SYSINV42 SLI 50 Series DC-AC Inverter System

30kW/42kVA

Features

- Telecom range DC input
- Single-phase 230 VAC true sine wave output
- Up to 30 kW/42 kVA full power
- N+1 redundancy
- Hot pluggable inverter modules
- Master driven auto configure setting at startup and at module replacement
- High efficiency: 92% peak
- Static Transfer Switch 180A modules; replaceable
- Manual Bypass
- Graphic display and visual LED's Synoptic Unit
- THD <0.5% resistive load
- No minimum load required
- Fast RS485 output current sharing
- Current limit and overvoltage protection
- Short-circuit proof
- Full power up to 55 ºC, max temperature 65 °C
- Optimized cooling for reduced noise and improved fan life
- RS485 link
- Input reflected ripple current: <300mA$_{rms}$ @ maximum load
- CE approved

Description

The SLI50-based DC to AC Inverter System (SYSINV42) provides a single-phase 230 VAC output distributed via a configurable set of circuit breakers and is an ideal solution for telecom, IT, and industrial applications. The SLI50 inverter module is the cornerstone of this system: in a 2Ux19" size it provides 5 kW/7 kVA of near-perfect power for highly demanding loads.

The SLI50 30 kW Inverter System can be configured up to 42 kVA rated power for DC inputs ranging from 40 VDC to 60 VDC for backup purposes or can function as a highly-reliable AC source. With several patented solutions inside, the electrical performance of the SLI50-based inverter products is at the top of the market with efficiency that peaks at 93%. A patented control algorithm compensates input current harmonics on the DC side without using bulky filters resulting in an almost perfect rejection of the 100 Hz. The automatic Static Transfer Switch (STS) rated at 180 Amps is fully modular, 4U high, and replaceable. Together with the manual bypass, it completes the inverter system.

Specifications

DC Input	
Input Voltage Range	40-60VDC, -48VDC Nominal
System voltage	Usable with negative or floating or positive input; positive systems also need to protect live path.
Inrush Current	ETSI EN 300 132-2 V2.1.2 clause 4.7
Input Switch	Bipolar rotating switch, no protection
Input Overcurrent Protection	Inverter module internal MCB 150 A negative path
Input Overvoltage Protection	65V at inverter module
Input Undervoltage protection	36V at inverter module
Reverse Polarity Protection	Diode at inverter module

AC Input	
Input Voltage Range	Single phase 200VAC-240VAC 47Hz to 63Hz
Input Overcurrent Protection	System bipolar MCB 200A

STS Mode	
Output Current	180 A maximum
Power Switches	Two, 1-ph single pole, Neutral not interrupted; replaceable (in bypass mode)
Control Unit	one, replaceable (in bypass mode)
Synoptics LEDs Unit	One, hot replaceable

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Output (Inverter Mode)	
Output Power	30 kW or 42 kVA maximum
Output Voltage Rating	230 VAC, adjustable between 200 VAC and 240 VAC
Output Frequency	50 Hz or 60 Hz, adjustable between 47 Hz and 63 Hz
Minimum Load	No minimum load required
Output Current	180A AC maximum
Overload	Reference to the inverter module I^2t curve, 30 A continuously, 95 A for 1 sec
Efficiency	Up to 92%
Current Share	±3% full load rating
Load Power Factor	0.33 ÷ 1 lagging or leading
Load Crest Factor	3 maximum
Load Regulation	±0.5% over full operating range with resistive load; when PF=0,33 and CF=3 max ±4%
Line Regulation	±0.1% over full operating range
Output Noise and Ripple	3% pk-pk (3kHz / 20MHz)
Total Harmonic Distortion	<0.5% on resistive load
Overvoltage Protection	260 VAC ±2% of Nominal
Undervoltage Protection	195 VAC ±2% of Nominal
Overcurrent Protection	Adjustable threshold from 15A to 30A for each inverter module
Safety Overcurrent Protection	By safety fuse 30A in any inverter module, both lines protected
Short-circuit Protection	95A ±5% for 1sec at each inverter module

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Display Unit	One per system, graphic, hot replaceable
Minimum Load	No minimum load required
Output Overcurrent Protection	I^2t like SCR disconnection, adjustable characteristic, at power switch module
Short-Circuit Protection	Software protection with Ith and cycle number exceeding Ith adjustable, at power switch module; second level 800 A for 2 ms catastrophic protection at power switch module
System Output Protection	System bipolar MCB 180A
Preferred Source	Inverter mode; priority of AC source is selectable
Transfer Time	Out of mask from one source to inside of mask from the other source: 0 to 4 ms; between un-synchronized sources <1/2 cycle (if synchronization disabled)
Off State Power Switch Module Isolation	Functional, Line path
Synchronization	Automatic, operated by the inverters

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Overtemperature Protection	Tamb>67°C and Tint>110°C, automatic shutdown with auto recovery; visual indication 5 °C before shutdown at each inverter module
Protection Restore Modes	Each protection can be individually set to “latch” or “autorestart” for n times
Adjustable Settings	All modules automatically will set identically one each other when changes are applied at the unique display present in the system

Signals and Controls

Every inverter module has LED’s function indication

System Synoptic Unit at STS shows system power path

One Display Unit at STS for monitor and inverter system settings

Output Alarm board, Form-C contacts:	Generic alarm, everything but inverter module
	Redundancy inverter fault
	More inverter fault
	Fan fault
	Power to load from mains (STS or manual by-pass)
	AC not available to loads
	High temperature

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Origin of Synchronization	AC input (selectable)
Overtemperature Protection	Tamb>67 °C automatic shutdown with auto recovery; Tint>90 °C, automatic switch to the alternative source if available; visual indication 5 °C before each threshold
Protections	All protections may be latching or with auto recovery for next n times before latching

Output Specifications, Manual Bypass Mode

Function	Maintenance mode for modules replacement
Output Current	180 A
Minimum Load	No minimum load required
Output Overcurrent Protection	System bipolar MCB 180A
Interlock	Mechanical

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Mechanical Specifications

System Size	600x600x1140 mm WxDxH
Weight	200 kg when fully equipped
Ingress Protection	IP20
Input/Output Connections	To access to internal bus bars and AC distribution MCB panel

Other

MTBF	Individual inverter 200,000 hours calculated at 40 °C excluding fan, TR-TSY-000332
Warranty	Two years from manufacturing date

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Safety and Environmental				
Temperature Range	Operating: -25 °C to 65 °C, derating above 55 °C, -75 W/ °C Storage: -40 °C to +85 °C		**Emissions**	EN55022, Class B
Operating Humidity	Maximum 90% RH non-condensing		**Immunity**	Electrostatic Discharge: EN61000-4-2, 8kV contact and 15kV air, Criteria A Radiated, Radio-Frequency, Electromagnetic Field: EN61000-4-3, 10V/m, Criteria A Electrical Fast Transients/Burst: EN61000-4-4, +/-2kV, Criteria A Surge Test: EN61000-4-5, 500V Criteria A, 2kVCM 1kV DM Low Z Criteria B Conducted Immunity: EN61000-4-6, 10 Vrms, Criteria A Power frequency magnetic field: EN 61000-4-8, 30 A/m, Criteria A
Operating Altitude	13,000 feet (3900m above sea level)			
Non-operating Altitude	40,000 feet			
Compliance requirements	IEC 60950-1: 2005, 2nd edition; EN 60950-1: 2006; UL 60950-1, 2nd edition; CAN/CSA-C22.2 No.60950-1-07, 2nd edition; Low Voltage Directive (2006/95/EC) and EMC Directive (2004/108/EC); CB Test Certificate & Report in accordance with IEC 60950-1: 2005, 2nd edition			
Regulatory Marks	CE		**Dielectric Withstand**	PRI-SEC 3000 VAC PRI-GND 500 VDC SEC-GND 1500Vrms or 2121 VDC (tested 100% for safety)
			AC Input Leakage Current	3 mA maximum at 230 VAC, 50 Hz