



POWER QUALITY & LOAD

50 kVA AUTOMATIC RESISTIVE LOAD BANK

PLC + HMI controlled industrial resistive load bank with automatic testing, live measurement, data logging and safety interlocks.



FRONT VIEW



REAR VIEW

50 kVA / 50 kW

RATED CAPACITY

415 V AC

3 PHASE, 4 WIRE

PLC + HMI

CONTROL SYSTEM

MODBUS + ETHERNET

COMMUNICATION

ENGINEERED FOR RELIABLE POWER.

Designed for controlled testing of DG sets, UPS systems, transformers, alternators and other AC power sources.

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Technical specification

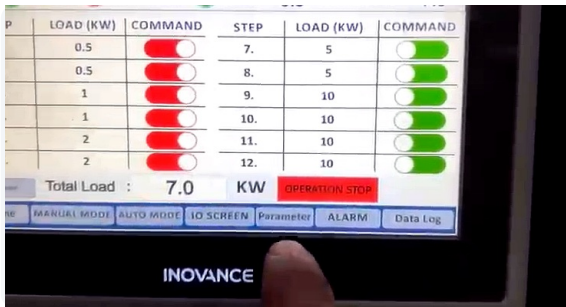
Key electrical, control, cooling and construction details of the load bank.

Product type	Automatic Resistive Load Bank
Rated capacity	50 kVA / 50 kW at unity power factor
Rated supply	415 V AC, 3 Phase, 4 Wire, 50 Hz
Load control	PLC controlled through HMI touch screen
Load switching	12 independently controlled load contactors / stages
Load-step allocation	As per final approved unit configuration
Power measurement	Modbus power meter with continuous HMI display
Operating modes	Manual, Automatic, Automatic Load Selection, Automatic Load Sequence, Load Cycling and Endurance Test
Cooling	Forced-air cooling with axial fan; bottom air intake and top air exhaust
Cooling interlock	Fan is started before load enable and continues after load removal for heater cooling
Safety devices	Emergency Stop, air-flow switch, temperature sensor, thermostat, electrical protection and PLC interlocks
Communication	PLC-HMI via Ethernet; power meter via Modbus RTU (RS-485); remote Ethernet monitoring optional
Data logging	Configurable sampling interval: 1 sec, 5 sec, 10 sec, 30 sec or 1 minute
Test report	Automatic test report data with CSV / Excel export and PDF where supported by HMI
Construction	Heavy-duty industrial powder-coated enclosure with locking castor wheels and lifting eyes
Applications	DG sets, UPS systems, transformers, alternators, inverters and other AC power sources

Manual & automatic operating modes

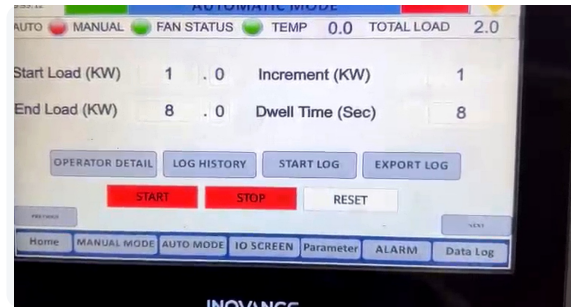
The PLC and HMI provide both direct operator control and programmable automatic testing.

MANUAL MODE



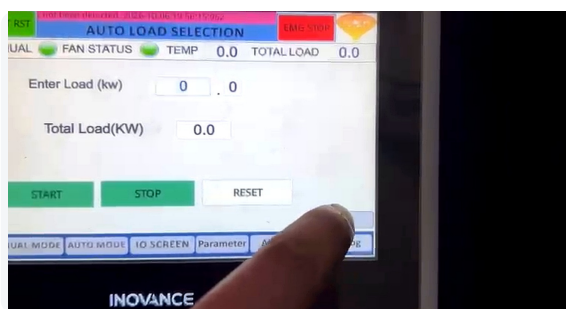
- Start fan and start test from HMI.
- Turn ON/OFF any individual load step.
- Observe live electrical parameters and applied load.
- Save test report.
- No automatic load sequence in Manual Mode.

AUTOMATIC MODE



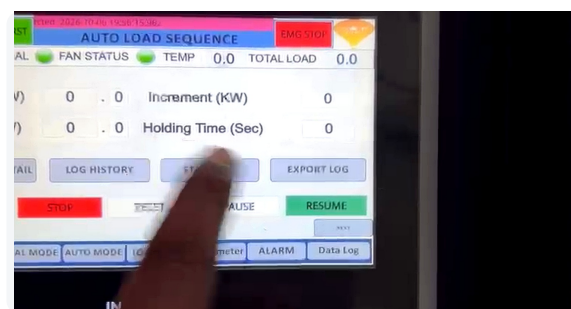
- Enter Start Load, End Load, Load Increment and Dwell Time.
- PLC automatically applies the load according to the entered settings.
- Automatic load increase, hold and unloading sequence.
- Start / Stop / Pause / Resume controls as provided on HMI.

AUTOMATIC LOAD SELECTION



- Enter the desired load value only.
- PLC determines the nearest possible load combination automatically.
- Logic minimizes contactor operation, maintains a balanced sequence and avoids unnecessary duplicate switching.

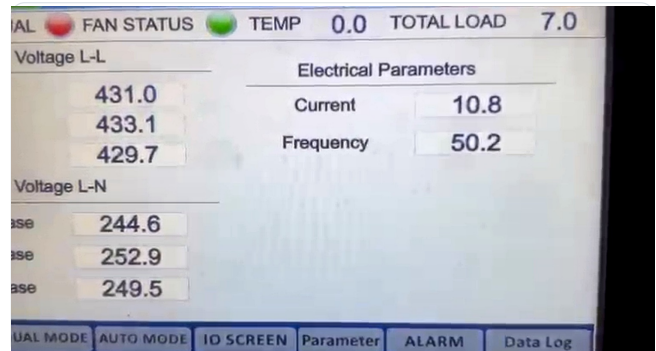
AUTOMATIC LOAD SEQUENCE



- Enter Starting Load, Ending Load, Increment and Holding Time.
- PLC steps through the programmed load profile automatically.
- Sequence stops after completing the programmed test.

Load cycling, endurance, measurement & reporting

Programmable tests support repeatable factory acceptance, commissioning and endurance trials.



LOAD CYCLING TEST

- Set required Load, ON Time, OFF Time and Number of Cycles.
- PLC repeats the ON/OFF cycle automatically until the programmed cycle count is completed.
- Cycle status and elapsed information are displayed on the HMI.

ENDURANCE TEST

- Enter Required Load and Test Duration.
- PLC maintains the selected load continuously for the test duration.
- HMI displays Elapsed Time and Remaining Time.
- Test data is available for report generation after completion.

FAN / COOLING SEQUENCE



ELECTRICAL MEASUREMENTS

- Voltage L-L
- Voltage L-N
- Current
- Frequency
- Active Power
- Apparent Power
- Reactive Power
- Power Factor
- Energy / kWh

DATA LOGGING

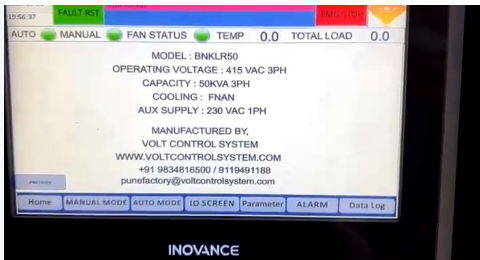
- Date
- Time
- Test Name
- Operator Name
- Voltage / Current
- Frequency / Power / PF
- Selected Load
- Temperature
- Alarm Status

TEST REPORT

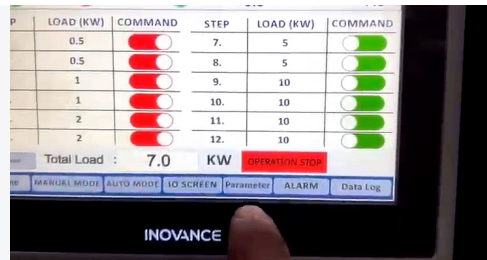
- Customer Name
- Project Name
- Serial Number
- Operator
- Start / End Time
- Duration
- Maximum Temperature
- Electrical values
- Load Applied / Result

HMI interface

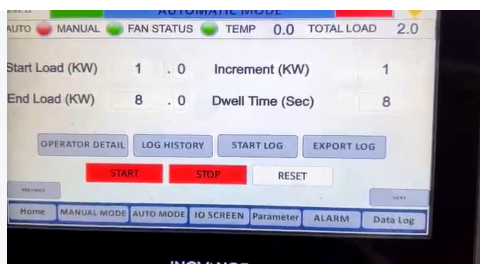
Actual HMI screens show operating modes, electrical parameters, load control, test functions and I/O status.



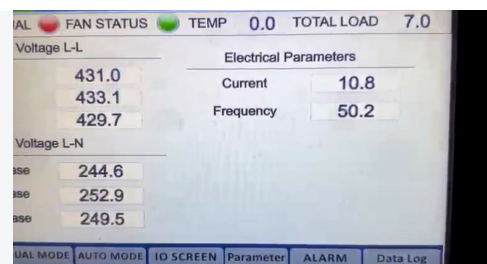
1. SYSTEM INFORMATION



2. MANUAL MODE



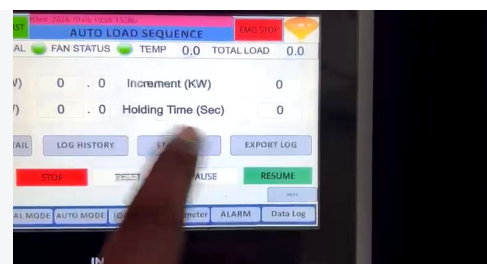
3. AUTOMATIC MODE



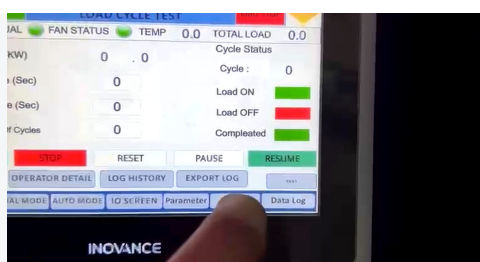
4. ELECTRICAL PARAMETERS



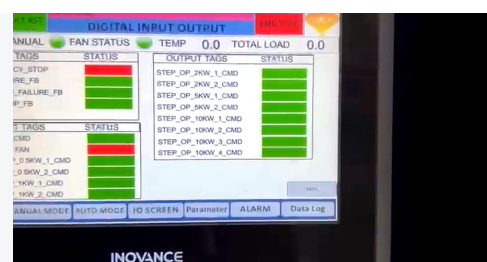
5. AUTOMATIC LOAD SELECTION



6. AUTOMATIC LOAD SEQUENCE



7. LOAD CYCLE TEST



8. DIGITAL I/O STATUS

Safety, alarms, settings & product views

Safety conditions override load commands and are displayed through the alarm and status system.

IMMEDIATE LOAD OFF

- Emergency Stop
- Fan Failure
- Air Flow Failure
- Over Temperature
- PLC Fault
- MCCB Trip
- Modbus Failure

WARNINGS / HISTORY

- High Temperature
- Door Open
- Low Voltage
- Communication Error
- Alarm list with Date, Time, Reset and History

PASSWORD-PROTECTED SETTINGS

- Fan Delay
- Temperature Limit
- Communication Settings
- Date & Time
- Operator Settings

COMMUNICATION

- PLC <-> HMI: Ethernet
- PLC <-> Power Meter: Modbus RTU (RS-485)
- Remote Monitoring: Ethernet TCP/IP (optional)
- Modbus TCP where configured



REAR / SIDE VIEW



REAR / SIDE VIEW



VOLT CONTROL SYSTEM

ENGINEERED FOR RELIABLE POWER.

Customized power-conditioning, conversion and load-testing solutions for industrial applications.

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