



**Part Description:** Portable DC charger for Electric three-wheeler

Revision History:

Revision	Date	Reason
0	10/03/22	New release

**About Stiger EV:**

Speedloop Auto Pvt Ltd – Stiger EV is an Electric Compact Utility vehicle established in 2020.

Head quarter is in Pune, India.

For more information, visit [www.stigerev.com](http://www.stigerev.com)

**Requirements:****1. Target Vehicle:**

Specifications	
Vehicle	Stiger EV 300
Power source	Traction Battery Pack (REES)
Homologation Category	L5N

**2. Component Objectives:**

- Charge LFP battery safely
- Communicate multiple safety units and safeguard vehicle while charging
- Should meet reliability and durability target.

**3. Component Requirements:****3.1. Regulatory Requirements:**

- AIS 004, IS 17017 part 21
- AIS 156
- AIS 037



3.2. Functional Requirements:

#	Parameter/ Function	Specification	UoM
1	Chemistry	LFP	
2	Type	Portable Charger	
3	Input Voltage (AC)	230	V
4	Charging Topology	CCCV	Programmable Will be preferred
5	System Voltage	48	V
6	Water Ingress Protection	>65	
7	Timer Protection	3.5	Hrs.
8	CAN communication	2.0	
9	Over temperature Detection	-45 to 60	Degree Celsius
10	Charger Temperature Monitoring	Yes	
11	Isolation Between Body & Input Terminal at 500 V	>1	M-ohm
12	Weight	< 7	kg
13	Connector Mating Life	>500	-

3.3. Reference Images:

NA

3.4. Dimensional Requirements:

#	Parameter/ Function	Specification	UoM
1	Length	< 285	mm
2	Width	< 160	mm
3	Height	< 70	mm
4	Output Wire Length	1	meter
5	IP wire Length	0.5	meter

3.5. Electrical Requirements:

#	Parameter/ Function	Specification	UoM
1	AC Input Voltage	230 ± 5 %	V
2	AC Input Current (Socket Rating)	16	A
3	Efficiency	>90	%
4	Max CV Mode Voltage	55	V
5	Max CC Current	40	A
6	Charge Stop Current	2	A
7	Max CC Mode duration	2.6	Hrs.
8	Max. Float Voltage time	50	min
9	Charger Shutdown Time after plug (Voltage=0 V)	3.5	Hrs.



**4. Performance Requirements:**

4.1. Design Verification Plan

#	Category	Description	Standard	Remark
1	Electrical	High voltage Tests	IS 9000	Supplier
		Current Draw test		Supplier
		Continuous Operating Tests		Supplier
2	Environmental	Water Spray Test		Supplier
		Thermal Stability Test		Supplier
		EMC	IS 17017-part 21 sec 1	Supplier
		Heat Damp test	IS 9000 part 5: sec 1 and 2	Supplier
		Salt mist test	IS 9000 part 11	Supplier
		Dust Tests	IS 9000 part 12	Supplier
		Driving Rain Test	IS 9000 part 16	Supplier
		Corrosion Resistance Test		Supplier
3	Mechanical	Vibration Test		Supplier
		Shock Test	IS 9000-part 7 sec 1	Supplier
		Drop Tests	IS 9000-part 7 sec 3	Supplier
4	Endurance	Life test		Supplier
		Cold test	9000 part 2	Supplier
		Rapid Change of temperature	9000 part 14	Supplier

Note: Test reports covering DVP test and other extensive tests reports to be shared by supplier.

4.2. Fitment Trials

#	Category	Description	Remark
1	Electrical	Insulation Resistance test	Stiger EV
		Operating Voltage	Stiger EV
		Integration With Wiring Harness	Stiger EV
		Continuous Operation Test	Stiger EV
		Integration w.r.t. Battery	Stiger EV
2	Mechanical	Mounting Integration	Stiger EV
		Dimensions	Stiger EV
		On Road Test- Vibration	Stiger EV

**5. Integration Details to be shared:**

- CAD
- Electrical Specification
- Component Level DFMEA
- Other if required

**6. Team Details:**

Name	Team	Role	Signature	Date
Ashay Ghogare	Engineering	Creator	<i>Ashay Ghogare</i>	06/10/22
Anay Darekar	VI	Reviewer	<i>Anay Darekar</i>	06-10-22
Om Rathod	S&SC	Creator	<i>Om Rathod</i>	06/10/22
Aditya Puppala	CTO	Approver	<i>Aditya</i>	06/10/22

Supplier	IS 9000 part 1 and 2	Heat Ramp Test	
Supplier	IS 9000 part 1	Soft mat test	
Supplier	IS 9000 part 1	Dust Test	
Supplier	IS 9000 part 1	Driving Rain Test	
Supplier		Corrosion Resistance Test	
Supplier		Vibration Test	Mechanical
Supplier	IS 9000-part 7 sec 1	Shock Test	
Supplier	IS 9000-part 7 sec 3	Drop Tests	
Supplier		Life test	Endurance
Supplier	8000 part 2	Cold test	
Supplier	8000 part 1A	Rapid Change of temperature	

Note: Test reports covering DV test and other extensive tests reports to be shared by supplier.

**4.2 Element Table**

Category	Description	Remark
1	Electrical	Insulation Resistance test
		Stiger EV
		Operating Voltage
		Stiger EV
		Integration With Wiring Harness
		Stiger EV
		Continuous Operation Test
		Stiger EV
		Integration w/L Battery
		Stiger EV
2	Mechanical	Mounting Integration
		Stiger EV
		Dimensions
		Stiger EV
		On Road Test- Vibration
		Stiger EV

**4.2 Information Details to be shared:**

- CAD
- Electrical Specification
- Component level DFM's
- Other if required