

LOAD BANKS WITH THE DIGITAL SOLUTION

LOADTEC

LOAD TECHNOLOGY, INC

POWER TESTING & DATA ACQUISITION SYSTEMS

LOAD BANK TYPE

TRAILER PORTABLE
455 – 3000 KW
DUAL VOLTAGE



- ▶ COMPLETE SYSTEM W/CABLE REELS
- ▶ CORNER STABILIZATION JACKS
- ▶ NEMA 3R - WEATHERPROOF
- ▶ LOCKABLE PROTECTIVE DOORS-ALL OPENINGS
- ▶ STRUCTURE STEEL TRAILER CONSTRUCTION
- ▶ TUBE STEEL DECK FRAME & STEEL DECK
- ▶ MEETS D.O.T. REQUIREMENTS
- ▶ PAINTED GALVANIZED STEEL ENCLOSURE
- ▶ POLYURETHANE UV RESISTANT PAINT
- ▶ SAFETY CHAINS WITH BREAK-AWAY BRAKES
- ▶ CABLE REELS W/GEAR REDUCTION CRANK
- ▶ 3 YEAR RESISTAR[®] LIMITED WARRANTY



- ▶ DIGITAL CONTROL SYSTEM
- ▶ INTEGRAL METERING
- ▶ DIGITAL OPERATOR INTERFACE
- ▶ ENTER VALUE FOR LOAD ADJUST
- ▶ PRESET LOAD % ADJUSTS
- ▶ 5KW ADJUSTMENT RESOLUTION
- ▶ UPGRADE WITH FIRMWARE
- ▶ NETWORK FOR SINGLE CNTRL PT†
- ▶ WINDOWS[®] CONTROL SOFTWARE†
- ▶ PORTABLE OIP-DIGITAL COMM
- ▶ HIGH SPEED RESPONSE CAPTURE†
- ▶ INTEGRAL DATA LOGGING†
- ▶ LABVIEW[®] INTEGRATION†



OIP PANEL

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 easily transported and moved on site 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.

▶ GENERAL SPECIFICATION

- ▶ **RATINGS:** >100% load guaranteed at rated voltage
- ▶ **TOLERANCE:** ±5% overall, ±2% balance
- ▶ **AMBIENT:** -20°F/-30°C to 120°F/50°C
- ▶ **ALTITUDE:** 4000 Ft. / 1200 M
- ▶ **ENCLOSURE:** Load Bank - Nema 3R
- ▶ **CABLE REELS:** Manual Operator – 750ft each
- ▶ **TRAILER:** Structural Steel construction
- ▶ **BRAKES:** Electric w/Break-away switch
- ▶ **CONSTRUCTION:** Galvanized Steel (LB Enclosure)
- ▶ **PAINT:**
 - ▶ **PREPARATION:** SSPC Surface Prep. Std. #SP1
 - ▶ **PRIMER:** Epoxy
 - ▶ **FINISH:** UV Resistant High Solid Polyurethane
- ▶ **LOAD RESISTORS:** RESISTAR® - Power Resistor
- ▶ **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,(3)Temperatures, OV_{LOAD}, UF_{LOAD}, OV/UV_{CNTRL}, UF_{CNTRL}, 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
		240&480V 3Ø	208&416V 3Ø	240V 1Ø				
OTM2	-0455.1-480DD2	455KW	340KW	300KW	5 KW	208-240V, 3Ø 416-480V, 3Ø	144" L 78" H 72" W	4000 GVW
	-0515.1-480DD2	515KW	385KW	343KW				4000 GVW
OTM4	-0655.1-480DD2	655KW	490KW	435KW	5 KW	208-240V, 3Ø 416-480V, 3Ø	216" L 78" H 90" W	10000 GVW
	-0755.1-480DD2	755KW	566KW	500KW				10000 GVW
	-0855.1-480DD2	855KW	640KW	570KW				10000 GVW
OTL4	-1005.1-480DD2	1005KW	755KW	670KW	5 KW	208-240V, 3Ø 416-480V, 3Ø	216" L 78" H 90" W	12000 GVW
	-1205.1-480DD2	1205KW	90KW	800KW				12000 GVW
OTT3	-1505.1-480DD2	1505KW	1130KW	1000KW	5 KW	208-240V, 3Ø 416-480V, 3Ø	216" L 84" H 90" W	12000 GVW
OTLS	-2005.1-480DD2	2005KW	1500KW	1333KW	5 KW	208-240V, 3Ø 416-480V, 3Ø	288" L 102" H 96" W	16000 GVW
	-2505.1-480DD2	2505KW	1875KW	1670KW				16000 GVW
	-3005.1-480DD2	3005KW	2250KW	2000KW				16000 GVW

▶ OPTIONS

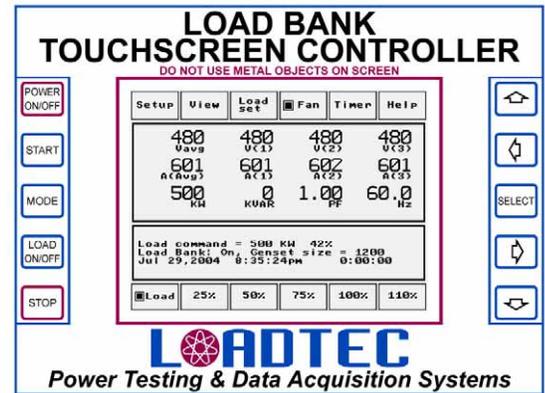
- ▶ **OPT01: LOADVIEW® SOFTWARE:** Load Bank Control, Metering & Data Logging Software for the Windows® Computer O.S.
- ▶ **OPT02: LOADVIEW® SOFTWARE HSR MODULE:** (requires option #OPT01)
This is an additional software module that is installed with the basic LoadView® software to provide High Speed 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.
- ▶ **OPT04: SURGE BRAKES:** Hydraulic surge brake with break-away actuator in lieu of the standard electric system
- ▶ **OPT05: SPARE TIRE:** under frame mounted spare tire with pad lockable mount
- ▶ **OPT06: MOTORIZED CABLE REELS:** (N.A. for Model OTLS) Motor operated cable reels in lieu of standard hand crank, 120VAC
- ▶ **OPT07: CABLE REELS SECURITY COVER:** Heavy Gauge pad lockable enclosure with hinged door to secure power cables
- ▶ **OPT08: SINGLE PHASE FAN:** (not available on Models OTL4 ,OTT3 or OTLS)
An electronic phase converter is installed and integrated with the control system to allow the 3Ø fan motor to operate at 240V, 1Ø. This soft starts the motor for small generator testing

TOUCHCOMMAND

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

▶ 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®

▶ 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

▶ 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 3rd Harmonic
- ▶ Calibration routine to match reference meters



▶ Network Controller Function †

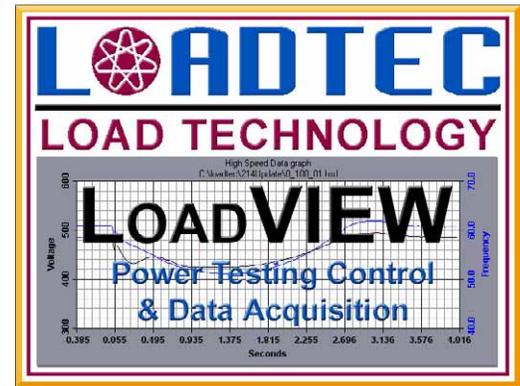
- ▶ Provides network TCP/IP control for (8) Load Banks
- ▶ Resistive, Inductive & Resistive/Reactive units can be connected
- ▶ The controller automatically configures when each unit is connected
- ▶ The individual units are connected using common Network Switch
- ▶ All connected units' functions are 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

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: 12Khz
- ▶ Metering Accurate past 3rd Harmonic
- ▶ Screen Refresh >3x / Second
- ▶ Sums connected units when networked†

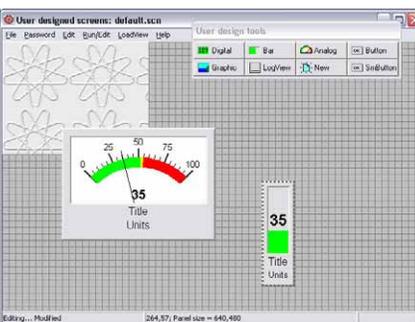
DATA LOGGING

- ▶ 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: 12KHz
- ▶ 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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