SMARTEN®
FUSION IS THE FUTURE

SOLAR ENERGY

HELIX
MPPT SOLAR PCU

• Panel Support Upto 1200W* • MPPT Technology
• Compatible with 24V Solar Panels
• Compatible with Li-Ion, LA & SMF • Wall Mount

*Panel capacity varies by model

TECHNICAL SPECIFICATIONS

Model Name	HELIX 1100	HELIX 1250
Mains Input mode		
Mains AC low cut UPS mode	175VAC ± 10VAC	
Mains AC low cut recovery UPS mode	185VAC ± 10VAC	
Mains AC high cut UPS mode	265VAC ± 10VAC	
Mains AC high cut recovery UPS mode	255VAC ± 10VAC	
Mains AC low cut WUPS mode	90VAC ± 10VAC	
Mains AC low cut recovery W.UPS mode	110VAC ± 10VAC	
Mains AC high cut WUPS mode	295VAC ± 10VAC	
Mains AC high cut recovery W.UPS mode	285VAC ± 10VAC	
Input Frequency Range	48Hz to 52Hz	
Voltage Output in Mains Mode	Same as input	
Frequency Output in Mains Mode	Same as input	
Battery		
Battery Type	LA/TUB/LI-ION	
DC input voltage	12V	
Battery Quantity 12V 100Ah Li-ION	1	
Float charging voltage	13.7V±0.2V	
Boost charging voltage for LA Battery	14V±0.2V	
Boost charging voltage for Tubular and SMF Battery	14.5V±0.2V	
Bulk Absorption Battery Voltage	14.8V±0.2V	
Boost charging voltage for LI-ION Battery	14.2V±0.2V	
Battery deep Discharge Recovery	Yes (Independent Charger to Recover Deep Discharge Battery)	
Charging Current LI-ION Battery	20A ± 3A	
Charging mode	5Amp 5A ± 1A 10Amp 10A ± 2A Enable 20A ± 3A Disable	
Backup Mode		
Output voltage	220VAC +5% -10% (until battery low alarm)	
Output frequency	50Hz ± 0.2 Hz	
Output waveform	Pure Sine Wave ≤ 5% THD	
Discharging current @ full load	42±2A	62±2A
Low Battery Warning	10.8V±0.2V	
Low Battery Cut	10.4V±0.2V	
Change over time UPS mode	< 10msec	
Change over time WUPS mode	< 25msec	
Protections		
Overload in backup mode	Yes provided, system will indicate on display at 101% load	
Short Circuit in Backup Mode	System will shutdown after 3 - retries in case of output short circuit	
Short Circuit in Mains Mode	Mains FUSE Blown	
Back feed	System will shutdown in case of back feed and there is no retry	
Over temperature	Yes provided, if heat sink temperature goes above 100°C System will shut down	
Reverse Battery	DC fuse will blown	
Phase to Phase protection in mains mode	Yes provided by electronic	
Battery High Protection	Yes provided by Firmware	

Model Name	HELIX 1100	HELIX 1250
Solar Charge Controller		
Solar Charge Controller type	MPPT Type	
Max Panel wattage can be connected	600W	1200W
Max PV Voltage	60±3V	
Max PV current	30A	55A
Reverse PV protection	Yes provided, it will also display on LCD panel	
Reverse current flow to PV	Yes provided, it will also display on LCD panel	
Sharing of current when PV and Grid Both are available	If PV power is not sufficient enough to charge the battery, system will start sharing battery charging from PV and grid.	
Mode Option	Solar >> Grid >> Battery (In this condition firts priority is Solar then Grid and Battery) Solar >> Battery >> Grid (in this condition first priority is solar then Battery and Grid) Grid >> Solar >> Battery (In this condition first priority is Grid then Solar and Battery, Mains will not be disconnect in this condition)	
Mains Disconnect SOC (State of charge)**	65%- of battery capacity*** Default SOC is 30% 75%- of battery capacity*** Default SOC is 40% 85%- of battery capacity*** Default SOC is 30% 90%- of battery capacity*** Default SOC is 30%	
Mains Disconnect SOC definition(State of charge)**	Mains will disconnect if battery will charge defined SOC level	
Mains Connect SOC (State of charge)**	20% of battery capacity 30% of battery capacity 40% of battery capacity 50% of battery capacity	
Mains Connect SOC definition(State of charge)**	Mains will be connect when battery use defined SOC value of full capacity	
Battery Capacity**	100Ah	
Display and Alarms		
LCD Initial Display	Welcome, SMARTEN Website Address, System Capacity, Charging Till 90VAC and Deep Discharge Battery, System Setting, UPS / WUPS mode, I/P range 90-295VAC / 170-265VAC, Battery Type Selected LA / SMF / Tubular/LI-ION, Battery Capacity Selected 100-135Ah / 150-200Ah	
LCD Status Display	Mains ON, Input Voltage, Input Frequency, Battery Voltage, Battery Charging, Battery Charged, Charging Current, Backup Mode, UPS ON, UPS OFF, Battery Voltage, Load %, Output Voltage, Output Frequency, Mains Low Cut, Mains High Cut, Mains Not Available, Mains Frequency Cut"	
Buzzer	Audible beep for Overload, Short Circuit, Back feed, Low Battery, Over Temperature, Mains Fuse blown / MCB Trip	
Mains Charging Enable and Disable	Yes, Provided user can set mains charging Enable/Disable from front keypad	
Unit Saving in Display	LCD Display will show the total saving unit from Solar	
Safety		
HV Test Input to Earth	Leakage current <5mA when 1.5kV applied for 1 min	
HV Test Output to Earth	Leakage current <5mA when 1.5kV applied for 1 min	
IR Test Input to Earth	>5MΩ between @ 500VDC	
IR Test Output to Earth	>5MΩ between @ 500VDC	
Earth Leakage current in Mains mode	< 2.5mA	
Earth Leakage current in Backup mode	< 2.5mA	
Definition		

* This option is enabled only for the LA/SMF/TUB batteries
** This option is enabled only for the Li-Ion Batteries
*** Default values in different modes (Close approximation)