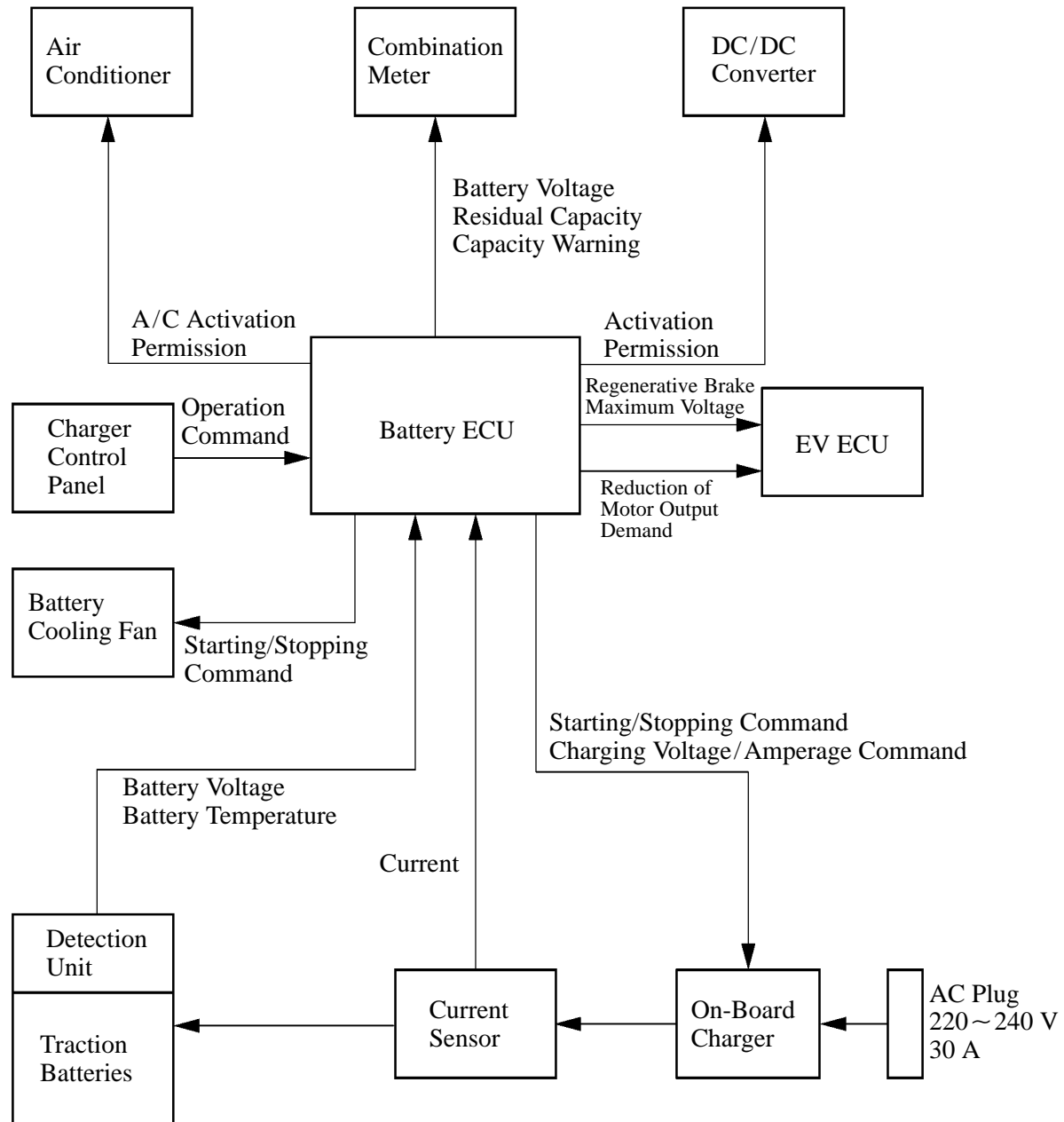


BATTERY CONTROL SYSTEM

DESCRIPTION

The battery control system monitors the state of the traction batteries of the electrical vehicle in order to ensure the proper use of the batteries and to display their residual capacity.

System Diagram



153BE01

CONSTRUCTION AND OPERATION

The battery control system consists of a battery ECU that controls the charging of the batteries and calculates the batteries' residual capacity, an on-board charger, a charger control panel for controlling the on-board charger, a current sensor that monitors the state of the traction batteries, etc.

1. Battery ECU

The battery ECU provides the following functions:

Charging Control Function

During charging, the battery ECU constantly monitors the state of the traction batteries and controls the operation of the charger, battery cooling fan related to charging. The battery ECU transmits, via serial communication, the commands to the charger for starting or stopping the charger and for controlling the charging current.

Driving Battery Control Function

When the vehicle is being driven, the battery ECU constantly monitors the traction batteries' voltage and temperature. In case of an abnormal battery temperature or a reduction in voltage, the battery ECU protects the traction batteries by limiting the motor's maximum output. In case of a high battery temperature, the battery ECU protects the traction batteries by controlling the electrical power through regenerative braking.

SOC (State Of Charge) Calculation Function

The battery ECU calculates the traction batteries' residual capacity through the ampere-hour formula. To ensure the monitoring precision, various corrections are made during the process of calculating the residual capacity according to the traction batteries' temperature, voltage, and amperage. The result of the traction batteries' residual capacity calculation is displayed in the SOC meter in the combination meter.

Battery Cooling Fan Control

The battery ECU constantly monitors the traction batteries' temperature while the vehicle is being driven, as well as when the traction batteries are being charged and controls the cooling fan of the battery cooling system.

Output to Combination Meter

The battery ECU outputs the signals that represent the detected battery voltage and the calculated battery residual capacity to the combination meter. When the battery residual capacity is low, the battery ECU outputs a signal to the residual capacity warning light in the meter.

2. On-Board Charger

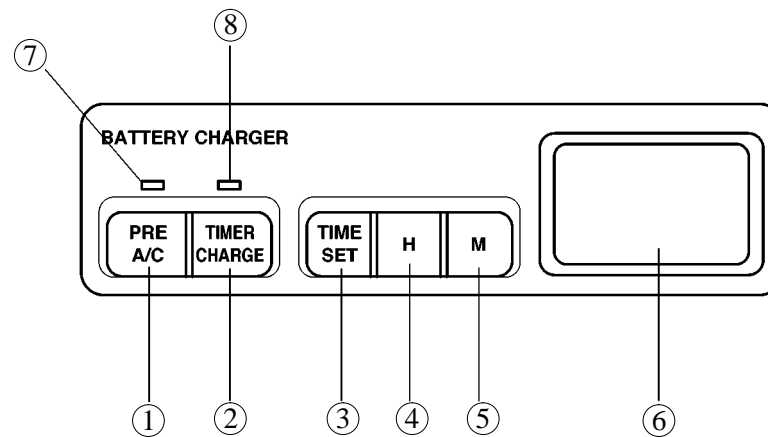
The on-board charger received commands from the battery ECU for starting or stopping the charger and for controlling the charging current. The signals from the battery ECU to the on-board charger are transmitted via serial communication.

3. Charger Control Panel

The charger control panel, which is used for controlling the charging of the on-board charger, is provided in the instrument panel.

Function

The function of the parts on the charger control panel such as switches and displays are described below.



1538E02

No.	Item	Function
①	PRE A/C Switch	Sets the preheat and precool functions (they can only be set when charging with the timer).
②	TIMER CHARGE Switch	Starts and stops the timer charge.
③	TIME SET Switch	Sets the current time, the charge starting time, and the preheat/precool starting time.
④	H Switch	Adjusts the “hours” when setting the time.
⑤	M Switch	Adjusts the “minutes” when setting the time.
⑥	Liquid Crystal Display (LCD)	The LCD indicates the following 3 items: <ul style="list-style-type: none"> ● Current time, charge starting time, charge ending time ● Operation error ● Charging system malfunction
⑦	Preheat/Precool LED	Indicates that the preheat or precool function has been set.
⑧	Timer Charge Indication LED	Indicates that it is undergoing timer charge.