GPU Heat Load Air Emulator

Introducing the Air Heater Commissioning Load Bank Solution Model ACLB Emulator 60

OVERVIEW

Powerload is proud to introduce a breakthrough in load bank technology — a compact, high-performance rack level GPU simulator load bank unit designed to meet the rigorous demands of colocation data centres. Delivering consistent, reliable, and safe testing capacity, ensures that your infrastructure operates at peak performance with the highest levels of protection and operational control. The Model ACLB 60 is a specialised solution for data centre commissioning and testing that integrates seamlessly with existing cooling infrastructure. This comprehensive technical data sheet provides detailed specifications, including power ratings, control interfaces, and physical dimensions.

SYSTEM OVERVIEW AND SPECIFICATIONS

The Powerload Model ACLB 60 consists of up to 60kW resistive air heat load designed for operation indoors to simulate IT rack operation. Our standard layout comprises a total of 60kW of low delta T air heat load configured in a server rack format for maximum compatibility with existing data center infrastructure. This unit works in conjunction with our Liquid Cooled GPU 160kW units.

KEY FEATURES

- Up to maximum 60KW air heat load on a 0-100% control.
- Adjustable Pressure drop to simulate GPU
- Supply and Return temperature measurement
- Full trending and recording of all results.
- Controller enables networking of up to 240 liquid cooled load banks
- Robust steel enclosure with sturdy welded frame and heavy-duty casters for durability.
- Thyristor heater control

LOAD BANK FEATURES:

- PMW Zero-cross switching
- Optical isolation between input and output
- Fast switching < 25ms at 50HZ, 16.7 at 60HZ
- No moving parts → long service life
- Low EMI / RFI noise
- Compact design

ELECTRICAL SPECIFICATIONS

Parameter	Value / Range	Notes
Power Supply	400vac 50hz, max 20 kW x3	Input side
Supply Current	38.0 A per phase @ 400 V x3	Supply Current
Control Signal	0–10 V	Load demand
Air Flow Protection	Air Flow Switch 604X	Volt free contacts, 20–300 Pa (standard)
Over-Heat Protection	OHC5	Volt free contacts, max 16 A
Temperature Sensor	Thermistor Curve K	4.7 kΩ @ 25°C
Switching Device	SCR	For AC loads
Leakage Current	≤ 10 mA (Off-State)	Typical at 480 VAC
EMC Compliance	EN61326 / EN55011 / EN61000	EMC Compliance

MECHANICAL & ENVIRONMENTAL

Parameter	Value
Load Bank Capacity (kW)	60kW
Step Load Increment (kW)	3 x 20kW
Inlet / Outlet Temperature (°C)	Min inlet 18 degrees C / Maximum outlet 35 degrees C. Designed to meet 10 - 16 degrees DT
Max Air Capacity (kW)	60kW
Air Flow Rate (CMH)	Maximum air flow = 17928 CMH for 60kW
Power Connection Type (Socket/Amps rating)	4 x 32a 3PN+E
Dimensions of Load Bank (L × W × H)	L = 1500mm x W = 600mm x H = 2325mm
Temperature Sensor Make / Model	IFM
Control Interface (Modbus/BACnet)	RJ45 Ethernet over IP web browser Network connection to each 60kW load bank, simultaneous operation.
Master–Slave Control Logic	Master Only in each 60kW load bank
Delta T Range	10 -16 Degrees C

PROTECTIONS

- Overcurrent protection: external fast-acting semiconductor fuse or MCB
- Overtemperature protection: 90°C on Heat Sink

CERTIFICATIONS

- CE, UL, UKCA
- RoHS compliant

TECHNICAL DETAILS AND INTEGRATION

- This unit is to be used in conjunction with the LCLB 160 (as a master) which has a user-friendly LCD color controller displays full operation of the load bank. It supports TCP/IP Modbus communication, utilising an Ethernet-based wiring infrastructure for seamless connectivity with building management systems.

- The master control panel features power on/off functions, master load on/off management, and comprehensive alarm indicators for low flow, over-temperature, and overpressure conditions. An internal/external control power switch is provided, along with notification for remote mode and dual Ethernet connections. The integrated power meter displays AC 3-phase voltage and current, power (kW), frequency, and power factor.

- The power distribution system is designed to comply with all relevant EU and UK electrical codes and standards, including CE requirements. All connections are clearly labeled and secured to prevent accidental disconnection during operation.

CONSTRUCTION AND FINISH

The Powerload ACLB 60 is constructed using heavy gauge steel with a Charcoal colour powder coated finish. It is engineered for continuous indoor operation in data center environments. The sturdy welded frame and heavy-duty casters provide easy mobility without compromising durability or operational life. The high-quality powder coated finish with stainless steel impact protection frame ensures both aesthetic appeal and functional protection in industrial settings.

Initial Commissioning

Easily simulate progressive load increases to verify cooling system performance and stability under controlled conditions

Thermal testing

Conduct comprehensive heat load tests to identify potential cooling system weaknesses before production deployment

Performance Validation

Verify cooling capacity meets design specifications across various load profiles and environmental conditions

Ongoing Certification

Maintain regulatory compliance with periodic testing and documentation of cooling system performance.