

LOAD BANKS WITH THE DIGITAL SOLUTION

# LOADTEC

LOAD TECHNOLOGY, INC

POWER TESTING & DATA ACQUISITION SYSTEMS

LOAD BANK TYPE

CONTAINERIZED  
2000-3750 KW  
DUAL VOLTAGE

- ▶ 20' ISO CONTAINER CONFIGURATION
- ▶ ISO 1CC Size
- ▶ 20' L x 8' W x 9'6" H (NOMINAL)
- ▶ PURPOSE BUILT STRUCTURE
- ▶ NOT A MODIFIED SHIPPING CONTAINER
- ▶ ALL STEEL CONSTRUCTION
- ▶ NO WOOD FLOORS
- ▶ POLYURETHANE UV RESISTANT PAINT
- ▶ WHITE FINISHED COLOR
- ▶ ALL OPENINGS WITH DOORS
- ▶ DOUBLE SEAL "SEA LOCK GASKETS"
- ▶ CAM-LEVER DOOR LATCHES
- ▶ ALL DOORS W/ PADLOCK PROVISIONS
- ▶ DOORS W/ HYDRAULIC POSITIONERS
- ▶ EASY MAINTENANCE ACCESS
- ▶ INTERIOR MAINTENANCE LIGHTING
- ▶ INTERIOR POWER OUTLETS
- ▶ INTERIOR SAFELY SHIELDING
- ▶ 3 YEAR RESISTAR® LTD WARRANTY



- ▶ COMPREHENSIVE 0.8PF TEST LOAD
- ▶ DIGITAL CONTROL SYSTEM
- ▶ INTEGRATED METERING
- ▶ DETACHABLE PORTABLE OIP
- ▶ OIP TOUCHSCREEN OPERATOR
- ▶ ENTER VALUE FOR LOAD ADJUST
- ▶ ENTER KW & PF TO ADJUST LOAD
- ▶ PRESET LOAD % ADJUSTS
- ▶ 5kW ADJUSTMENT RESOLUTION
- ▶ UPGRADE OPERATION WITH FIRMWARE
- ▶ NETWORK FOR SINGLE CNTRL PT†



PORTABLE OIP PANEL

- ▶ WINDOWS® CONTROL SOFTWARE†
- ▶ INTEGRAL DATA LOGGING†
- ▶ HIGH SPEED RESPONSE CAPTURE†
- ▶ ETHERNET-TCP/IP INTERFACE†
- ▶ LABVIEW® INTEGRATION†

**LOADTEC Load Banks are the most advanced power testing systems available.**

**APPLICATION:** The units provide a self contained adjustable load for testing generators, UPS's & sources of varying kilowatt and voltage ratings. Typical users are generator set & electrical power equipment manufacturers. Other users are assemblers and installers to provide performance verification of their equipment. The units are transportable to provide a complete test system.

**CONTROL:** The units are controlled by an advanced dual processor embedded controller with integrated metering. Operator control is by a touch screen OIP with a color graphical LCD display. Upgrade to the latest control features with just a firmware upload. The units can be networked with an optional external controller to create a larger system with single point control.

**RESISTAR® LOAD RESISTOR:** The Resistar® is designed specifically for high density applications. The resistors are terminated and supported by ceramic components and stainless steel terminations. They are mounted in small trays that are easily removed and serviced by a single individual. The Resistar® has a 3 year warranty. They are conservatively designed so NO COOL DOWN is required.

**LOAD INDUCTORS:** The load inductors are non-saturating iron core type. The inductors are copper wound with a very low Q Factor and impose a harmonic distortion of less than 0.5%. For easy maintenance, the inductors are installed in trays that are removable from the container exterior.

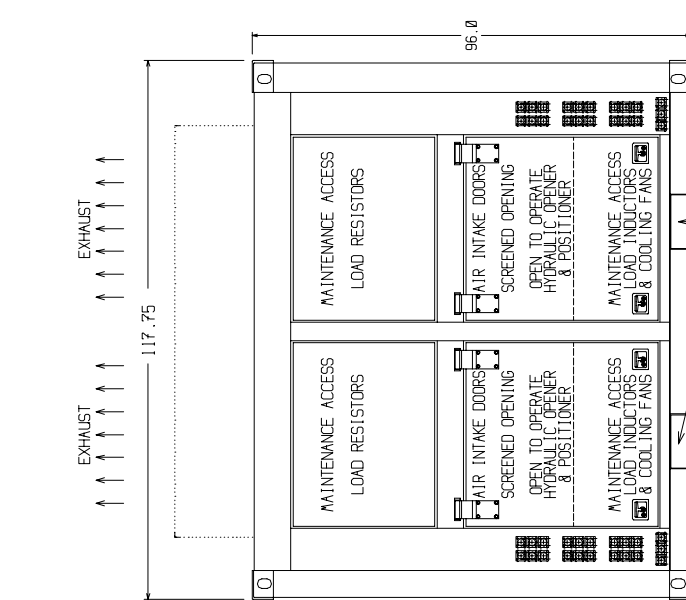
**▶ GENERAL SPECIFICATION**

- ▶ **RATINGS:** >100% load guaranteed at rated voltage
- ▶ **TOLERANCE:** ±5% overall, ±3% balance
- ▶ **AMBIENT:** -20°F/-30°C to 120°F/50°C
- ▶ **ALTITUDE:** 4000 Ft. / 1200 M
- ▶ **ENCLOSURE:** ISO Container 688 Standard
- ▶ **SIZE:** 1CC – ISO 688 Standard
- ▶ **CONSTRUCTION:** Purpose Built(not a modified container)
- ▶ **STORAGE:** Moisture tight for storage & transportation
- ▶ **DOOR:** All double sealed gasketed with cam-lever pad-lockable door latches.
- ▶ **LOUVER:** Resistive ventilation opening provided with stainless guards and louvers
- ▶ **PAINT:**
  - ▶ **PREPARATION:** SSPC Surface Prep. Std. #SP1
  - ▶ **PRIMER:** Butyl acid etching
  - ▶ **FINISH:** UV Resistant High Solid Polyurethane
- ▶ **LOAD RESISTORS:** RESISTAR® - Power Resistor
- ▶ **LOAD INDUCTORS:** Iron Core, VPI 220°C Insulation 0.5% Max. Harmonic Distortion
- ▶ **CONTROL POWER SOURCE:** Switch Selectable from the test source or external source
- ▶ **COOLING:** Forced air cooled by air foil propeller(s)
- ▶ **METERING:** VM,AM,FM,KW,PF,KVA,KVAR,Rotation
- ▶ **ALARMS:** Air Flow,(4)Temperatures, OV<sub>LOAD</sub>, UF<sub>LOAD</sub>, OV/UV<sub>CNTRL</sub>, UF<sub>CNTRL</sub>, Cooling Motor Overload
- ▶ **LOAD PROTECTION:** Load sections individually fused
- ▶ **LOAD CONTROL:** High duty cycle magnetic contactors
- ▶ **MANUALS:** (2) w/Drawings, BOM & operator instructions

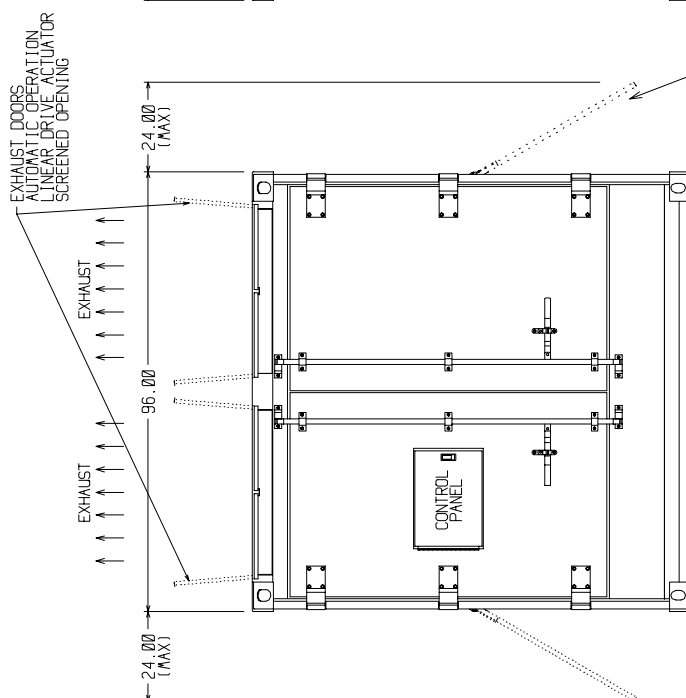
MODEL	PART NUMBER	RATINGS			LOAD ADJUST (NOMINAL)	COOLING MOTOR RATING	DIMENSIONS	WEIGHT
		LOAD KW/KVA	POWER FACTOR	VOLTAGE ø / HZ				
OCL2	-2000.8-480DD2	2000KW 2500KVA	0.8PF	240&480V 3ø 60HZ	5 KW	208-240V & 416-480V 3Ø 60HZ	238.5”L 96.0”D 102.0”H	22,500 LBS
	-2500.8-480DD2	2500KW 3125KVA						25,000 LBS
	-3000.8-480DD2	3000KW 3750KVA						30,000 LBS
	-3750.8-480DD2	3750KW 4688KVA						35,000 LBS
	-2000.8-415YD2	2000KW 2500KVA	0.8PF	240&415V 3ø 50&60HZ	5 KW	208-240V & 380-415V 3Ø 50&60HZ w/Freq. Cntrlr	238.5”L 96.0”D 102.0”H	22,500 LBS
	-2500.8-415YD2	2500KW 3125KVA						25,000 LBS
	-3000.8-415YD2	3000KW 3750KVA						30,000 LBS
	-3750.8-415YD2	3750KW 4688KVA						35,000 LBS
	-2000.8-600DY2	2000KW 2500KVA	0.8PF	480&600V 3ø 60HZ	5 KW	450-480V & 575-600V 3Ø 60HZ	238.5”L 96.0”D 102.0”H	22,500 LBS
	-2500.8-600DY2	2500KW 3125KVA						25,000 LBS
	-3000.8-600DY2	3000KW 3750KVA						30,000 LBS
	-3750.8-600DY2	3750KW 4688KVA						35,000 LBS

**▶ OPTIONS**

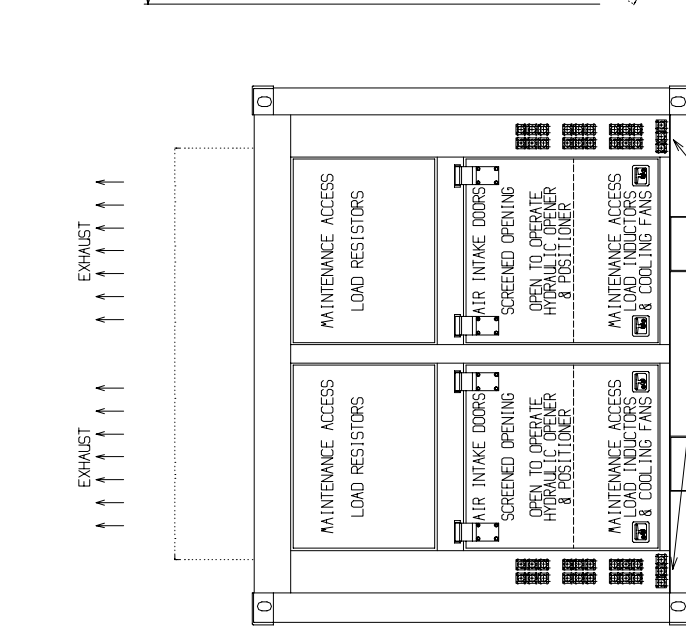
- ▶ **OPT01: LOADVIEW® SOFTWARE:** Load Bank Control, Metering & Data Logging Software for the Windows® Computer O.S.
- ▶ **OPT02: LOADVIEW® SOFTWARE HSR MODULE:** (requires option #OPT01)  
This is an additional software module that is installed with the basic LoadView® software to provide High Speed Response data for the test source. Provides Min/Max voltage, frequency & time to return to nominal with graphing.
- ▶ **OPT03: CAMLOCK RECEPTACLES:** Crouse-Hinds Series 1016 male quick connect receptacles are installed and bused to the main load bus to provide multiple 400 amp quick connects for the load connection cables.



SIDE VIEW  
TYPICAL BOTH SIDES



END VIEW  
POWER CONTROL ACCESS  
(TYPICAL - BOTH ENDS)



SIDE VIEW  
TYPICAL BOTH SIDES

NOTES

- CONSTRUCTION : 10' ISO: 1D
- PAINT : WHITE
- DIMENSIONS : INCHES
- WEIGHT : 25,000 LBS

**LOADTEC** LOAD TECHNOLOGY, INC.  
4225 Production Ct., Las Vegas, NV 89115

SCALE: 0-0036 APPROVED DRAWN BY: DPB

DATE: 12/10/06 REVISED: 00/00/00

OC1 - 10' (1D) ISO CONTAINER LOAD BANK  
ELEVATION - PROPOSED CONCEPT

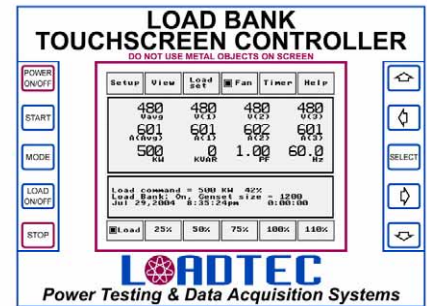
REFERENCE: DRAWING No. OCL102-01

# TOUCH COMMAND

## OPERATOR INTERFACE PANEL

## TOUCH SCREEN CONTROLLER

### DIGITAL CONTROL FOR EASY USE OF POWERFUL FEATURES



#### ▶ FEATURES:

- ▶ Dual Processor embedded control system
- ▶ No. 1 processor dedicated to control & data display
- ▶ No. 2 processor dedicated to metering & data acquisition
- ▶ Load Bank operation made easy by software control
- ▶ Operator guided by graphical Transflective LCD display
- ▶ Touch the KW value & controller queries for new load value
- ▶ Full Metering & status continuously displayed
- ▶ OIP shock mounted in magnetic mount
- ▶ OIP sources its power from the main system, no battery

#### ▶ PROTECTIVE SYSTEM:

- ▶ The embedded controller provides a comprehensive protection system
- ▶ All faults are displayed and recorded in an operation log
- ▶ Faults will shutdown or disconnect the unit as required
- ▶ Temperature and voltage faults are two stage to warn before shutdown
- ▶ Fan operation & air flow are monitored
- ▶ Exhaust, intake and internal temperatures are monitored
- ▶ Load over voltage is monitored in two stages for pre-shutdown alarm
- ▶ Control voltage is monitored for over & under voltage in two stages
- ▶ Control frequency is monitored for over & under rating condition
- ▶ Cooling fan motor overload is monitored and alarmed
- ▶ Fuses are provided on each control and load circuit

#### ▶ CONTROL FUNCTIONS:

- ▶ Control power: On-Off
- ▶ Automatic fan start for voltage & rotation
- ▶ Direct KW or Amperage load command input
- ▶ Direct PF command input (optional resistive/inductive units)
- ▶ Jog load up & down adjustment by programmable value
- ▶ (5)Programmable step buttons by % of test source rating
- ▶ Load step / Fan compensation correction variables
- ▶ (16)Stage Programmable Test Sequencer
- ▶ Real time clock and Start/Stop timer

#### ▶ ADVANTAGES:

- ▶ Digital Data Communication
- ▶ Network Multiple units to create a large system
- ▶ Upgrade to the latest feature or operation with software
- ▶ The digital controller makes the unit a Testing Platform
- ▶ Standard portable remote control to 500 ft from unit
- ▶ Multiple OIP controllers can be connected
- ▶ RS232,RS422 & RS485 ports for custom configurations
- ▶ TCP/IP ready
- ▶ Integrate to third party control systems like Labview®



#### ▶ METERING:

- ▶ Metering is an integral part of the embedded controller
- ▶ Dedicated processor for metering and data acquisition
- ▶ Voltmeter: L1-2, L2-3, L3-1, Average
- ▶ Ammeter: L1, L2, L3, Average
- ▶ Frequency: 45-440Hz.
- ▶ Kilowatts, KVA, Kilovars, Power Factor, Rotation
- ▶ Accuracy:  $\pm 0.5\%$ ,  $\pm 1c$
- ▶ 8kHz sampling, RMS values past the 3<sup>rd</sup> Harmonic
- ▶ Calibration routine to match reference meters

#### ▶ Network Control Function †

- ▶ Provides network TCP/IP control for (8) Load Banks
- ▶ Resistive, Inductive & Resistive/Reactive units can be connected
- ▶ The controller automatically configures when each unit is connected
- ▶ The individual units are connected using common Network Switch
- ▶ All connected units' functions are combined for common control
- ▶ The controller verifies that each unit has the same phase connections
- ▶ The control of the system can be by Touch Screen OIP
- ▶ The LoadView Software can also be interfaced to the system



## LOAD BANKS WITH THE DIGITAL SOLUTION

† Designates Optional Equipment or Feature Information

Subject to Change without Notice

Representative:

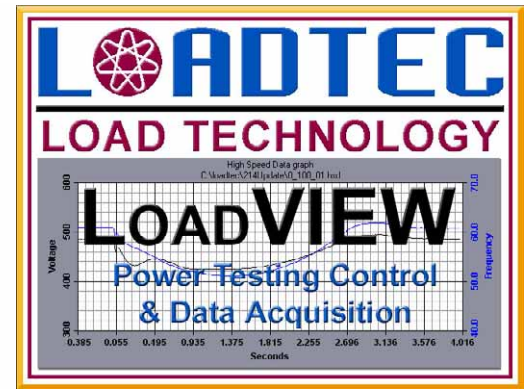
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# LOADVIEW®

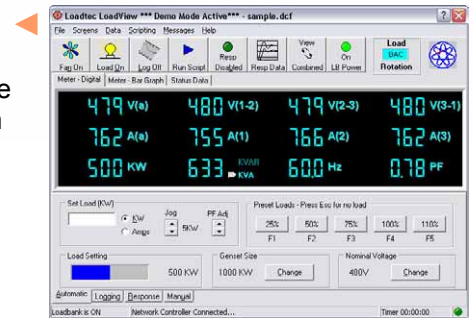
## Load Bank Control Software

BRINGING FULL LOAD BANK CONTROL & DATA ACQUISITION TO THE POWER OF THE WINDOWS® OPERATING SYSTEM



### COMPLETE SYSTEM CONTROL: ALL OIP FUNCTIONS PLUS MORE

- ▶ Fan Start / Stop: Single Button Control
- ▶ Automatic Fan Voltage Selection: Motor automatically configured for voltage
- ▶ Automatic Fan Rotation Selection: Fan always starts in the correct direction
- ▶ Load Select by Entering kW value or Amperage value
- ▶ Automatic Step Value Adjustment based on applied voltage
- ▶ (5) Assignable Load Select Percentage Buttons
- ▶ Step Jog: Assign value for one button load increase or decrease
- ▶ Manual Load Step Override: Select load steps directly
- ▶ Status of all Alarm and Operating Parameters

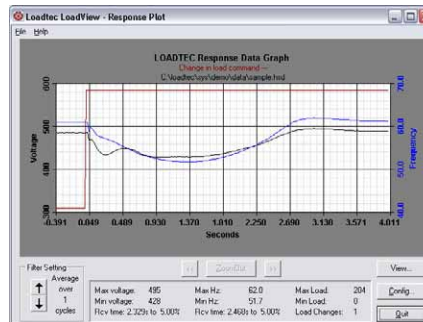


### FULL METERING

- ▶ Voltage:  $V_{AVG}$ ,  $V_{L1-2}$ ,  $V_{L2-3}$ ,  $V_{L3-1}$
- ▶ Amperage:  $A_{AVG}$ ,  $A_{L1}$ ,  $A_{L2}$ ,  $A_{L3}$
- ▶ Frequency: 45-440Hz.
- ▶ Kilowatt: Average
- ▶ Kilovars: Average
- ▶ KVA: Average
- ▶ P. F.: 0.50Lag-1.00-0.50 Lead
- ▶ Rotation: ABC,BAC
- ▶ Accuracy:  $\pm 0.5\%$ ,  $\pm 1c$
- ▶ All values are true R.M.S.
- ▶ Display Numerically or Bar Graph
- ▶ Bar Graph with Range Colors
- ▶ Metering automatically rescaled
- ▶ Calibration routine
- ▶ High Speed Sampling Rate: 8KHz
- ▶ Metering Accurate past 3<sup>rd</sup> Harmonic
- ▶ Screen Refresh >3x / Second
- ▶ Sums connected units when networked†

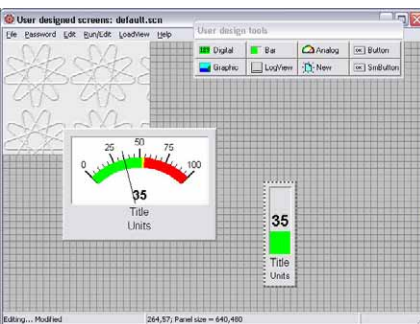
### DATA LOGGING

- ▶ Record the Test
- ▶ Metering Values Recorded
- ▶ (8) User-Definable Fields/Values
- ▶ Records all Values Automatically
- ▶ Select Values to Print after test
- ▶ Different Values for different reports
- ▶ Set Record interval: 1sec – 999min
- ▶ Configurable Report Generator
- ▶ Export Data to Excel®



### HIGH SPEED RESPONSE(HSR)†

- ▶ Captures the source response
- ▶ High Speed Sampling: 8KHz
- ▶ Pre-Event Data: up to 240Cycles
- ▶ Event Data: 120 Sec. @ 60Hz.
- ▶ Max. & Min. Voltage Values
- ▶ Max. & Min. Frequency Values
- ▶ Adjustable response % to Nominal
- ▶ Tabular Data Points Viewable
- ▶ Tabular Data Exportable



### USER SCREENS

- ▶ Develop Custom Control Screens
- ▶ All Functions & Data Assignable
- ▶ Meters: Numeric, Analog, Bar
- ▶ Buttons: Control, Indicator, Graphic
- ▶ Sounds: Custom sound elements
- ▶ Graphics: Custom BMP elements
- ▶ Colors: Custom color all elements
- ▶ Number of Screens unlimited
- ▶ Call new screen from any screen

### SCRIPTING

- ▶ Automate complete test
- ▶ All functions controllable
- ▶ Develop Script as profile: % Load
- ▶ Useable with single unit or network
- ▶ Use Script to assure full test
- ▶ Use Script to assure identical tests
- ▶ Set Data Logging to record test
- ▶ Set HSR to capture source response
- ▶ Save Data to File

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