

HACA415 Series 420KW – 1500KW Outdoor Rated 3 Phase AC Load Banks With Automatic and Manual Control



Features

- **FULLY AUTOMATIC STEP CONTROL**
- **ADJUSTABLE MANUAL CONTROL**
- **THREE PHASE OPERATION**
- **SAFETY ISOLATION CONTACTORS**
- **AUTO FAN CONTROL**
- **OUTDOOR OPERATION**
- **HIGH POWER**
- **FUSE PROTECTION**
- **GENERATOR WET STACKING REGULATION**
- **GENERATOR PROOF LOADING MAINTENANCE**
- **RENEWABLE EXPORT LOAD DUMP**
- **OPTIONAL REMOTE CONTROL PANEL**



The Hillstone HACA - series of automatic load banks offer a dual usage solution to on-site generator maintenance and operation issues, such as running the genset on low load which causes wet stacking of the diesel engine. The HACA can also be used to limit the amount of power exported to the grid from renewable power generation systems, such as Bio-Mass and Anaerobic Digestion Plants

HACA load banks incorporate force cooled high powered resistor elements, HRC fuse protection, automatic fan control, fan failure shut down and emergency stop push button, with micro-processor automatic control of multiple load steps via a 0-10V or 4-20mA signal from the generator output. On - site adjustment of the trip / regulation level and adjustment of the switching time is available via internal controls as detailed below:

AUTOMATIC CURRENT CONTROL SET POINT: Factory set point of approximately 60% of the automatic load regulation value. Defined as a current value the control system can be adjusted on site by the insertion or removal of 4 different orange links which make up 15 different preselected values. The load bank is factory set with all links inserted.

Using a combination of the 4 links any value, between approximately 16% and 60% are selectable of the full load of the feedback. Different % values can be offered on request.

AUTOMATIC CONTROL TIMER ADJUSTMENT: The load bank has multiple load channels, each being a % of the full load of the load bank. When the generator output is low then the load bank will close a channel to increase the load. If the generator output is still too low, then another channel will close. This will repeat until the generator output is no longer low or all load channels have closed. The time between each channel closing can be altered. This preselected value can be changed by the insertion or removal of 4 different links which make up 15 different preselected values. Using a combination of the 4 links any value, between 6 seconds and 90 seconds (in increments of 6 seconds), is selectable.

MANUAL CONTROL: The HACA can be operated in manual mode giving the user full control of the individual load steps for proof loading on the generator. Each individual load step is selectable via panel mounted illuminated switches.

HACA415 Performance Table:

Load Bank Type Ref	Max. Volts	Power at 415V	Amps at 415V	Power at 400V	Amps at 400V	Power at 380V	Amps at 380V
HACA415-420	415V	420KW	583A	385KW	559A	352KW	435A
HACA415-510	415V	510KW	708A	468KW	679A	428KW	649A
HACA415-600	415V	600KW	833A	551KW	799A	504KW	764A
HACA415-810	415V	810KW	1125A	743KW	1078A	680KW	1031A
HACA415-1020	415V	1020KW	1417A	936KW	1358A	857KW	1299A
HACA415-1200	415V	1200KW	1667A	1102KW	1597A	1008KW	1528A
HACA415-1500	415V	1500KW	2083A	1377KW	1996A	1260KW	1910A

HACA415 Specification

Max voltage	415 volts, three phase, 3W + E delta operation
Frequency	50Hz (60Hz optional)
Rating	Continuous duty cycle operation with no limitations. See performance table above.
Adjustment	Automatic Control with Load control point adjustable by customer Manual Control via illuminated load steps
Generator Feed Back Signal	0-10V or 4-20mA signal representing the Generators FLC
Controls & Indication	Fan / Master control circuit ON / OFF switch, Manual / Auto selector switch, Internal Remote Load Dump Signal, Indication of operational mode, Power On Indicator Light, Fan On Indicator Light, Fan / Air Alarm Indicator Light, Over Temperature Alarm Indicator Light, Phase Rotation Alarm Indicator Light
Cable termination	Via un-drilled gland plate to internal terminals or stud connectors
Cooling	Force cooled, vertical airflow with auto fan control and fan overrun to cool elements during the run down period. Ambient intake cooling air is drawn in at the base of the unit and heated air exhausted out the top. Intake openings are designed to prevent objects greater than 50mm diameter from entering the unit. Motor start and resettable circuit breaker protection included. Fan Blade material aluminium / non-corroding material.
Element type	Removable, Insulated, air cooled, stainless steel, Incoloy, resistor elements designed for continuous duty in black heat and is insulated to prevent short circuit or electrocution.
Circuit Protection	HRC 120KA Fuse Protection for each individual load step, Emergency Stop, Motor Start, Interlocked Alarms, Remote Load Dump
Alarms	High Temperature Alarm, Differential Pressure Alarm, Phase Rotation. All Alarms are electrically interlocked with the load application controls to prevent load from being applied if an alarm condition is present.
Installation	Designed for permanent installation outdoor operation, floor fixing

HACA415 Enclosure Specification:

Environmental Protection:	Outdoor weatherproof construction, suitable for installation on a concrete pad or structural base. A thermostatically controlled heater shall be located within the control section to provide protection to the control devices from the effects of moisture and condensation. Electrical control chamber IP54, Element chamber IP21.
Construction:	316L Stainless steel frame and panels and exterior fasteners. 316L Stainless steel provides superior corrosion protection and extended service life, with a better tolerance to high heat exposure.
Finish:	Powder coated, textured finish RAL 7032
Operating temperature:	0-50 Deg C
Storage temperature:	0-80 Deg C
Movement:	Forklift Movement

HACA415 Case Size:

Load Bank Type Ref	Case Size	Length (mm)	Width (mm)	Height (mm)	Approx. Weight (Kgs)
HACA415-420	A	1080mm	1600mm	2060mm	550Kgs
HACA415-510	A	1080mm	1600mm	2060mm	600Kgs
HACA415-600	A	1080mm	1600mm	2060mm	660Kgs
HACA415-810	B	2020mm	1600mm	2060mm	900Kgs
HACA415-1020	B	2020mm	1600mm	2060mm	1000Kgs
HACA415-1200	B	2020mm	1600mm	2060mm	1200Kgs
HACA415-1500	C	3000mm	1600mm	2060mm	1600Kgs

Manufacturing Standards

Low Voltage Directive	2006/95/EC
EMC directive 2004/108/EC	BS EN61000-6-3 2007 amendments for 2011
	BS EN61000-6-1 2007
	BS EN61000-6-4 2007 amendments for 2011
Hillstone Products Quality Assurance	ISO 9001:2008

Available Optional Extras

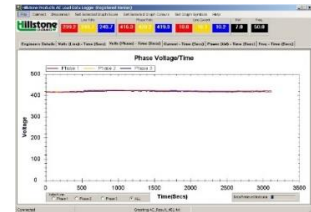
DIGITAL POWER METER

A panel mounted power meter is provided to display, line volts, phase volts, line current, power and frequency



PC INTERFACE & DATA LOGGING SOFTWARE

The PC interface and data logging software allows transfer and storage of test data to a laptop or PC using Hillstone/Windows software. The computer display includes line volts, phase volts, line current, power and frequency plus a real time graphical display.



Quick Load Application

When an export restriction to the grid is needed the HACA load bank will quickly apply a load within 100 – 200ms

3W, N + E Star Configuration for the incoming power circuit.

CT Measurement for the Generator Output measurement when no signal is provided

REMOTE CONTROL PANEL

A wall mountable control panel is available for the remote operation of the load bank which includes the following controls and indicators:

- Fan / Master control circuit ON / OFF switch,
- Manual / Auto selector switch
- Manual Load step controls
- Indication of operational mode
- Power On Indicator Light
- Fan On Indicator Light
- Fan Alarm Indicator Light
- Over Temperature Alarm Indicator Light
- Phase Rotation Alarm Indicator Light
- Digital Power Meter (Optional)
- Differential Pressure Alarm Indicator Light

Notes:

- Units are rated for continuous operation at max volts.
- Standard resistance element tolerance +/- 7.5%
- Changes to specification, components, dimensions or weights may vary without prior notice.
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