

Harnessing Solar Power for greener earth and better tomorrow



Liebert ESU

1 to 100 kW OFF Grid Solar Inverter

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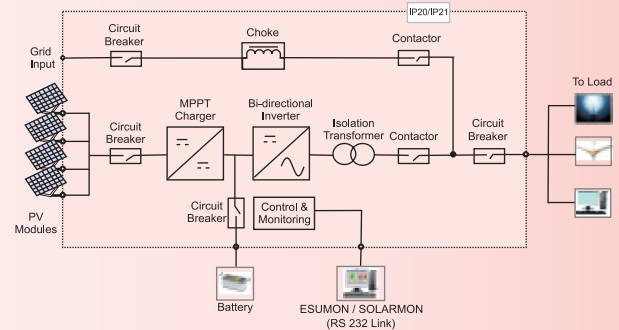
Liebert EEU

1 to 250 kW Grid Connect Solar Inverter

Liebert ESU (Energy Storage Unit)

Features:

- Micro processor based design
- Bi-directional Solar Inverter with MPPT charge controller
- High Efficiency & Reliability
- 20 years design life. Tropicalised design
- Hybrid inverter Operation with Wind / DG
- Inbuilt LCD display
- Sophisticated local & remote monitoring system (Optional)
- Built in output isolation transformer
- Compliance to test standards
- “During insufficient Solar Power, Grid shares with solar to cater constant load. This avoid battery discharge. (Optional)”
- “ESU three phase models - paralleling (max 3 nos. in standalone mode) (Optional)”



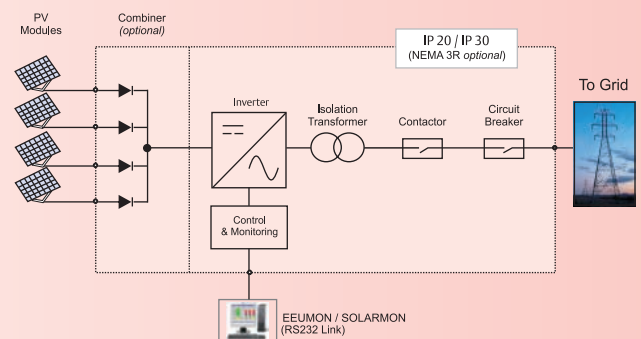
Liebert ESU is single / three phase output, bi-directional inverter system. ESU operates in parallel with the grid utility. Solar Photovoltaic panels convert solar energy into electrical energy as DC power. This DC power is used to charge the batteries through a charge controller and also used for the load through inverter. Additional energy is exported to the grid.

Optional Feature - For the ESU rating, During insufficient Solar Power, Grid shares with solar to cater constant Load. This avoid battery discharge.

Liebert EEU (Energy Export Unit)

Features:

- Micro processor / DSP based MPPT Design
- High efficiency & Reliability
- 20 years design life. Tropicalised design
- Inbuilt LCD display
- Sophisticated local & remote monitoring system (Optional)
- Built in output isolation transformer up to 100 kW
- Compliance to test standards



Liebert EEU is single / three phase output inverter, with Grid interactive feature. Solar Photovoltaic panels convert solar energy into electrical energy as DC power. This DC power becomes input for the EEU inverter. The inverter converts it into conventional AC power, and with its state of the art Grid synchronization design, this AC power is fed to the supply grid.



Specifications: Liebert ESU: 1-10 kW, 1 Phase

PARAMETERS	SPECIFICATIONS						
	1kW	2kW	3kW	4kW	5kW	6kW	10kW
INVERTER MODEL	Liebert ESU, 1 PH Off Grid Solar Inverter						
INPUT							
Maximum Solar Array Input (KWp)	1.2kWp	2.4kWp	3.6kWp	4.8kWp	6.0kWp	7.2kWp	12kWp
Array Input Current	17Amp	33Amp	50Amp	33Amp	42Amp	50Amp	66Amp
Array Voltage Range	40V to 88 VDC				80V to 176 VDC		100 - 220 VDC
Max. open circuit voltage	88 VDC				176 VDC		220 VDC
MPPT voltage range	56 TO 68VDC				112 TO 136 VDC		140 TO 170 VDC
CHARGER CONTROLLER	MPPT						
BATTERY							
Voltage	48 VDC				96 VDC		120 VDC
Max. Grid Charging Current ⁽⁵⁾	14A	29A	43A	28A	35A	42A	60A
Type	SMF / Lead Acid Wet Cell						
OUTPUT							
Power Capacity	1kW	2kW	3kW	4kW	5kW	6kW	10kW
Load Power Factor	0.8 Lag to Unity						
Voltage / Frequency	230 Vac, Single Phase, 50 HZ						
Regulation	+/-2%						
Voltage Distortion	<3% at Linear load						
Grid tracking voltage / frequency	230 Vac +/-10% / 50 Hz (+/-3 Hz)						
Over Load	125% for 4 Minutes and 150% for 1 Minute						125% for 10 Minutes and 150% for 1 Minute
Peak Efficiency ⁽¹⁾	>=83%	>=85%	>=85%	>=88%	>=89%	>=90%	>=91%
OPERATING MODES	1. Stand alone 2. Off line 3. Grid Interactive						1. Stand alone 2. Grid Interactive
ENVIRONMENTAL							
Operating Temperature ⁽²⁾	0 to 45°C						
Storage Temperature	-10 to +55°C						
Relative Humidity	Upto 95% RH Non Condensing						
Acoustics Noise ⁽³⁾	<60 dB @ 1 meter						<62 dB
Altitude ⁽⁴⁾	<1000 meter above Sea Level						
MECHANICAL							
IP	IP 21						
Cooling	Forced Cool						
Dimensions W x D x H	225 x 650 x 600				250 x 650 x 700		400 x 800 x 950
Weight in kg. (approx.)	50	55	60	77	83	90	240
LCD DISPLAY	Inbuilt						
MONITORING (Optional)	RS 232 / Ethernet, GSM / GPRS Modem Connectivity, S/W SOLARMON						Same as 10 kW, 3 PH ESU
STANDARD	IEC 62040 - 3, IEC - 61683, IEC - 60068						

Specifications: Liebert ESU: 10-100 kW, 3 Phase

PARAMETERS	SPECIFICATIONS				
	10kW	20kW	30kW	50kW	100kW
INVERTER MODEL	Liebert ESU, 3 PH Off Grid Solar Inverter				
INPUT					
Maximum Solar Array Input (KWp)	12kWp	24kWp	36kWp	60kWp	120kWp
Array Input Current	66Amp	67Amp	100Amp	167Amp	335Amp
Array Voltage Range	100 - 220 VDC		200 - 440 VDC		
Max. open circuit voltage	220 VDC		440 VDC		
MPPT voltage range	140 TO 170 VDC		280 TO 340 VDC		
CHARGER CONTROLLER	MPPT				
BATTERY					
Voltage	120 VDC		240 VDC		
Max. Grid Charging Current ⁽⁵⁾	60A	60A	90A	177A	354A
Type	SMF / Lead Acid Wet Cell				
OUTPUT					
Power Capacity	10kW	20kW	30kW	50kW	100kW
Voltage / Frequency	415 Vac, Three Phase, 50 HZ				
Load Power Factor	0.8 Lag to Unity				
Regulation	+/- 2%				
Voltage Distortion	<2% at Linear load & <5% at Non Linear load				
Grid tracking voltage / frequency	415 Vac +/- 10% / 50 Hz (+/- 3 Hz)				
Over Load	125% for 10 Minutes and 150% for 1 Minute				
Peak Efficiency ⁽¹⁾	>=91%	>=91%	>=92%	>=93%	>=93%
OPERATING MODES	1. Stand alone 2. Grid Interactive				
ENVIRONMENTAL					
Operating Temperature ⁽²⁾	0 to 45°C		0 - 45°C		
Storage Temperature	-10 to +55°C				
Relative Humidity	Upto 95% RH Non Condensing				
Acoustics Noise ⁽³⁾	< 62 dB	< 62 dB	< 62 dB	< 72 dB	< 72 dB
Altitude ⁽⁴⁾	< 1000 meter above Sea Level				
MECHANICAL					
IP	IP 20				
Cooling	Forced Cool				
Dimensions W x D x H in mm	400 x 800 x 950	550 x 900 x 1300		1000 x 900 x 1900	1200 x 1000 x 2050
Weight in kg. (approx.)	250	400		800	1115
LCD DISPLAY	Inbuilt				
MONITORING (Optional)	RS232 / RS 485 / HTTP / MODBUS / MODEM, S/W ESUMON / RMON / WEBMON				
STANDARD	IEC 62040 - 3, Self Certifications				

Specifications: Liebert EEU: 1-6 kW, 1 Phase

PARAMETERS	SPECIFICATIONS					
	1kW	2kW	3kW	4kW	5kW	6kW
INVERTER MODEL	Liebert EEU, 1 PH Grid Connect Solar Inverter					
INPUT						
Solar Array Input (KWp)	1.25kWp	2.5kWp	3.75kWp	5kWp	6.25kWp	7.50kWp
Array Voltage Range	40V to 88 VDC			80V to 176 VDC		
Max. open circuit voltage	88 VDC			176 VDC		
MPPT voltage range	56 to 68 VDC			112 to 136VDC		
CONTROLLER	MPPT					
OUTPUT						
Power Capacity	1kW	2kW	3kW	4kW	5kW	6kW
Voltage / Frequency	230 Vac, Single Phase, 50 HZ					
Line Power Factor	> 0.98					
Grid Tracking Range	+10% to -20%, +/- 3HZ					
Current Distortion	< 5%					
Output Current Limit	4.3 A	8.7 A	13 A	17.4 A	21.7 A	26 A
Peak Efficiency ⁽¹⁾	>=83%	>=85%	>=85%	>=88%	>=89%	>=90%
ENVIRONMENTAL						
Operating Temperature ⁽²⁾	0 to 40°C					
Storage Temperature	-10 to +55°C					
Relative Humidity	Upto 95% RH Non Condensing					
Acoustics Noise ⁽³⁾	< 55 dB					
Altitude ⁽⁴⁾	< 1000 meter above Sea Level					
MECHANICAL						
IP	IP 20					
Cooling	Forced Cool					
Dimensions W x D x H in mm	225 x 650 x 600			250 x 650 x 700		
Weight in kg. (approx.)	50	50	55	72	78	85
LCD DISPLAY	Inbuilt					
MONITORING (Optional)	RS 232 / Ethernet, GSM / GPRS Modem Connectivity, S/W SOLARMON					
STANDARD	IEC 62040 - 3					

Specifications: Liebert EEU: 10-250 kW, 3 Phase

PARAMETERS	SPECIFICATIONS					
	10 kW	20 kW	30 kW	50 kW	100 kW	250 kW (TXR Less)
INVERTER MODEL	Liebert EEU, 3 PH Grid Connect Solar Inverter					
INPUT						
Solar Array Input (KWp)	12.50kWp	25kWp	37.50kWp	62.50kWp	125kWp	313kWp
Array Voltage Range	110 to 220 VDC		400 to 700 VDC			400 to 800 VDC
Max. open circuit voltage	220 VDC		700 VDC			800 VDC
MPPT voltage range	140 to 180 VDC		420 to 600 VDC			420 to 750 VDC
CONTROLLER	MPPT					
OUTPUT						
Power Capacity	10 kW	20 kW	30 kW	50 kW	100 kW	250 kW
Voltage / Frequency	415 Vac, 3 Ph, 4 Wire, 50 HZ					
Line Power Factor	> 0.99					
Grid Tracking Range	+10% to -15%, +/- 3HZ					+/- 10%, +/- 3HZ
Current Distortion	< 5%					
Output Current Limit	15 A Per Phase	29 A Per Phase	44 A Per Phase	73 A Per Phase	145 A Per Phase	460 A Per Phase
Peak Efficiency ⁽¹⁾	> = 91%	> = 92%	> = 92%	> = 93%	> = 94%	> = 95%
ENVIRONMENTAL						
Operating Temperature ⁽²⁾	0 to 40°C	0 to 50°C	0 to 45°C	0 to 50°C	0 to 45°C	0 to 50°C
Storage Temperature	-10 to +55°C					
Relative Humidity	Upto 95% RH Non Condensing					
Acoustics Noise ⁽³⁾	< 60 dB	< 65 dB	< 65 dB	< 72 dB	< 72 dB	< 75 dB
Altitude ⁽⁴⁾	< 1000 meter above Sea Level					
MECHANICAL						
IP	IP 20	IP 30	IP 30	IP 30	IP 30	IP 31
Cooling	Forced Cool					
Dimensions W x D x H in mm	400 x 800 x 950	800 x 800 x 1610	800 x 800 x 1610	1200 x 900 x 2050	1200 x 900 x 2050	1200 x 900 x 2050
Weight in kg. (approx.)	250	450	500	750	915	915
LCD DISPLAY	Inbuilt					
MONITORING (Optional)	RS 232 / RS 485 / Ethernet / MODBUS / Modem, HTTP, S/W EEUOMON / RMON / WEBMON					
STANDARD	IEC 62040 - 3					

Notes:

- 1) For tolerances see IEC / EN 60146-1-1
- 2) Extended temperature range is available upto 50°C. For 55°C, please contact technical support
- 3) Acoustic noise measured @ 1 meter as per ISO 3746.
- 4) For higher altitude complies with IEC / EN 62040-3
- 5) Maximum Grid Charging Power for the batteries is dependent on Inverter efficiency and the load wattage.
- 6) Solar Inverters includes Class D surge protection.
- 7) Array through Battery Charging Power & Load Power should not be exceed than Equipment Rating.

Specifications: Liebert ESU +: 1 kW, 1 Phase

PARAMETERS	SPCIFICATIONS
	1 kW
INVERTER MODEL	Liebert ESU+, 1 PH Off Grid Solar Inverter
INPUT - Array Input	50 - 100 VDC
Max. open circuit voltage	102 VDC
MPPT voltage range	50 to 88 VDC
CHARGER CONTROLLER	MPPT
BATTERY	
Voltage	48 VDC
Max. Grid Charging Current	10 / 15 A (user selectable)
Type	SMF / Lead Acid Wet Cell
OUTPUT	
Power Capacity	1 kW / 1 KVA
Voltage / Frequency	230 Vac, Single Phase, 50 HZ (+/- 0.5%) Stand alone mode
Load Power Factor	Unity
Regulation	+/- 5%
Voltage Distortion	<3% at Linear load
Grid tracking voltage / frequency	170 to 270 VAC / 40 to 65 HZ
Over Load	150% for 5 Seconds and 110 - 150% for 10 Seconds
Peak Efficiency ⁽¹⁾	>=90%
OPERATING MODES	1. Stand alone 2. Off line 3. Grid Interactive
ENVIRONMENTAL	
Operating Temperature ⁽²⁾	0 - 55°C
Storage Temperature	-15 to +60°C
Relative Humidity	Upto 95% RH Non Condensing
Acoustics Noise ⁽³⁾	<55 dB @ 1 meter
Altitude ⁽⁴⁾	< 1000 meter above Sea Level
MECHANICAL	
IP	IP 20
Cooling	Forced Cool
Dimensions W x D x H in mm	272 x 355 x 128
Weight in kg. (approx.)	8 kg
LCD DISPLAY	Inbuilt
MONITORING (Optional)	RS232
STANDARD	IEC 62040 - 3, IEC 60950, IEC - 61683, IEC - 60068

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	<p>2013 CIO CHOICE 2013 Awards (Centre Of Recognition & Excellence) - Most Preferred Brand</p> <ul style="list-style-type: none"> • Data Center (UPS) • Data Center (Cooling) • Power Distribution • Infrastructure Appliance 	<p>2013 (Global recognition) EMA Radar Report™ for Data Center Infrastructure Management 'Most Comprehensive DCIM Solution' - Trellis</p>
<p>2012 (Global recognition) Forrester's March 2012: "Market Overview: Data Center Infrastructure Management Solutions" report 'Dominant supplier in data center infrastructure management (DCIM)'</p>		
	<p>2012 (APAC recognition) Frost & Sullivan 'Asia Pacific Market Share Leadership 2012' - data centre cooling solutions market</p>	<p>2010 Frost & Sullivan 'India UPS Market Leadership Award'</p>
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Note: Specifications & Features may vary based on the condition.

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