHAUST RISE:	220°F
AIRFLOW:	Approx 60,000 cfm divided between two cooling fans
CONTROL POWER:	Internal, derived from power source under load. Rental Center Configurable: 480v, 600v, 3-phase, 60 Hertz. Control circuits at 120v via internal isolation transformer. Fan motor load: 2 x 10hp, 13A. Control power load: 3.0 kva, 6.25A.

LOAD RANGER-R

3000KW Load Bank System

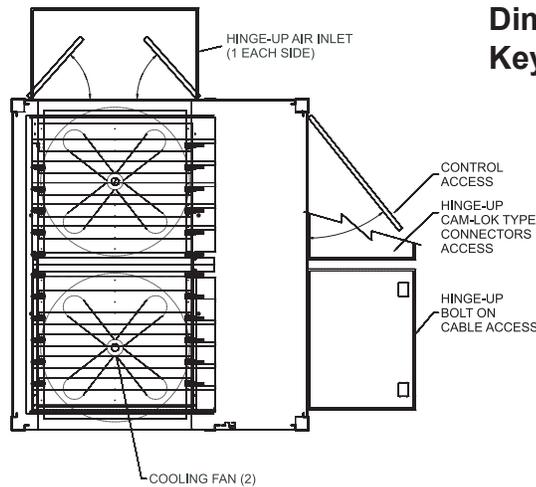
SIMPLEX[®]

The Load Bank is a completely self-contained, freestanding unit which includes all resistive load elements, load control devices, load element branch circuit fuse protection, main load bus and terminals, cooling system, control power supply, unit controller and malfunction detection system.

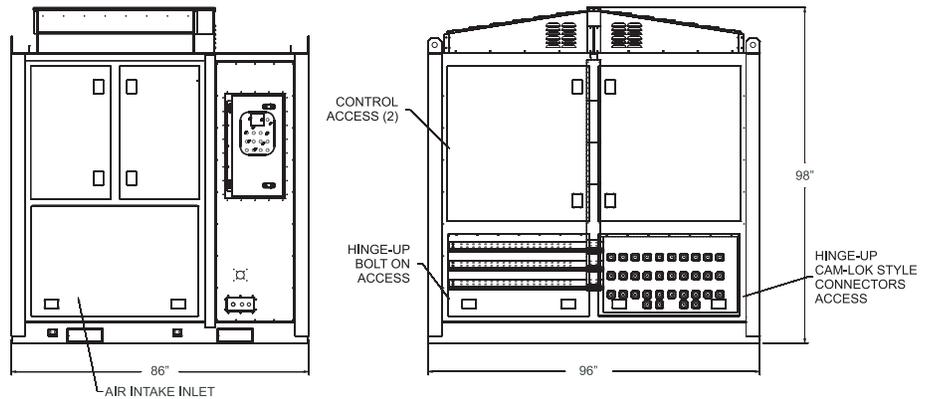
System Protection

Sensors, alarms (alarm message on operator interface terminal), lock-outs as appropriate, for the following:

- Fan failure, each of two fans
- High exhaust temperature, each of two fans
- High intake temperature
- High interior temperature
- Louver open/closed



Dimensions and Key Features



Load Elements

Simplex Powr-Web: Open wire, helically wound, chromium alloy, load element thermally derated to 60%. 5% tolerance, 2% balance. .995 p.f. Element wire mechanically supported over entire length such that if a wire should break, the broken wire segments will not short to adjacent conductors or to ground. Load elements are individually serviceable and replaceable in the field without major disassembly of the load bank. The load elements are installed in slide-out, removable trays such that any element is easily accessed without disturbing any other elements.

Power Connection

Bolt on bus bar and cam-lock style connectors behind hinge-up access door.

Cooling

Forced air, vertical airflow. 2 x 10HP, 3-phase, TEFC motor direct driving cast aluminum fan blades. Circuit breaker combination motor starter.

Enclosure

Type 3R control section; Type 3R power section. Epoxy primed, polyurethane finish coating, dark gray. Power operated exhaust ventilation louvers. Lifting eyes, forklift channels, hinged, lockable, access doors with flush latches.



Overview

- Very high capacity, resistive/inductive portable Load Bank
- 5.0MVA, 4.0MW, 3.0MVAR
- Low voltage to 690vAC
- ISO 20' Container style enclosure
- Digital load control

Features

The Simplex Solar-5 is a very large capacity, resistive/inductive portable load bank capable of 0.8 power factor loads to 5.0MVA (4.0MW, 3.0MVAR). The Solar-5 is designed for low voltage application to 690vAC. PLC based digital load control with touchscreen operator interface is standard. The unit is network capable with other Solar Load Banks as well as most standard Simplex Load Banks in order to form large, ultra high capacity systems which can be controlled from a single operator interface with totalized data acquisition.

The Solar-5 is packaged in a purpose-built, ISO 20', high-cube container STYLE enclosure. Rather than re-purposing used ISO shipping containers, Simplex has ingeniously designed a purpose-built enclosure which includes

the important design features of a container, including holding true to ISO container dimensions, incorporating ISO container corner locking pins and using heavy-duty formed and tubular steel construction in a massive, rugged weldment. A purpose-built enclosure eliminates the compromises inherent in reworking a used shipping container. The resultant enclosure provides 4-sided service access and generous internal space while maintaining structural integrity.

The Solar-5 is intended for severe portable duty. As such, the unit buttons-up tight when not in use. Hot air exhaust is vertical, through roof mounted electrically operated louvers. Air intakes are on the side and covered by manual hatches. The load bank is also suitable for stationary application.

Two means of power connection are provided: copper bus bars for bolt-on cables, and Cam-Lock type connectors for Cam-lock type terminated cable.

The Solar-5 is equipped with the advanced Simplex Digital Control System which provides touchscreen operator interface, keypad load entry, data display and acquisition, Ethernet remote control. The load bank is equipped with a local operator interface

which is removable for remote control. Software is available for control from a user supplied Windows PC. Simplex AutoTest software is available for full testing automation.

Features

- Rugged, purpose built container style enclosure based upon standard ISO 20-foot, high-cube design
- Formed and tubular steel massive weldment
- Powered exhaust louvers
- Generous internal space and 4-sided access
- Power-Web resistive load elements
- Iron-core inductors
- IEC contactors
- Branch circuit fuse protection
- Copper bus bar and Cam-Lock style cable connection provisions
- Comprehensive malfunction detection system
- Digital control and data acquisition
- Network capable
- Automation software available

SOLAR-5R

5 MVA, 0.8 P.F. Container Load Bank

SIMPLEX®

General Specifications

Capacity: 5.0MVA, 0.8 power factor
 4.0MW, resistive
 3.0MVAR, inductive

Voltage: Single voltage, specify one:
 480vAC, 3-phase, 3-wire
 600vAC, 3-phase, 3-wire
 690vAC, 3-phase, 3-wire
 416vAC, 3-phase, 3-wire
 380vAC, 3-phase, 3-wire

De-rates as the square of the voltage beneath these voltages.

Frequency: 60 Hertz or 50 Hertz, specify one

Load Steps: 5KW / 3.75KVAR digital load step resolution

Duty Cycle: Continuous

Ambient Temp.: 125°F

Exhaust Rise: 150°F (hot spot temps to 500°F)

Airflow Required: 75,000 CFM

Control Power:

Selectable internal or external.

External power requirements:
 3 x 15HP cooling fan motors
 Control power load: 10.0 KVA

Enclosure:

Purpose-built, container style steel enclosure with ISO 20' container dimensions, corner locking pins. Outdoor weatherproof. Painted dark grey polyurethane over epoxy primer.

Dimensions: 240" W x 96" D x 100" H

Net Weight: Approx. 30,000 pounds

Principle Systems

The Load Bank is a completely self-contained, freestanding unit which includes all load elements, load control devices, load element branch circuit fuse protection, main load bus and terminals, cooling system, control power supply, digital controller with data acquisition and malfunction detection system and weatherproof enclosure.

Resistive Load Elements: Simplex Powr Web: Open wire, helically wound, chromium alloy, load element thermally derated to 60%. 5% tolerance, 2% balance. .995 p.f. Element wire mechanically supported over entire length such that if a wire should break, the broken wire segments will not short to adjacent conductors or to ground. UL Recognized

Inductive Load Elements: Iron-core, non-saturable air-gap type, with aluminum windings, varnish/epoxy coated. 150C rise. 220C insulation

Load Control: Branch circuit contactors, each 50 KW resistive circuit max, each 75 KVAR inductive circuit max. Contactors have enclosed silver surfaced contacts, 120V coils; electrically operated and electrically held. Contactors are IEC type

Element Circuit Protection: Branch circuit fuses, each 50KW resistive branch circuit max, 75KVAR inductive circuit max. , 600v, 200kAIC, current limiting type.

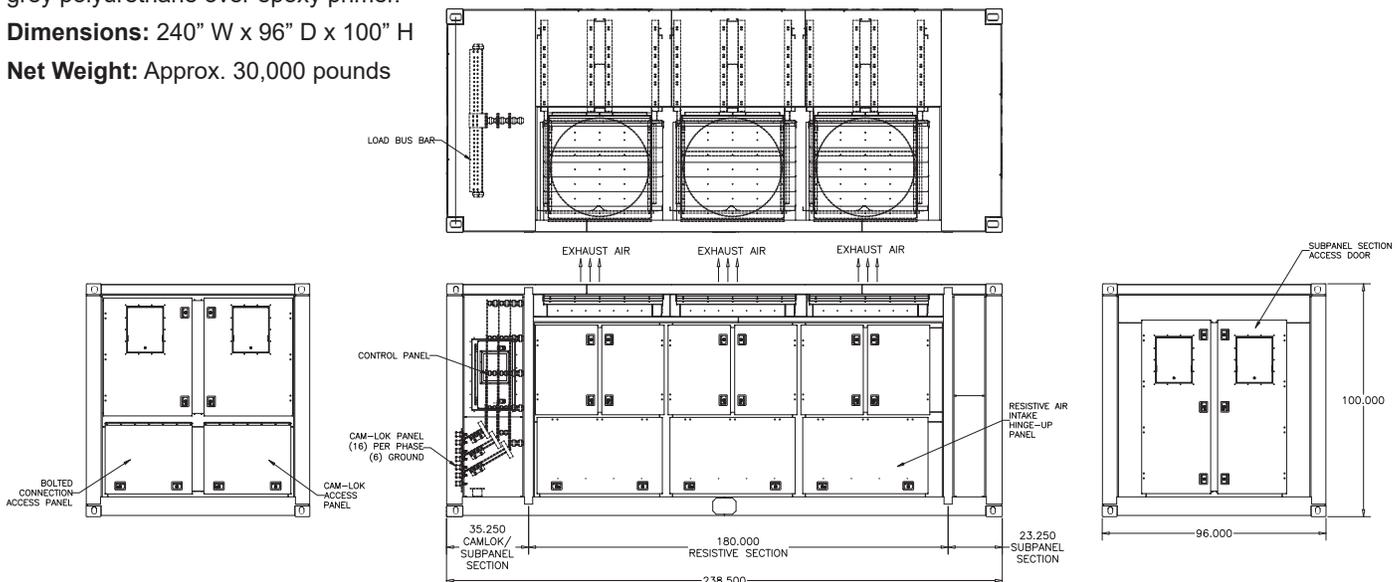
Power Wiring: 150°C insulated; color-coded and numbered.

Control Wiring: 105°C numbered

Power Connection: Plated copper bus bar for bolt-on cable connections, behind hinged door and Cam-Lock style plug-in connectors, bulkhead mounted behind hinged door. 400A, 4/0 connectors.

Cooling: Forced air, vertical airflow, top exhaust. 3 x 15HP, 3-phase, TEFC motor direct driving cast aluminum fan blades. Circuit breaker combination motor starters. Electrically powered exhaust louvers, via linear actuator, with position indicating output. Manual air intake doors with door limit switches

System Protection: Sensors, alarms, lock-outs as appropriate, for the following: Fan Failure, High Exhaust Temperature, High Intake Temperature, Exhaust Louver Open/Closed, Each Louver, Intake Door Open Closed, Access Door Open, Each Door, Fan Motor Overload, and Emergency Stop.



Options

Dual voltage with reduced overall capacity:

- 240/480v
- 416/480v
- 480/600v
- 480/690v

Addition of capacitive load to 0.90 p.f. leading, with reduced overall capacity

Special use construction

- Marine
- Arctic

Highway trailer and trailer accessories

- Cable reels
- Power cable sets

Infinitely variable load control

Automation software

Windows PC control software

Remote control packages

- Suitcase controller
- Remote control cables/reels

Enclosure options

- Custom paint colors and markings
- Stainless steel construction



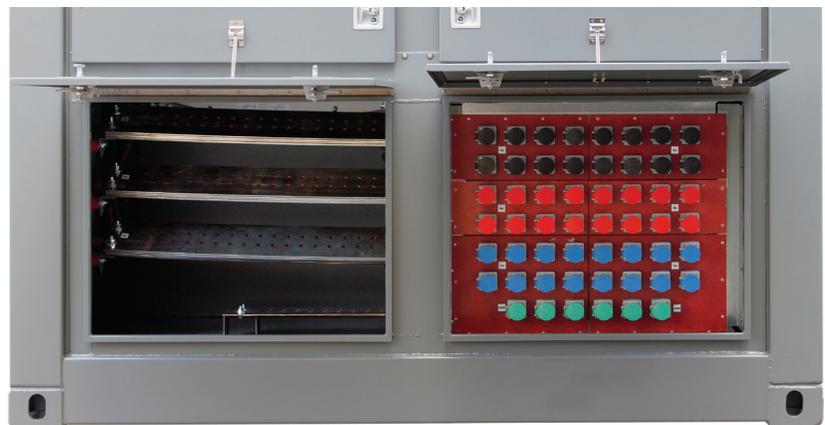
Solar-5 with all ventilation and service doors closed and ready for transport.



Purpose built enclosure insures ample interior space and service access. Shown above are readily accessible inductive elements.



The touchscreen operator interface mounted in a protective enclosure is removable for remote control.



Solar-5 is equipped with two means of power cable connection: copper bus bars for bolted connection of cables and Cam-Lock style connectors.

SOLAR-5R

5 MVA, 0.8 P.F. Container Load Bank



Digital Control and Data Acquisition System

PLC based digital control with 8-inch color TFT touchscreen operator interface.

Functions

- Control power source and voltage level detection
- Malfunction detection and protection
- Direct access (keypad) load control
- Alternate mimic panel load control
- Basic automation of load control
- Field adjustable exhaust temperature limits with temperature display
- Built-in control from customer supplied computer

Instrumentation

Digital power transducer to digital controller and meter displays on touchscreen:

- 3-phase voltage (each, L-L)
- 3-phase current (each line)
- Frequency
- KW
- KVAR
- Power-factor

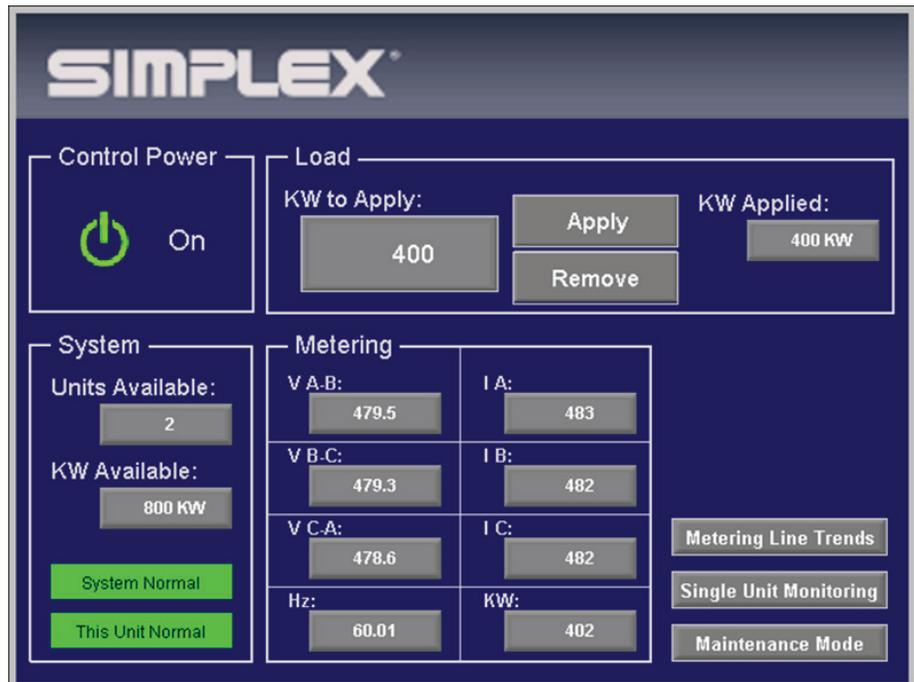
Data Acquisition

- Captures and records all electrical values
- Start recording/stop recording screen buttons
- One second sample rate
- Exports text file to detachable flash drive which plugs into USB port

Outputs

MODBUS (standard) or BacNet (optional):

- Load applied
- Each electrical value as above



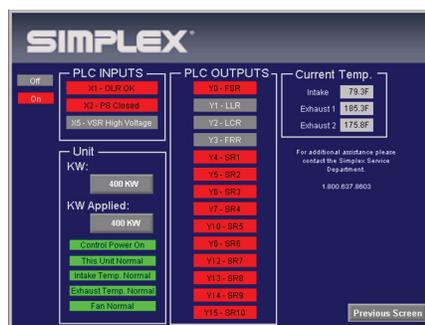
Main Screen



Monitoring Screen



Metering Trends Screen



Diagnostics Screen



Maintenance Screen



Networked Load Bank Systems

FORM VERY LARGE MEDIUM VOLTAGE SYSTEMS WITH SINGLE-POINT CONTROL

Form systems from 2.5MW to 50.0MW, 0.8 power factor (3.125MVA – 62.5MVA); 1-20 trailers.

Integrated trailer design Rental Load Bank System consisting of:

- Simplex Load Cube 0.8PF Load Bank
- Multi-voltage oil filled rental duty transformer
- Power cables as required
- Network control cables as required
- Heavy duty semi-trailer

Each trailer rated:

- 3.125 MVA, 0.8 power factor
- 2.5MW, resistive load
- 1.875MVAR inductive load
- 5.0KW, 3.75KVAR load step resolution

Re-connectable primary voltages:

- kV: 2.4, 4.16, 6.9, 7.2, 7.6, 8.0, 8.3, 12.0, 12.47, 13.2, 13.8, 14.4

Networked Ethernet control of multiple modules to a single operator interface.

Rental options:

- 15kV power cable
- 15kV main breakers/disconnects
- Cat-5 or fiber-optic communications cable
- Ethernet network switches
- Testing automation software
- Data acquisition and recording

Technical services available:

- Setup assistance
- Start-up service
- Operator oversight
- 24/7 service availability
- Site planning



Actual confined space intallation. See page 76.

LOAD CUBE R
2500KW Load Bank System
Variable Power Factor

Overview

- Rental Duty Portable Load Bank
- 3125kva, 0.8 Power Factor
- 2500kw Resistive
- 1875kvar Inductive
- Adjustable Power Factor
- Configurable for 480v, 600v, 690v
- Digital Load Control
- Capable of Parallel Operation and Control to Form Large Systems

Description

The Simplex Load Cube is an ultra-large capacity, fully portable, resistive/reactive Load Bank System intended for field use in testing, maintenance and performance proving of large generating systems. The Load Cube is rated 2500kw, 1875kvar and is configurable at the Rental Center for operation at 480v, 600v, or 690v. The Load Cube is typically used to test large diesel generators, turbines, paralleled generators and shipboard generators.

With a purpose-built design consisting of rugged, all-welded, tubular steel frame, heavy gauge steel sides, guarded hinged doors, power-operated ventilation louvers, the Load Cube is far superior to designs which use refurbished and modified ISO shipping containers. Four-sided access allows ready service of all components and facilitates the ultra-compact design.

Compact and easily transportable, the Load Cube is ideal for rental use. With a footprint of only 8 x 10 feet and a height of less than 9 feet, the Load Cube is easily transportable by drop-deck flat bed trailer. Lifting eyes and forklift channels simplify site movement.

The Load Cube utilizes digital load control for direct access of load values, block transitions, and user programmable automation. A selection of digital power meters and data acquisition software is available.



The Simplex Load Cube represents the ultimate technology in large generator load testing performance.

CAPACITY:	3125 kva, 0.8 power factor; 2500kw, resistive; 1875 kvar, inductive
VOLTAGE:	Rental Center Configurable: 480v, 600v, 690v, 3-phase, 60 Hertz
FREQUENCY:	60 Hertz, 50 Hertz at reduced voltage
LOAD STEPS:	Digital load control, 10 kw, 7.5 kvar resolution. Circuits of 10–20–20–50–100–100–200–250–250–500–1000 kw 7.5–15–15–37.5–75–75–150–187.5–187.5–375–750 kvar
DUTY CYCLE:	Continuous
AMBIENT TEMP.:	125°F
EXHAUST RISE:	220°F
AIRFLOW:	Approx 60,000 cfm divided between two cooling fans
CONTROL POWER:	Internal, derived from power source under load. Rental Center Configurable: 480v, 600v, 690v, 3-phase, 60 Hertz. Control circuits at 120v via internal isolation transformer. Fan motor load: 2 x 10hp, 13A. Control power load: 3.0 kva, 6.25A.

**PORTABLE
MULTI-VOLTAGE
3500 KVA
TRANSFORMER**
Substation Type
Transformer
3500 kVA,
Tapped Primary:
Tapped Secondary

- kVA: 3500, 65°C Rise, 5.75% impedance, 85°C
- Insulating Liquid: Mineral Oil, "Non-PCB.", 780 GAL
- Three Phase, Class-Onan, 60Hertz
- BIL - H.V./L.V 95kV / 30kV
- Conductor MAT: H.V./L.V - AL/AL
- Primary Voltages: 2400v, 4160v, 6928v, 7200v, 7620v, 7970v, 8320v, 12,000v, 12,470v, 13,200v, 13,800v, 14,400v
- Secondary Voltages: 600Y/346v, 480Y/277v

High Voltage →  480Y/277 x 600Y/346

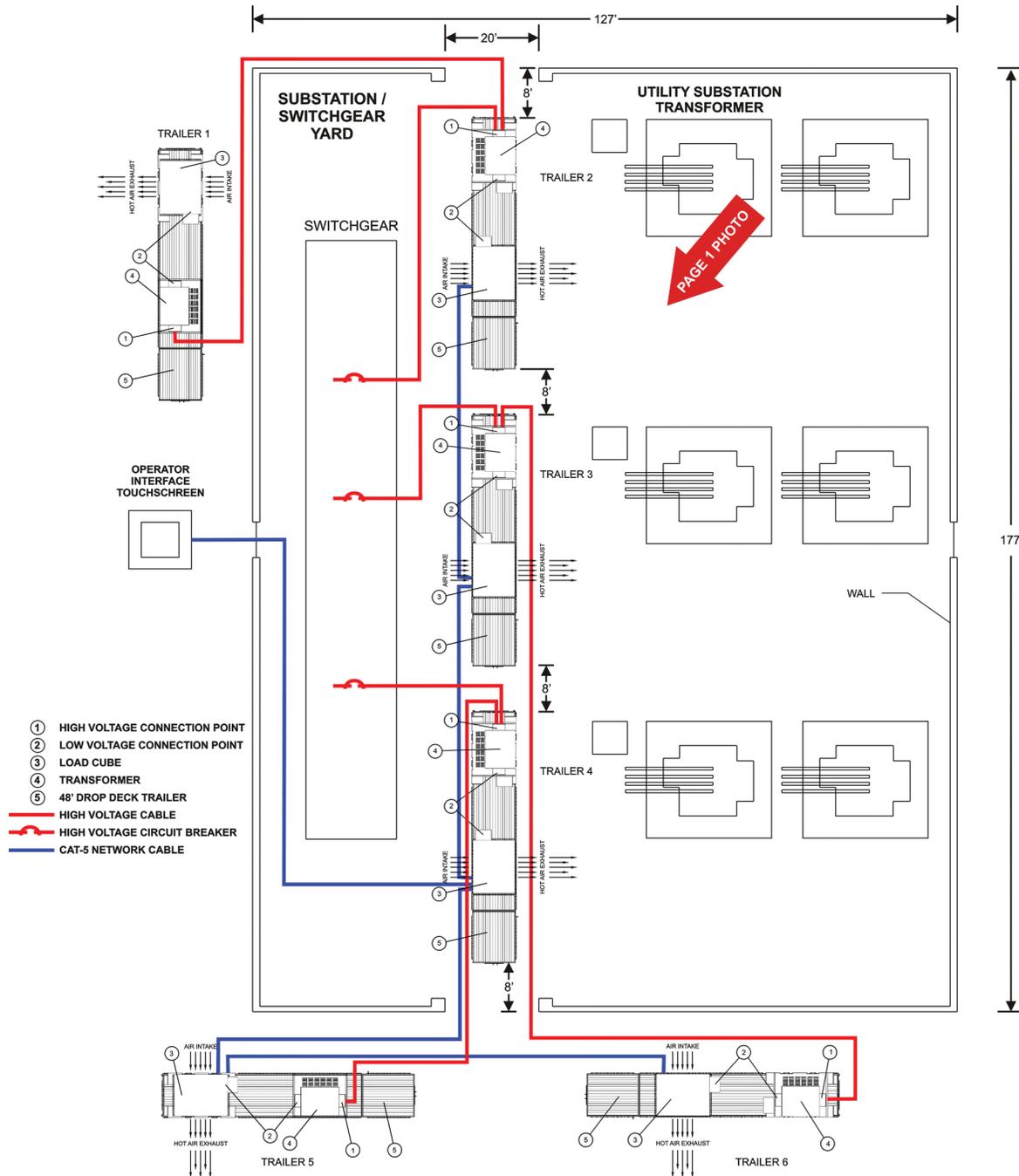


3500 kVA substation transformer
4 each high voltage bushings in full length enclosure with 4-hole spades
7 each low voltage bushings in full length enclosure with 6-hole spades
Aluminum windings
Mineral oil filled
Pressure relief valve
Filler plug with Schrader valve
Oil level gauge, temperature gauge with dual contacts and pressure vacuum gauge
1" drain valve with sampler
Externally operated no load tap changer
Externally operated no load dual voltage switch
Externally operated no load delta-wye switch
Forklift pockets
Gas sample valve
NEMA 4 control box
2" drain valve with oil sampler
3" square tubing protective cage
Diagrammatic corrosion resistant nameplate
Furnished with Standard ANSI accessories

Actual Layout of Recent Project at Large Medical Center

Six (6) trailers, 15.0MW, 0.8 P.F., 13.8KV

Load Banks positioned in confined space. Pairs of Load Banks jumped together then connected to circuit breakers in switchgear. All six (6) trailers networked together to a single operator interface touchscreen. Simplex provided services: setup assistance, start-up and operator oversight.





Overview

Very large capacity, portable Load Bank System consisting of multiple units, each rated 5.0MW, capable of parallel operation to form very large systems of up to virtually unlimited capacity.

Medium voltage to 34.5kV.

Includes:

- Trailer portable load modules
- Portable or fixed mounted distribution switchgear
- Integrated digital control and data acquisition system
- Connection accessories

Description and Specification

Each 5.0MW Portable Trailer Load Bank consists of four (4) principle elements, factory packaged as a system:

1. Low voltage resistive load bank module, 5.0MW, 480vAC
2. Transformer package for medium-voltage operation, 5.0MVA, MV:480vAC, including 15kV disconnect
3. Highway semi- trailer integration of above for portable, highway transportation and outdoor weatherproof use
4. Digital controller for standalone or multi-unit paralleled operation from a single control station

Low Voltage Load Bank Module

- Total Capacity: 5.0MW, 1.0 power factor
- Voltage: 480vAC, 3-phase, 3-wire (from transformer)
- Frequency: 60 Hertz
- Load steps: 50KW step resolution

Transformer Module

- 5.0 MVA, dry type
- Medium voltage delta: 480Y/277vAC, 60 hertz
- Medium voltage, 1200A, 3-pole, manually operable, fixed mounted, fusible disconnect
- Fused low voltage outputs

Trailer

- Highway semi-trailer, "low-boy", tri-axle, 48-foot.

Digital Controller

PLC-based digital control. Each load bank trailer equipped with digital control system and local operator interface. Each trailer networked such that entire trailer can be controlled from a single station. Any system of paralleled trailers can be controlled from a single station, either at one trailer or at a remote station.

Digital power transducer to monitor volts-amps-hertz-KW. Network communication is via Modbus-TCP over Ethernet.

Power Distribution Switchgear

For connection of system of multiple load banks to generator switchgear:

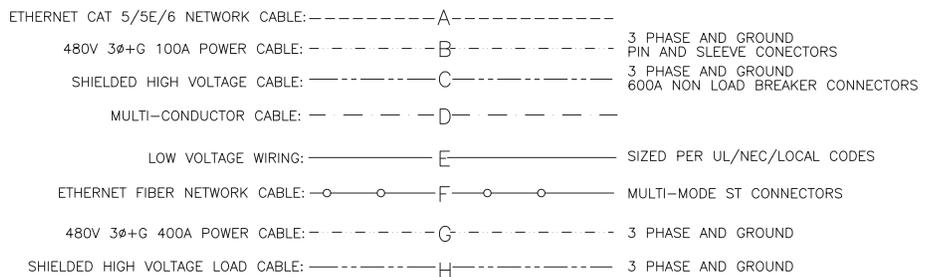
1. Outdoor, freestanding metal-enclosed power distribution switchgear consisting of multiple cubicles
2. 15kV vacuum circuit breaker for each load bank trailer
3. Transformer Protection Relay for each breaker.
4. Instrumentation potential and current transformers
5. Low voltage motor starter and control power cubicle
6. Network PLC control
7. Touchscreen operator interface

Optional Capability

- 480v direct load power input
- Second medium voltage input
- Medium voltage connection cables
- Low voltage connection cables
- Automation software
- Windows PC for single point control and automation



Simplified System Overview for 20MW, 13.8kV System



VULCAN-5R

5-100 MW, to 34.5 kV

SIMPLEX®

15kV outdoor power distribution switchgear for 20MW system consisting of four Vulcan-5 Load Banks.

Drawout vacuum circuit breakers with protective relays, plug-in connectors for 15kV cable, low voltage cubicle for load bank control, 400A shore power panelboard, 4 x 100A "pin-and-sleeve" connectors for load bank fan/control power, network interfaces, local touchscreen.



Description

The Simplex Nautilus-250 is a water-cooled load bank designed expressly for data-center chiller commissioning and testing applications. The Nautilus-250 is a compact, portable product featuring infinite power and water flow control for precise temperature rise setting versus applied power. The Nautilus is fully networkable for control of single or multiple units from a remote station.

Using a PLC with touchscreen HMI, integrated with temperature sensors and flow transducers and controlling an electrically operated water proportioning valve, the Nautilus allows the operator to select precise power levels, versus water temperature rise versus water flow rates. Power level is infinitely controllable over a 0-250kw range.

Multiple Nautilus Load Banks can be controlled from a single operator HMI. Software is available for control from a Windows- based PC, for data acquisition and for full testing automation.

Features

The load bank is a completely self-contained, freestanding unit, which includes all resistive load elements, load control, load element branch circuit fuse protection, main load bus and terminals, valves and fittings, control power supply, malfunction detection system.

Control System: PLC control with 8-inch color TFT touchscreen HMI. Screen is configured for local or remote operation. Remote requires 120v power source.

Control Function: Master control on-off button; keypad entry of load values, apply and remove buttons; controller calculates reduced voltage load values automatically, applying actual requested load value for the applied voltage up to the reduced voltage capacity of the load bank. Water Flow Control: Either full on or thermostatic control. Thermostatic control is either manual or to a temperature rise preset. Operator interface is a screen based vernier valve control with displays of valve position, flow rate, temp in, temp out, temp rise.

Automatic thermostatic control allows operator to enter value of temp rise. Controller then adjusts flow rate to maintain that rise. Controller inhibits over temperature, greater than 180°F outlet temp. Displays: AC 3-phase voltage and current, frequency, kilowatts. Alarms: high outlet temp, low flow, high pressure. Messages: normal operation, valve open, valve closed. Water Flow Control Messages: water inlet temp, water outlet temp, overall temp rise, main manifold water flow rate, valve position in percent of open.

Capacity: 250 kW

Voltage: 480vAC, 3-phase, 3-wire

Frequency: 60 Hertz

Load Steps: Infinitely variable via digital control, comprised of circuits as follows -

KW: 0-25 – 25 – 50-50-50-50

Duty Cycle: Continuous

Ambient Temperature: 52°C

Control Power: External,

via power inlet and power cord to 120v 15A outlet

Cooling Requirements: Fresh water; Nominal 125 GPM supply yields approx. 12.5°F rise at full power; Flow rate is infinitely variable to a max temp rise not to exceed 180°F outlet -

$KW = GPM \times Temp. Rise (F) \times .16$

$GPM = KW / (Temp. Rise \times .16)$

$Temp. Rise (F) = KW / (GPM \times .16)$

Weight: Approximately 1600 lbs full of water, 900 lbs dry



Rental Duty Variable Load Steps 480v Load Bank

Water Connection: 2-inch, water inlet and water outlet. Quick disconnect couplings, shutoff ball valves.

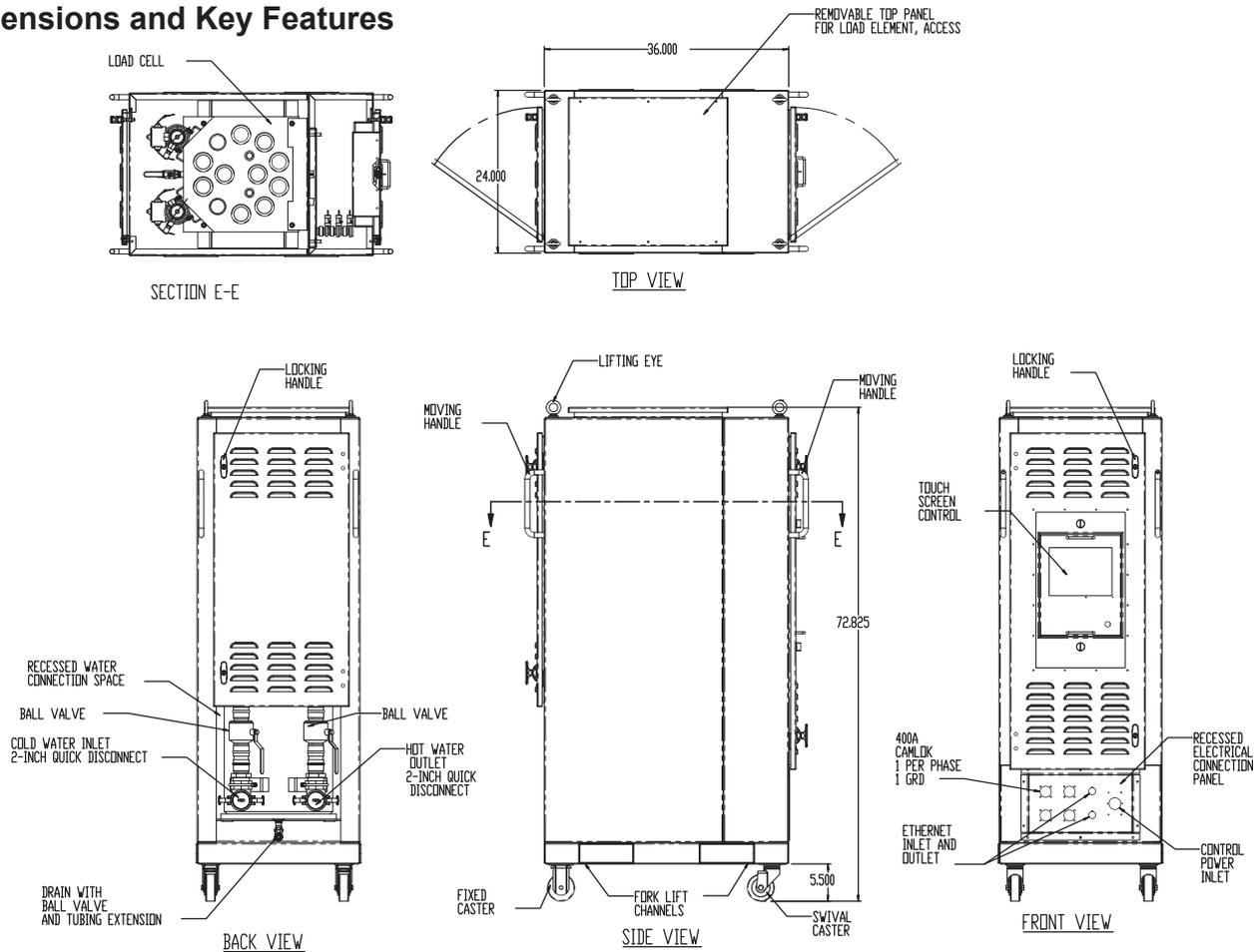
Enclosure: Environmental type 1 freestanding, indoor, portable enclosure. Aluminum frame clad with aluminum panels and doors. Front power connections. Rear water connections. Casters, forklift pads, lifting eyes. Powder coated white cabinet, blue doors. 72H x 24W x 36D

NAUTILUS 250R

250KW Resistive Water Cooled Load Bank

SIMPLEX®

Dimensions and Key Features



Load Cell

1 x 250 kW load, consisting of heavy-gauge, steel housing, load elements, control valves and sensors as described below

Load Elements

Immersion type, tubular construction, stainless steel or Incolloy sheathed, chromium-alloy conductor. Screw-plug mounting.

Load Control

Triac and Branch circuit contactors, each 25 kw or 50 kW circuit.

Element Circuit Protection

Branch circuit fuses, each 50 kW branch circuit or each step.

Power Wiring

150°C insulated; color-coded and numbered, XLP insulation

Control Wiring

90°C, color-coded and numbered

Power Connection

Cam-Type connectors, 1 x 4/0 (400A) per phase and 1 x ground. Bulk-head mount connectors installed on front.

System Protection

Sensors: Protection for High water temperature; Low water flow; High pressure. Alarm and shutdown upon failure detection

Sensors

Main manifold flow transducer, 4-20mA; inlet water temp thermocouple, exhaust water temp thermocouple; cell pressure.

Enclosure

Type 1 indoor freestanding. Approx 24" W x 72" H x 36" D.

Water flow control

Equipped with main inlet and outlet shutoff ball valves, pressure relief valve. Motorized gate valve on inlet for water flow control.

Overview

- 500KW Water-Cooled Load Bank
- Compact, space-efficient design with casters
- Totally quiet operation
- Suitable for use with chilled-water systems in data centers
- Digital control with portable touchscreen
- Power transducer, V-A-Hz-KW display on screen

Description

The Atlantis-Series is an attractive alternative to air-cooled Load Banks: it is perfectly quiet and cool running; it is extremely compact and may be installed in otherwise unutilized space; it is virtually maintenance free.

The Atlantis-500 is ideal for data center chiller system commissioning. With its large 4-inch water connections and minimal pressure drop, the Atlantis will accept the high water flows required for limited temperature rise, typically 12.5°F.

Multiple Atlantis Load Banks can be networked to form large systems controlled from a single operator interface. In addition, the Atlantis shares the same control architecture with the Simplex Nautilus-250, 250kw water-cooled load bank, permitting any number of Atlantis and Nautilus Load Banks to be networked together. Control and data acquisition software is available from Simplex for systems integration and for control from PC's.

Each load cell includes sensors for normal operation, cooling failure, overpressure and loss of flow / low water level.

Load elements are water immersion power resistors. Load control is via magnetic contactors with branch circuit power fuses.



Rental Duty Low Voltage Load Bank to 600v

Control power for the Load Bank is provided by 120V, transformer isolated, internal power supplies. Control power is derived internally, from the connected power source or from an external source.

Power distribution within the Load Bank is via a 3-phase main copper load bus. Field connections are via cam-lok type connectors.

The Atlantis 500 is suitable for use with a variety of cooling media, including city water (nominal 50 PSI), closed loop chilled water systems, heat exchanger systems, pumped water from natural sources (lake, river, etc.) or brine or sea water (requires optional nickel alloy construction and elements).

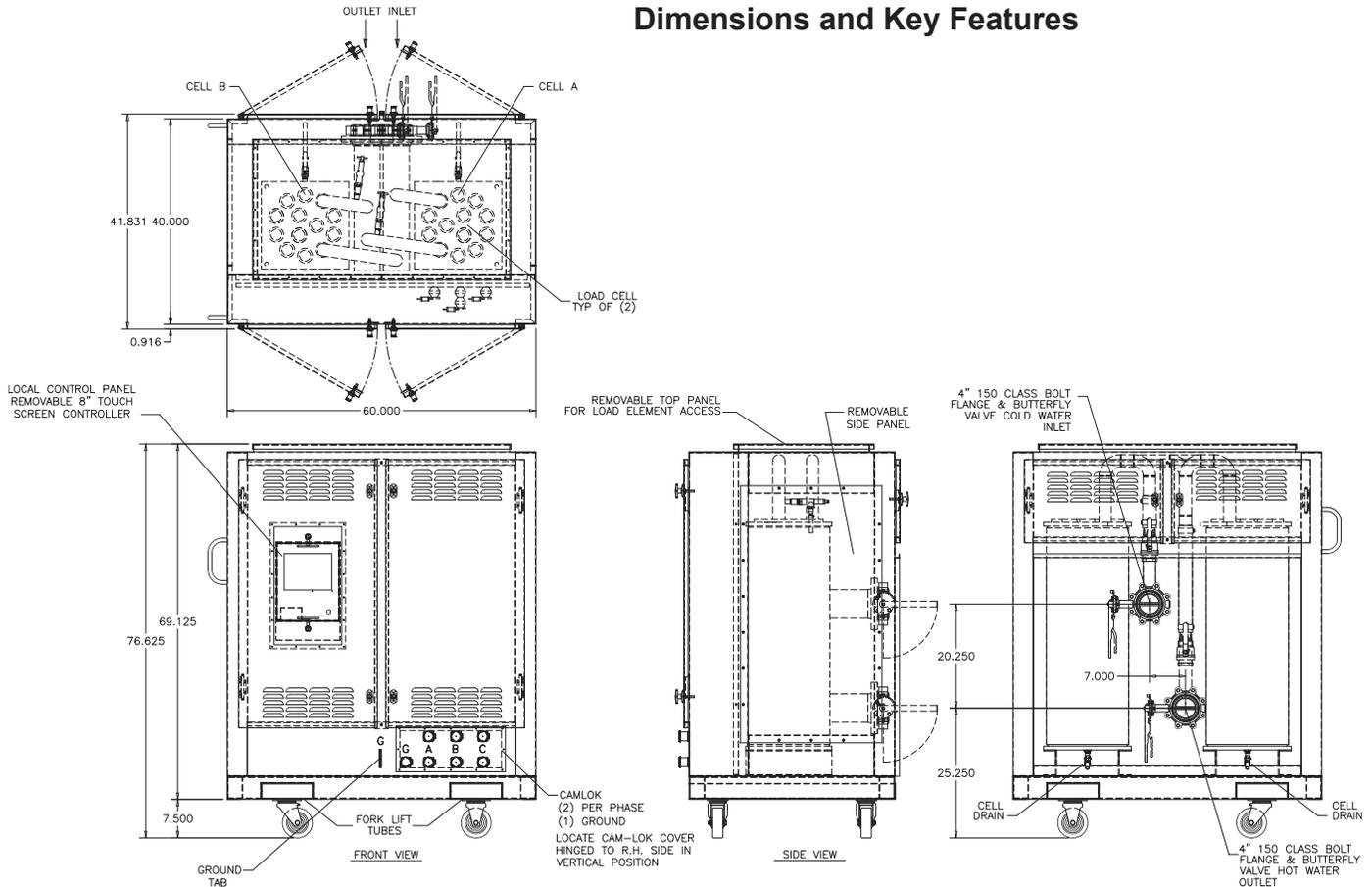


Atlantis-500R

Water-Cooled Load Bank

SIMPLEX®

Dimensions and Key Features



SPECIFICATIONS

CAPACITY:	500KW, Resistive, 1.0 p.f.
VOLTAGE:	Low voltage to 600V, specify
FREQUENCY:	50Hz, 60Hz and 400Hz
LOAD STEPS:	50KW resolution standard. 1-5-10-25KW resolution available.
COOLANT:	Chiller, city water, closed -loop heat exchanger, natural water (river, lake, etc.)
COOLING:	Normal Duty: 10 GPM per 100KW, 62.5°F rise Minimum Cooling Requirements: 6.25 GPM per 100KW, 100°F rise, outlet not to exceed 170°F Typical Duty, Chilled Water Systems, 50 GPM per 100KW, 12.5°F rise Coolant Requirements: KW = GPM x Temp. Rise (F) x .16, GPM = KW / (Temp. Rise x .16) Temp. Rise (F) = KW / (GPM x .16) Particles must be less than 150 microns or a filter is required
PRESSURE DROP:	5 PSI or less
CONTROL POWER:	Internal or external source, transformer isolated, 120V
PRESSURE:	180 PSI test pressure, 50 PSI nominal / operating pressure
DUTY CYCLE:	Continuous



**Rental Duty
Substation Type Transformer
3500 kVA, Tapped Primary:
Tapped Secondary**

- kVA: 3500, 65°C Rise, 5.75% impedance, 85°C
- Insulating Liquid: Mineral Oil, "Non-PCB.", 780 GAL
- Three Phase, Class-Onan, 60Hertz
- BIL - H.V./L.V 95kV / 30kV
- Conductor MAT: H.V./L.V - AL/AL
- Primary Voltages: 2400v, 4160v, 6928v, 7200v, 7620v, 7970v, 8320v, 12,000v, 12,470v, 13,200v, 13,800v, 14,400v
- Secondary Voltages: 600Y/346v, 480Y/277v

High Voltage →  ← 480Y/277 x 600Y/346

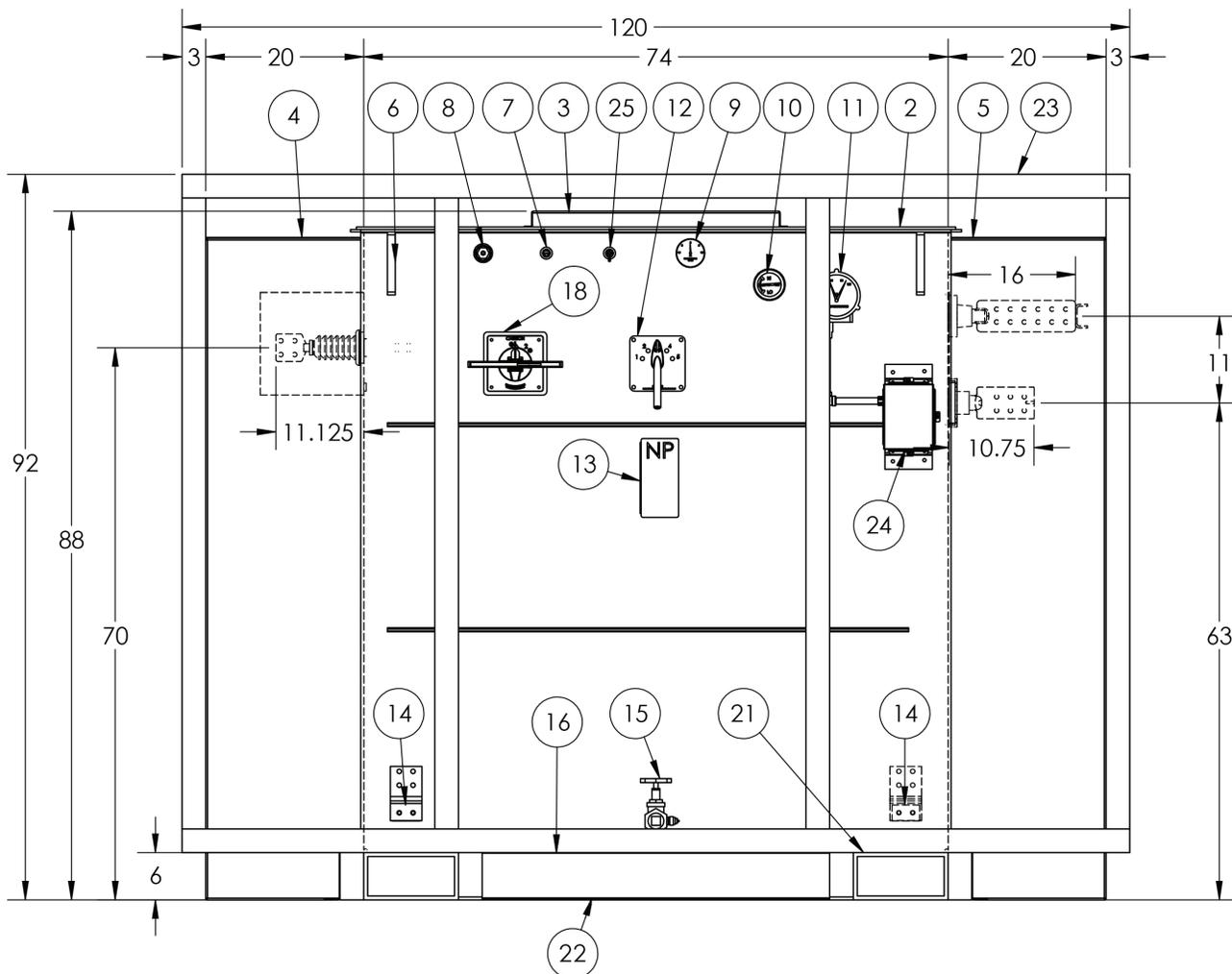
3500 kVA substation transformer
4 each high voltage bushings in full length enclosure with 4-hole spades
7 each low voltage bushings in full length enclosure with 6-hole spades
Aluminum windings
Mineral oil filled
Pressure relief valve
Filler plug with Schrader valve
Oil level gauge, temperature gauge with dual contacts and pressure vacuum gauge
1" drain valve with sampler
Externally operated no load tap changer
Externally operated no load dual voltage switch
Externally operated no load delta-wye switch
Forklift pockets
Gas sample valve
NEMA 4 control box
2" drain valve with oil sampler
3" square tubing protective cage
Diagrammatic corrosion resistant nameplate
Furnished with Standard ANSI accessories

Portable Multi-Voltage 3500kVA Transformer

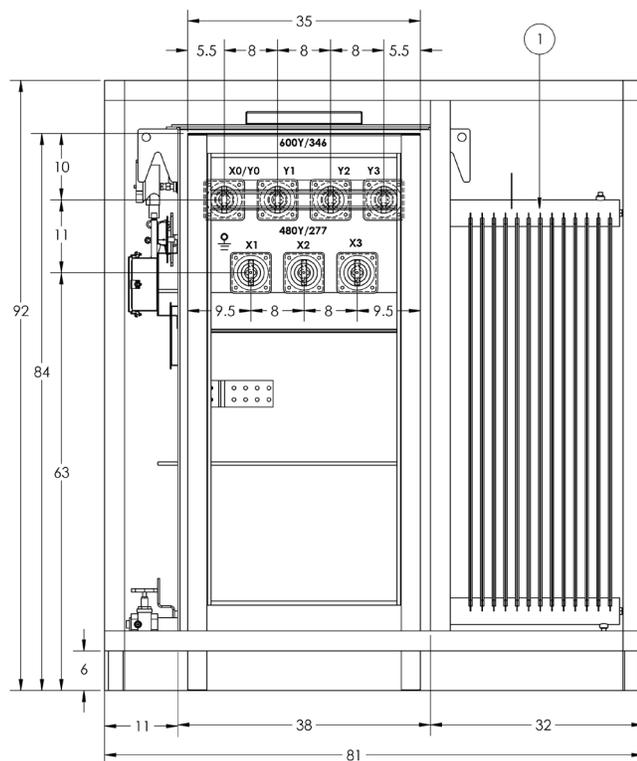
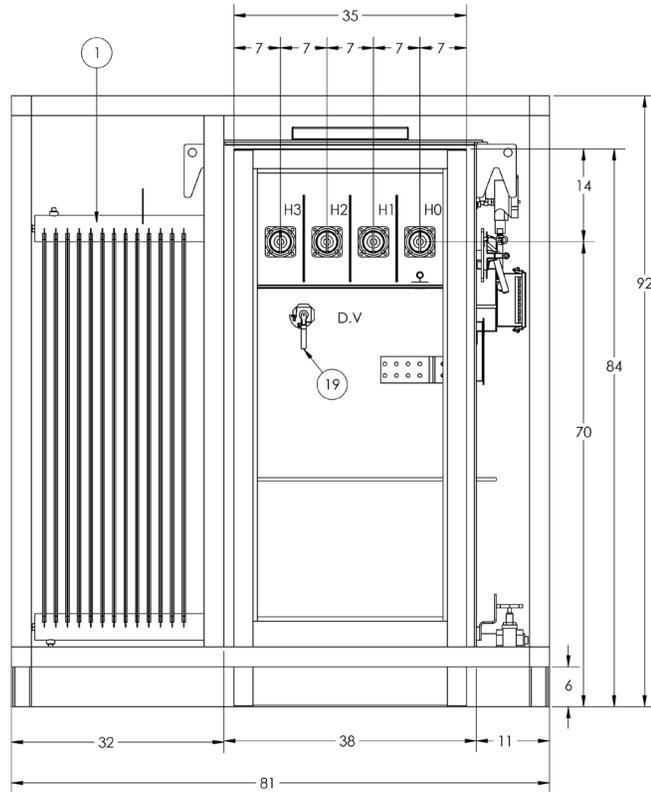
SIMPLEX®

3500 Kva Substation Type Transformer Mineral Oil Filled Three-Phase, Onan, 65°C Rise, 60-Hertz

1. Radiators (flexoplate) (as required).
2. Welded on cover.
3. Bolted on inspection plate.
4. Tamperproof removable high voltage terminal chamber cabinet with three point latching lift off padlockable door with stainless steel hinges and open bottom for conduit or cable entrance. High voltage terminal chamber supplied with three each high voltage bushings with nema 4 hole spade terminals. One each high voltage neutral bushing with nema 4 hole spade terminal and removable ground strap. One each eight hole ground pad provided in throat.
5. Tamperproof removable low voltage terminal chamber cabinet with three point latching lift off padlockable door with stainless steel hinges and open bottom for conduit or cable entrance. Low voltage terminal chamber supplied with three each low voltage bushings with nema 12 hole spade terminals and three each 6 hole spade terminals. One each low voltage neutral bushing with nema 12 hole spade terminal and removable ground strap. One each eight hole ground pad provided in throat.
6. Lifting hooks (4 each required).
7. Automatic pressure relief valve.



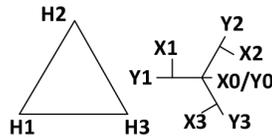
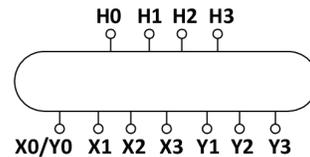
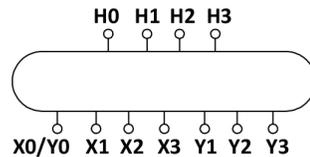
8. One inch filling plug with schrader valve.
9. Pressure vacuum gauge.
10. Liquid level gauge.
11. Dial type thermometer with dual alarm contacts.
12. Externally operated no-load tapchanger padlockable in any position.
13. Diagrammatic corrosion resistant nameplate.
14. Two each stainless steel ground pads, one on back side of tank.
15. Two inch drain valve with oil sampling device.
16. Transformer base.
17. Transformer filled with non-p.C.B. Mineral oil at time of manufacture.
18. Externally operated no-load delta-wye switch.
19. Externally operated no-load dual voltage selector switch.
20. Provisions for jacking.
21. Fork truck lifting provisions.
22. Bottom of transformer undercoated to prevent corrosion.
23. 3" Square tubing protective cage.
24. All alarm contacts wired to terminal strip inside nema 4 control box.
25. Gas sampler valve.
26. Paint rental - white.



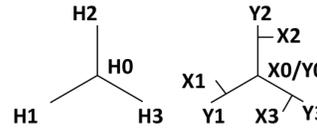
Portable Multi-Voltage 3500kVA Transformer

SIMPLEX®

S/N:	AS ASSIGNED	TYPE :	CZ	MFG DATE :	
kVA :	3500	65°C RISE	5.75% IMP	85 °C	
INSULATING LIQUID	MINERAL OIL	"NON-PCB."	780 GAL		
THREE PHASE	CLASS - ONAN	60 HERTZ	INST BOOK V-100		
VOLTAGE RATING	2400 DELTA X 7200 DELTA - 480Y/277 X 600Y/346 4160GRDY/2400 X 12470GRDY/7200 - 480Y/277 X 600Y/346				
BIL - H.V /L.V	95kV / 30 kV	CONDUCTOR MAT:	H.V/L.V - AL/AL		



30° DISP



0° DISP

DELTA HIGH VOLTAGE CONNECTIONS				
VOLTS	AMP	T.C ON	DELTA-WYE SWITCH ON	DUAL VOLTAGE SWITCH ON
2400	842	D	1	1
8320	243	A	1	2
7970	254	B	1	2
7620	265	C	1	2
7200	281	D	1	2
6928	292	E	1	2

WYE HIGH VOLTAGE CONNECTIONS				
VOLTS	AMP	T.C ON	DELTA-WYE SWITCH ON	DUAL VOLTAGE SWITCH ON
4160Y	486	D	2	1
14400Y	140	A	2	2
13800Y	146	B	2	2
13200Y	153	C	2	2
12470Y	162	D	2	2
12000Y	168	E	2	2

CAUTION: TAP CHANGER MUST BE ON D POSITION FOR 2400 VOLTS

CAUTION: TAP CHANGER MUST BE ON D POSITION FOR 4160Y VOLTS

NOTE: H0 AND X0 BUSHING MUST BE SOLIDLY GROUNDED WHEN THE DELTA - WYE SWITCH IS IN POSITION 2 (GROUNDED Y)

NOTE: WHEN GRDY VOLTAGE IS USED ON DELTA FEED, DROP THE NEUTRAL AT THE HIGH VOLTAGE SIDE OF TRANSFORMER. CONNECT H1,H2 AND H3 TO THE DELTA SYSTEM.

MAX OPERATING PRESSURE OF LIQUID PRESERVATION SYSTEM 7.5 LBF/IN² POSITIVE AND 5 LBF/IN² NEGATIVE.

CORE AND COIL **7845 LBS**

TANK & FITTINGS **5305 LBS**

TANK DESIGNED FOR 12LBF/IN² VACUUM FILLING LIQUID LEVEL BELOW TOP SURFACE OF THE HIGHEST POINT OF THE HIGHEST MANHOLE FLANGE AT 25°C 6.56 INCHES.

LIQUID **5850 LBS**

TOTAL MASS **19000 LBS**

LIQUID LEVEL CHANGES 0.45 INCHES/10°C CHANGE IN LIQUID LEVEL TEMPERATURE.

UNTANKING MASS (HEAVIEST PIECE) **7845 LBS**

CONTAINS NO DETECTABLE LEVEL OF PCB (LESS THAN 2 PPM) AT THE TIME OF MANUFACTURE

Conductors

Flexible tin-coated soft annealed bunch stranded copper meeting ASTM B-33

Conductor Shield

Combination semi-conducting tape and/or extruded semiconductive thermosetting material

Insulation Shield

Tin-coated copper braid applied over a semiconductive tape (5-15kV)

Insulation

Heat, moisture and ozone resisting 90°C Ethylene-Propylene rubber (EPR) meeting ICEA S-75-381/NEMA WC58

Jacket

CPE meeting ICEA S-75-381/NEMA WC58. Consult factory for availability of other jacket materials.

Identification

Cable shall be surface printed showing manufacturer, size, voltage rating, type and temperature rating



Application

These single conductor portable power cables are extremely flexible and specifically designed for use on mobile substation equipment. The Type SH cable is often necessary for supplying power while replacing damaged utility poles or during routine maintenance of substations.

Features

- Extremely flexible stranding for ease of bending
- The conductor shield is bonded to the insulation – providing easy, clean stripping
- Jacket is heat, oil, flame and chemical resistant
- Continuous conductor temperature 90°C
- Jackets available in voltage colors, yellow (5 & 8kV), orange (15kV), red (25 & 35kV). Consult factory for availability of other colors.

Ratings & Approvals

- ASTM B-33: Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes
- ICEA S-75-381/NEMA WC-58: Portable and Power Feeder Cables for Use in Mines and Similar Applications

Type SH Single Conductor
15kV Class • 90°C



Buy It Connectorized!

Factory installed terminations and assemblies from SOS help lower your overall connectivity costs.

- Lugs
- Couplers
- Loadbreak Elbows
- Rain Shields

15kV Single Conductor Portable Power Cable – Type SH

Part No. 37-550-	Size AWG/kcmil	Minimum Wires per Conductor	Nominal Insulation Thickness in.	Nominal Jacket Thickness in.	Nominal Outside Diameter in.	Approx. Weight lbs. per 1,000 ft.	Ampacity 90°C
016	2	259	.210	.155	1.203	881	195
017	1/0	266	.210	.155	1.320	1147	260
018	2/0	323	.210	.155	1.350	1226	300
020	4/0	532	.210	.170	1.497	1594	400
021	250	627	.210	.170	1.547	1758	445
009	350	888	.210	.190	1.765	2364	550
024	500	1221	.210	.190	1.900	2937	685



Fully User Customizable Main Window

Sizes, colors, window placement, graphs and meters displayed can all be user adjusted.

Simplex AutoTest Software delivers full automation of generator load testing when applied with a load bank system equipped with AutoTest hardware. Simplex AutoTest provides user-definable automated load-test routines, pass-fail analysis, data collection and report generation. Simplex designed and developed the AutoTest Software system specifically for OEM production line test cell use. AutoTest is equally applicable to field testing, performance-proving, commissioning and acceptance of generator sets. AutoTest is intended for use with Simplex resistive and resistive/reactive load banks, either as new equipment or as a field upgrade. AutoTest can also be applied to other brands of load banks when these load banks are equipped with AutoTest hardware.

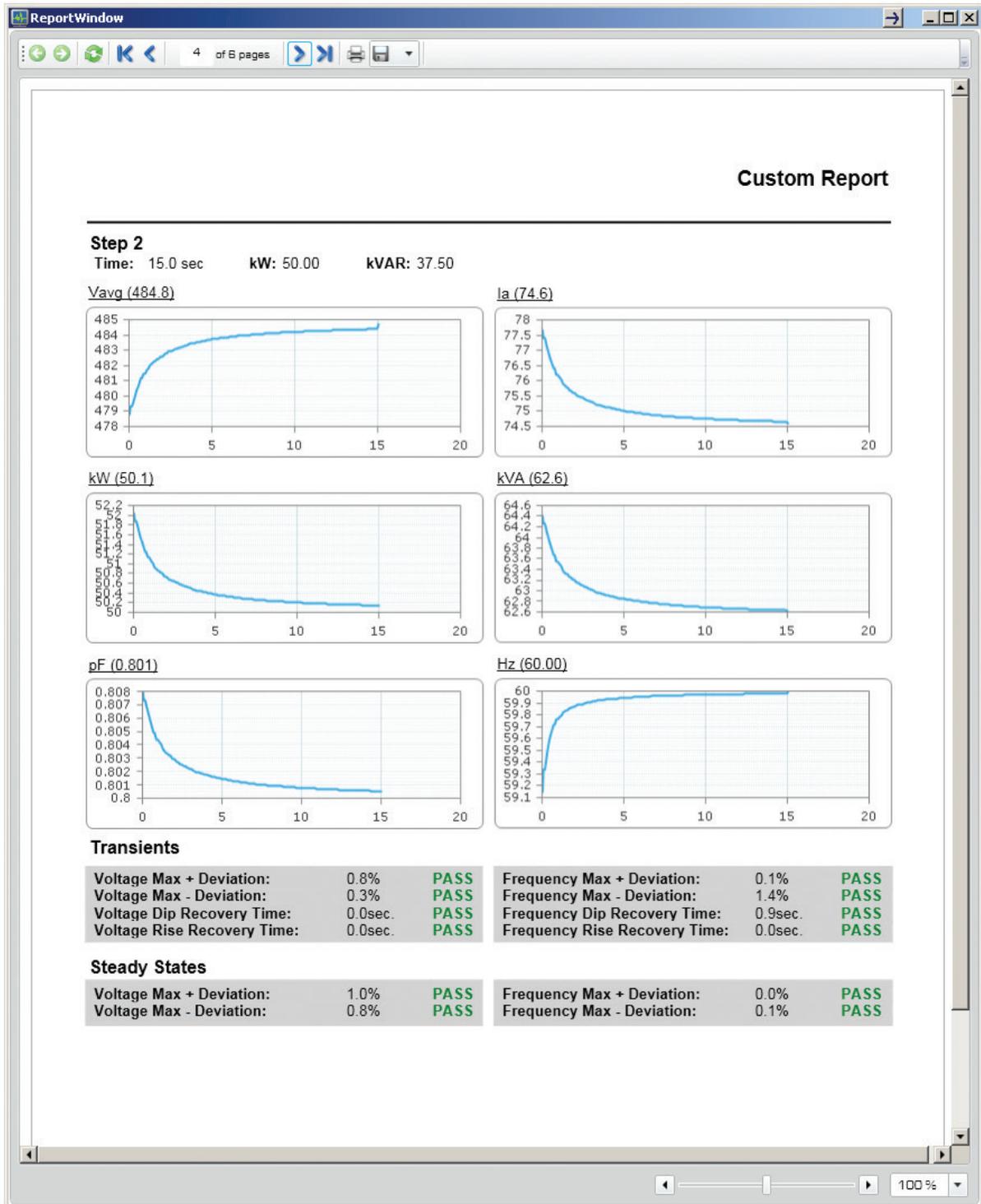
AutoTest runs under Windows XP or Windows 7. AutoTest communicates with the load bank over a dedicated Ethernet system.

AutoTest can be user configured for automated test per specific generator rating, model, serial number or bar-code scan. Test routines can be user defined as KW versus time, KW @ power factor versus time, percent load versus time, etc. Each routine can be saved to memory. Pass-fail performance criteria can be pre-set and saved as either global set points or as specific generator settings. Typical pass-fail criteria are voltage error and frequency error under transient and steady-state loads. Full manual load control is also possible with loads entered as direct entries, as percents, as analog mimic panel switches, or other user configurable interface.

The AutoTest operating screen presents high accuracy digital and analog capture and display of voltage, amperes, frequency, KW, KVAR, power factor. Running time and accumulated time, KW/KVAR-hours, and harmonic analysis are also available.

Engine data can be collected as well from appropriate network devices. This data can be integrated for pass-fail analysis, displayed on the AutoTest main operating screen and reported in the test documentation.

AutoTest can be networked to central management systems and data collection systems for display of values and collection of data. AutoTest equipped load banks can be networked to parallel individual cells to form a larger virtual test cell.



Report Tool – Fully User Customizable Report Generation

Data fields, graphs, pass fail information can be added or removed from the report – Saves to PDF, Excel, etc.

Sample Report

Test Information

Test Date:	Thursday, November 17, 2011	Engineer:	John Smith	Bay:	Load Test Bay 1
Customer:	Acme	Job #:	12345-67-89		

Genset

Model: abc123 **Series:** 123

Rating

kW:	300.00	kVA:	400.00	Volts L-N:	277.00
Volts L-L:	480.00	Amps:	480.00	PF:	0.800
Phase:	3	Hz:	60.00	RPM:	1800.00

Engine

Manufacturer:	ABC123	Serial #:	98765-43-21	Model:	123456
Fuel Type:	Diesel	Governor:	DEF456	Controller:	HIJ789

Generator

Manufacturer:	Marathon Electric	Serial #:	654321	Model:	123
Connection:	Delta	Wires:	Other	Leads:	3

Test Settings

Transients

Voltage Max + Deviation:	15.00%	Frequency Max + Deviation:	15.00%
Voltage Max - Deviation:	-5.00%	Frequency Max - Deviation:	-5.00%
Voltage Dip Recovery Time:	5.00 sec.	Frequency Dip Recovery Time:	5.00 sec.
Voltage Rise Recovery Time:	5.00 sec.	Frequency Rise Recovery Time:	5.00 sec.

Steady State

Voltage Max + Deviation:	2.00%	Frequency Max + Deviation:	0.50%
Voltage Max - Deviation:	-2.00%	Frequency Max - Deviation:	-0.50%

Don't See What You Need?

SIMPLEX®

Simplex will customize or build-to-rent and more.

If you can imagine it, we can **Build-to-Rent**.



- High Voltage DC Load Banks
- Capacitive Load Banks
- Aerospace Applications
- Data Acquisition and Networking Requirements
- Automation
- Voltage and Frequency Regulation
- Wind Farm Testing
- Naval Testing
- And More

