Hillstone PRODUCTS

TECHNICAL DATA SHEET SHEET

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TYPE REF : HACA220 – 20 – 4

THREE PHASE AUTOMATIC RESISTIVE AC LOAD BANKS

Features

- *FULLY AUTOMATIC FOUR STEP CONTROL*
- *220V THREE PHASE 60 HZ OPERATION*
- *SAFETY ISOLATION CONTACTORS*
- *AUTO FAN CONTROL*
- *OUTDOOR OPERATION*
- *LOW COST*
- *HIGH POWER 20KW RATING*
- *FUSE PROTECTION*

Typical load bank illustrated

The Hillstone HACA - series automatic load banks offer a low cost solution to on-site generator problems where low loading causes wet stacking of the diesel engine. Units incorporate force cooled high powered resistor elements, with micro-processor automatically control in four equal steps via a current transformer signal from the generator output. Features include HRC fuse protection, control CT, automatic fan control, fan failure shut down and emergency stop push button. On site adjustment of the trip level is available via internal controls.
The HACA220-20-4 is supplied with a top heat shield for high temperature outdoor operation.

Specification

Max voltage	220 volts, three phase 60 Hz
Rating	20KW at 220V three phase, line to line (4 equal automatic steps of 5KW)
Adjustment	Trip level adjustable by customer
Controls & indication	Master control circuit on / off switch, indication of operational mode.
Cable termination	Via un-drilled gland plate to internal terminals or stud connectors
Cooling	Force cooled, horizontal airflow, auto fan control including fan overrun to cool elements.
Element type	Insulated, air cooled, stainless steel, Incoly, resistor elements (see note 2)
Environmental Protection	Electrical control chamber IP54, element chamber IP21
Construction	Robust Zintec steel frame and panels, plus top heat shield / drip lid and fork pockets
Finish	Powered coated, textured finish RAL 7032
Operating temperature	0-50 deg C (see note 3)
Storage temperature	0-80 deg C
Installation	Designed for permanent installation outdoor operation, floor fixing
Size	1000 mm long x 525 mm wide x 785 mm high, weight 40 kgs

Notes :

1. Units are rated for continuous operation at max volts
2. Standard resistance element tolerance +/- 7.5%
3. Heat shield recommended above 40 deg C.
4. External power and control cables are not included
5. Changes to specification, components, dimensions or weights may vary without prior notice.
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Hillstone Products Ltd
Units 1 & 2 Freetown Business Park
Hudcar Lane Bury Lancashire
England UK BL9 6HD

Tel. +44 (0) 161 763 3100
Fax. +44 (0) 161 763 3158
e-mail sales@hillstone.co.uk
web www.hillstone.co.uk

HACA415 – series – 24KW to 200KW

3 PHASE FULLY AUTOMATIC RESISTIVE AC LOAD BANKS

Features

- *FULLY AUTOMATIC FOUR STEP CONTROL*
- *THREE PHASE OPERATION*
- *SAFETY ISOLATION CONTACTORS*
- *AUTO FAN CONTROL*
- *OUTDOOR OPERATION*
- *LOW COST*
- *HIGH POWER*
- *FUSE PROTECTION*

Typical 108KW load bank

The Hillstone HACA - series automatic load banks offer a low cost solution to on-site generator problems where low loading causes wet stacking of the diesel engine. Units incorporate force cooled high powered resistor elements, with micro-processor automatically control in four steps via a current transformer signal from the generator output. Features include HRC fuse protection, control CT, automatic fan control, fan failure shut down and emergency stop push button.
On - site adjustment of the trip level is available via internal controls.
Standard units do not require any auxiliary supply as the fan and controls are powered from the gen-set output. Optional extras include three phase delta operation, louvered air intake and exhaust, heat shield plus a separate auxiliary control supply if required.

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	Case size	Approx weight
HACA415-24-4	415V	24KW	33A	22KW	32A	20KW	30A	A	40kgs
HACA415-36-4	415V	36KW	50A	33KW	48A	30KW	46A	A	55kgs
HACA415-60-4	415V	60KW	83A	55KW	72A	50KW	76A	B	70kgs
HACA415-72-4	415V	72KW	100A	66KW	96A	60KW	91A	C	100kgs
HACA415-108-4	415V	108KW	150A	99KW	144A	90KW	137A	C	120kgs
HACA415-144-4	415V	144KW	200A	132KW	191A	121KW	183A	D	150kgs
HACA415-200-4	415V	198KW	275A	181KW	263A	166KW	252A	D	180kgs

Approximate case sizes

case size	Case length	Case width	Case height	Length with top heat shield	Width with top heat shield	Height with top heat shield
A	885 mm	420 mm	700 mm	1000 mm	525 mm	785 mm
B	1000 mm	520 mm	930 mm	1150 mm	625 mm	1015 mm
C	1000 mm	800 mm	900 mm	1150 mm	675 mm	1015 mm
D	1035 mm	835 mm	980 mm	1185 mm	940 mm	1065 mm

HACA415 – series continued .....

Specification

Max voltage	415 volts, three phase, 4 wire with neutral (3 wire delta operation optional)
Frequency	50 / 60 hz
Rating	see performance table
Adjustment	Trip level adjustable by customer
Controls & indication	Master control circuit on / off switch, indication of operational mode.
Cable termination	Via un-drilled gland plate to internal terminals or stud connectors
Cooling	Force cooled, horizontal airflow, auto fan control including fan overrun to cool elements.
Element type	Insulated, air cooled, stainless steel, Incoly, resistor elements (see note 2)
Environmental Protection	Electrical control chamber IP54, element chamber IP21
Construction	Robust Zintec steel frame and panels, drip lid (top lift brackets and heat shield optional extras)
Finish	Powered coated, textured finish RAL 7032
Operating temperature	0-40 deg C (see note 3)
Storage temperature	0-80 deg C
Installation	Designed for permanent installation outdoor operation, floor fixing
Optional extras	Separate auxiliary control supply Three phase delta connection. Increase environment protection with louvers on intake and exhaust and heat shield External power cables and control cable between the CT and load bank are extra.

Typical 72KW load bank with optional louvers

Notes :

1. Units are rated for continuous operation at max volts
2. Standard resistance element tolerance +/- 7.5%
3. Heat shield recommended above 40 deg C. Consult our sales office for use above 40 deg C
4. External power and control cables are not included
5. Changes to specification, components, dimensions or weights may vary without prior notice.
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Hillstone Products Ltd
Units 1 & 2 Freetown Business Park
Hudcar Lane Bury Lancashire
England UK BL9 6HD

Tel. +44 (0) 161 763 3100
Fax. +44 (0) 161 763 3158
e-mail sales@hillstone.co.uk
web www.hillstone.co.uk

HACA415 – X1 series – 12KW to 63KW

3 PHASE & 1 PHASE AUTOMATIC RESISTIVE AC LOAD BANKS

Features

- *AUTOMATIC SINGLE STEP*
- *THREE PHASE & SINGLE PHASE OPERATION*
- *SAFETY ISOLATION CONTACTORS*
- *FAN FAIL PROTECTION*
- *LOW COST*
- *HIGH POWER*
- *FUSE PROTECTION*

Typical 63KW load bank

The Hillstone HACA - X1 series automatic load banks offer a low cost solution to on-site generator problems where low loading causes wet stacking of the diesel engine. Units incorporate force cooled high powered resistor elements, with automatically controlled in a single step via a current transformer signal from the generator output. HRC fuse protection, control CT, fan failure shut down and emergency stop push button are included with the fan and controls powered from the gen-set output. Internal connection links allow operation on three phase or single phase. Optional extras include separate auxiliary control supply, three phase delta operation and louvered air intake and exhaust.

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	Case size	Approx weight
HACA415-12X1	415V	12KW	16A	11KW	16A	10KW	15A	A	35kgs
HACA415-18X1	415V	18KW	25A	16KW	24A	15KW	23A	A	40kgs
HACA415-24X1	415V	24KW	33A	22KW	32A	20KW	30A	A	50kgs
HACA415-30X1	415V	30KW	41A	27KW	40A	25KW	38A	A	55kgs
HACA415-36X1	415V	36KW	50A	33KW	48A	30KW	46A	B	85kgs
HACA415-45X1	415V	45KW	62A	41KW	60A	37KW	46A	B	100kgs
HACA415-54X1	415V	54KW	75A	50KW	72A	45KW	57A	B	125kgs
HACA415-63X1	415V	72KW	87A	57KW	84A	53KW	80A	B	150kgs

Approximate case sizes

case size	length	width	height
A	1100 mm	650 mm	700 mm
B	1100 mm	650 mm	1100 mm

Typical 45KW load bank with optional louvers

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HACA415 – X1 series continued .....

Specification

Max voltage	415 volts, three phase, 4 wire with neutral
Frequency	50 / 60 hz testing
Rating	see above table
Adjustment	Fixed three phase single step. Adjustable via internal links for single phase operation (see single phase rating table)
Controls	Master control circuit on / off switch
Cable termination	Via undrilled gland plate to internal terminals or stud connectors
Cooling	Force cooled, horizontal airflow, auto start and stop plus fan overrun to cool elements. Fan and controls powered from L1 & neutral
Element type	Insulated, air cooled, stainless steel, Incoly, sheathed resistor elements (see note 4)
Environmental Protection	Designed for outdoor operation under a shelter, electrical control chamber IP54, element chamber IP21
Construction	Robust Zintec steel frame and panels and drip lid
Finish	Powered coated, textured finish RAL 7032
Operating temperature	0-40 deg C (see note 5)
Storage temperature	0-80 deg C
Case design	Designed for permanent installation, floor fixing
Optional extras	Separate auxiliary control supply Three phase delta connection. Increase environment protection with louvers on intake and exhaust External power cables and control cable between the CT and load bank are extra.

SINGLE PHASE RATING TABLE - see note 2 (ranges selected via internal links)

LOAD BANK type ref.	Range 1 at 240V	Range 2 at 240V	Range 3 at 240V	Range 1 at 230V	Range 2 at 230V	Range 3 at 230V	Range 1 at 220V	Range 2 at 220V	Range 3 at 220V
HACA415-12X1	4KW	8KW	12KW	3.7KW	7.3KW	11KW	3.4KW	6.7KW	10KW
HACA415-18X1	6KW	12KW	18KW	5.7KW	11KW	16KW	5KW	10KW	15KW
HACA415-24X1	8KW	16KW	24KW	7.3KW	14KW	22KW	6.7KW	13KW	20KW
HACA415-30X1	10KW	20KW	30KW	9.2KW	18KW	27KW	8.4KW	16KW	25KW
HACA415-36X1	12KW	24KW	----	11KW	22KW	----	10KW	20KW	30KW
HACA415-45X1	15KW	30KW	----	14KW	27KW	----	12KW	25KW	----
HACA415-54X1	18KW	----	----	16KW	----	----	15KW	30KW	----
HACA415-63X1	21KW	----	----	19KW	----	----	17KW	----	----

Notes :

1. Units are rated for continuous operation at max volts
2. Contact our sales office for single phase operation above 30KW
3. Single phase operation on L1 & neutral only
4. Standard resistance element tolerance +/- 7.5%
5. Consult our sales office for operation above 40 deg C
6. External power and control cables are not included
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Hillstone Products Ltd
Units 1 & 2 Freetown Business Park
Hudcar Lane Bury Lancashire
England UK BL9 6HD

Tel. +44 (0) 161 763 3100
Fax. +44 (0) 161 763 3158
e-mail sales@hillstone.co.uk
web www.hillstone.co.uk

Doc ref	HACA415 X3 series 70 - 200KW
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TECHNICAL DATA SHEET SHEET

HACA415 – X3 series – 70KW to 200KW

3 PHASE AUTOMATIC RESISTIVE AC LOAD BANKS

Features

- *AUTOMATIC OPERATION*
- *MICRO-PROCESSOR CONTROL*
- *8 STEP AUTO SELECTION*
- *THREE PHASE OPERATION*
- *SAFETY ISOLATION CONTACTORS*
- *FAN FAIL PROTECTION*
- *LOW COST*
- *HIGH POWER*
- *FUSE PROTECTION*

Typical load bank illustrate

The Hillstone HACA415 - X3 series automatic load banks offer a low cost solution to on-site generator problems where low loading causes wet stacking of the diesel engine. Units incorporate force cooled high powered resistor elements, with automatic micro-processor control using progressive switch steps via a current transformer signal from the gen-set output. HRC fuse protection, control CT, fan failure shut down and emergency stop push button are included with the fan and controls powered from the gen-set output. Optional extras include separate auxiliary control supply, three phase delta operation and louvered air intake and exhaust.

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	Case size	Approx weight
HACA415-70X3	415V	72KW	100A	66KW	96A	60KW	92A	C	120kgs
HACA415-100X3	415V	102KW	141A	93KW	135A	85KW	130A	C	130kgs
HACA415-126X3	415V	126KW	175A	115KW	167A	105KW	160A	C	140kgs
HACA415-140X3	415V	144KW	200A	132KW	192A	121KW	183A	D	170kgs
HACA415-170X3	415V	171KW	225A	148KW	215A	136KW	206A	D	180kgs
HACA415-200X3	415V	201KW	275A	181KW	263A	166KW	252A	D	200kgs

Approximate case sizes

case size	length	width	height
C	1100 mm	650 mm	1100 mm
D	1100 mm	850 mm	1100 mm

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HACA415 – X3 series continued .....

Specification

Max voltage	415 volts, three phase, 4 wire with neutral
Frequency	50 / 60 hz testing
Rating	see performance table
Adjustment	Trip level pre-set at load bank max rating. Control circuit automatically introduces load progressively, in 9KW or 18KW steps, when gen-set output falls below pre-set level.
Control range	8 progressive steps of 9KW or 18KW dependant of load bank rating (see switch step range below)
Controls	Master control circuit on / off switch and emergency stop push button.
Protection	Emergency stop push button, HRC fuses, fan fail and fan overload auto shut down
Cable termination	Via undrilled gland plate to internal terminals or stud connectors
Cooling	Force cooled, horizontal airflow, auto start and stop plus fan overrun to cool elements.
Element type	Insulated, air cooled, stainless steel, Incoly, sheathed resistor elements (see note 4)
Environmental Protection	Designed for outdoor operation, electrical control chamber IP54, element chamber IP21
Construction	Robust Zintec steel frame and panels and drip lid
Finish	Powered coated, textured finish RAL 7032
Operating temperature	0-40 deg C (see note 5)
Storage temperature	0-80 deg C
Case design	Designed for permanent installation, floor fixing
Optional extras	Separate auxiliary control supply Three phase delta connection. Increase environment protection with louvers on intake and exhaust External power cables and control cable between the CT and load bank are extra.

Switched step range

LOAD BANK type ref.	Min step at 415V	Min step at 400V	Min step at 380V
HACA415-70X3	9KW	8.5KW	8KW
HACA415-100X3	9KW	8.5KW	8KW
HACA415-126X3	9KW	8.5KW	8KW
HACA415-140X3	18KW	17KW	16KW
HACA415-170X3	18KW	17KW	16KW
HACA415-200X3	18KW	17KW	16KW

Notes :

1. Units are rated for continuous operation at max volts
2. L1 & neutral required for control circuit
3. CT supplied for remote installation by others.
4. Standard resistance element tolerance +/- 7.5%
5. Consult our sales office for operation above 40 deg C
6. External power and control cables are not included
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Hillstone Products Ltd
Units 1 & 2 Freetown Business Park
Hudcar Lane Bury Lancashire
England UK BL9 6HD

Tel. +44 (0) 161 763 3100
Fax. +44 (0) 161 763 3158
e-mail sales@hillstone.co.uk
web www.hillstone.co.uk

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HAC380 – 5NC THREE PHASE AC LOAD BANK

Features :

- *SIMPLE OPERATION*
- *LOW MAINTENANCE*
- *NATURALLY COOLED*
- *CONTINUOUS RATING*
- *LOW COST*
- *THREE PHASE*
- *STAR or DELTA OPERATION*
- *WALL or FLOOR MOUNTED*
- *NO AUX MAINS REQUIRED*

Typical unit illustrated

The Hillstone HAC380-5NC load bank offers a low cost solution to wet-stacking problems associated with generators operating at low loads. The design incorporate naturally cooled isolated resistor elements mounted in a double skin steel case, suitable for outdoor use in high temperature environments.

HAC380-5NC Specification

Max voltage	380 volts 3 phase
Frequency	45 – 66 Hz
Rating	5KW three phase at 380V
Cooling	Naturally cooled, vertical airflow
Element type	Stainless steel insulated INCOLY sheathed elements (+/- 7.5% tolerance)
Environmental	IP20 for heat chamber, IP55 for electrical chamber, suitable for indoor or outdoor operation
Construction	Wall or floor mounting double skin steel case, with mesh grills
Size	560 mm deep x 600 mm high x 550 mm wide
Weight	25 kgs
Finish	Powered coated, textured finish RAL 7032
Operating temperature	0-40 deg C (higher ambient operation available on request)
Storage temperature	0-80 deg C
Optional extras	HRC fuse protection isolation switch external cables alternative voltage or power ratings

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England UK BL9 6HD

Tel. +44 (0) 161 763 3100
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e-mail sales@hillstone.co.uk
web www.hillstone.co.uk