





HYBRID INVERTER



SPECIFICATIONS

OVERVIEW	
Model Designation	SPHI-IN-6
Environmental Protection	IP65
Protective Class	1
Battery Input Data	
Nominal Battery Voltage	48VDC
DC Voltage Range	40~62VDC
Maximum Charging Voltage	62VDC (Configurable)
Maximum Charging Current	120 A
Maximum Discharging Current	120 A
Charging Curve	3 Stages / Float
Charging Strategy for Li-Ion Battery	Self-adaption to BMS
Number of DC Connections	1
PV String Input Data	
Maximum DC Input Power	7,500 W
Nominal DC Voltage	360VDC
Maximum DC Input Voltage	600VDC
MPPT Range	120~550VDC
Start-up Voltage / Initial Feed In Voltage	160VDC / 125VDC
Maximum Input Current per MPPT	15 A
Maximum Isc PV	21 A
Maximum Inverter Back Feed Current to Array	0 A
Number of MPP Trackers	2 with 2 inputs each







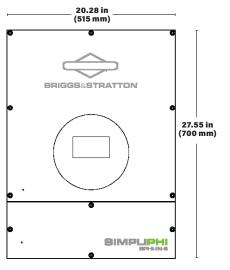
Nominal Output Frequency Output Prequency Range 47.5–51.5 Hz or 59.3–60.5 Hz Output Voltage Range 105.5–332VAC per phase 107.50–50.5 Hz or 59.3–60.5 Hz Output Voltage Range 105.5–332VAC per phase 109.5–332VAC per phase 109.5–332VAC per phase 109.6–60.5 Hz Output Power Factor Output Power Factor Output Power Factor Output THDI (@Nominal Output) 30% Switch Over Time (Grid Down) ACOutput Outge (Beck-up) Maximum Output Apparent Power Instantaneous Power (10ms) 12,000VA Instantaneous Power (10ms) Surge Power (5 sec) 0,000VA Maximum Output Active Power 0,000 W Mominal Output Voltage 12,000VA Maximum Output Voltage 12,000VA Mominal Output Voltage 12,000VA 12,000VA 12,000VA 12,000VA 12,000VA 12,000VA 12,000VA 12,000VA 12,000VA 12,00VA 12,000VA 12,000VA 12,000VA 12,000VA 12,000VA 12,000VA 12,000V	AC Output Data (On-grid)	
Nominal Output Frequency Output Prequency Range 105.5-13.74/C per phase 105.5-13.74/C per phase 107.5-15.74 p		6,000 VA
Output Frequency Range Output Voltage Range Inrush Current/Duration O/P DC Component OUtput Power Factor Output Thibl (@Nominal Output) AC Output Data (Gack-up) Maximum Output Apparent Power Instantaneous Power (10ms) Surge Power (5 sec) Output THIPL (@Nominal Output) Output THIPL (@Linux (Gack-up) Output TH	Nominal Output Voltage	220VAC / 240VAC L1-L2, 110VAC / 120VAC L-N
Output Voltage Range Inrush Current/Duration 30 A per phase / 20 ms O/P DC Component Cloom MA Output Power Factor >0.899 (Adjustable from 0.9 leading to 0.8 legging) Output THD (@Nominal Output) Switch Over Time (Grld Down) ACO Cutput Data (Backsup) Maximum Output Apparent Power Instantaneous Power (10ms) Surge Power (5 sec) 9,000VA Maximum Output Active Power Nominal Output Voltage 220VAC / 240VAC LI-12, 110VAC / 120VAC LI-N Nominal Output Voltage 320VAC / 240VAC LI-12, 110VAC / 120VAC LI-N Nominal Output THDV (@Linear Load) Output THDV (@Linear Load) Similar Function Parallel Function Parallel Function Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection Integrated Froster (Included Integrated Insulation Resistor Detection Integrated Insulation Resistor Detectio	Nominal Output Frequency	50 / 60 Hz
Inrush Current/Duration	Output Frequency Range	47.5~51.5 Hz or 59.3~60.5 Hz
O/P DC Component Output Power Factor >0.099 (Adjustable from 0.9 leading to 0.9 lagging) Output THDI (@Nominal Output) 3% Switch Over Time (Grid Down) AC Output Data (Back-up) Maximum Output Apparent Power Instantaneous Power (10ms) Surge Power (5 sec) 9,000VA Maximum Output Active Power Mominal Output Voltage 220VAC / 240VAC LI-L2, 110VAC / 120VAC LI-N Nominal Output Frequency - Auto Sensing 50/80 (Li-1 Hz) Output THDV (@Linear Load) 3% Output THDV (@Linear Load) 43% Automated Generator Start Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated In	Output Voltage Range	105.5–132VAC per phase
Output Power Factor >0.99 (Adjustable from 0.9 leading to 0.9 legging) Output THDI (@Nominal Output) <	Inrush Current/Duration	30 A per phase / 20 ms
Output THDI (@Nominal Output) Switch Over Time (Grid Down) AC Output Data (Gack-up) Maximum Output Apparent Power Instantaneous Power (10ms) Surge Power (5 sec) Maximum Output Active Power Surge Power (5 sec) Maximum Output Active Power Nominal Output Voltage 220VAC / 240VAC Li-L2, 110VAC / 120VAC L-N Nominal Output Frequency - Auto Sensing So/80 (±0.1 Hz) Output THDV (@Linear Load) Ves Parallel Function Parallel Units Automated Generator Start Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated	O/P DC Component	<100 mA
Switch Over Time (Grid Down) AC Output Data (Back-up) Maximum Output Apparent Power Instantaneous Power (10ms) Surge Power (5 sec) Maximum Output Active Power Surge Power (5 sec) Maximum Output Active Power Surge Power (5 sec) Maximum Output Voltage 220VAC / 240VAC LI-L2, 110VAC / 120VAC L-N Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Nominal Output Frequency - Auto Sensing Surge Power (6 sec) Surge Po	Output Power Factor	>0.99 (Adjustable from 0.9 leading to 0.9 lagging)
Maximum Output Apparent Power 6,000VA Instantaneous Power (10ms) 12,000VA Surge Power (5 sec) 9,000VA Maximum Output Active Power 6,000 W Maximum Output Active Power 220VAC / 240VAC LI-L2, 110VAC / 120VAC LI-N Nominal Output Voltage 220VAC / 240VAC LI-L2, 110VAC / 120VAC LI-N Nominal Output Frequency - Auto Sensing 50/60 (±0.1 Hz) Output THDV (@Linear Load) 3,3% Output THDV (@PF 0.8 Non-Linear Load) 5,5% Parallel Function Yes Parallel Units 5 Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency 96.50% Maximum Battery to Load Efficiency 91.00% Protection Anti-Islanding Protection Integrated Protection Integrated AFCI (Arc-Fault) Integrated Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit Integrated Residual Current Monitoring Unit Integrated	Output THDi (@Nominal Output)	<3%
Maximum Output Apparent Power Instantaneous Power (10ms) Surge Power (5 sec) 9,000VA Maximum Output Active Power 6,000 W Nominal Output Voltage 220VAC / 240VAC LI-L2, 110VAC / 120VAC LI-N Nominal Output Frequency - Auto Sensing 50/60 (±0.1 Hz) Output THDV (@Linear Load) C5% Parallel Function Parallel Units 5 Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Insulation Resistor Detection Residual Current Monitoring Unit Integrated	Switch Over Time (Grid Down)	<8 ms
Instantaneous Power (10ms) Surge Power (5 sec) 9,000VA Maximum Output Active Power 6,000 W Nominal Output Voltage 220VAC / 240VAC L1-L2, 110VAC / 120VAC L-N Nominal Output Frequency - Auto Sensing 50/60 (±0.1 Hz) Output THDV (@Linear Load) 45% Parallel Function Yes Parallel Function Parallel Units 5 Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Insulation Resistor Detection Residual Current Monitoring Unit Integrated	AC Output Data (Back-up)	
Surge Power (5 sec) 9,000VA Maximum Output Active Power 6,000 W Nominal Output Voltage 220VAC / 240VAC L1-L2, 110VAC / 120VAC L-N Nominal Output Frequency - Auto Sensing 50/60 (±0.1 Hz) Output THDV (@Linear Load) 45% Parallel Function Yes Parallel Function Yes Parallel Units 5 Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency 96.50% Maximum Battery to Load Efficiency 91.00% Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Insulation Resistor Detection Integrated Insulation Resistor Detection Integrated	Maximum Output Apparent Power	6,000VA
Maximum Output Active Power 6,000 W Nominal Output Voltage 220VAC / 240VAC L1-L2, 110VAC / 120VAC L-N Nominal Output Frequency - Auto Sensing 50/60 (±0.1 Hz) Output THDV (@Linear Load) <3% Output THDV (@PF 0.8 Non-Linear Load)	Instantaneous Power (10ms)	12,000VA
Nominal Output Voltage 220VAC / 240VAC LI-L2, 110VAC / 120VAC L-N Nominal Output Frequency - Auto Sensing 50/60 (±0.1 Hz) Output THDV (@Linear Load) Cys Parallel Function Parallel Function Parallel Units 5 Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated Insulation Resistor Detection Residual Current Monitoring Unit Integrated Residual Current Monitoring Unit	Surge Power (5 sec)	9,000VA
Nominal Output Frequency - Auto Sensing Output THDv (@Linear Load) Output THDv (@F 0.8 Non-Linear Load) Parallel Function Yes Parallel Function Yes Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated	Maximum Output Active Power	6,000 W
Output THDv (@Linear Load) Output THDv (@PF 0.8 Non-Linear Load) Parallel Function Yes Parallel Units 5 Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency 96.50% Maximum Battery to Load Efficiency 10.00% Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Integrated Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Integrated Insulation Resistor Detection Integrated Integrated	Nominal Output Voltage	220VAC / 240VAC L1-L2, 110VAC / 120VAC L-N
Output THDv (@PF 0.8 Non-Linear Load) Parallel Function Yes Parallel Units 5 Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated Insulation Resistor Detection Residual Current Monitoring Unit Integrated Integrated Integrated	Nominal Output Frequency - Auto Sensing	50/60 (±0.1 Hz)
Parallel Function Parallel Units 5 Automated Generator Start Included Efficiency Maximum Solar to Utility Efficiency 96.50% Maximum Battery to Load Efficiency 91.00% Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit	Output THDv (@Linear Load)	<3%
Parallel Units Automated Generator Start Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated Insulation Resistor Detection Residual Current Monitoring Unit	Output THDv (@PF 0.8 Non-Linear Load)	<5%
Automated Generator Start Efficiency Maximum Solar to Utility Efficiency Maximum Battery to Load Efficiency Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated	Parallel Function	Yes
Maximum Solar to Utility Efficiency 96.50% Maximum Battery to Load Efficiency 91.00% Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Integrated Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit	Parallel Units	5
Maximum Solar to Utility Efficiency 96.50% Maximum Battery to Load Efficiency 91.00% Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection Integrated AFCI (Arc-Fault) Integrated Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit Integrated	Automated Generator Start	Included
Maximum Battery to Load Efficiency Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Integrated Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit	Efficiency	
Protection Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection Integrated AFCI (Arc-Fault) Integrated Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit Integrated	Maximum Solar to Utility Efficiency	96.50%
Anti-Islanding Protection Integrated PV String Input Reverse Polarity Protection Integrated AFCI (Arc-Fault) Integrated Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit Integrated	Maximum Battery to Load Efficiency	91.00%
PV String Input Reverse Polarity Protection AFCI (Arc-Fault) Ground Fault Monitoring Integrated Insulation Resistor Detection Residual Current Monitoring Unit Integrated Integrated	Protection	
Protection Integrated AFCI (Arc-Fault) Integrated Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit Integrated	Anti-Islanding Protection	Integrated
Ground Fault Monitoring Integrated Insulation Resistor Detection Integrated Residual Current Monitoring Unit Integrated	PV String Input Reverse Polarity Protection	Integrated
Insulation Resistor Detection Integrated Residual Current Monitoring Unit Integrated	AFCI (Arc-Fault)	Integrated
Residual Current Monitoring Unit Integrated	Ground Fault Monitoring	Integrated
	Insulation Resistor Detection	Integrated
Output Over Current Protection Integrated - 90 A per phase	Residual Current Monitoring Unit	Integrated
	Output Over Current Protection	Integrated - 90 A per phase

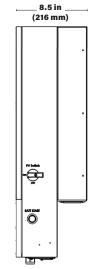


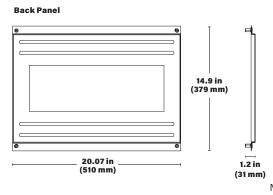




Protection	
Output Short Protection	Integrated
Rapid Shut Down Relay	Integrated - AP Smart devices
General Data	
Operating Temperature Range	-13 – 140 °F (-25 – 60 °C)
Transformerless	Yes
Consumption Modes	UPS, Self-Consumption, TOU, Off-Grid Backup, Grid-Tied without Batteries
Relative Humidity	0~90%
Operating Altitude	<13,123 ft (4,000 m)
Cooling	External Force Convection
Noise	<50 dB
Dimensions (W x H x D)	20.28 x 27.55 x 8.5 in (515 x 700 x 216 mm)
Weight	86 lb (39 kg)
Back Panel Dimensions (W x H x D)	20.07 x 14.9 x 1.2 in (510 x 379 x 31 mm)
Communications Interface	
User Interface	LCD / Phone Application (iOS & Android)
Communication with BMS	CANBUS
Communications Between Inverters	CANBUS
Communication with Cloud - API with Grid Services	via EnergyTrak™ Gateway
Communication Port	RS-232
Intelligent Slot	RS232 / USB, BMS, Wi-Fi
Certifications / Standards	
Grid Regulation	UL 1741SA / TR-2020, IEEE1547.1-2020
Safety Regulation	6-1, 6-4 IEC / EN 62109-1&2
EMC	EN 61000-6-2, EN 61000-6-3









CERTIFIED TO UL9540

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