

# RISH BATTERY CHARGER

Switched Mode Multistage Charge Technology



Input:

Universal single-phase Input

**Protections:**

Short circuit, Overload, Over voltage, Reverse Polarity Connection, Over Temperature.

**Features:**

Switch Mode Technology

Automatic 3 Stage Charge Profile

Boost Charge Function

Reverse Polarity Protection with Fuse.

LED indicator for Power ON, Charging, Boost Mode, Float Mode, Battery Reverse/ Fuse Blown Connection.

Cooling by free air convection

DIN Rail Mounting

Compact size, 3 Year warranty

## RISH Elite 3612A

### Input Data

Nominal Input Voltage	115/230 Vac
Input Voltage range	90 – 280 Vac 127 – 396 Vdc
Inrush Current (Vn and In Load) I <sup>2</sup> t	≤ 45 A ≤ 5 msec.
Frequency	45 – 65 Hz ±6%
Input Current (115 – 230 Vac)	1.5 – 0.75 A
AC Input Fuse	4 A

### Output

Absorption Voltage (VA)	14.2 V (TYP)
Boost Voltage (VA)	14.4 V (TYP)
Float Voltage (VB)	13.5 V (TYP)
Max. Charging Current (IA) at < 50°C	2.6 A (In)
Max. Charging Current (IA) at 60°C	80% of In (permanent)
Max. Charging Current (IA) at 70°C	60% of In (permanent)
End of charging current (IB)	In X 0.32A ±20 %
Turn-On delay after applying mains voltage	2.5 sec. (max)
Line regulation	< ±0.5 %
Residual Ripple	≤ 120 mV <sub>pp</sub>
Efficiency	≥ 75 %

Short-circuit Protection	Constant Current
Short-circuit current	Max 1.2 X In ±10%
Dissipation power load max (W)	15 W
Over Load protection	Constant Current
Over Voltage Output protection	Yes
Over Temperature Protection	Yes
Parallel connection	No
Recommended Battery Capacity Range (Ah)	9 - 30 Ah
Charge Fail Contact rating (EN60947-4-1)	Resistive load
Max. 30 VDC 1A	
Max. 120 VAC 1A	
Min.1mA at 5 VDC	Min permissive load

### Climatic Data

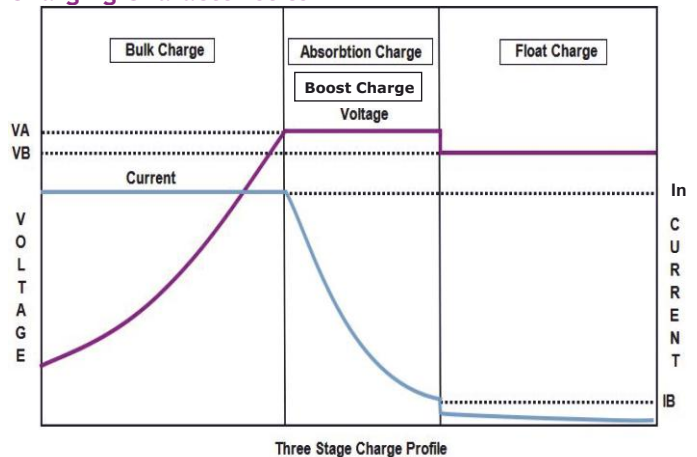
Ambient Temperature operation	-20°C to +70 °C
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Ambient Temperature Storage	-40°C up to +85 °C
Humidity at 25 °C, no condensation	95 %
Cooling	Convection

### General Data

Isolation Voltage (In / Out)	3000 Vac
Isolation Voltage (In / PE)	1605 Vac
Isolation Voltage (Out / PE)	500 Vac
Protection Class (EN/IEC 60529)	IP 20
Reliability: MTBF IEC 61709	> 5,00,000 h
Pollution Degree Environment	2
Connection Terminal Blocks	2.5 mm <sup>2</sup> (24 – 14 AWG)
Screw Type	
Vibration (operation)	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.
Protection class	1 with PE connected

### Charging Characteristics



## 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.

## Dimensional Details

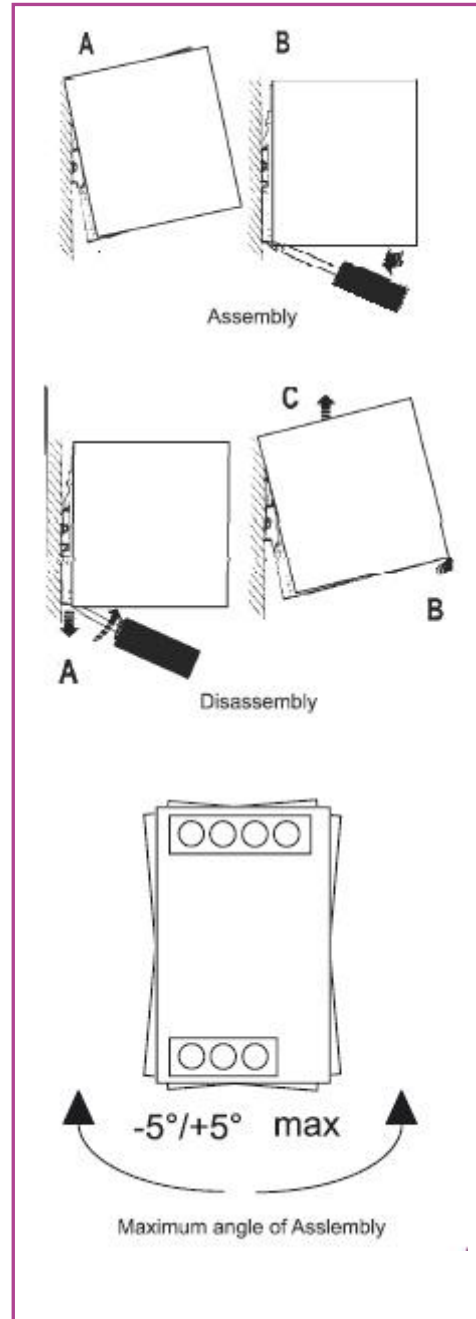


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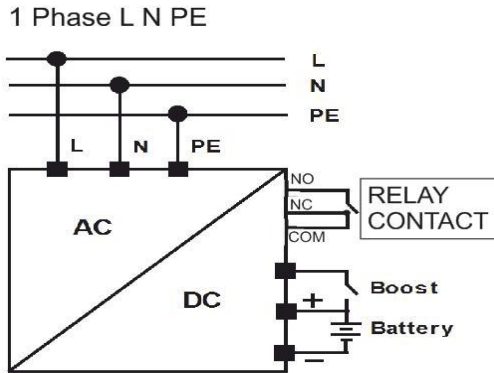
55 X 110 X 105

All Dimensions are in mm

## Installation:



## Electrical Connection

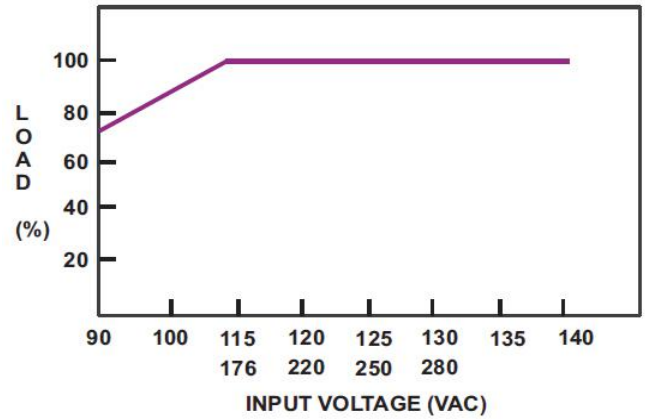


### Note-

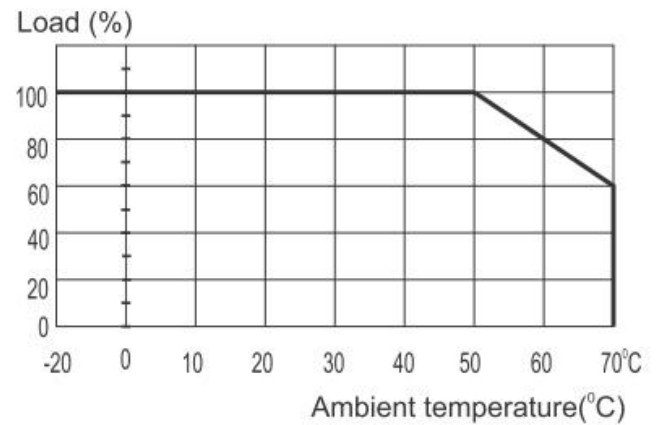
\*Refer Battery manufacturers data sheet for their suggestions on acceptance of higher charge rates since charging Battery beyond recommended capacity will increase the charging time and below specified capacity will increase charge rate causing dehydration and grid corrosion on the positive plate which will result in loss of battery capacity.

- 1) All parameters not specifically mentioned are measured at 230VAC input, Rated load and 25°C of ambient temperature.
- 2) Ripple and noise are measured at 20MHz of bandwidth short length lead terminated with a 0.1uF & 47uF parallel capacitor.

## Static Characteristics



## Derating Curve



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Switched Mode Multistage Charge Technology



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Universal single-phase Input

Efficiency up to 86%

## Protections:

Short circuit, Overload, Over voltage, Reverse Polarity Connection, Over Temperature.

## Features:

Switch Mode Technology

Automatic 3 Stage Charge Profile

Boost Charge Function

Reverse Polarity Protection with Fuse.

LED indicator for Power ON, Charging, Boost Mode, Float Mode, Battery Reverse/ Fuse Blown Connection.

Cooling by free air convection

DIN Rail Mounting

Compact size, 3 Year warranty

## RISH Elite 72xx

### Input Data

Nominal Input Voltage	115/230 Vac
Input Voltage range	90 – 280 Vac 127 – 396 Vdc
Inrush Current (Vn and In Load) $I^2t$	$\leq 40 \text{ A} \leq 5 \text{ msec.}$
Frequency	45 – 65 Hz $\pm 6\%$
Input Current (115 – 230 Vac)	2.8 – 1.5 A
AC Input Fuse	4 A
Recommended DC Output Fuse	See Table

### Output

Absorption Voltage (VA)	See Table
Boost Voltage (VA)	See Table
Float Voltage (VB)	See Table
Max. Charging Current (IA) at $< 40^\circ\text{C}$	See Table (In)
Max. Charging Current (IA) at $50^\circ\text{C}$	80% of In (permanent)
Max. Charging Current (IA) at $60^\circ\text{C}$	60% of In (permanent)
End of charging current (IB)	In X 0.32A $\pm 20\%$
Turn-On delay after applying mains voltage	2.5 sec. (max)
Line regulation	$< \pm 0.5\%$
Residual Ripple	$\leq 120 \text{ mV}_{pp}$
Efficiency	$\geq 86\%$
Short-circuit Protection	Constant Current
Short-circuit current	Max 1.2 X In $\pm 10\%$
Dissipation power load max (W)	20.5 W
Over Load protection	Constant Current
Over Voltage Output protection	Yes
Over Temperature Protection	Yes
Parallel connection	No
Recommended Battery Capacity Range (Ah)	See Table
Charge Fail Contact rating (EN60947-4-1)	
Max. 30 VDC 1A	Resistive load
Max. 120 VAC 1A	
Min. 1mA at 5 VDC	Min permissive load

### Climatic Data

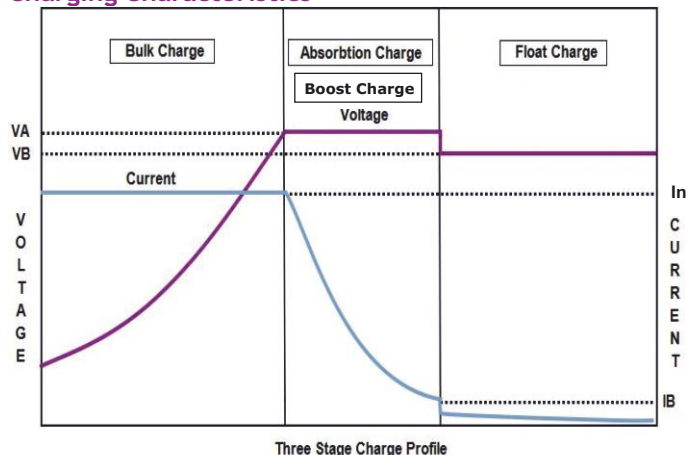
Ambient Temperature operation	$-20^\circ\text{C}$ to $+70^\circ\text{C}$ ( $>60^\circ\text{C}$ Derating 2.5%/ $^\circ\text{C}$ )
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Ambient Temperature Storage	$-40^\circ\text{C}$ up to $+85^\circ\text{C}$
Humidity at $25^\circ\text{C}$ , no condensation	95 %
Cooling	Convection

### General Data

Isolation Voltage (In / Out)	3000 Vac
Isolation Voltage (In / PE)	1605 Vac
Isolation Voltage (Out / PE)	500 Vac
Protection Class (EN/IEC 60529)	IP 20
Reliability: MTBF IEC 61709	$> 5,00,000 \text{ h}$
Pollution Degree Environment	2
Connection Terminal Blocks	2.5 mm <sup>2</sup> (24 – 14 AWG)
Screw Type	
Vibration (operation)	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.
Protection class	1 with PE connected

### Charging Characteristics



## 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.

## Dimensional Details

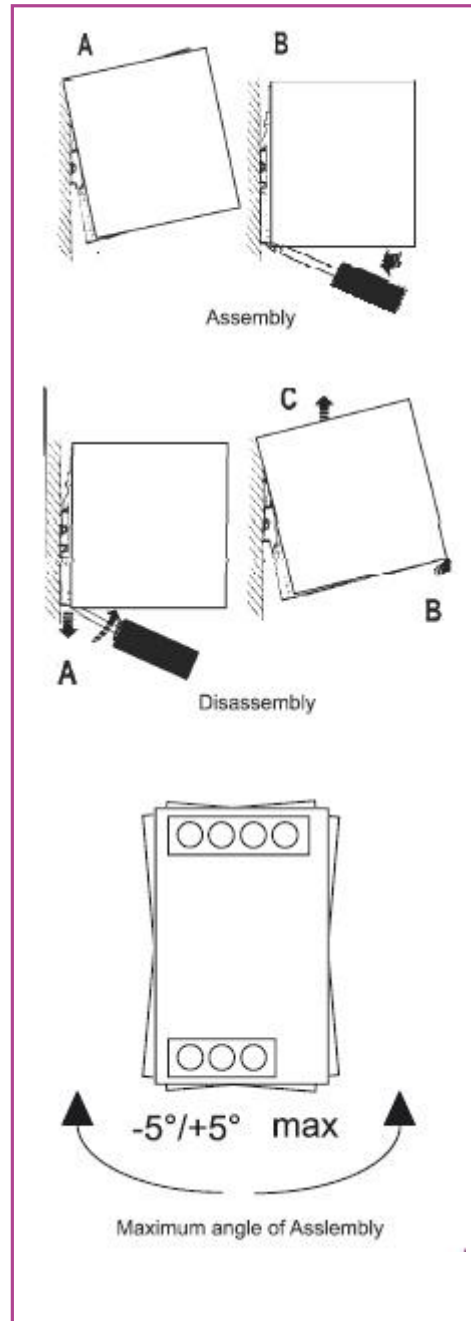


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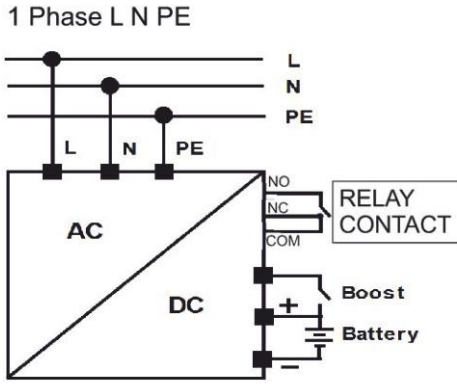
55 X 110 X 105

All Dimensions are in mm

## Installation:



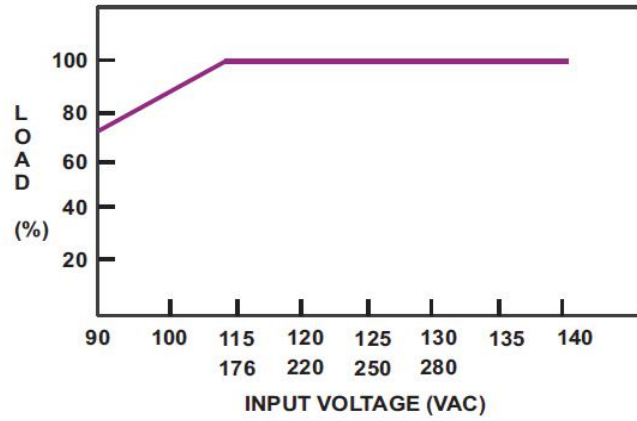
## Electrical Connection



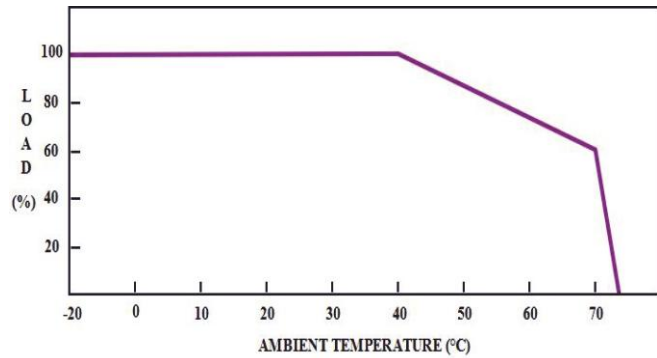
### Note-

\*Refer Battery manufacturers data sheet for their suggestions on acceptance of higher charge rates since charging Battery beyond recommended capacity will increase the charging time and below specified capacity will increase charge rate causing dehydration and grid corrosion on the positive plate which will result in loss of battery capacity.

## Static Characteristics



## Derating Curve



Model	Constant Current	V Boost (TYP)	V Absorption (TYP)	V Float (TYP)	Nominal O/p Current (In)	Recommended Battery Capacity Range (Ah)*
Rish Elite 7212	5.9 A	14.4 V	14.2 V	13.5 V	5.2 A	30 - 60 Ah
Rish Elite 7224	2.9 A	28.8 V	28.4 V	27 V	2.6 A	15 - 30 Ah

# RISH BATTERY CHARGER

Switched Mode Multistage Charge Technology



## Input:

Universal single-phase Input

Efficiency up to 86%

## Protections:

Short circuit, Overload, Over voltage, Reverse Polarity Connection, Over Temperature.

## Features:

Switch Mode Technology

Automatic 3 Stage Charge Profile

Boost Charge Function

Reverse Polarity Protection with Fuse.

LED indicator for Power ON, Charging, Boost Charge, Float Mode, Battery Reverse/ Fuse Blown Connection.

Cooling by free air convection

DIN Rail Mounting

Compact size, 3 Year warranty

## RISH Elite 120xx

### Input Data

Nominal Input Voltage	115/230 Vac
Input Voltage range	90 – 280 Vac 127 – 396 Vdc
Inrush Current (Vn and In Load) I <sup>2</sup> t	≤ 40 A ≤ 5 msec.
Frequency	45 – 65 Hz ±6%
Input Current (115 – 230 Vac)	2.8 – 1.5 A
AC Input Fuse	4 A
Recommended DC Output Fuse	See Table

### Output

Absorption Voltage (VA)	See Table
Boost Voltage (VA)	See Table
Float Voltage (VB)	See Table
Max. Charging Current (IA) at < 40°C	See Table (In)
Max. Charging Current (IA) at 50°C	80% of In (permanent)
Max. Charging Current (IA) at 60°C	60% of In (permanent)
End of charging current (IB)	In X 0.32A ±20 %
Turn-On delay after applying mains voltage	2.5 sec. (max)
Line regulation	< ±0.5 %
Residual Ripple	≤ 120 mV <sub>pp</sub>
Efficiency	≥ 86 %
Short-circuit Protection	Constant Current
Short-circuit current	Max 1.2 X In ±10%
Dissipation power load max (W)	20.5 W
Over Load protection	Constant Current
Over Voltage Output protection	Yes
Over Temperature Protection	Yes
Parallel connection	No
Recommended Battery Capacity Range (Ah)	See Table
Charge Fail Contact rating (EN60947-4-1)	
Max. 30 VDC 1A	Resistive load
Max. 120 VAC 1A	
Min.1mA at 5 VDC	Min permissive load

### Climatic Data

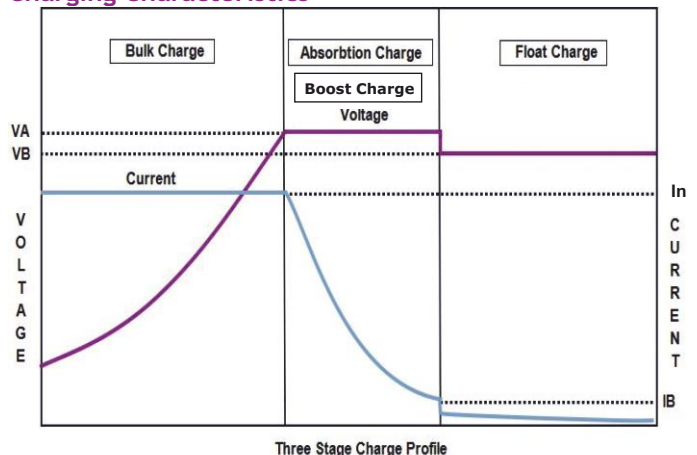
Ambient Temperature operation	-20°C to +70 °C (>60°C Derating 2.5%/°C)
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Ambient Temperature Storage	-40°C up to +85 °C
Humidity at 25 °C, no condensation	95 %
Cooling	Convection

### General Data

Isolation Voltage (In / Out)	3000 Vac
Isolation Voltage (In / PE)	1605 Vac
Isolation Voltage (Out / PE)	500 Vac
Protection Class (EN/IEC 60529)	IP 20
Reliability: MTBF IEC 61709	> 5,00,000 h
Pollution Degree Environment	2
Connection Terminal Blocks	2.5 mm <sup>2</sup> (24 – 14 AWG)
Screw Type	10 to 500Hz, 2G, 20min/sweep, period - 1Hr, Each along X,Y,Z axes.
Vibration (operation)	30g in all direction in acc. with IEC 60068-2-27.
Shock	1 with PE connected

### Charging Characteristics



## 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.

## Dimensional Details

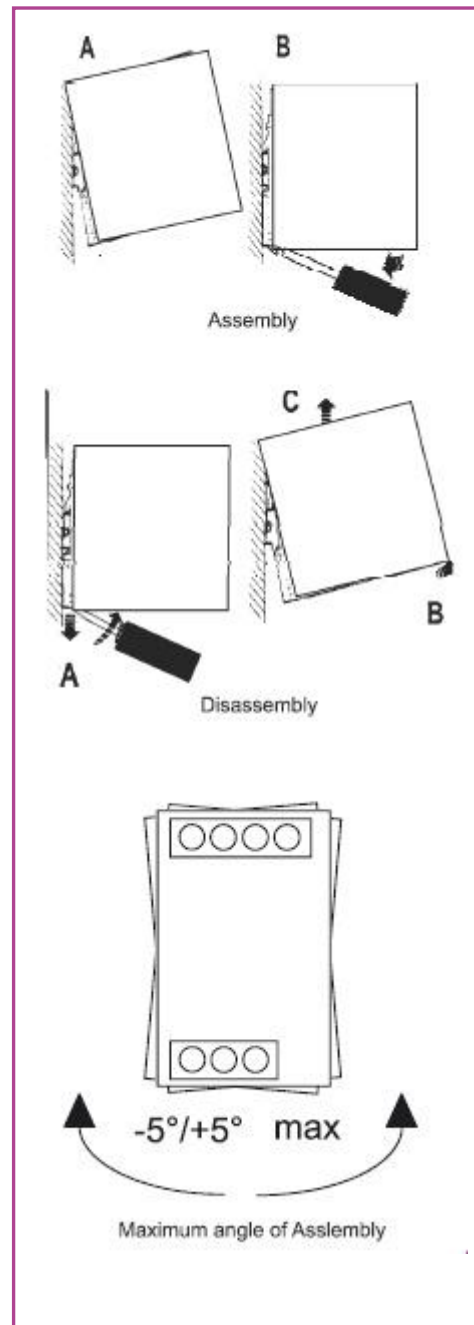


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55 X 110 X 105

All Dimensions are in mm

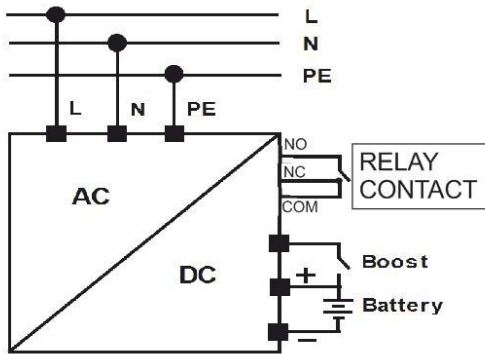
## Installation:





## Electrical Connection

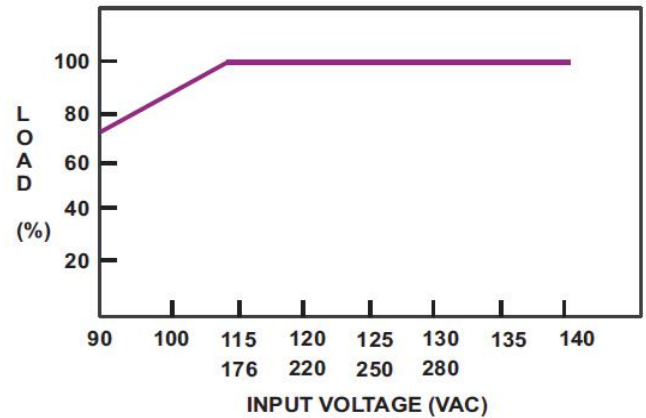
1 Phase L N PE



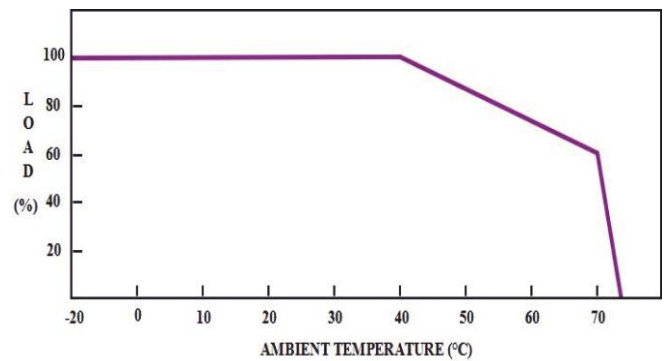
### Note-

\*Refer Battery manufacturers data sheet for their suggestions on acceptance of higher charge rates since charging Battery beyond recommended capacity will increase the charging time and below specified capacity will increase charge rate causing dehydration and grid corrosion on the positive plate which will result in loss of battery capacity.

## Static Characteristics



## Derating Curve



Model	Constant Current	V Boost (TYP)	V Absorption (TYP)	V Float (TYP)	Nominal O/p Current (In)	Recommended Battery Capacity Range (Ah)*
Rish Elite 12012	9.6 A	14.4 V	14.2 V	13.5 V	8.5 A	30 - 100 Ah
Rish Elite 12024	4.8 A	28.8 V	28.4 V	27 V	4.25 A	15 - 50 Ah

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Switched Mode Multistage Charge Technology



Input:

Universal single-phase Input

Efficiency up to 86%

Protections:

Short circuit, Overload, Over voltage, Reverse Polarity Connection, Over Temperature.

Features:

Switch Mode Technology

Automatic 3 Stage Charge Profile

Boost Charge Function

Reverse Polarity Protection with Fuse.

LED indicator for Power ON, Charging, Boost Mode, Float Mode, Battery Reverse/ Fuse Blown Connection.

Cooling by free air convection

DIN Rail Mounting

Compact size, 3 Year warranty

## RISH Elite 12030A

### Input Data

Nominal Input Voltage	115/230 Vac
Input Voltage range	90 – 280 Vac 127 – 396 Vdc
Inrush Current (Vn and In Load) I <sup>2</sup> t	≤ 40 A ≤ 5 msec.
Frequency	45 – 65 Hz ±6%
Input Current (115 – 230 Vac)	2.8 – 1.5 A
AC Input Fuse	4 A

### Output

Absorption Voltage (VA)	35.52 V (TYP)
Boost Voltage (VA)	36.0 V (TYP)
Float Voltage (VB)	33.75 V (TYP)
Max. Charging Current (IA) at < 40°C	3.4 A (In)
Max. Charging Current (IA) at 50°C	80% of In (permanent)
Max. Charging Current (IA) at 60°C	60% of In (permanent)
End of charging current (IB)	In X 0.32A ±20 %
Turn-On delay after applying mains voltage	2.5 sec. (max)
Line regulation	< ±0.5 %
Residual Ripple	≤ 120 mV <sub>pp</sub>
Efficiency	≥ 86 %
Short-circuit Protection	Constant Current
Short-circuit current	Max 1.2 X In ±10%
Dissipation power load max (W)	20.5 W
Over Load protection	Constant Current
Over Voltage Output protection	Yes
Over Temperature Protection	Yes
Parallel connection	No
Recommended Battery Capacity Range (Ah)	12 - 40 Ah
Charge Fail Contact rating (EN60947-4-1)	
Max. 30 VDC 1A	Resistive load
Max. 120 VAC 1A	
Min. 1mA at 5 VDC	Min permissive load

### Climatic Data

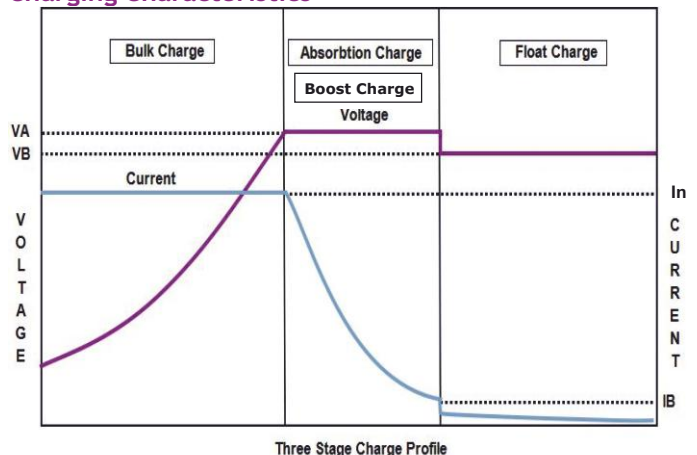
Ambient Temperature operation	-20°C to +70 °C (>60°C Derating 2.5%/°C)
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Ambient Temperature Storage	-40°C up to +85 °C
Humidity at 25 °C, no condensation	95 %
Cooling	Convection

### General Data

Isolation Voltage (In / Out)	3000 Vac
Isolation Voltage (In / PE)	1605 Vac
Isolation Voltage (Out / PE)	500 Vac
Protection Class (EN/IEC 60529)	IP 20
Reliability: MTBF IEC 61709	> 5,00,000 h
Pollution Degree Environment	2
Connection Terminal Blocks	2.5 mm <sup>2</sup> (24 – 14 AWG)
Screw Type	10 to 500Hz, 2G, 20min/sweep, period - 1Hr, Each along X,Y,Z axes.
Vibration (operation)	30g in all direction in acc. with IEC 60068-2-27.
Shock	
Protection class	1 with PE connected

### Charging Characteristics



## Norms and certifications

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

## Electrical Safety

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## 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.

## Dimensional Details

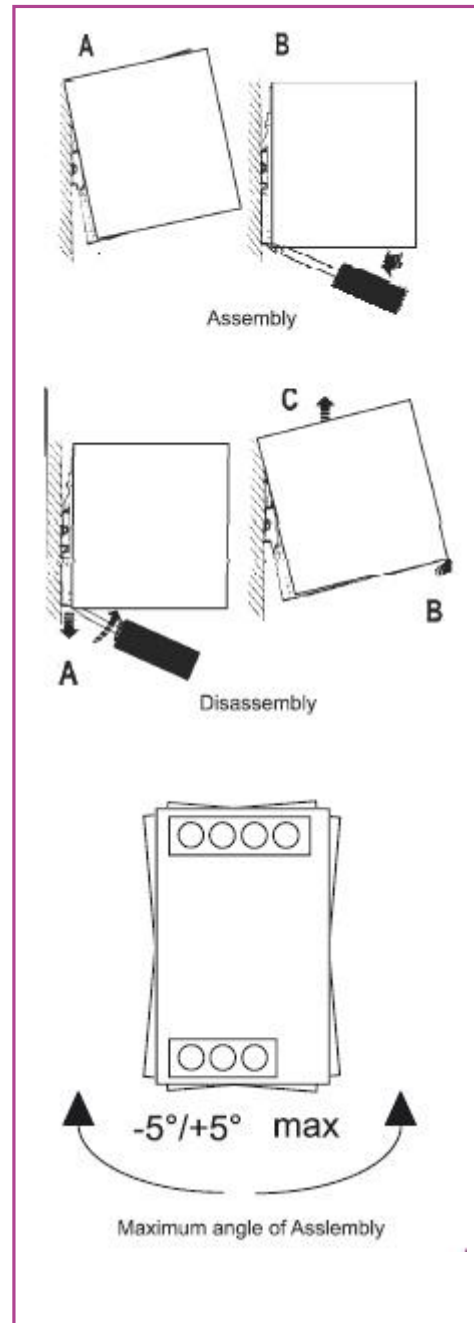


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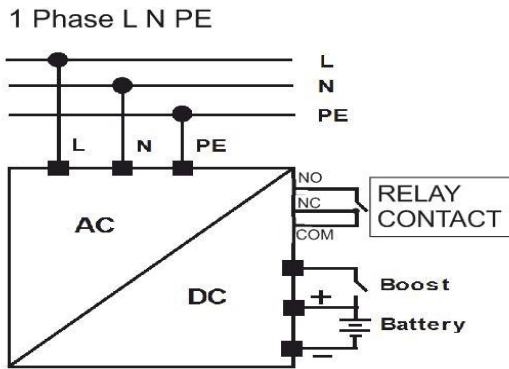
55 X 110 X 105

All Dimensions are in mm

## Installation:



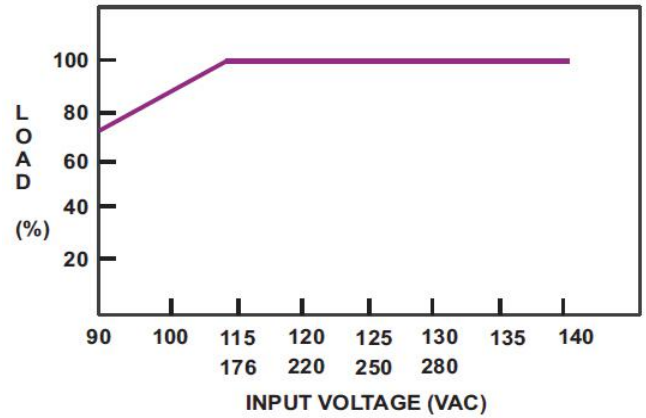
## Electrical Connection



### Note-

\*Refer Battery manufacturers data sheet for their suggestions on acceptance of higher charge rates since charging Battery beyond recommended capacity will increase the charging time and below specified capacity will increase charge rate causing dehydration and grid corrosion on the positive plate which will result in loss of battery capacity.

## Static Characteristics



## Derating Curve

