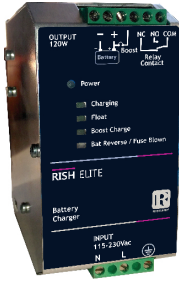


**RISH ELITE Battery Charger 1 Phase (12, 24 Vdc)**

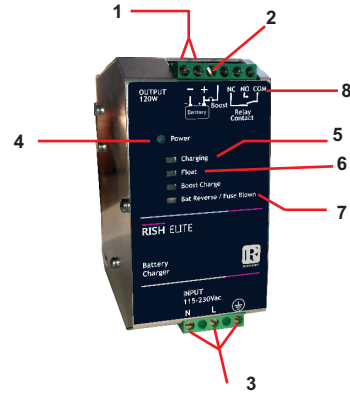


Thank you for having chosen one of our products for your work. We are certain the RISHABH INSTRUMENTS Battery Charger will meet your application requirements.

**General Description**

RISH ELITE 12012A, 12024A is a Switch Mode Automatic 3 Stage Battery Charger Suitable for Battery types Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd. The Battery Charger is used to put energy into a secondary cell or rechargeable battery by forcing an electric current through it. The Battery Charger offers Short circuit, Overload, Over voltage, Reverse Polarity, Over Temperature protections. A rugged casing with bracket for DIN rail mounting provide IP20 protection degree.

**Operating and Display Elements :**



**No. 1:**

The (+) (-) terminals are Output Terminals of battery Charger used to connect battery to battery charger. Ensure that (+) terminal of battery is connected to (+) terminal of charger and (-) terminal of battery is connected to (-) terminal of charger.

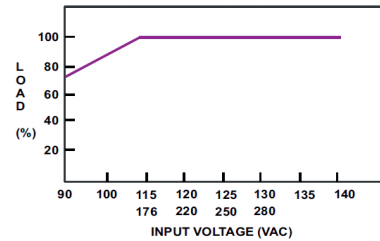
**No. 2:**

**Boost Charge :** Connect (short) Boost Terminal to (+) terminal of battery charger to select Boost mode. Boost charging involves a charging at high voltage than Absorption charge mode to charge the battery. It is generally if the battery has been discharged heavily. Boost charge enables the quick charging of depleted batteries. Thus Charging Battery in Boost charge will take less time to full its Capacity than Normal (Absorption) charging. Once battery charger is selected in Boost Charge Mode then it will increased voltage level somewhat higher than Absorption charge voltage level. Thus it deliver high rate of charge at high voltage to full battery capacity rapidly. This mode is helpful to charge battery faster than Absorption Charge mode when battery is heavily discharge. In this mode Charging LED, boost charge LED will Turn ON (Green).

**Note:** Refer Battery manufacturers data sheet for their suggestions on acceptance of higher charge at higher voltage rates.

**No. 3:**

Input Terminal of battery charger. Read datasheet carefully for acceptance of input voltage range to Power ON Battery Charger. Refer derating curve of Input versus Battery Capacity (% Load).



**No. 4:**

**Power:** Indicates Mains input is present i.e Battery Charger is Power ON. During Battery Charger is Power ON "Power" LED will light Green.

**No. 5:**

**CHARGING :** The first stage in a three stage charge cycle is known as the bulk charge. In this stage, the battery charger will rapidly return the battery to a state of charge that accomplishes this by maintaining a constant relatively high current. The current is held constant against the rising internal resistance to charge current by raising the battery voltage. When battery is heavily discharge and connected to battery charger, charger will charge it by constant current. During Constant current charging **CHARGING** LED will be ON (Green). Once battery voltage is raised Charger will reduce charge current to full battery capacity to approx 90%. Refer charging Curve for more detail.

**No. 6:**

**Float :** During the float charge, the voltage is dropped to a level lower level than what was applied during the absorption charge. This reduced voltage reduces the possibility of overcharging. The float charge serves two purpose, First, it brings the battery from approx 90 percent state of charge to a 100 percent state of charge. Second, it maintains the battery in a 100 percent state of charge condition. This Mode delivers charges to battery by tracking it's self discharge rates.

**No. 7:**

**BAT REVERSE/ FUSE BLOWN :** If Battery is connected in reverse polarity then Battery charger will protect it by disconnecting charger to keep Battery charger and Battery in safe mode. The Internal fuse will blown up immediately when connected in reverse polarity. BAT REVERSE/ FUSE BLOWN will turn ON (RED) when battery is connected in reverse polarity or if the internal fuse of the battery charger is blown. To use battery charger for normal operation replace the blown fuse as per rating of fuse depending upon the battery charger model. **For 12012A and 12024A fuse rating specifications are: TIME LAG FUSE 250VAC 10A 20X5mm**

**Warning:** - Avoid Reverse Polarity Connection of Battery to Charger.

**No. 8:**

**RELAY CONTACT** Battery Charger is having an electrically isolated Signal contact (Relay Output). The Signal Contact closes when output Power is OK (NO, COM will make contact) and Opens either in absence of input voltage or some internal fault (NC, COM will make contact). The Symbol of Relay Contacts are as shown. One can use this feature as Alarm output to indicate that Battery Charger is failed and look at input supply voltage. This feature is particularly useful in redundant application.



**Charge Fail Contact Rating:**

Max. DC1: 30 Vdc 1 A; Resistive load (EN 60947-4-1)  
AC1: 120 Vac 1A  
Min.:1mA at 5 Vdc | Min permissible load

**Safety and warning notes**



**WARNINGS :-**

- > The charger is designed for charging only batteries according to the technical specification.
- > Do not use the charger for any other purpose. Always follow battery manufacturers recommendations.
- > Never try to charge non rechargeable batteries.
- > Check the cables prior to use. Ensure that no cracks have occurred in the cable or bend protection. A charger with damaged cables must not be used.
- > Never charge a damaged battery.
- > Never charge a frozen battery.
- > Never place the charger on top of the battery when charging.
- > Always provide for proper ventilation during charging.
- > Avoid covering the charger.
- > A battery being charged could emit explosive gases. Prevent sparks close to the battery.
- > Ensure that the cabling does not jam or comes into contact with hot surfaces or sharp edges.
- > Battery acid is corrosive. Rinse immediately with water if acid comes into contact with skin or eyes, seek immediate medical advice.
- > Never Connect Battery in reverse Polarity.

**Connection:**

**Cable Connection:** The following cable cross-sections may be used:

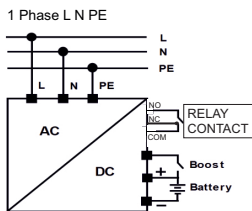
	Solid (mm <sup>2</sup> )	Stranded (mm <sup>2</sup> )	AWG	Torque (Nm)	Stripping Length
Input:	0.2 – 2.5	0.2 – 2.5	24 – 14	0.5 – 0.6 Nm	7 mm
	4.0	6.0	30 – 10	0.8 – 1.0 Nm	7 mm
Output:	0.2 – 2.5	0.2 – 2.5	24 – 14	0.5 – 0.6 Nm	7 mm
	4.0	6.0	30 – 10	0.8 – 1.0 Nm	7 mm
Signal:	0.2 – 2.5	0.2 – 2.5	24 – 14	0.5 – 0.6 Nm	7 mm
	4.0	6.0	30 – 10	0.8 – 1.0 Nm	7 mm

The Connection is made by the screw type 2.5 mm<sup>2</sup> (RISH ELITE 120XXA series) terminal block. Use only copper cables that are designed for operating temperature of > 75°C wiring terminal shall be marked to indicate the proper connection for the Battery Charger.

**Input - Output power connection:**

Input:		
RISH ELITE 120xxA series	1 Phase Switching Battery Charger	L, N, PE ⚡
Output:		
Charging is made via the		(+), (-).

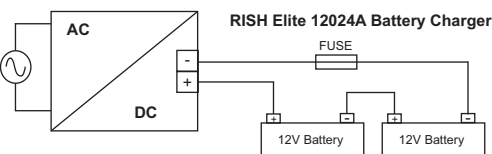
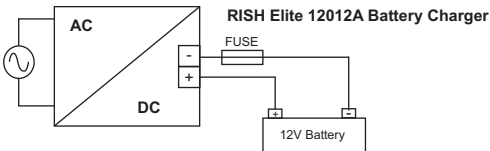
**Electrical Connection:**



**Signalling:**

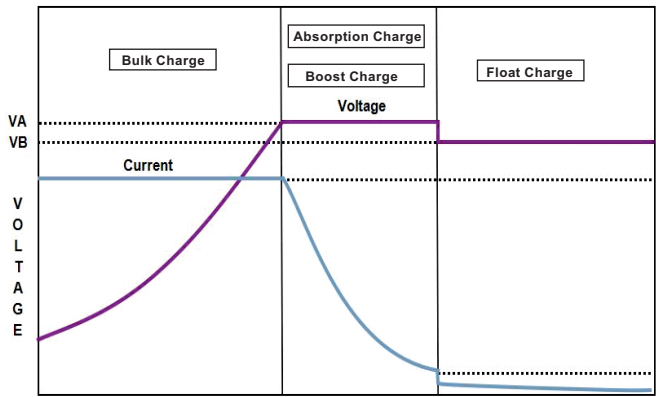
Description:	LED Status:
<b>Power :</b> Mains OK, Lights up permanently	Green
<b>Charging :</b> Bulk charging, Steady Voltage Charge	Green
<b>Float :</b> Trickle Charge	Green
<b>Boost Charge :</b> High voltage charge rate to charge the battery (Manual Selection)	Green
<b>BAT REVERSE/ FUSE BLOWN :</b> Reverse Polarity protection/ Internal Fuse Blown Indication	Red

**Output Connection:**



MODEL	FUSE RATING	
	CURRENT	CAPACITY
ELITE 12012A	10A	350A*s
ELITE 12024A	10A	350A*s

## Charging Curve:



## Standards and Certification

### Norms and certifications

The CE mark in According to EMC 2004/108/EC and Low voltage directive 2006/95/EC.

### Electrical Safety

According to IEC/EN 60950 (VDE 0805) EN 50178 (VDE 0160) for assembling device. The unit must be installed according to IEC/EN 60950. Input / Output separation: SELV EN60950-1 and PELV EN 60204-1. Double or reinforced insulation.

### EMC Immunity

EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN61000-6-2

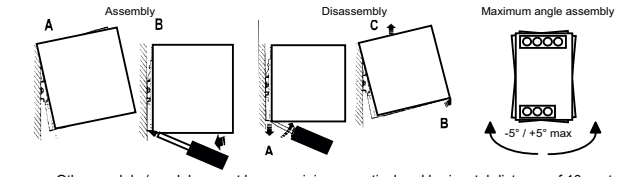
### EMC Emission

EN61000-6-4, EN 61000-3-2

### Standards Conformity

EN 60204-1 Safety of Electrical Equipment Machines.

## Rail Mounting:



Other models / modules must have a minimum vertical and horizontal distance of 10 cm to this power supply in order to guarantee sufficient auto convection. Depending on the ambient temperature and load of the device, the temperature of the housing can become very high!

	RISH ELITE 12012A Battery Charger	RISH ELITE 12024A Battery Charger
		
<b>Input Data</b>		
Nominal Input Voltage	115/230 Vac	115/230 Vac
Input Voltage range	90 – 280 Vac / 127 – 396 Vdc	90 – 280 Vac / 127 – 396 Vdc
Inrush Current (Vn and In Load) I't	<= 40 A <= 5 msec.	<= 40 A <= 5 msec.
Frequency	45 – 65 Hz ± 6%	45 – 65 Hz ± 6%
Input Current (115 – 230 Vac)	2.8 – 1.5 A	2.8 – 1.5 A
AC Input Fuse	4 A	4 A
<b>Output Data</b>		
Absorption Voltage (VA)	14.2 V (± 2%)	28.4 V (± 2%)
Boost Voltage (VA)	14.4 V (± 2%)	28.8 V (± 2%)
Float Voltage (VB)	13.5 V (± 2%)	27 V (± 2%)
Max. Charging Current (IA) at < 40°C	8.5 A (In)	4.25 A (In)
Max. Charging Current (IA) at 50°C	80% of In (permanent)	80% of In (permanent)
Max. Charging Current (IA) at 60°C	60% of In (permanent)	60% of In (permanent)
End of charging current (IB)	In X 0.32A ±10 %	In X 0.32A ±10 %
Turn-On delay after applying mains voltage	2.5 sec. (max)	2.5 sec. (max)
Line regulation	< ± 0.1 %	< ± 0.1 %
Residual Ripple	120 mVpp	120 mVpp
Efficiency	86 %	86 %
Short-circuit Protection	YES, Constant Current (9.6 A)	YES, Constant Current (4.8 A)
Short-circuit current	Max 1.2 X In 5%	Max 1.2 X In 5%
Dissipation power load max (W)	20.5 W	20.5 W
Over Load protection	YES, Constant Current (9.6 A)	YES, Constant Current (9.6 A)
Over Voltage Output protection	YES	YES
Parallel connection	NO	NO
Recommended Battery Capacity Range (Ah)	30 - 100 Ah	15 - 50 Ah
Charge Fail Contact rating (EN60947-4-1)	Resistive (Max. 30 VDC 1A Max / 120 VAC 1A)	Resistive (Max. 30 VDC 1A Max / 120 VAC 1A)
Min.1mA at 5 VDC	Min permissive load	Min permissive load
<b>Climatic Data</b>		
Ambient Temperature operation	-20°C to +70 °C (>60°C Derating 2.5%/°C)	-20°C to +70 °C (>60°C Derating 2.5%/°C)
Ambient Temperature Storage	-40°C up to +85 °C	-40°C up to +85 °C
Humidity at 25 °C, no condensation	95 %	95 %
Cooling	Convection	Convection
<b>General Data</b>		
Isolation Voltage (In / Out)	3000 Vac	3000 Vac
Isolation Voltage (In / PE)	2000 Vac	2000 Vac
Isolation Voltage (Out / PE)	500 Vac	500 Vac
Protection Class (EN/IEC 60529)	IP 20	IP 20
Reliability: MTBF IEC 61709	> 5,00,000 h	> 5,00,000 h
Pollution Degree Environment	2	2
Connection Terminal Blocks Screw Type	2.5 mm <sup>2</sup> (24 – 14 AWG)	2.5 mm <sup>2</sup> (24 – 14 AWG)
Vibration (operation)	10 to 500Hz, 2G, 20min/sweep, period - 1Hr, Each along X,Y,Z axes.	10 to 500Hz, 2G, 20min/sweep, period - 1Hr, Each along X,Y,Z axes.
Shock	30g in all direction in acc. with IEC 60068-2-27.	30g in all direction in acc. with IEC 60068-2-27.
Protection class	1 with PE connected	1 with PE connected