

Class 1



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1. SCOPE

1.1. Introduction

The TE CCS1 charging inlet was designed to power electric and hybrid vehicles that comply with standard IEC 62196-3.

The maximum rated current for AC is 32A and for DC is 250A continuous current at Ambient temperature of 20°C at the maximum voltage of 250V for AC and 1000V for DC.

200A DC is supported indefinitely at ambient temperature up to 50°C.

The content of this specification covers the technical characteristics, performance and test requirements for the EV CHARGE INLET Combined Charging System Type 1 further mentioned as CCS1.

When tests are performed the following specifications and standards shall be used. All inspections shall be performed using the applicable inspection plan and customer drawing.

2. APPLICABLE DOCUMENTS

The following mentioned documents are part of this specification. Unless otherwise specified, the latest edition of the documents applies. In the event of conflict between the requirements of this specification and the information contained in the referenced documents, this specification shall take precedence.

2.1. TE Connectivity Documents

General Requirements

Requirement	Description
109-1 Rev. J	General Requirements for Testing

Table 1

Drawings

Drawing	Description
CD-2381070-1	CHARGE INLET ASSY WITH LED CCS1
CD-2388501	CHARGE INLET KIT. LED. COMBO 1

Table 2

Specifications

Specification	Description
114-94722	Application Specification EV Charge Inlet CCS1 with LED
114-94436	Crimp Specification (90° DC-Contact)
114-13000	Micro MATE-N-LOK Connectors
108-94519	Actuator-Specification

Table 3

2.2. Other Documents

Specification	Description
IEC 62196-1: 2014/06	General requirements
IEC 62196-2: 2016/02	Dimensional compatibility and interchangeability requirements for AC pin and contact-tube accessories
IEC 62196-3: 2014/06	Dimensional compatibility and interchangeability requirements for DC and AC/DC pin and contact-tube vehicle couplers
SAE J1772: 2016/02	SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler

Table 4

3. REQUIREMENTS

3.1. Design and Construction

The product has been designed to withstand its environment and the effects it has on it.

3.2. Material

The Material data is available in the IMDS (International Material Data System of the Automotive Industry).

3.3. Product Ratings

Dimensions

Mating-Face Geometry

compatible with IEC 62196-2 Sheet 2-I
and IEC 62196-3 Sheet 3-IIIa

Screw Points

See Drawing

Environmental conditions

Ambient temperature

-30 °C +50 °C

Max. altitude

5000m above sea-level

Protection degree

IP5KX with flaps closed condition
IP6KX with flaps opened condition
IPX7 Temp. reduce to 85°C

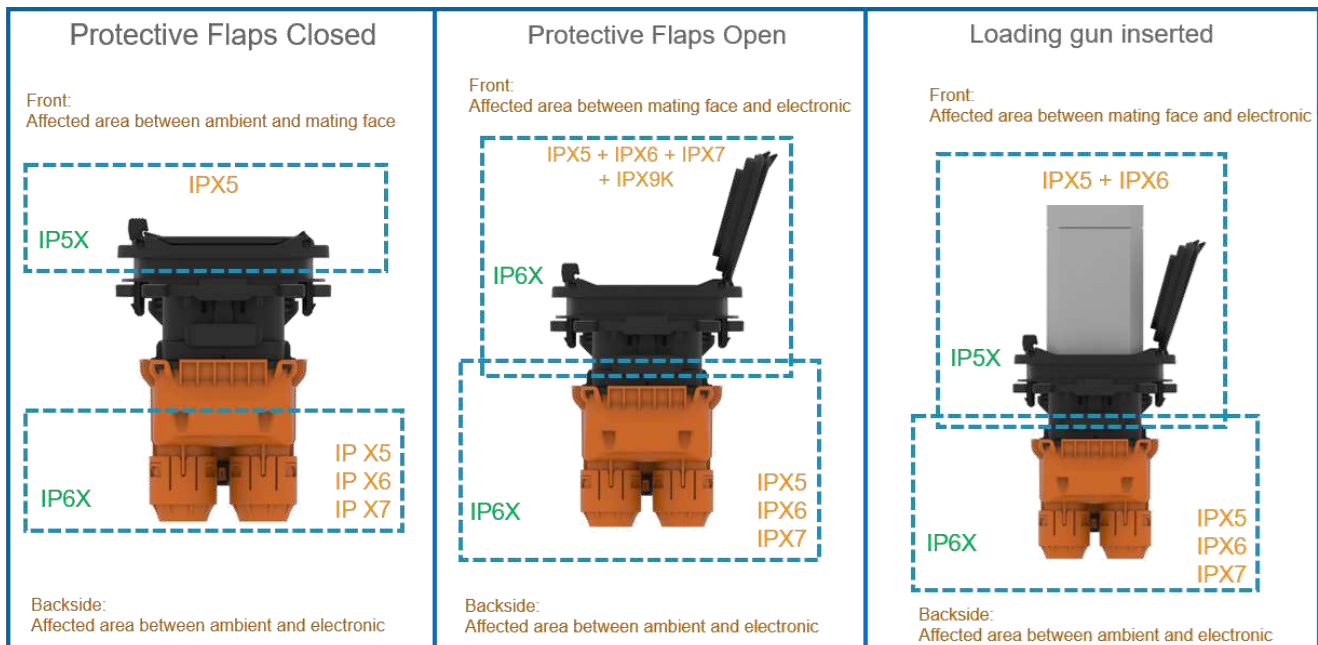


Figure 1

Electrical Properties

Max. charging performance	7,68 kW (AC) / 120 kW (DC)
Type of charging current	AC / DC
Number of AC-phases	1
Number of Terminals	7 (PE, L1, L2/N, DC+, DC-, CS, CC)
Rated current	32A AC / 200A DC
Rated voltage	250V AC / 1000V DC
Signal pin rated current	2A
Signal pin rated voltage	30V
Type of signal transmission	Analog
Insulation resistance of adjacent contacts	200MΩ
Resistant coding	acc. IEC 61851-1

Mechanical Properties

Mating / un-mating endurance	<= 10000 cycles
Insertion force	typical <100N (depending on connector)
Retention force	typical <100N (depending on connector)
Mechanical Stability of charging socket	max. 500N in all directions (max. Lever-Length 100mm)
Vibration Level	LV214 PG17 Severity 2 (Body mount)

Temperature Sensing

Temperature Sensor Type	PT1000
Type of Sensor	DIN EN 60751
Recommended measuring current	nominal 0.1mA / max. 1mA
Sensor tolerance at recommended measuring current	+/-20 Ohm @ Tamb 25°C +/- 5°C
Temperature range	-40 to +85°C
Shut down	85°C measured temperature at sensor (Equivalent to max. contact temperature 90°C)

Actuator

See TE Actuator-Specification TE-108-94519

Installation

Orientation
Max. Angle

see picture below
180° -60°/+5°

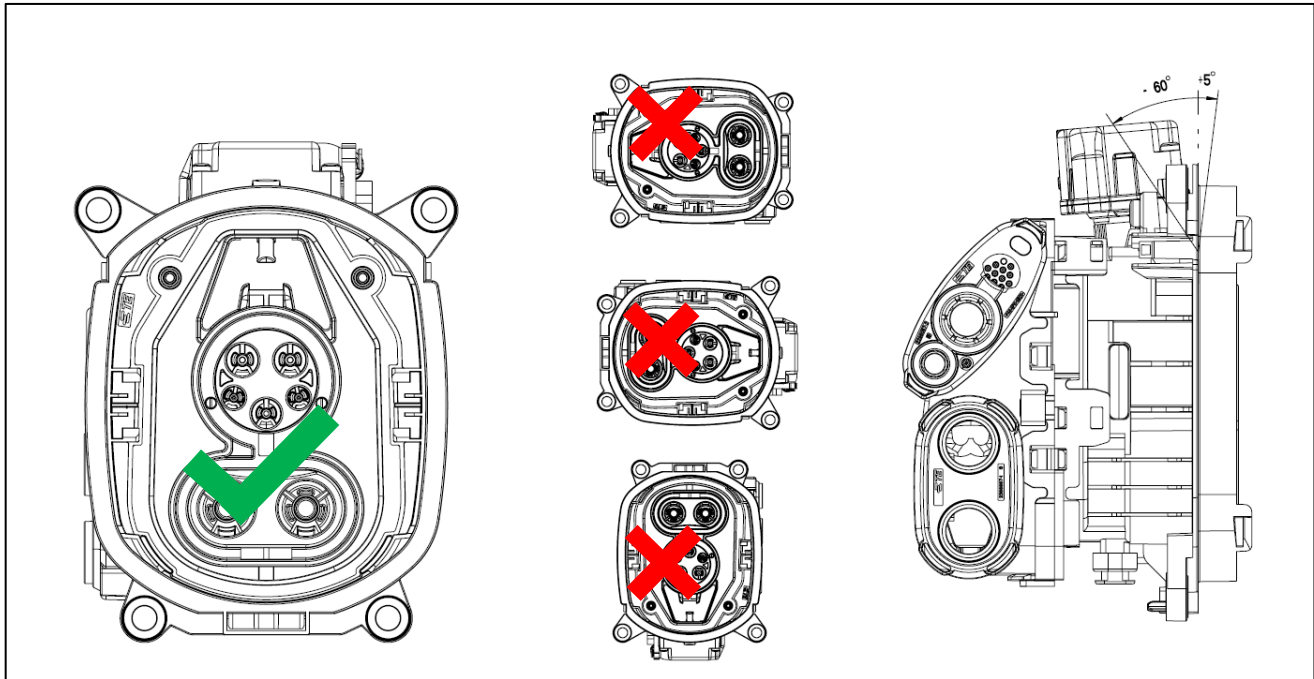


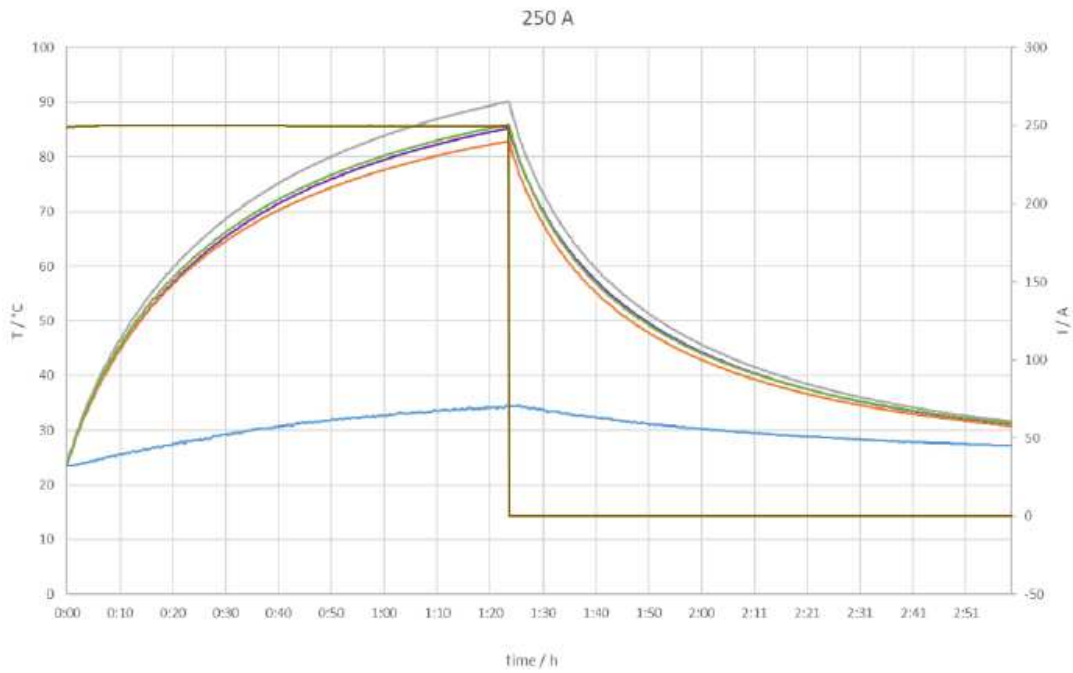
Figure 2

3.4. Performance and Test Description

Specification	Description
ISO20653	IP6KX – Fixed cable side (Rear Cover) IP5KX – Water and Dust Protection vehicle inlet mated
IEC 62196-1:2014	Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 1: General requirements
IEC 62196-2:2016	Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories
IEC 62196-3:2014	Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 3: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers
Additional: selected tests of automotive standards LV124, LV214, LV215-2	

4. TEMPERATURE RISE CURVES:

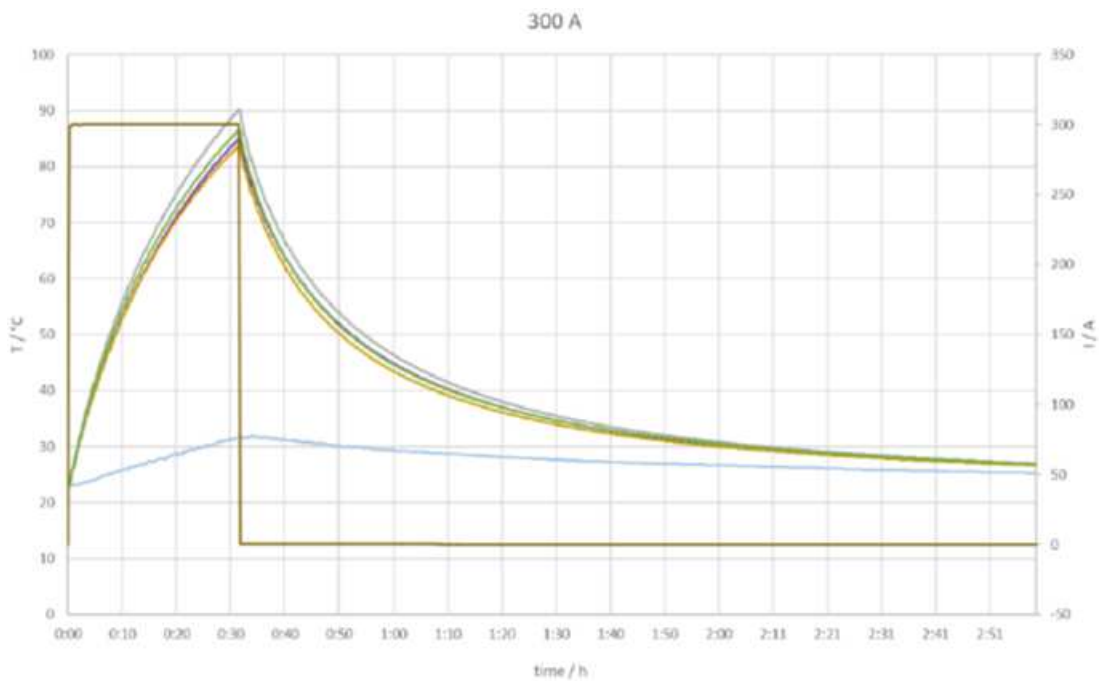
4.1. Temperature Rise for 250 Amps



250A continuous current at Ambient temperature of 20°C

Figure 3

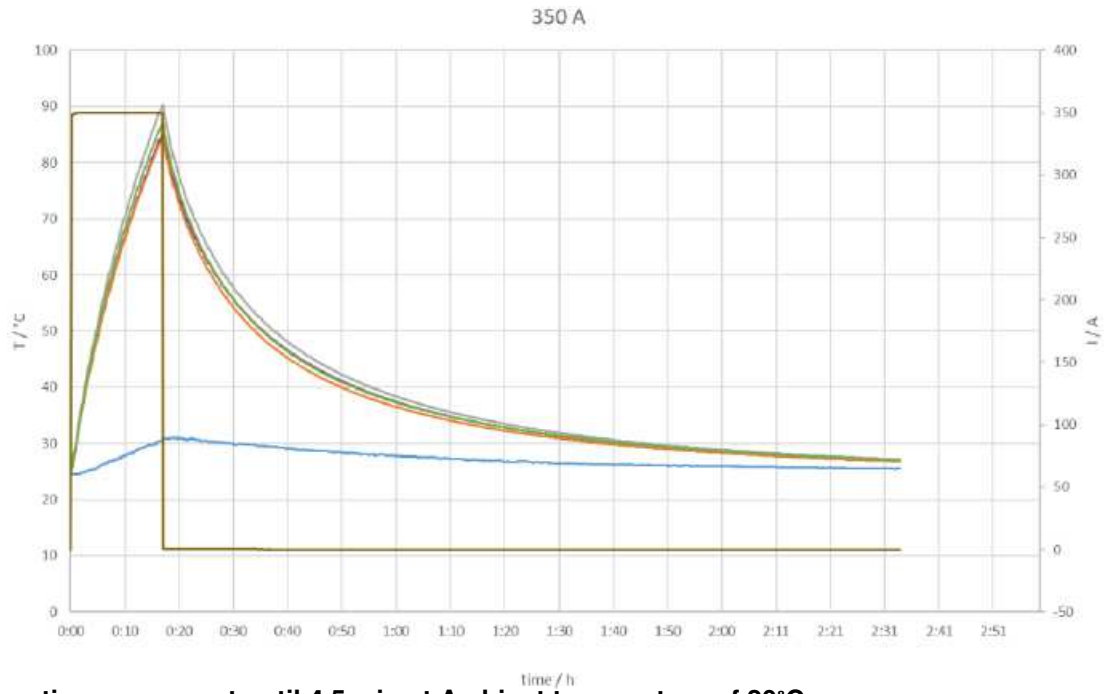
4.2. Temperature Rise for 300 Amps



300A continuous current until 8.2 min at Ambient temperature of 20°C

Figure 4

4.3. Temperature Rise for 350 Amps



350A continuous current until 4.5 min at Ambient temperature of 20°C

Figure 5

LTR	REVISION RECORD	DWN	APP	DATE
A	INITIAL DOCUMENT	SUPRIYA S	DANAPPA H	27 Sep 2021
A1	SCOPE INTRODUCTION UPDATED IN CHAPTER 1.1 TEMPERATURE RISE CURVE FIGURE 1, FIGURE 2, AND FIGURE 3 ADDED IN CHAPTER 4 ELECTRICAL PROPERTIES RATED VOLTAGE UPDATED IN CHAPTER 3.3.	SUPRIYA S	AMRUTHA RAO C H	30 AUG 2021
A2	SCOPE INTRODUCTION TYPO ERROR CORRECTION: 250V MAXIMUM VOLTAGE FOR AC	SUPRIYA S	AMRUTHA RAO C H	28 SEP 2023
A3	MINOR UPDATE IN DESCRIPTION AND FIGURE 1 ADDED CHAPTER 3.3: TEMPERATURE SENSING SHUT DOWN TEMPERATURE UPDATED FROM 90°C to 85°C	SUPRIYA S	AMRUTHA RAO C H	30 NOV 2023
A4	CHAPTER 1.1: THE MAXIMUM RATED CURRENT FOR DC UPDATED FROM 200A TO 250A	SUPRIYA S	AMRUTHA RAO C H	31 JAN 2023