

HMI User Guide

CCS2 Controller

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Change Record

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1 Intended Use

This user guide is a comprehensive resource for users who seek to understand and utilise the charger's Human Machine Interface (HMI).

- General Approach to HMI Operations (Section 2):
 - Begin with a description of the HMI system's purpose and function in the entire process.
 - Explain the initial screen layout and navigation features.
 - Familiarise users with basic interactions and common tasks.
- DC Charger Parameters and Operation (Section 3):
 - Emphasis on the DC charging operation.
 - Provide an exhaustive explanation of the DC charger's parameters and charging mode.
 - Identify the current state of the charging gun (gun 1 and 2).
 - Highlight fault indications.
- AC Charger Parameters and Operation (Section 4):
 - Emphasis on the AC charging operation.
 - Provide an exhaustive explanation of the AC charger's parameters.
 - Identify the current state of the charging gun (gun 3).
 - Highlight fault indications.
- HMI Firmware Upgradation (Section 5):
 - Guide users through the process of firmware upgrading.
 - Explain how to format a microSD card and load the firmware onto it.
 - Provide step-by-step instructions for performing the firmware upgrade.

WARNING!	Risk caused by inappropriate use!
	<p>Any unconventional usage or operation of the product may have unintended repercussions.</p> <ul style="list-style-type: none"> • Only use the product in a conventional manner.

1.1 Alteration and Restoration of the Product or System

To prevent risks and ensure optimal performance, no alterations, attachments, or restoration of the product are permitted without explicit authorisation of Bacancy Systems PVT LTD.

2 Operating Functionality and its Overview

2.1 Welcome

After properly booting up the system, the welcome screen will appear on the screen. Wait a few moments for the charger-type section screen. (Figure 1)

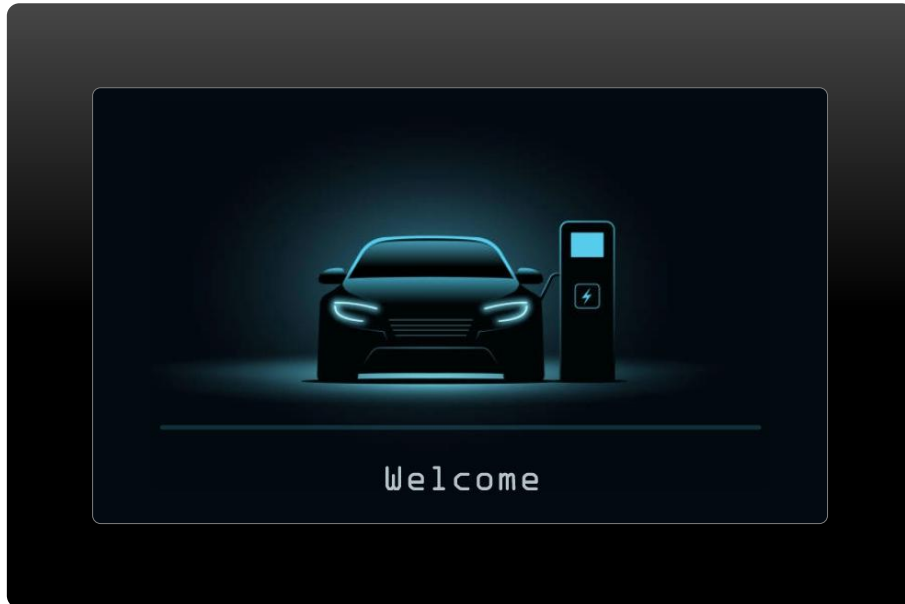


Figure 1 Welcome screen

2.2 Charger Type Selection

This is the initial screen following the welcome screen. The user can select the charger type according to the requirements and the type of electric vehicle. For further information, consider the following sections. (Figure 2)

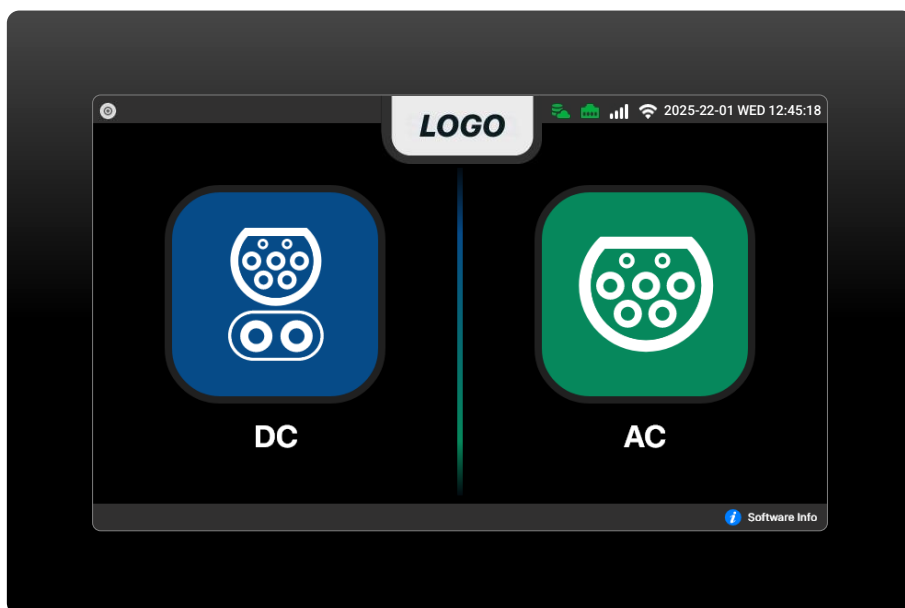


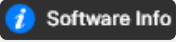



Figure 2 Charger type section screen

The user should be familiarised with the buttons and functionalities available when selecting a type of charger, as shown in the table below. (Table 1)


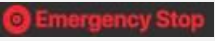



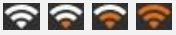
Table 1 Charger type selection: button and function.

No.	Button	Name	Description
1.		DC Charger	To proceed with the DC charging procedure.
2.		AC Charger	To proceed with the AC charging procedure.
3.		Software Information	To find out regarding the current firmware version information.
4.		Logo	It is configurable as per the requirements of the company.

2.2.1 Notification Bar

While using the HMI, the top of the screen will display all connection, date and time, and emergency-related notifications, as briefly described in a table. (Table 2)

Table 2 Notification bar: button and function

No.	Button	Name	Function
1.	 	Emergency	Grey: Inactive physical emergency button. Red: Active physical emergency button.
2.		Server	Red: Unavailable server connectivity. Orange: The server connects with “Wi-Fi” connectivity. Yellow: The server connects with “GSM” connectivity. Green: The server connects with “Ethernet” connectivity.
3.		Ethernet	White: Ethernet disconnected. Green: Ethernet connected.
4.		GSM / LTE Network	Yellow: It shows the GSM/LTE network range from unavailable to ideal state, consequently.
5.		Wi-Fi Network	Orange: It shows the Wi-Fi network range from unavailable to ideal state, consequently.
6.	YYYY-MM-DD-DAY	Date	Date format. (Year-Month-Date-Day)
7.	HH:MM:SS	Time	Time format in 24 hours. (Hour: Minute: Second)

2.2.2 Software Information

The firmware version may also be accessed via the charger type selection screen instead of the charger's operation screen. When you click the software info button, you will see the firmware version information. (Figure 3)

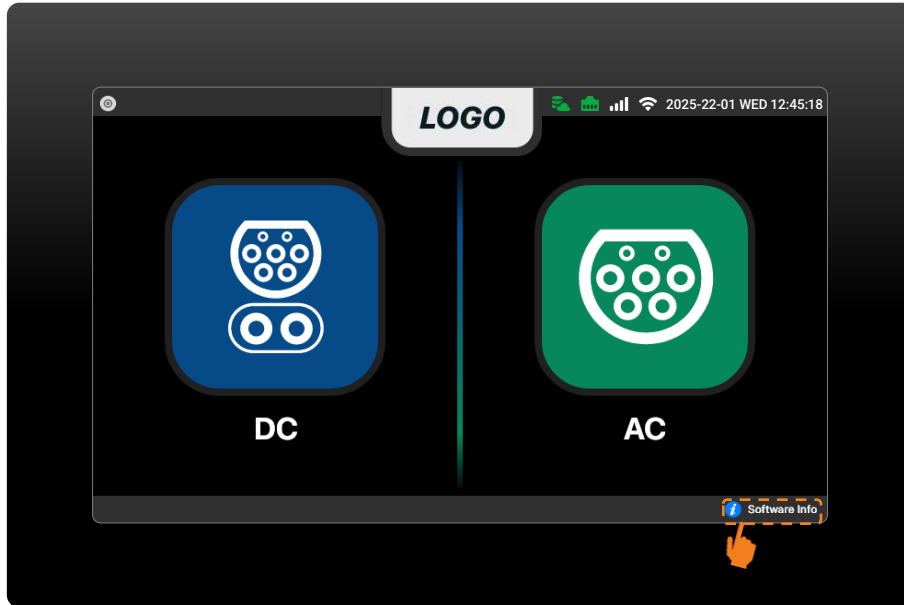


Figure 3 Charger type selection screen: open the software information

This is a firmware (software) information screen. Here, the user can access information regarding firmware versions such as MCU, OCPP, RFID, LED, PLC 1, and PLC 2. (Figure 4)



Figure 4 Firmware (Software) version information screen

Table 3 Navigation button: firmware (Software) version information.

No.	Button	Name	Function
1.		Back Button	it will bring back to the previous screen
2.		Home Button	it will bring back to the home screen.

3 DC Charger Parameters and Operation

The charging type can be selected as either DC or AC. To operate the DC charger, press the DC charger button. It will open the home screen of the DC charger. (Figure 5)

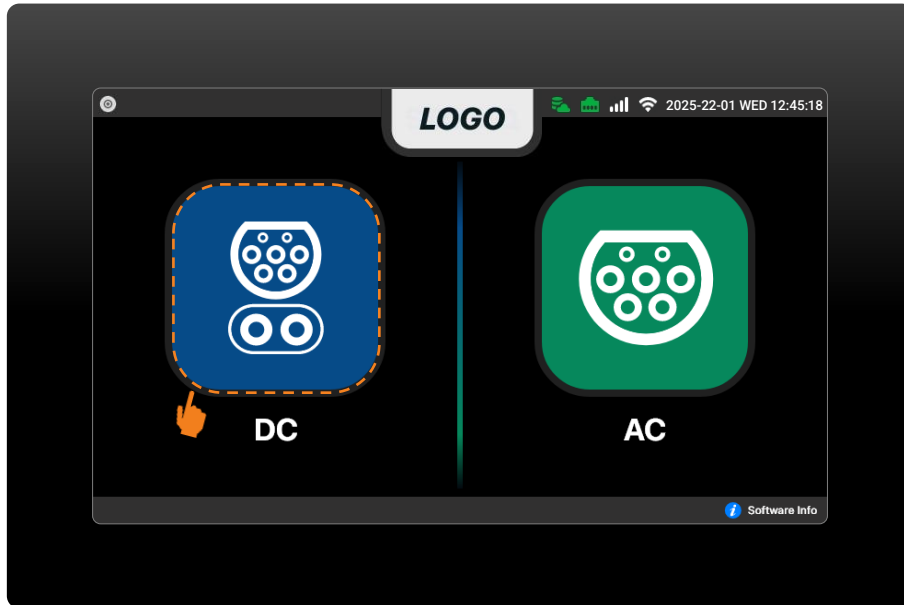


Figure 5 Charger type selection screen: press the DC charger button

This is the home screen of the DC charger following the charger type selection screen. (Figure 6)

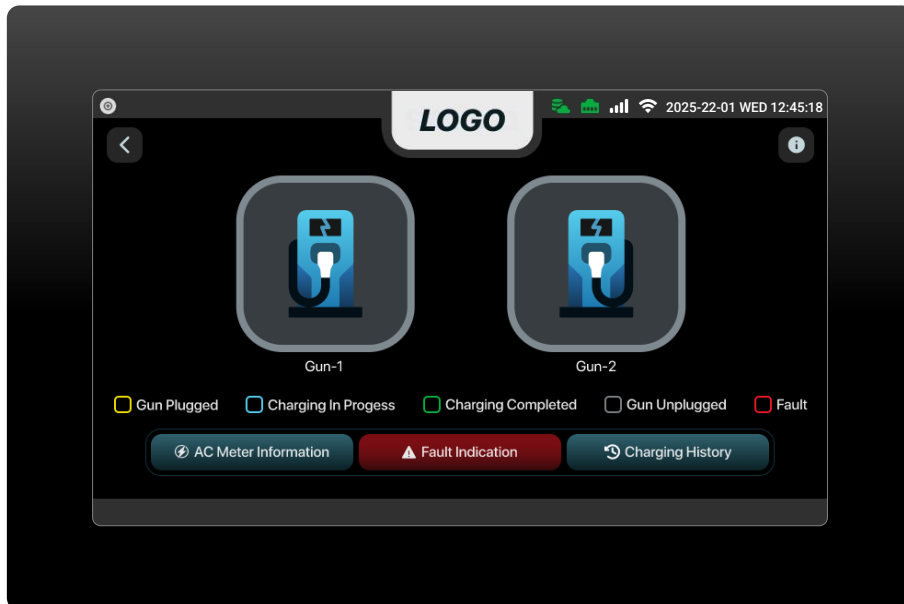


Figure 6 DC charger home screen

3.1 Home Screen of DC Charger

The home screen of the DC charger has different types of buttons and their applications, which are described in the table. (Table 4)

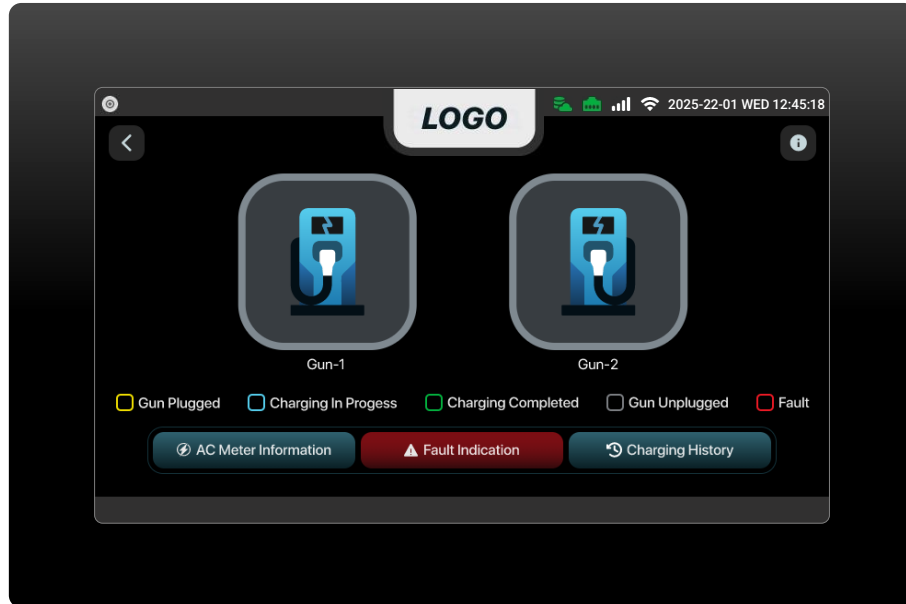














Figure 7 DC charger home screen: buttons and their applications

Table 4 DC charger home screen: button and function.

No.	Button	Name	Function
1.	 	Gun-1 or Gun 2	To operate Gun-1 or Gun-2 of the DC charging operation.
2.	    	Gun-1 State	<p>Unplugged: When the gun is not connected to the EV.</p> <p>Gun Plugged: When the gun is connected to the EV.</p> <p>Charging Process: When the gun is charging the EV.</p> <p>Charging completed: When the charging process is completed.</p> <p>Fault: When the fault occurs during the charging process.</p>
3.		AC Meter Information	To get the AC Meter information.
4.		Fault Indication	To get the fault indication information.
5.		Charging History	To get the charging history log.
6.		Back Button	To move the previous screen.
7.		Info Button	To get information about the gun state.

3.1.1 Home Screen: Information

Press the information button, and it will show a pop-up message relating to starting the authentication process shows up. (Figure 8 & 9)

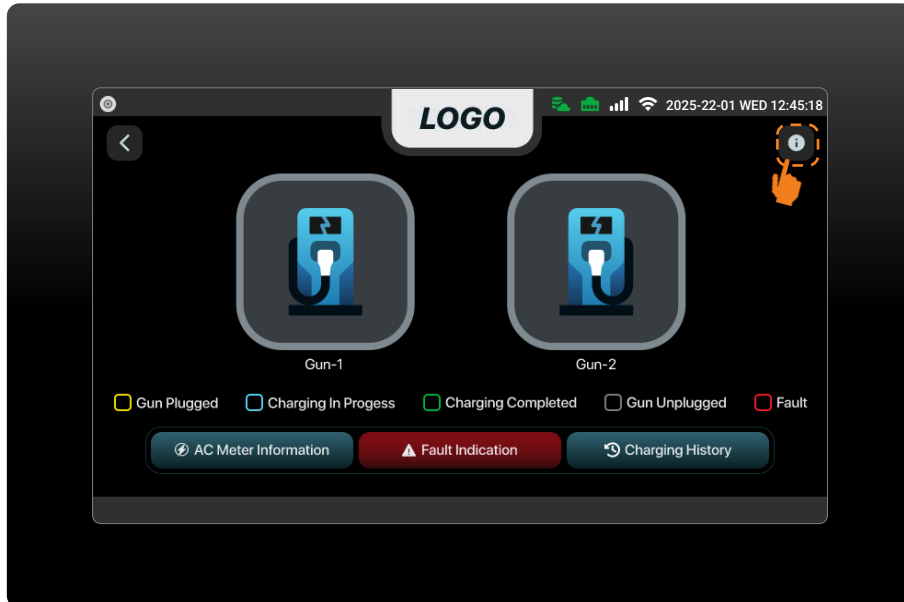


Figure 8 DC charger home screen: press the information button

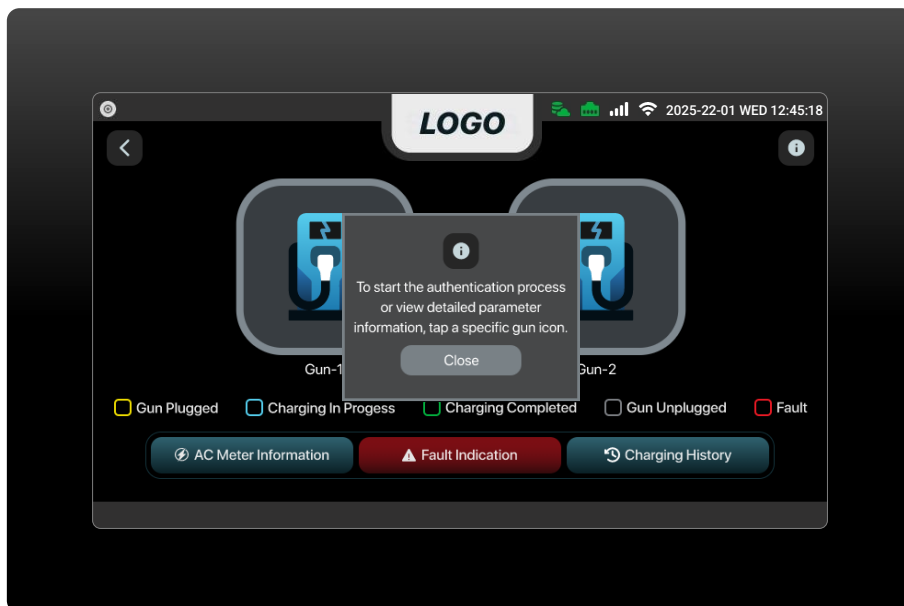
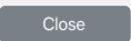


Figure 9 The authentication information pop-up message: to start the process

Table 5 Navigation button: the authentication process information

No.	Button	Name	Function
1.		Close Button	To close the authentication process information pop-up message.

3.1.2 AC Meter Information

The user can get AC meter information from the DC charger home screen by pressing the “AC meter information” button. (Figures 10 & 11)

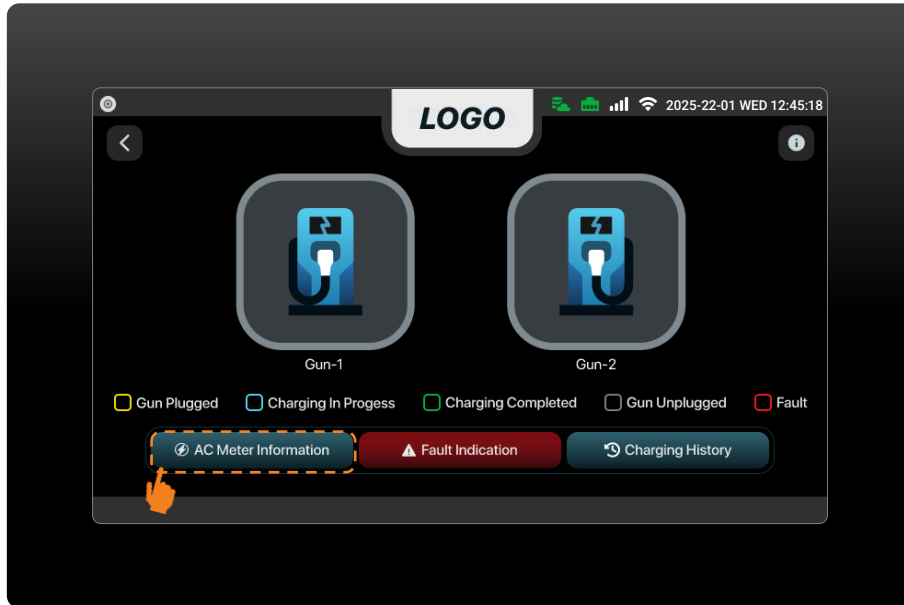





Figure 10 DC charger home screen: press the AC meter information button

This is AC meter information where the user can get the information about all charging parameters related to “AC meter”.



Figure 11 AC meter information screen

Table 6 Navigation button: AC meter information

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC charger home screen.
3.		Info Button	To get information about the AC meter information.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the three-phase input power appears. (Figures 12 & 13)

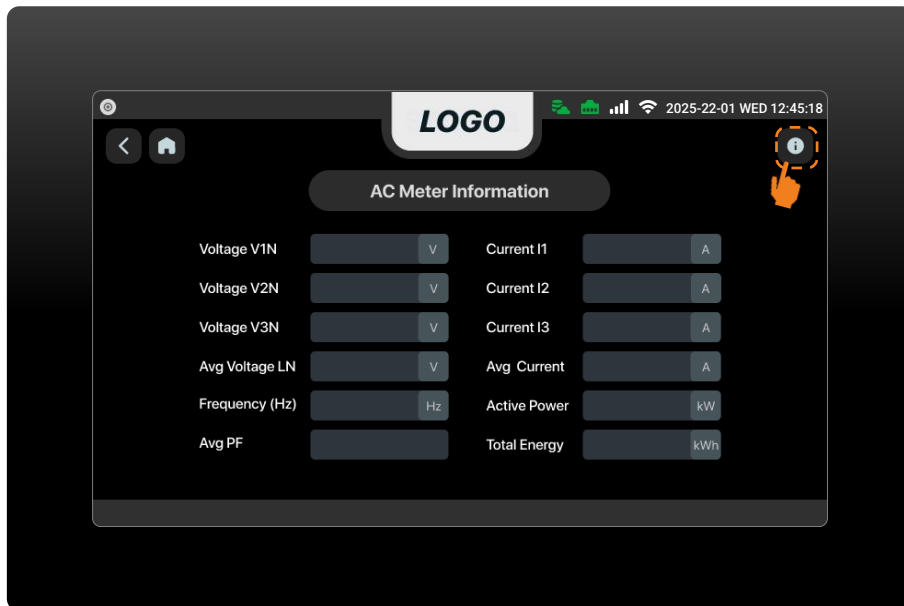


Figure 12 AC meter information screen: press the information button.

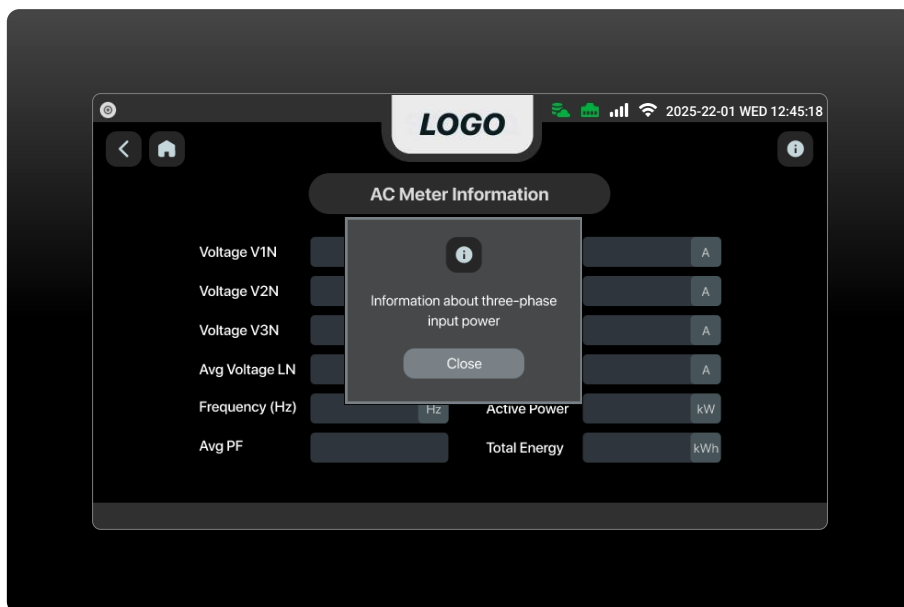
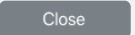


Figure 13 Three-phase input power pop-up information message.

Table 7 Navigation button: three-phase input power information.

No.	Button	Name	Function
1.		Close Button	To close three-phase input power information pop-up message.

A. Clock Configuration

Press the “date and time” button from the notification bar in the AC meter information, and it will open the clock configuration screen. (Figures 14 & 15)

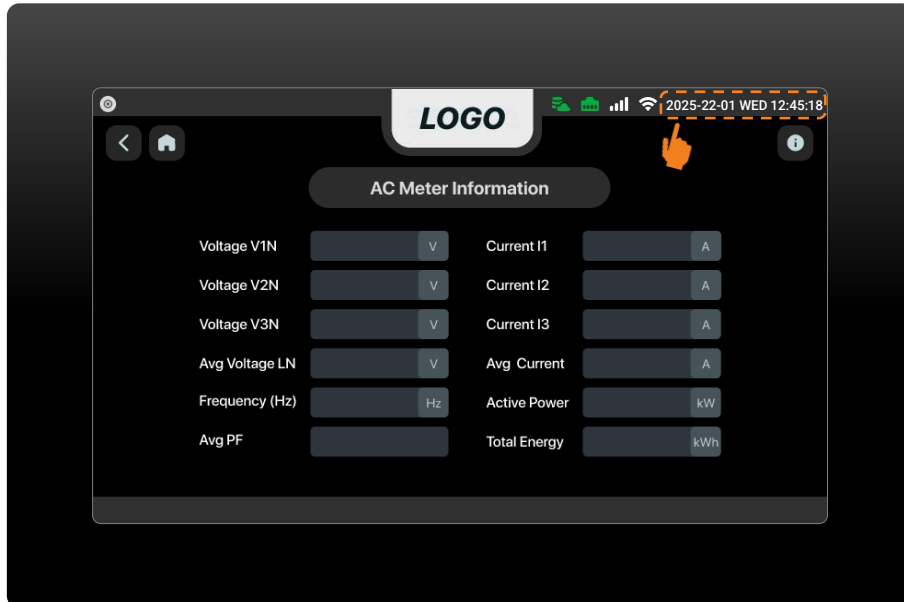


Figure 14 Press the “date and time” button.

This is a clock configuration screen where the user can set the desired date and time. (Table 8 & 9)

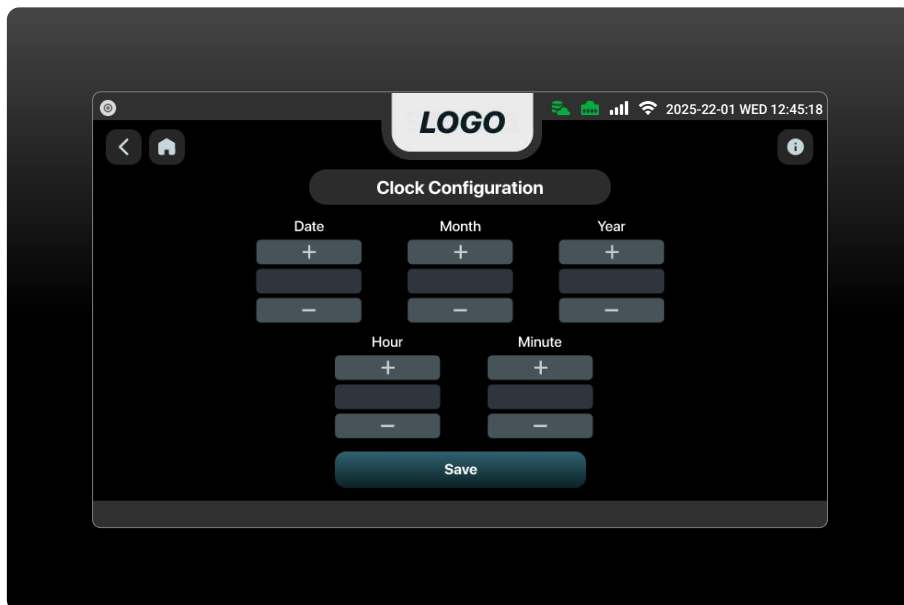


Figure 15 Clock configuration screen.

Table 8 Date and time configuration button


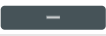




No.	Button	Name	Function
1.		Increase Button	To increase the time value.
2.		Decrease Button	To decrease the time value.
3.		Save Button	To save date and time.

Table 9 Navigation button: clock configuration screen

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC charger home screen.
3.		Info Button	To get information about the gun state.

3.1.3 Fault Indication

The user can access the fault-related information by pressing “Fault Indication” button from the DC charger home screen. It will open the fault indication screen. (Figure 16 & 17)

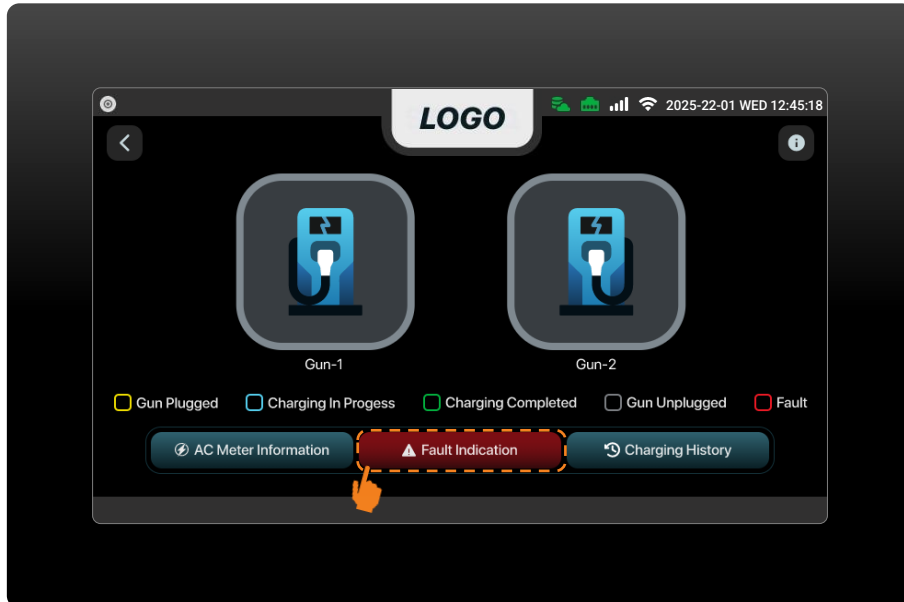


Figure 16 DC charger home screen: press the fault indication button.

This is a fault indication screen. There is specific fault information present in four categories. (Table 10 & 11)

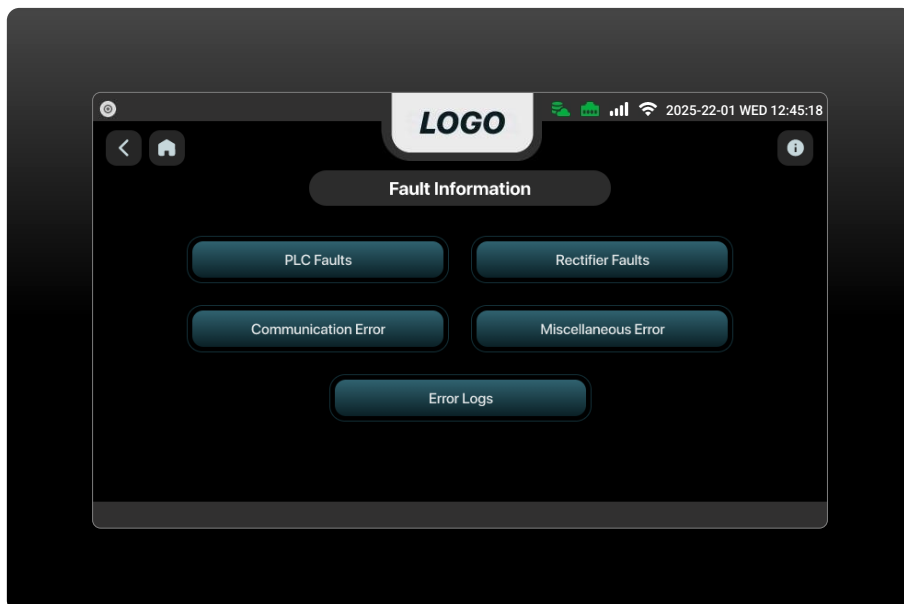


Figure 17 Fault information screen.

Table 10 Fault information button









No.	Button	Name	Function
1.		PLC Fault	To get information related to PLC fault.
2.		Rectifier Fault	To know about rectifier fault information.
3.		Communication Fault	To know about the communication failure.
4.		Miscellaneous Error	To know about the device connection status.
5.		Error Log	To know about the error log.

Table 11 Navigation button: fault information screen

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC charger home screen.
3.		Info Button	To know about the fault information.

Information Pop-up Message

Press the information button to show a pop-up message describing a specific fault.
 (Figures 18 & 19)

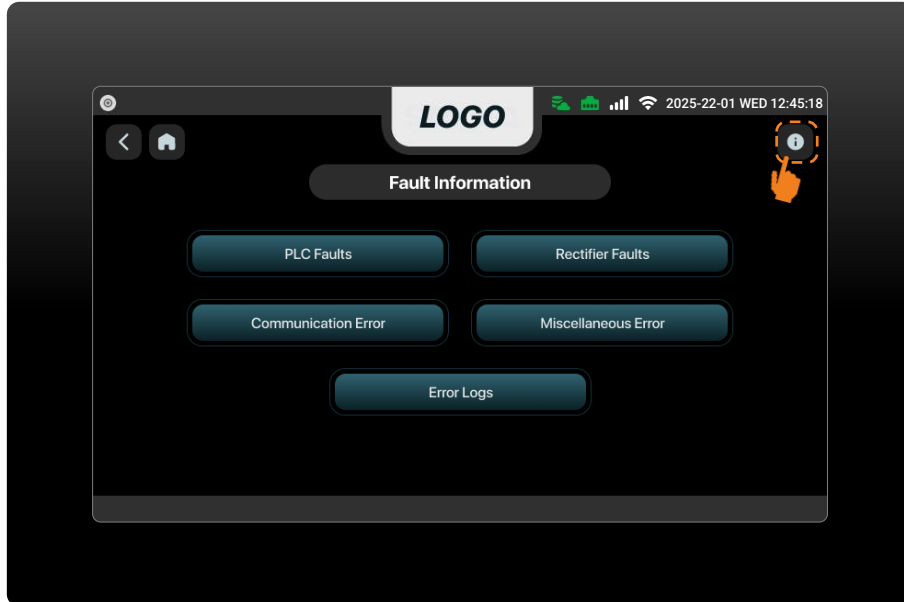


Figure 18 Fault Information screen: press the information button

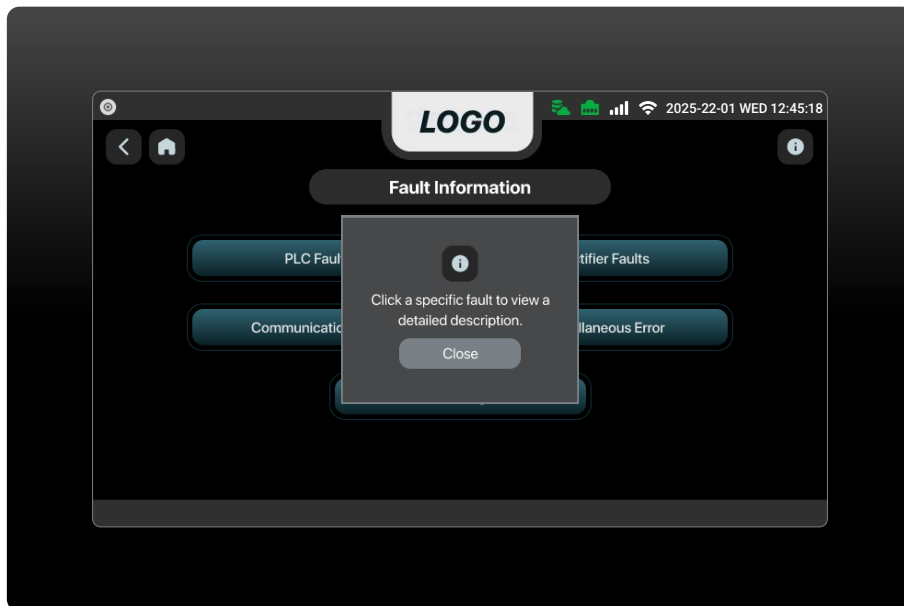



Figure 19 Specific fault pop-up information message

Table 12 Navigation button: specific fault pop-up information

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

A. PLC Faults

To get information related to PLC faults, press the “PLC faults” button. It will open the PLC faults screen. (Figure 20)

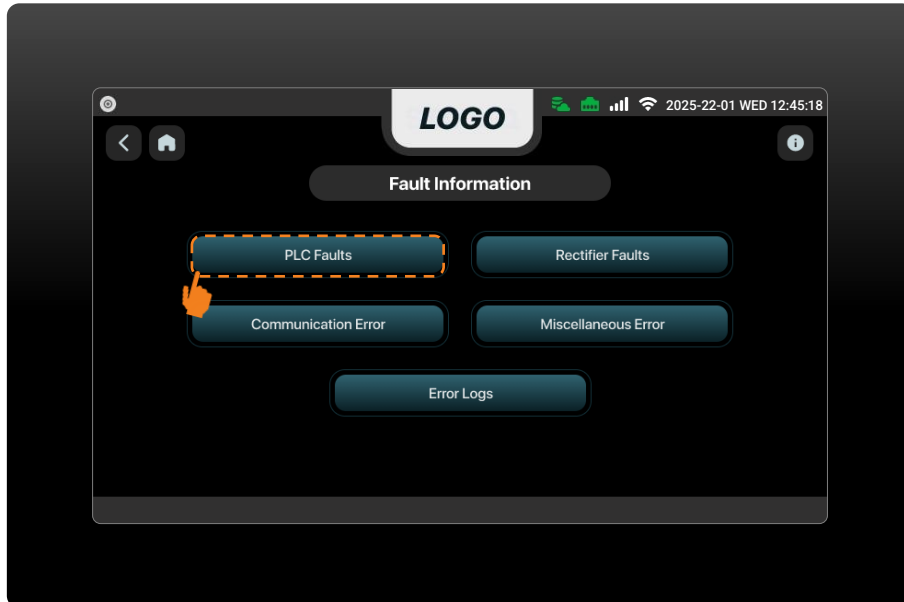


Figure 20 Fault Information: press the PLC faults button

This is the PLC fault screen. The users can get information about PLC errors or no errors for Gun 1 and Gun 2. (Figure 21)

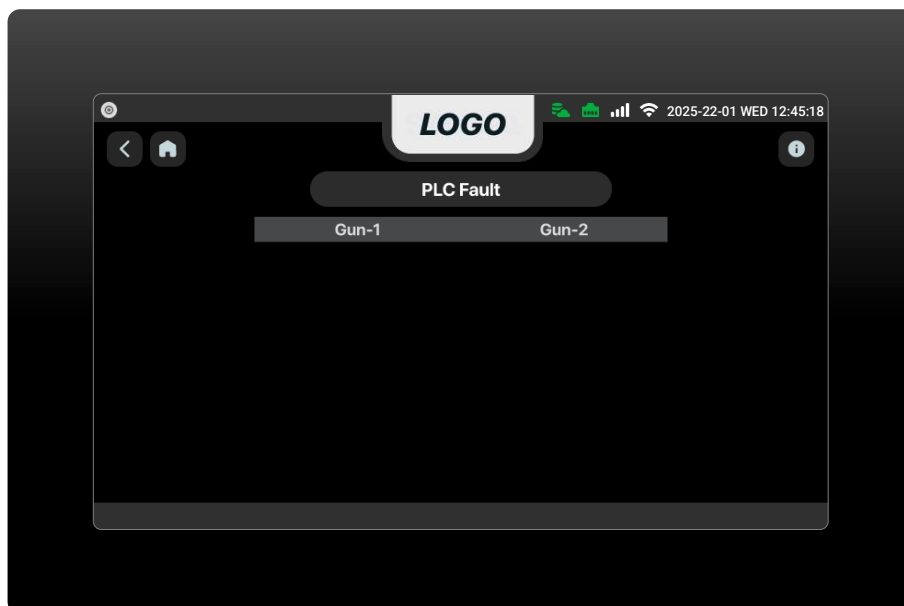


Figure 21 PLC fault screen

Table 13 Navigation button: PLC fault screen

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC charger home screen.
3.		Info Button	To know about the PLC error or no-error state.

Information Pop-up Message

Press the information button, and it will show a pop-up message with colour about the error indication. (Figures 22 & 23)

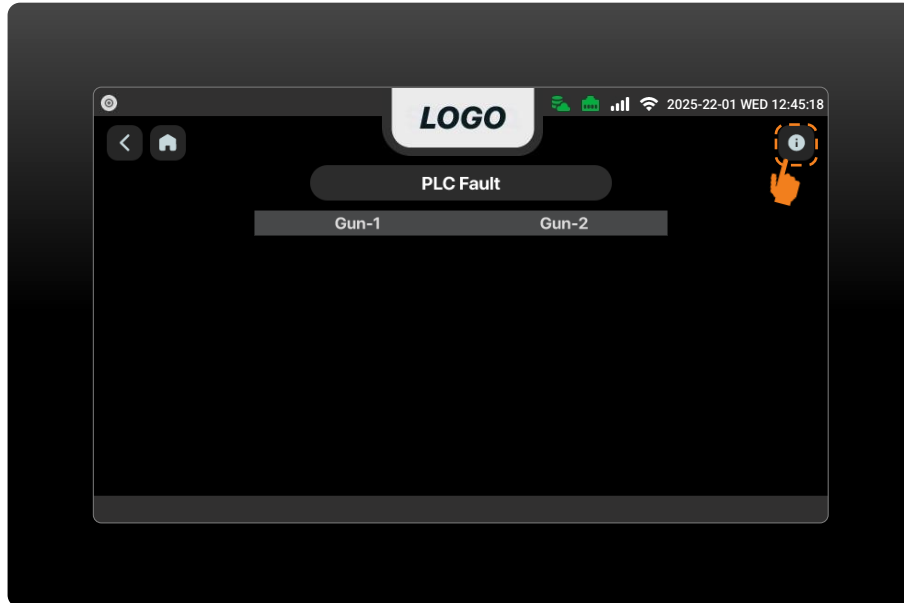


Figure 22 PLC faults screen: press the information button.

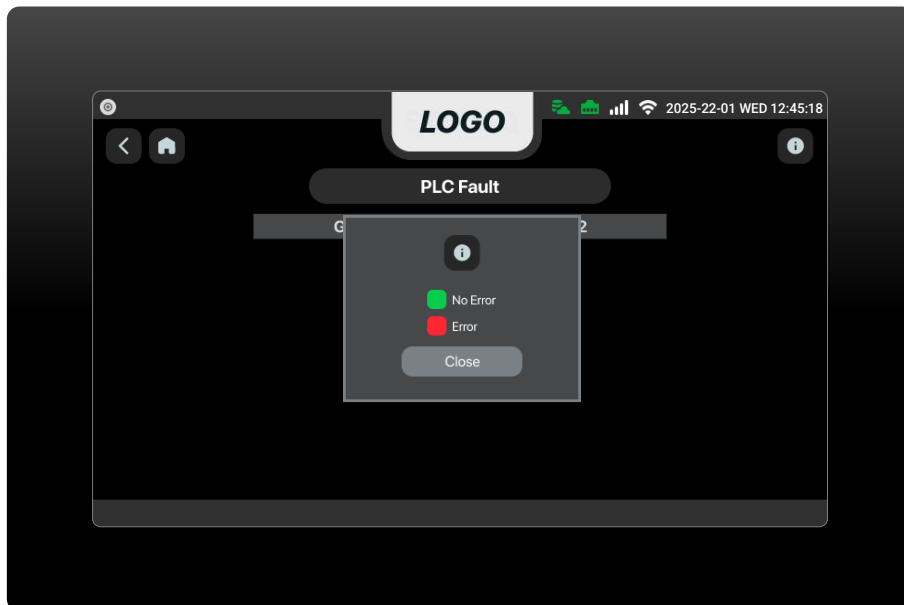



Figure 23 PLC faults error pop-up information message

Table 14 Navigation button: PLC fault error or no error

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

B. Rectifier Faults

To know the rectifier faults, press the “rectifier faults” button. It will open the “rectifier faults information” screen. (Figures 24 & 25)

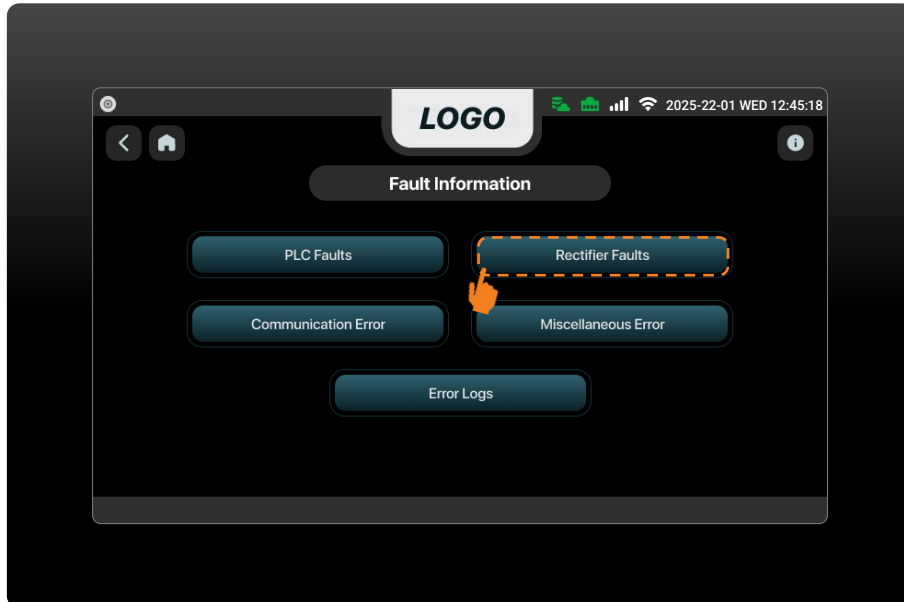


Figure 24 Fault Information: press the rectifier faults button

This is a rectifier fault information screen, where you get the error code for four rectifiers. (Table 15)

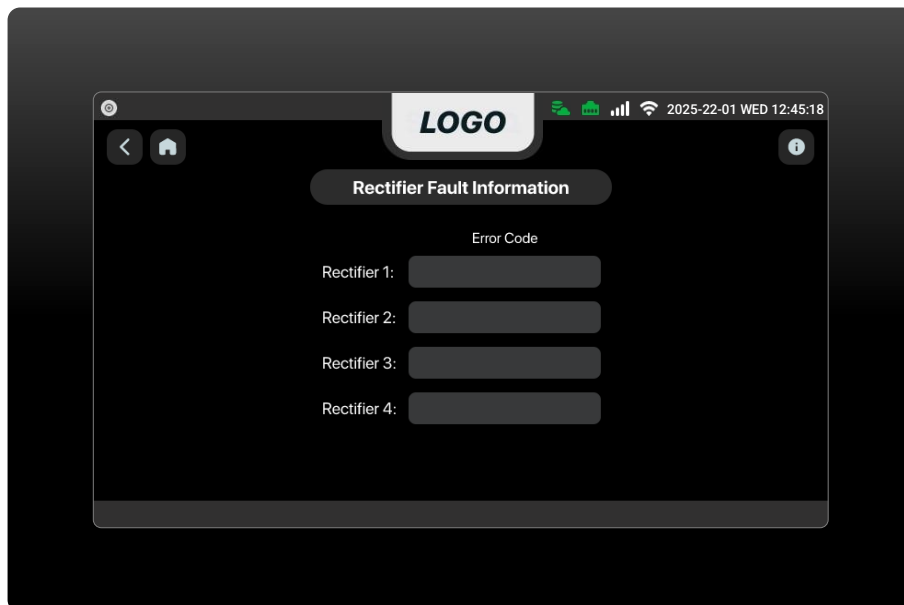


Figure 25 Rectifier fault information screen

Table 15 Navigation button: rectifier fault

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC charger home screen.
3.		Info Button	To know about the rectifier error code.

Information Pop-up Message

Press the information button, and it will show a pop-up message with colour about the error indication. (Figures 26 & 27)

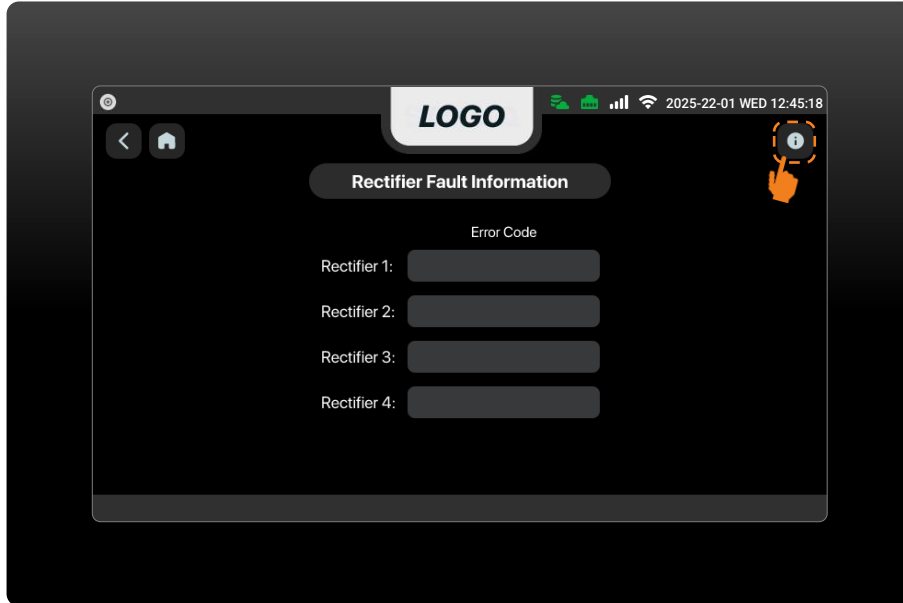


Figure 26 Rectifier faults information screen: press the information button.

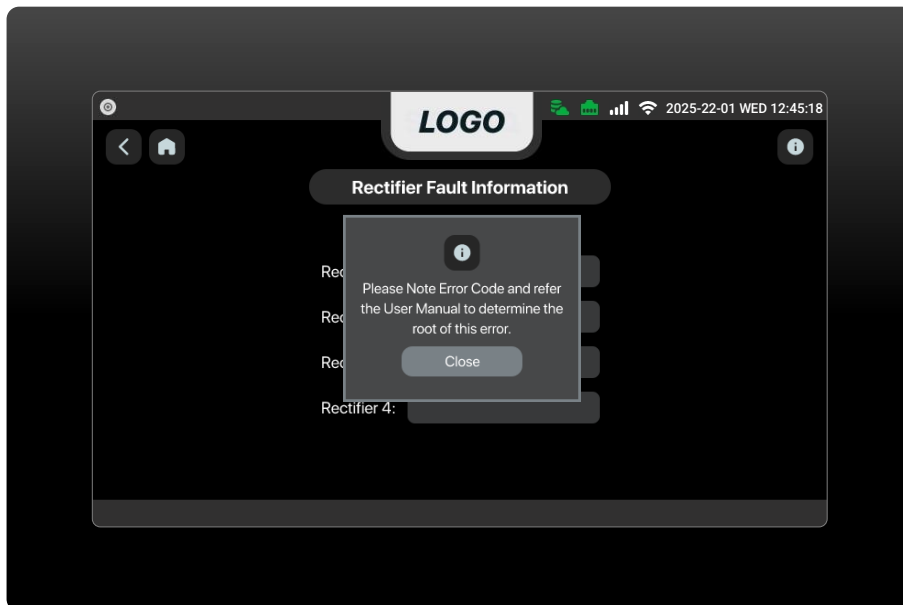



Figure 27 Rectifier faults pop-up information message.

Table 16 Navigation button: rectifier fault

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

C. Communication Error

To get information regarding a communication problem, press the “communication error” button, it will show the communication failure screen. (Figure 28)

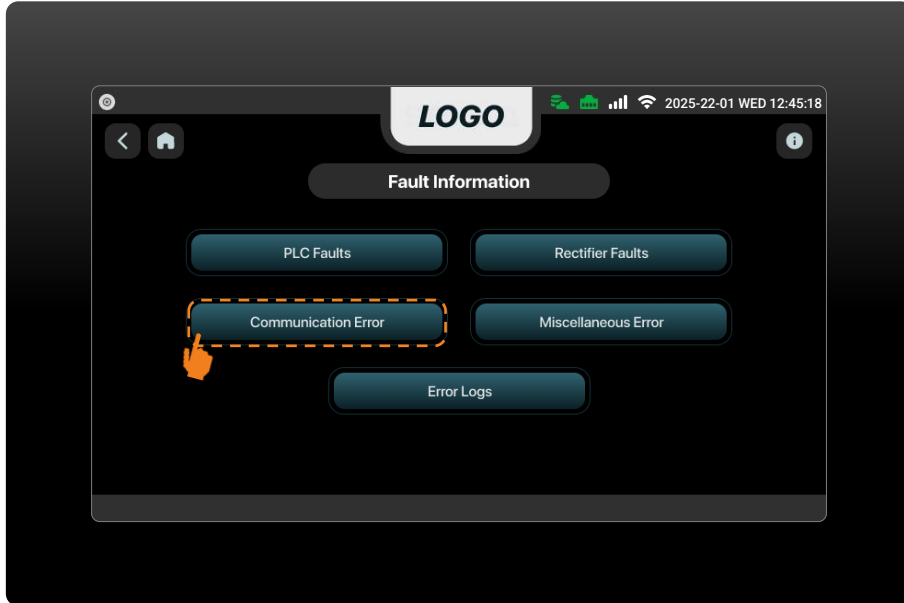


Figure 28 Fault Information: press the communication error button

This is a communication failure, where the user can access the fault type information such as the PLC, Rectifier, OCPP and Modbus Master communication error and their status. (Figure 29)

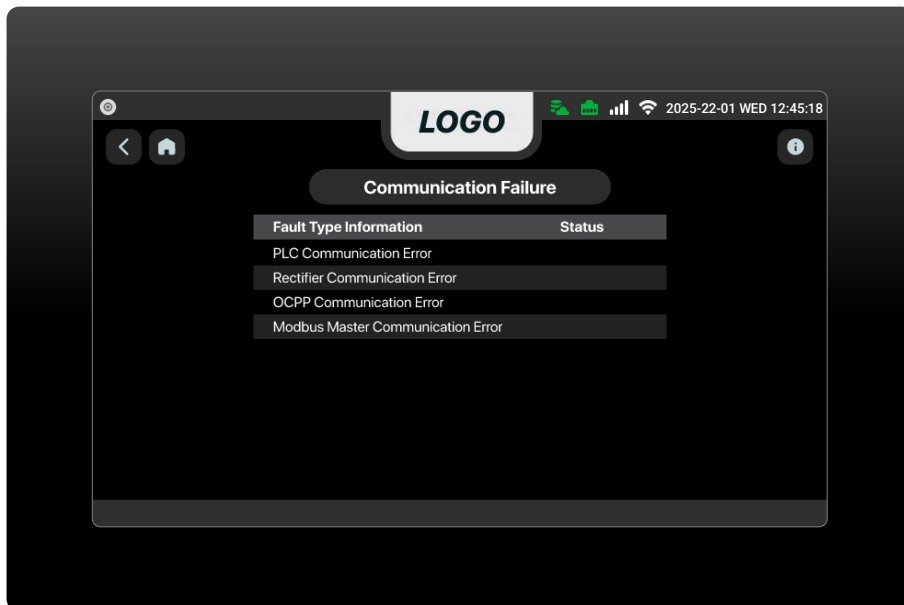


Figure 29 Communication failure screen

Table 17 Navigation button: communication failure (error)

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC charger home screen.
3.		Info Button	To know about the communication failure.

Information Pop-up Message

Press the information button, and it will show a pop-up message with colour about the error indication. (Figures 30 & 31)



Figure 30 Communication failure screen: press the information button

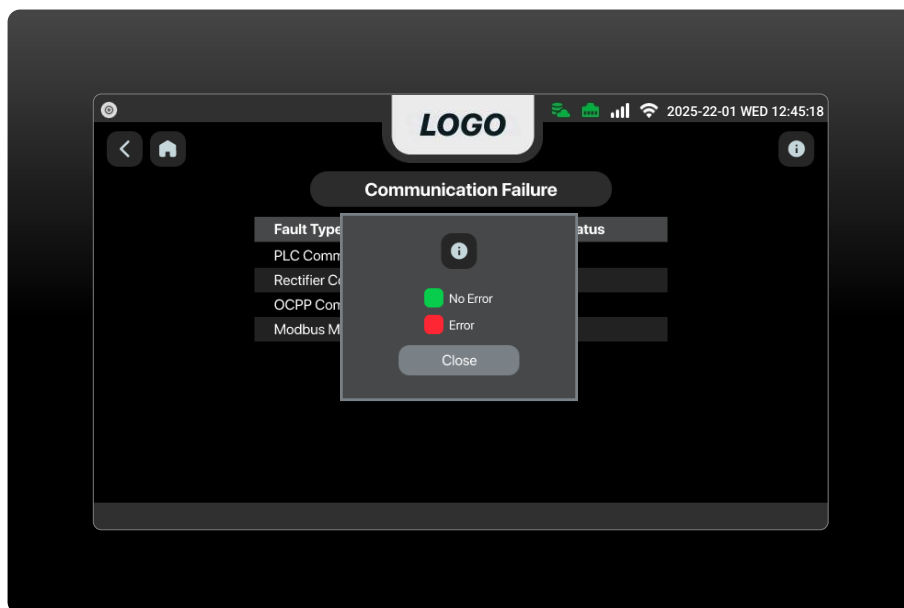
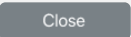


Figure 31 Communication faults pop-up information message

Table 18 Navigation button: communication failure

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

D. Miscellaneous Error

To get information related to device communication status, press the “miscellaneous error” button. It will open the “device connection status” screen. (Figure 32)

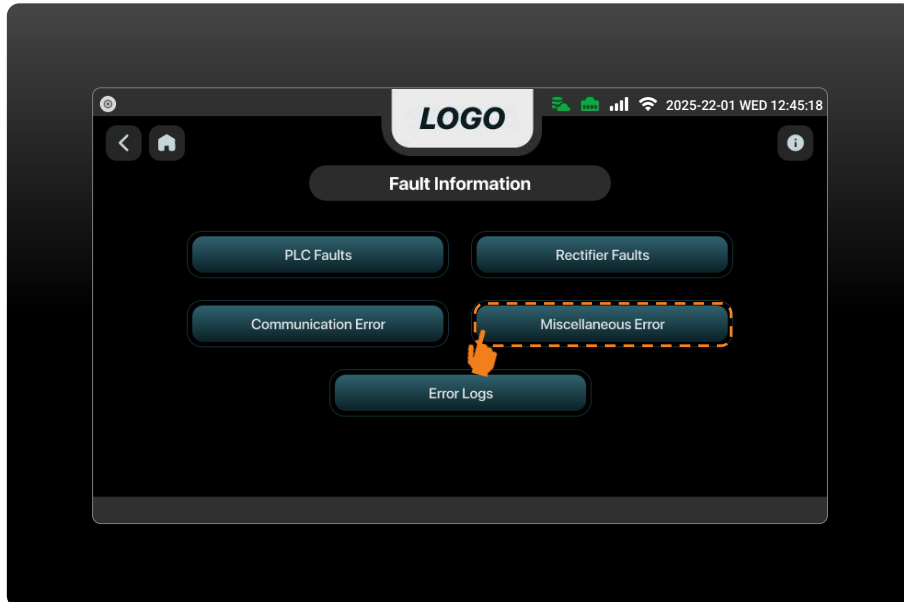


Figure 32 Fault Information: press the miscellaneous error button

This is the device connection status screen. The screen shows device information and status, such as RFID Module, LED Module, AC Meter, DC Meter 1, and DC Meter 2. (Figure 33)

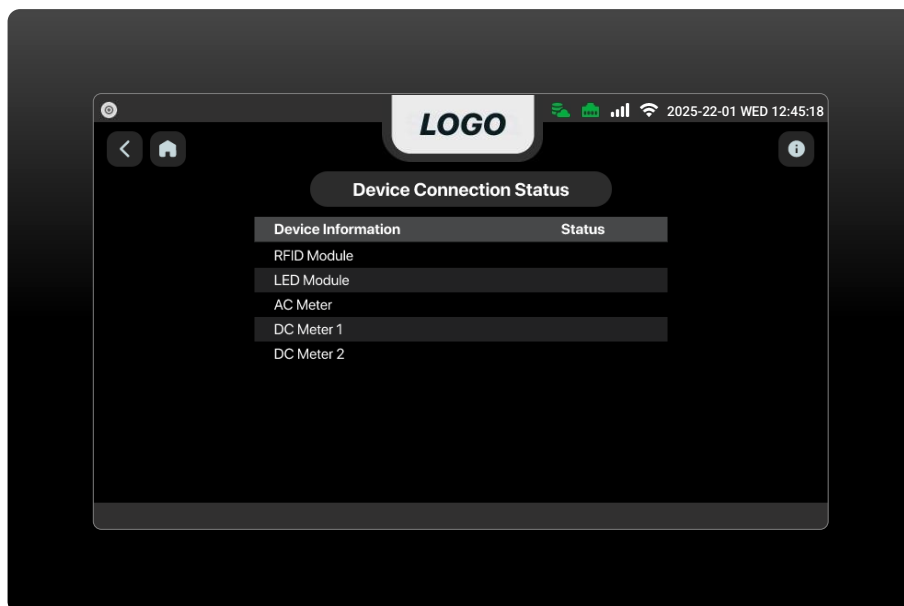



Figure 33 Device connection Status (miscellaneous error) screen

Table 19 Navigation button: device connection status

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC charger home screen.
3.		Info Button	To know about the rectifier error code.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the error indication with colour, as shown in the figure below.



Figure 34 Device connection status: press the information button

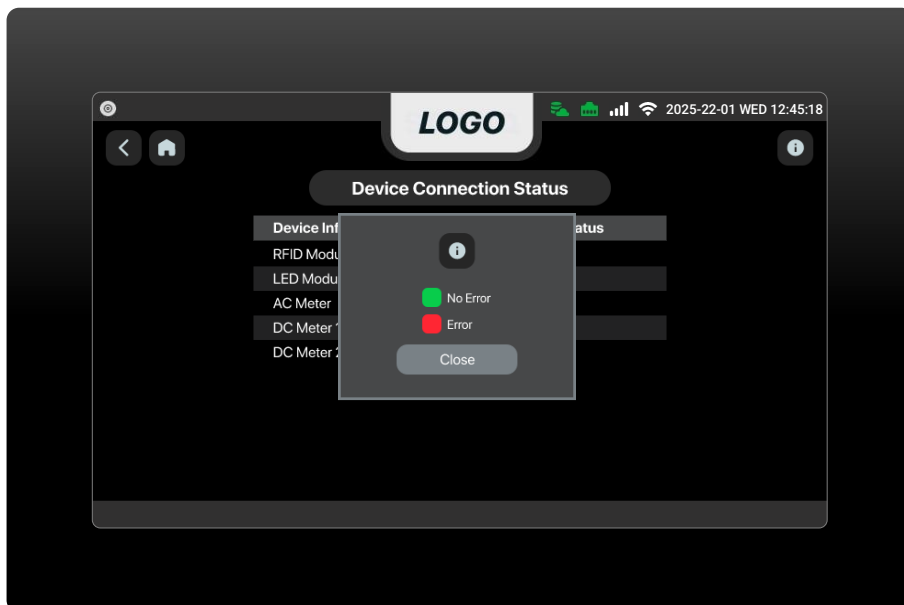



Figure 35 Device connection status pop-up information message

Table 20 Navigation button: device connection status

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

E. Error Log

To get information related to errors, press the “Error Logs” button. It will open the “Error log data” screen. (Figure 36)

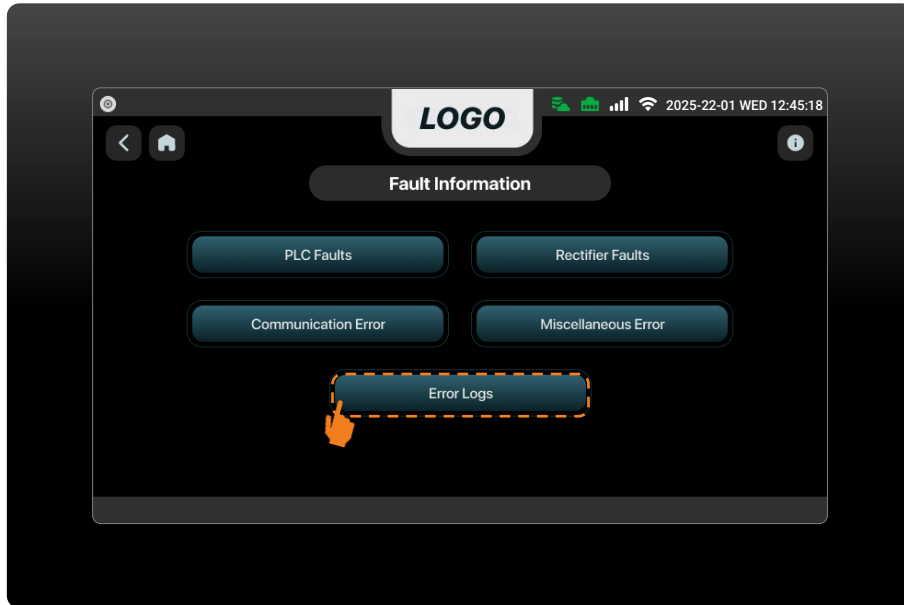


Figure 36 Fault Information: press the error logs button

This is the screen where error logs are shown. The screen displays error log data in tabular style, with 5 raw data points per page and a maximum of 10 pages. (Figure 37)

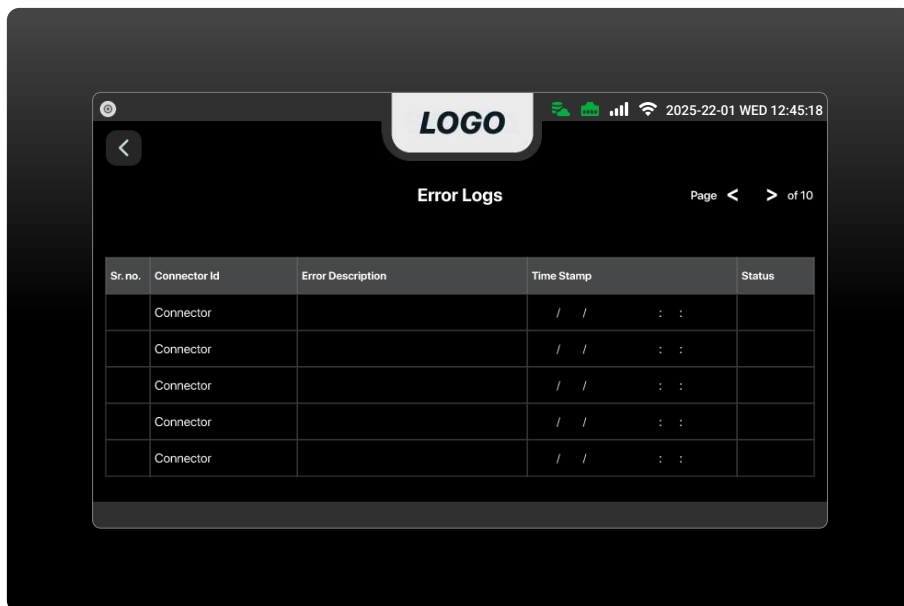


Figure 37 Error Log screen

Table 21 Navigation button: device connection status


No.	Button	Name	Function
1.		Back Button	To move the previous screen.

Table 22 Error log screen: description

No.	Error Name	Description
1.	STEMP INIT FAIL	System temperature initial failure
2.	GUN TEMPERATURE HIGH	The gun temperature exceeded the 90°C threshold limit.
3.	HIGH NEUTRAL TO EARTH VOLTAGE	Neutral to earth voltage exceeds the limit.
4.	MAIN SUPPLY LOW	AC mains with voltages less than the 159-threshold limit.
5.	MAIN SUPPLY HIGH	AC mains with voltage thresholds above 280.
6.	RFID COMM FAIL	RFID module is unable to communicate with the controller over the RS-485 interface.
7.	RELAY BOARD STOP WORKING	Relay Board is not communicating with the Controller.
8.	AC ENERGY METER COMM FAIL	The energy meter is unable to communicate with the controller over the RS-485 interface.
9.	GUN DC METER COMM FAIL	DC metre is unable to communicate with the controller over the RS-485 interface.
10.	ALL DC METER COMM FAIL	All DC metre is unable to communicate with the controller over the RS-485 interface.
11.	LED BOARD FAIL	The LED controller does not communicate with the controller.
12.	HIGH LEAKAGE CURRENT	Leakage current exceeds 30 mA.
13.	SYSTEM TEMPERATURE HIGH	The cabinet temperature is out of range.
14.	SPD FAULT	SPD malfunctions occur.
15.	ALL PLC COMM FAIL	Both PLC modules are unable to communicate with the controller using CAN bus.
16.	PLC COMM FAIL	PLC Modules' CAN communication is disrupted.
17.	CONTROLLER DASHBOARD FAIL	A controller is unable to communicate with all peripherals.
18.	SMOK DETECT	The smoke sensor detected a fire inside the cabinet.
19.	TEMPER DETECT	Tamper or door sensor detection event.
20.	RCBC MCCB FAIL	RCCB trip because of over-leakage or excessive NE, or MCB trip due to short circuit and overload.
21.	EMERGENCY PRESSED	The emergency switch is pressed.
22.	HMI COMM FAULT	HMI cannot communicate with the main controller.
23.	MODEM COMM FAIL	Modem communication failure with the OCPP module.
24.	INPUT CONTACTOR FAIL	AC Contactor Failure.
25.	ALL RECTIFIER COMM FAIL	CAN communication is lost between the controller and the rectifier module.
26.	RECTIFIER1 COMM FAIL	Rectifier 1 communication fails with the controller.
27.	RECTIFIER2 COMM FAIL	Rectifier 2 communication fails with the controller.

No.	Error Name	Description
28.	RECTIFIER3 COMM FAIL	Rectifier 3 communication fails with the controller.
29.	RECTIFIER4 COMM FAIL	Rectifier 4 communication fails with the controller.
30.	ISOLATION FAIL	Insulation failure.
31.	RECTIFIER TEMP HIGH	Rectifier temperature exceeds the 70°C threshold limit.
32.	GUN DC OVER VOLTAGE	Rectifier DC output voltage exceeds EV maximum voltage.
33.	GUN UNDER VOLTAGE	Rectifier DC output is undervoltage.
34.	GUN DC OUTPUT OVER CURRENT	Rectifier DC Output current exceeds EV maximum current.
35.	GUN DC CONTACTOR FAIL	DC contactor failure.
36.	GUN FUSE DAMAGE	Fuse damage.
37.	GUN AUTH TIMEOUT	Authentication failure.
38.	GUN CP LINE FAULT	PLC module determined a CP line problem.
39.	GUN SLAC ERROR	PLC module determined SLAC failure
40.	GUN V2G ERROR	PLC module determined a Vehicle 2 Grid failure.
41.	GUN PRECHARGE ERROR	Pre-charging stage failure.
42.	EV ERROR	Electric vehicles cause failure.
43.	AC TYPE2 METER COMM FAIL	The AC energy meter is unable to communicate with the controller.
44.	GUN TYPE2 OVER VOLT	AC output voltage exceeds EV maximum voltage.
45.	GUN TYPE2 UNDER VOLT	AC output undervoltage error.
46.	GUN AC TYPE2 OVER CURR	AC output current exceeds EV maximum current.
47.	GUN AC TYPE2 UNDER CURR	AC output undercurrent error.
48.	MAINS FAIL	When any phase voltage is not within the standard, a mains failure occurs.
49.	RECTIFIER1 FAULT	Some faults have occurred in the rectifier.
50.	RECTIFIER2 FAULT	Some faults have occurred in the rectifier.

3.1.4 Charging History

The user can access the previous charging session information by pressing the “Charging history” button from the DC charger home screen. It will open the charging history screen. (Figure 38)

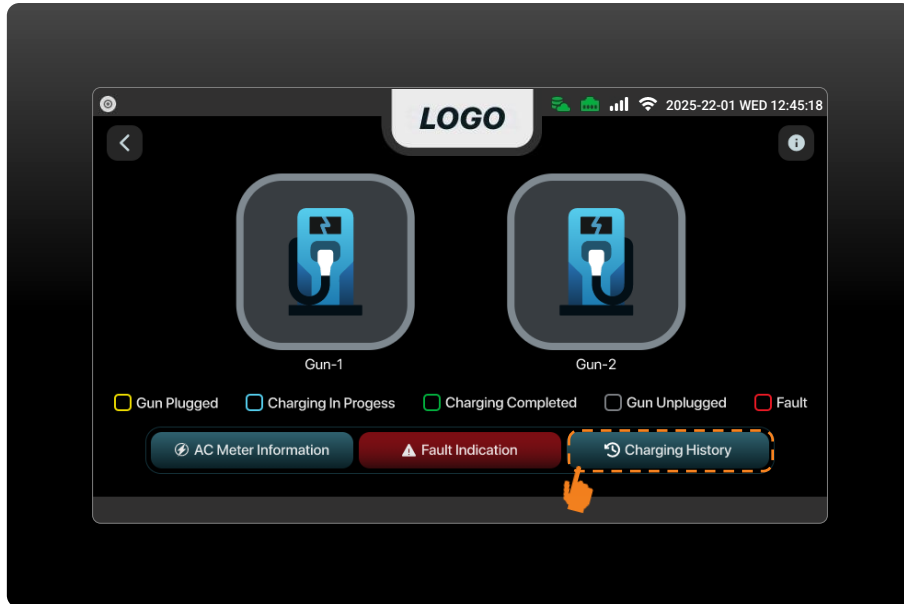


Figure 38 DC charger home screen: press the charging history button

This is the screen where the charging history is shown. The screen displays charging history data in tabular style, with 5 raw data points per page and a maximum of 20 pages. (Figure 39)

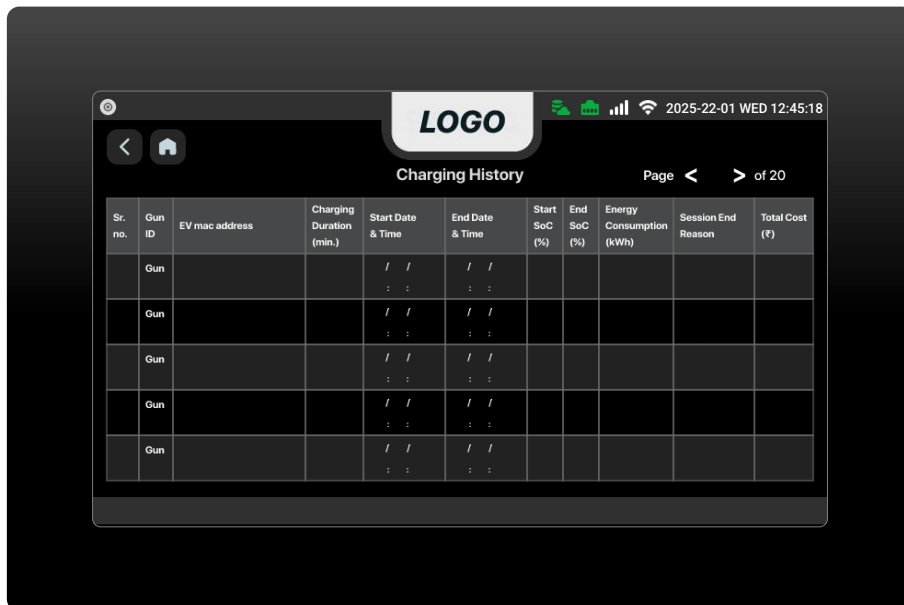


Figure 39 Charging history log screen

Table 23 Navigation button: device connection status

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC charger home screen.

3.2 DC Gun-1 Charging Parameter

Press the Gun-1 button to initiate the DC Gun-1 charging process from the DC charger home screen. (Figure 40)

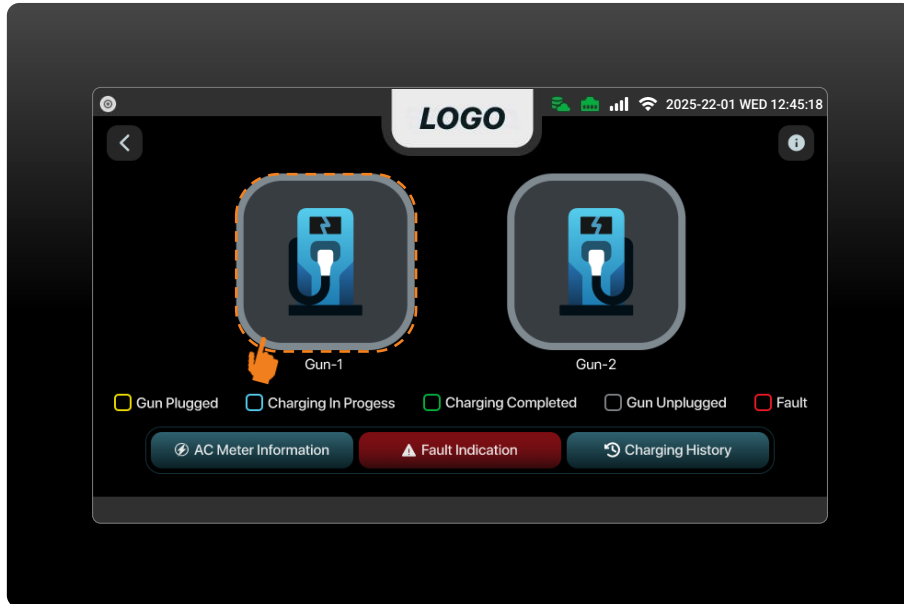


Figure 40 DC charger home screen: press the Gun-1 button

This is a DC Gun-1 charging parameter screen. Here, the user can get charging-related parameters. (Figure 41)

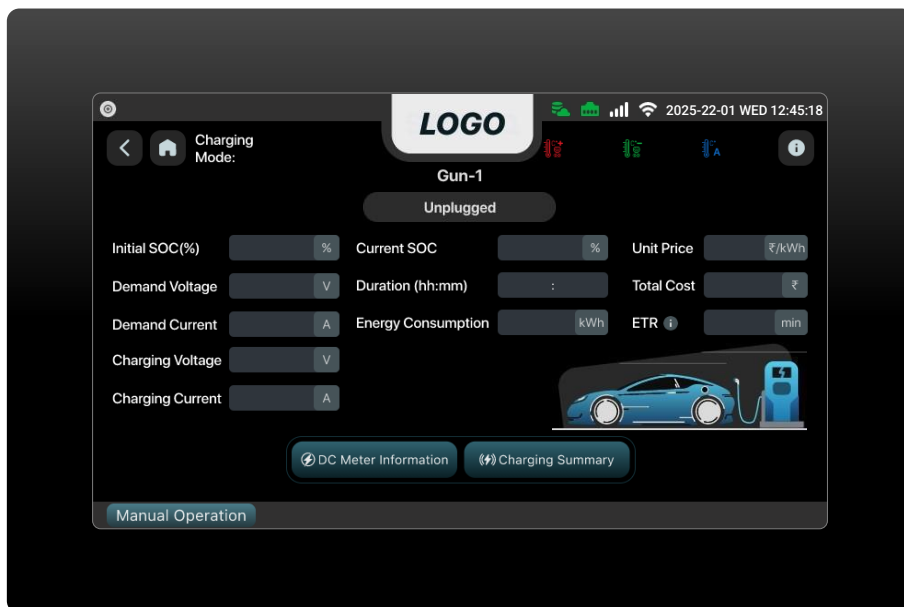






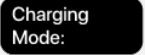







Figure 41 Gun-1 parameter screen

Table 24 Navigation button: Gun-1 parameter screen

No.	Button	Name	Function
1.		DC Meter Information	To get the DC meter information.
2.		Charging Summary	To get the charging summary.
3.		DC Gun-1 status	To know more about the present condition of DC gun-1 functioning or fault indication, press the information button.
4.		DC+	To indicate the DC positive temperature.
5.		DC-	To indicate the DC negative temperature.
6.		Ambient Temperature	To indicate the ambient temperature.
7.		Charging Mode	To indicate the charging mode such as auto, energy, SoC and Time.
8.		Manual Operation	To set manual charging mode operation such as auto, energy, SoC and Time.
9.		ETR	Estimated Time Remaining to fully charge EV.
10.		Back Button	To move the previous screen.
11.		Home Button	To move the DC charger home screen.
12.		Info Button	To know about the DC Gun-1 state information.

3.2.1 Operation Status

The charging status indicates the present condition of the DC Gun-1 operation. Furthermore, the user can know more about the charging status in the table. (Table 25)

Table 25: Operation status name and function

No.	Name	Function
1.	Unplugged	The gun is not connected.
2.	Plugged-In	The gun is connected to EV.
3.	Authentication	Authentication using RFID/OCPP within 55 seconds of starting this state.
4.	Authentication Timeout	Authentication is not done within the time interval.
5.	Authentication Denied	Authentication was rejected by the server.
6.	Authentication Success	Authentication success response from the server.
7.	Isolation Fail	Isolation test fail.
8.	Preparing for charging	Initialising for charging.
9.	Precharge Fail	Precharge test fail.
10.	Charging	EV charge in progress.
11.	Charging Complete	EV charge completed.
12.	PLC Fault	The fault occurred in the PLC module.
13.	Rectifier Fault	The fault occurred in the rectifier module.
14.	Communication Error	Communication break with EV.
15.	Emergency Stop	Emergency stop triggered by user.

3.2.2 EV Charging Procedure

The user can charge the EV using four distinct EV charging modes: auto, energy, SoC, and time. The system comes pre-set in auto charging mode. However, there is a mode switch option to charge the EV according to a specified manner. In addition, section 3.2.4 provides information on setting the EV charging mode.

A. Auto Charging Mode

By default, the EV charging mode is in auto charging mode. (Figure 42)

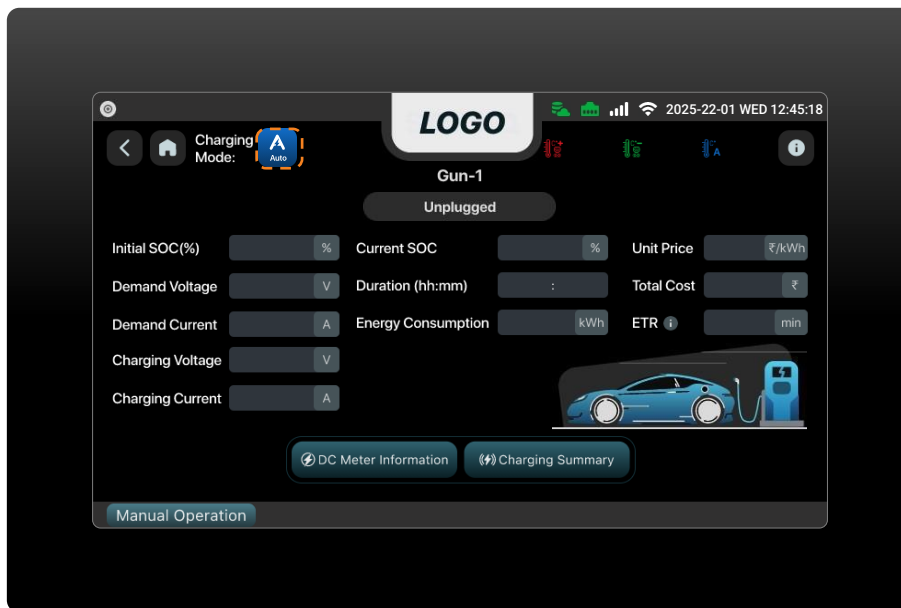


Figure 42 Gun-1 parameter screen: auto charging mode

Step 1. Initial start

When the DC Gun-1 is not connected to the EV, the display shows the status “Unplugged”. (Figure 43)

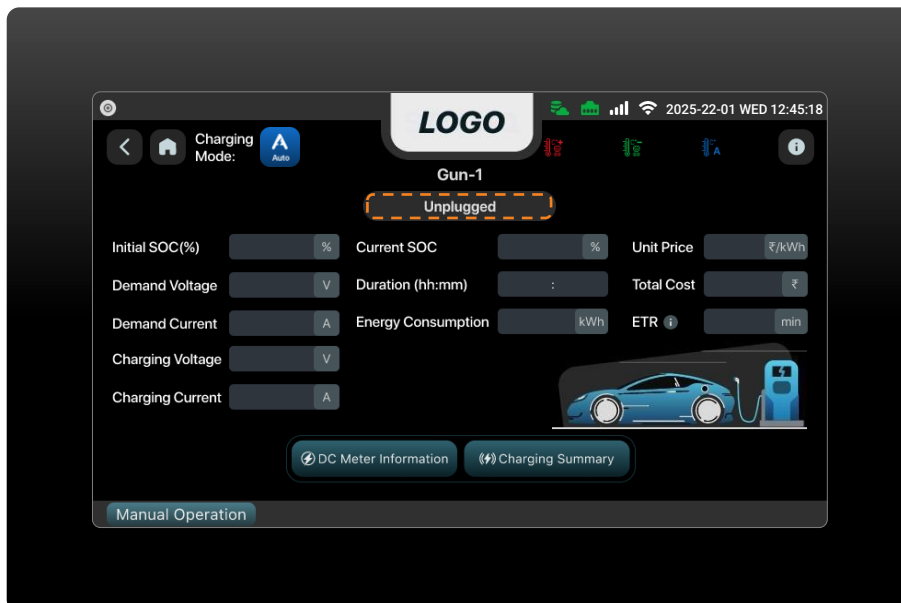


Figure 43 Unplugged status

Step 2. Connect Gun-1 to EV

When the DC Gun-1 is connected to the EV for charging, the display shows the status “Plugged-in”. (Figure 44)



Figure 44 Plugged-In status

Step 3. Tap RFID card or tag on a reader.

When an RFID card or tag is tapped on a reader, the screen displays the “RFID tag detected” indicator. (Figure 45)



Figure 45 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 46)

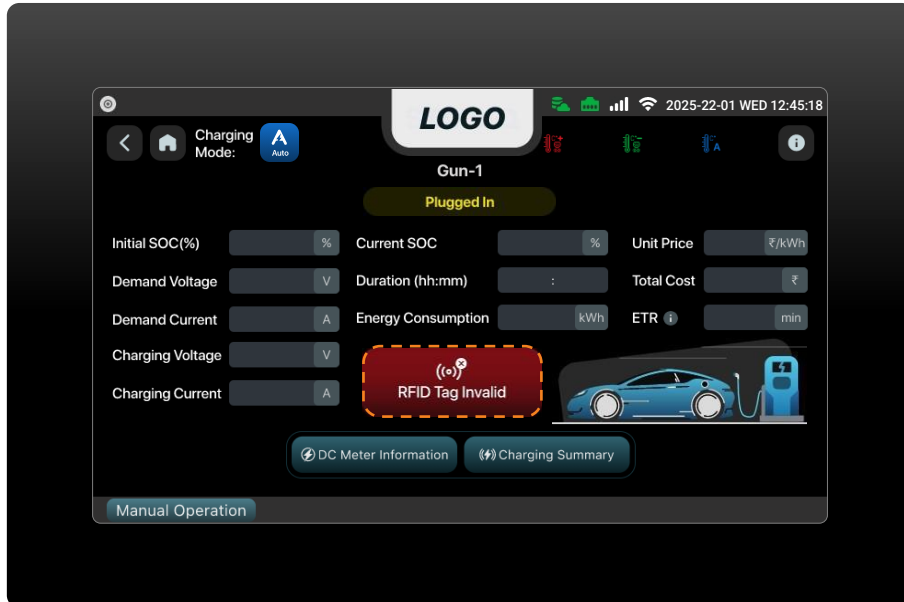


Figure 46 RFID tag invalid indicator

Step 4. Authentication of RFID card or tag.

When you tap a valid RFID card or tag on the reader, the screen will display the “RFID Tag Valid” indicator. (Figure 47)



Figure 47 RFID tag valid indicator

Step 5. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”.
(Figure 48)



Figure 48 Preparing for charging status

Step 6. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 49)

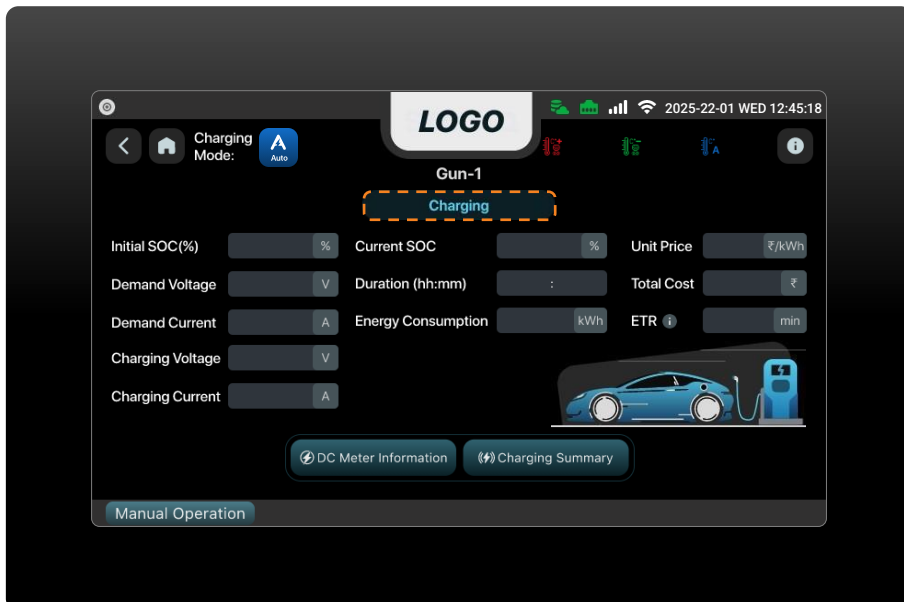


Figure 49 Charging status

Step 7. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”. (Figure 50)

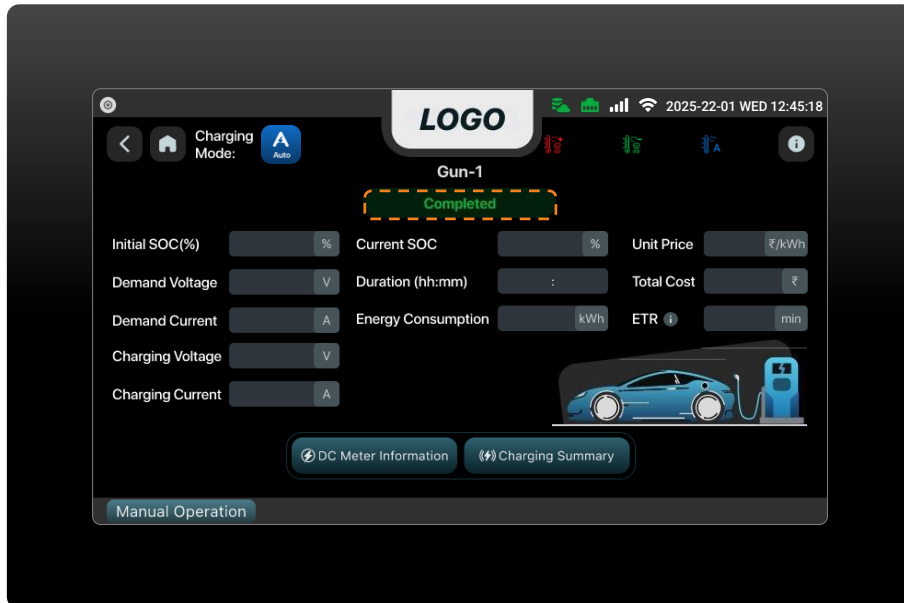


Figure 50 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process. (Figure 51)

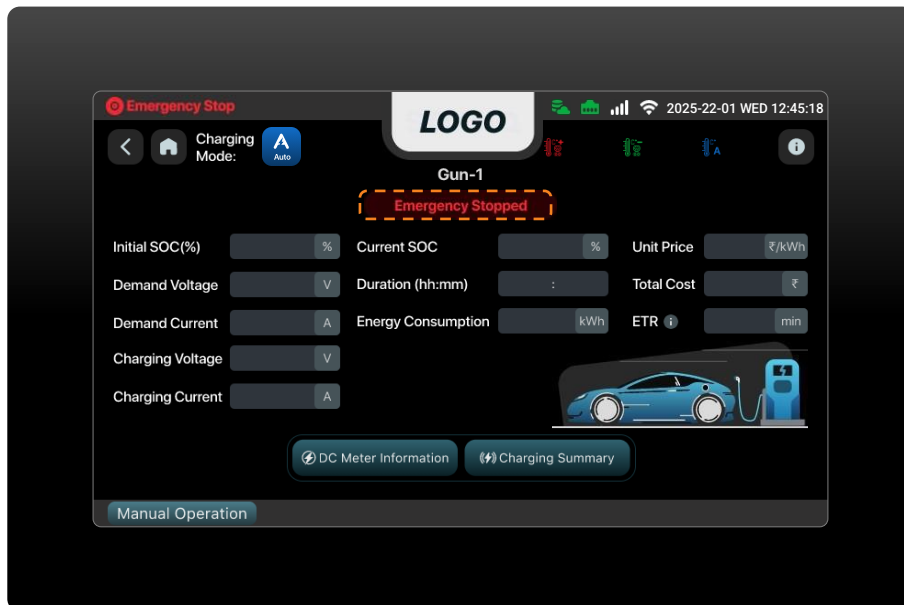


Figure 51 Emergency stopped status

3.2.3 Manual Charging Mode

The user can EV charging using the manual mode where there are four manual charging modes. Press the Manual Operation button to open the manual charging mode menu screen. (Figure 52)



Figure 52 Press the “Manual Operation” button

Start / Stop Charging Mode pop-up

This is a manual operation start or stop pop-up box which is helpful to start a new charging mode or stop the existing EV charging mode. (Figure 53 & Table 26)

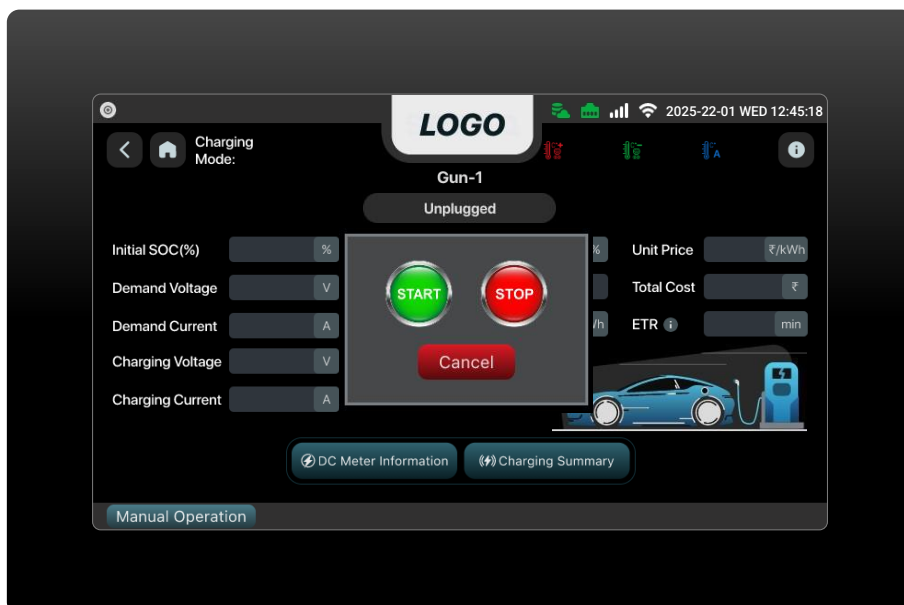





Figure 53 Start or Stop charging mode pop-up

Table 26 Fault information button.

No.	Button	Name	Function
1.		Start Button	To start the new charging mode.
2.		Stop Button	To stop the current charging mode.
3.		Cancel Button	To close the popup.

There are four EV charging modes on the screen. Furthermore, the user can know more about the EV charging modes in the table. (Figure 54 & Table 27)

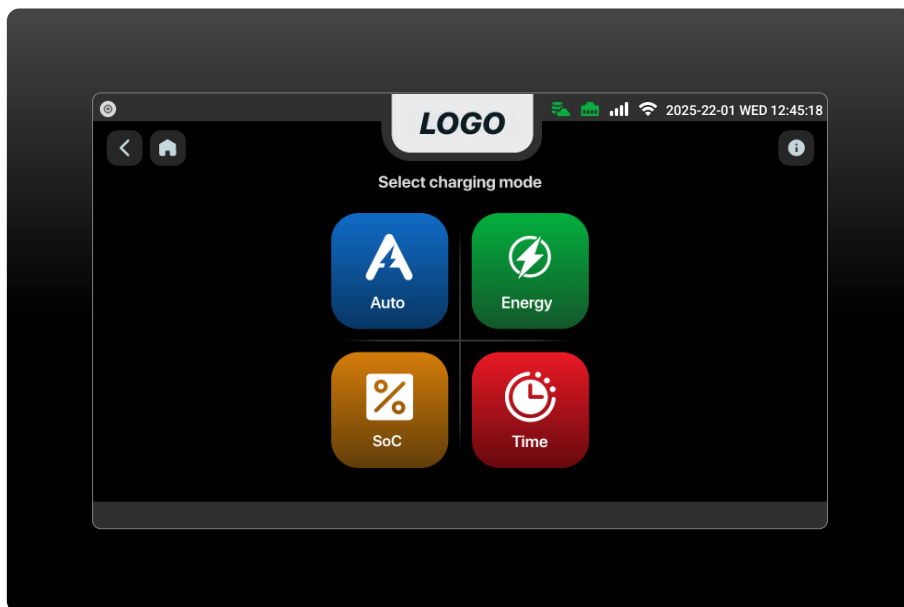









Figure 54 Select charging mode

Table 27 Fault information button

No.	Button	Name	Function
1.		Auto Mode	To completely charge the vehicle, select auto mode.
2.		Energy Mode	To set the vehicle's energy target, select the energy mode and enter the energy value in kWh.
3.		SoC Mode	To charge the vehicle to a certain SoC percentage, select SoC mode and enter the SoC percentage.
No.	Button	Name	Function

4.		Time Mode	To set up the time for charging the vehicle, select the time mode and enter the expected number of minutes.
5.		Back Button	To move the previous screen.
6.		Home Button	To move the DC charger home screen.
7.		Info Button	To know about the DC Gun-1 state information.

Information Pop-up Message

Press the information button, and it will show a pop-up message with colour about the EV charging mode selection info. (Figures 55 & 56)

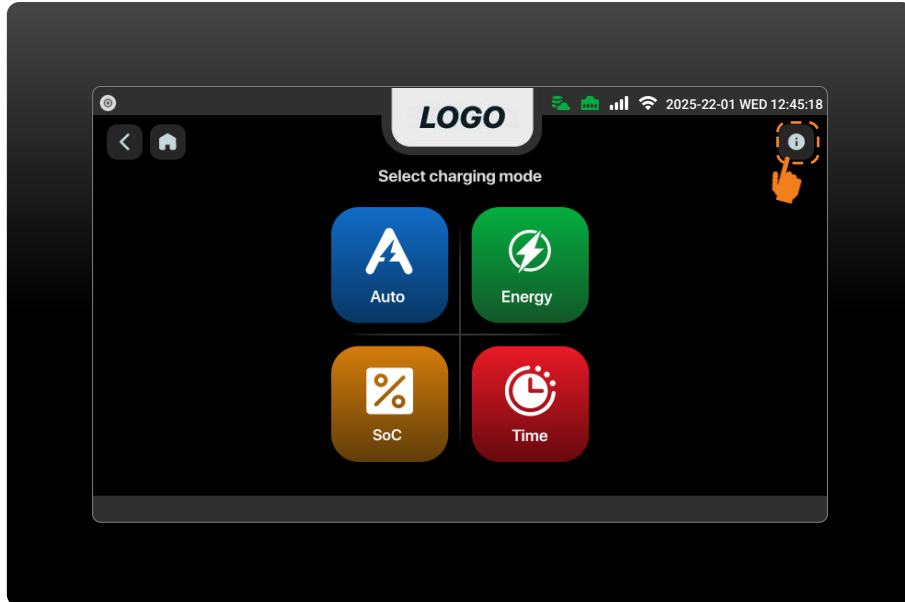


Figure 55 Select charging mode: press the information button

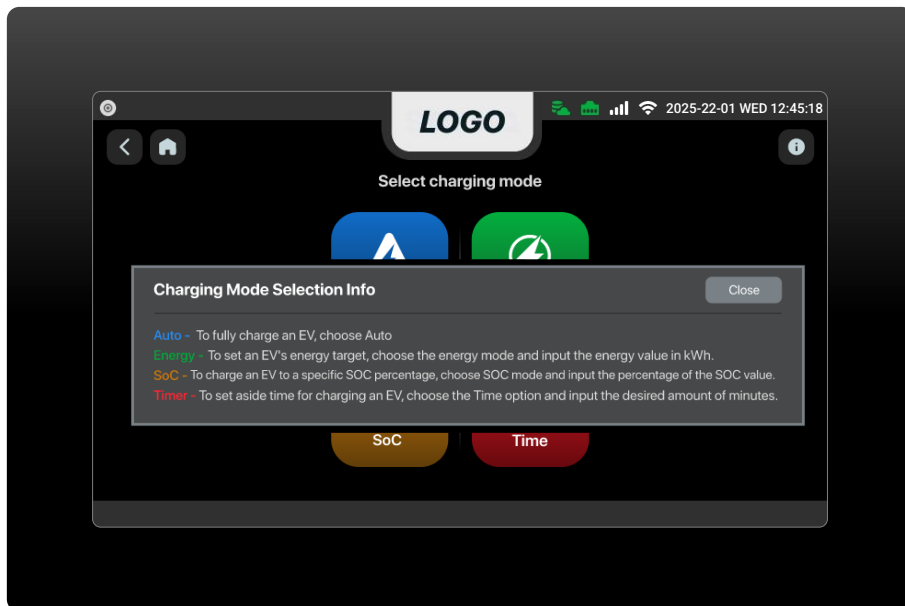


Figure 56 Charging mode

Table 28 Navigation button: PLC fault error or no error

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

A. Energy Charging Mode

To set the energy charging mode, press the “Energy” button. It will open the energy details screen. (Figure 57)

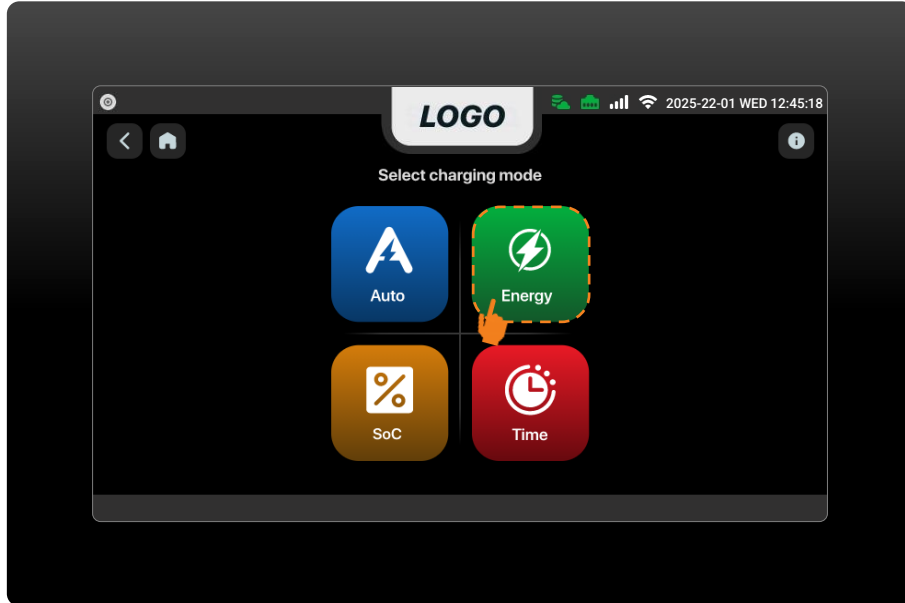


Figure 57 Select charging mode: press the Energy Button

This is the energy detail screen. Users can press the input box to enter their desired energy value in kWh, which ranges from 1 to 999. (Figure 58)

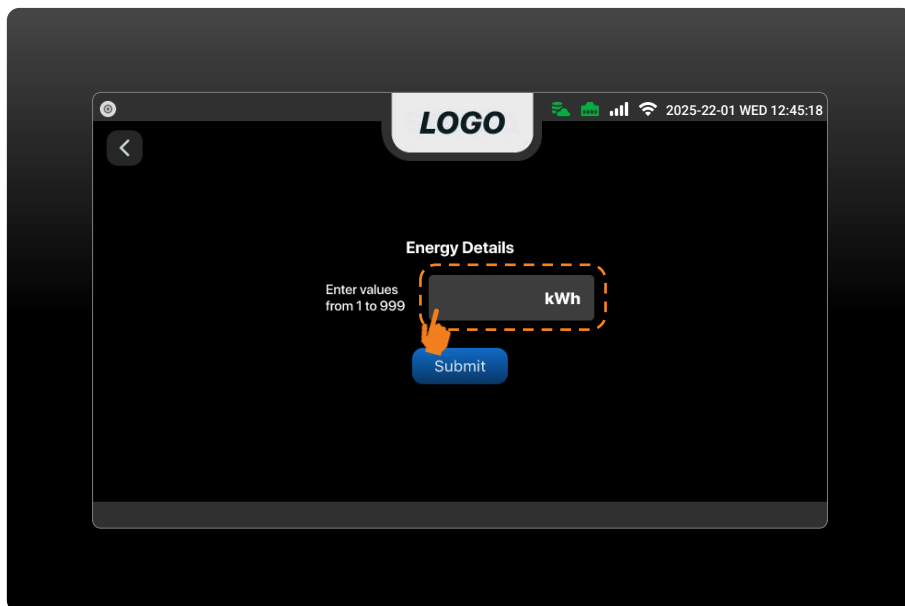


Figure 58 Energy Mode: Enter the Energy Details.

Enter the desired energy value using the on-screen numeric keyboard and press the “OK” button. (Figure 59)

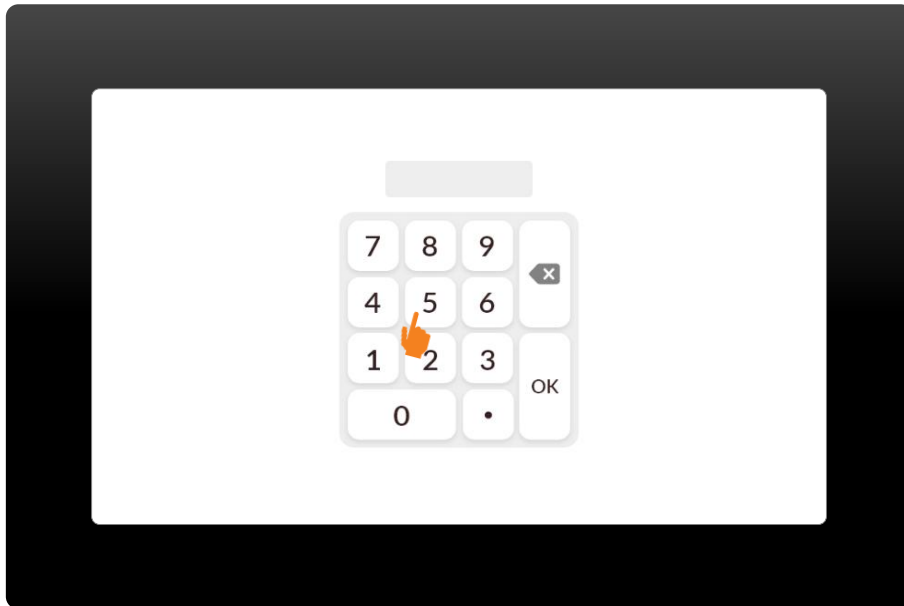


Figure 59 Enter the desired Energy Value

To set the energy values, press the “submit” button. It will proceed to the authenticating screen. (Figure 60)

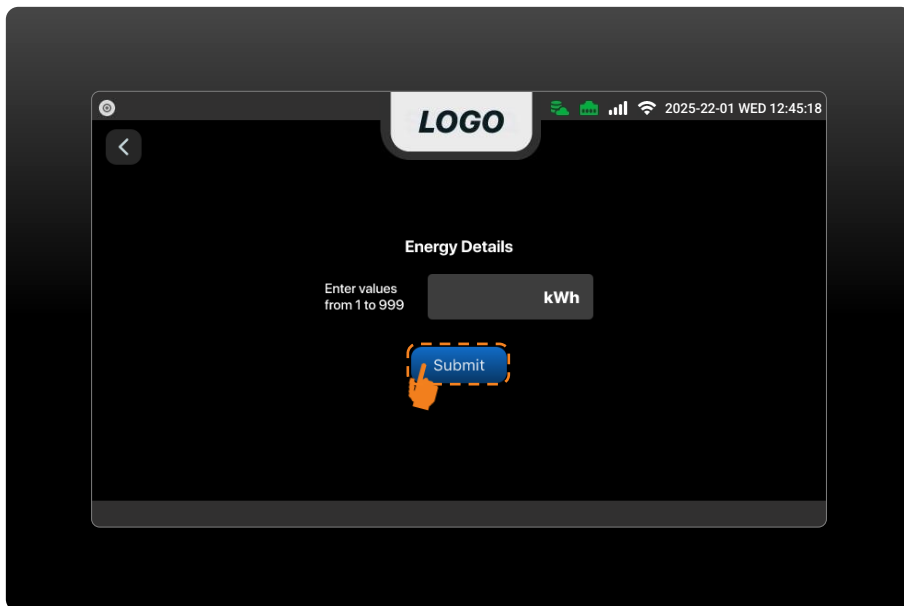


Figure 60 Press the submit button

This is the authentication screen, and there are three options for validating the authentication.
(Figure 61)

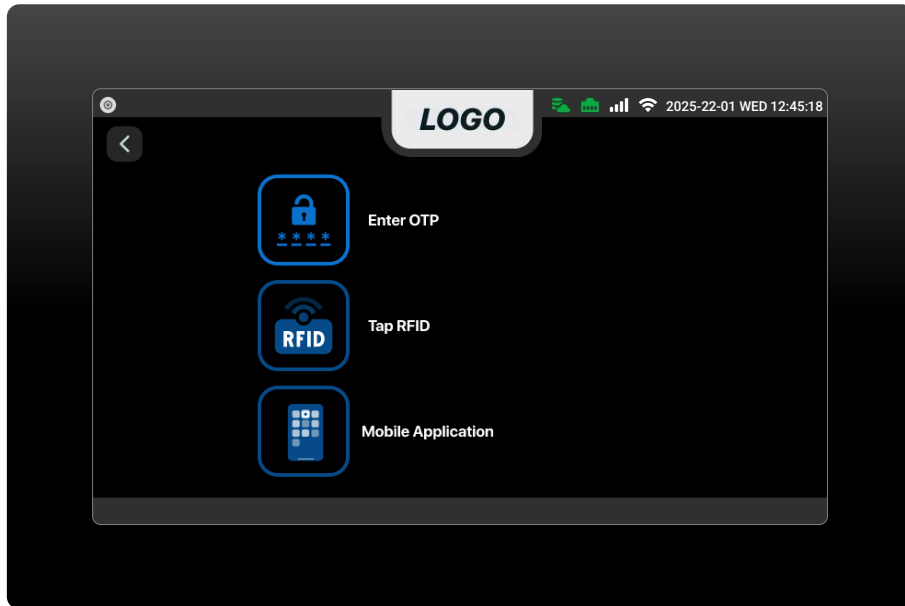


Figure 61 Authentication screen

(i). Mode Authentication

The user has three authentication options, which are detailed in this section. Use one of these based on the user's requirements.

Option 1. PIN / OTP Authentication

Press the "Enter OTP" button to proceed to the PIN / OTP authentication session screen.

(Figure 62)

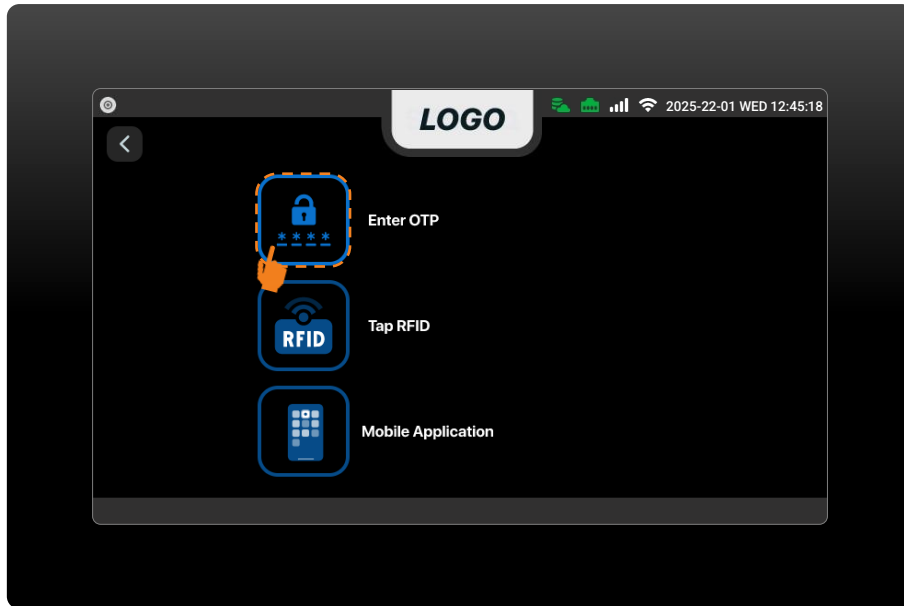


Figure 62 Press the "Enter OTP" Button

This is a PIN / OTP session authentication screen, where the user can enter PIN or OTP using the On-screen keyboard, and then press the "Enter" button. (Figure 63)

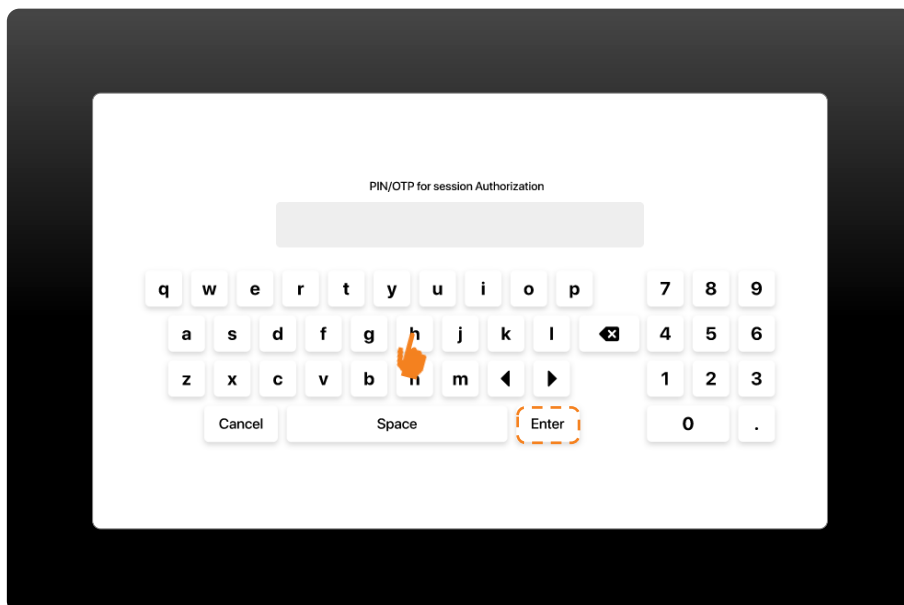


Figure 63 Use the on-screen keyboard to enter a PIN or OTP

It will take some time to validate the PIN or OTP you entered. Please wait throughout the verification procedure; do not end the session. (Figure 64)

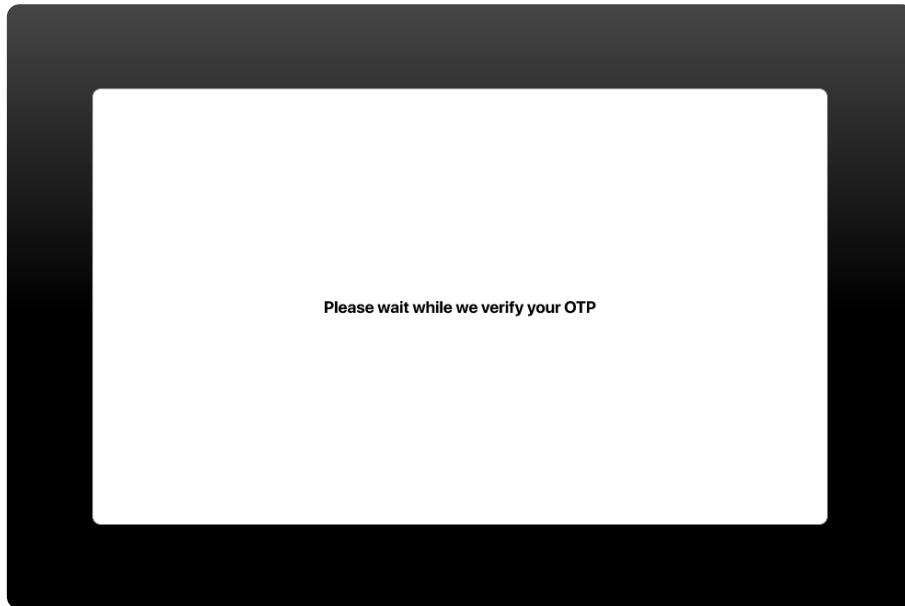


Figure 64 PIN or OTP Verification Process

The screen displays the "Token ID Submitted" indicator, which indicates that validating the token ID for the PIN or OTP will take a few seconds. (Figure 65)



Figure 65 Token ID Submitted Indicator

Use of an invalid PIN or OTP

The screen displays the "Token ID Invalid" indicator, which indicates that the token ID is invalidated. Please re-enter the pin or OTP. (Figure 66)

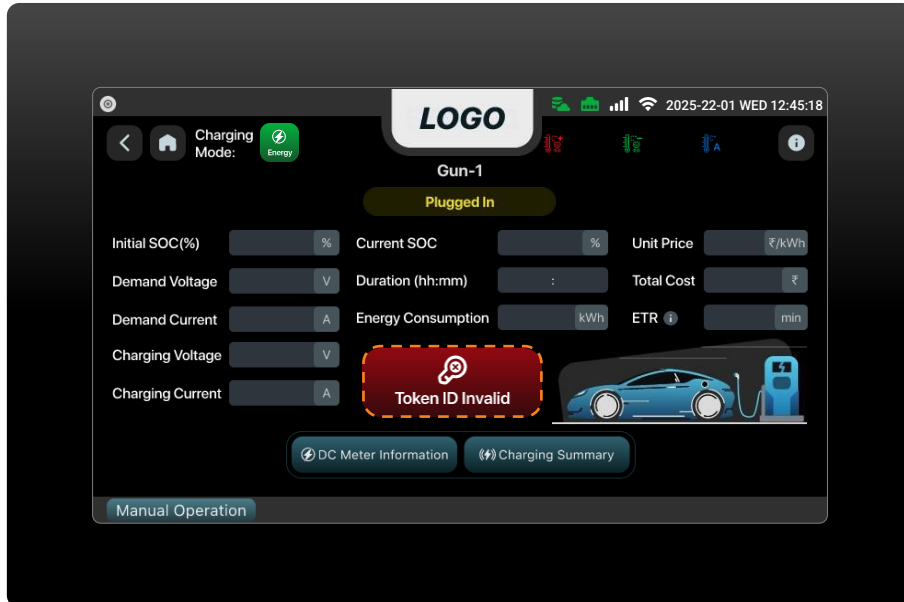


Figure 66 Token ID Invalid Indicator

When the token ID is successfully validated, the screen displays the "Token ID Valid" indicator, indicating that it is ready to charge in Energy mode. (Figure 67)

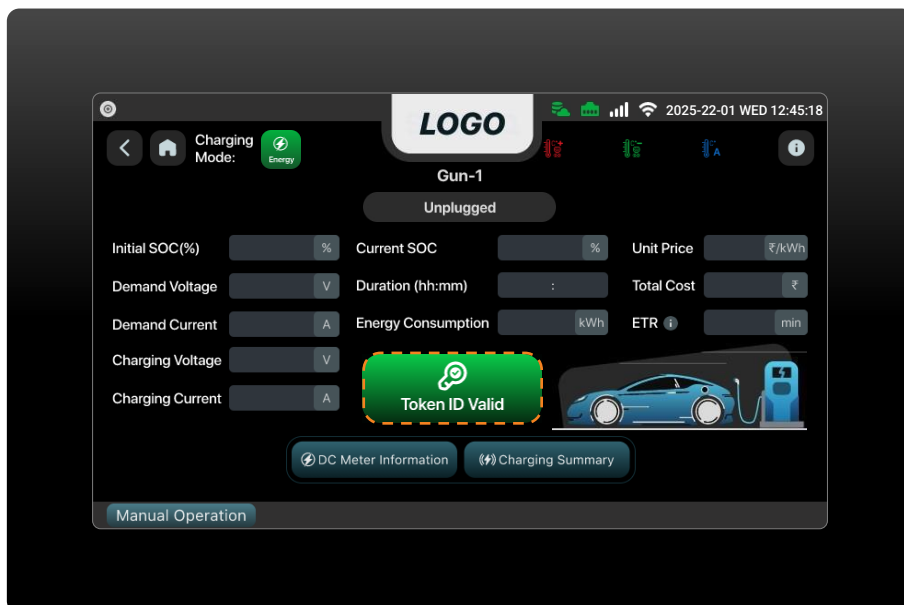


Figure 67 Token ID Valid Indicator

Option 2. RFID Authentication

Press the "Tap RFID" button to proceed to the RFID authentication session screen. (Figure 68)

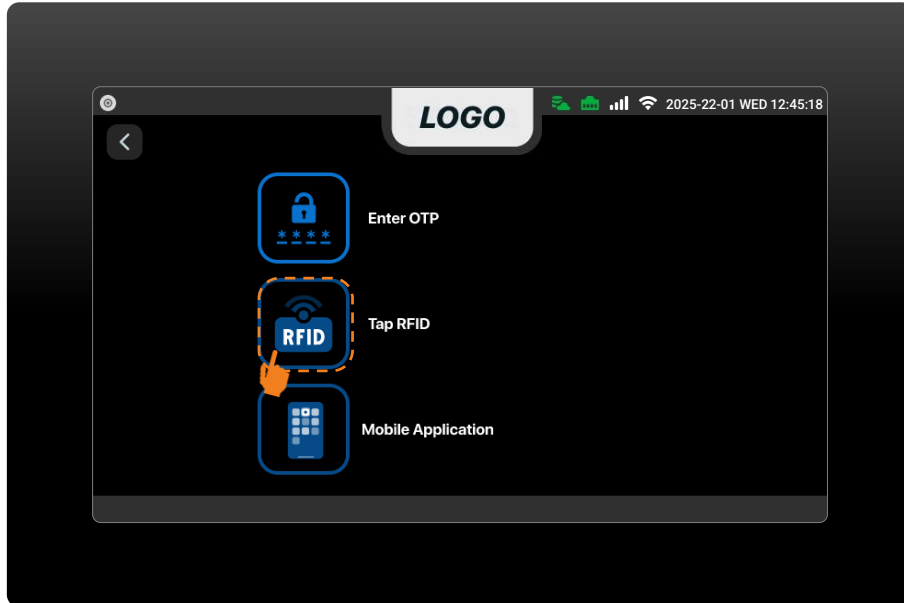


Figure 68 Press the "Tap RFID" Button

This is the information pop-up for tapping RFID on the RFID reader and pressing the "OK" button to authenticate RFID identification. (Figure 69)

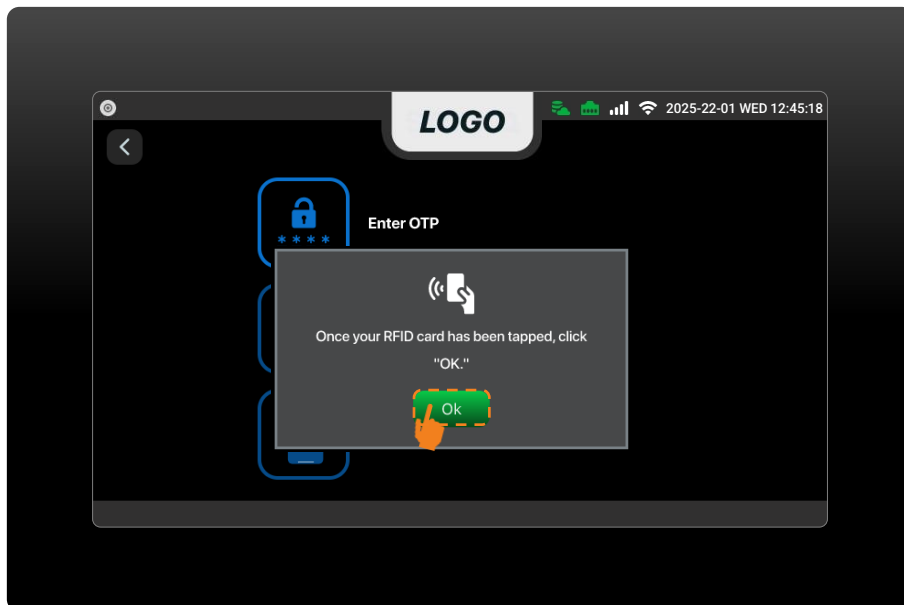


Figure 69 Tap the RFID card on the RFID reader

When an RFID card is detected, the screen displays the “RFID tag detected” indicator.
(Figure 70)

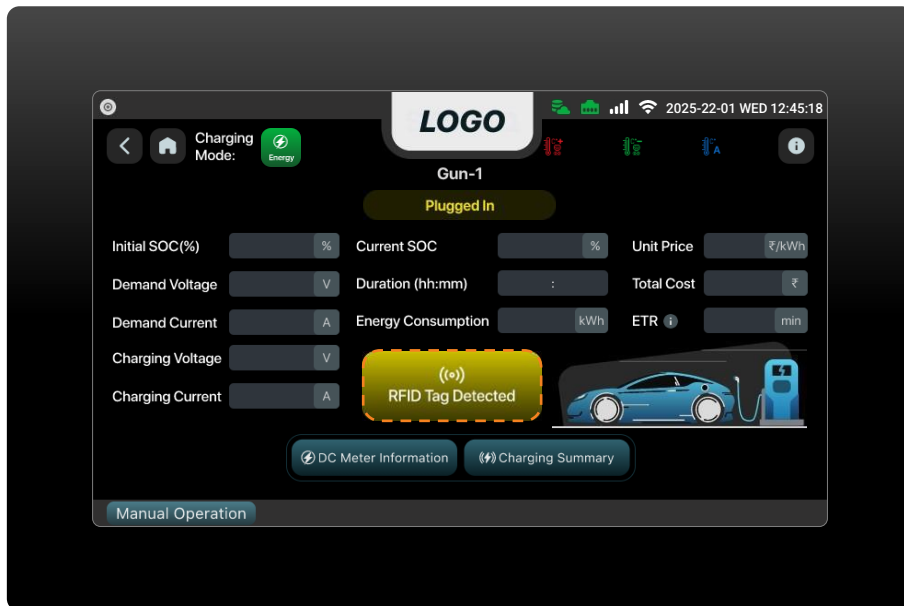


Figure 70 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 71)

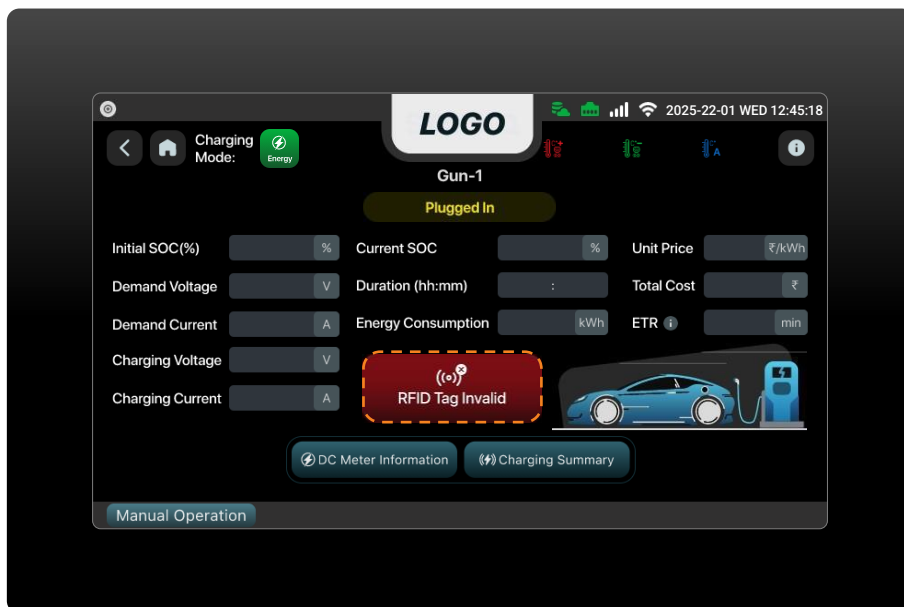


Figure 71 RFID tag invalid indicator

When the RFID Card is successfully validated, the screen displays the “RFID Tag Valid” indicator, indicating that it is ready to charge in Energy mode. (Figure 72)

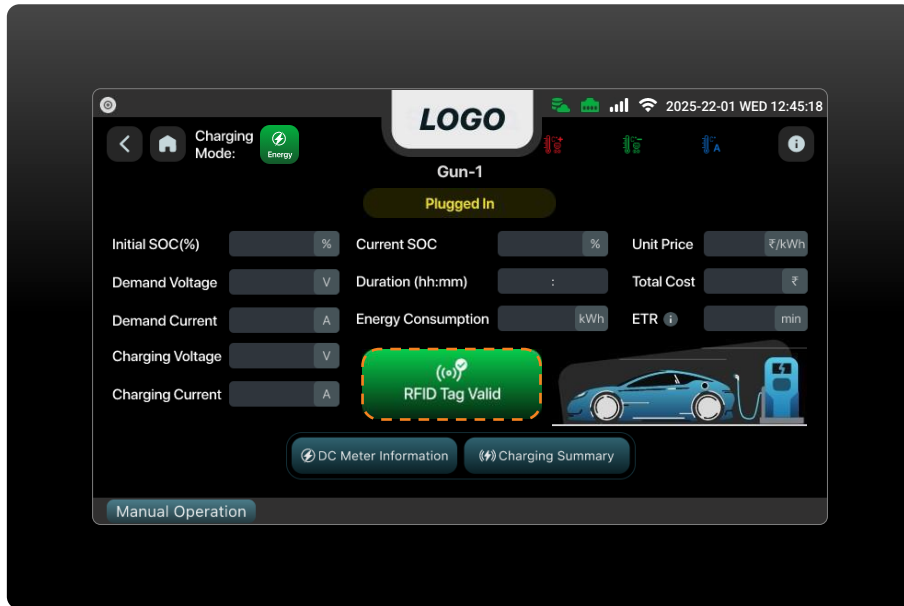


Figure 72 RFID tag valid indicator

Option 3. Mobile Application

Mobile application authentication is an alternative for integrating the personalised mobile application for EV charging. Pressing the "Mobile Application" button will lead user to the mobile application authentication session.

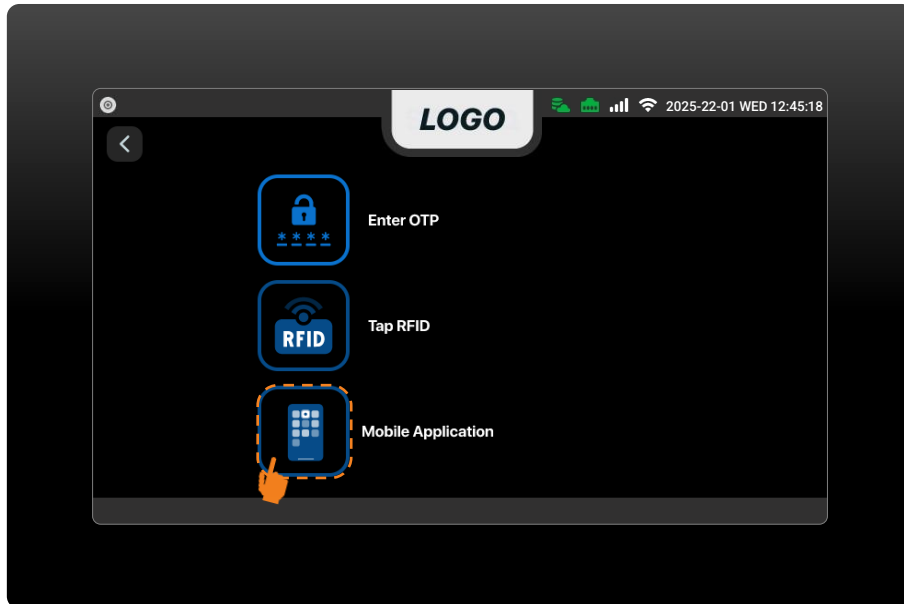


Figure 73 Press the "Mobile Application" button

(ii). Charging Procedure

Step 1. Initial start

When the DC Gun-1 is not connected to the EV, the display shows the status “Unplugged”.

(Figure 74)

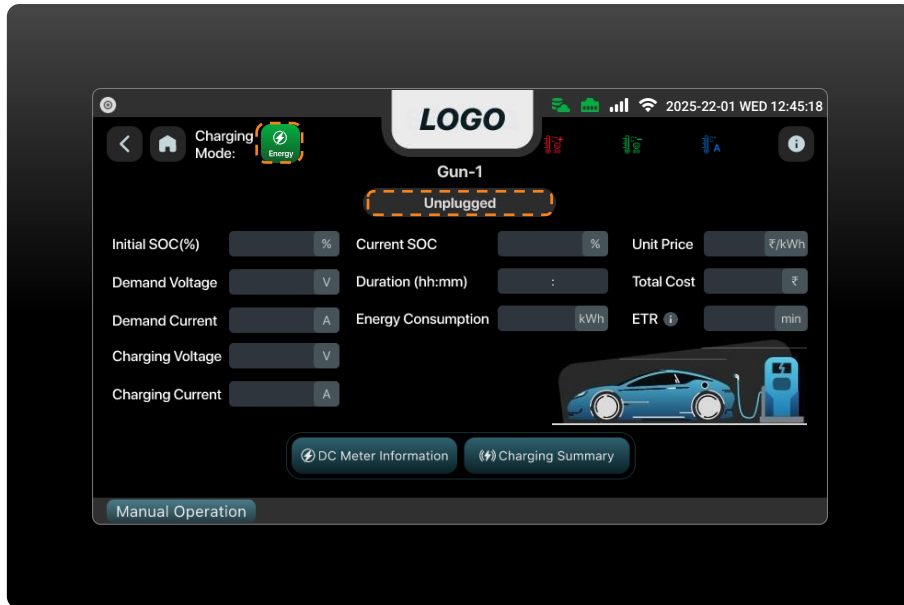


Figure 74 Unplugged status

Step 2. Connect Gun-1 to EV

When the DC Gun-1 is connected to the EV for charging, the display shows the status “Plugged-in”. (Figure 75)



Figure 75 Plugged-In status

Step 3. Tap RFID card or tag on a reader.

When an RFID card or tag is tapped on a reader, the screen displays the “RFID tag detected” indicator. (Figure 76)

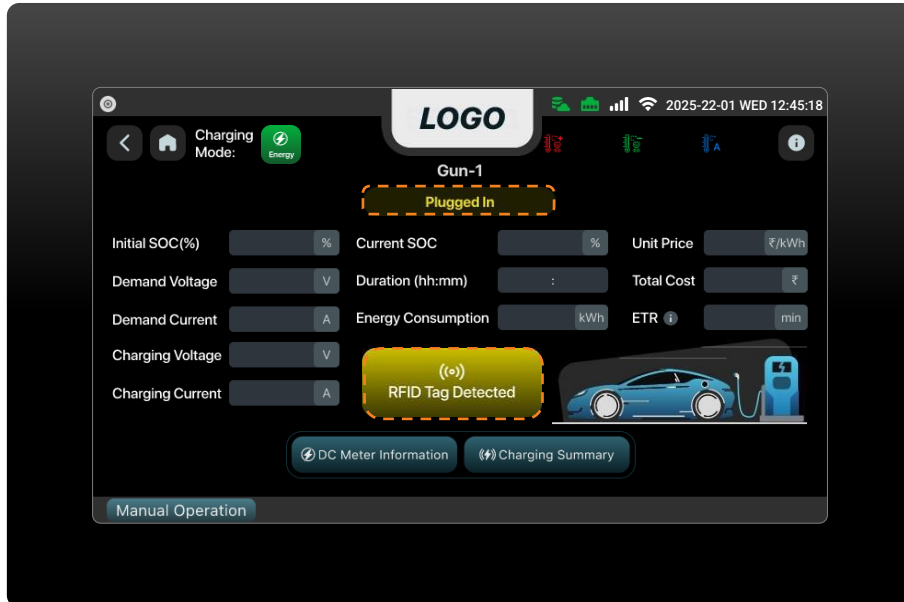


Figure 76 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 77)

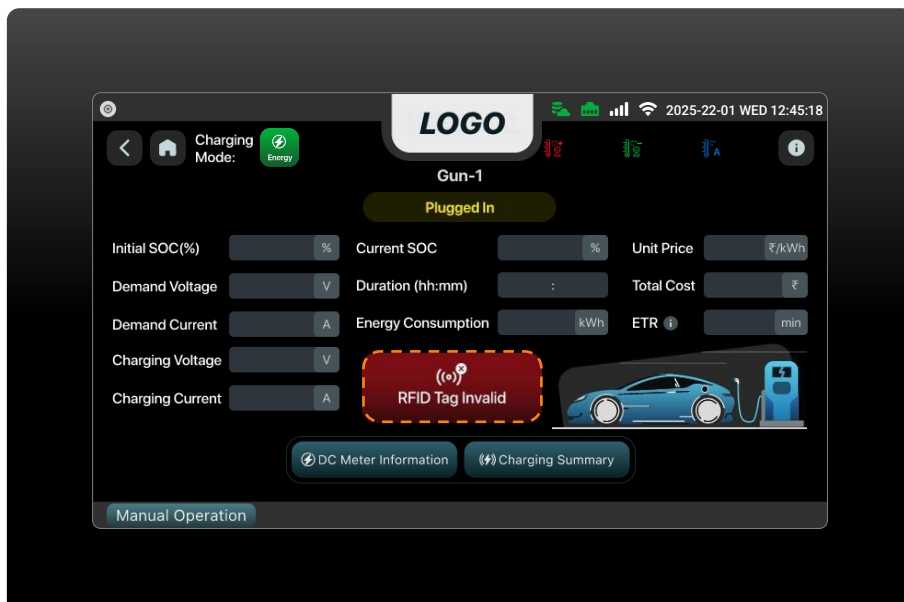


Figure 77 RFID tag invalid indicator

Step 4. Authentication of RFID card or tag.

When you tap a valid RFID card or tag on the reader, the screen will display the “RFID Tag Valid” indicator. (Figure 78)

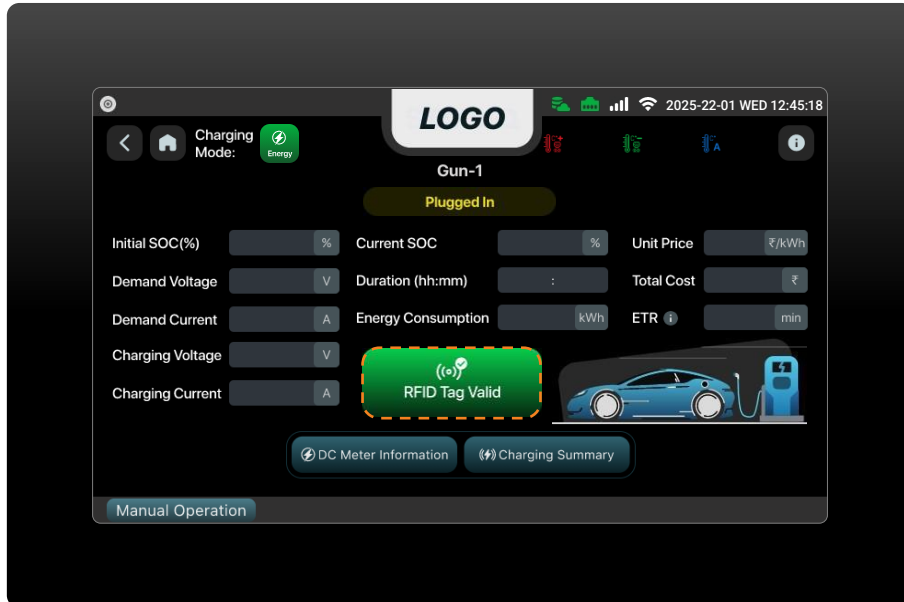


Figure 78 RFID tag valid indicator

Step 5. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”. (Figure 79)



Figure 79 Preparing for charging status

Step 6. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 80)

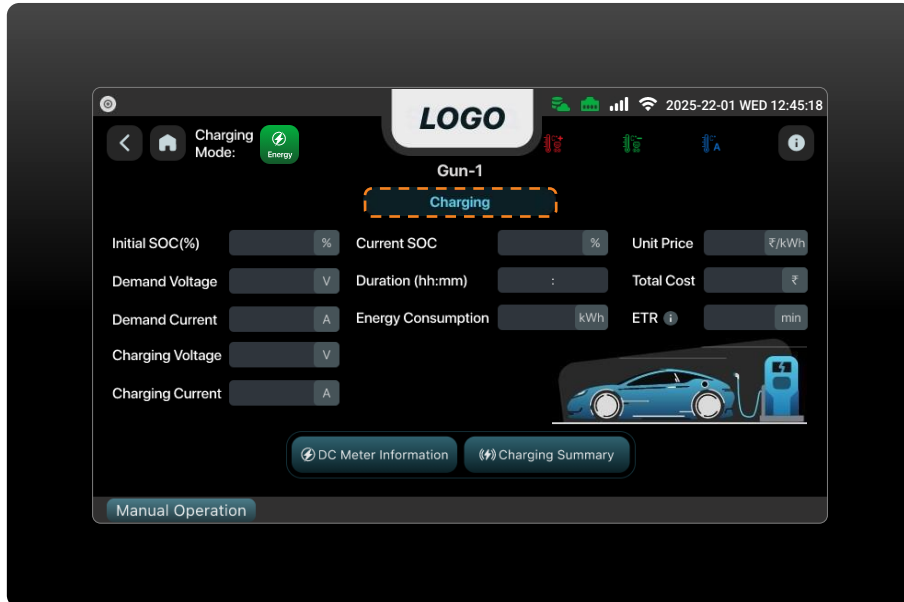


Figure 80 Charging status

Step 7. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”. (Figure 81)

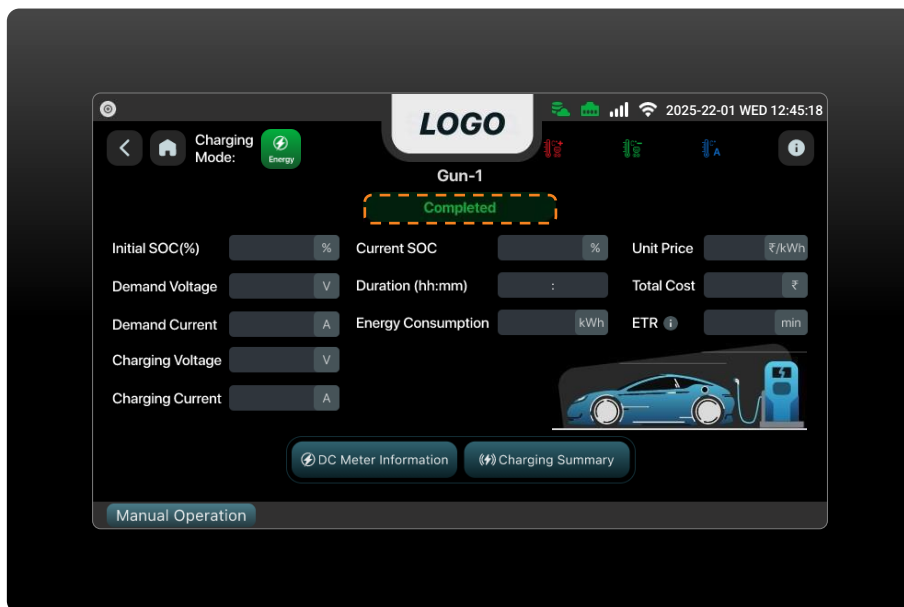


Figure 81 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process.
(Figure 82)



Figure 82 Emergency stopped status

B. SoC Charging Mode

To set SoC charging mode, press the “SoC” button. It will open the SoC details screen.
(Figure 83)

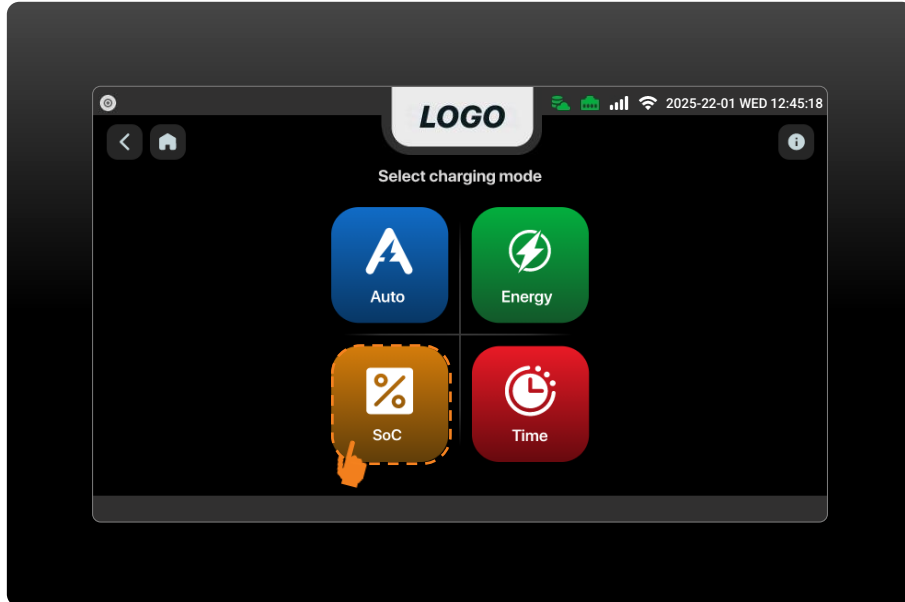


Figure 83 Select charging mode: press the SoC button

This is the SoC details screen. Users can use the input box to enter their desired SoC value in percentages ranging from 1 to 99. (Figure 84)

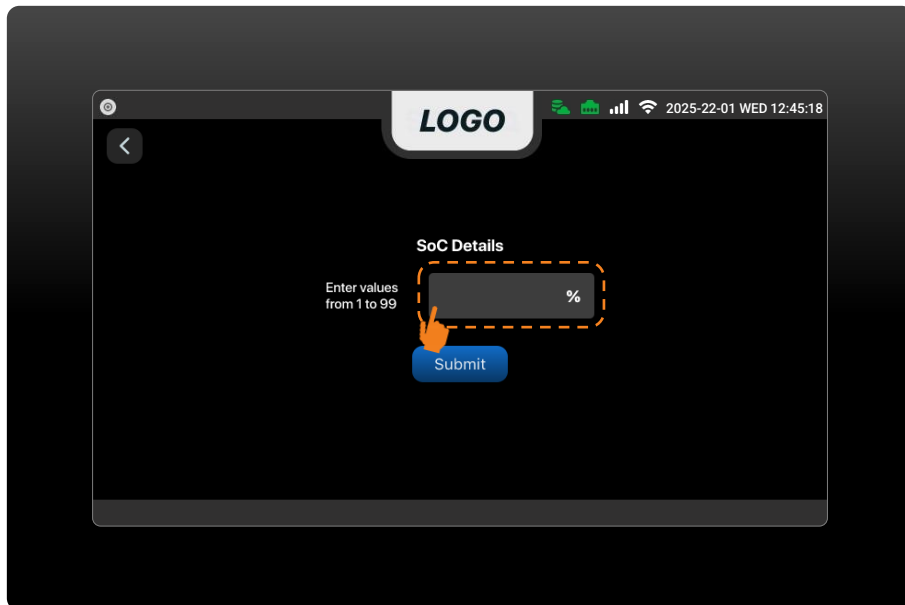


Figure 84 SoC mode: enter the SoC details

Enter the desired SoC value using the on-screen numeric keyboard and press the "OK" button.
(Figure 85)

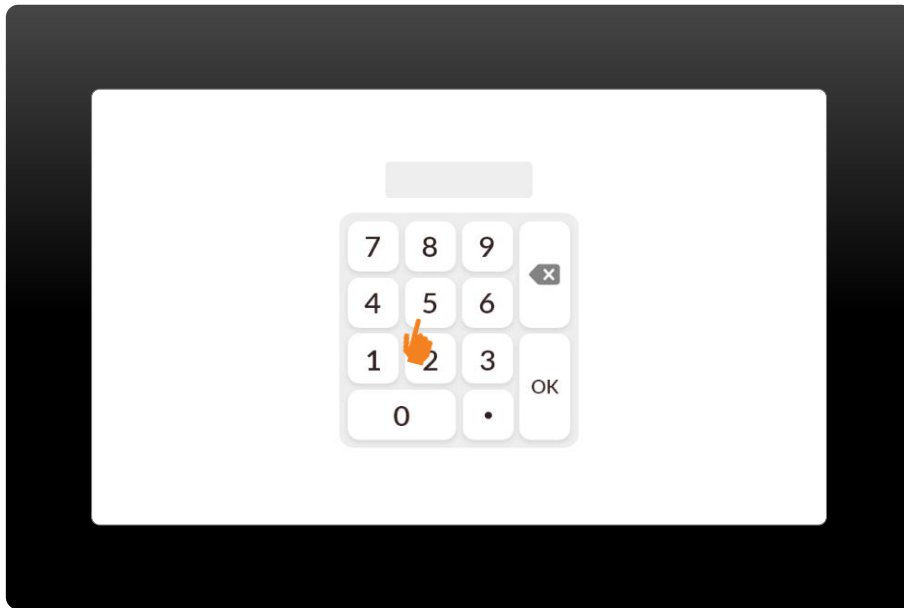


Figure 85 Enter the desired SoC value

To set the SoC values, press the "submit" button. It will proceed to the authenticating screen.
(Figure 86)

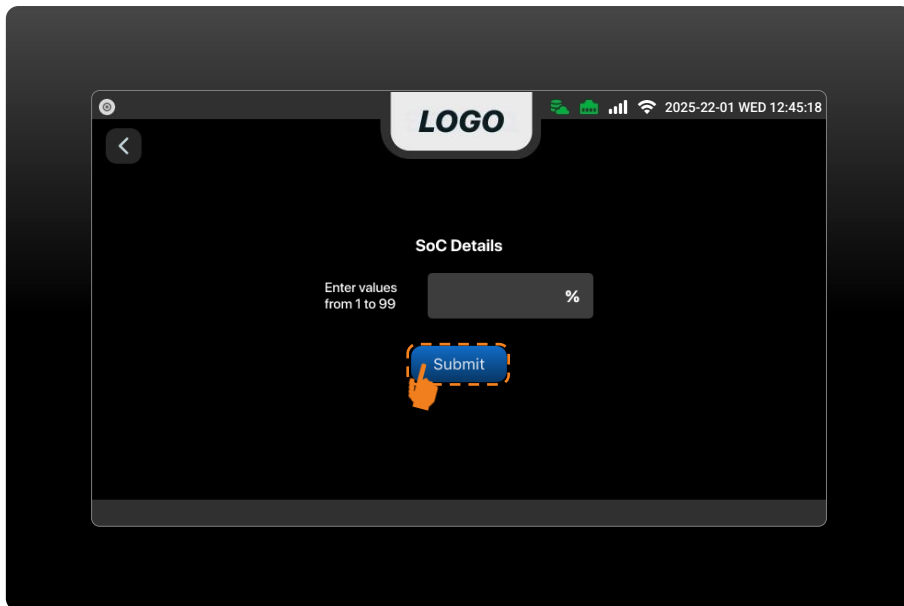


Figure 86 Press the submit button

This is the authentication screen, and there are three options for validating the authentication.
(Figure 87)

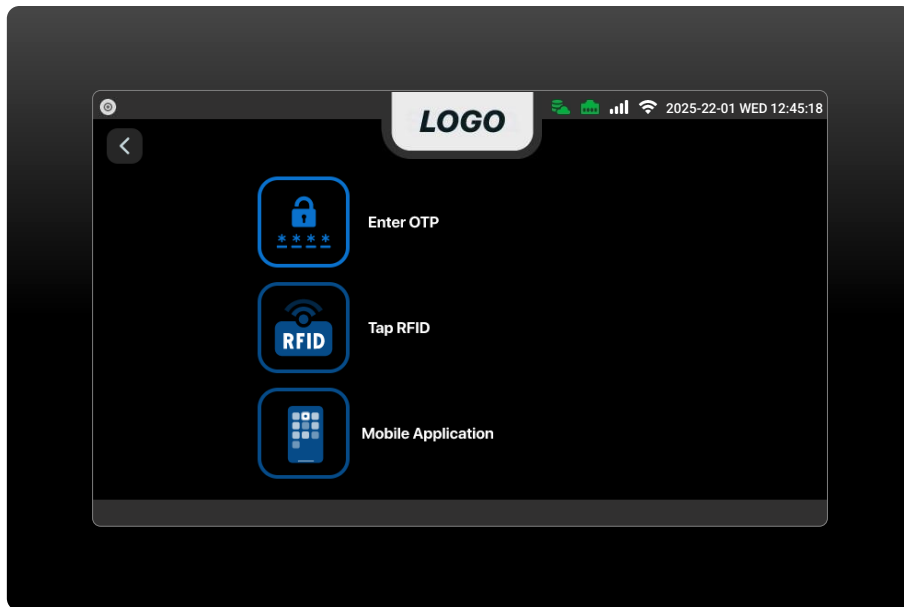


Figure 87 Authentication screen

(i). Mode Authentication

The user has three authentication choices, which are detailed in this section. Use one of these based on the user's requirements.

Option 1. PIN / OTP Authentication

Press the “Enter OTP” button to proceed to the PIN / OTP authentication session screen.

(Figure 88)

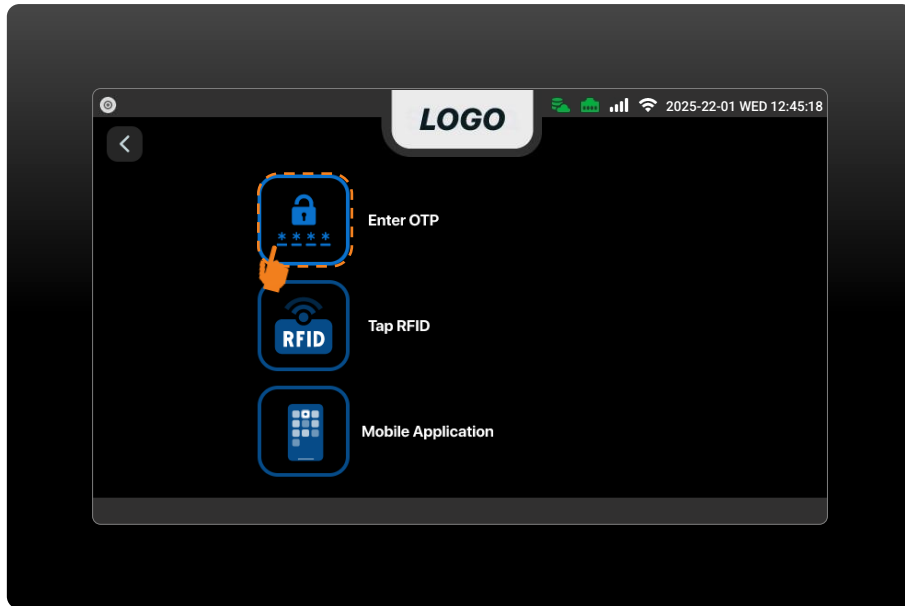


Figure 88 Press the “Enter OTP” button

This is a PIN / OTP session authentication screen, where the user can enter PIN or OTP using the On-screen keyboard, and press the “Enter” button. *(Figure 89)*

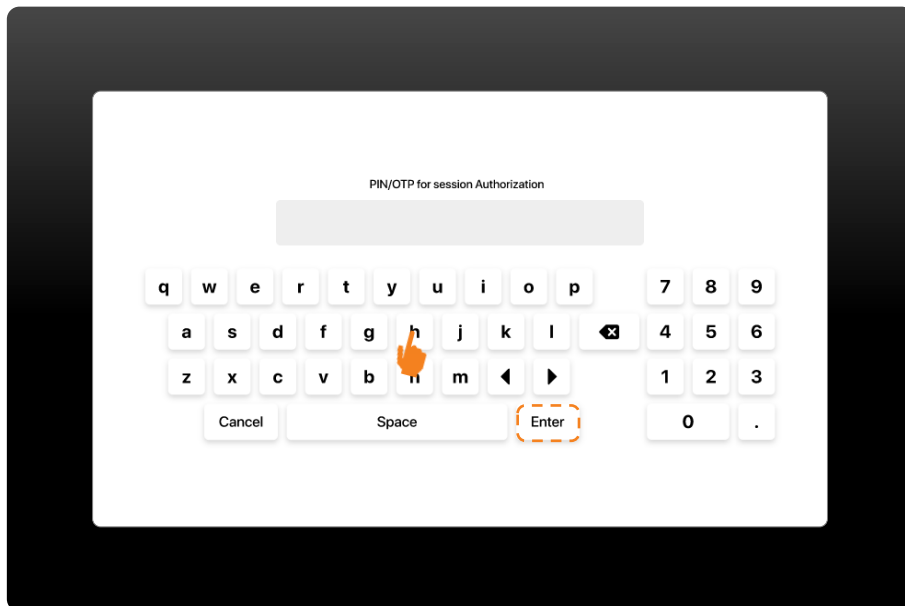


Figure 89 Use the on-screen keyboard to enter a PIN or OTP

It will take some time to validate the PIN or OTP you entered. Please wait throughout the verification procedure; do not end the session. (Figure 90)

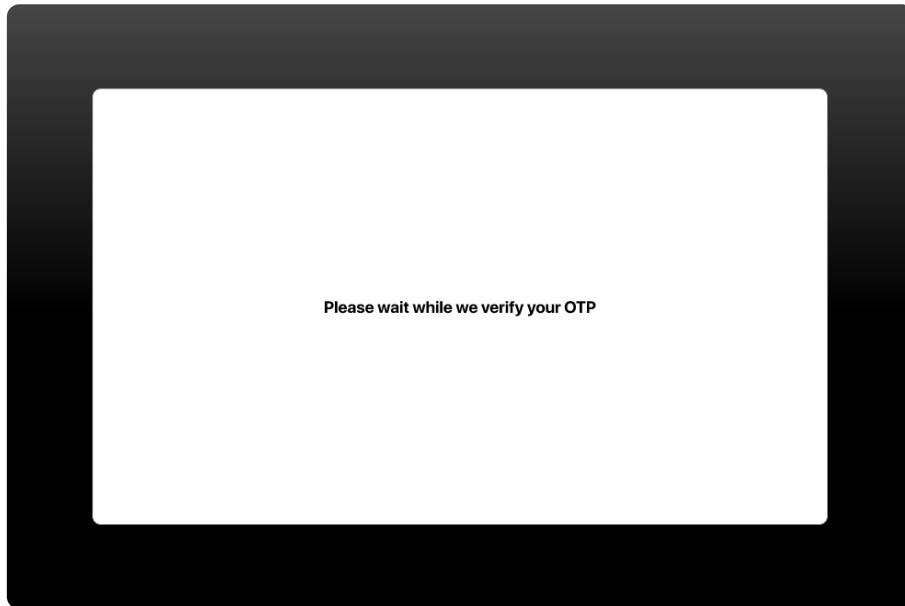


Figure 90 PIN or OTP verification Process

The screen displays the "Token ID Submitted" indicator, which indicates that validating the token ID for the PIN or OTP will take a few seconds. (Figure 91)



Figure 91 Token ID submitted indicator

Use of an invalid PIN or OTP

The screen displays the "Token ID Invalid" indicator, which indicates that the token ID is invalidated. Please re-enter the pin or OTP. (Figure 92)

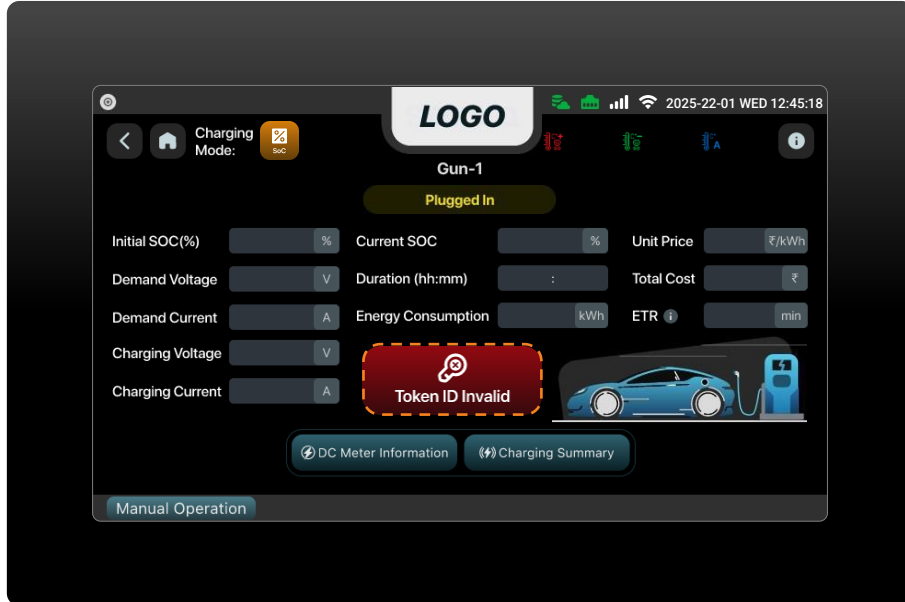


Figure 92 Token ID invalid indicator

When the token ID is successfully validated, the screen displays the "Token ID Valid" indicator, indicating that it is ready to charge in SoC mode. (Figure 93)



Figure 93 Token ID valid indicator

Option 2. RFID Authentication

Press the “Tap RFID” button to proceed to the RFID authentication session screen. (Figure 94)

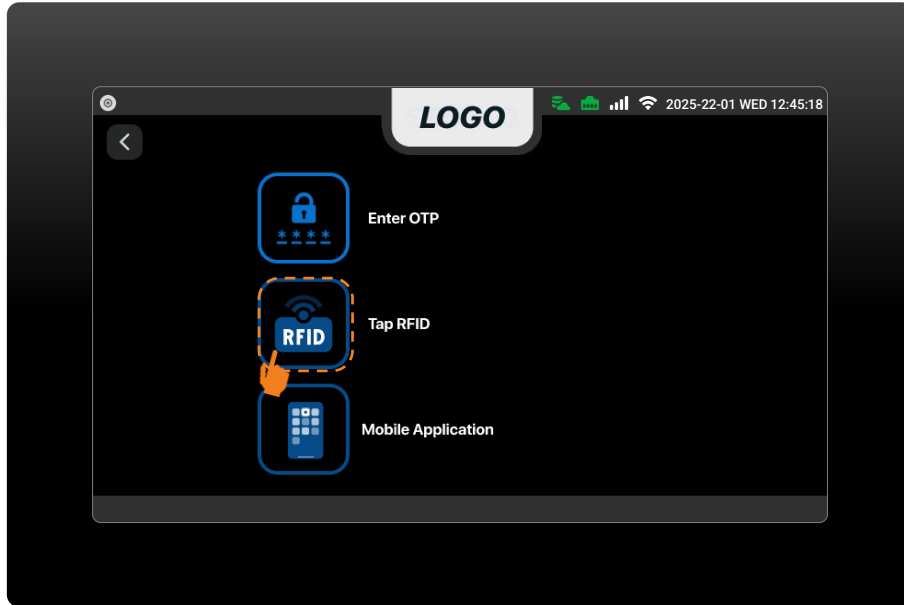


Figure 94 Press the “Tap RFID” button

This is the information pop-up for tapping RFID on the RFID reader and pressing the "OK" button to authenticate RFID identification. (Figure 95)

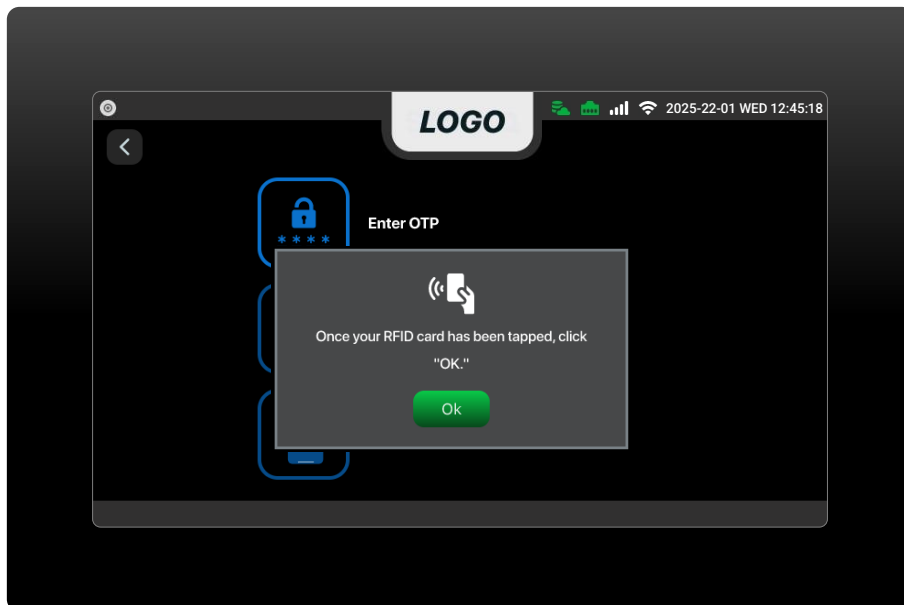


Figure 95 Tap the RFID card on the RFID reader

When an RFID card is detected, the screen displays the “RFID tag detected” indicator.
(Figure 96)



Figure 96 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 97)

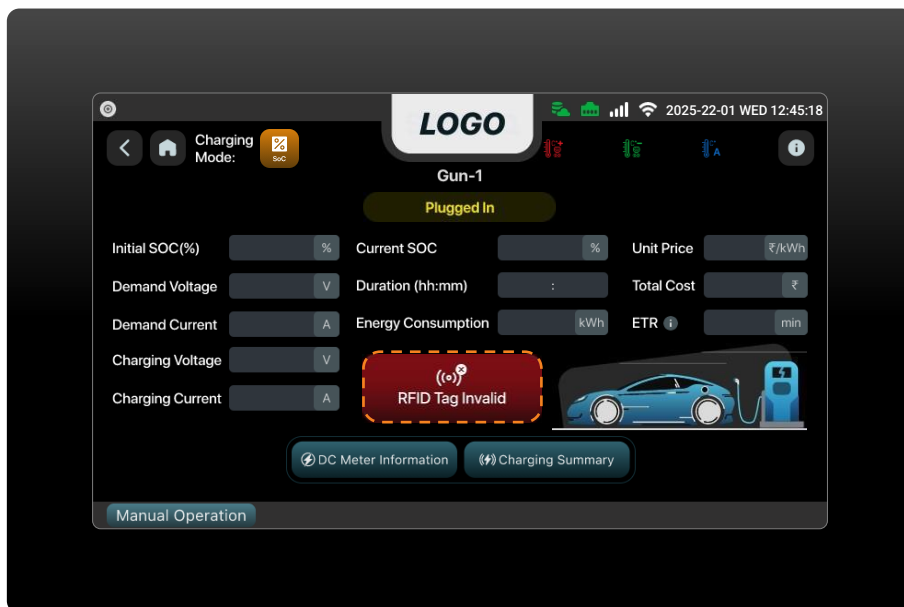


Figure 97 RFID tag invalid indicator

When the RFID Card is successfully validated, the screen displays the “RFID Tag Valid” indicator, indicating that it is ready to charge in Energy mode. (Figure 98)

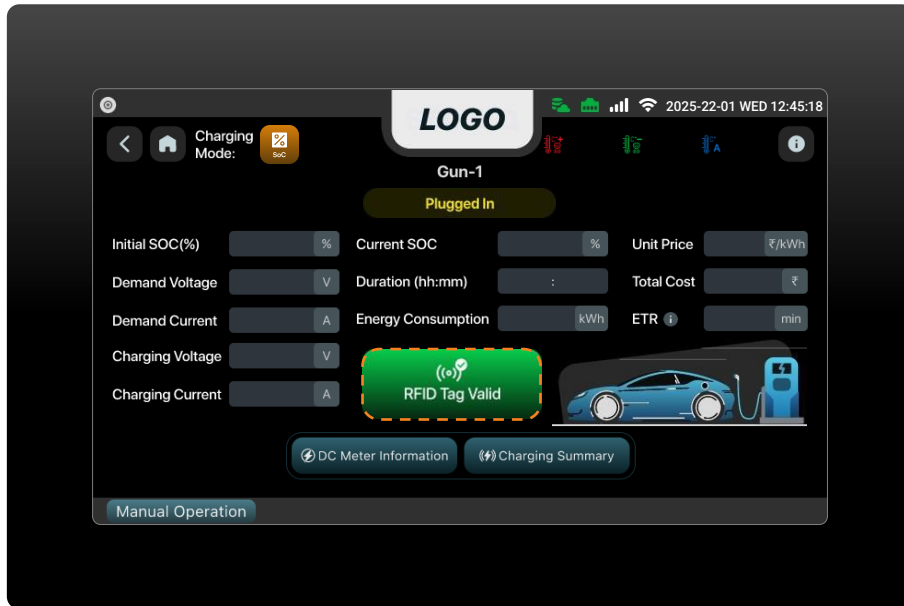


Figure 98 RFID tag valid indicator

Option 3. Mobile Application

Mobile application authentication is an alternative for integrating the personalised mobile application for EV charging. Pressing the "Mobile Application" button will lead the user to the mobile application authentication session. (Figure 99)

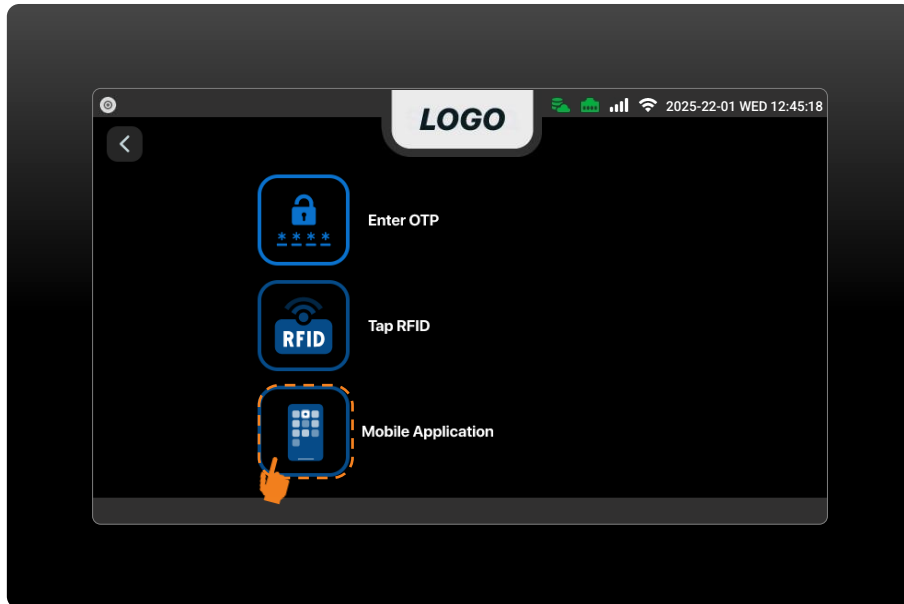


Figure 99 Press the "Mobile Application" button

(ii). Charging Procedure

Step 1. Initial start

When the DC Gun-1 is not connected to the EV, the display shows the status “Unplugged”.

(Figure 100)

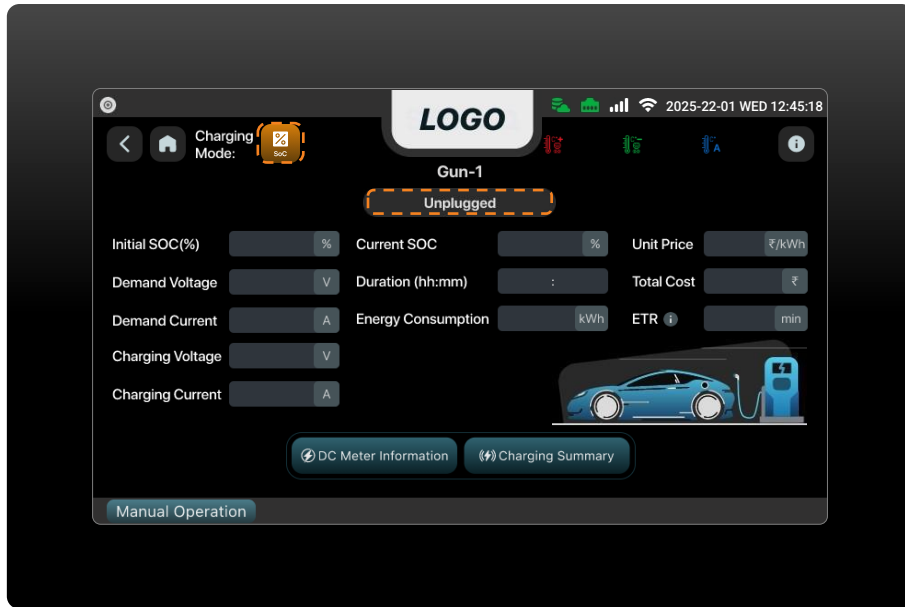


Figure 100 Unplugged status

Step 2. Connect Gun-1 to EV

When the DC Gun-1 is connected to the EV for charging, the display shows the status “Plugged-in”. (Figure 101)

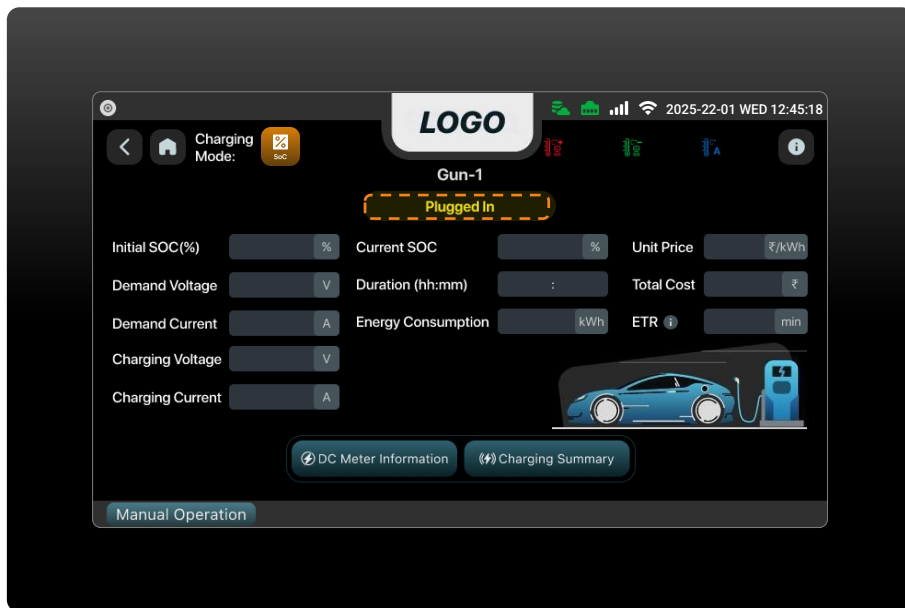


Figure 101 Plugged-In status

Step 3. Tap RFID card or tag on a reader.

When an RFID card or tag is tapped on a reader, the screen displays the “RFID tag detected” indicator. (Figure 102)

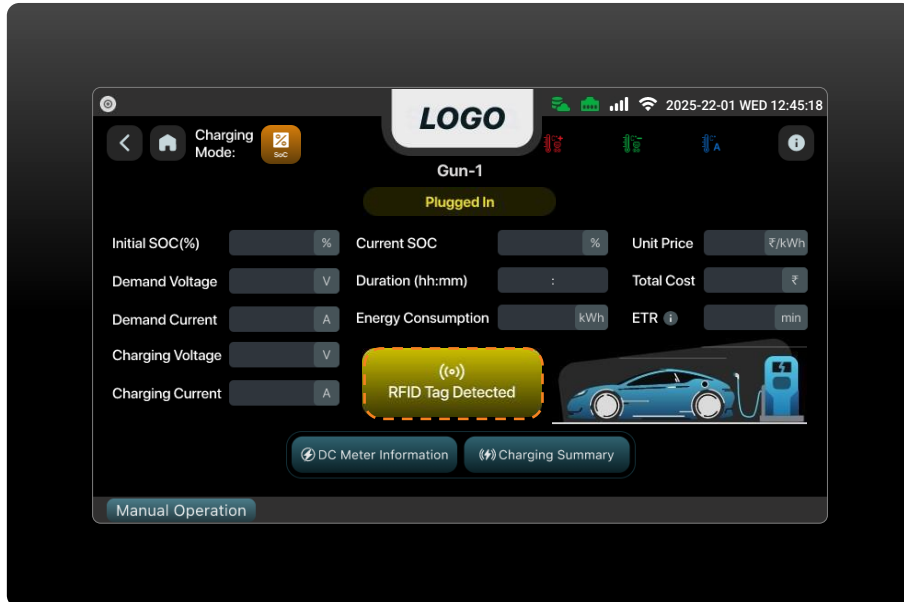


Figure 102 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 103)

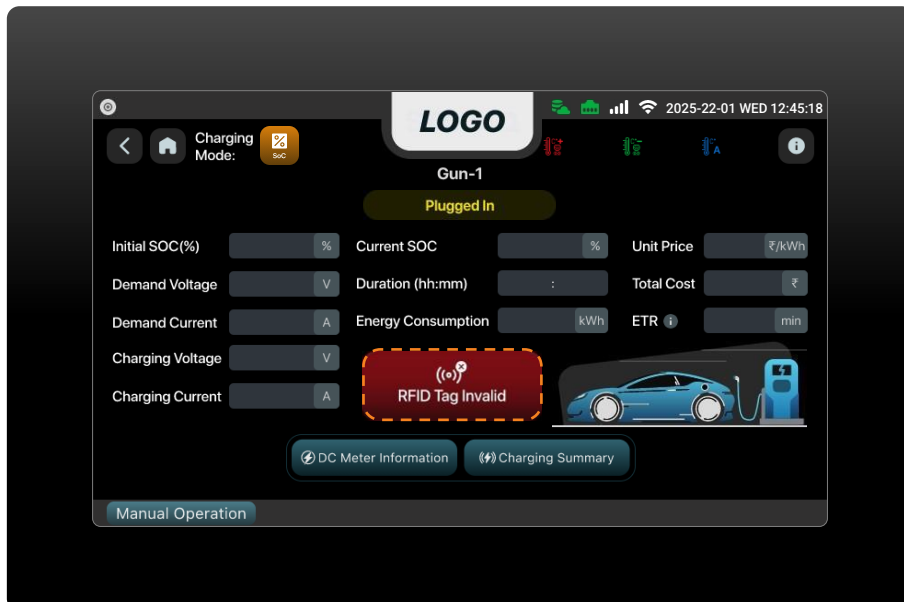


Figure 103 RFID tag invalid indicator

Step 4. Authentication of RFID card or tag.

When you tap a valid RFID card or tag on the reader, the screen will display the “RFID Tag Valid” indicator. (Figure 104)



Figure 104 RFID tag valid indicator

Step 5. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”. (Figure 105)



Figure 105 Preparing for charging status

Step 6. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 106)

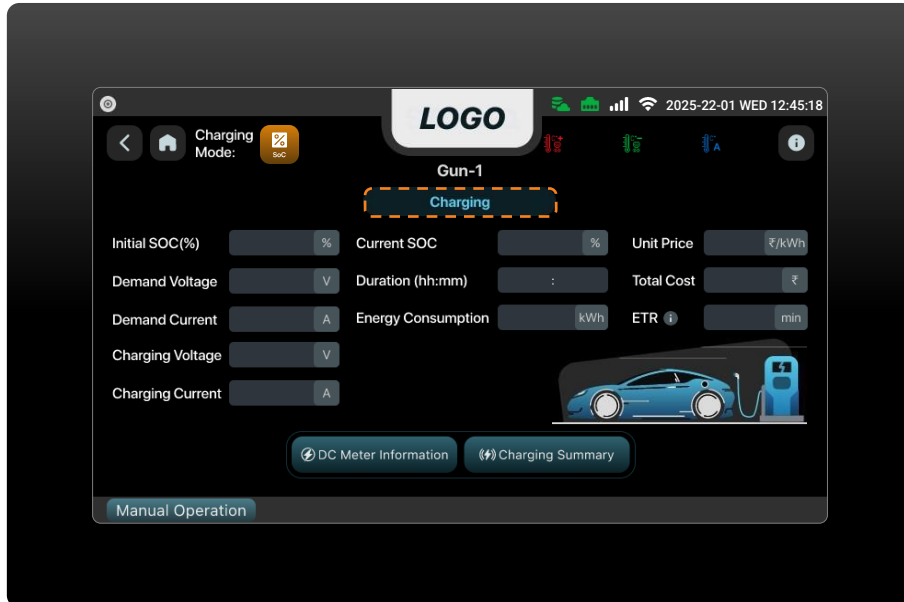


Figure 106 Charging status

Step 7. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”. (Figure 107)

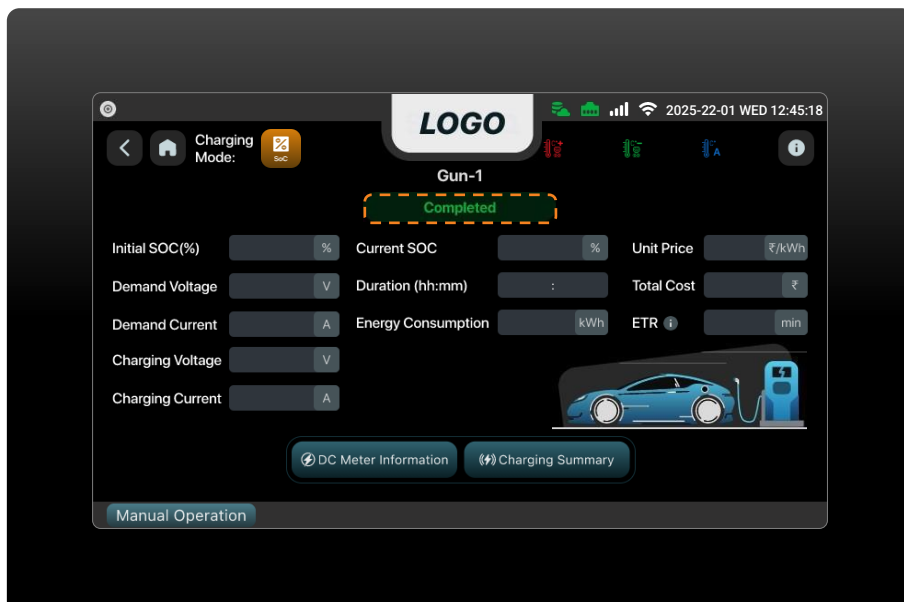


Figure 107 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process. (Figure 90)

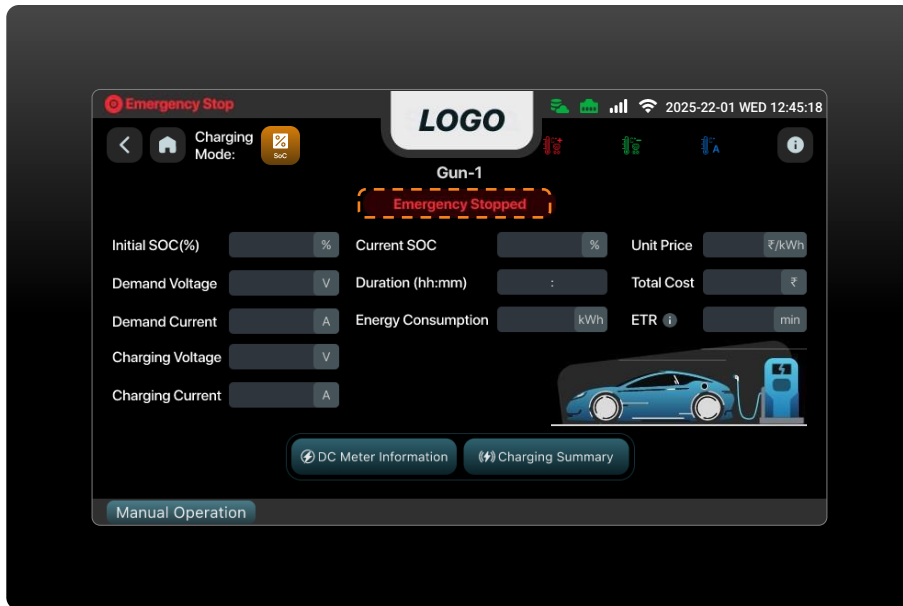


Figure 108 Emergency stopped status

C. Time Charging Mode

To set the time charging mode, press the “Time” button. It will open the time details screen.
(Figure 109)

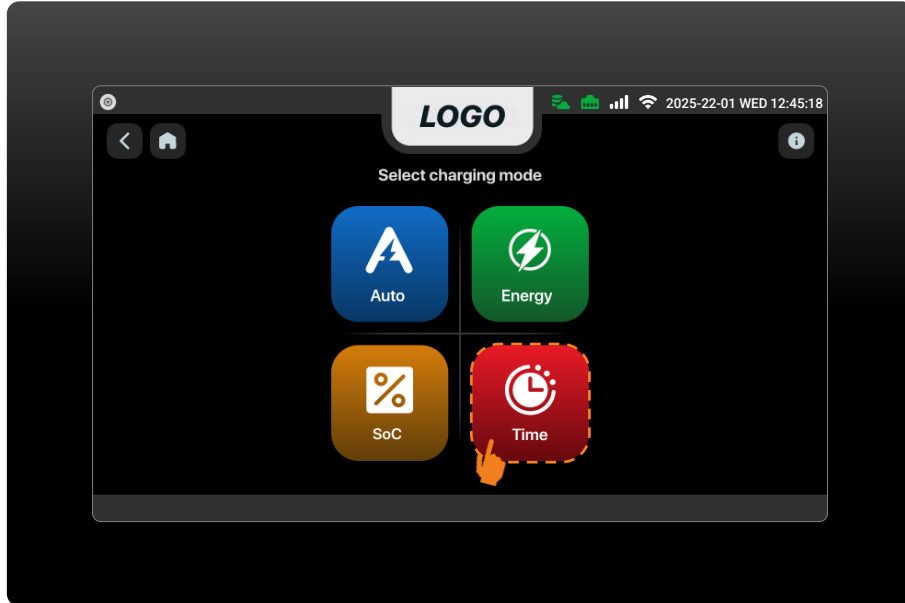


Figure 109 Select charging mode: press the time button

This is the time details screen. Users can use the input box to enter their desired time value in minutes ranging from 1 to 999. (Figure 110)

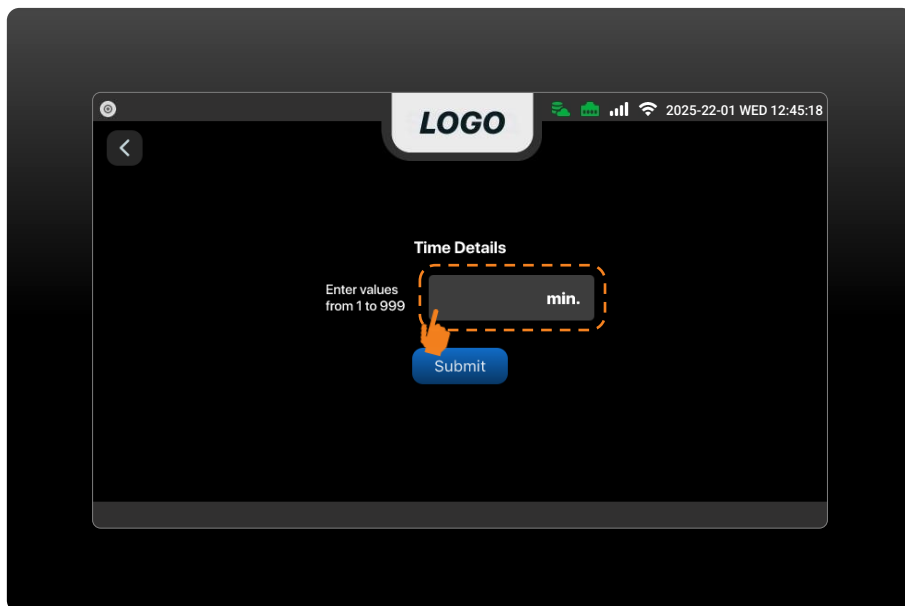


Figure 110 Time mode: enter the time details

Enter the desired time value using the on-screen numeric keyboard and then press the "OK" button. (Figure 111)

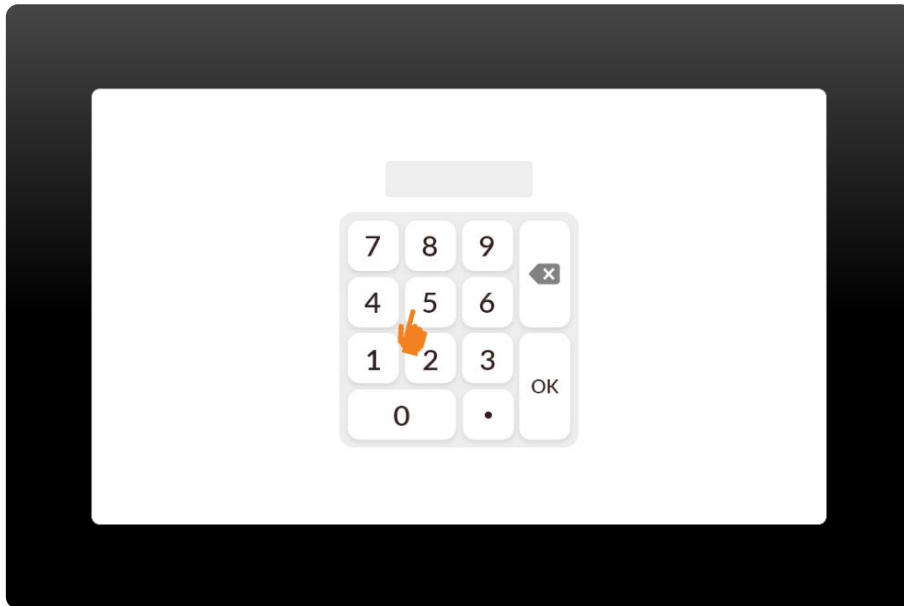


Figure 111 Enter the desired Time value

To set the time values, press the "submit" button. It will proceed to the authenticating screen. (Figure 112)

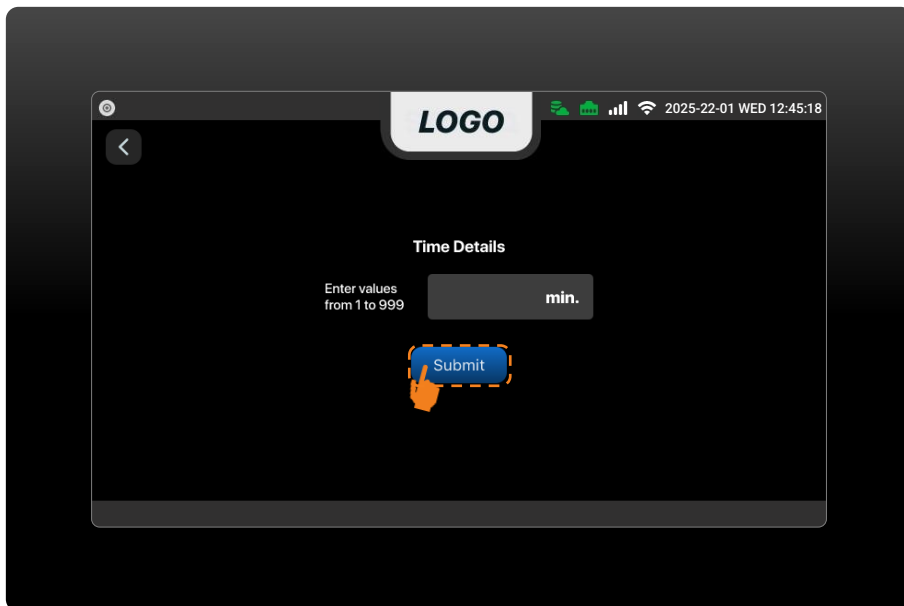


Figure 112 Press the submit button

This is the authentication screen, and there are three options for validating the authentication.
(Figure 113)

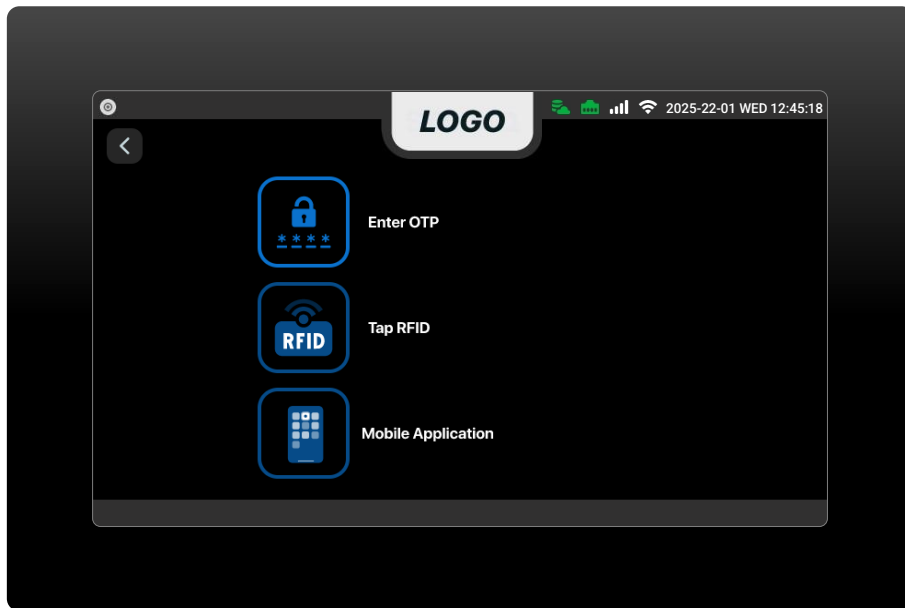


Figure 113 Authentication screen

(i). Mode of Authentication

The user has three authentication choices, which are detailed in this section. Use one of these based on the user's requirements.

Option 1. PIN / OTP Authentication

Press the "Enter OTP" button to proceed to the PIN / OTP authentication session screen.

(Figure 114)

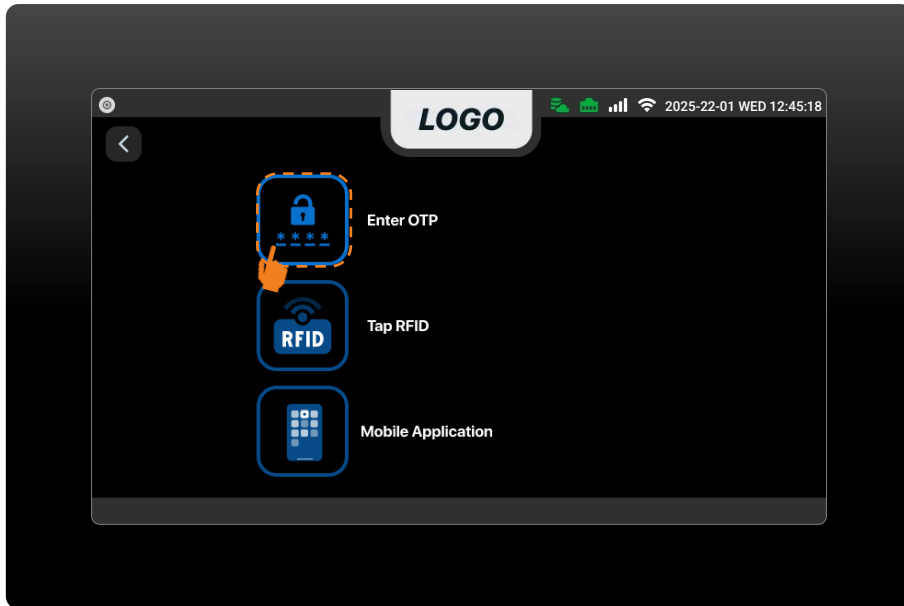


Figure 114 Press the "Enter OTP" button

This is a PIN / OTP session authentication screen, where the user can enter PIN or OTP using the On-screen keyboard, and then press the "Enter" button. *(Figure 115)*

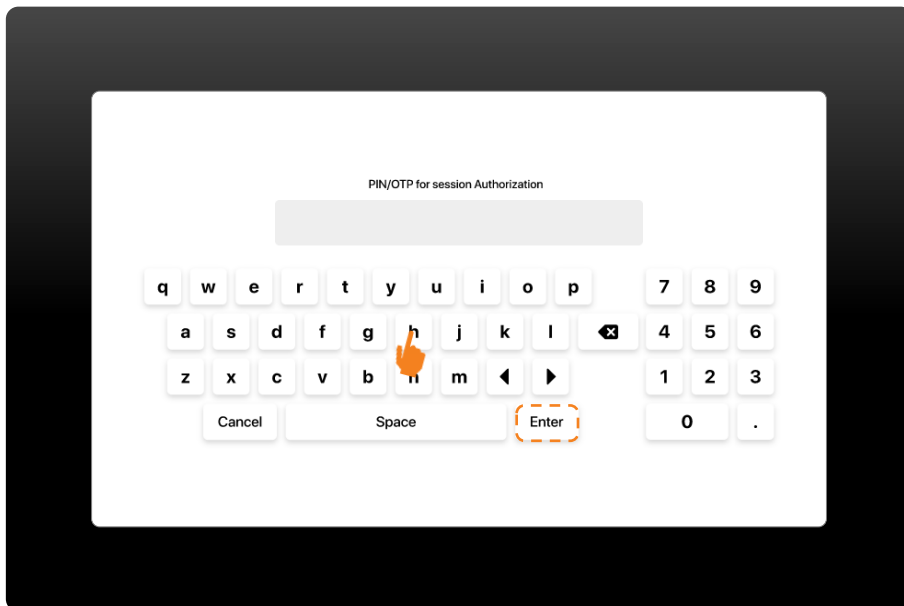


Figure 115 Use the on-screen keyboard to enter a PIN or OTP

It will take some time to validate the PIN or OTP you entered. Please wait throughout the verification procedure; do not end the session. (Figure 116)

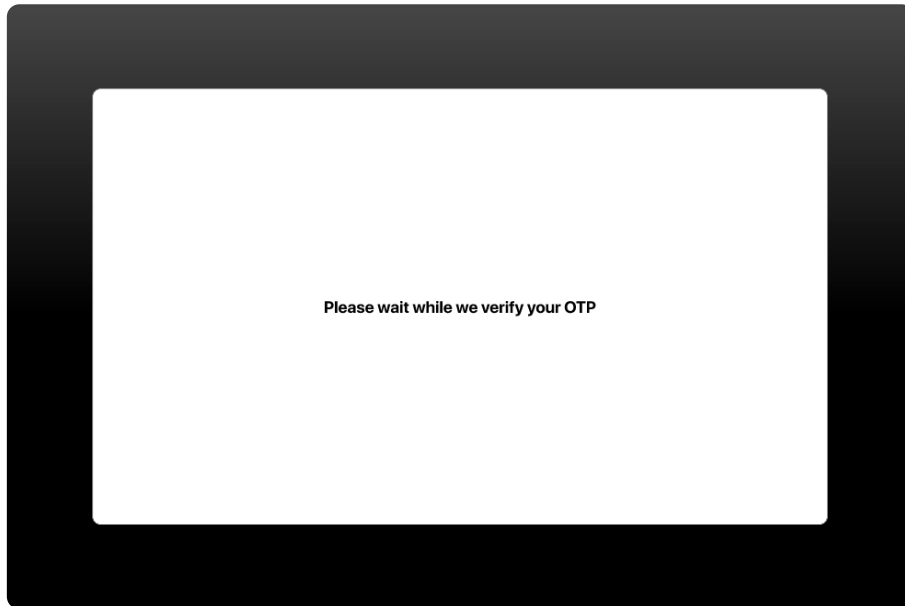


Figure 116 PIN or OTP verification process

The screen displays the "Token ID Submitted" indicator, which indicates that validating the token ID for the PIN or OTP will take a few seconds. (Figure 117)



Figure 117 Token ID submitted indicator

Use of an invalid PIN or OTP

The screen displays the "Token ID Invalid" indicator, which indicates that the token ID is invalidated. Please re-enter the pin or OTP. (Figure 118)



Figure 118 Token ID invalid indicator

When the token ID is successfully validated, the screen displays the "Token ID Valid" indicator, indicating that it is ready to charge in time mode. (Figure 117)

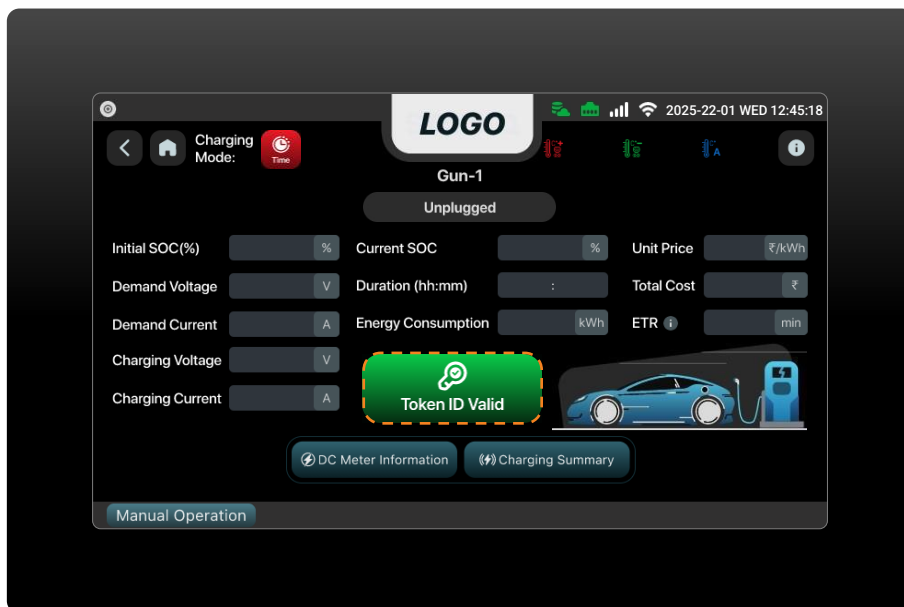


Figure 119 Token ID valid indicator

Option 2. RFID Authentication

Press the "Tap RFID" button to proceed to the RFID authentication session screen. (Figure 120)

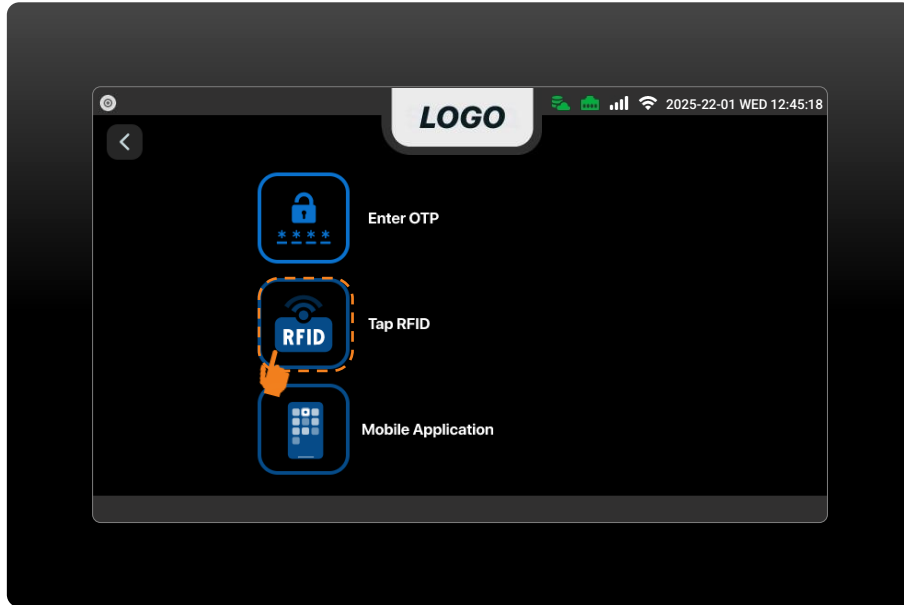


Figure 120 Press the "Tap RFID" button

This is the information pop-up for tapping RFID on the RFID reader and pressing the "OK" button to authenticate RFID identification. (Figure 121)

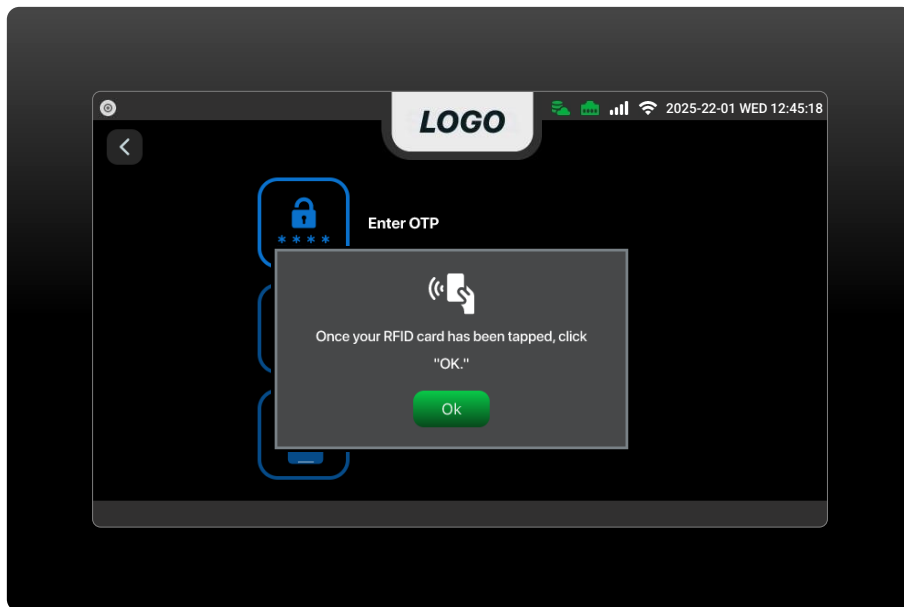


Figure 121 Tap the RFID card on the RFID reader

When an RFID card is detected, the screen displays the “RFID tag detected” indicator.
(Figure 122)

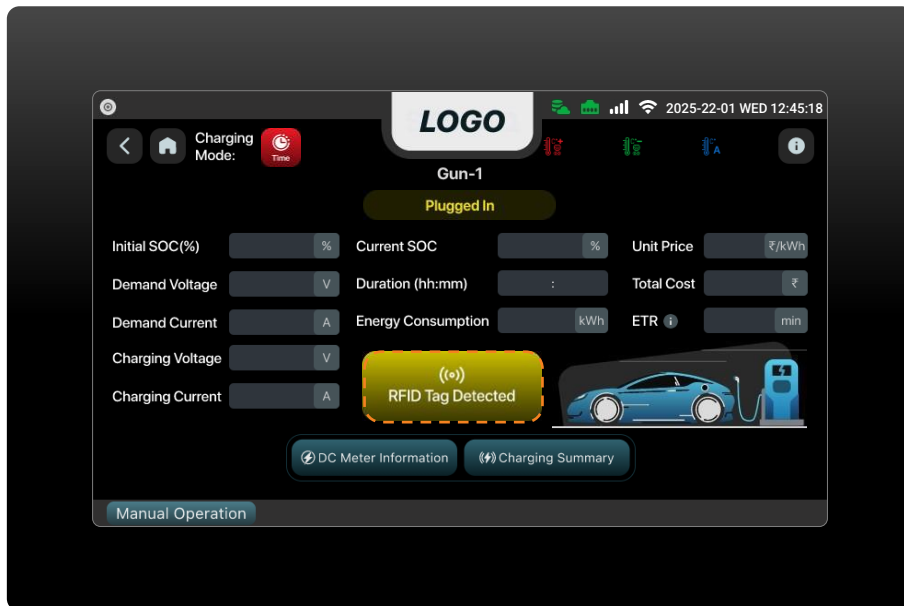


Figure 122 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 123)

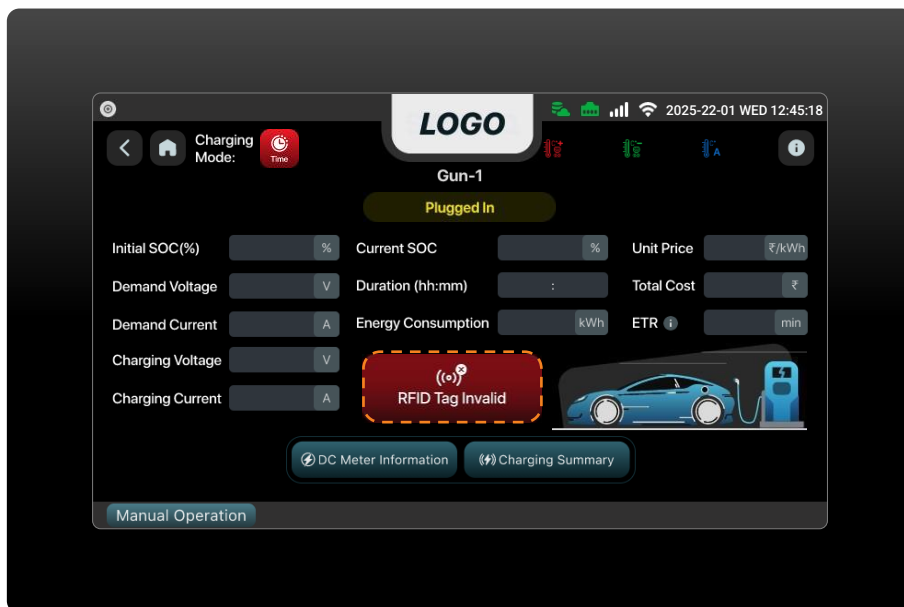


Figure 123 RFID tag invalid indicator

When the RFID Card is successfully validated, the screen displays the “RFID Tag Valid” indicator, indicating that it is ready to charge in time mode. (Figure 124)

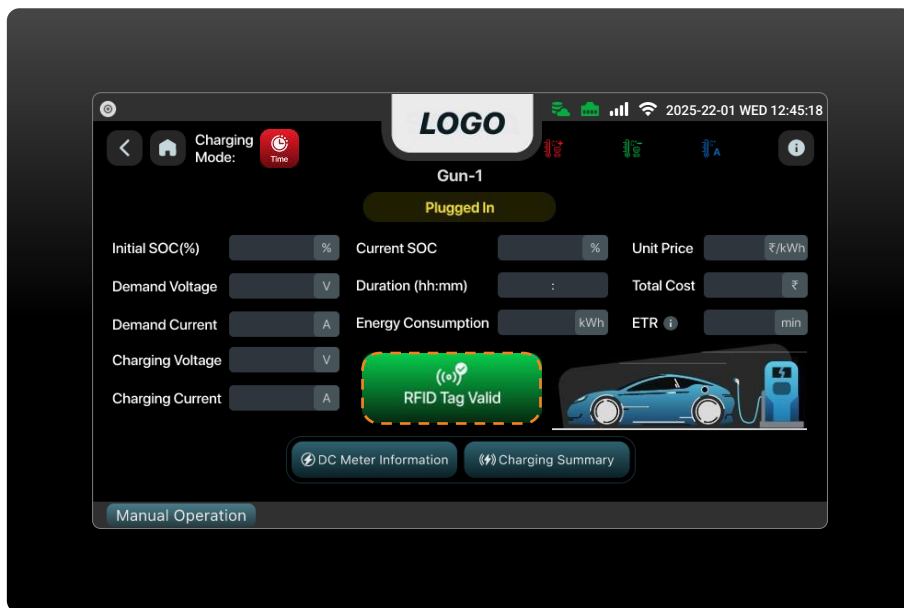


Figure 124 RFID tag valid indicator

Option 3. Mobile Application

Mobile application authentication is an alternative for integrating the personalised mobile application for EV charging. Pressing the "Mobile Application" button will lead the user to the mobile application authentication session. (Figure 125)

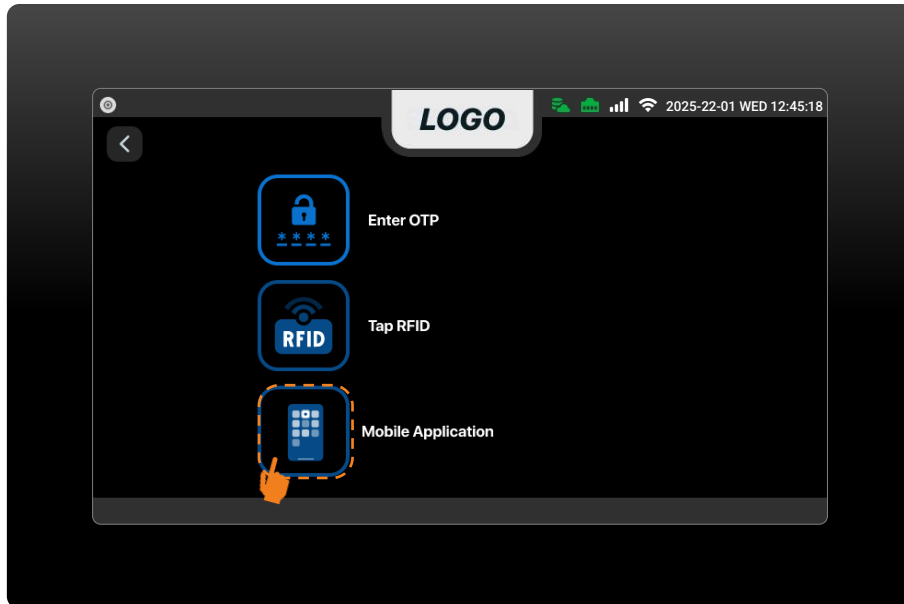


Figure 125 Press the "Mobile Application" button

(ii). Charging Procedure

Step 1. Initial start

When the DC Gun-1 is not connected to the EV, the display shows the status “Unplugged”.

(Figure 126)

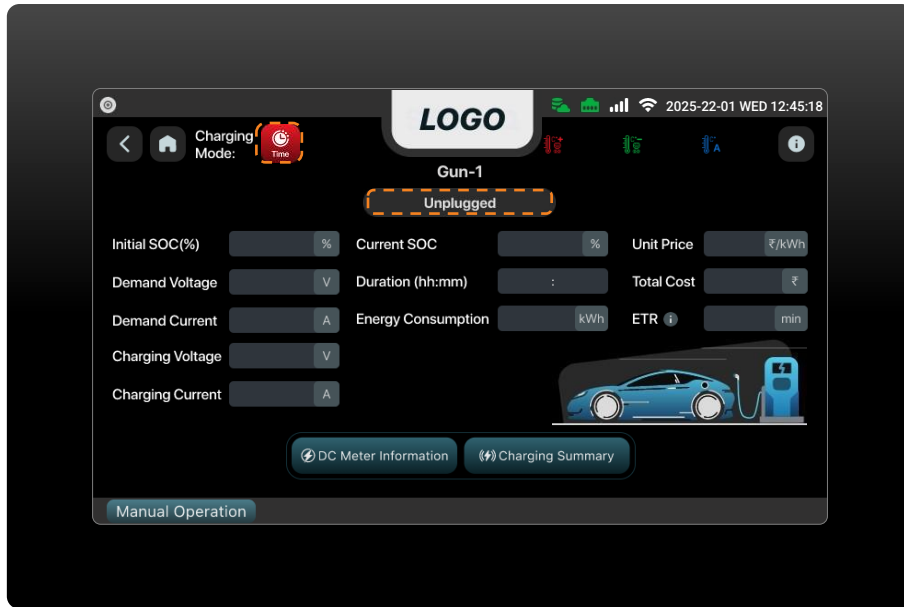


Figure 126 Unplugged status

Step 2. Connect Gun-1 to EV

When the DC Gun-1 is connected to the EV for charging, the display shows the status “Plugged-in”. (Figure 127)

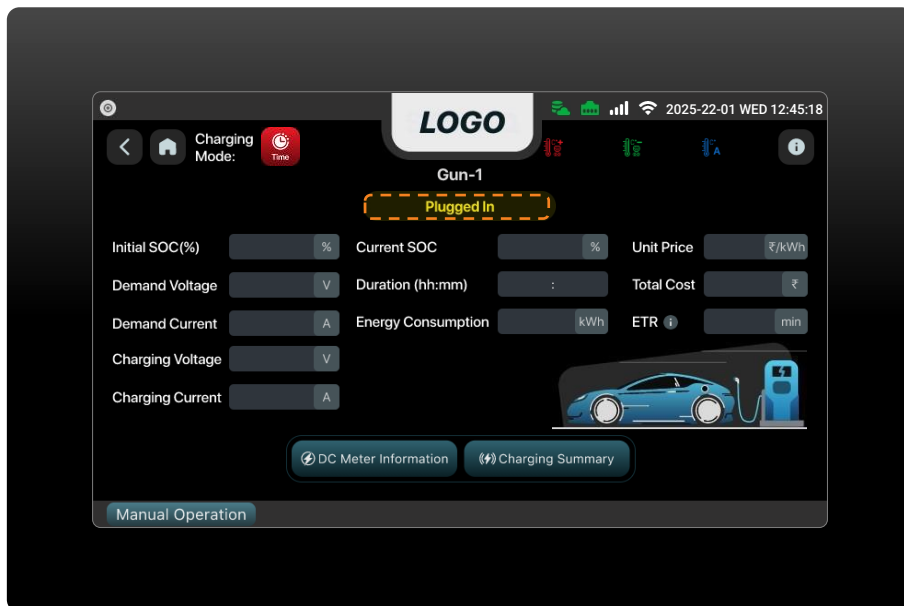


Figure 127 Plugged-In status

Step 3. Tap RFID card or tag on a reader.

When an RFID card or tag is tapped on a reader, the screen displays the “RFID tag detected” indicator. (Figure 128)

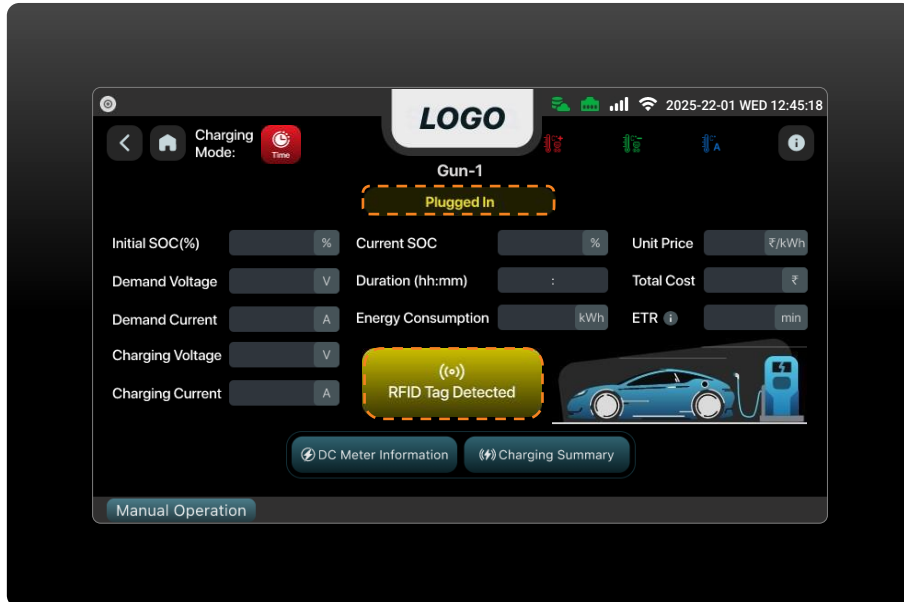


Figure 128 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 129)

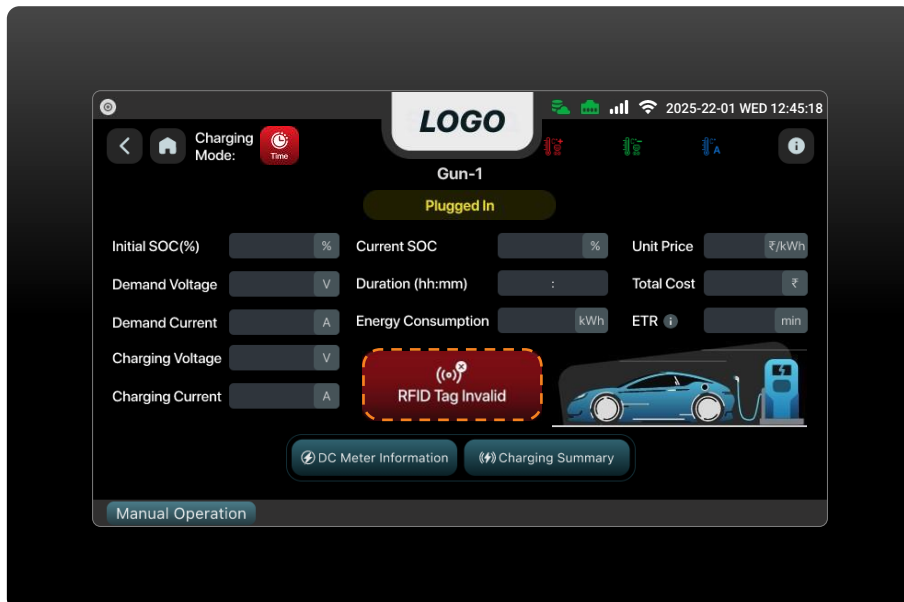


Figure 129 RFID tag invalid indicator

Step 4. Authentication of RFID card or tag.

When you tap a valid RFID card or tag on the reader, the screen will display the “RFID Tag Valid” indicator. (Figure 130)

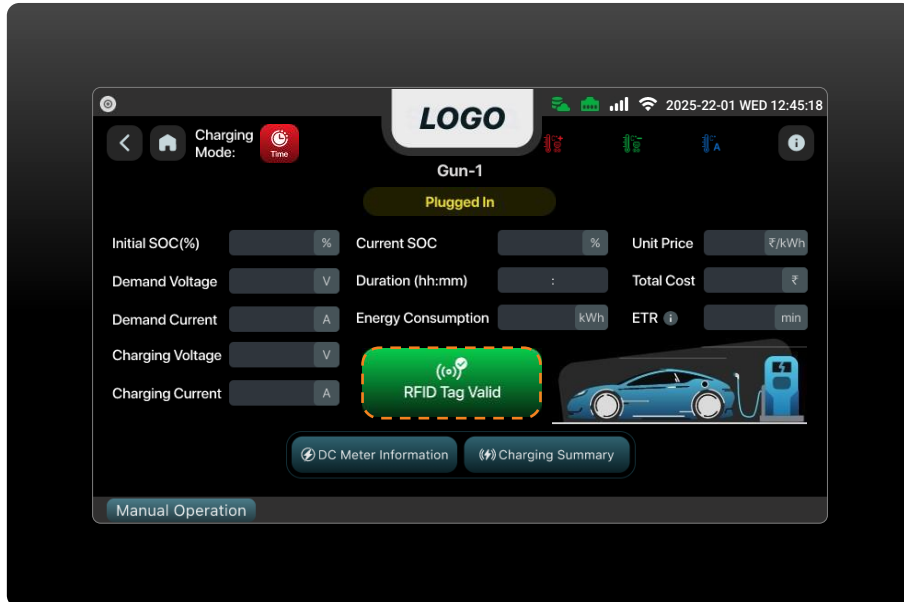


Figure 130 RFID tag valid indicator

Step 5. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”. (Figure 131)



Figure 131 Preparing for charging status

Step 6. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 132)

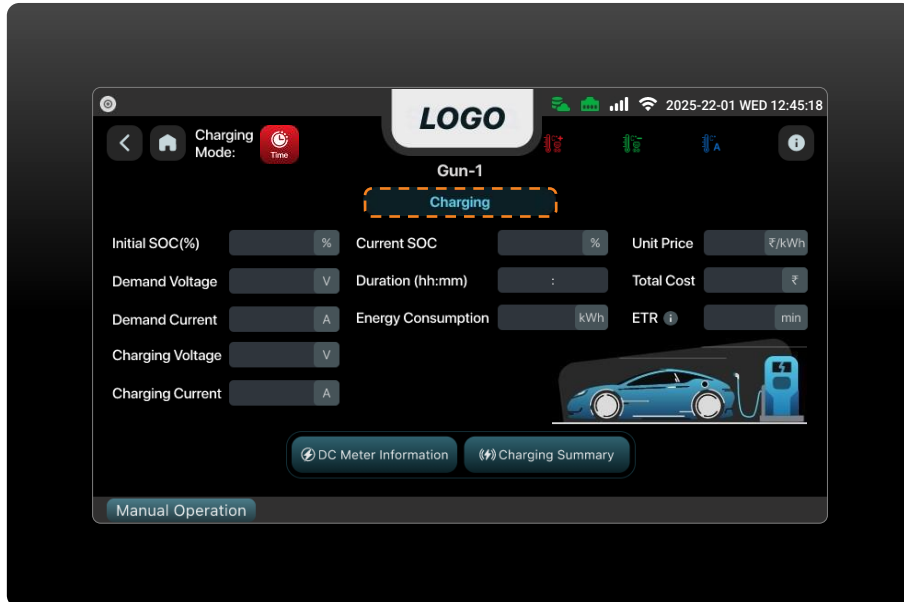


Figure 132 Charging status

Step 7. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”. (Figure 133)

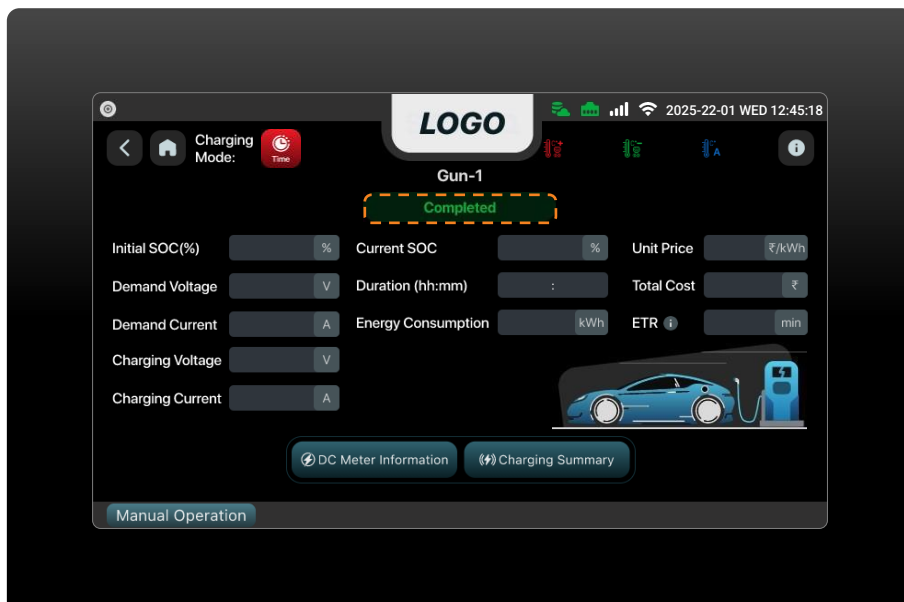


Figure 133 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process.
(Figure 90)

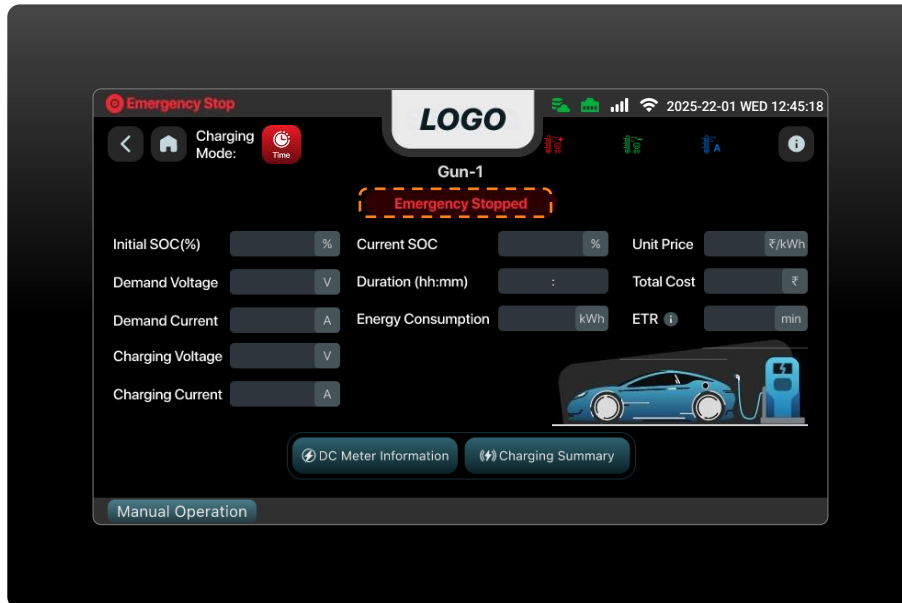


Figure 134 Emergency stopped status

3.2.4 Charging Information

The user can access the DC Gun-1 charging information from the DC Gun-1 charging parameter screen. Here, four types of information are available. (Figure 135)

- A. DC Meter Information
- B. Charging Summary

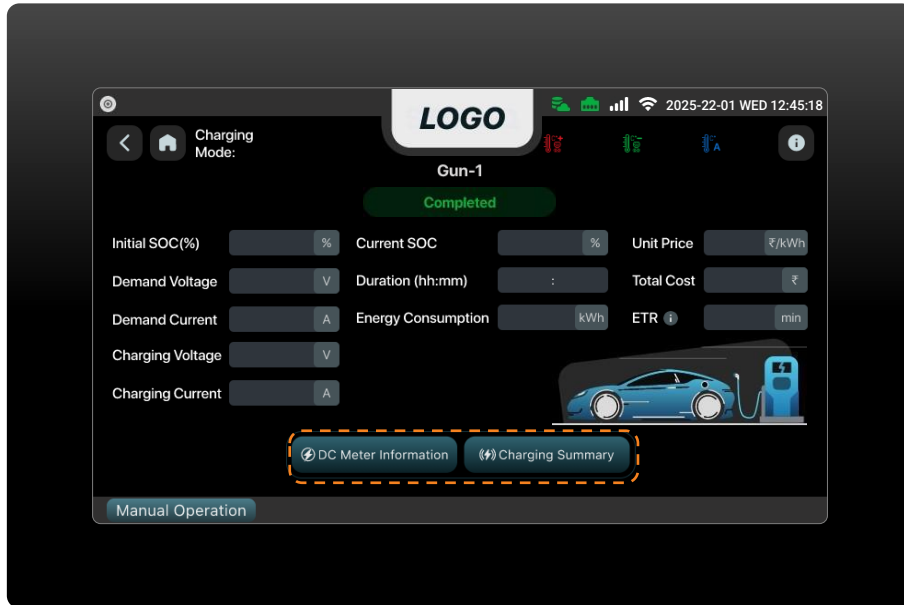


Figure 135 DC Gun-1 charging parameter screen: information section

A. DC Meter Information

The user can get DC output information from the DC Gun-1 charging parameter screen by pressing the “DC meter information” button. (Figure 136)

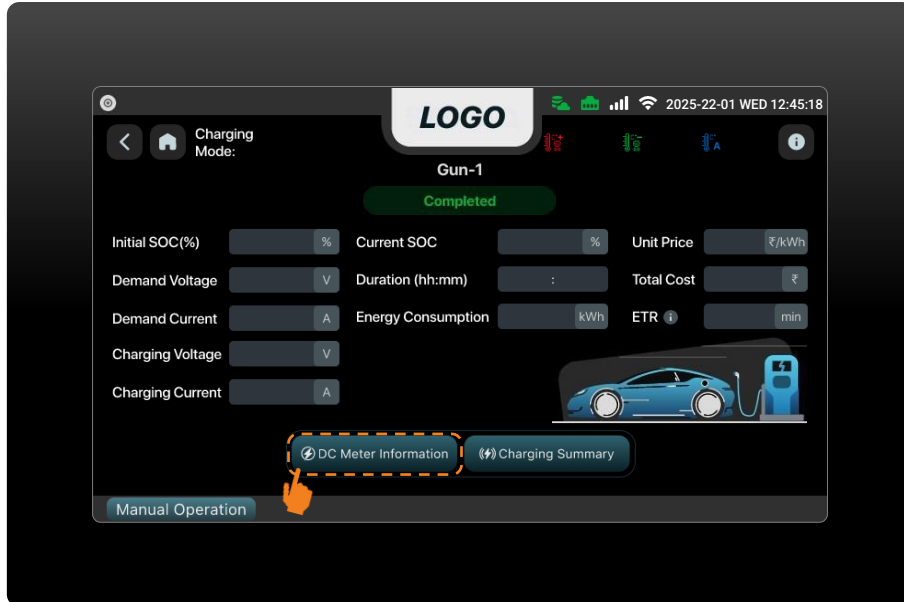


Figure 136 DC Gun-1 charging parameter screen: press the DC meter information button

This is DC output information where the user can get the information about all charging parameters related to the “DC meter”. (Figure 137 & Table 29)

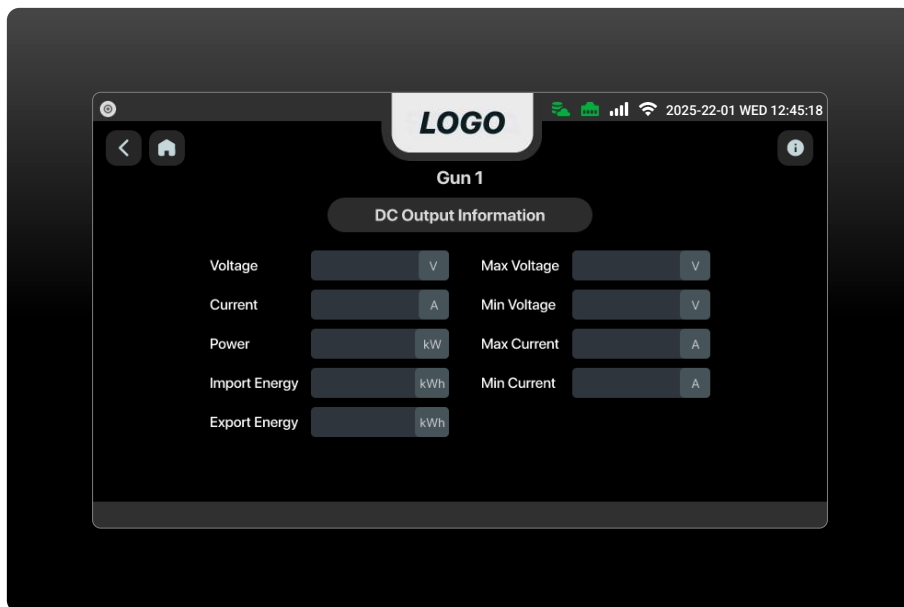





Figure 137 DC output information

Table 29 Navigation button: DC output information

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC Gun-1 charging parameter screen.
3.		Info Button	To get information about the DC meter.

Information Pop-up Message

Press the information button, and it will show a pop-up message about DC output power appears. (Figures 138 & 139)

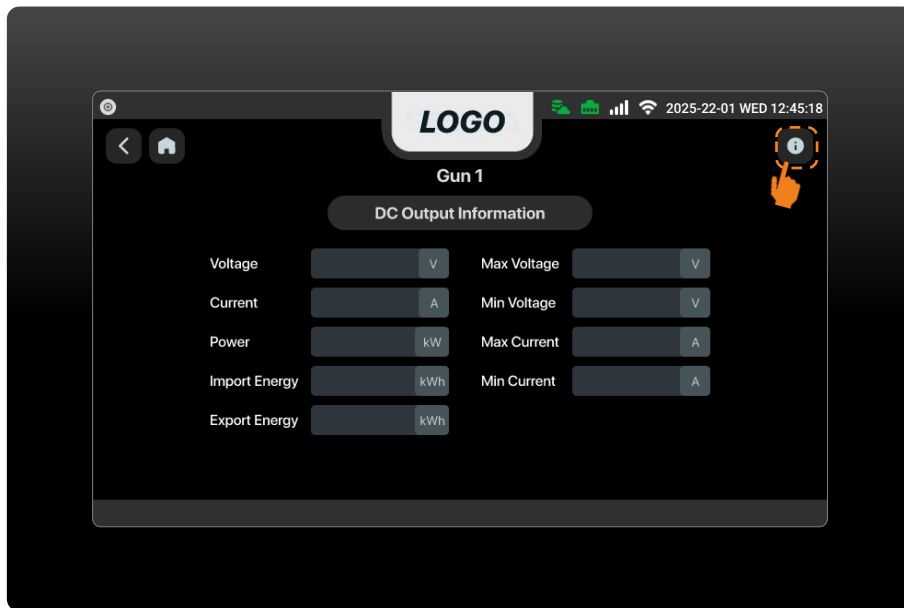



Figure 138 DC output information screen: press the information button



Figure 139 DC output power pop-up information message

Table 30 Navigation button: DC output power information

No.	Button	Name	Function
1.		Close Button	To close DC output power information pop-up message.

B. Charging Summary

The user can get charging summary from the DC Gun-1 charging parameter screen by pressing the “Charging Summary” button. (Figure 140)



Figure 140 DC Gun-1 charging parameter screen: press the charging summary button

This is the charging summary screen, where the user can get information related to charging in summary format. (Figure 119)

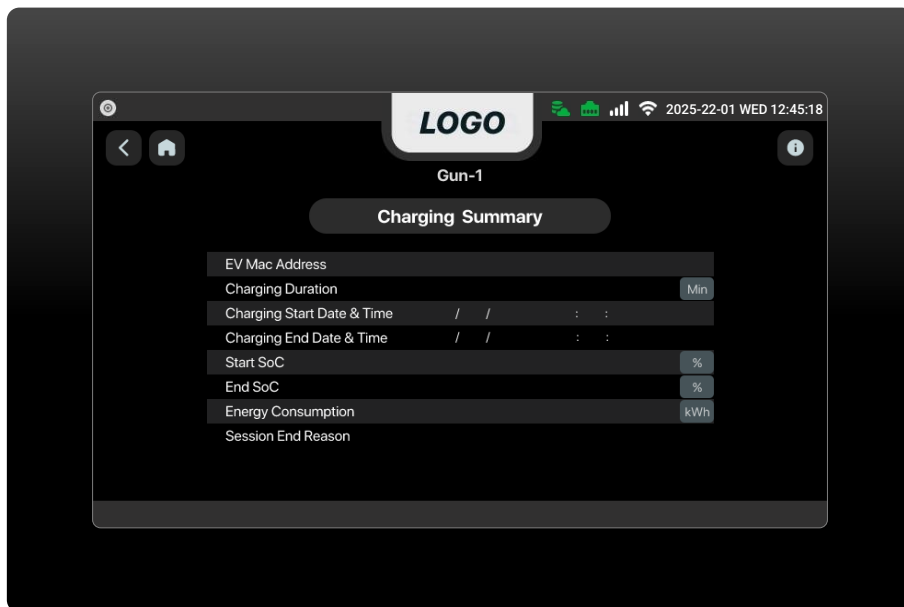





Figure 141 DC Gun-1 charging summary screen

Table 31 Navigation button: DC Gun-1 charging summary

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC Gun-1 charging parameter screen.
3.		Info Button	To get information about the charging summary.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the most recent charging cycle. (Figure 142 & 143)

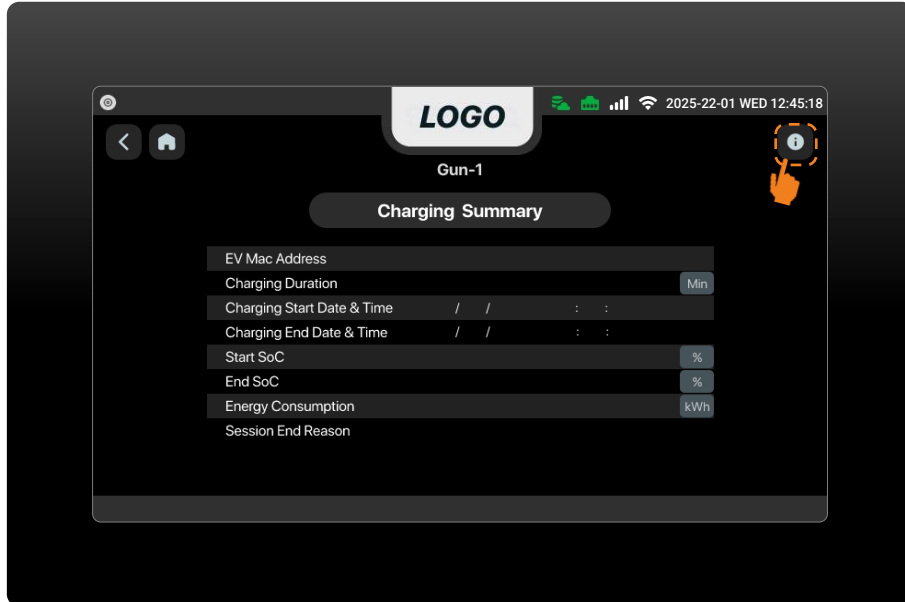


Figure 142 Charging summary screen: press the information button

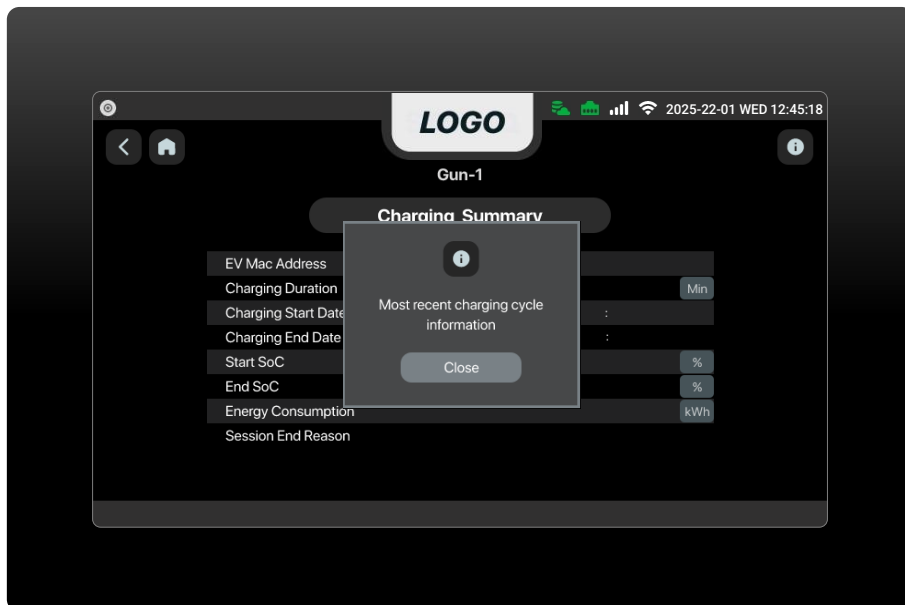


Figure 143 Charging summary pop-up information message

Table 32 Navigation button: charging summary

No.	Button	Name	Function
1.		Close Button	To close charging summary information pop-up message.

3.3 DC Gun-2 Charging Parameter

Press the Gun-2 button to initiate the DC Gun-2 charging process from the DC charger home screen. (Figure 144)

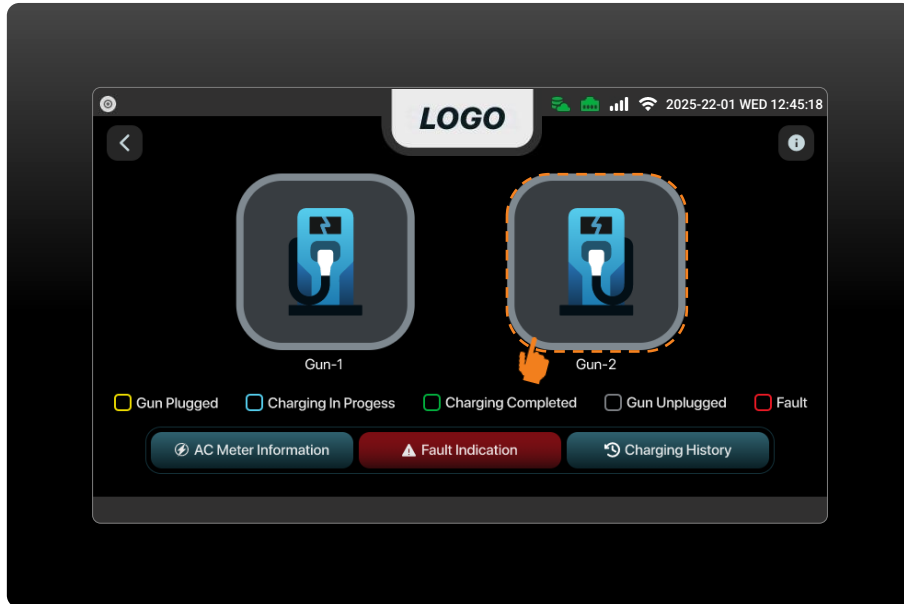


Figure 144 DC charger home screen: press the Gun-2 button

This is a DC Gun-2 charging parameter screen. Here, the user can get charging-related parameters. (Figure 145)

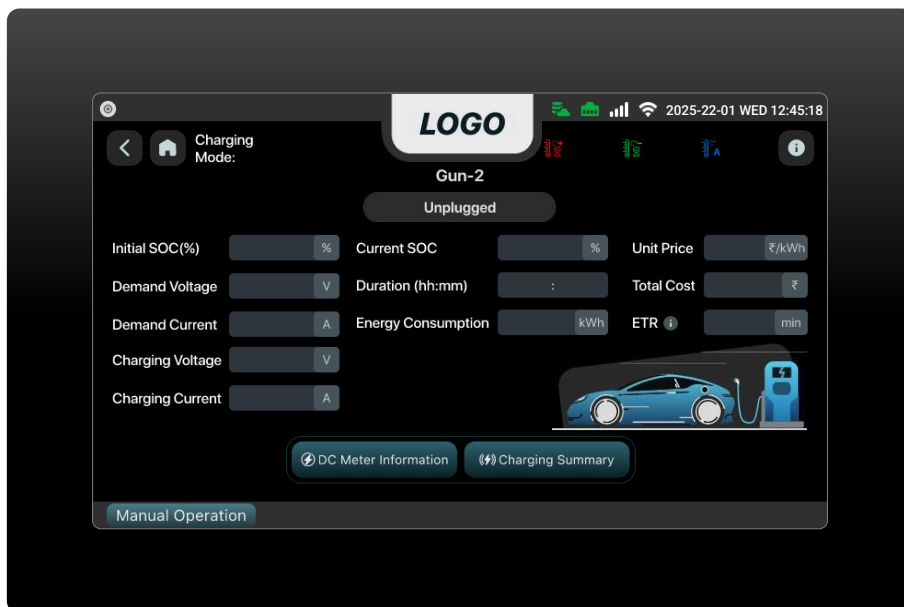






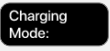






Figure 145 Gun-2 parameter screen

Table 33 Navigation button: Gun-2 parameter screen

No.	Button	Name	Function
1.		DC Meter Information	To get the DC meter information.
2.		Charging Summary	To get the charging summary.
3.		DC Gun-2 status	To know more about the present condition of DC gun-2 functioning or fault indication, press the information button.
4.		DC+	To indicate the DC positive temperature.
5.		DC-	To indicate the DC negative temperature.
6.		Ambient Temperature	To indicate the ambient temperature.
7.		Charging Mode	To indicate the charging mode such as auto, energy, SoC and Time.
8.		Manual Operation	To set manual charging mode operation such as auto, energy, SoC and Time.
9.		Back Button	To move previous screen.
10.		Home Button	To move DC charger home screen.
11.		Info Button	To know about the DC Gun-1 state information.

3.3.1 Operation Status

The charging status indicates the present condition of the DC Gun-2 operation. Furthermore, the user can know more about the charging status in table. (Table 34)

Table 34: Operation status name and function

No.	Name	Function
1.	Unplugged	Gun not connected.
2.	Plugged-In	Gun connected with EV.
3.	Authentication	Authentication using RFID/OCPP with in 55 second of start this state.
4.	Authentication Timeout	Authentication not done within the time interval.
5.	Authentication Denied	Authentication rejected by the server.
6.	Authentication Success	Authentication success response from server.
7.	Isolation Fail	Isolation test fail.
8.	Preparing for charging	Initialising for charging.
9.	Precharge Fail	Precharge test fail.
10.	Charging	EV charge in progress.
11.	Charging Complete	EV charge completed.
12.	PLC Fault	Fault occurred in PLC module.
13.	Rectifier Fault	Fault occurred in rectifier module.
14.	Communication Error	Communication break with EV.
15.	Emergency Stop	Emergency stop triggered by user.

3.3.2 EV Charging Procedure

The user can charge the EV using four distinct EV charging modes: auto, energy, SoC, and time. The system comes pre-set in auto charging mode. However, there is a mode switch option to charge the EV according to a specified manner. In addition, section 3.3.4 provides information on setting the EV charging mode.

A. Auto Charging Mode

By default, the EV charging mode is in auto charging mode. (Figure 146)

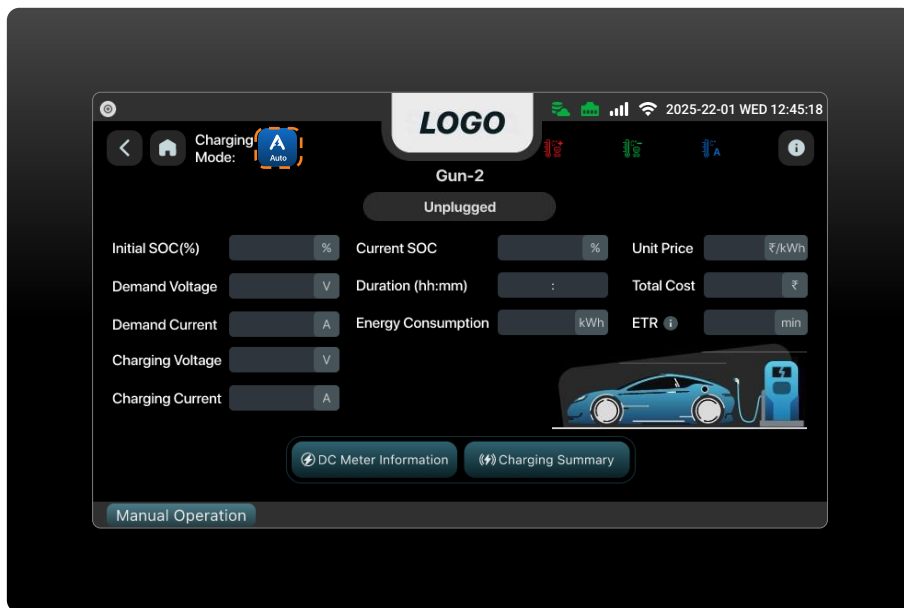


Figure 146 Gun-2 parameter screen

Step 1. Initial start

When the DC Gun-1 is not connected to the EV, the display shows the status “Unplugged”. (Figure 147)

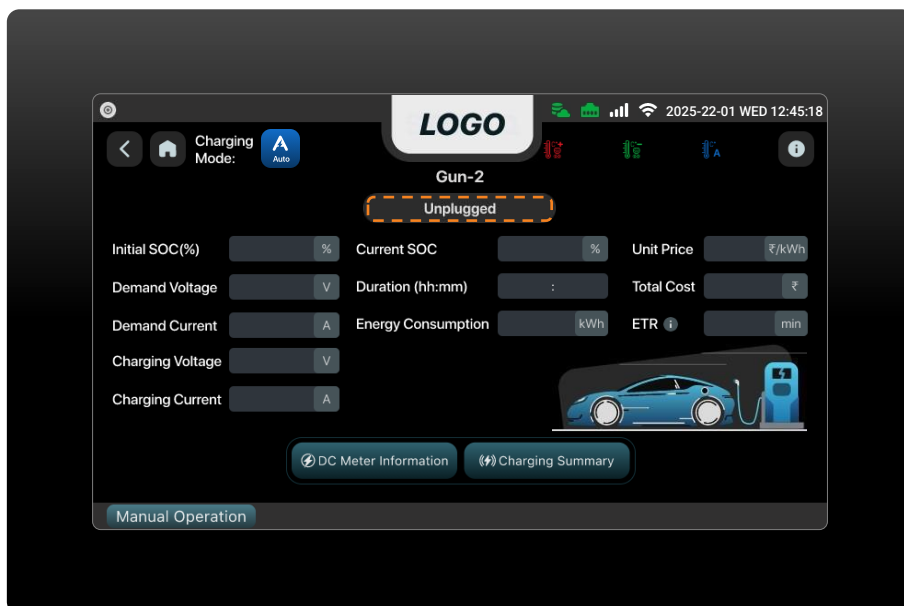


Figure 147 Unplugged status

Step 2. Connect Gun-2 to EV

When the DC Gun-2 is connected to the EV for charging, the display shows the status “Plugged-in”. (Figure148)



Figure 148 Plugged-In status

Step 3. Tap RFID card or tag on a reader.

When an RFID card or tag is tapped on a reader, the screen displays the “RFID tag detected” indicator. (Figure 149)

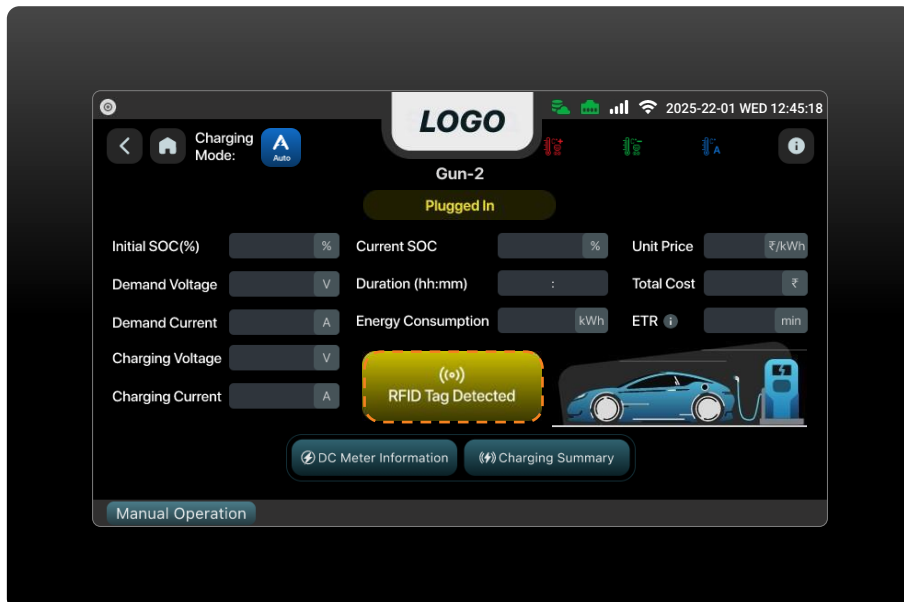


Figure 149 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 150)

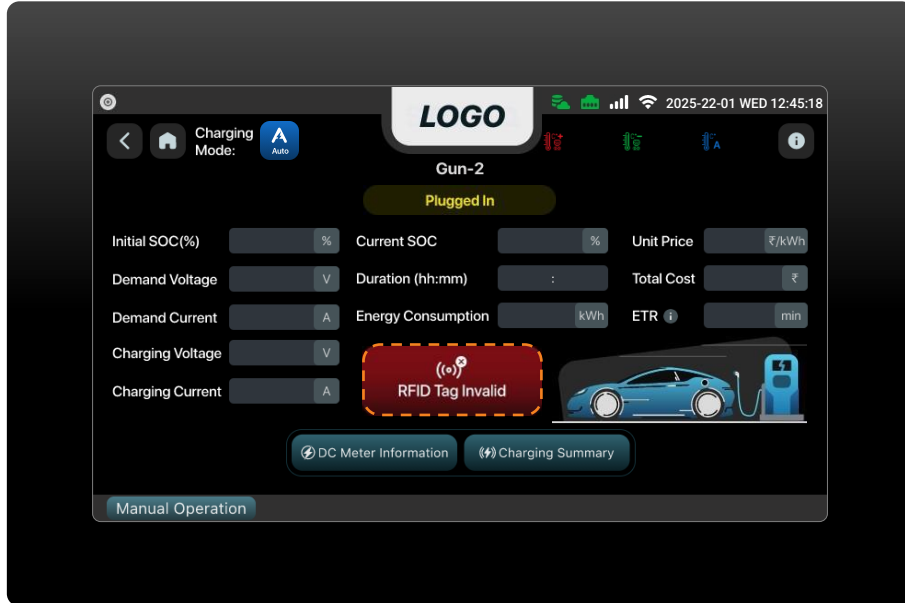


Figure 150 RFID tag invalid indicator

Step 4. Authentication of RFID card or tag.

When you tap a valid RFID card or tag on the reader, the screen will display the “RFID Tag Valid” indicator. (Figure 151)



Figure 151 RFID tag valid indicator

Step 5. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”.
(Figure 152)

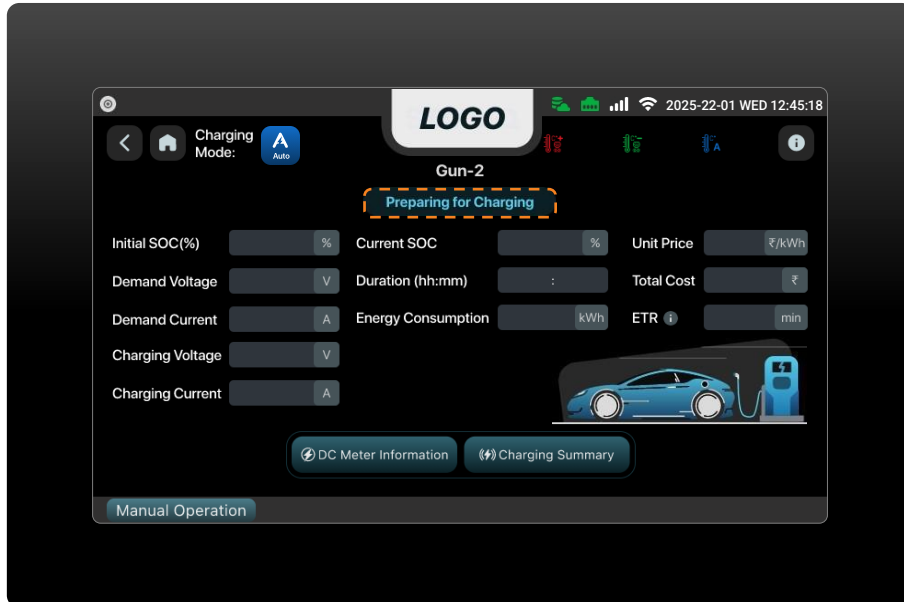


Figure 152 Preparing for charging status

Step 6. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 153)



Figure 153 Charging status

Step 7. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”.
(Figure 154)

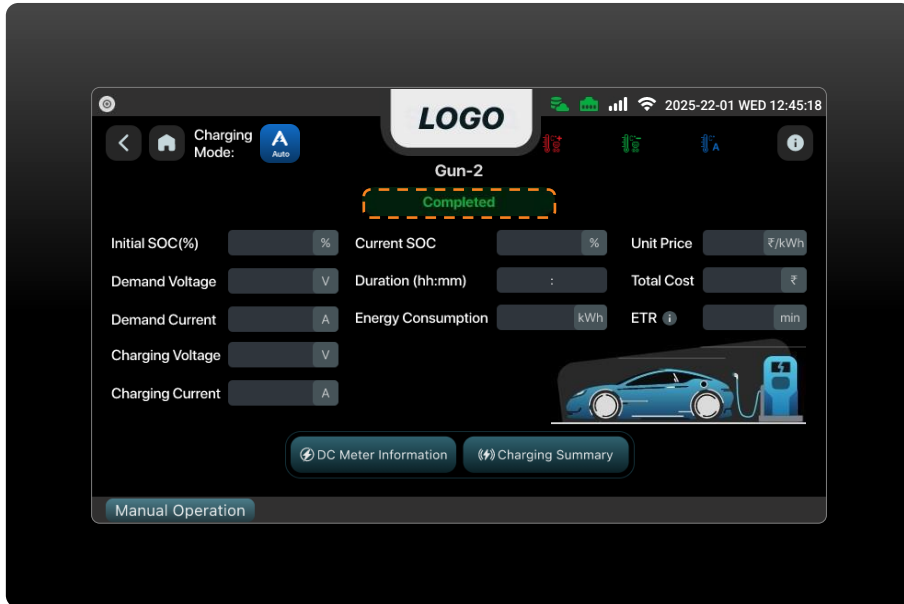


Figure 154 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process.
(Figure 155)

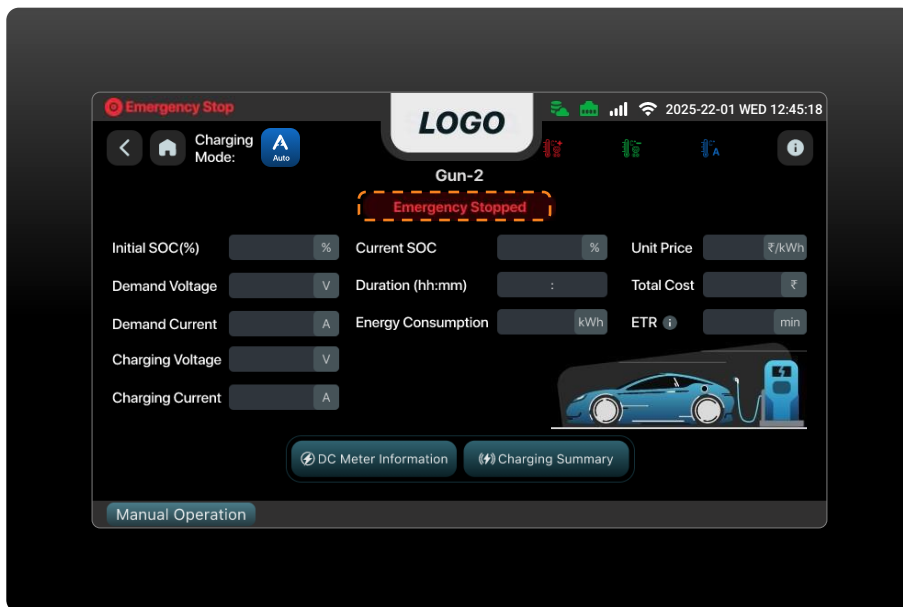


Figure 155 Emergency stopped status

3.3.3 Manual Operation Mode

The user can EV charging using the manual mode where there are four manual mode options. Press the Manual Operation button to open the manual charging mode menu. (Figure 156)



Figure 156 Press the “Manual Operation” button

Start / Stop Charging Mode pop-up

This is a manual operation start or stop pop-up box which is helpful to start a new charging mode or stop the existing charging mode. (Figure 157 & Table 35)

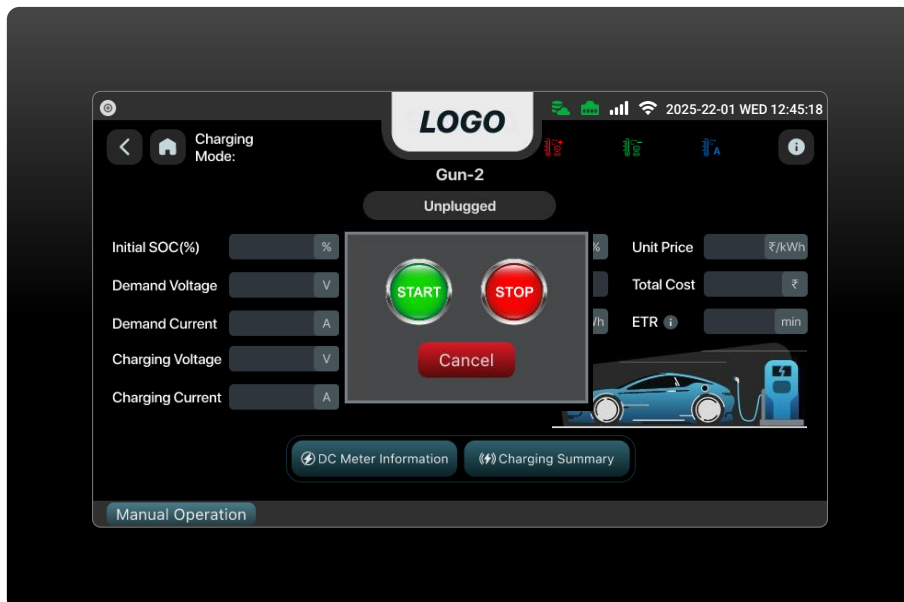





Figure 157 Start or Stop charging mode pop-up

Table 35 Fault information button

No.	Button	Name	Function
1.		Start Button	To start the new charging mode.
2.		Stop Button	To stop the current charging mode.
3.		Cancel Button	To close the popup.

There are four EV charging modes on the screen. Furthermore, the user can know more about the EV charging modes in the table. (Figure 158 & Table 36)

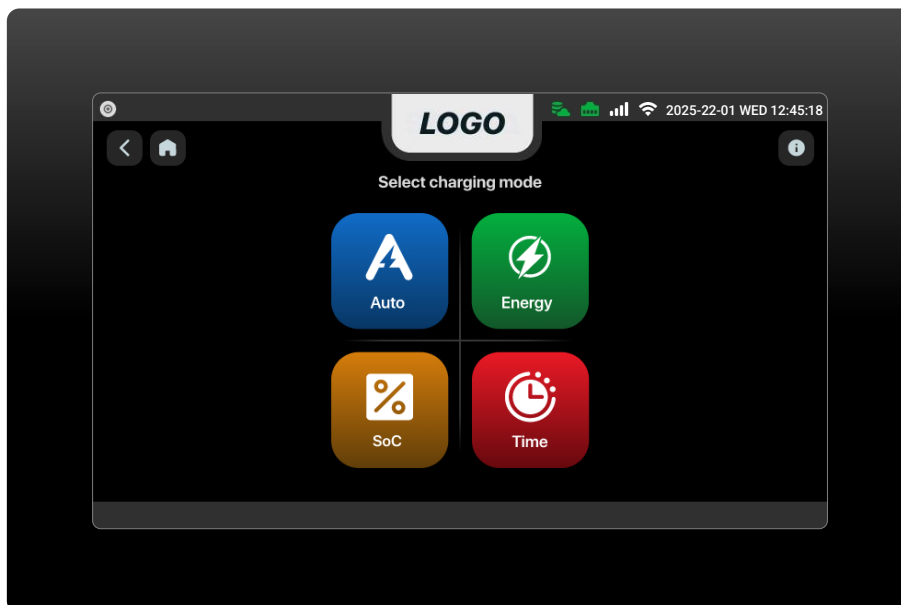









Figure 158 Select charging mode

Table 36 Fault information button

No.	Button	Name	Function
1.		Auto Mode	To completely charge the vehicle, select auto mode.
2.		Energy Mode	To set the vehicle's energy target, select the energy mode and enter the energy value in kWh.
3.		SoC Mode	To charge the vehicle to a certain SoC percentage, select SoC mode and enter the SoC percentage.
No.	Button	Name	Function

4.		Time Mode	To set up the time for charging the vehicle, select the time mode and enter the expected number of minutes.
5.		Back Button	To move the previous screen.
6.		Home Button	To move the DC charger home screen.
7.		Info Button	To know about the DC Gun-1 state information.

Information Pop-up Message

Press the information button, and it will show a pop-up message with colour about the EV charging mode selection info. (Figures 159 & 160)

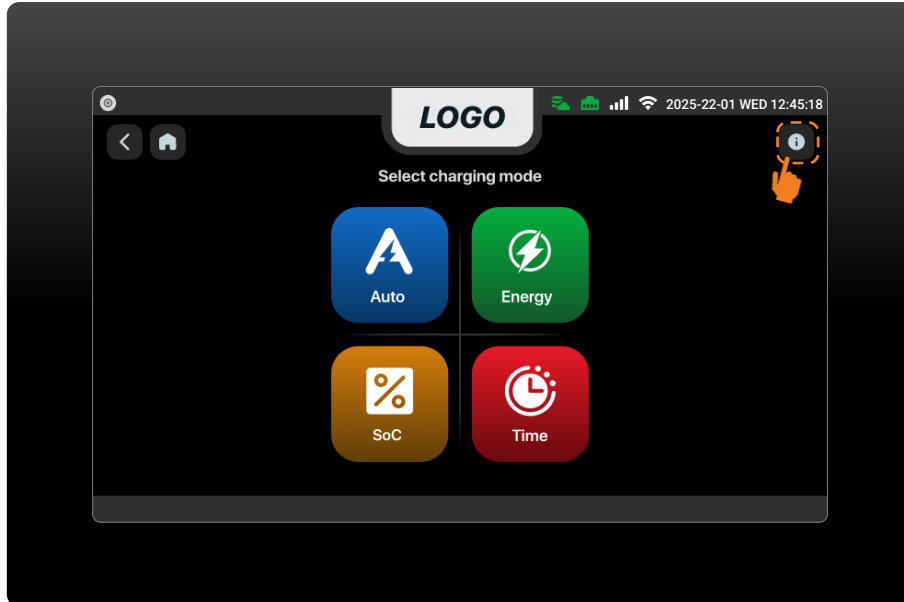


Figure 159 Select charging mode: press the information button

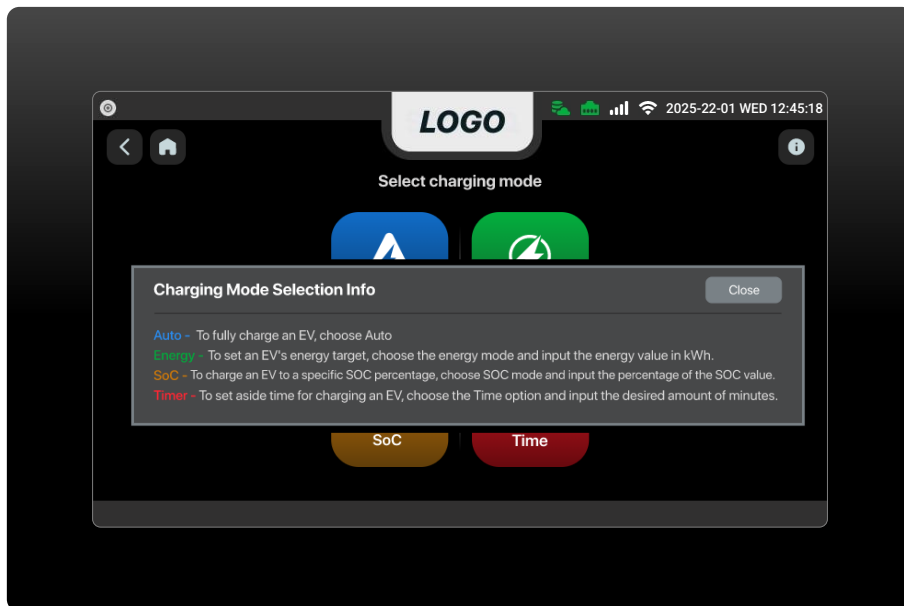



Figure 160 Charging mode selection information

Table 37 Navigation button: PLC fault error or no error

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

A. Energy Charging Mode

To set the energy charging mode, press the “Energy” button. It will open the energy details screen. (Figure 161)

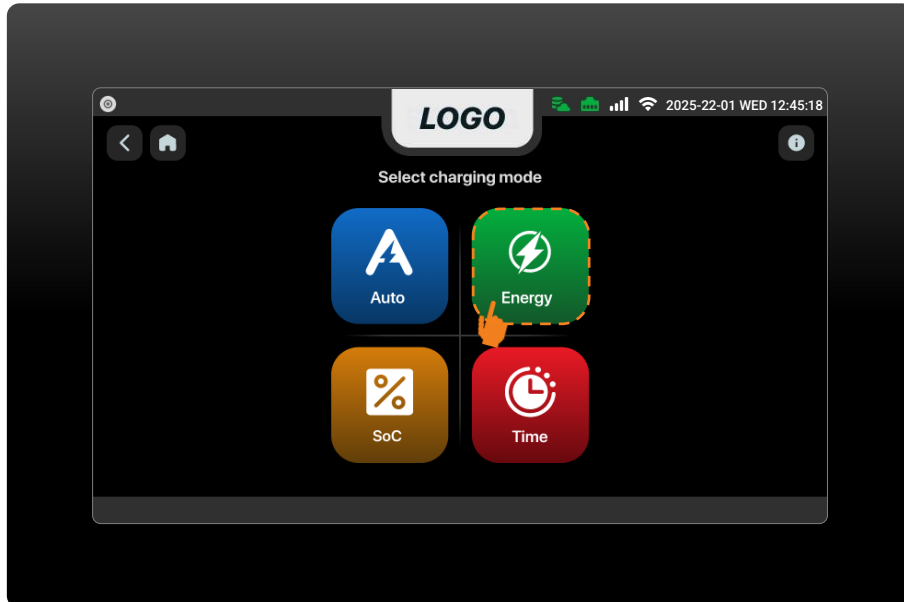


Figure 161 Select charging mode: press the energy button

This is the energy detail screen. Users can press the input box to enter their desired energy value in kWh, which ranges from 1 to 999. (Figure 162)

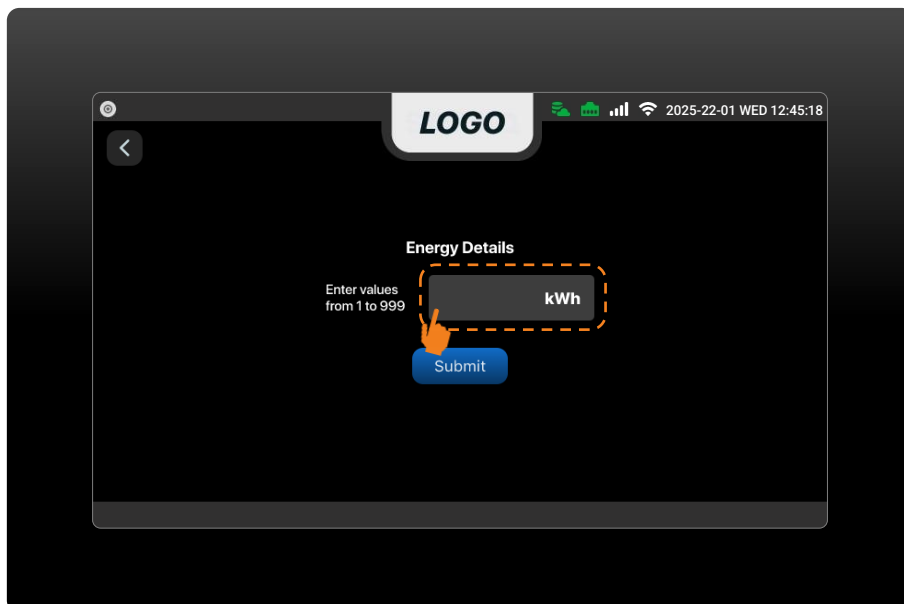


Figure 162 Energy mode: enter the energy details

Enter the desired energy value using the on-screen numeric keyboard and then press the “OK” button. (Figure 163)

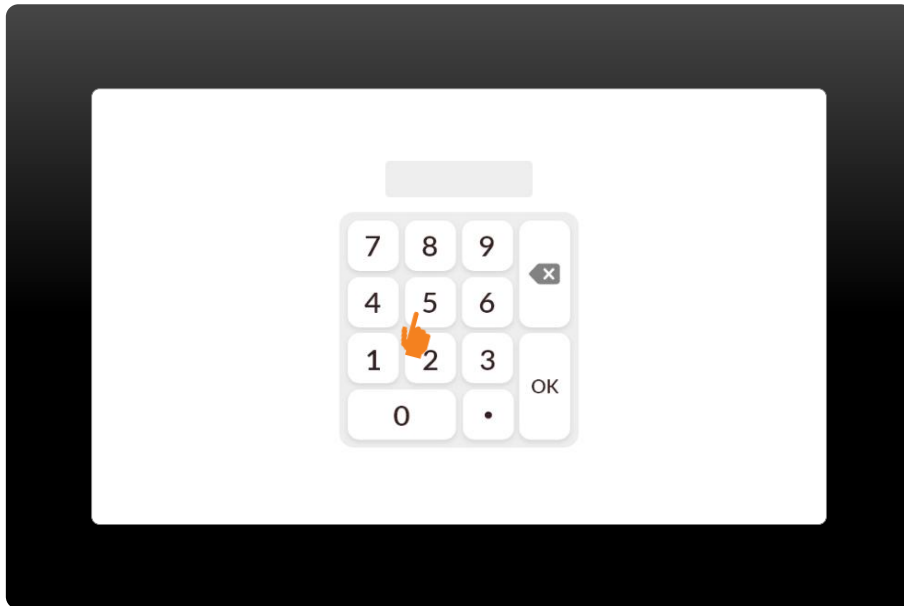


Figure 163 Enter the desired energy value

To set the energy values, press the “submit” button. It will proceed to the authenticating screen. (Figure 164)

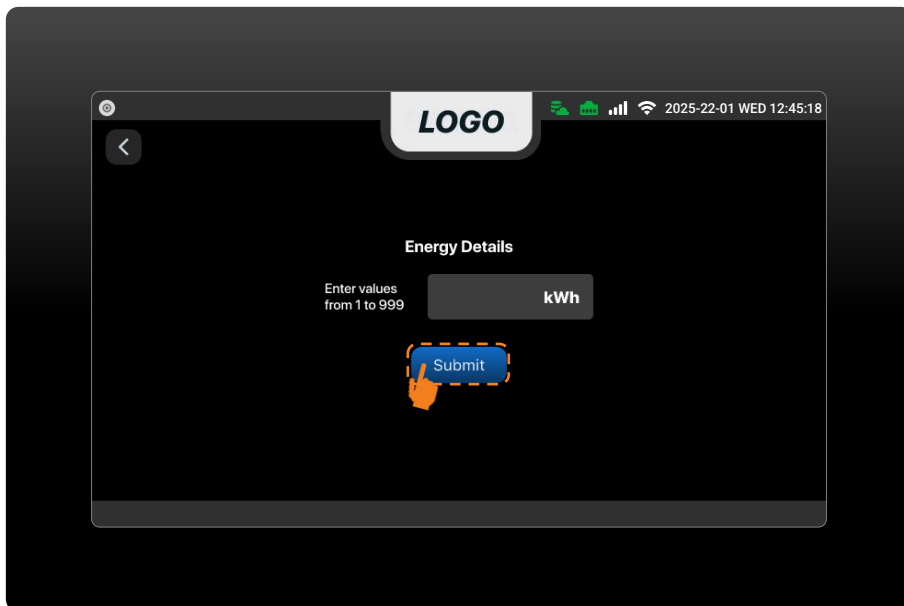


Figure 164 Press the submit button

This is the authentication screen, and there are three options for validating the authentication.
(Figure 165)

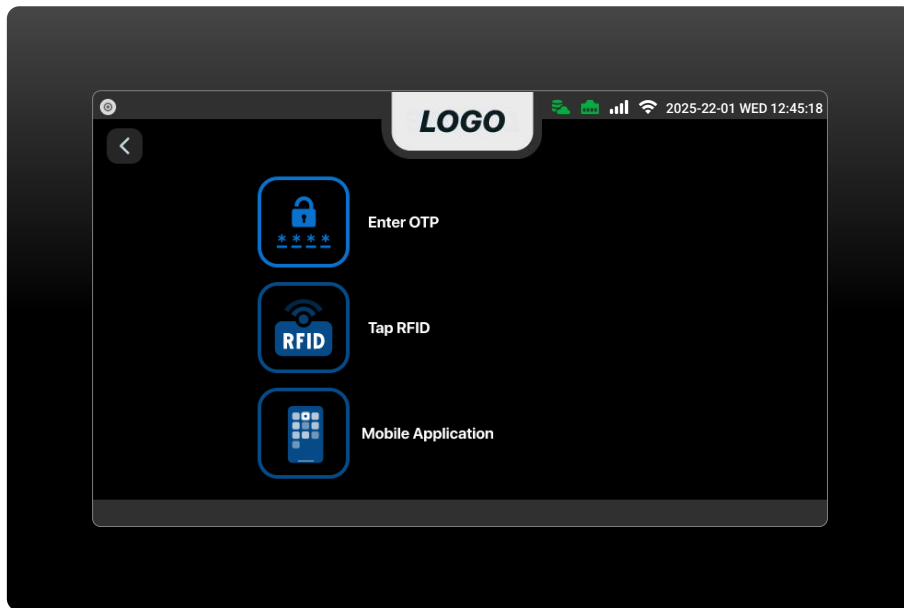


Figure 165 Authentication screen

(i). Mode Authentication

The user has three authentication choices, which are detailed in this section. Use one of these based on the user's requirements.

Option 1. PIN / OTP Authentication

Press the "Enter OTP" button to proceed to the PIN / OTP authentication session screen.

(Figure 166)

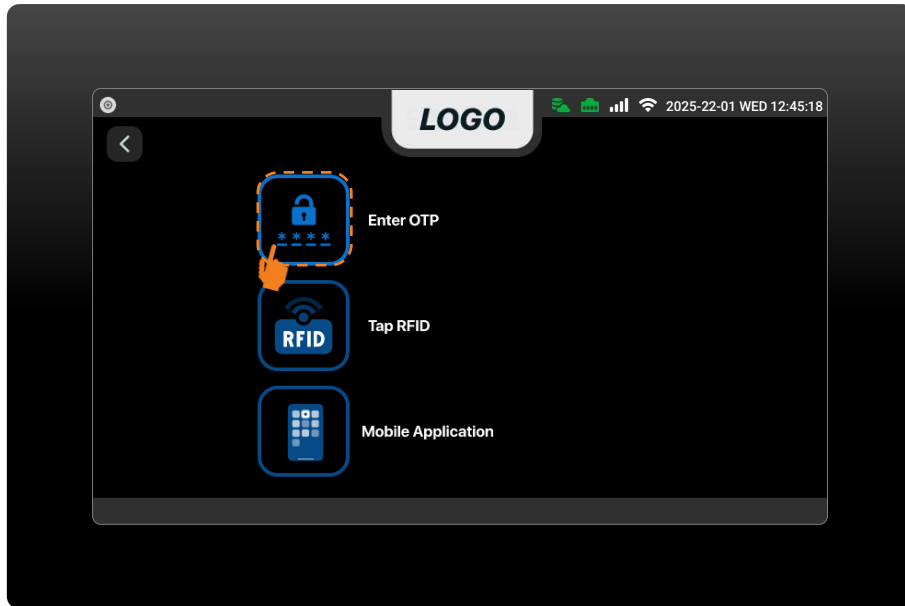


Figure 166 Press the "Enter OTP" button

This is a PIN / OTP session authentication screen, where the user can enter PIN or OTP using the On-screen keyboard, and then press the "Enter" button. *(Figure 167)*

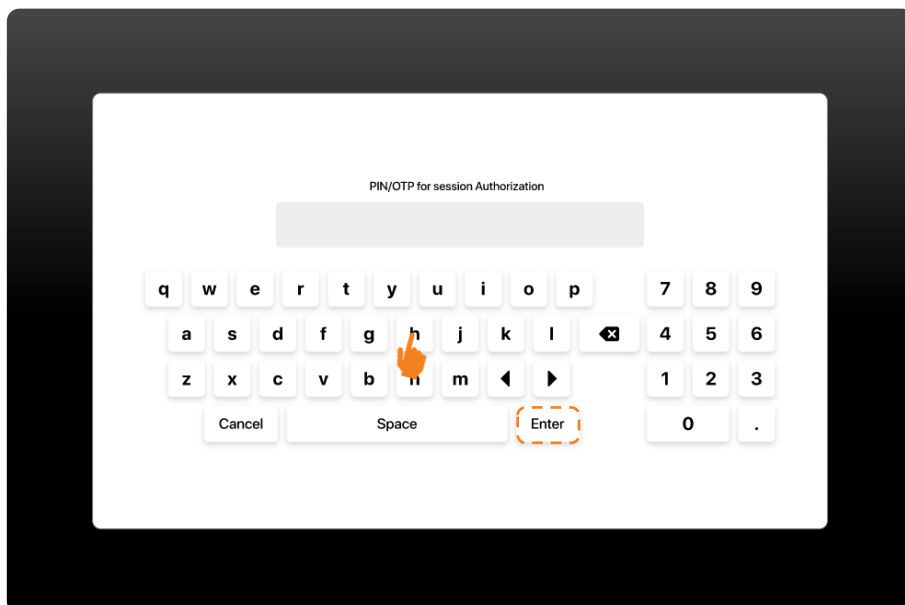


Figure 167 Use the on-screen keyboard to enter a PIN or OTP

It will take some time to validate the PIN or OTP you entered. Please wait throughout the verification procedure; do not end the session. (Figure 168)

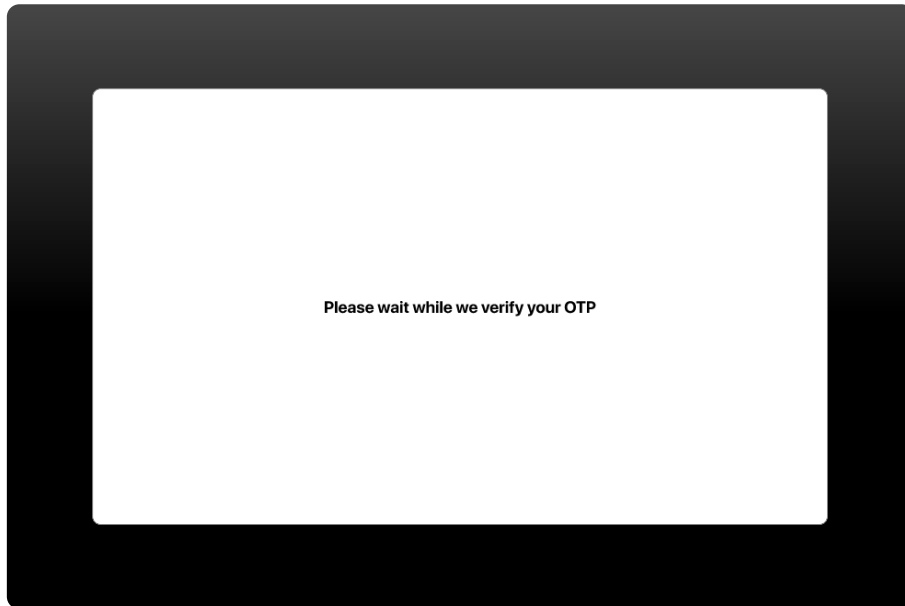


Figure 168 PIN or OTP verification process

The screen displays the "Token ID Submitted" indicator, which indicates that validating the token ID for the PIN or OTP will take a few seconds. (Figure 169)

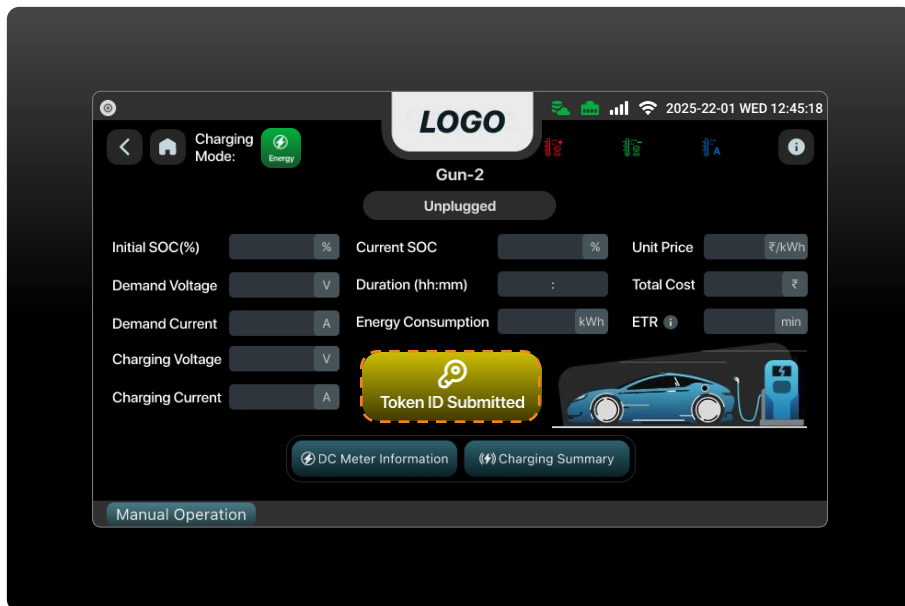


Figure 169 Token ID submitted indicator

Use of an invalid PIN or OTP

The screen displays the "Token ID Invalid" indicator, which indicates that the token ID is invalidated. Please re-enter the pin or OTP. (Figure 170)



Figure 170 Token ID invalid indicator

When the token ID is successfully validated, the screen displays the "Token ID Valid" indicator, indicating, that it is ready to charge in Energy mode. (Figure 171)



Figure 171 Token ID valid indicator.

Option 2. RFID Authentication

Press the "Tap RFID" button to proceed to the RFID authentication session screen. (Figure 172)

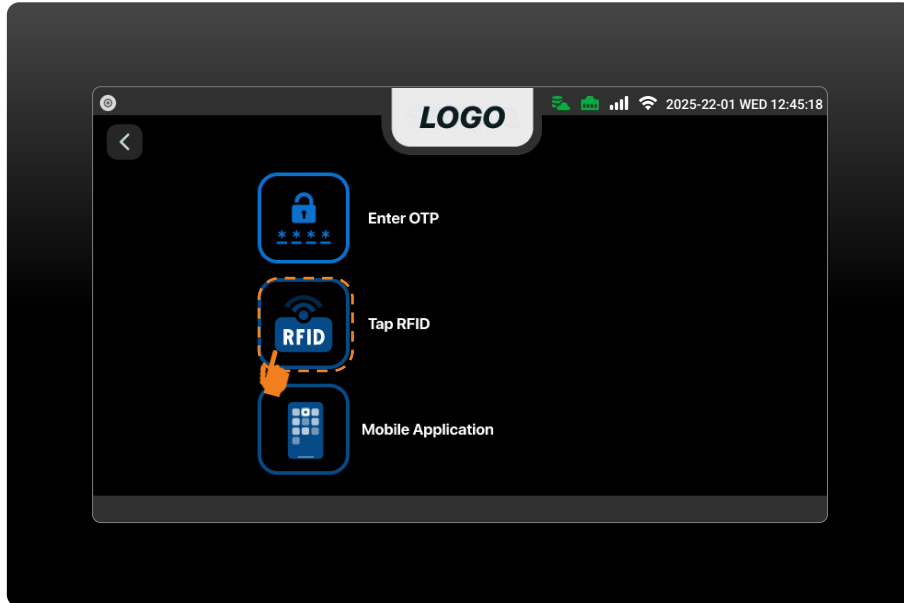


Figure 172 Press the "Tap RFID" button

This is the information pop-up for tapping RFID on the RFID reader and pressing the "OK" button to authenticate RFID identification. (Figure 173)

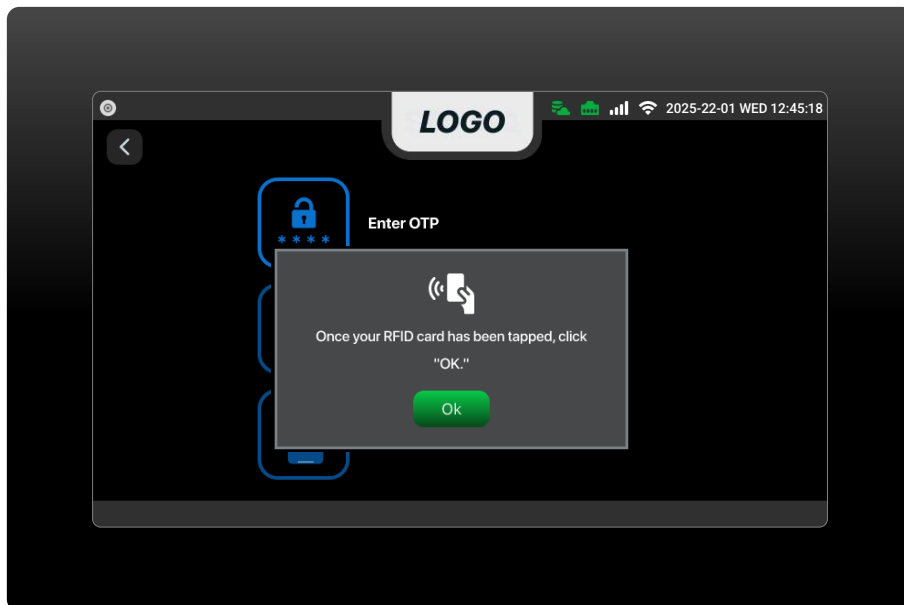


Figure 173 Tap the RFID card on the RFID reader

When an RFID card is detected, the screen displays the “RFID tag detected” indicator.
(Figure 174)



Figure 174 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 175)

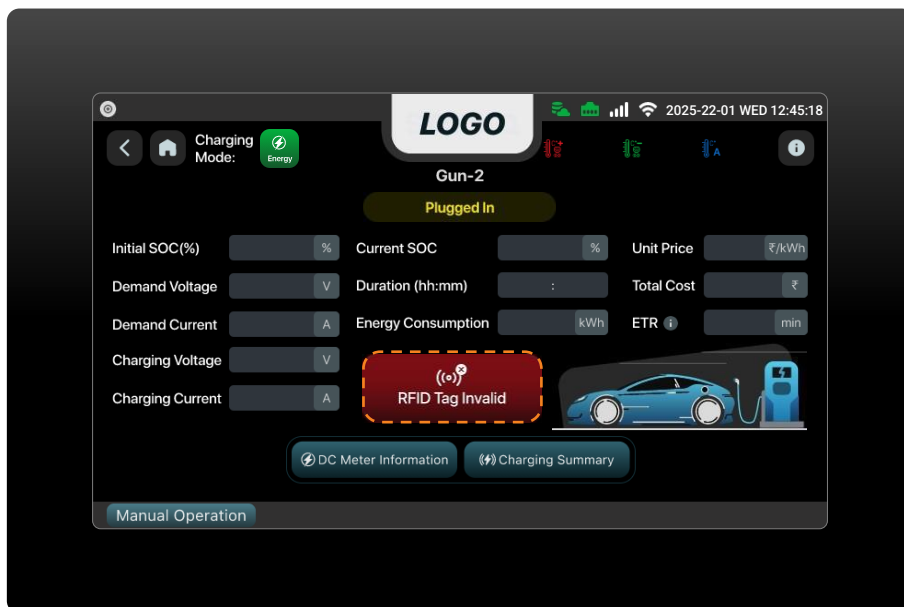


Figure 175 RFID tag invalid indicator

When the RFID Card is successfully validated, the screen displays the “RFID Tag Valid” indicator, indicating, that it is ready to charge in Energy mode. (Figure 176)

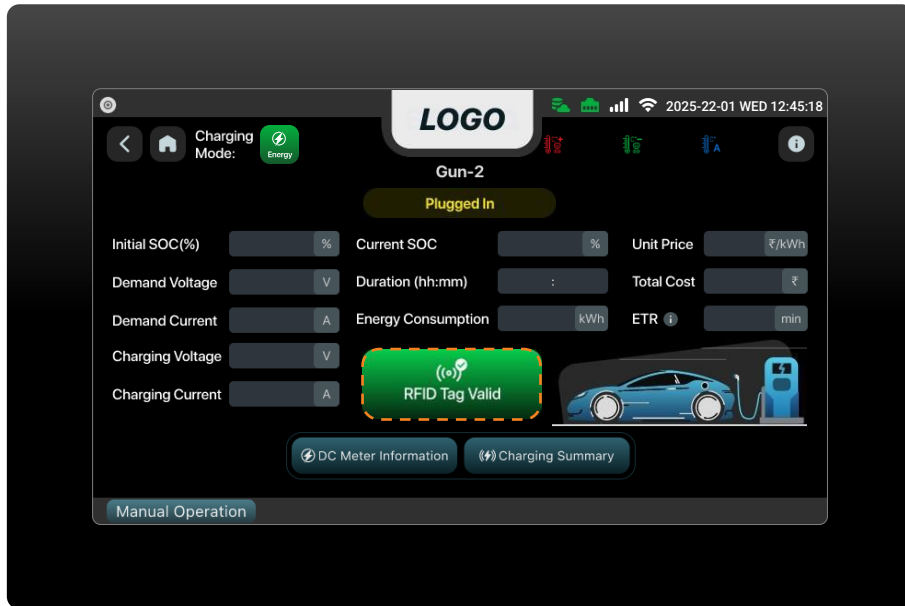


Figure 176 RFID tag valid indicator

Option 3. Mobile Application

Mobile application authentication is an alternative for integrating the personalised mobile application for EV charging. Pressing the "Mobile Application" button will lead the user to the mobile application authentication session. (Figure 177)

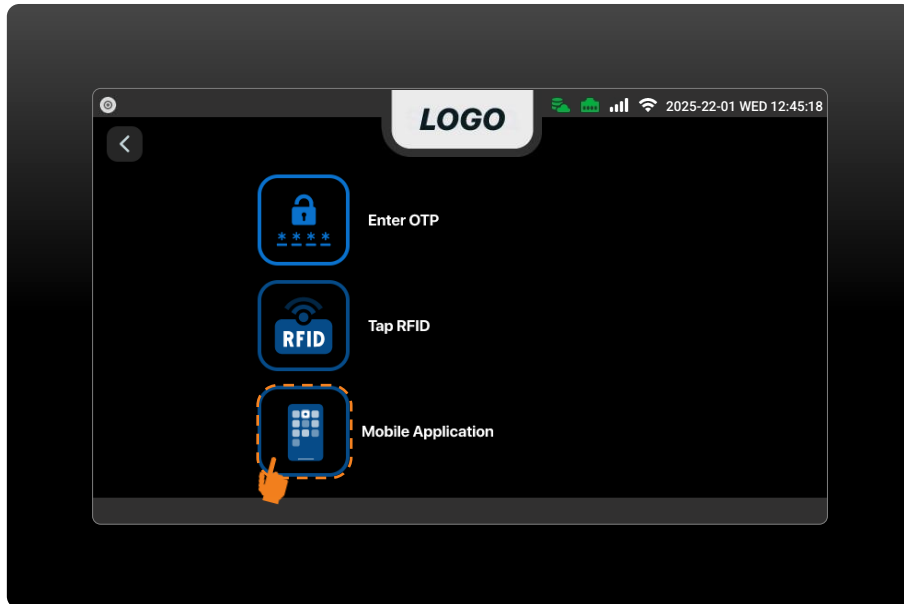


Figure 177 Press the "Mobile Application" button

(ii). Charging Procedure

Step 1. Initial start

When the DC Gun-2 is not connected to the EV, the display shows the status “Unplugged”.

(Figure 178)

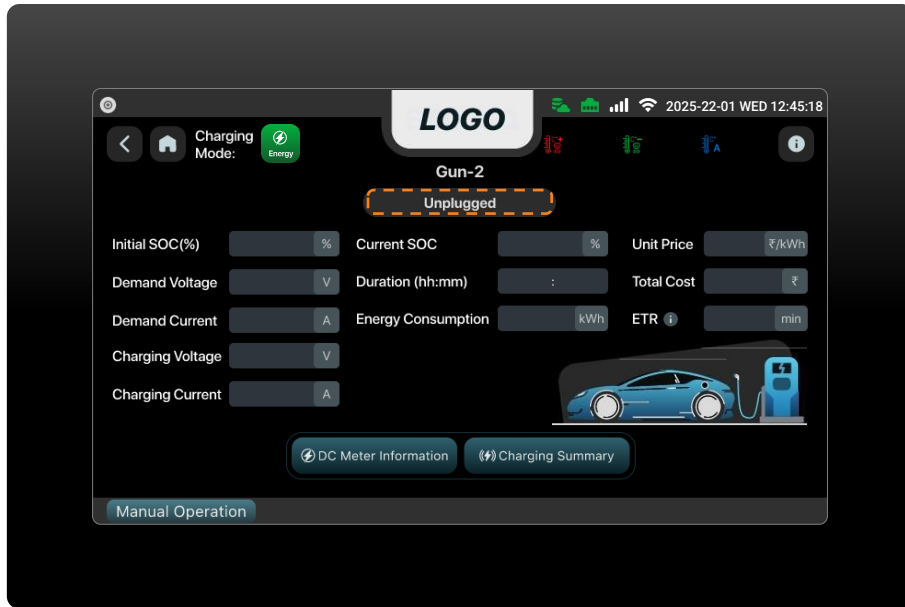


Figure 178 Unplugged status

Step 2. Connect Gun-1 to EV

When the DC Gun-2 is connected to the EV for charging, the display shows the status “Plugged-in”.

(Figure 179)

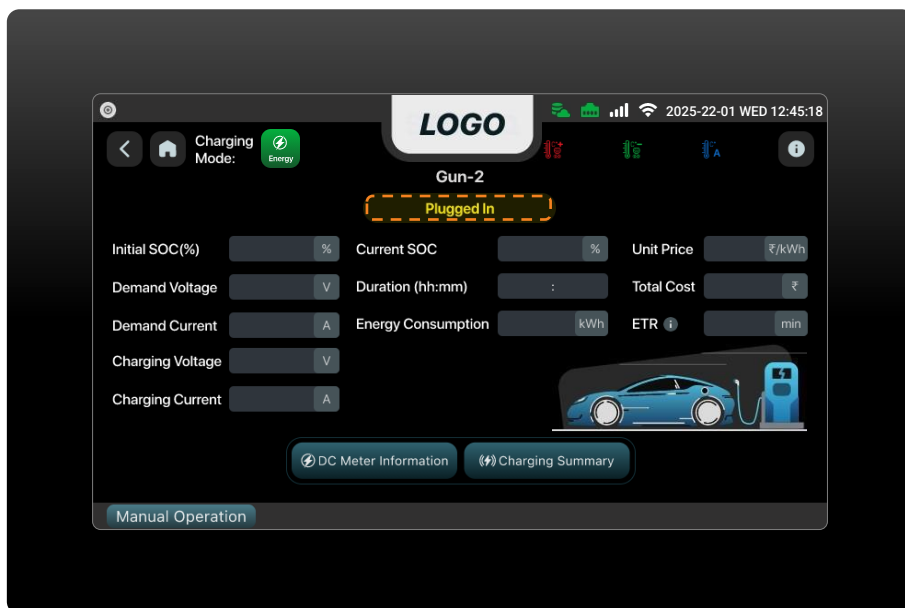


Figure 179 Plugged-In status

Step 3. Tap RFID card or tag on a reader.

When an RFID card or tag is tapped on a reader, the screen displays the “RFID tag detected” indicator. (Figure 180)

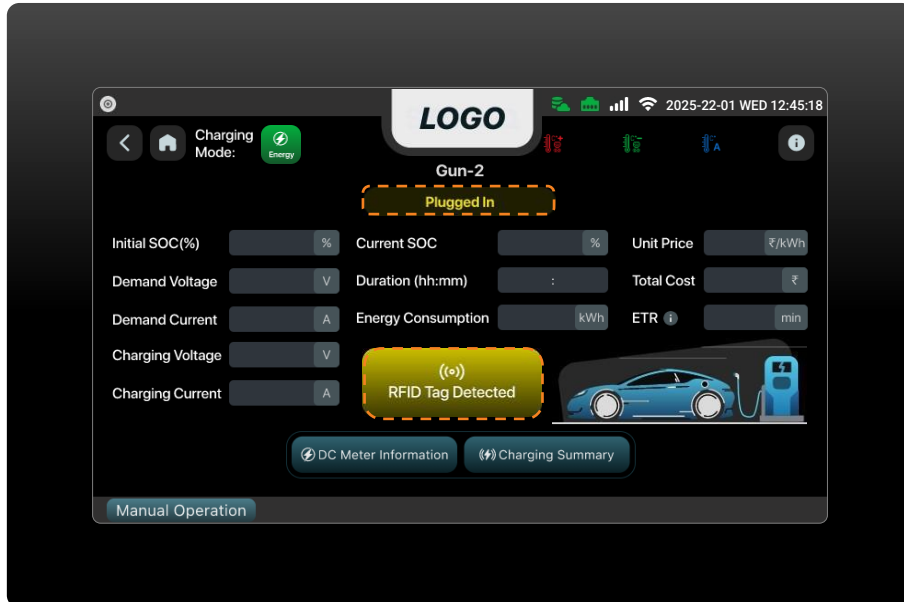


Figure 180 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 181)

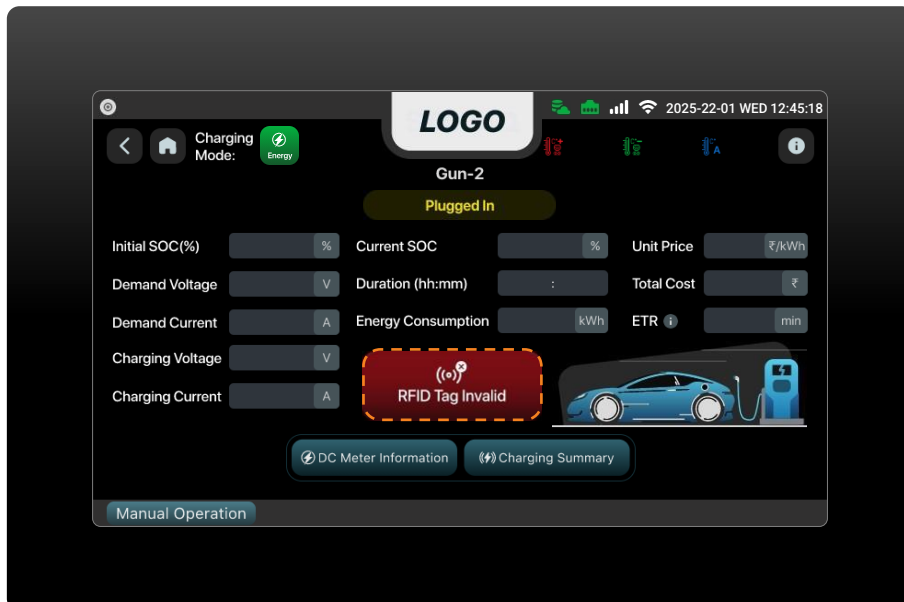


Figure 181 RFID tag invalid indicator

Step 4. Authentication of RFID card or tag.

When you tap a valid RFID card or tag on the reader, the screen will display the “RFID Tag Valid” indicator. (Figure 182)

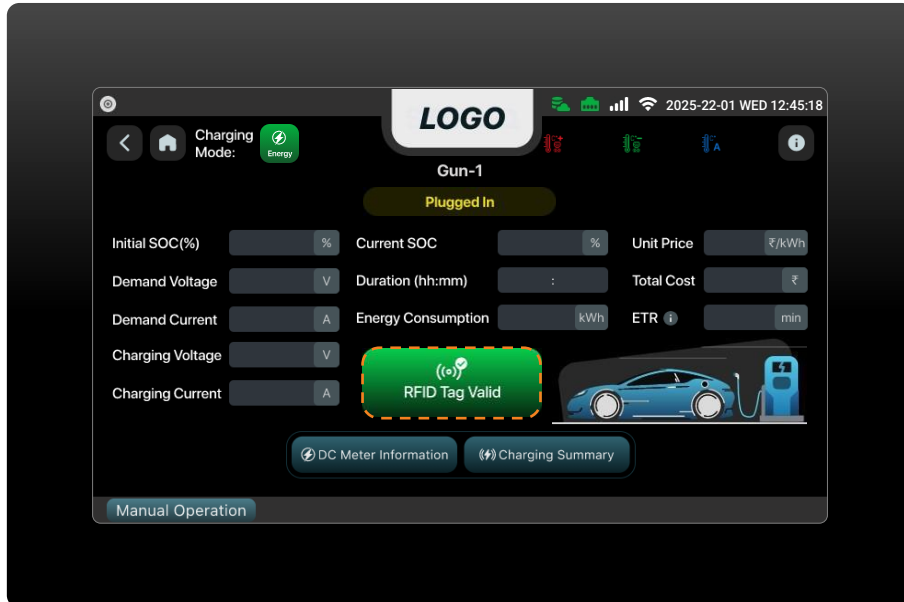


Figure 182 RFID tag valid indicator

Step 5. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”. (Figure 183)



Figure 183 Preparing for charging status

Step 6. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 184)

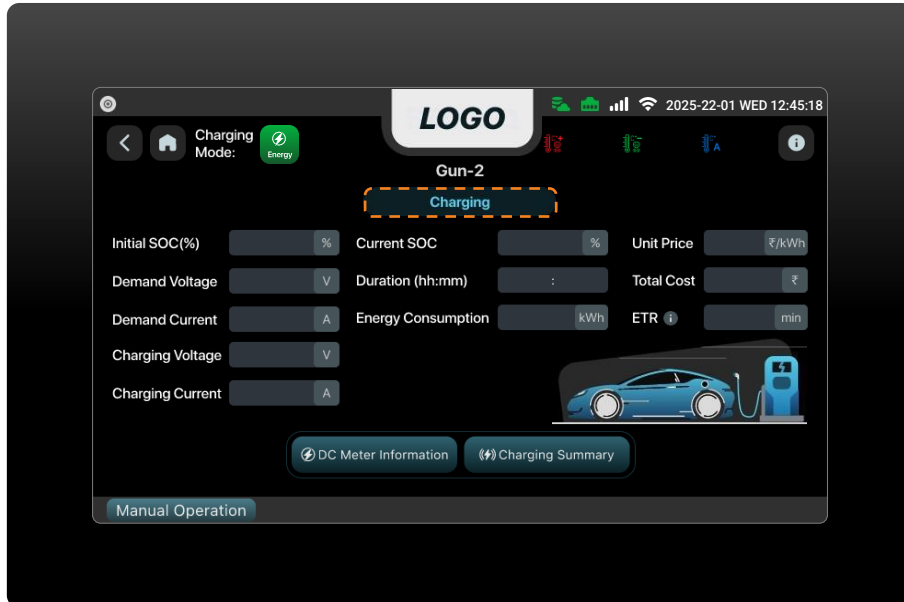


Figure 184 Charging status

Step 7. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”. (Figure 185)

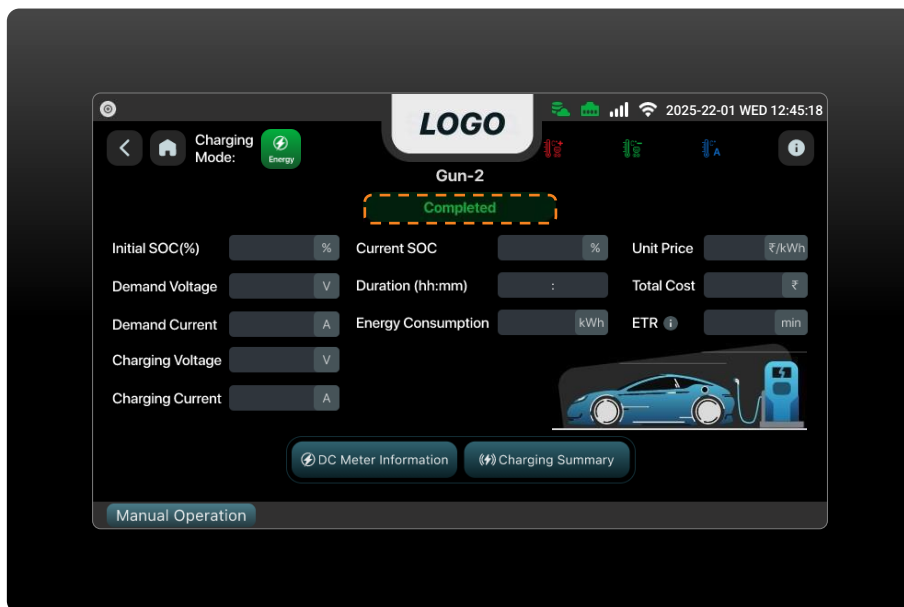


Figure 185 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process.
(Figure 186)

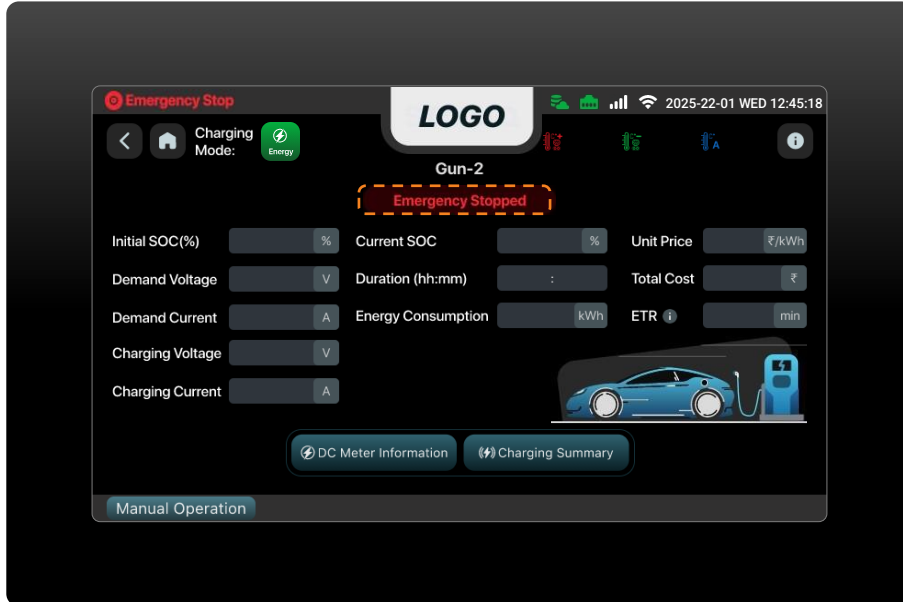


Figure 186 Emergency stopped status

B. SoC Charging Mode

To set SoC charging mode, press the “SoC” button. It will open the SoC details screen.
(Figure 187)



Figure 187 Select charging mode: press the SoC button

This is the SoC details screen. Users can use the input box to enter their desired SoC value in percentages ranging from 1 to 99. (Figure 188)

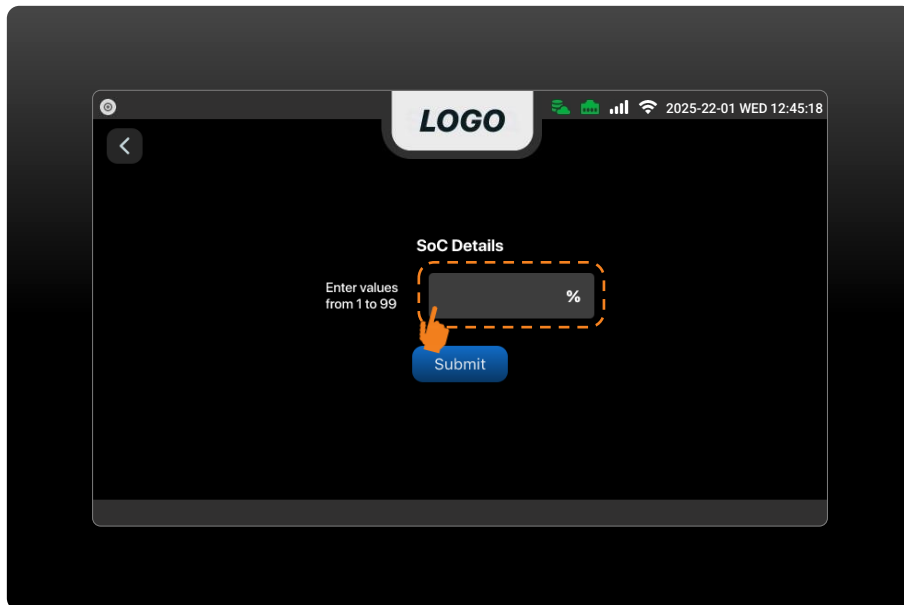


Figure 188 SoC mode: enter the SoC details

Enter the desired SoC value using the on-screen numeric keyboard and press the “OK” button.
(Figure 189)

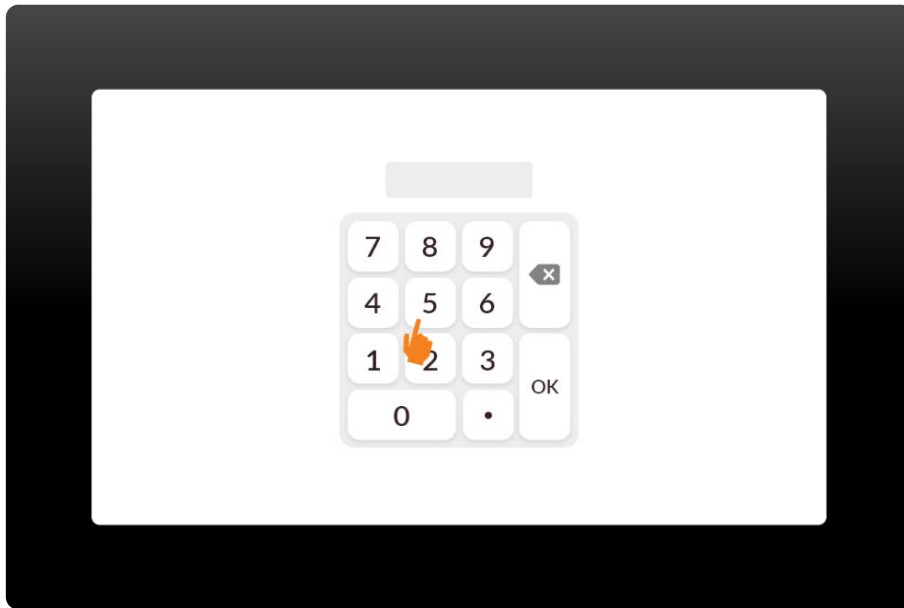


Figure 189 Enter the desired SoC value

To set the SoC values, press the “submit” button. It will proceed to the authenticating screen.
(Figure 190)

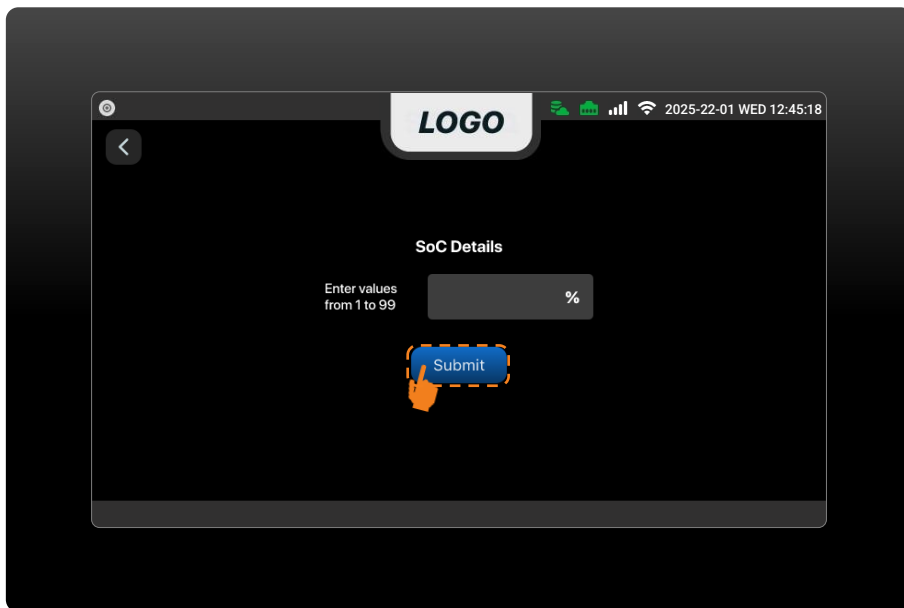


Figure 190 Press the submit button

This is the authentication screen, and there are three options for validating the authentication.
(Figure 191)

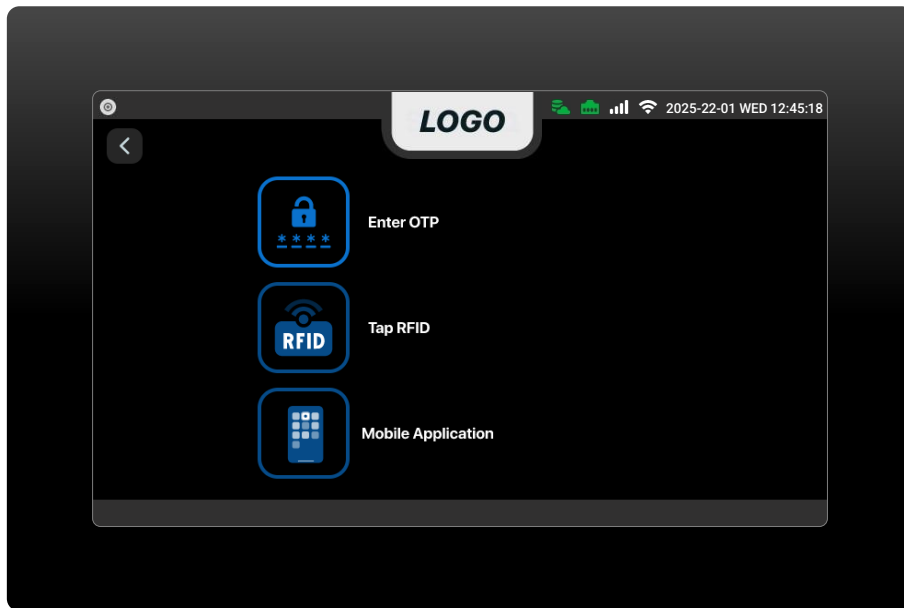


Figure 191 Authentication screen

(i). Mode Authentication

The user has three authentication choices, which are detailed in this section. Use one of these based on the user's requirements.

Option 1. PIN / OTP Authentication

Press the "Enter OTP" button to proceed to the PIN / OTP authentication session screen.

(Figure 192)

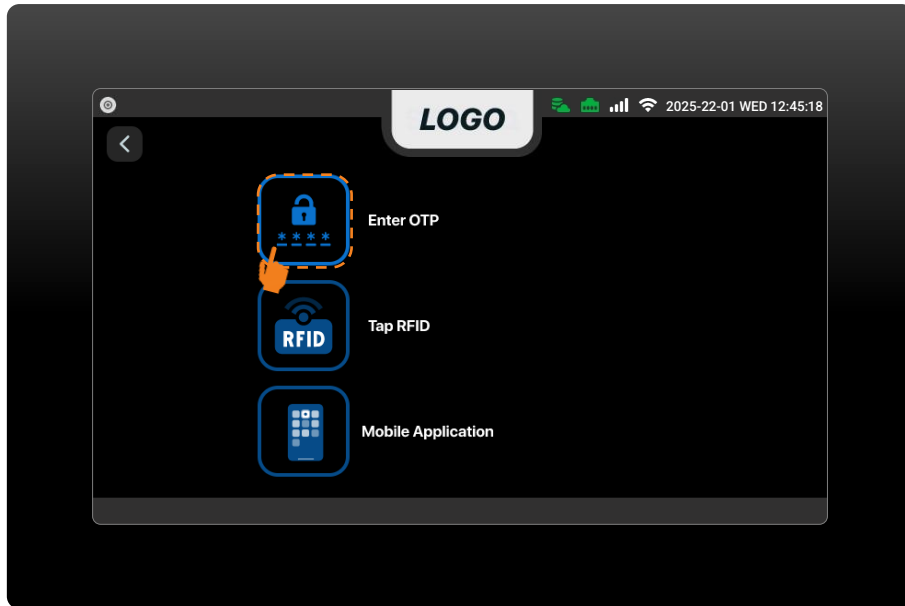


Figure 192 Press the "Enter OTP" button

This is a PIN / OTP session authentication screen, where the user can enter PIN or OTP using the On-screen keyboard, and then press the "Enter" button. *(Figure 193)*

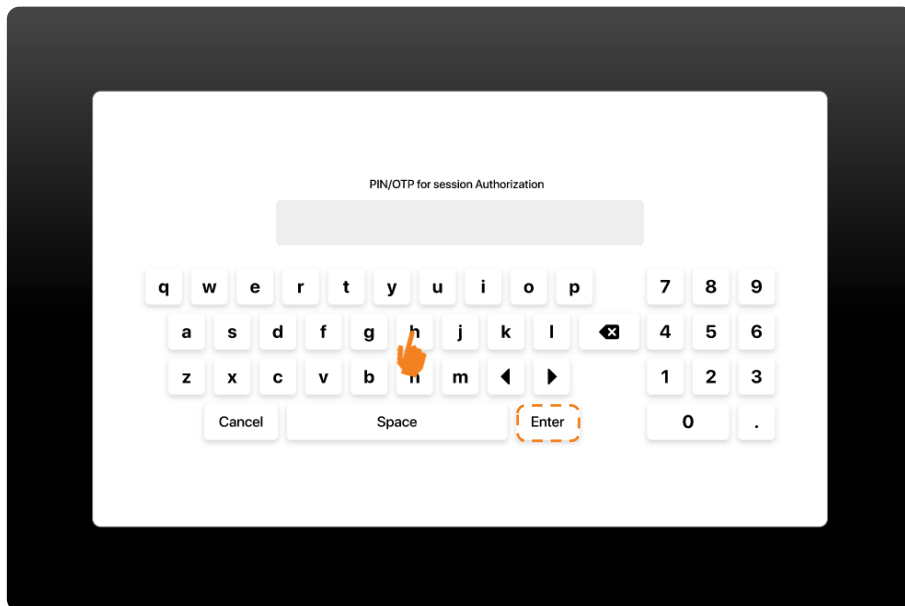


Figure 193 Use the on-screen keyboard to enter a PIN or OTP

It will take some time to validate the PIN or OTP you entered. Please wait throughout the verification procedure; do not end the session. (Figure 194)

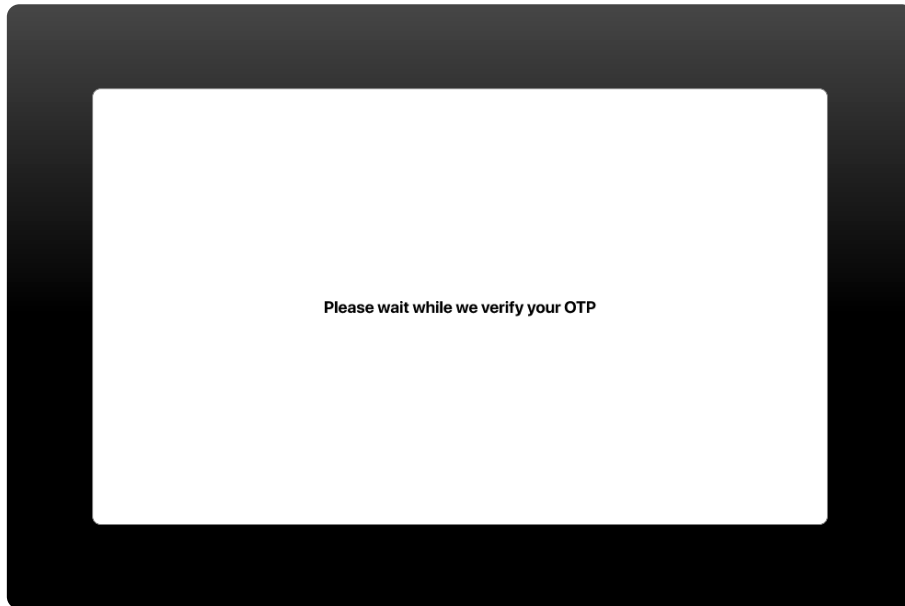


Figure 194 PIN or OTP verification process

The screen displays the "Token ID Submitted" indicator, which indicates that validating the token ID for the PIN or OTP will take a few seconds. (Figure 195)



Figure 195 Token ID submitted indicator

Use of an invalid PIN or OTP

The screen displays the "Token ID Invalid" indicator, which indicates that the token ID is invalidated. Please re-enter the pin or OTP. (Figure 196)

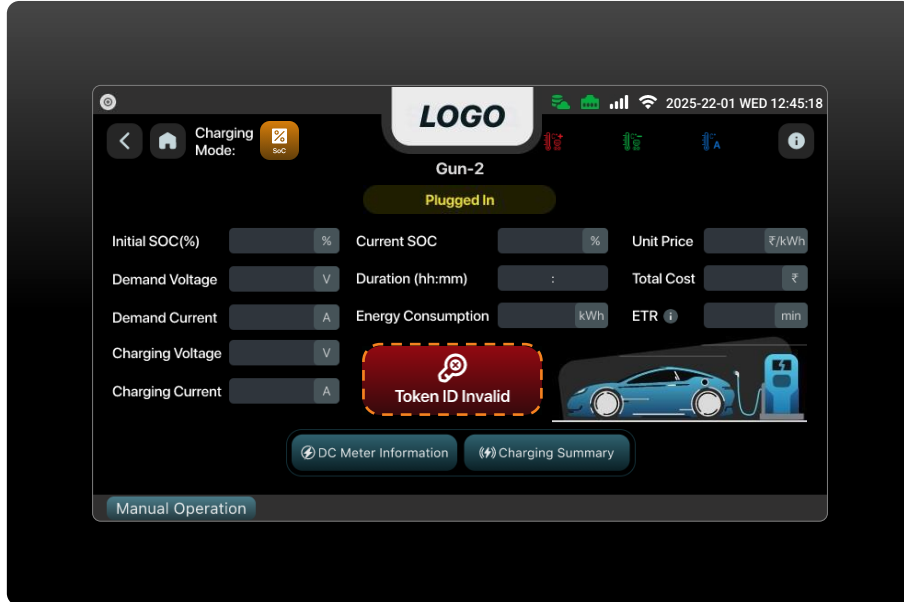


Figure 196 Token ID invalid indicator

When the token ID is successfully validated, the screen displays the "Token ID Valid" indicator, indicating that it is ready to charge in SoC mode. (Figure 197)



Figure 197 Token ID valid indicator

Option 2. RFID Authentication

Press the "Tap RFID" button to proceed to the RFID authentication session screen. (Figure 198)

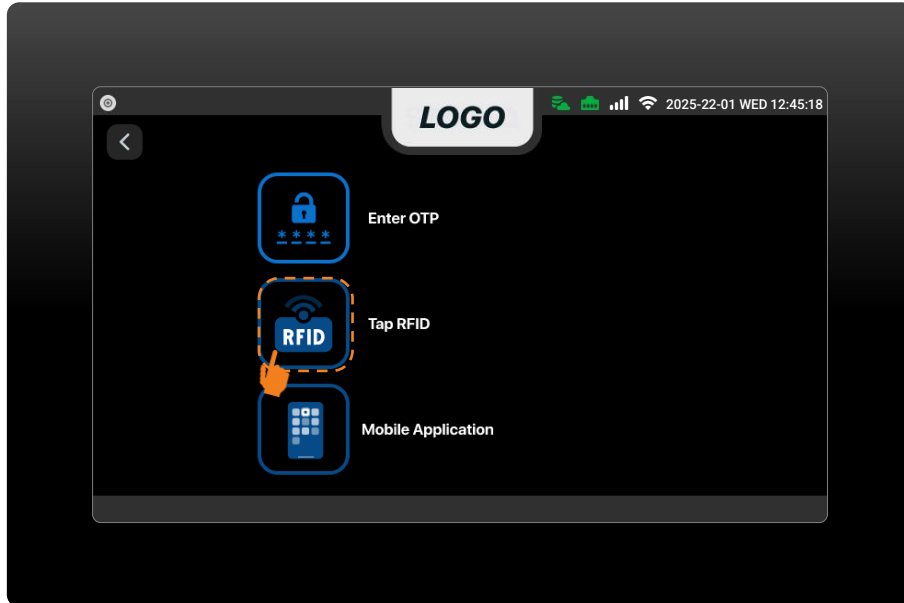


Figure 198 Press the "Tap RFID" button

This is the information pop-up for tapping RFID on the RFID reader and pressing the "OK" button to authenticate RFID identification. (Figure 199)

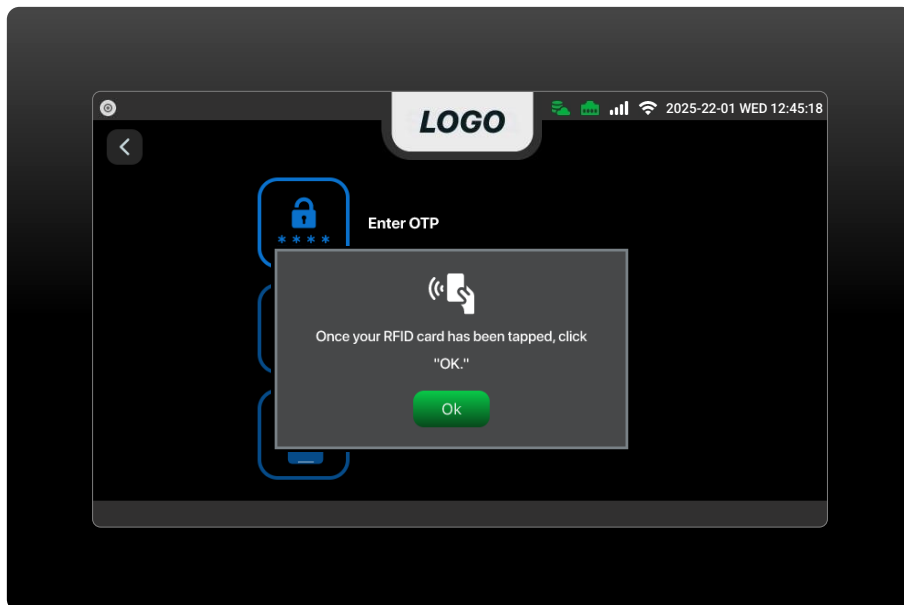


Figure 199 Tap the RFID card on the RFID reader

When an RFID card is detected, the screen displays the “RFID tag detected” indicator.
(Figure 200)



Figure 200 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 201)

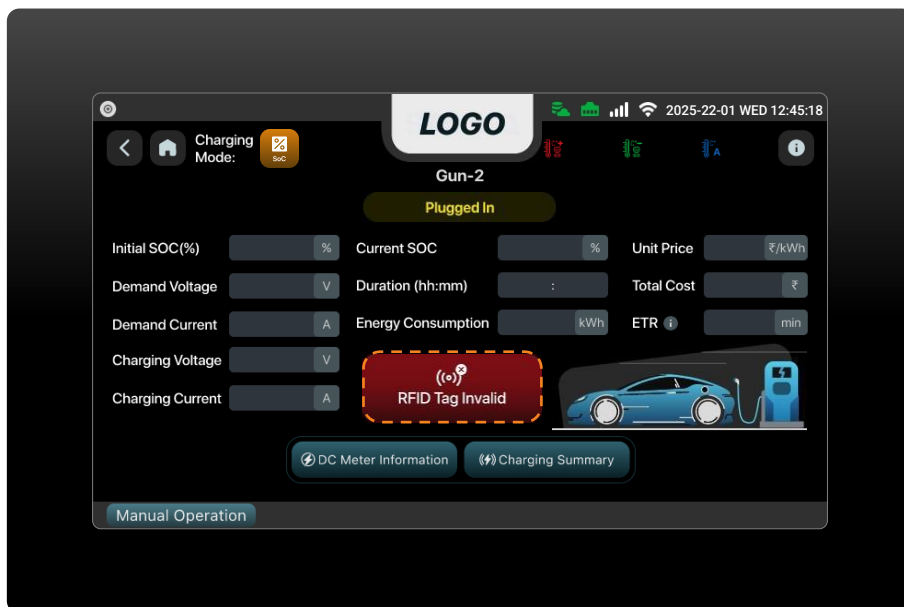


Figure 201 RFID tag invalid indicator

When the RFID Card is successfully validated, the screen displays the “RFID Tag Valid” indicator, indicating that it is ready to charge in Energy mode. (Figure 202)

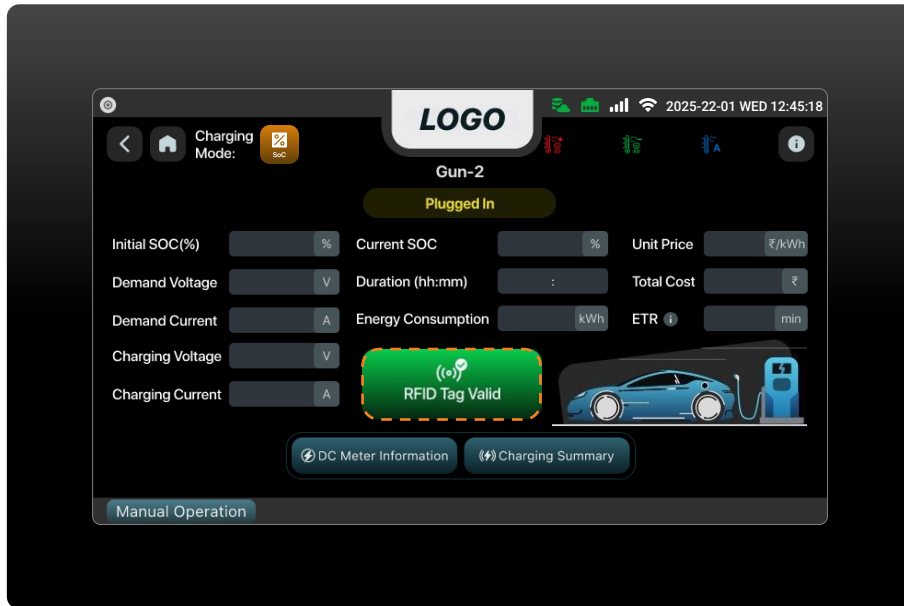


Figure 202 RFID tag valid indicator

Option 3. Mobile Application

Mobile application authentication is an alternative for integrating the personalised mobile application for EV charging. Pressing the "Mobile Application" button will lead the user to the mobile application authentication session. (Figure 203)

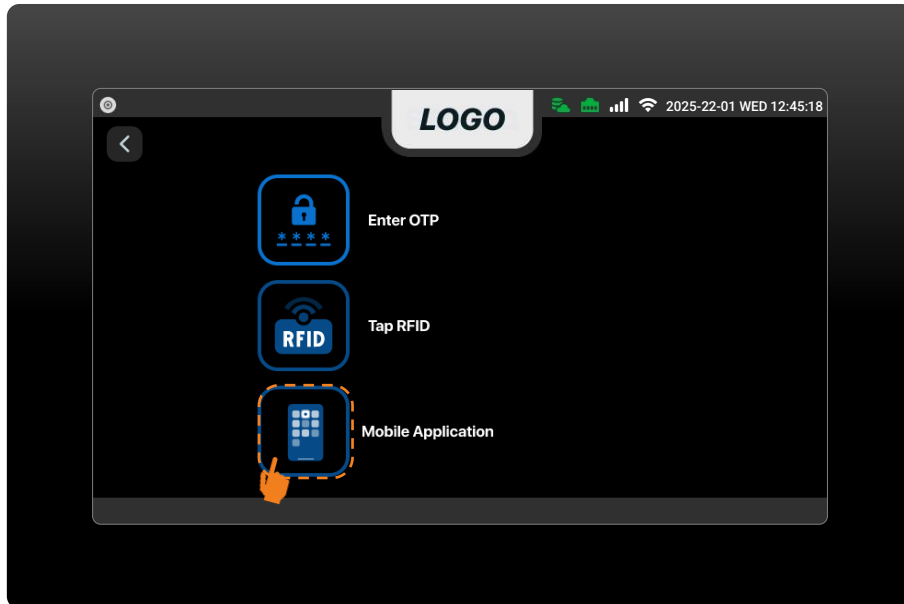


Figure 203 Press the "Mobile Application" button

(ii). Charging Procedure

Step 1. Initial start

When the DC Gun-2 is not connected to the EV, the display shows the status “Unplugged”.

(Figure 204)



Figure 204 Unplugged status

Step 2. Connect Gun-2 to EV

When the DC Gun-2 is connected to the EV for charging, the display shows the status “Plugged-In”. (Figure 205)



Figure 205 Plugged-In status

Step 3. Tap RFID card or tag on a reader.

When an RFID card or tag is tapped on a reader, the screen displays the “RFID tag detected” indicator. (Figure 206)

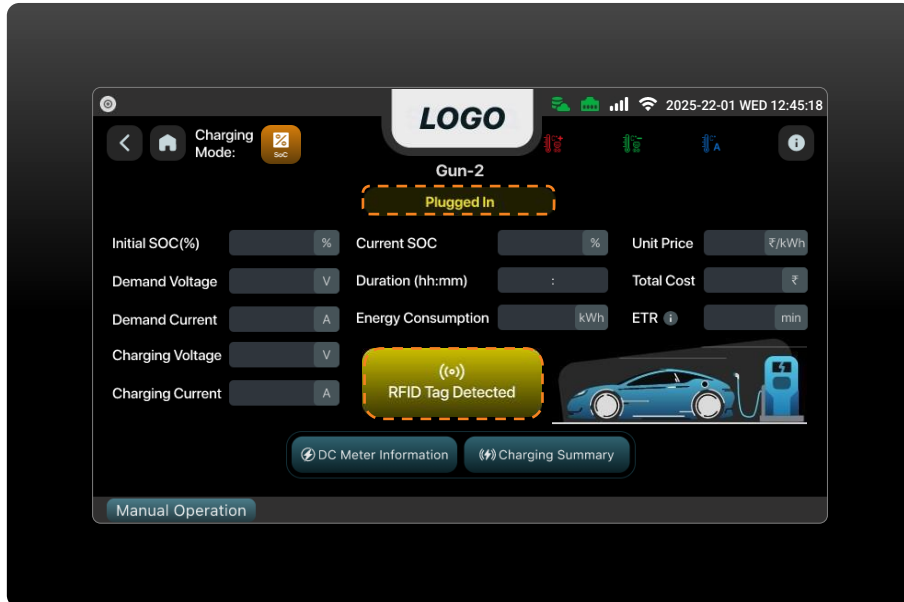


Figure 206 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 207)

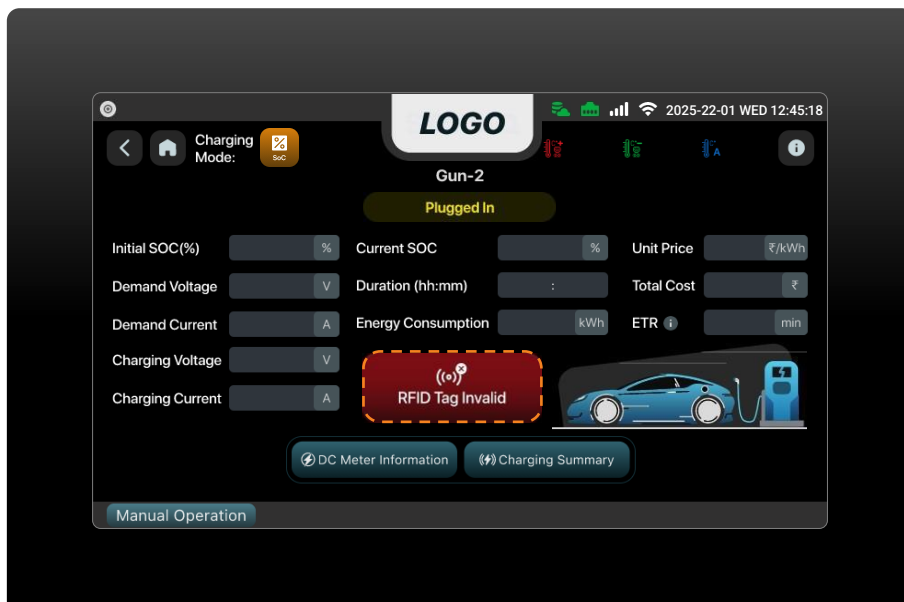


Figure 207 RFID tag invalid indicator

Step 4. Authentication of RFID card or tag.

When you tap a valid RFID card or tag on the reader, the screen will display the “RFID Tag Valid” indicator. (Figure 208)

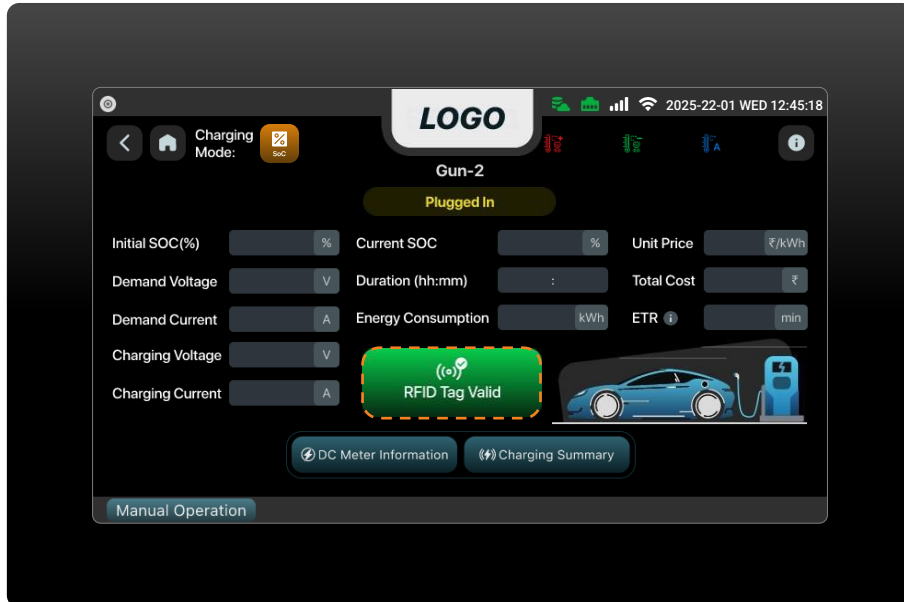


Figure 208 RFID tag valid indicator

Step 5. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”. (Figure 209)



Figure 209 Preparing for charging status

Step 6. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 210)

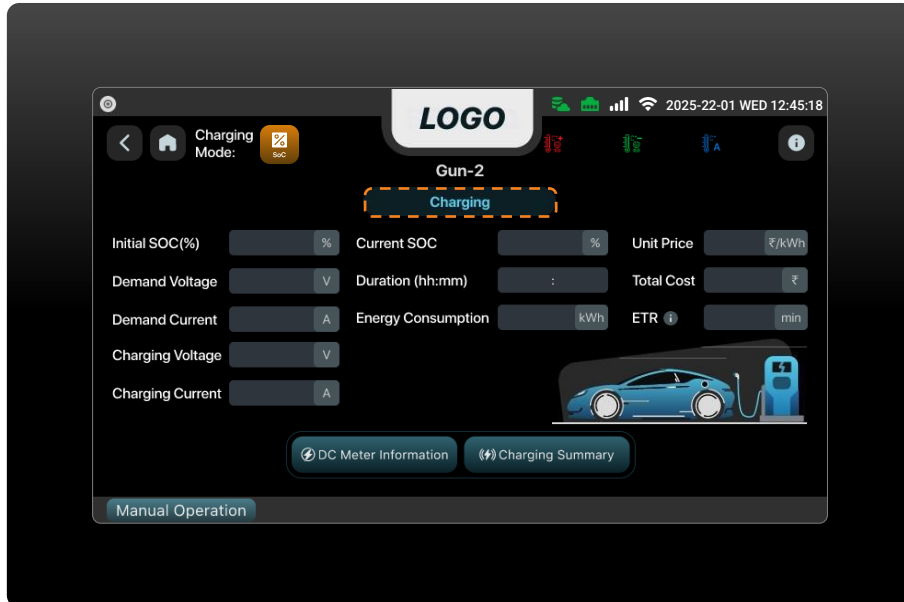


Figure 210 Charging status

Step 7. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”. (Figure 211)

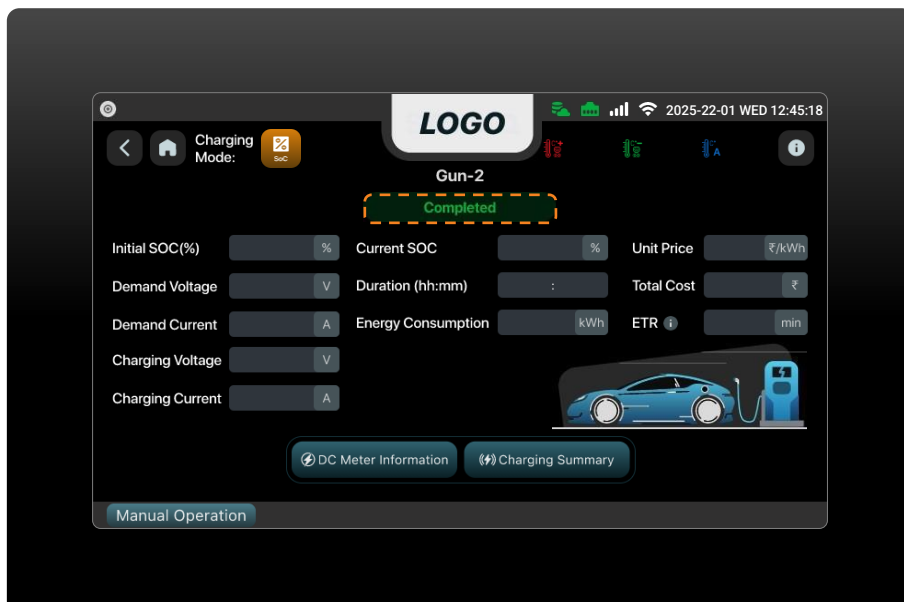


Figure 211 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process. (Figure 212)

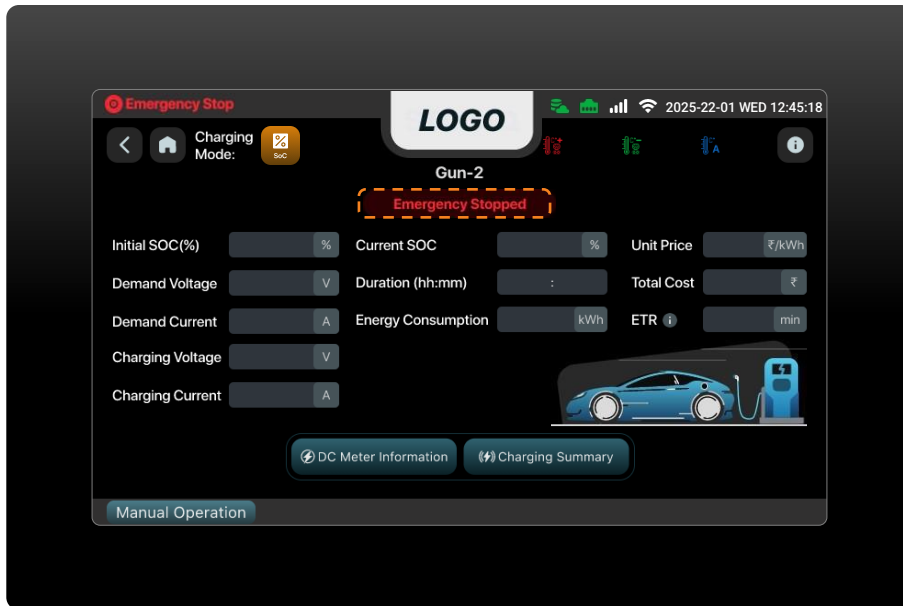


Figure 212 Emergency stopped status

C. Time Charging Mode

To set time charging mode, press the “Time” button. It will open the time details screen.
(Figure 213)

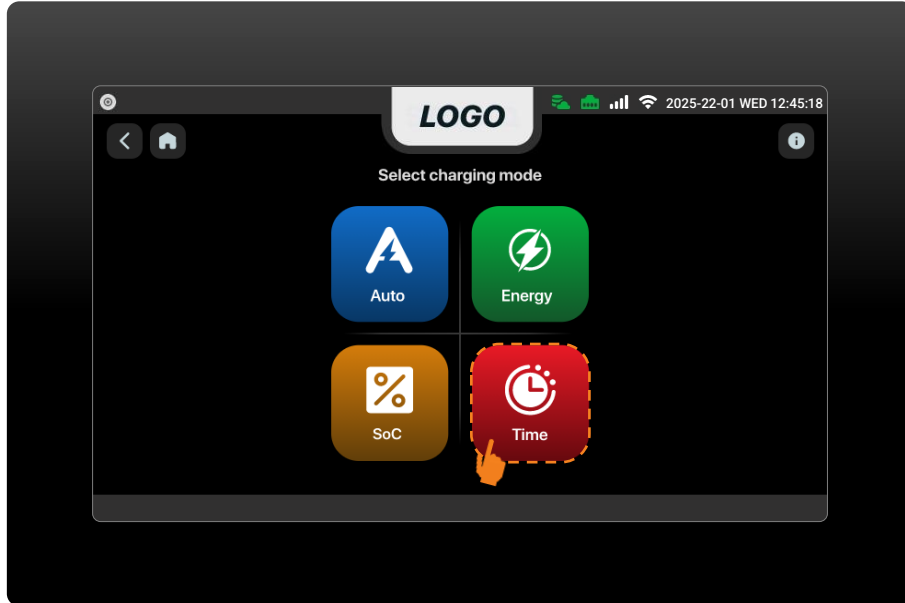


Figure 213 Select charging mode: press the time button

This is the time details screen. Users can use the input box to enter their desired time value in minutes ranging from 1 to 999. (Figure 214)

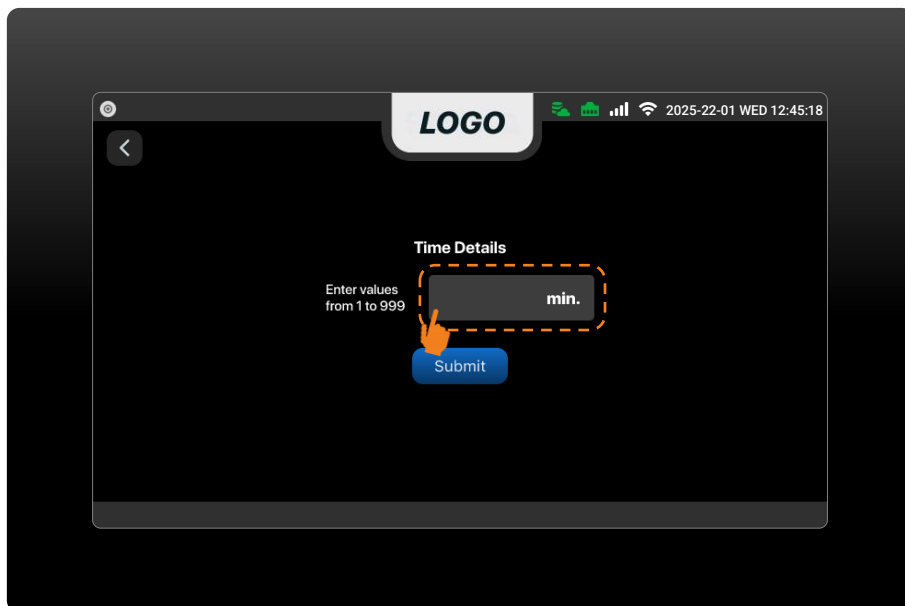


Figure 214 Enter the time details

Enter the desired time value using the on-screen numeric keyboard and then press the "OK" button. (Figure 215)

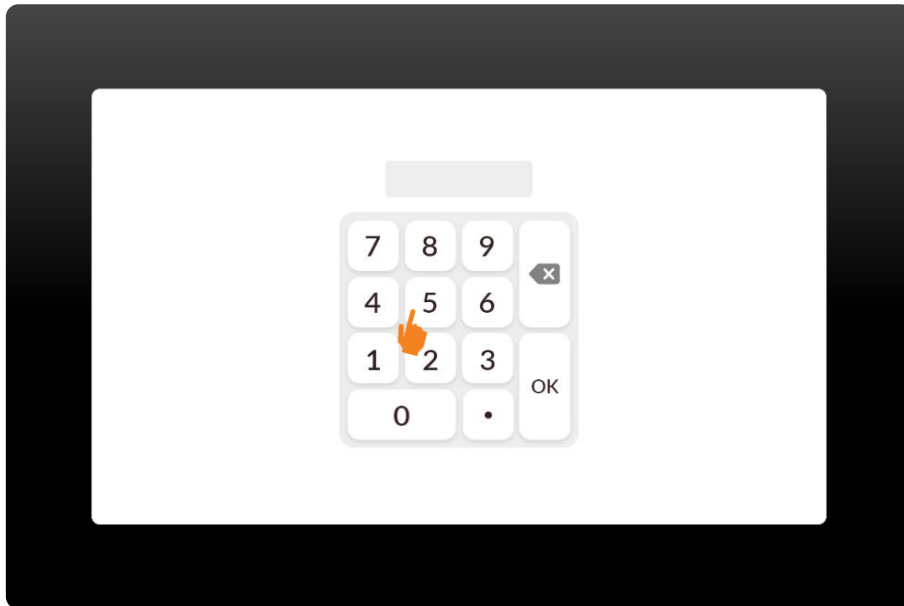


Figure 215 Enter the desired Time value

To set the time values, press the "submit" button. It will proceed to the authenticating screen. (Figure 216)

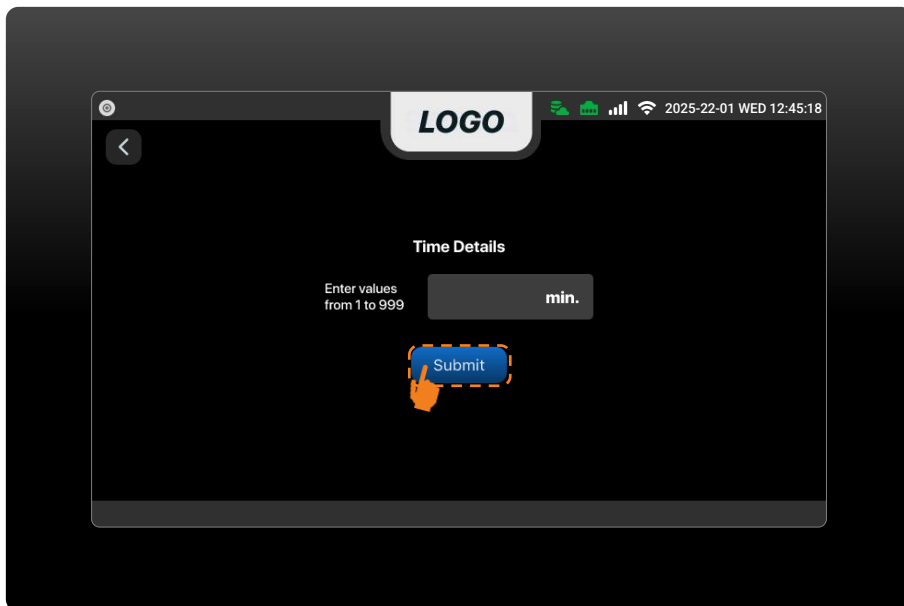


Figure 216 Press the submit button

This is the authentication screen, and there are three options for validating the authentication.
(Figure 217)

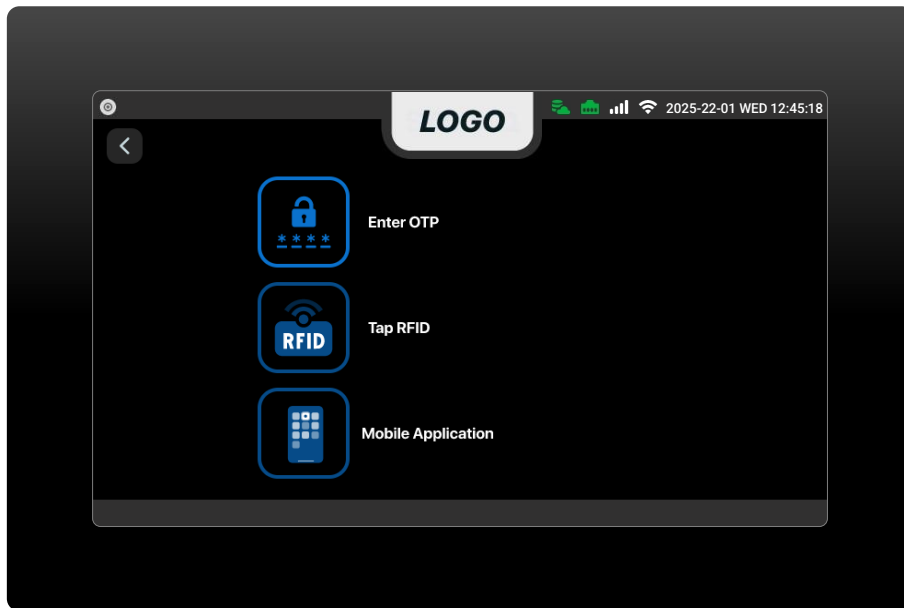


Figure 217 Authentication screen

(i). Mode of Authentication

The user has three authentication choices, which are detailed in this section. Use one of these based on the user's requirements.

Option 1. PIN / OTP Authentication

Press the "Enter OTP" button to proceed to the PIN / OTP authentication session screen.

(Figure 218)

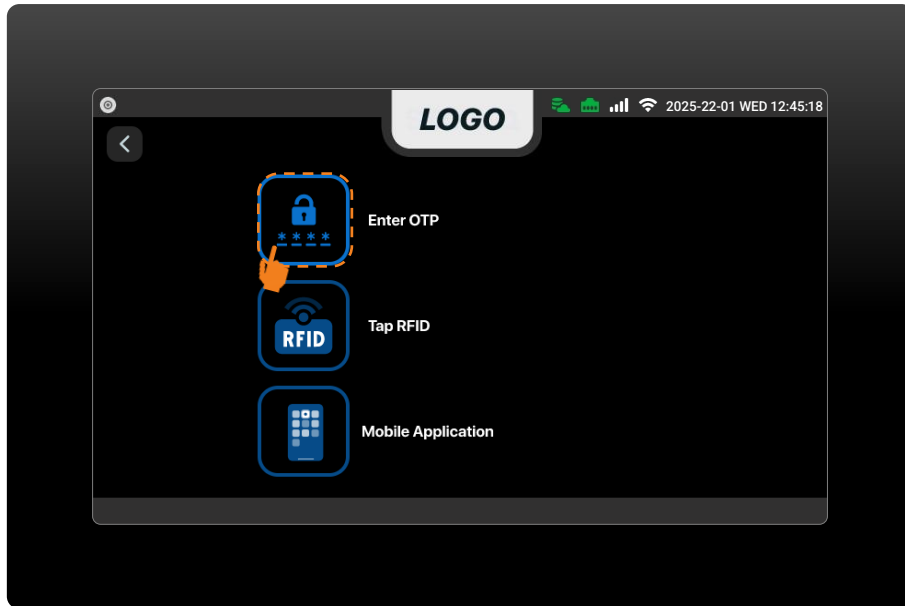


Figure 218 Press the "Enter OTP" button

This is a PIN / OTP session authentication screen, where the user can enter PIN or OTP using the On-screen keyboard, and then press the "Enter" button. *(Figure 219)*

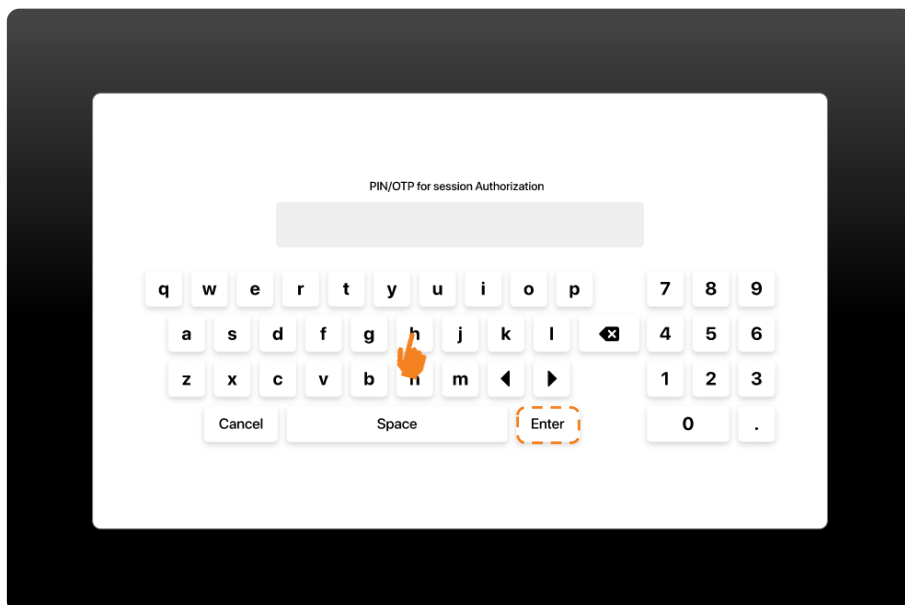


Figure 219 Use the on-screen keyboard to enter a PIN or OTP

It will take some time to validate the PIN or OTP you entered. Please wait throughout the verification procedure; do not end the session. (Figure 220)

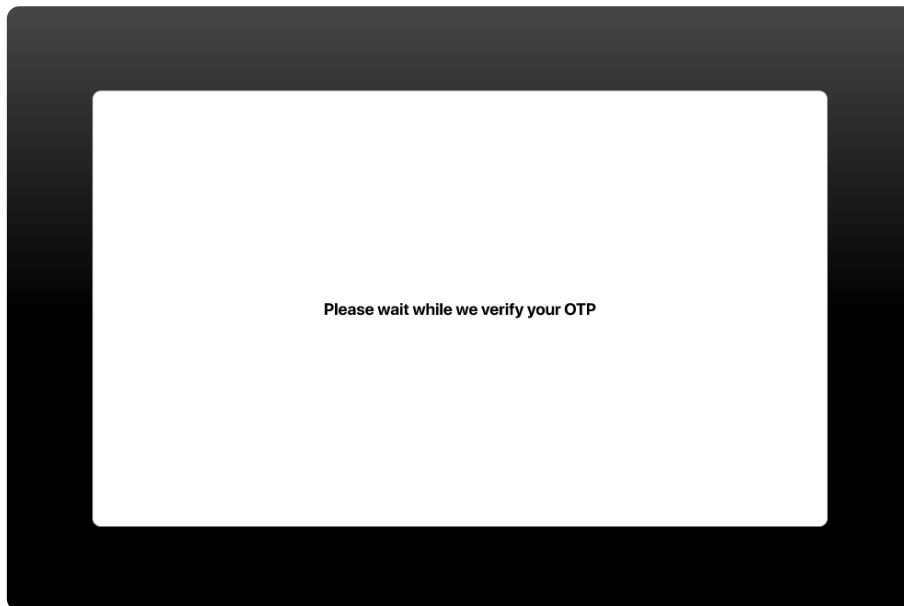


Figure 220 PIN or OTP verification process

The screen displays the "Token ID Submitted" indicator, which indicates that validating the token ID for the PIN or OTP will take a few seconds. (Figure 221)

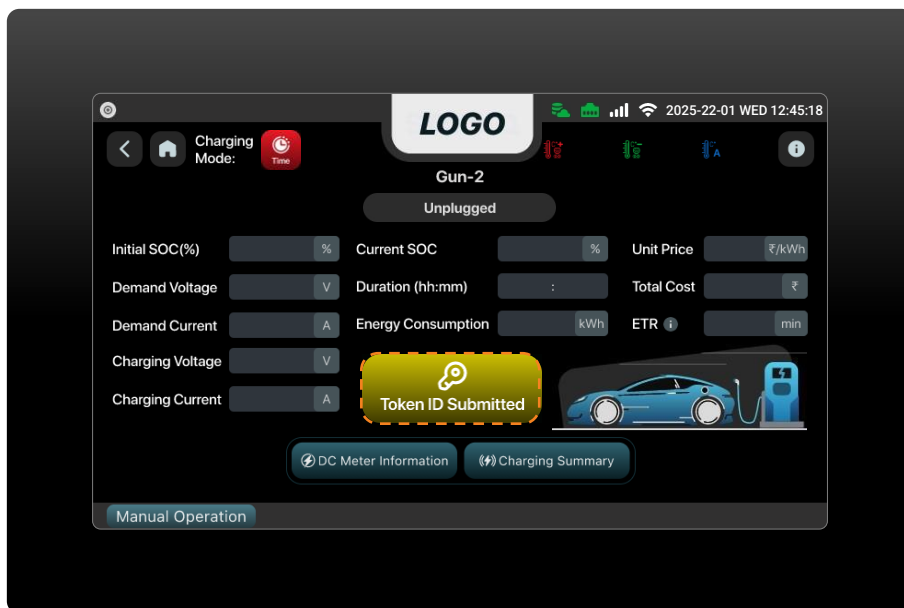


Figure 221 Token ID submitted indicator

Use of an invalid PIN or OTP

The screen displays the "Token ID Invalid" indicator, which indicates that the token ID is invalidated. Please re-enter the pin or OTP. (Figure 222)



Figure 222 Token ID invalid indicator

When the token ID is successfully validated, the screen displays the "Token ID Valid" indicator, indicating that it is ready to charge in time mode. (Figure 223)

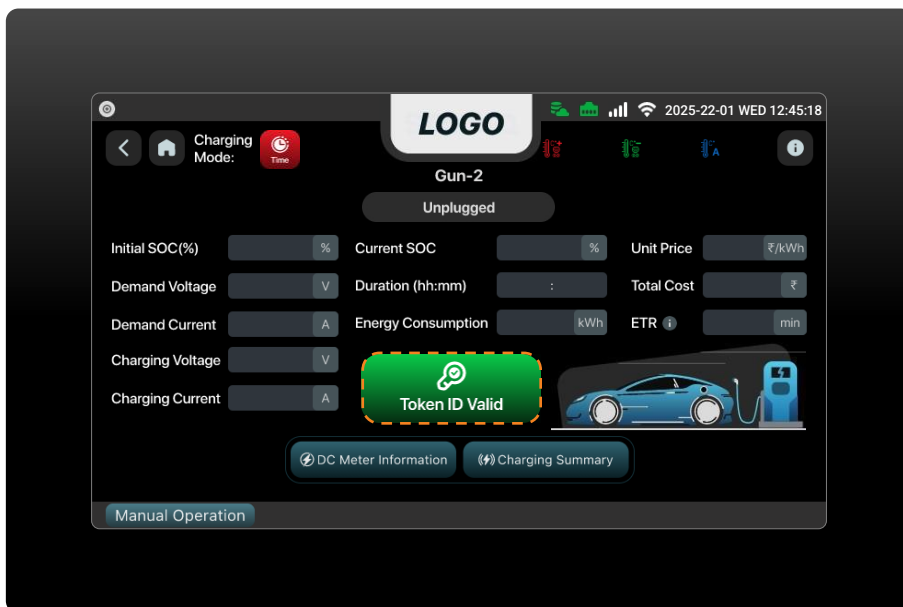


Figure 223 Token ID valid indicator

Option 2. RFID Authentication

Press the "Tap RFID" button to proceed to the RFID authentication session screen.

(Figure 224)

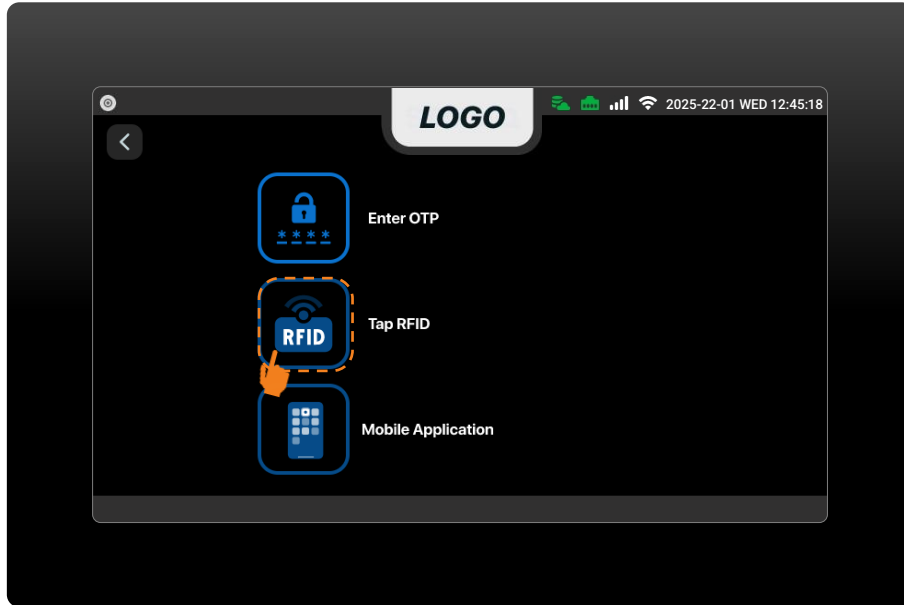


Figure 224 Press the "Tap RFID" button

This is the information pop-up for tapping RFID on the RFID reader and pressing the "OK" button to authenticate RFID identification. (Figure 225)

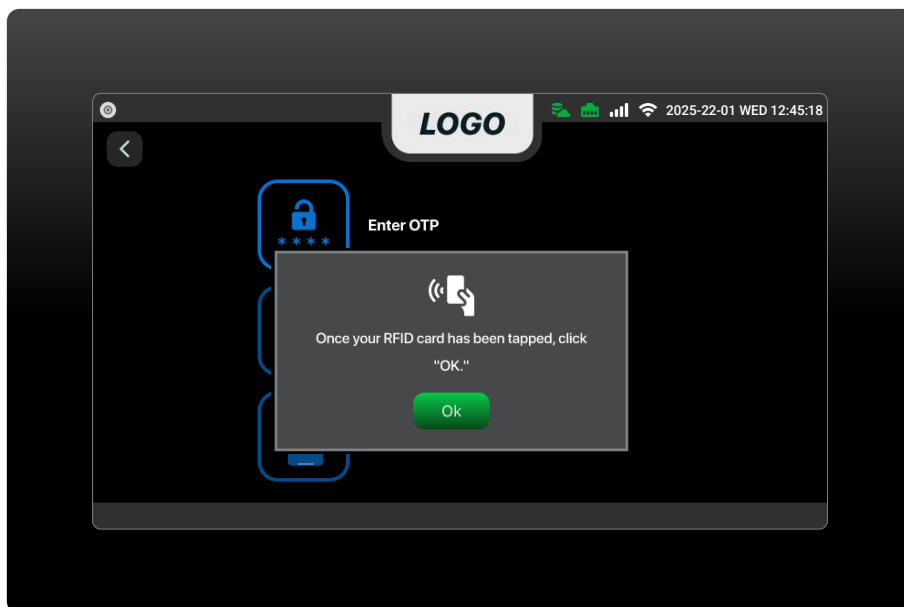


Figure 225 Tap the RFID card on the RFID reader

When an RFID card is detected, the screen displays the “RFID tag detected” indicator.
(Figure 226)

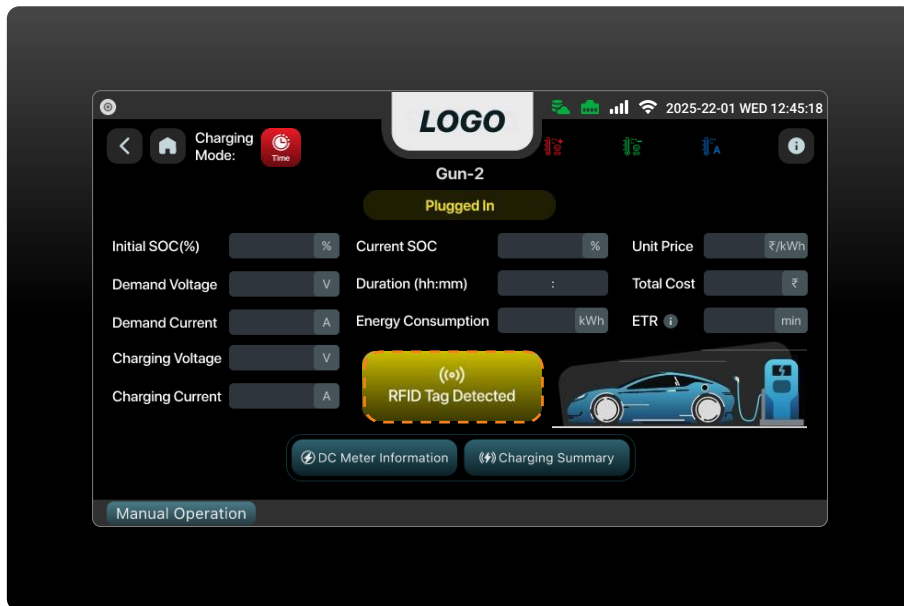


Figure 226 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 227)

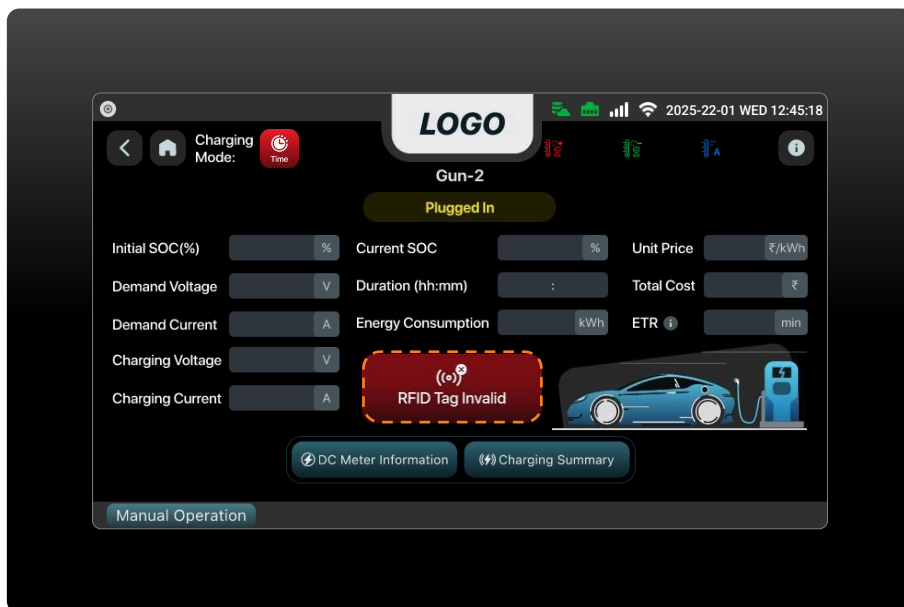


Figure 227 RFID tag invalid indicator

When the RFID Card is successfully validated, the screen displays the “RFID Tag Valid” indicator, indicating that it is ready to charge in time mode. (Figure 228)

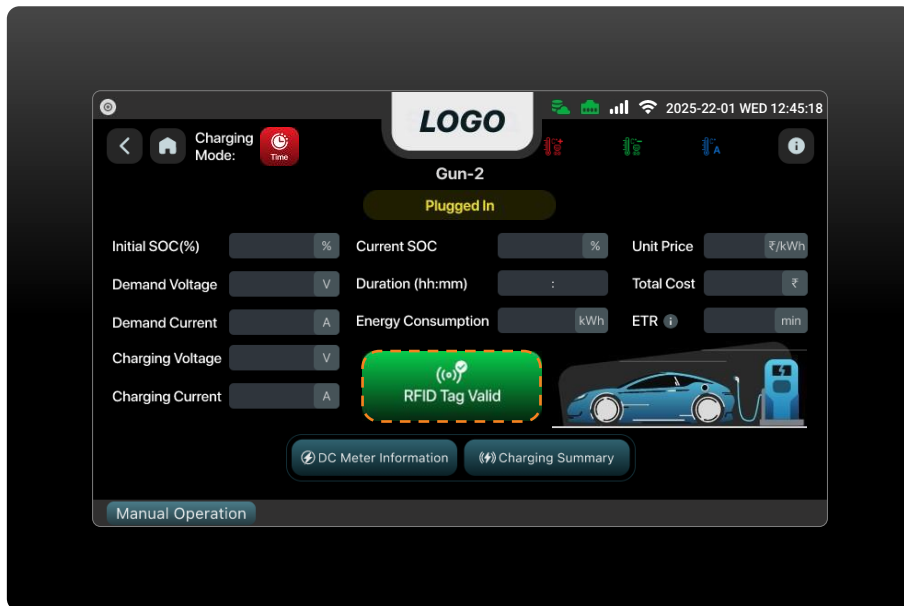


Figure 228 RFID tag valid indicator

Option 3. Mobile Application

Mobile application authentication is an alternative for integrating the personalised mobile application for EV charging. Pressing the "Mobile Application" button will lead the user to the mobile application authentication session. (Figure 229)

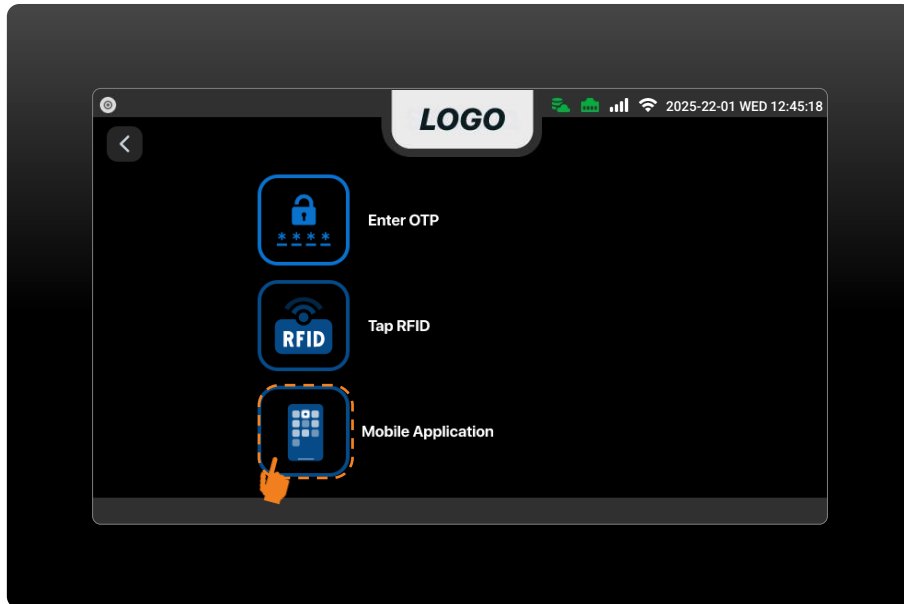


Figure 229 Press the "Mobile Application" button

(ii). Charging Procedure

Step 1. Initial start

When the DC Gun-2 is not connected to the EV, the display shows the status “Unplugged”.

(Figure 230)



Figure 230 Unplugged status

Step 2. Connect Gun-2 to EV

When the DC Gun-2 is connected to the EV for charging, the display shows the status “Plugged-in”.

(Figure 231)



Figure 231 Plugged-In status

Step 3. Tap RFID card or tag on a reader.

When an RFID card or tag is tapped on a reader, the screen displays the “RFID tag detected” indicator. (Figure 232)

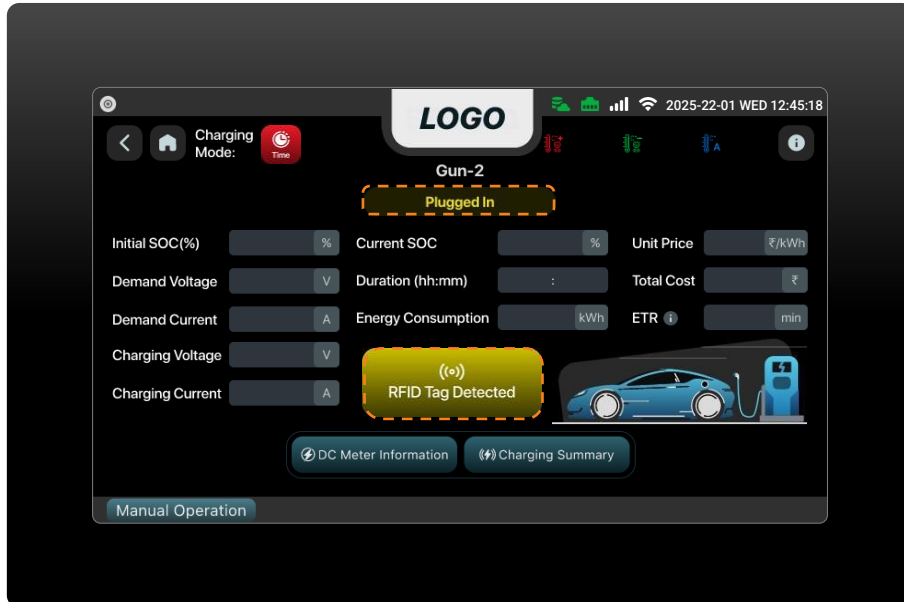


Figure 232 RFID tag detection indicator

Use of an unauthorised RFID card or tag.

When an unauthorised RFID card or tag is tapped on a reader, the screen displays the “RFID Tag Invalid” indicator. Kindly use a valid RFID card or tag. (Figure 233)

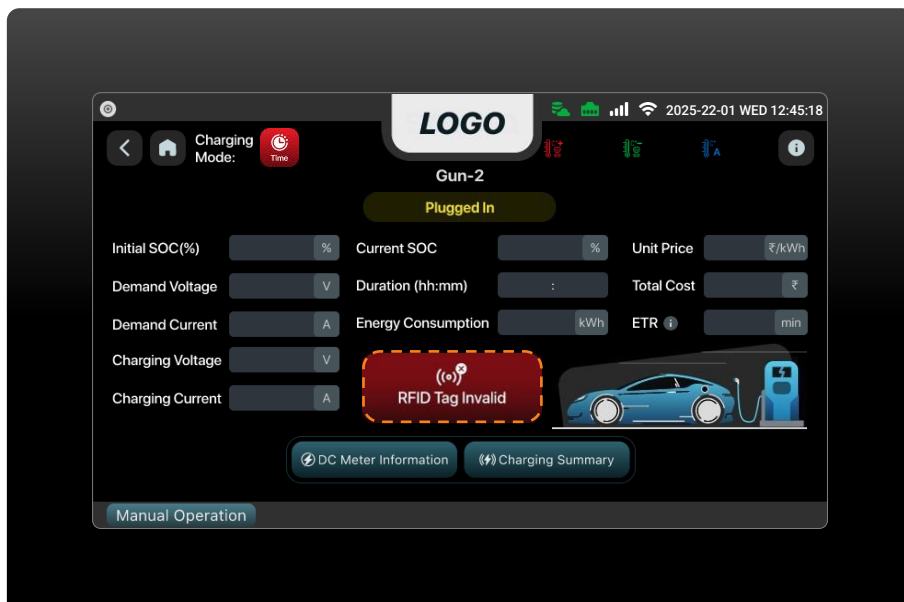


Figure 233 RFID tag invalid indicator

Step 4. Authentication of RFID card or tag.

When you tap a valid RFID card or tag on the reader, the screen will display the “RFID Tag Valid” indicator. (Figure 234)

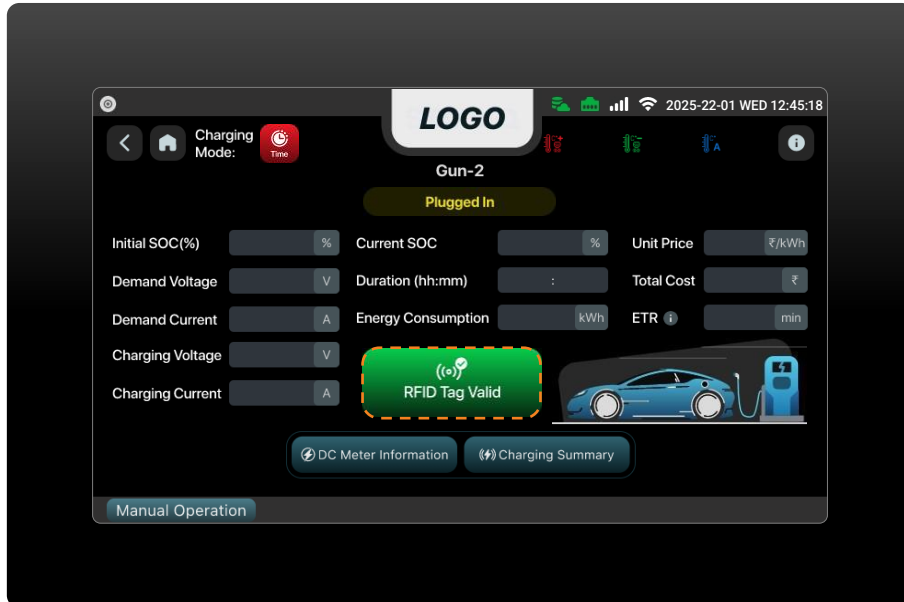


Figure 234 RFID tag valid indicator

Step 5. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”. (Figure 235)



Figure 235 Preparing for charging status

Step 6. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 236)

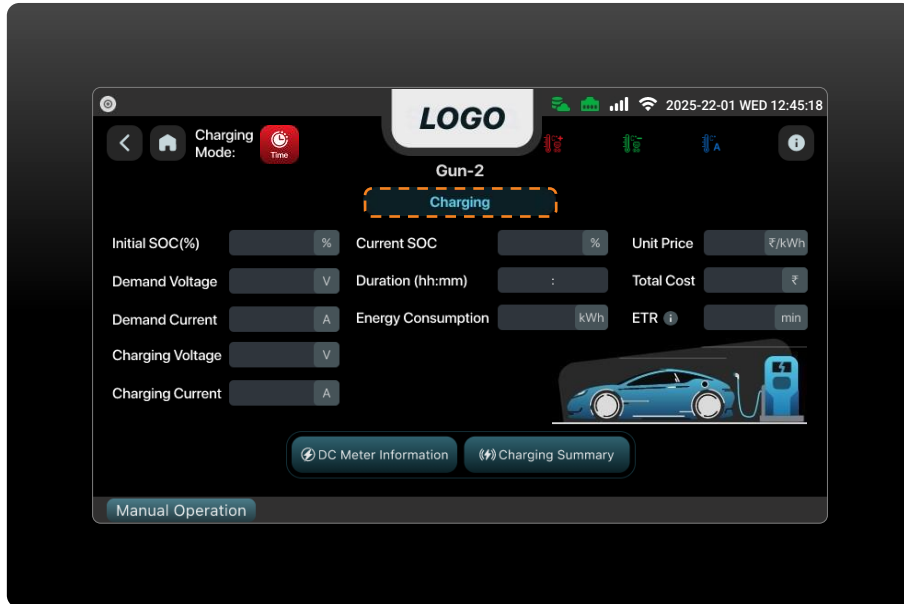


Figure 236 Charging status

Step 7. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”. (Figure 237)



Figure 237 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process.
(Figure 298)



Figure 238 Emergency stopped status

3.3.4 Charging Information

The user can access the DC Gun-2 charging information from the DC Gun-2 charging parameter screen. Here, four types of information are available. (Figure 239)

- A. DC Meter Information
- B. Charging Summary

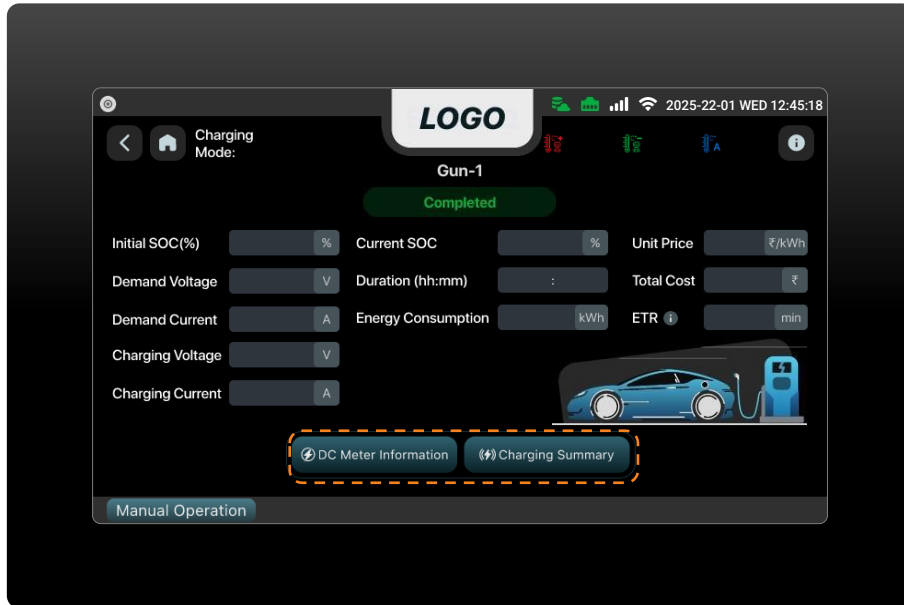


Figure 239 DC Gun-2 charging parameter screen: Information section

A. DC Meter Information

The user can get DC output information from the DC Gun-2 charging parameter screen by pressing the “DC meter information” button. (Figure 240)



Figure 240 DC Gun-2 charging parameter screen: press the DC meter information button

This is DC output information where the user can get the information about all charging parameters related to the “DC meter”. (Figure 241 & Table 38)

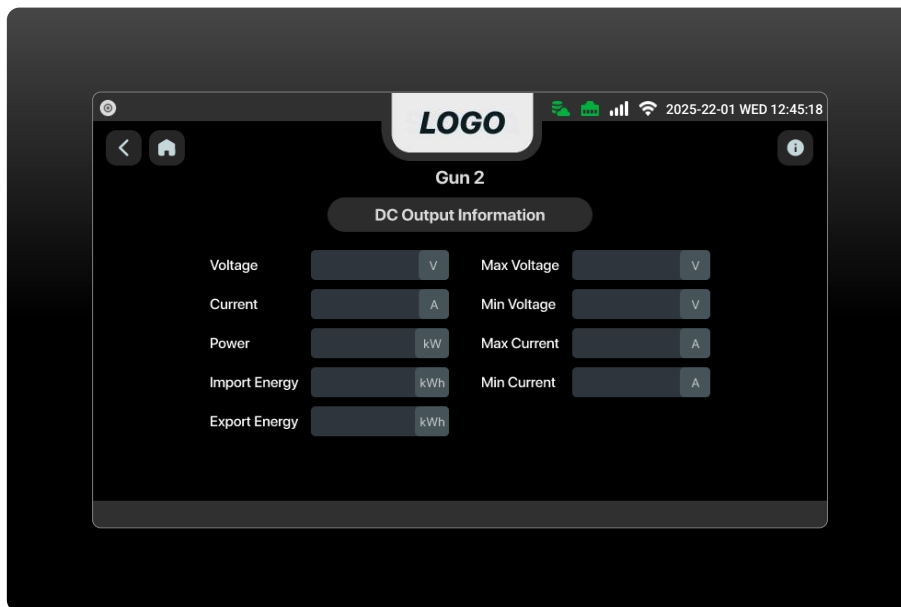





Figure 241 DC output information

Table 38 Navigation button: DC output information.

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC Gun-2 charging parameter screen.
3.		Info Button	To get information about the DC meter.

Information Pop-up Message

Press the information button, and it will show a pop-up message about DC output power appears. (Figures 242 & 243)

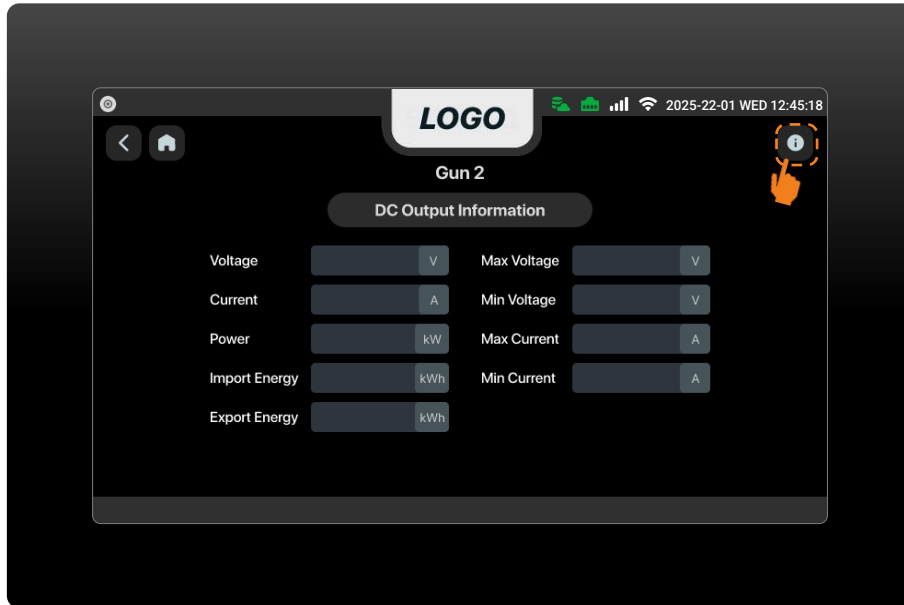


Figure 242 DC output information screen: press the information button

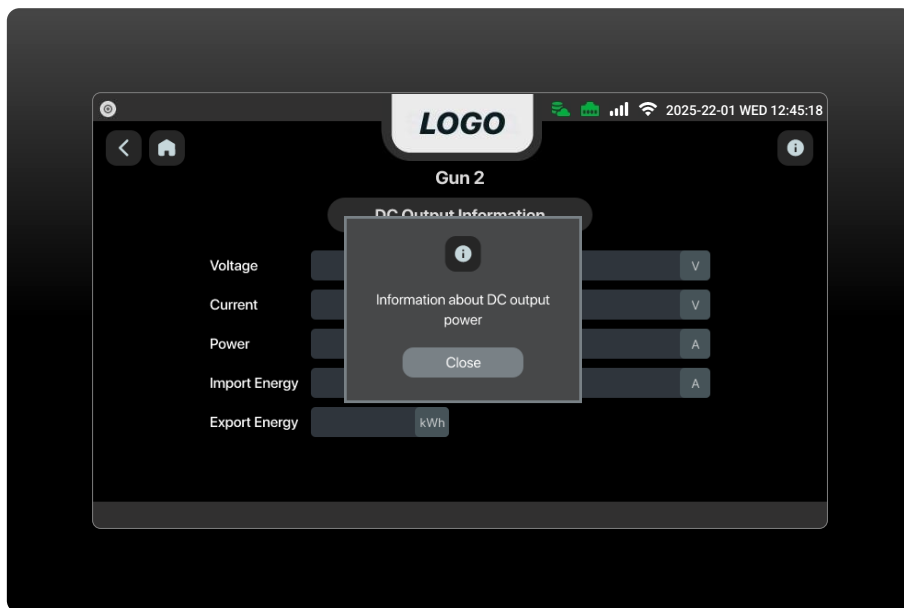
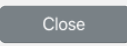


Figure 243 DC output power pop-up information message

Table 39 Navigation button: DC output power information

No.	Button	Name	Function
1.		Close Button	To close DC output power information pop-up message.

B. Charging Summary

The user can get charging summary from the DC Gun-2 charging parameter screen by pressing the “Charging Summary” button. (Figure 244)

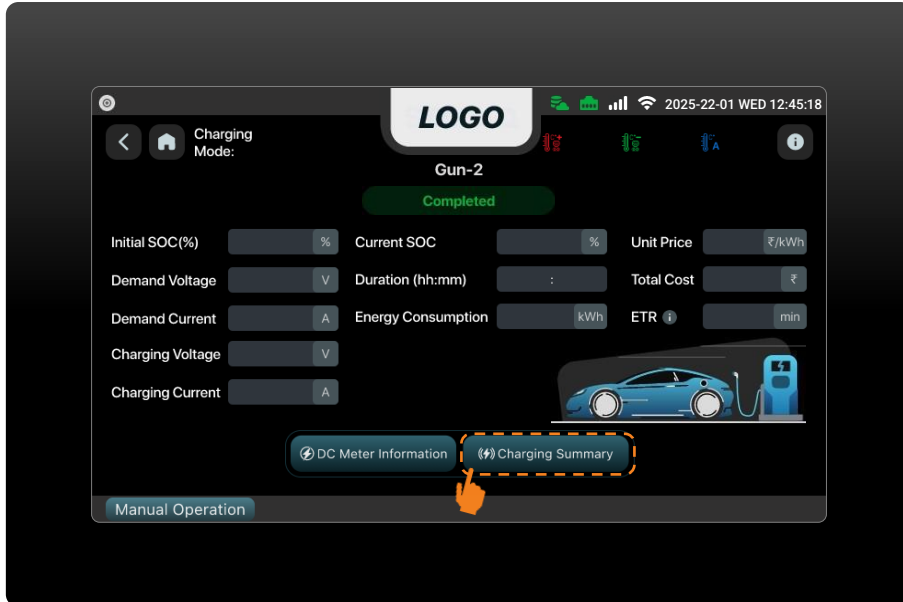





Figure 244 DC Gun-2 charging parameter screen: press the charging summary button

This is the charging summary screen, where the user can get information related to charging in summary format. (Figure 245)



Figure 245 DC Gun-2 charging summary screen

Table 40 Navigation button: DC Gun-2 charging summary

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the DC Gun-1 charging parameter screen.
3.		Info Button	To get information about the charging summary.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the most recent charging cycle. (Figure 246 & 247)



Figure 246 Charging summary screen: press the information button

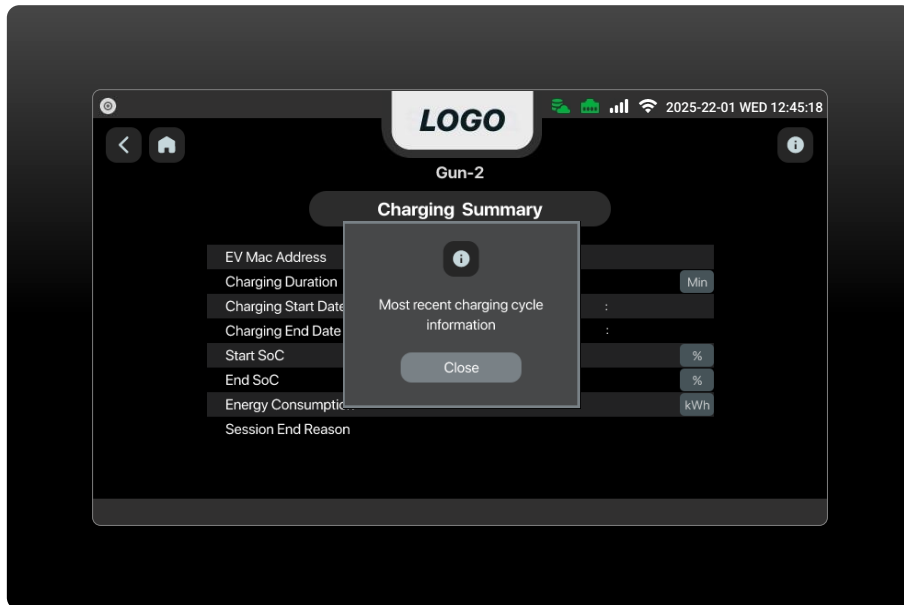
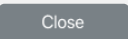


Figure 247 Charging summary pop-up information message

Table 41 Navigation button: charging summary

No.	Button	Name	Function
1.		Close Button	To close charging summary information pop-up message.

4 AC Charger Parameter and Operation

The charging type can be selected as either DC or AC. To operate the AC charger, press the AC charger button. It will open the home screen of the DC charger. (Figure 248)

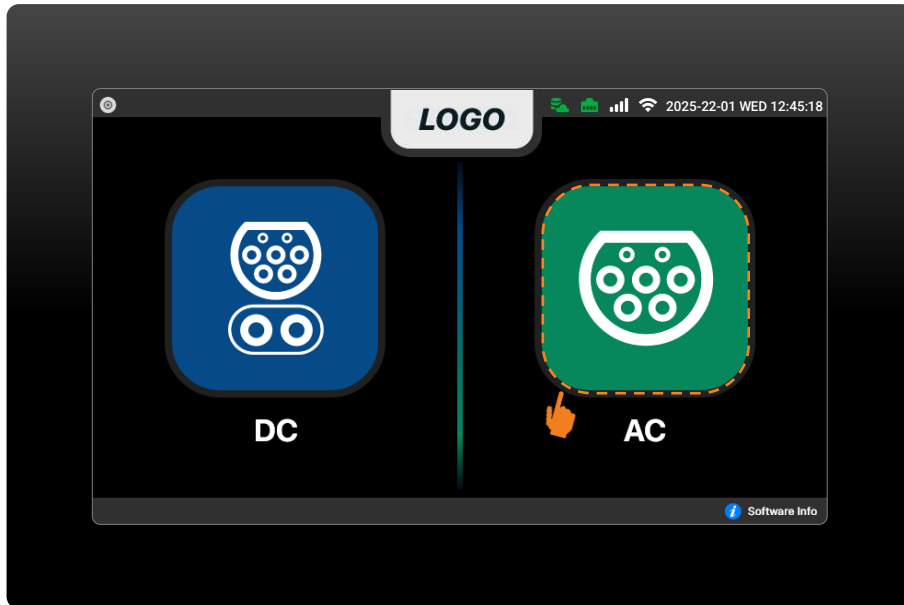


Figure 248 To operate the AC charger: press the AC charger button

This is an AC Gun-3 charging parameter screen. Here, the user can get charging-related parameters. (Figure 249)

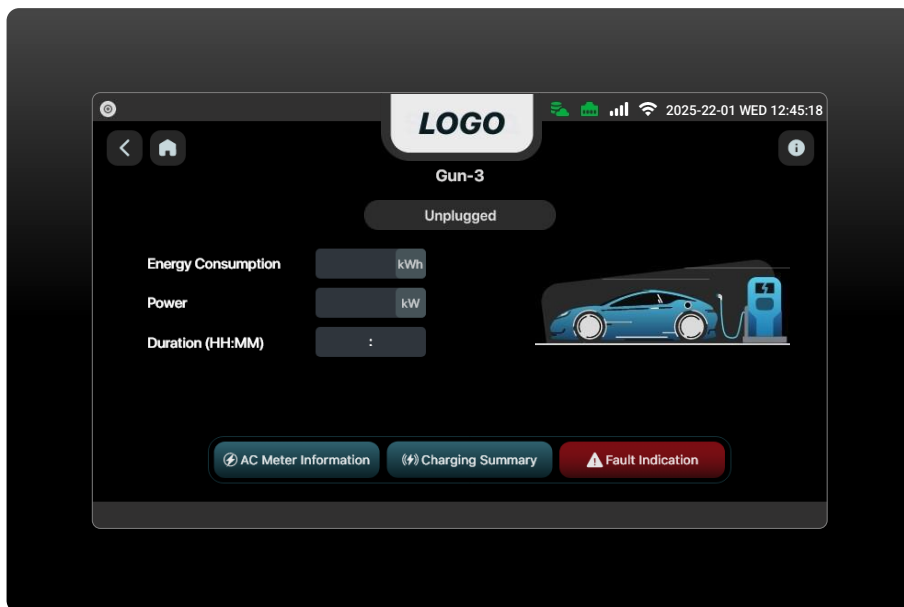









Figure 249 Gun-3 parameter screen

Table 42 Navigation button: Gun-3 parameter.

No.	Button	Name	Function
1.		AC Meter Information	To get the AC meter information.
2.		Charging Summary	To get the charging summary.
3.		Fault Indication	To get the fault indication information.
4.		AC Gun-3 status	To know more about the present condition of AC Gun-3 functioning or fault indication.
5.		Back Button	To move previous screen.
6.		Home Button	To move the DC or AC charger type selection
7.		Info Button	To know about the firmware version information.

4.1 AC Gun-3 Charging Parameter

4.1.1 Operation Status

The charging status indicates the present condition of the AC Gun-3 operation. Furthermore, the user can know more about the charging status in the table. (Table 43)

Table 43: Operation status name and function.

No.	Name	Function
1.	Unplugged	The Gun is not connected.
2.	Plugged-In	The Gun is connected to EV.
3.	Charging	EV charge in progress.
4.	Charging Complete	EV charge completed.
5.	Emergency Stop	Emergency stop triggered by user.

Step 1. Initial start.

When the AC Gun-1 is not connected to the EV, the display shows the status “Unplugged”. (Figure 250)

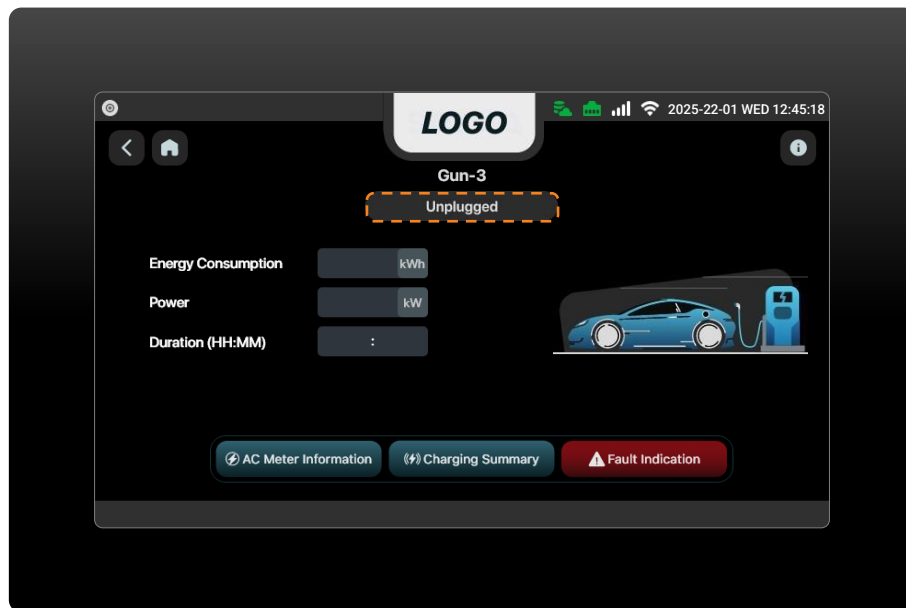


Figure 250 Unplugged status

Step 2. Connect AC Gun-3 to EV.

When the AC Gun-3 is connected to the EV for charging, the display shows the status “Plugged-in”. (Figure 251)

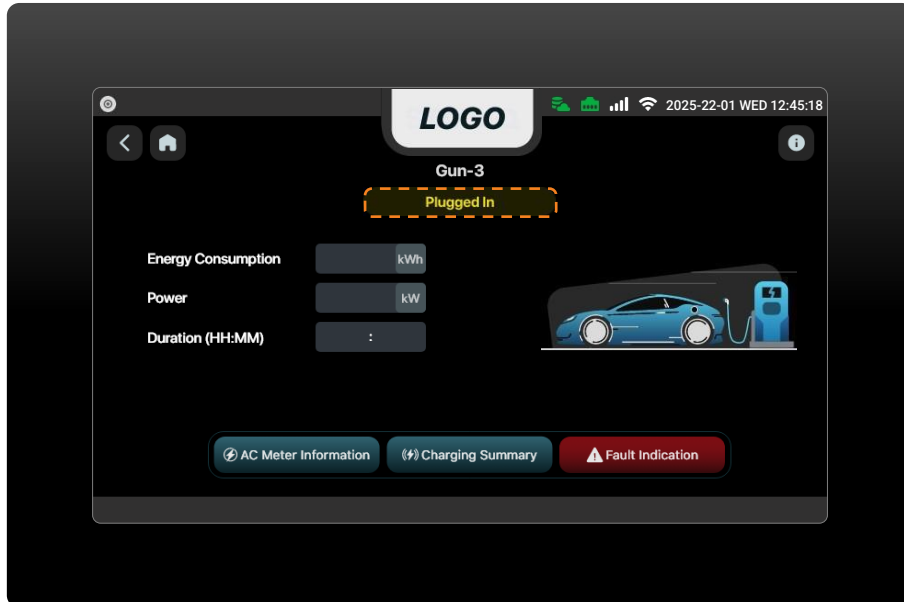


Figure 251 Plugged-in status

Step 3. The initial charging preparation time.

When authentication is completed, the display shows the status “Preparing for Charging”. (Figure 252)

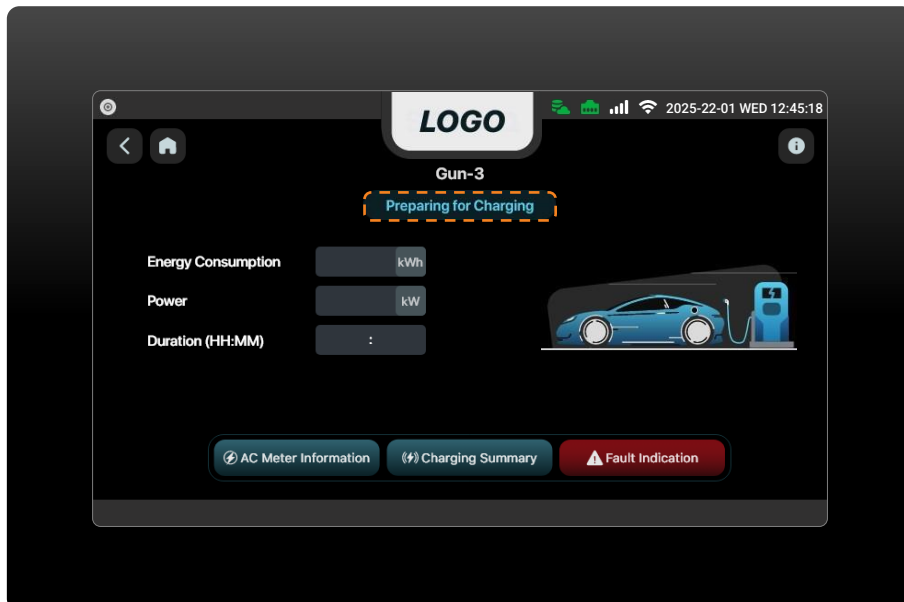


Figure 252 Preparing for charging status

Step 4. The charging process starts.

After preparing for the charging process, the charging process will start. The display shows the status “charging”. (Figure 253)

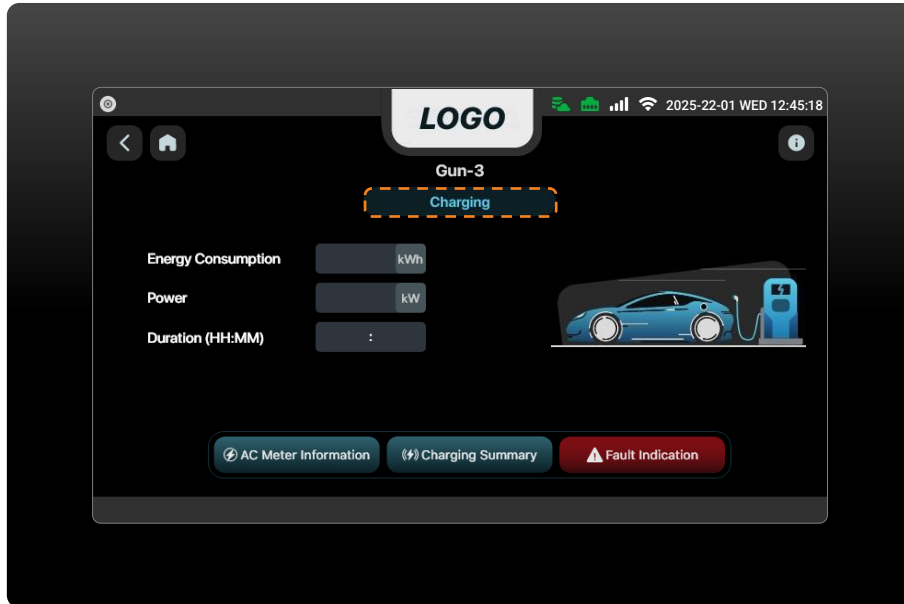


Figure 253 Charging status

Step 5. Finish the charging process.

After the charging process is completed, the display shows the status “Completed”. (Figure 254)

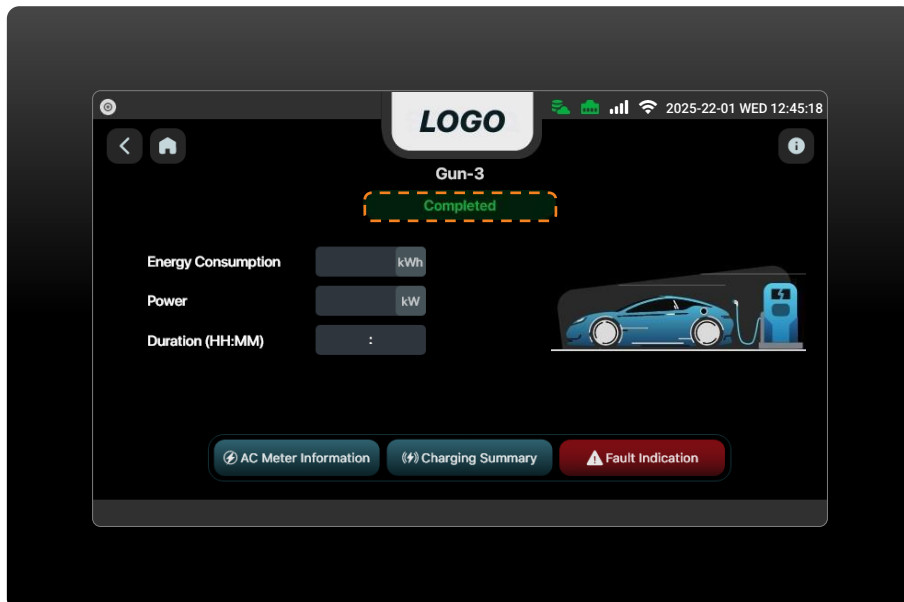


Figure 254 Completed status

Use the physical emergency button.

When the user pushes the physical emergency button during the charging process.
(Figure 255)

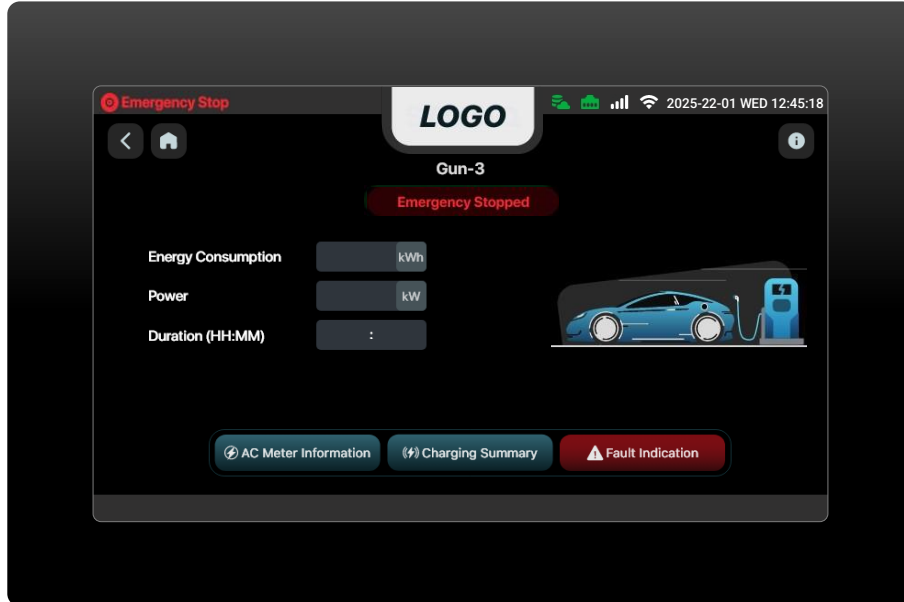


Figure 255 Emergency stopped status

4.1.2 Charging Information

The user can access the AC Gun-3 charging information from the AC Gun-3 charging parameter screen. Here, four types of information are available. (Figure 256)

- A. AC Meter Information
- B. Charging Summary
- C. Fault Indication

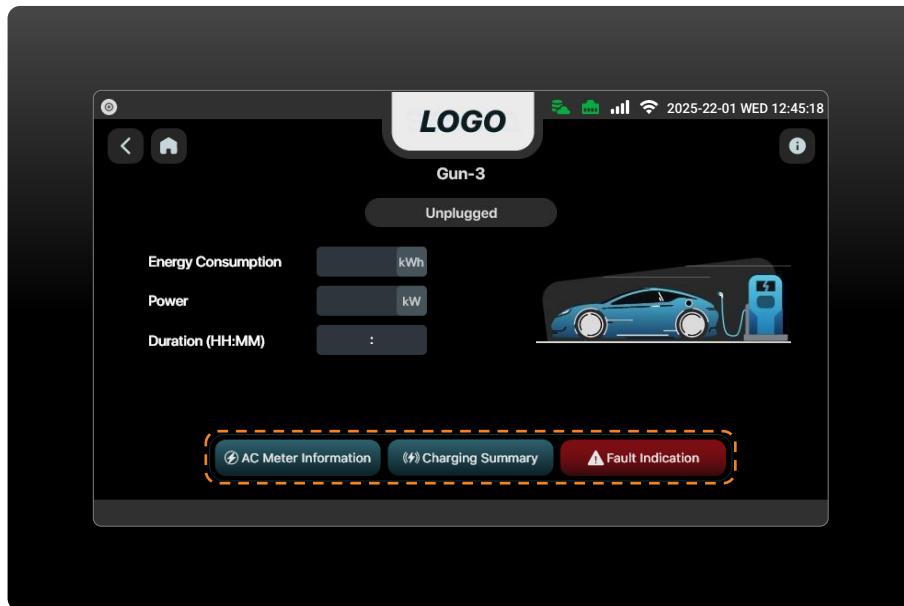


Figure 256 AC Gun-3 charging parameter screen: information section

A. AC Meter Information

The user can get AC meter information from the AC Gun-1 charging parameter screen by pressing the “AC meter information” button. (Figure 257)

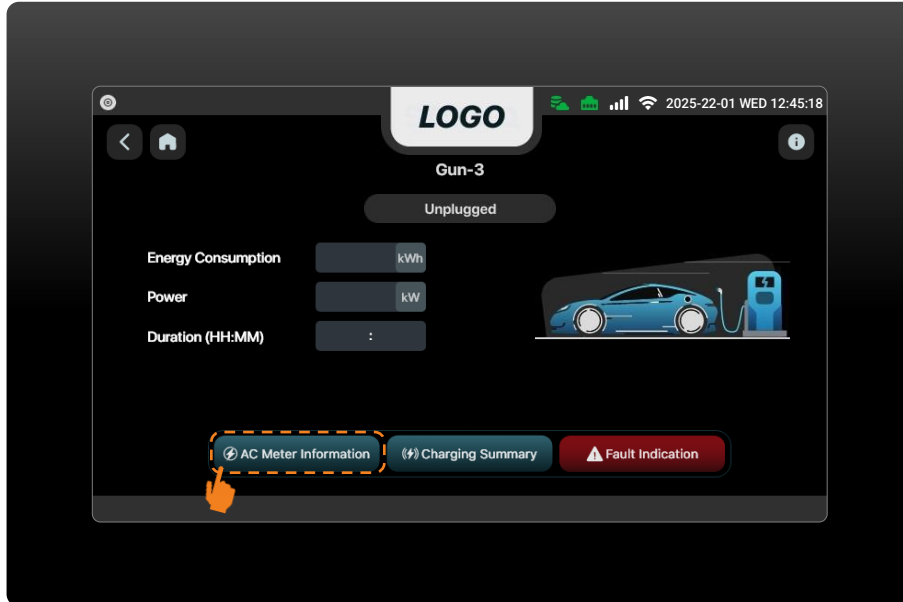





Figure 257 AC Gun-3 charging parameter screen: press the AC meter information button

This is AC meter information where the user can get the information about all charging parameters related to “AC meter”. (Figure 258)



Figure 258 AC meter information screen

Table 44 Navigation button: AC meter information.

No.	Button	Name	Function
1.		Back Button	To move previous screen.
2.		Home Button	To move DC Gun-1 charging parameter screen.
3.		Info Button	To get information about the AC meter.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the three-phase input power appears. (Figures 259 & 260)

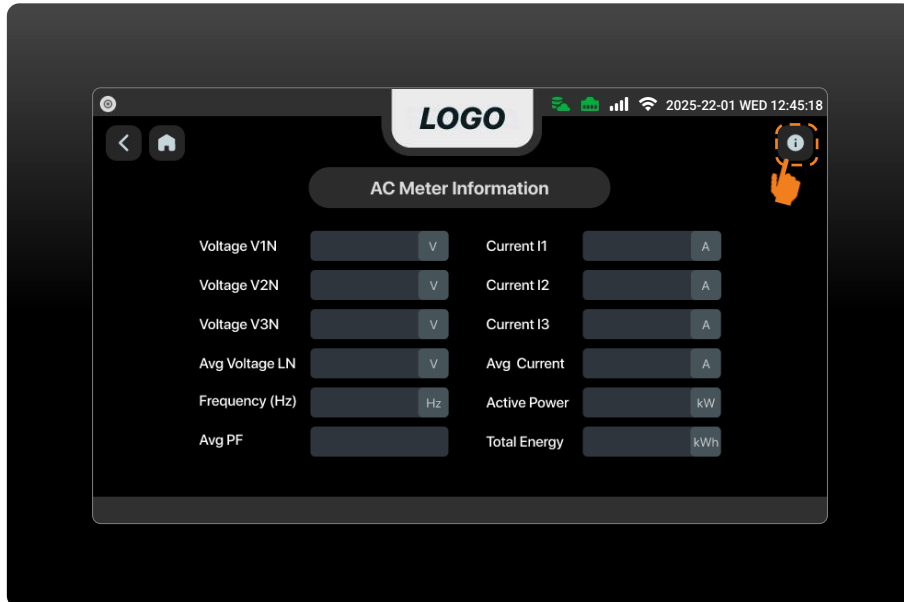


Figure 259 AC meter information screen: press the information button

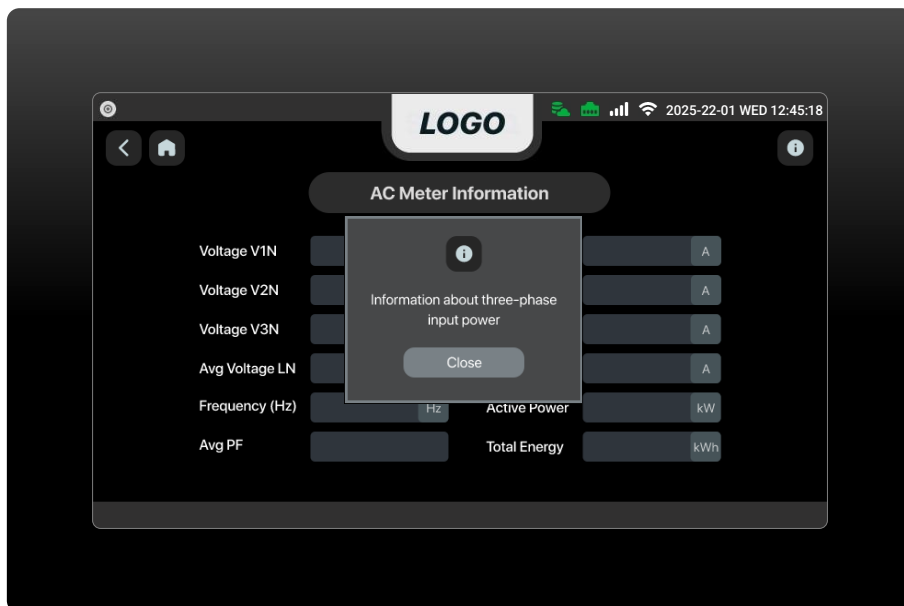
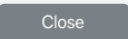


Figure 260 Three-phase input power pop-up information message

Table 45 Navigation button: three-phase input power information

No.	Button	Name	Function
1.		Close Button	To close the three-phase input power information pop-up message.

B. Charging Summary

The user can get charging summary from the AC Gun-3 charging parameter screen by pressing the “Charging Summary” button. (Figure 261)

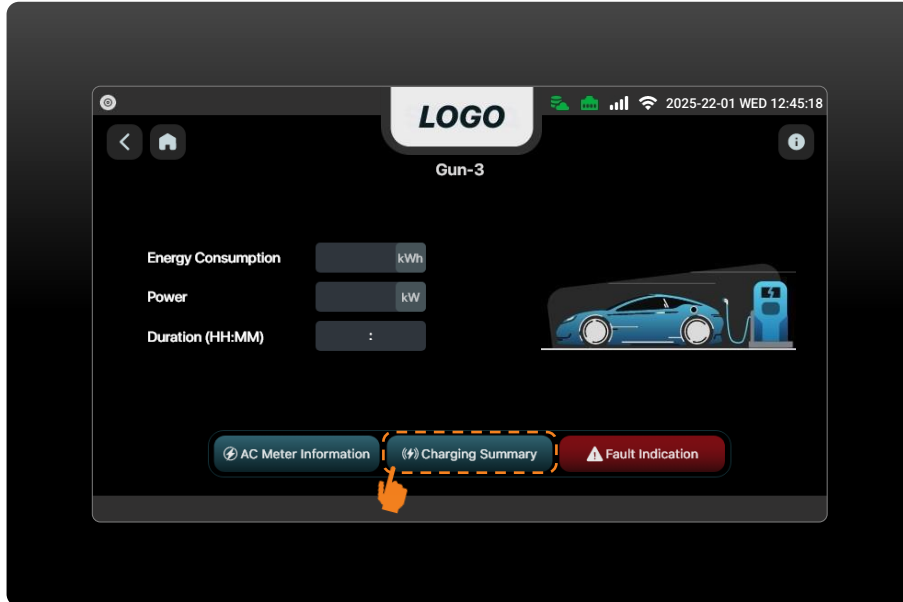


Figure 261 AC Gun-3 charging parameter screen: press the charging summary button

This is the charging summary screen, where the user can get information related to charging in summary format. (Figure 262)

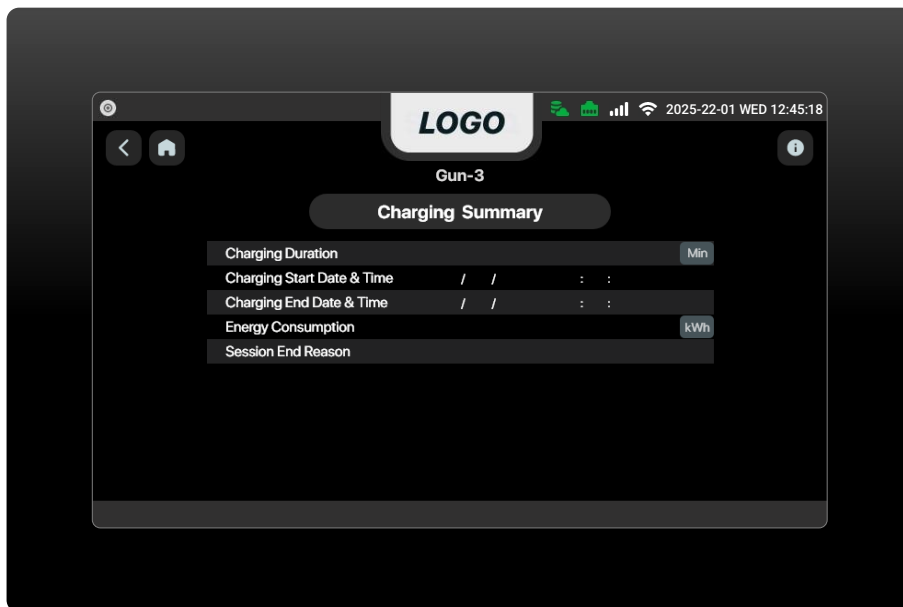





Figure 262 AC Gun-3 charging summary screen

Table 46 Navigation button: AC Gun-3 charging summary

No.	Button	Name	Function
1.		Back Button	To move previous screen.
2.		Home Button	To move AC Gun-3 charging parameter screen.
3.		Info Button	To get information about the charging summary.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the most recent charging cycle. (Figures 263 & 264)

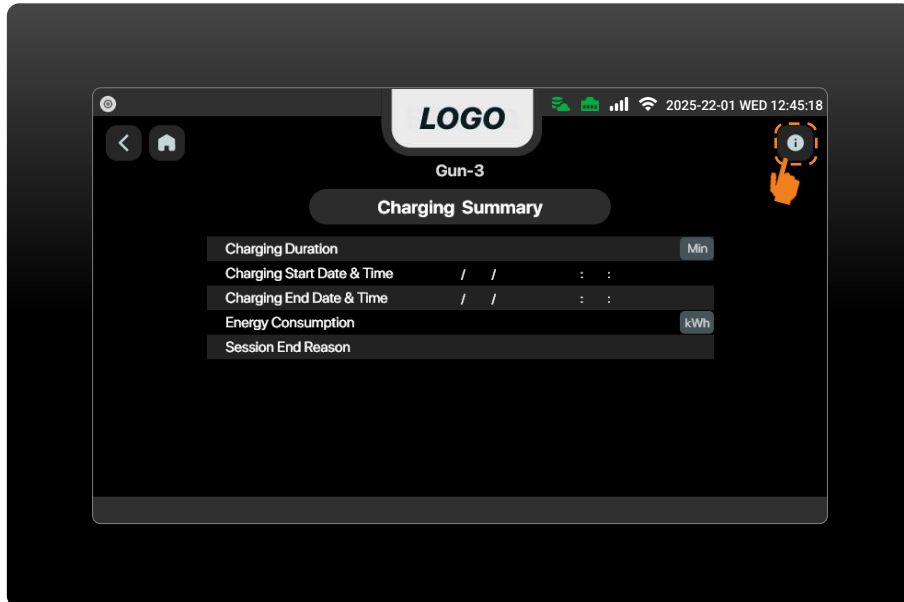


Figure 263 Charging summary screen: press the information button

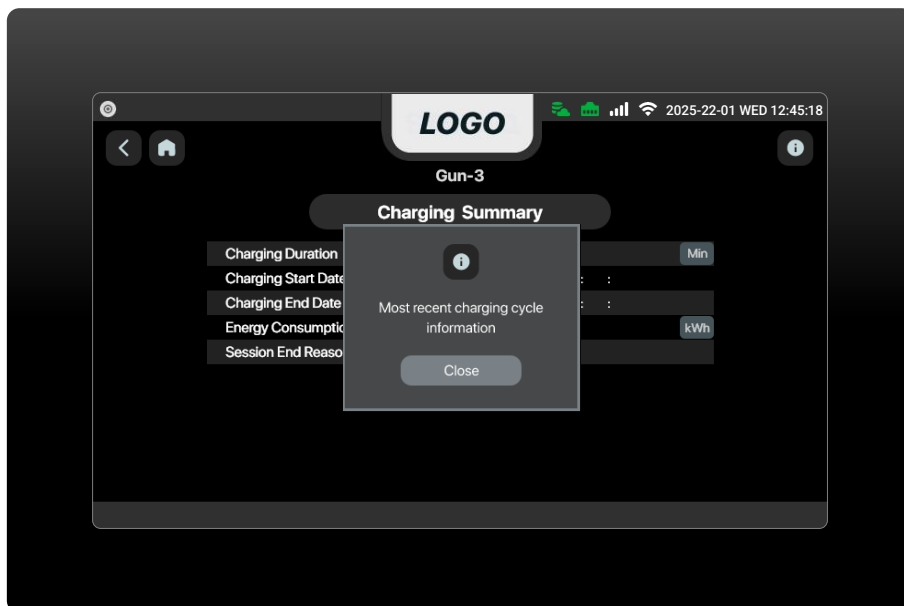


Figure 264 Charging summary pop-up information message

Table 47 Navigation button: charging summary

No.	Button	Name	Function
1.		Close Button	To close charging summary information pop-up message.

C. Fault Indication

The user can access the fault-related information by pressing “Fault Indication” from the AC Gun-3 charging parameter screen. It will open the fault indication screen. (Figures 265 & 266)

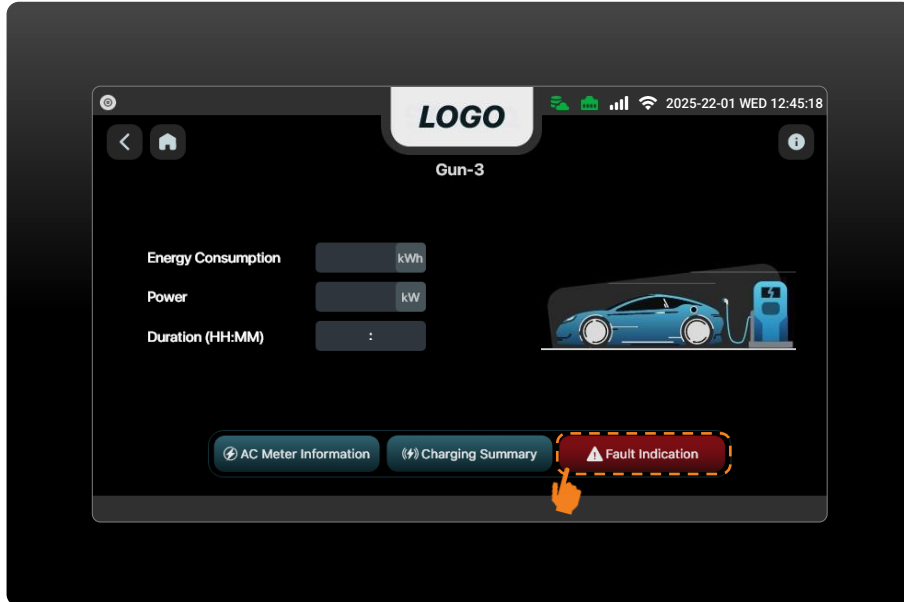


Figure 265 AC Gun-3 charging parameter screen: press the fault indication button

This is a fault indication screen. There is specific fault information present in four categories. (Tables 48 & 49)

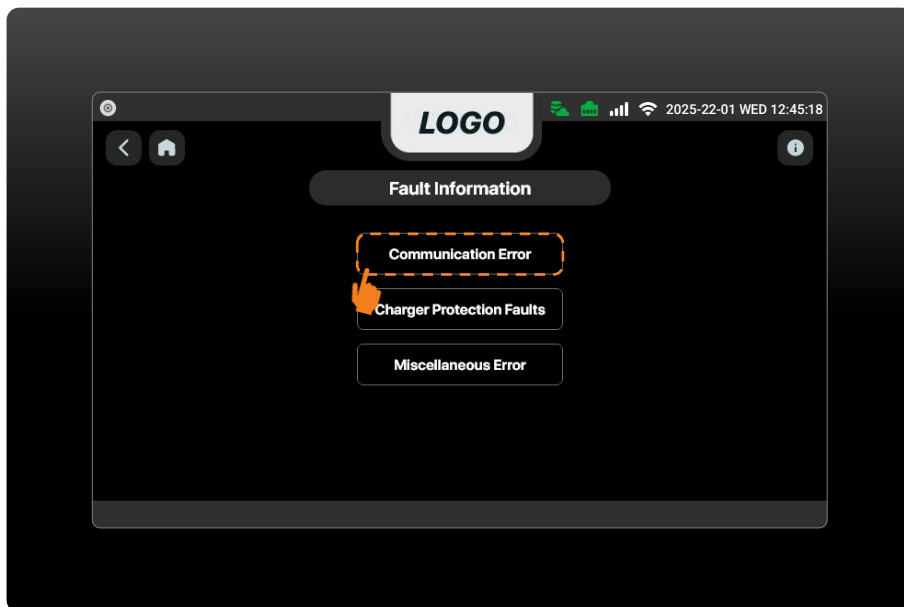


Figure 266 AC Gun-3 fault information screen

Table 48 Fault information button







No.	Button	Name	Function
1.		Communication Error	To know about the communication failure.
2.		Charger Protection Faults	To know about the charger protection faults.
3.		Miscellaneous Error	To know about the device connection status.

Table 49 Navigation button: fault information

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the AC Gun-3 charging parameter screen.
3.		Info Button	To know about the fault information.

Information Pop-up Message

Press the information button to show a pop-up message for a specific fault with a description.
(Figures 267 & 268)

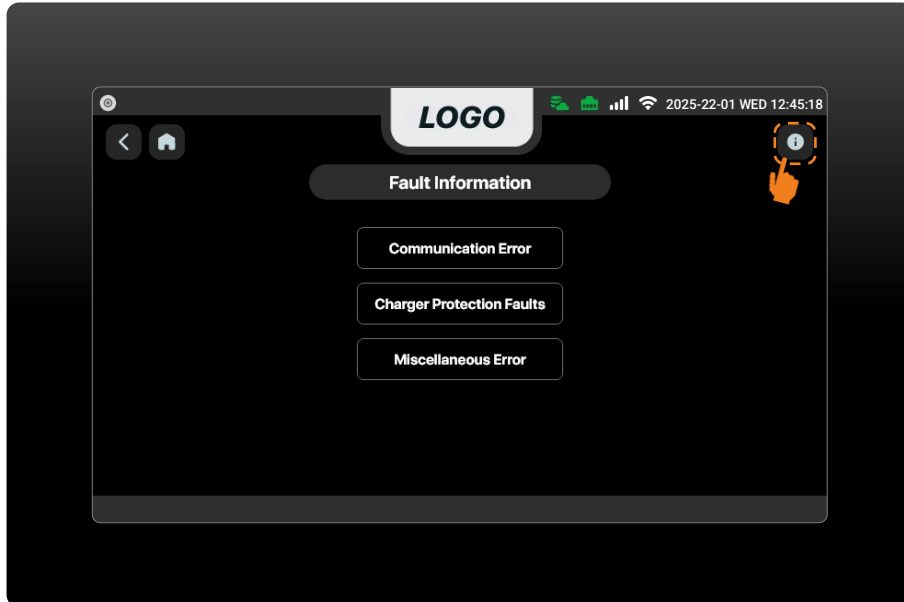


Figure 267 Fault information screen: press the information button

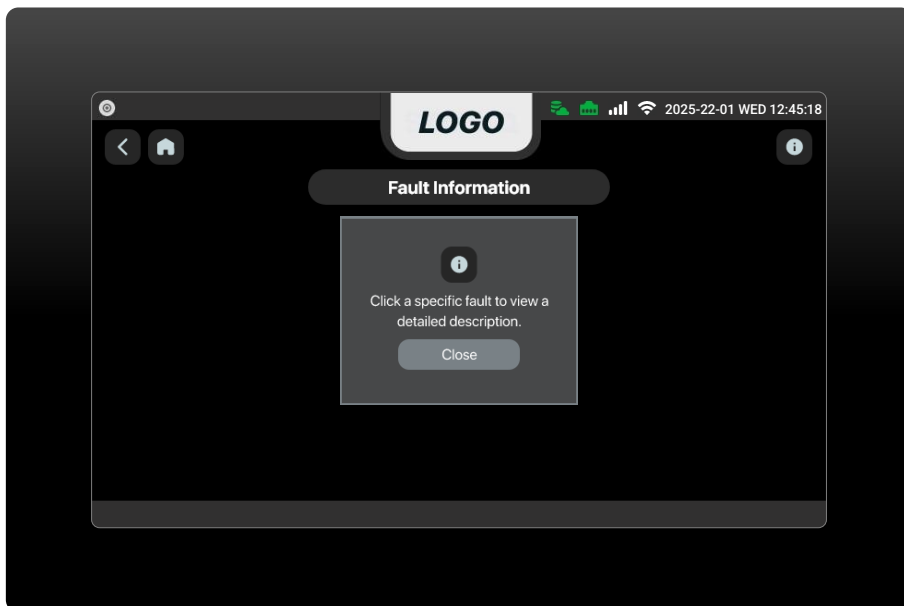



Figure 268 Specific fault pop-up information message

Table 50 Navigation button: charging summary

No.	Button	Name	Function
1.		Close Button	To close charging summary information pop-up message.

(i). Communication Error

To get information regarding a communication problem, press the “communication error” button, it will show the communication failure screen. (Figure 269)

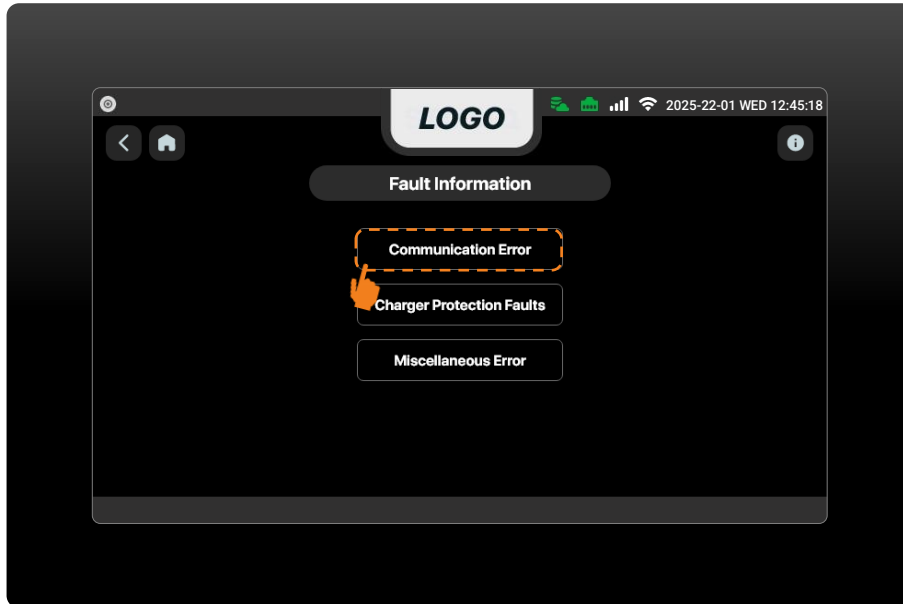


Figure 269 Fault information: press the communication error button.

This is a communication failure, where the user can access the fault type information such as the OCPP and Modbus Master communication error and their status. (Figure 270)

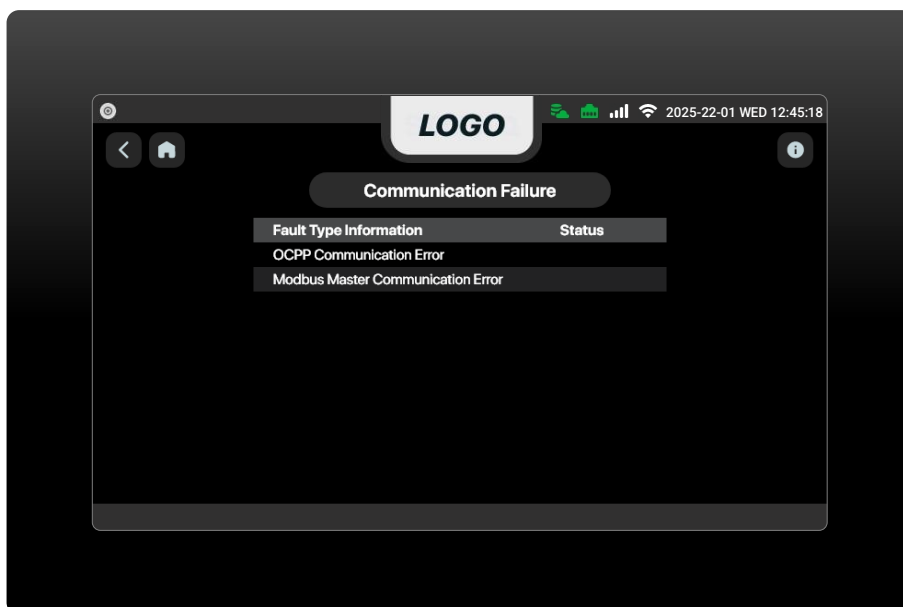





Figure 270 Communication failure screen

Table 51 Navigation button: communication failure

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the AC Gun-3 charging parameter screen.
3.		Info Button	To know about the communication failure.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the error indication with colour. (Figures 271 & 272)

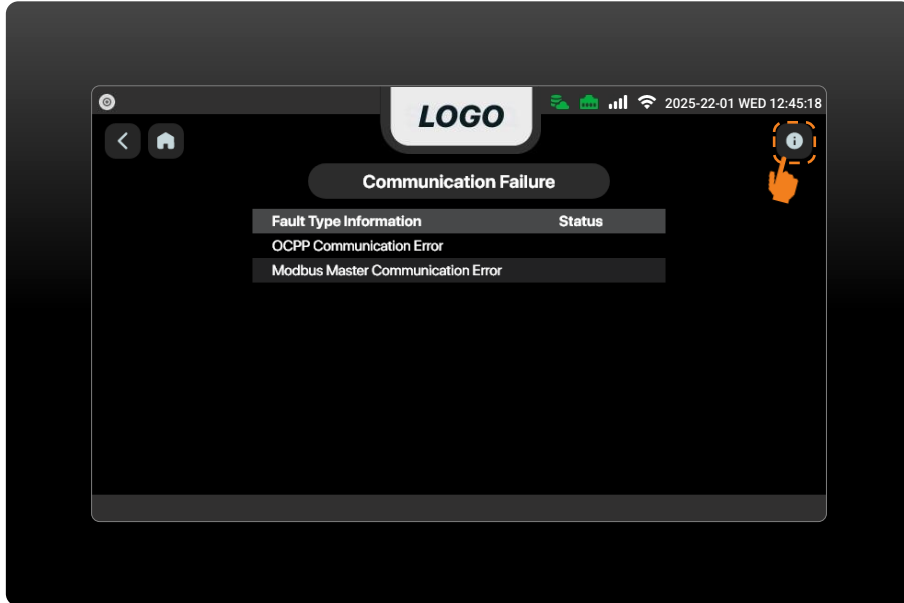


Figure 271 Communication failure screen: press the information button

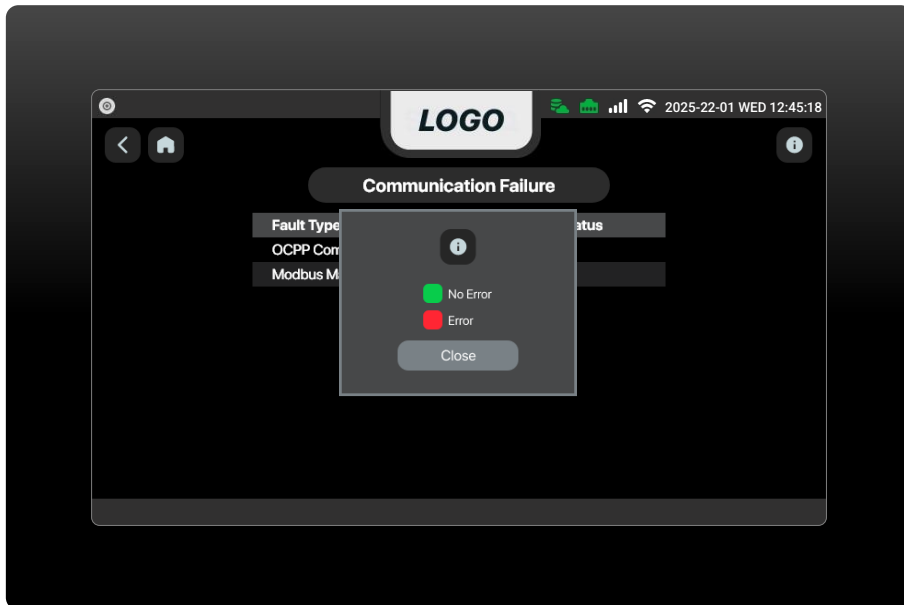
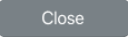


Figure 272 Communication faults pop-up information message

Table 52 Navigation button: communication failure

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

(ii). Charger Protection Faults

To get information regarding a charger protection fault, press the “charger protection faults” button, it will show the charger protection faults screen. (Figure 273)

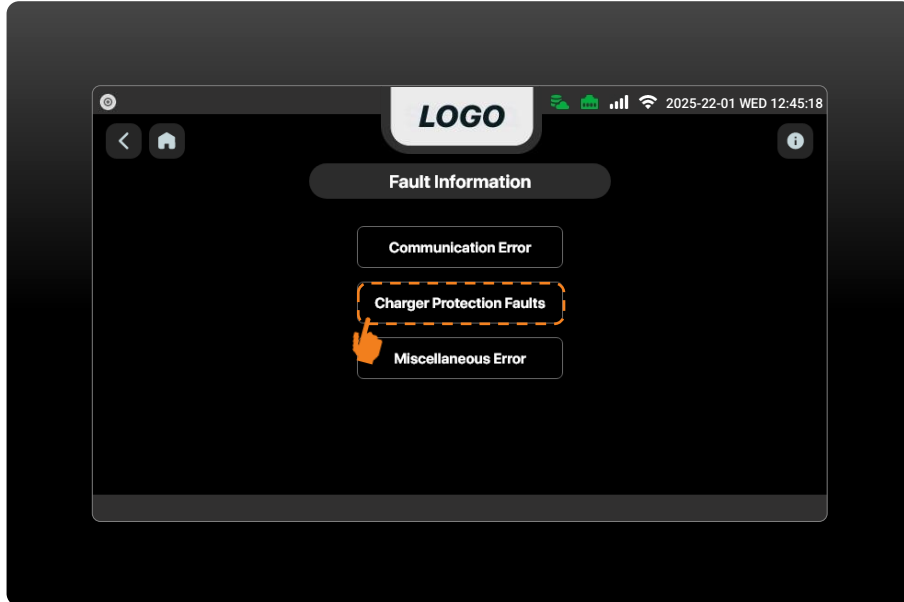


Figure 273 Fault Information: press the charger protection faults button

This is the charger protection faults screen. The screen shows fault type information and status, such as supply mains low, supply main high, under voltage, over voltage, under current and over current. (Figure 274)

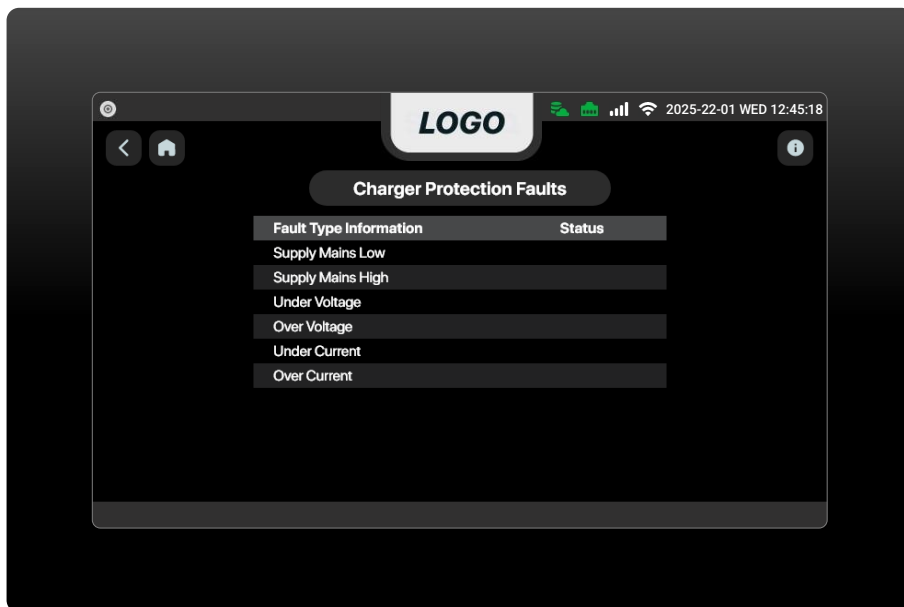





Figure 274 Charger protection faults screen

Table 53 Navigation button: charger protection faults

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the AC Gun-3 charging parameter screen.
3.		Info Button	To know about the charger protection faults.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the error indication with colour. (Figures 275 & 276)

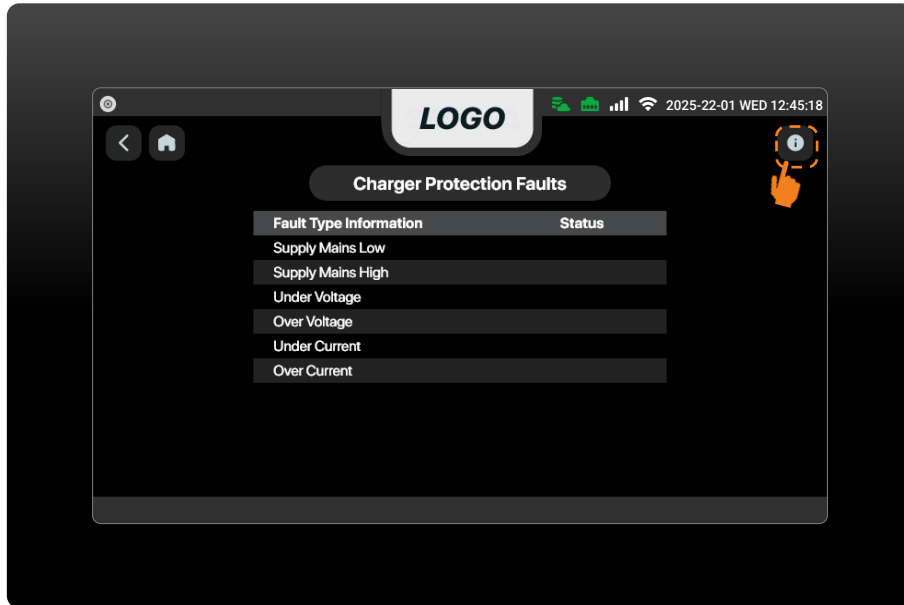


Figure 275 Device connection status: press the information button

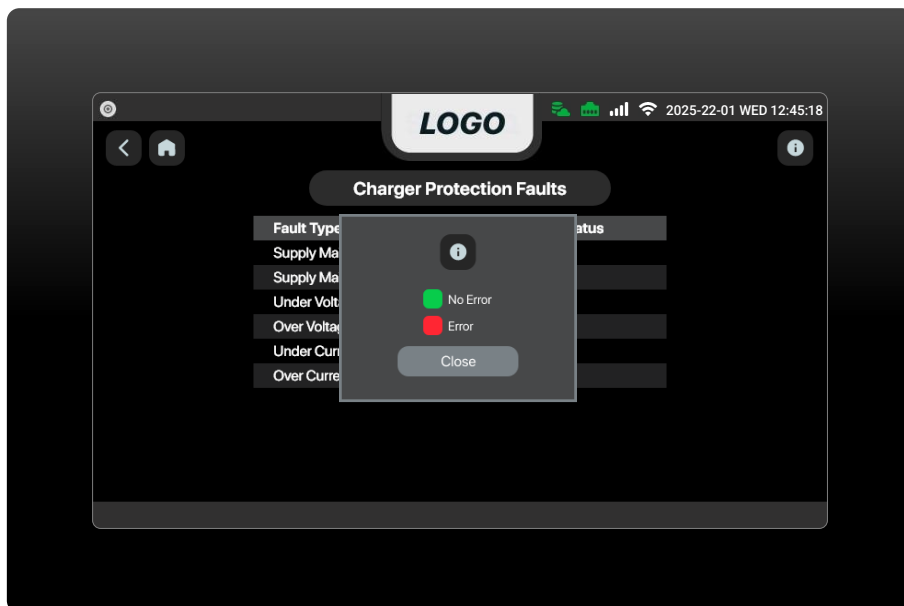


Figure 276 Device connection status pop-up information message

Table 54 Navigation button: device connection status

No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

(iii). Miscellaneous Error

To get information related to device communication status, press the “miscellaneous error” button. It will open the “device connection status” screen. (Figure 277)

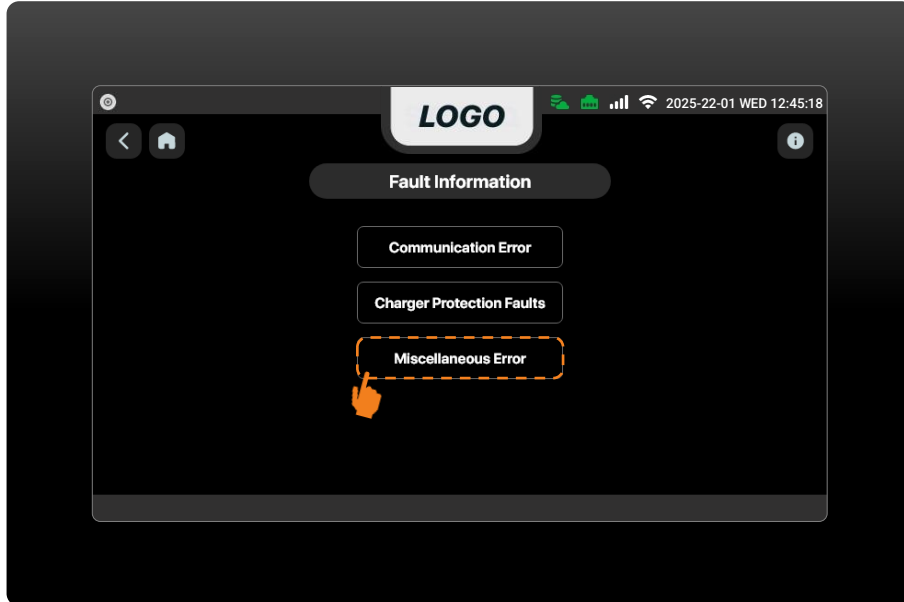


Figure 277 Fault information: press the miscellaneous error button

This is the device connection status screen. The screen shows device information and status, such as RFID Module, LED Module and AC Meter. (Figure 278)

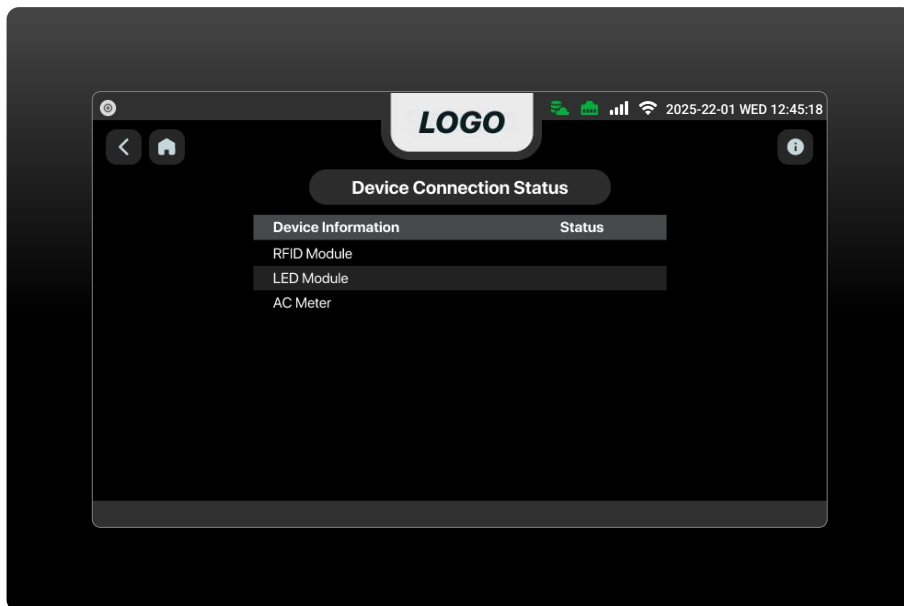





Figure 278 Device connection Status (miscellaneous error) screen

Table 55 Navigation button: device connection status

No.	Button	Name	Function
1.		Back Button	To move the previous screen.
2.		Home Button	To move the AC Gun-3 charging parameter screen.
3.		Info Button	To know about the device connection status.

Information Pop-up Message

Press the information button, and it will show a pop-up message about the error indication with colour. (Figure 279 & 280)



Figure 279 Device connection status: press the information button

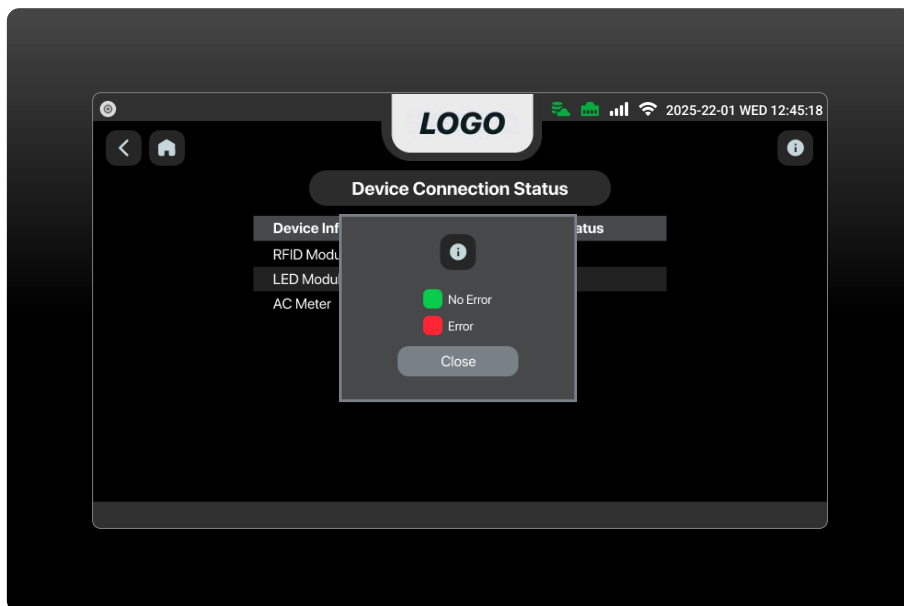
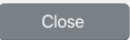



Figure 280 Device connection status pop-up information message


Table 56 Navigation button: device connection status


No.	Button	Name	Function
1.		Close Button	To close information pop-up message.

5 Firmware Upgrade

A firmware upgrade is essential to ensure that the charger operates optimally. Please read the safety precautions carefully before proceeding with the firmware upgrading procedure.

MANDATORY	Read Firmware Upgrade Procedure
	To get an understanding of the procedure, the user should pay careful attention to the upgrade procedure.

WARNING!	Risk of void for warranty and its services
	Inappropriate handling of the product may result in the voiding of the warranty for the product or its services.

NOTE!	Firmware upgradation files.
	The latest version of the firmware files will be provided by the technical support team of Bacancy Systems PVT LTD.

- **Prerequisite**

1. microSD card (support for 16 GB of memory size)
2. microSD card reader or micro-SD card-supported laptop or PC.
3. PC or Laptop (power by windows operating system)
4. "DWIN SET" folder with latest version of files.

(i). Format microSD Card

- Step 1.** Connect a microSD card to a laptop or PC using the microSD card reader or supported laptop or PC.
- Step 2.** Navigate to the “start menu”, then search for the “run” application. Open it. Or simply press the “**Windows** + R” keys using the keyboard. (Figure 281)

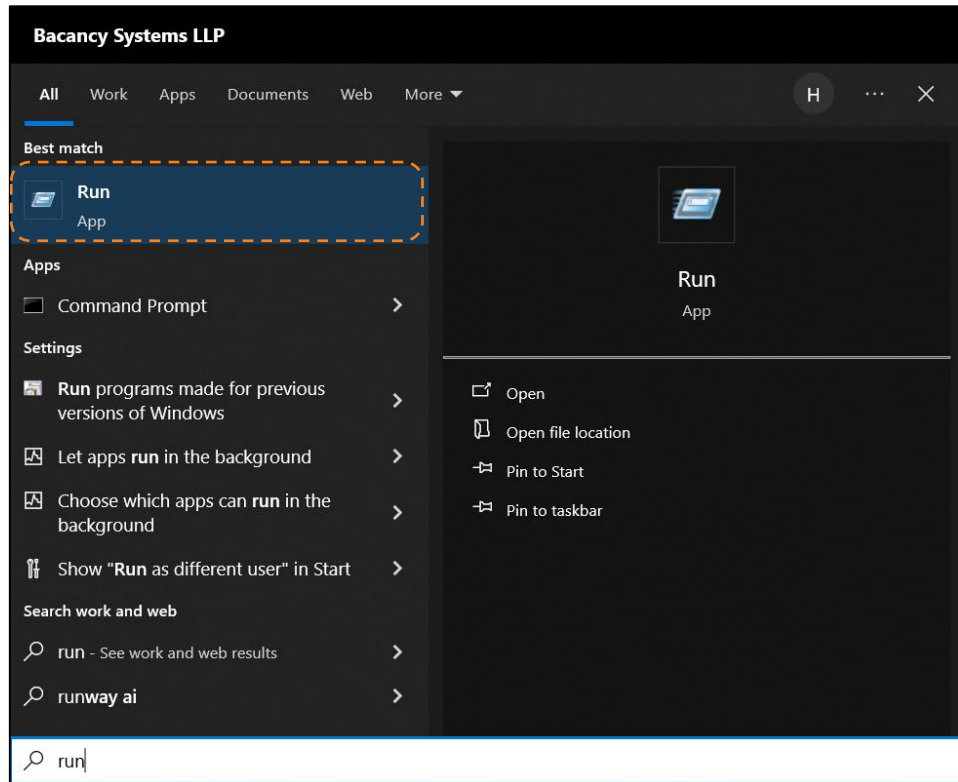


Figure 281 Open the run application

- Step 3.** Type "CMD," then press the “Ok” button. (Figure 282)

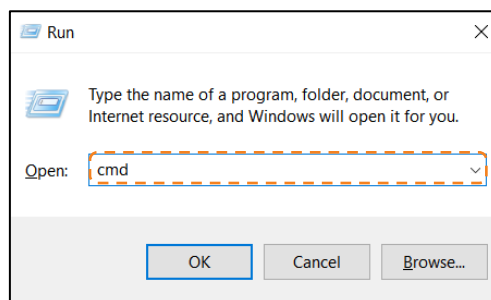



Figure 282 Type “cmd”

Step 4. Enter **format/q e:/fs:fat32/a:4096** command in cmd application. (Figure 283)

NOTE!	cmd's command and microSD card drive letter
	<ul style="list-style-type: none"> To add sector blocks, use the FAT32 file system, where "e" indicates the drive letter provided by Windows to the SD card. Before entering the cmd command, the user should know the drive letter assigned to the microSD card and change it accordingly.



```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19044.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ADMIN>format/q e:/fs:fat32/a:4096
  
```

Figure 283 Enter command in cmd application

Step 5. Make sure that a microSD card is connected to a laptop or PC.

Step 6. Press the “enter” key using the keyboard. (Figure 284)



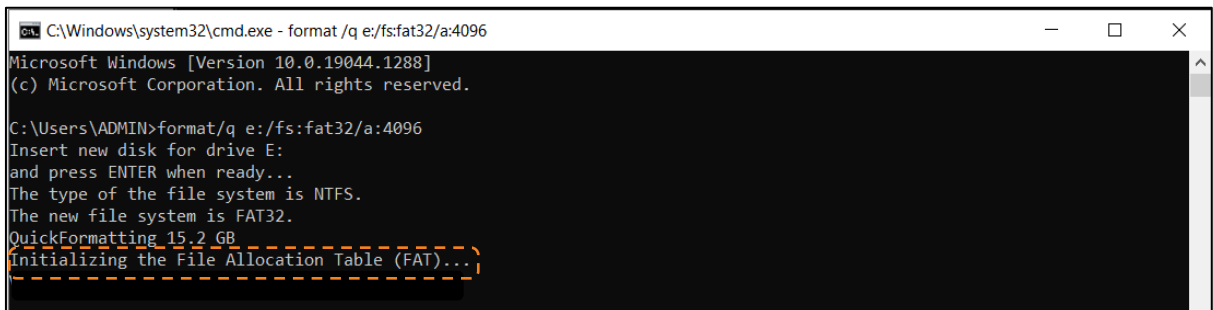
```

C:\Windows\system32\cmd.exe - format /q e:/fs:fat32/a:4096
Microsoft Windows [Version 10.0.19044.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ADMIN>format/q e:/fs:fat32/a:4096
Insert new disk for drive E:
and press ENTER when ready...
  
```

Figure 284 Press the “enter” key

Step 7. Wait for the formatting process. (Figure 285)



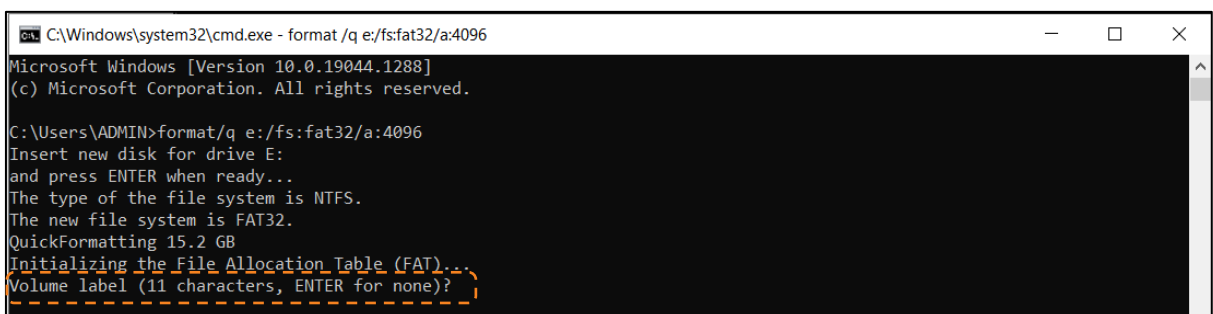
```

C:\Windows\system32\cmd.exe - format /q e:/fs:fat32/a:4096
Microsoft Windows [Version 10.0.19044.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ADMIN>format/q e:/fs:fat32/a:4096
Insert new disk for drive E:
and press ENTER when ready...
The type of the file system is NTFS.
The new file system is FAT32.
QuickFormatting 15.2 GB
Initializing the File Allocation Table (FAT)...
  
```

Figure 285 Formatting process

Step 8. Press the “enter” key for the default volume label. (Figure 286)



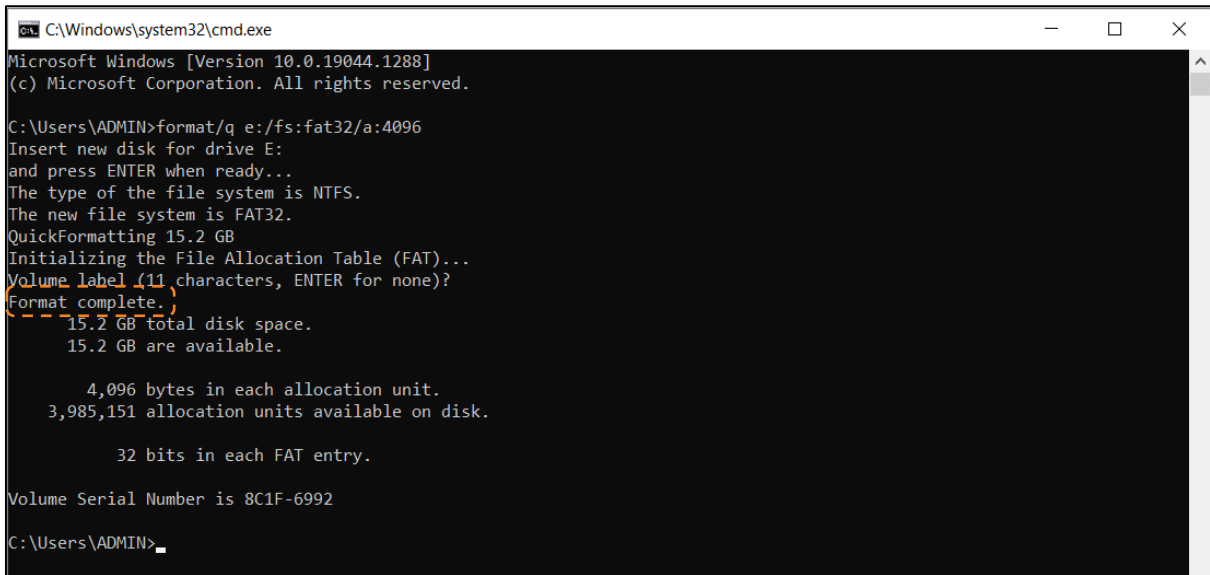
```

C:\Windows\system32\cmd.exe - format /q e:/fs:fat32/a:4096
Microsoft Windows [Version 10.0.19044.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ADMIN>format/q e:/fs:fat32/a:4096
Insert new disk for drive E:
and press ENTER when ready...
The type of the file system is NTFS.
The new file system is FAT32.
QuickFormatting 15.2 GB
Initializing the File Allocation Table (FAT)...
Volume label (11 characters, ENTER for none)?
  
```

Figure 286 Press the “enter” key for the default volume label

Step 9. microSD card format process is completed. (Figure 287)



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19044.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ADMIN>format/q e:/fs:fat32/a:4096
Insert new disk for drive E:
and press ENTER when ready...
The type of the file system is NTFS.
The new file system is FAT32.
QuickFormatting 15.2 GB
Initializing the File Allocation Table (FAT)...
Volume label (11 characters, ENTER for none)?
Format complete.
--- 15.2 GB total disk space.
    15.2 GB are available.

    4,096 bytes in each allocation unit.
    3,985,151 allocation units available on disk.

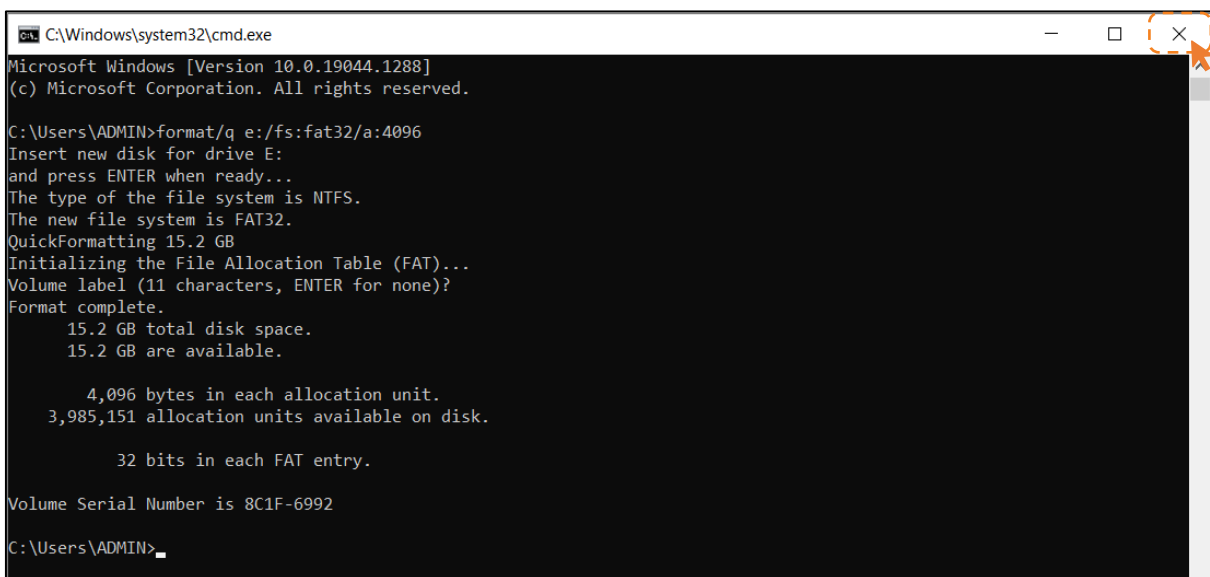
    32 bits in each FAT entry.

Volume Serial Number is 8C1F-6992

C:\Users\ADMIN>
```

Figure 287 The format is completed

Step 10. Close the cmd application. (Figure 288)



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19044.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ADMIN>format/q e:/fs:fat32/a:4096
Insert new disk for drive E:
and press ENTER when ready...
The type of the file system is NTFS.
The new file system is FAT32.
QuickFormatting 15.2 GB
Initializing the File Allocation Table (FAT)...
Volume label (11 characters, ENTER for none)?
Format complete.
    15.2 GB total disk space.
    15.2 GB are available.

    4,096 bytes in each allocation unit.
    3,985,151 allocation units available on disk.


    32 bits in each FAT entry.

Volume Serial Number is 8C1F-6992

C:\Users\ADMIN>
```

Figure 288 Close the cmd application

(ii). Firmware Upgrade Procedure

NOTE!	12 VDC Power Supply
	To switch on the HMI display after inserting a microSD card, connect a 12VDC power supply.

Step 1. Copy the “DWIN_SET” folder to the microSD card. *(Figure 289)*


Name	Date modified	Type	Size
 DWIN_SET	24/04/2024 09:48	File folder	

Figure 289 DWIN_SET folder in the microSD card

Step 2. Insert a microSD card into the HMI display.

Step 3. Connect the 12 VDC power supply to the HMI display.

Step 4. Switch on the HMI display.

Step 5. The firmware upgrade procedure is started, and the “SC CARD PROCESS...” message shows on display. *(Figure 290)*

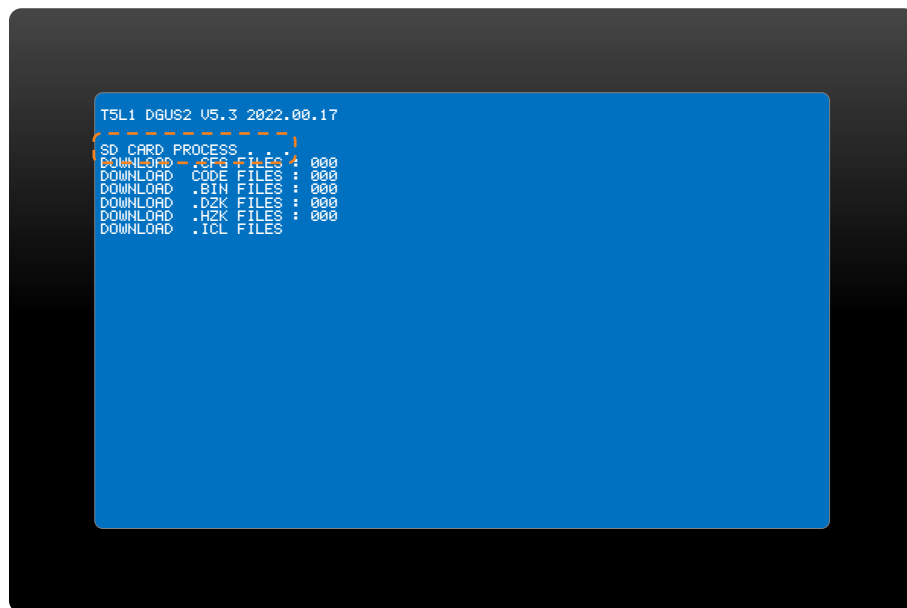


Figure 290 The firmware upgrade procedure is started

Step 6. After successfully upgrading the firmware, the screen displays the message “SD CARD PROCESS...END!” indicated by the “+” symbol. (Figure 291)

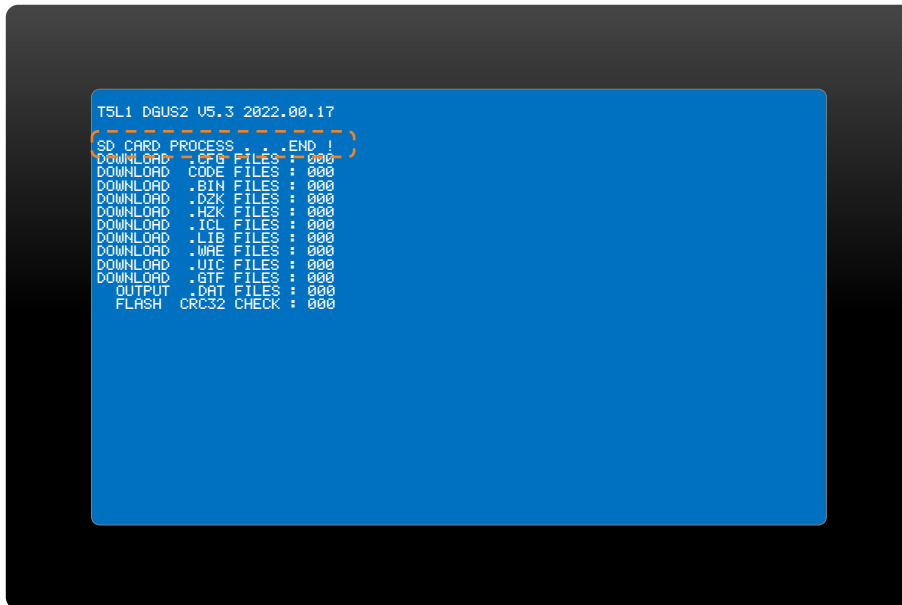



Figure 291 The firmware upgrade procedure is ended.



Figure 292 The firmware upgrade procedure is completed


Step 7. Switch off the HMI display by disconnecting the 12 VDC power supply, then remove a microSD card.

NOTE!	Unable to Upgrade HMI Firmware
	<p>If a user is unable to upgrade HMI firmware, please contact Bacancy Systems PVT LTD's technical support team.</p>


6 Appendix


6.1 Abbreviations and Glossary

AC	<i>Alternating current, is a type of electrical current in which the current repeatedly changes direction</i>
CAN	<i>A controller area network (CAN) bus is a high-integrity serial bus system for networking intelligent devices. CAN busses and devices are common components in automotive and industrial systems.</i>
CCS2	<i>The Combined Charging System (CCS) is a standard for charging electric vehicles.</i>
COM	<i>COM (communication port) is the original, yet still common, name of the serial port interface on PC-compatible computers.</i>
DC	<i>Direct current (DC) is one-directional flow of electric charge.</i>
EV	<i>An EV is defined as a vehicle that can be powered by an electric motor that draws electricity from a battery and is capable of being charged from an external source.</i>
HMI	<i>Human Machine Interface.</i>
Hz	<i>hertz, the SI unit of frequency, is equal to one cycle per second.</i>
kW	<i>Kilowatt (symbol: kW) is a unit of electric power.</i>
LED	<i>A light-emitting diode (LED) is a semiconductor device that emits light when current flows through it.</i>
MCU	<i>The Motor Control Unit (MCU) is an electronic module that interfaces between the batteries (DC power sources) and the motor (AC or BLDC). Its main task is to control the EV's speed and acceleration based on throttle input.</i>
OCP	<i>The OCPP (Open Charge Point Protocol) enables the integration of equipment from different manufacturers.</i>
PLC	<i>Programmable Logic Controllers (PLCs) are industrial computers, with various inputs and outputs, used to control and monitor industrial equipment based on custom programming</i>
RFID	<i>Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify, and track tags attached to objects.</i>

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