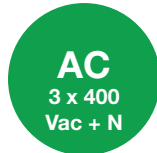


Power Conversion System for Local Energy Management



Description

Hercules is a **bidirectional modular Power Conversion System (PCS)** made of 20kW building blocks. It can reach power levels up to 640 kW when assembling 32 converters in parallel.

The two AC ports and one DC port make it ready for **energy storage applications**. Indeed, Hercules's solution involves a **built-in Battery Management System (BMS)** compatible with different battery chemistries (lead, lithium, NiMH, NiCd). Moreover, it is also intended to **communicate with Energy Management Systems (EMS)**.

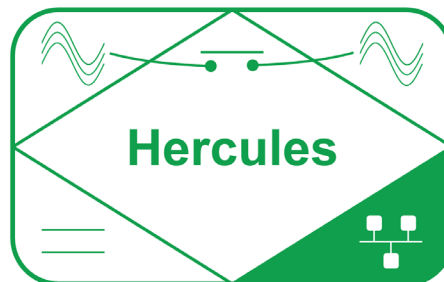
Applications

Hercules focus on **off-grid and grid-tied applications**. Paired with batteries, the Energy Storage System can optimize your energy bills through:

- Peak shaving
- Increase self-consumption
- Frequency Demand response
- Energy storage grid interactive up to 240 kVA/kW

Main Features

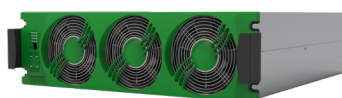
- Modularity
- Hot-pluggable
- Versatile charging
- Battery sustainability
- Harsh AC conditions
- High efficiency, certified by SGS
- Control and monitoring capabilities



Illustrations are non-binding and may include customized fittings.

Hercules 20 kVA/kW - 3 Ports

General		Hercules 20 kVA/kW – 3 Ports	
Part number	T451970528		
MTBF / Cooling	240 000 hrs / Forced		
Efficiency (Typical)	96% certified by SGS at 45% load		
True Redundant Systems – compliant	3 disconnection levels on AC Output and DC 4 disconnection levels on AC Input		
Vibration	GR63 office vibration 0 to 100Hz-0.1g / transport vibration 5 to 100Hz-0.5 g, 100 to 500Hz - 1.5g / Drop test		
Operating conditions	Designed for installation in an IP20 or IP21 environment. When installed in a dusty or corrosive environment, appropriate measures (air filtering, ...) must be taken.		
Altitude above sea without de-rating	1500m / Above 1500m : 0.8% de-rating per 100m		
Ambient / storage temperature / relative humidity	-10 to 40 °C / -40 to 70 °C / 95%, non-condensing		
Material (casing)	Coated steel-ALU ZINC-Front plate coated black RAL9005		
Internal temperature management and switch off	Yes		
Turn on delay	20 s to 40 s depending on the number of modules installed		
Galvanic isolation	No		
Power			
AC Input Specifications			
Maximum power (VA) / (W)	20 kVA / 20 kW / Bi-directional		
Short time backfeed capacity (@PF 0.9)	150% - 15s 130% - 30s 120% - 60s 110% permanent		
Nominal voltage (AC)	3 x 380V / 400V / 415V + Neutral 5 wires		
Voltage range (AC)	150 Vac to 275 Vac line to neutral (power derating below 220 Vac)		
Conformity range before transfer to DC	Adjustable		
Power factor at rated power	> 99%		
Frequency range (selectable) / synchronization range	50 or 60 Hz / range 30 to 70 Hz adjustable		
Short circuit backfeed current per phase	53 A 20 ms - 38 A RMS ,15 s.		
DC Battery Specifications			
Maximum power (W)	20 kW / Bi-directional		
Nominal voltage (DC)	-204 Vdc / 0 Vdc / +204 Vdc with the zero-voltage connected to AC neutral		
Voltage range (DC)	-168 Vdc to -245 Vdc / 0 Vdc / +168 Vdc to +245 Vdc		
Nominal current (at 408 Vdc)	52 A		
Maximum input current (for 5 second) / voltage ripple	67 A / < 400 mVrms		
Input voltage boundaries	User selectable		
AC Output Specifications			
Maximum power (VA) / (W)	20 kVA / 20 kW / Bi-directional		
Nominal voltage (AC)	3x380V / 400V / 415V + Neutral 5 wires		
Short time overload capacity (@PF 0.9)	150% - 15s 130% - 30s 120% - 60s 110% permanent		
Short circuit clear up capacity	5 x In for 20 msec – Only if AC Input is available With magnitude control and management		
Short circuit current on battery, per phase	61 A, 20 ms - 43.5 A RMS, 15 s.		
Admissible load power factor	Full power rating from 0 inductive to 0 capacitive		
Frequency / frequency accuracy	50 - 60 Hz / 0.03 %		
Total harmonic distortion (resistive load)	< 1.5 %		
Load impact recovery time	0.4 ms		
Nominal current per phase (In)	29 A		
Crest factor at nominal power	2.8 : 1		
In Transfer Performance			
Max. voltage interruption / total transient voltage duration (max)	0 s / 0 s		
Signaling & Supervision			
Display	Synoptic LED		
Alarms output / Supervision	Via Pegasus controller (refer to Pegasus datasheet)		
Certificates & Approvals			
Safety / Grid Interactive	EN 62040-1-1 / Synergrid: C10-11, EN50549 (up to 240 kW)		
EMC (immunity)	EN 55022 (A), EN 61000-4-2/3/4/5/6/8		
Functionality	VFI-SS-111		
Mechanical Specifications			
Dimensions (W x H x D mm)*	19" x 3U x 572 mm		
Weight	24 kg		
AC Connection / DC Connection	Pluggable blade terminals / Pluggable blade terminals		



HERCULES

Hercules Standard Cabinets

General	Hercules 60	Hercules 200	Hercules 420	Hercules 640
Operating conditions	Designed for installation in an IP20 or IP21 environment. When installed in a dusty or corrosive environment, appropriate measures (air filtering, ...) must be taken.			
Galvanic isolation	No			
Power				
AC Input Specifications				
Maximum power (VA) / (W)	60 kVA / 60 kW	200 kVA / 200 kW	420 kVA / 420 kW	640 kVA / 640 kW
Short circuit backfeed current per phase	159 A 20 mS – 114 A Rms 15 Sec.	530 A 20 mS – 380 A Rms 15 Sec.	1113 A 20 mS – 798 A Rms 15 Sec.	1696 A 20 mS – 1216 A Rms 15 Sec.
DC Battery Specifications				
Maximum power (W)	60 kW	200 kW	420 kW	640 kW
Nominal current (at 408 Vdc)	156 A	520 A	1092 A	1664 A
Maximum input current (for 5 second) / voltage ripple	201 A / < 400 mVrms	670 A / < 400 mVrms	1407 A / < 400 mVrms	2144 A / < 400 mVrms
AC Output Specifications				
	(Only with Hercules Back-Up Modules)			
Maximum power (VA) / (W)	60 kVA / 60 kW	200 kVA / 200 kW	420 kVA / 420 kW	640 kVA / 640 kW
Short circuit current on battery, per phase	159 A 20 mS – 114 A Rms 15 Sec.	530 A 20 mS – 380 A Rms 15 Sec.	1113 A 20 mS – 798 A Rms 15 Sec.	1696 A 20 mS – 1216 A Rms 15 Sec.
Nominal current per phase (In)	87 A	290 A	609 A	928 A
Signaling & Supervision				
Display	7" display included (rack mounting)			
Controller	Pegasus controller included			
Alarms output / Supervision	Dry contact on Pegasus controller / Modbus, CANBUS and SNMP via Pegasus controller			
Mechanical Specifications				
Dimensions (W x H x D mm)*	600 x 1100 x 800 mm	600 x 2100 x 800 mm	1200 x 2100 x 800 mm	1800 x 2100 x 800 mm
Numbers of cabinets	1	1	2	3
AC Connection / DC Connection	Nut and bolt on copper bar / Nut and bolt on copper bar			

* Other cabinet heights on demand.



HERCULES 60



HERCULES 200



HERCULES 420



HERCULES 640