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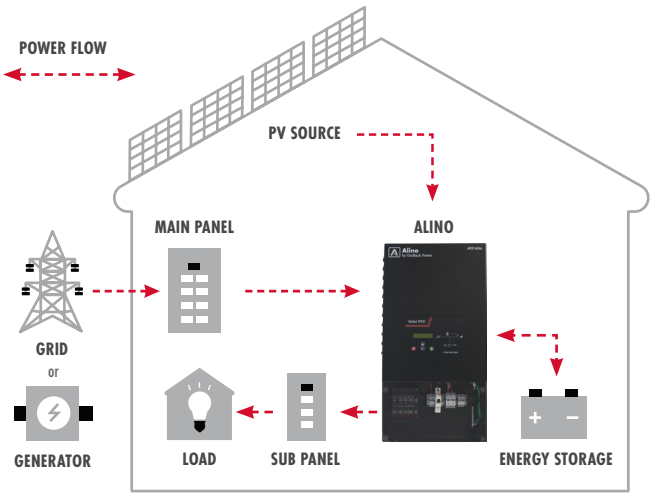
Alino

Solar Power Conditioning Unit

- Maximum Power Point Tracking (MPPT) algorithm provides maximum yield from available solar energy
- Robust Automatic Voltage Regulation (AVR) in grid mode protects your loads through automatic voltage stabilization—varying voltages between 85 to 143VAC automatically adjust to 120V ±10%
- Galvanic isolated transformer improves safety
- Intelligent charge management with 4 stage battery charging improves battery performance and life
- High surge support to start heavy loads
- Supports sealed, maintenance-free and flooded battery types
- Conformal coated PCB enhances reliability
- All-in-one design saves significant labor time by simplifying the installation and interface with pre-wired DIN mount and AC and DC bus bars
- Space saving wall-mount design



The OutBack Alino solar power conditioning unit is an all-in-one integrated power electronic system.

The Alino comprises a solar photovoltaic charger that charges the battery bank, an inverter that provides power to AC loads from the battery bank and an AC rectifier that charges the battery from an AC input source. An advanced Digital Signal Processor (DSP) in the PCU controls the power flow by maximizing solar power harvesting, provides uninterrupted power and reduces the utility charges and gas bill on diesel generators.

	50Hz			60Hz			
Models:	**APCU 1424**	**APCU 2648**	**APCU 3348**	**APCU 1424A**	**APCU 1424B**	**APCU 2648A**	**APCU 2648B**
Parameters							
Type	Single-phase solar power conditioning unit			Single-phase solar power conditioning unit			
Nominal Battery Voltage	24VDC	48VDC	48VDC	24VDC	24VDC	48VDC	48VDC
Nominal Power Rating (25°C)	1400VA	2600VA	3300VA	1400VA	1400VA	2600VA	2600VA
Nominal Output	230VAC/50Hz	230VAC/50Hz	230VAC/50Hz	120VAC/60Hz	220VAC/60Hz	120VAC/60Hz	220VAC/60Hz
Electrical—Solar							
Charger Technology	MPPT	MPPT	MPPT	MPPT	MPPT	MPPT	MPPT
PV Charge Controller Rating	1kW$_p$	2kW$_p$	2.5kW$_p$	1kW$_p$	1kW$_p$	2kW$_p$	2kW$_p$
Battery Input Range	18 to 32VDC	36 to 64VDC	36 to 64VDC	18 to 32VDC	18 to 32VDC	36 to 64VDC	36 to 64VDC
Absolute Maximum VOC	55VDC	100VDC	100VDC	55VDC	55VDC	100VDC	100VDC
Operating Voltage Lmit	50VDC	90VDC	90VDC	50VDC	50VDC	90VDC	90VDC
MPPT Range	26 to 40VDC	48 to 72VDC	48 to 72VDC	26 to 40VDC	26 to 40VDC	48 to 72VDC	48 to 72VDC
Panel High Voltage Cut-Off	>50VDC	>90VDC	>90VDC	>50VDC	>50VDC	>90VDC	>90VDC
Recommended PV Panel	72 & 60 cells	72 & 60 cells	72 & 60 cells	72 & 60 cells	72 & 60 cells	72 & 60 cells	72 & 60
Recommended PV Panel Configuration	1 panel per string and 4 panels in parallel	2 panels in series per string and 4 panels in parallel	2 panels in series per string and 5 panels in parallel	1 panel per string and 4 panels in parallel	1 panel per string and 4 panels in parallel	2 panels in series per string and 4 panels in parallel	2 panels in series per string and 4 panels in parallel
Maximum Charging Current	40A	40A	40A	40A	40A	40A	40A
Charger Efficiency	>95%	>95%	>95%	>95%	>95%	>95%	>95%
MPPT Tracking Efficiency	>99%	>99%	>99%	>99%	>99%	>99%	>99%
Charging Modes	Four modes (bulk/absorption/float/equalization)			Four modes (bulk/absorption/float/equalization)			
Battery Type Selection	Default flooded or sealed maintenance-free (VRLA/GEL/AGM), selectable through front panel			Default flooded or sealed maintenance-free (VRLA/GEL/AGM), selectable through front panel			
Battery High Cut-Off	>32VDC	>64VDC	>64VDC	>32VDC	>32VDC	>64VDC	>64VDC
Type of Cooling	Forced	Forced	Forced	Forced	Forced	Forced	Forced
Electrical—Grid							
Input Voltage Range	145 to 275VAC	145 to 275VAC	145to 275VAC	75 to 143VAC	145 to 265VAC	75 to 143VAC	145 to 265VAC
Input Frequency Range	42 to 58Hz	42 to 58Hz	42 to 58Hz	55 to 65Hz	55H to 65Hz	55 to 65Hz	55 to 65Hz
AVR Input Range (Beyond Given Input Range, AVR Output Regulation is ±20%)	165 to 275VAC	165 to 275VAC	165 to 275VAC	85 to 143VAC	165 to 265VAC	85 to 143VAC	165 to 265VAC
AVR Output Range	230VAC ± 10%	230VAC ± 10%	230VAC ± 10%	120VAC ± 10%	220VAC ± 10%	120VAC ± 10%	220VAC ± 10%
Typical Frequency	50Hz	50Hz	50Hz	60Hz	60Hz	60Hz	60Hz
Battery Charging Current from Mains	Up to 20A	Up to 20A	Up to 20A	Up to 20A	Up to 20A	Up to 20A	Up to 20A
Transfer Time (Utility/Generator to Inverter)	<12ms	<12ms	<12ms	<12ms	<12ms	<12ms	<12ms

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	50Hz			60Hz			
Models:	**APCU 1424**	**APCU 2648**	**APCU 3348**	**APCU 1424A**	**APCU 1424B**	**APCU 2648A**	**APCU 2648B**
Electrical—Inverter							
Output Voltage	230VAC	230VAC	230VAC	120VAC	220VAC	120VAC	220VAC
Frequency	50Hz ± 0.5Hz	50Hz ± 0.5Hz	50Hz ± 0.5Hz	60Hz ± 0.5Hz	60Hz ± 0.5Hz	60Hz ± 0.5Hz	60Hz ± 0.5Hz
Output Wave Form	Pure sinewave	Pure sinewave	Pure sinewave	Pure sinewave	Pure sinewave	Pure sinewave	Pure sinewave
Load Regulation	±2%	±2%	±2%	±2%	±2%	±2%	±2%
Output Power Factor	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Peak Efficiency	>88%	>90%	>90%	>90%	>90%	>90%	>90%
THD (Linear Load)	<3%	<3%	<3%	<3%	<3%	<3%	<3%
Crest Factor	3:1	3:1	3:1	3:1	3:1	3:1	3:1
Battery Low Alarm and Indication	21.9V	43.8V	43.8V	21.9V	21.9V	43.8V	43.8V
Low Battery Load Cut-Off	21.5V	43V	43V	21.5V	21.5V	43V	43V
Load Reconnect	>25V	>50V	>50V	>25V	>25V	>50V	>50V
Instantaneous Power (100ms)	3600VA	7200VA	9000VA	3600VA	3600VA	7200VA	7200VA
Surge Power (0.5sec)	2400VA	4800VA	6000VA	2400VA	2400VA	4800VA	4800VA
Continuous Power Rating (25°C)	1400VA	2600VA	3300VA	1400VA	1400VA	2600VA	2600VA
Short Circuit	**One retry followed by permanent shutdown:** 0.1sec ON and 10sec OFF			**One retry followed by permanent shutdown**: 0.1sec ON and 10sec OFF			
Load Recovery	≤100% of nominal power output and manual reset after three retries			≤100% of nominal power output and manual reset after three retries			
Overload Cut-Off	**Three retries followed by permanent shutdown**: 110-125% 60sec ON and 10sec OFF, 125-150% 10sec ON and 10sec OFF, 150-200% 3sec ON and 10sec OFF, 200-300% 0.5sec ON and 10sec OFF >300% 0.1sec ON and 10sec OFF			**Three retries followed by permanent shutdown**: 110-125% 60sec ON and 10sec OFF, 125-150% 10sec ON and 10sec OFF, 150-200% 3sec ON and 10sec OFF, 200-300% 0.5sec ON and 10sec OFF, 300% 0.1sec ON and 10sec OFF			
Electrical—PCU							
Mode of Operation	Solar/grid/priority, selectable through front panel			Solar/grid/priority, selectable through front panel			
Self Consumption (Sleep Mode Inactive)	<26W	<45W	<45W	<26W	<26W	<45W	<45W
Self Consumption(Sleep Mode Active)	<10W	<10W	<10W	<10W	<10W	<10W	<10W
No Load Shutdown (Sleep Mode Active, % of Rated Full Load Current)	<3%	<2%	<2%	<3%	<3%	<2%	<2%
No Load Recovery Time	4sec	4sec	4sec	4sec	4sec	4sec	4sec
Mechanical							
Dimensions H × W × D (mm)	670 × 350 × 150	670 × 350 × 150	670 × 350 × 150	670 × 350 × 150	670 × 350 × 150	670 × 350 × 150	670 × 350 × 150
Net Weight (kg)	25	30	30	25	25	30	30
Recommended Mounting	Wall-mount	Wall-mount	Wall-mount	Wall-mount	Wall-mount	Wall-mount	Wall-mount
Cable Entry	Bottom	Bottom	Bottom	Bottom	Bottom	Bottom	Bottom
AC Input Terminals	MCB and DIN Rail feed-through terminal block 6U			MCB and DIN Rail feed-through terminal block 6U			
AC Output Terminals	DIN Rail feed-through terminal block 6U			DIN Rail feed-through terminal block 6U			
Panel Terminals	DIN Rail feed-through terminal block 10U			DIN Rail feed-through terminal block 10U			
Battery Terminals	DIN Rail feed-through terminal block 35U			DIN Rail feed-through terminal block 35U			
Environmental							
Operating Temperature	0 to 50°C	0 to 50°C	0 to 50°C	0 to 50°C	0 to 50°C	0 to 50°C	0 to 50°C
Acoustic Noise	<56dB	<56dB	<56dB	<56dB	<56dB	<56dB	<56dB
Relative Humidity Range (Non-Condensing)	5 to 95%	5 to 95%	5 to 95%	5 to 95%	5 to 95%	5 to 95%	5 to 95%
Altitude	2000m above sea level	2000m above sea level	2000m above sea level	2000m above sea level	2000m above sea level	2000m above sea level	2000m above sea level
Operating Environment	Indoor/protected	Indoor/protected	Indoor/protected	Indoor/protected	Indoor/protected	Indoor/protected	Indoor/protected
Ingress Protection	IP21	IP21	IP21	IP21	IP21	IP21	IP21

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Protections							
Short Circuit	Input/output	Input/output	Input/output	Input/output	Input/output	Input/output	Input/output
Reverse Polarity	Battery (via internal fuse)/panel			Battery (via internal fuse)/panel			
Overload	Three retries followed by shutdown			Three retries followed by shutdown			
Over Temperature Protection	**Inverter**: >92°C **PV charger**: >92°C			**Inverter**: >92°C **PV charger**: >92°C			
Battery Protection	High and low voltage	High and low voltage	High and low voltage	High and low voltage	High and low voltage	High and low voltage	High and low voltage
Display	Alpha numeric LCD	Alpha numeric LCD	Alpha numeric LCD	Alpha numeric LCD	Alpha numeric LCD	Alpha numeric LCD	Alpha numeric LCD
Configurable Parameters (Through Front Panel Keys)	Battery type, battery Ah selection, solar or grid priority, sleep mode enable/disable, factory reset, tariff per unit			Battery type, battery Ah selection, solar or grid priority, sleep mode enable/disable, factory reset, tariff per unit			
Environmental Protections	All PCB boards are conformally coated			All PCB boards are conformally coated			
External Accessories							
Wall-Mount	Mounting bracket and accessories			Mounting bracket and accessories			
Regulations and Directives							
Compliance	IEC61683, IEC 60068-2 (1, 2, 14, 30), MNRE compliant			IEC61683, IEC 60068-2 (1, 2, 14, 30)			
Display and LED Indications							
LED Green	Input, battery, mains, bypass, AC output			Input, battery, mains, bypass, AC output			
LED Red (Fault Indication)	Short circuit, overload, over temperature, battery low, battery high			Short circuit, overload, over temperature, battery low, battery high			
LCD Display Parameters	Software versions, PCU power, output frequency, PCR output current, SPV input power, load bypass, no load shutdown, battery Ah %, mains charging current, mains charging/mains charger off, PCR load %, SPV voltage and current, battery voltage and current, panel low, system off, priority (solar/grid), tariff per unit, battery type (tubular/SMF), savings, alarm status, factory reset, sleep mode ON/OFF, AVR ON/OFF, temperature, SPV NTC fail			Software versions, PCU power, output frequency, PCR output current, SPV input power, load bypass, no load shutdown, battery Ah %, mains charging current, mains charging/mains charger off, PCR load %, SPV voltage and current, battery voltage and current, panel low, system off, priority (solar/grid), tariff per unit, battery type (tubular/SMF), savings, alarm status, factory reset, sleep mode ON/OFF, AVR ON/OFF, temperature, SPV NTC fail			
Miscellaneous							
Warranty	2 years	2 years	2 years	2 years	2 years	2 years	2 years

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