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# T-Power

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## EVCC HW Manual

Version 1.0



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# 1. Introduction

This document outlines the external interface of T-power's EVCC product, the TP200, designed for electric vehicles compliant with European standards. The TP200 serves as a communication controller, utilizing a CAN interface to communicate with the Battery Management System (BMS).

The TP200 is equipped with a physical interface for external connectivity, including a CAN interface for communication and an RS-232 interface for debugging purposes. This document specifically details the interface configurations and functionalities of the TP200 model.

## 1.1 EVCC



Fig. 1 View for EVCC

## 2. Architecture

This section outlines the system and hardware architecture design of the system.

### 2.1 Reference Model

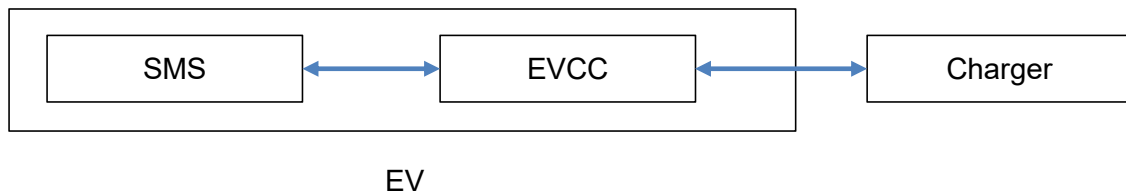


Fig. 2 Reference Model

### 2.2 System Board Diagram

A hardware terminal of Tp200 is depicted in Fig.5.

#### 2.2.1 Function diagram

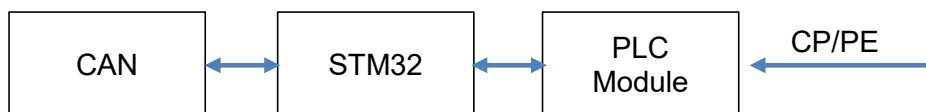


Fig. 3 Function diagram for TP200

## 2.2.2 Pin configuration

The socket is fixed on the EVCC module. The signal definitions for the connector are shown in the table below.

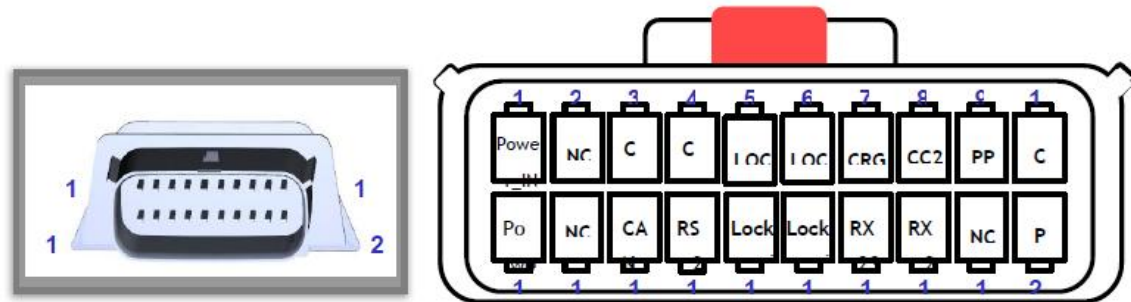


Fig. 4 EVCC Module Connector Signal Definition Table

| Pin number | Line number  | Description/<br>Signal Type | Wire Gauge/mm <sub>2</sub> | Function Definition                                  | Remarks            |
|------------|--------------|-----------------------------|----------------------------|------------------------------------------------------|--------------------|
| PIN1       | Power-IN     | Power                       | 1                          | Positive power supply from vehicle lead-acid battery |                    |
| PIN2       | NC           | -                           | -                          | -                                                    | Blind plug         |
| PIN3       | CAN Low      | Communication               | 0.5                        | Charging CANL                                        | Twisted pair       |
| PIN4       | NC           | -                           | -                          | -                                                    | Blind plug         |
| PIN5       | Lock Forward | Power                       | 1                          | Electronic lock power supply                         | Lock V+, Unlock V- |
| PIN6       | Lock Forward | Power                       | 1                          | Electronic lock power supply                         | Lock V-, Unlock V+ |
| PIN7       | CRG          | Signal                      | 1                          | Wake up BMS                                          |                    |
| PIN8       | NC           | -                           | -                          | -                                                    | plug               |

|       |               |               |     |                                                      |              |
|-------|---------------|---------------|-----|------------------------------------------------------|--------------|
| PIN9  | PP            | Signal        | 0.5 | Proximity Detection Signal                           | plug         |
| PIN10 | CP            | Signal        | 1   | Control Pilot and Communication Signal               |              |
| PIN11 | Power-GND     | Power         | 1   | Negative Power Supply from Vehicle Lead-Acid Battery |              |
| PIN12 | NC            | -             | -   | -                                                    | plug         |
| PIN13 | CAN High      | Communication | 0.5 | Charging CANH                                        | Twisted pair |
| PIN14 | RS232 RX      | Communication | 0.5 | Debug Serial Port                                    |              |
| PIN15 | Lock signal-1 | Signal        | 0.5 | Electronic Lock Feedback Signal 1                    |              |
| PIN16 | Lock signal-2 | Signal        | 0.5 | Electronic Lock Feedback Signal 2                    |              |
| PIN17 | RS232 GND     | Communication | 0.5 | Debug Serial Port                                    |              |
| PIN18 | RS232 TX      | Communication | 0.5 | Debug Serial Port                                    |              |
| PIN19 | NC            | -             | -   | -                                                    | plug         |
| PIN20 | PE            | Signal        | 1   | Vehicle Ground                                       |              |

Note 1: The power supply for locking/unlocking the electronic lock is determined to be 24V or 12V according to the model of the electronic lock used in the project.

### 2.2.3 Option

Can be select a shield can as an option.

### 3. Hardware characteristic

Indicates the hardware electrical features and interface items.

#### 3.1 Features

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| CPU                   | STM32H743                                            |
| PLC Modem             | QCA7005, Qualcomm HomePlug GreenPHY, EVSE            |
| External Interface    | RS232 for console                                    |
|                       | CAN 2.0B                                             |
| Operation temperature | -25. C ~ 85. C                                       |
| Operation voltage     | DC12V( $\pm 10\%$ )                                  |
| Weight                | 0.480 Kg                                             |
| Dimension             | (151 $\pm 1$ ) * (113 $\pm 1$ ) * (35.3 $\pm 1$ ) mm |
| Current Consumption   | <200mA<br>Min 115mA<br>Max 150mA<br>AVG<br>121mA     |

## 3.2 Interface

|           |                                                                                                                                                                                      |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PLC Modem | <ul style="list-style-type: none"><li>• QCA7005</li><li>• Qualcomm HomePlug GreenPHY</li><li>• EVSE</li></ul>                                                                        |
| CAN       | <ul style="list-style-type: none"><li>• Compatible with ISO11898 High speed CAN</li><li>• Specified for data rates up to 1Mbps</li><li>• Bus fault voltage (V)-14 to 14</li></ul>    |
| RS485     | <ul style="list-style-type: none"><li>• Specified for data rates up to 5Mbps</li><li>• Low quiescent current : 300uA</li><li>• -7V to +12V common mode input voltage range</li></ul> |
| RS232     | <ul style="list-style-type: none"><li>• Meets EIA/TIA-232-F standards from 3.0V to 5.5V Power supply</li><li>• Interoperable with RS232 down to 2.7V power source</li></ul>          |
| USB       | <ul style="list-style-type: none"><li>• Fully compliant to full speed USB2.0 specification</li></ul>                                                                                 |

## Appendix A: Record of Changes

Table 1 - Record of Changes

| Version Number | Date       | Author/Owner | Description of Change |
|----------------|------------|--------------|-----------------------|
| 1.0            | 05/24/2024 | SH LEE       | Initial Release       |
| 1.1            | 06/03/2024 | SH LEE       | Add HW spec           |
| 1.2            | 06/12/2024 | SH LEE       | Add interface         |