SPEED-E 30/40 kW fast DC charger

Instruction manual

Sanki America Inc
105-3905 rue Isabelle, Brossard QC, J4Y 2R2, Canada
+1-514-473-4234
www.speed-e.net
info@speed-e.net
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Added important safety instructions

Version 1.21 – June 6, 2022
Added maintenance instructions

Version 1.30 – January 10, 2024
Updated model range

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Removed obsolete models, corrected wire gauges

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Updated drawings

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Updated charging sequence, practical info

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Removed R version from the IM

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IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

This manual contains important instructions for models SPEED-E 30 and SPEED-E 40 that shall be followed during installation, operation and maintenance of the unit.

These safety symbols may appear in this manual or in the device

	**Equipment protective earth terminal**
	**Phase symbol**
	**Risk of electric shock**
	**Attention, refer to the manual**

WARNING

- For use with electric vehicles.
- High Voltage. Risk of electric shock. No user-serviceable parts inside
- Defective cables or wires must be replaced with qualified service personnel.
- To avoid the risk of abnormal termination or fire, do not obstruct air inlets and outlets. If the air flow through the device is restricted, call for service.
- The field wiring must be done with copper (AWG 3-6) or aluminum (AWG 3-4) conductors, rated to 75°C.

GROUNDING INSTRUCTIONS

This unit is to be connected to a grounded, metal, permanent wiring system, or an equipment-grounding conductor is to be run with circuit conductors and connected to equipment-grounding terminal on battery charger. Connections to battery charger shall comply with all local codes and ordinances.

Introduction

SPEED-E 30/40 is a family of single-output CCS1 level 3 DC chargers with maximum power up to 40 kW and maximum output voltage 900 V. The charger's compact enclosure and light weight makes is suitable for wall- or pole-mounting, reducing the installation costs.

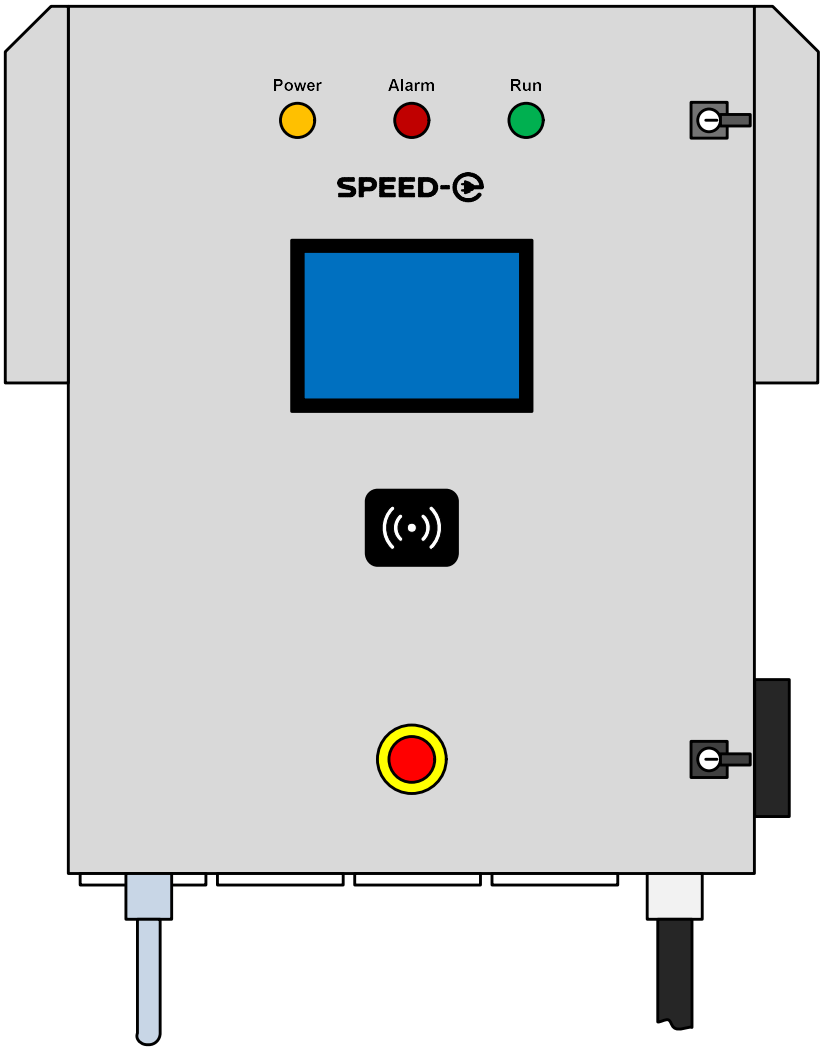

Figure 1. General view of SPEED-E 30/40 charger

The chargers are intended to cover a variety of applications, such as:

- Medium- and heavy-duty industrial fleets such as delivery trucks
- Community charging (for example, in condominiums)
- Employee car charging near the office buildings

The charger's output can supply output voltage up to 900 V, which makes it ready for the upcoming generation of high-voltage vehicle batteries.

High output current (up to 133 A for the 40-kW model) allows the charger to match the performance of some 50-kW chargers during the full charging cycle, while having less power reserved in the infrastructure. The range of load voltage and current is shown in Figure 2.

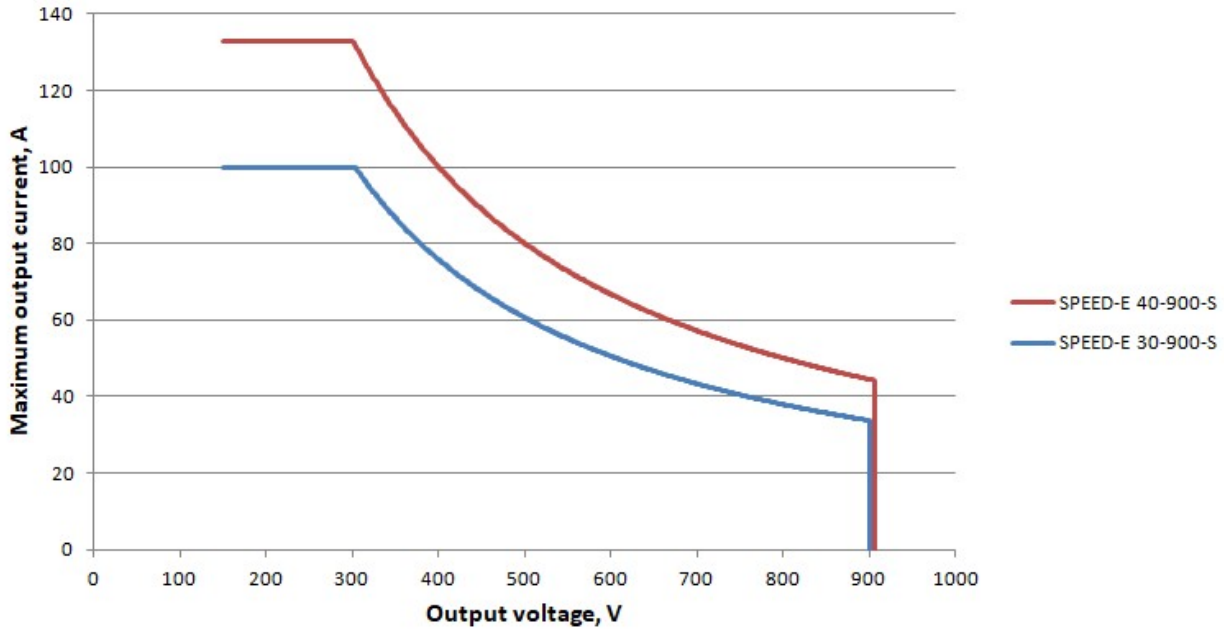

Figure 2. Maximum current reachable at a requested voltage

Model naming

SPEED-E 40-900-SC

- Enclosure type: C – carbon steel, S – stainless steel
- Output type: S – single connector
- Maximum output voltage: 900 V
- Maximum output power: 30 or 40 kW

Charger specifications

Model	SPEED-E 30-900-S*	SPEED-E 40-900-S*
Operational		
Charging connector	SAE J1772 Combo type 1 (DC only)	
Cable length	5 or 7.5 m (16’ or 24’)	
User interface	7” high brightness touch LCD	
Card reader	ISO 14443	
Data communication	OCPP 1.6J	
Power input		
Input voltage	480 VAC (nominal), 3-phase delta, 60 Hz	
Input current, nom	39 A	52 A
Input current, max	60 A	80 A
Power factor	0.98 min	
Current THD	5% max	
Power output		
Output power, max	30 kW	40 kW
Output voltage	150-900 VDC	
Output current, max	100 A	133 A
Conversion efficiency	95% min	
Environmental		
Protection level	IP53	
Enclosure	Type 3R	
Operating temperature	-30..+55°C (-20..+130°F)	
Storage temperature	-40..+70°C (-40..160°F)	
Mechanical		
Size	810 mm x 710 mm x 280 mm (32” x 28“ x 11”)	
Weight (w/o cable)	56 kg (125 lb)	

Table 1. Chargers’ specifications

Installation

The charger must be installed on a vertical wall or a pole, at a minimum height of 60 cm (2’).

The charger shall not be installed closer than 6 meters (20’) of an outdoor motor fuel dispensing device or in a commercial garage (repair facility).

The dimensions of the module are shown in Figure 3.

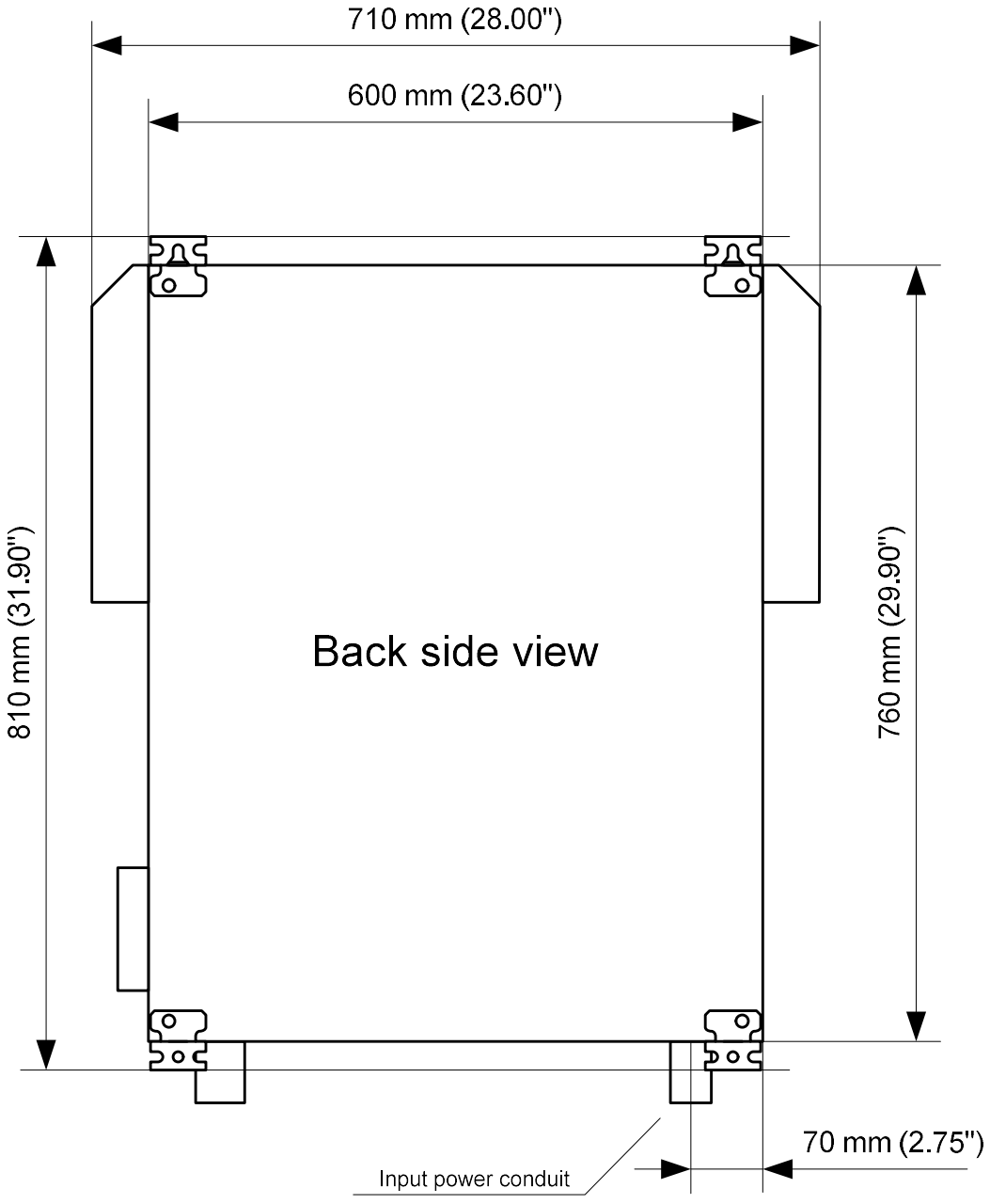

Figure 3. Charger's dimensions



Top mounting bracket Bottom mounting bracket

Figure 4. Top and bottom mounting brackets

The charger is supplied with 4 mounting brackets. For the wall-mounting on the wall use the landing pattern shown below. Alternatively, one may first install two top screws without the charger, then hang the charger on the screws through the slots in the brackets and mark the positions of two bottom screws.

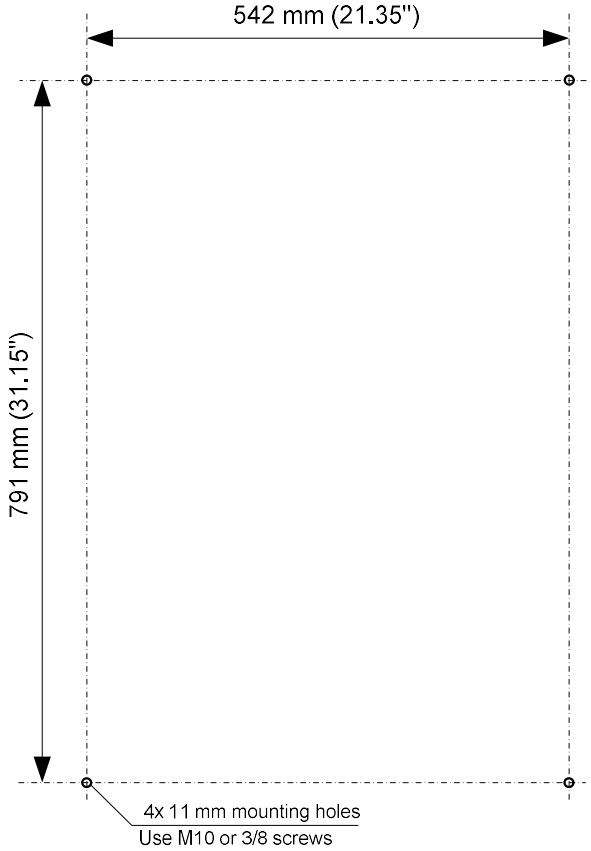

Figure 5. Mounting screws' pattern

The charger's view with the front cover removed is shown in Figure 6. Arrows indicate power cable connections.

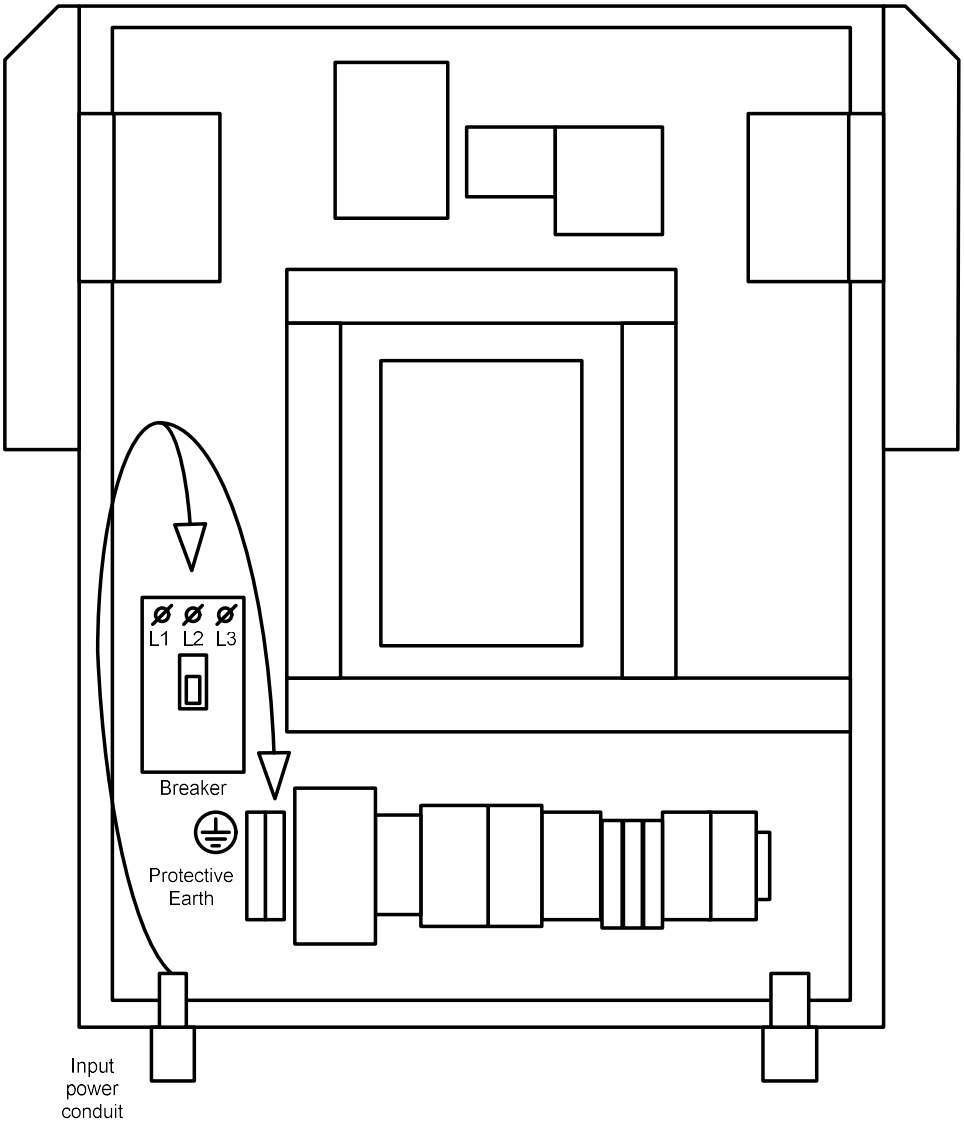

Figure 6. Charger's connection to AC mains

For the wire gauge, refer to Table 2.

Model	Input wire gauge, copper (rated to +75°)	Input wire gauge, aluminum (rated to +75°)
SPEED-E 30	AWG 6	AWG 4
SPEED-E 40	AWG 4	AWG 3

Table 2. Recommended wire gauge

The charger must be properly grounded to reduce the risk of electric shock.

User operation instructions

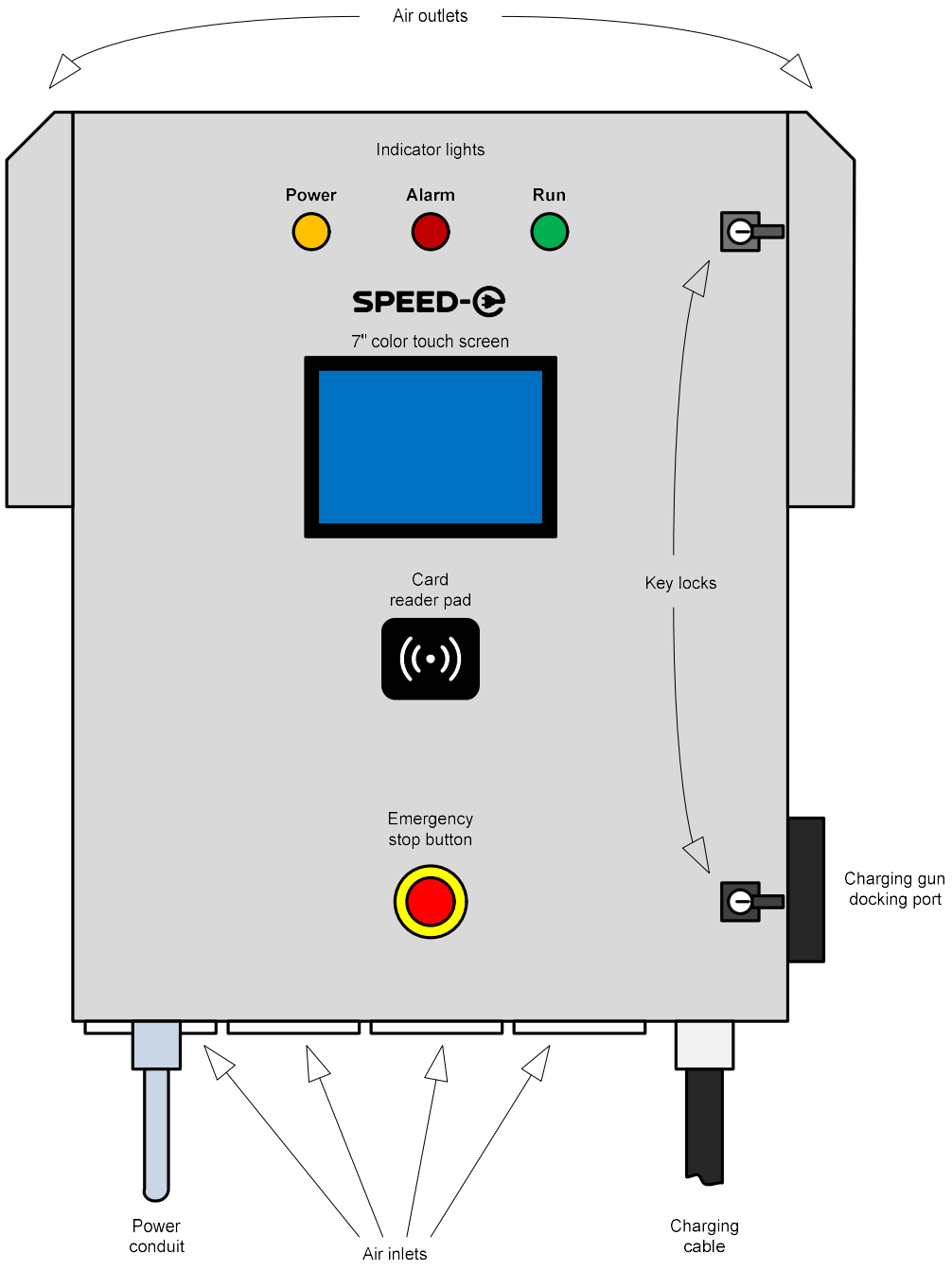

Figure 7. General view of the charger

The unit must be properly installed in accordance with the installation instructions before it can be used.

Refer to Figure 7 for the location of the main controls.

Control	Function
Emergency stop button	At any point the charging may be interrupted by pressing the Emergency Stop button. To release the system from Emergency Stop, turn the button counterclockwise.
Power indicator lamp	Indicates the idle state of the charger
Alarm indicator lamp	Indicates an abnormal condition (an abnormal termination of the charging, a subsystem failure or an emergency stop condition)
Run indicator lamp	Indicates the running (power delivery) state of the charger
The touch screen	serves as a user interface
The card reader pad	may be used to start the charging or stop the charging (if started with the same card)
Air inlets and outlets	Used for the cooling of the charger.
Docking port	Used to keep the gun between the charging sessions

Table 3. Charger's controls

The home screen of the charger is shown in Figure 8.

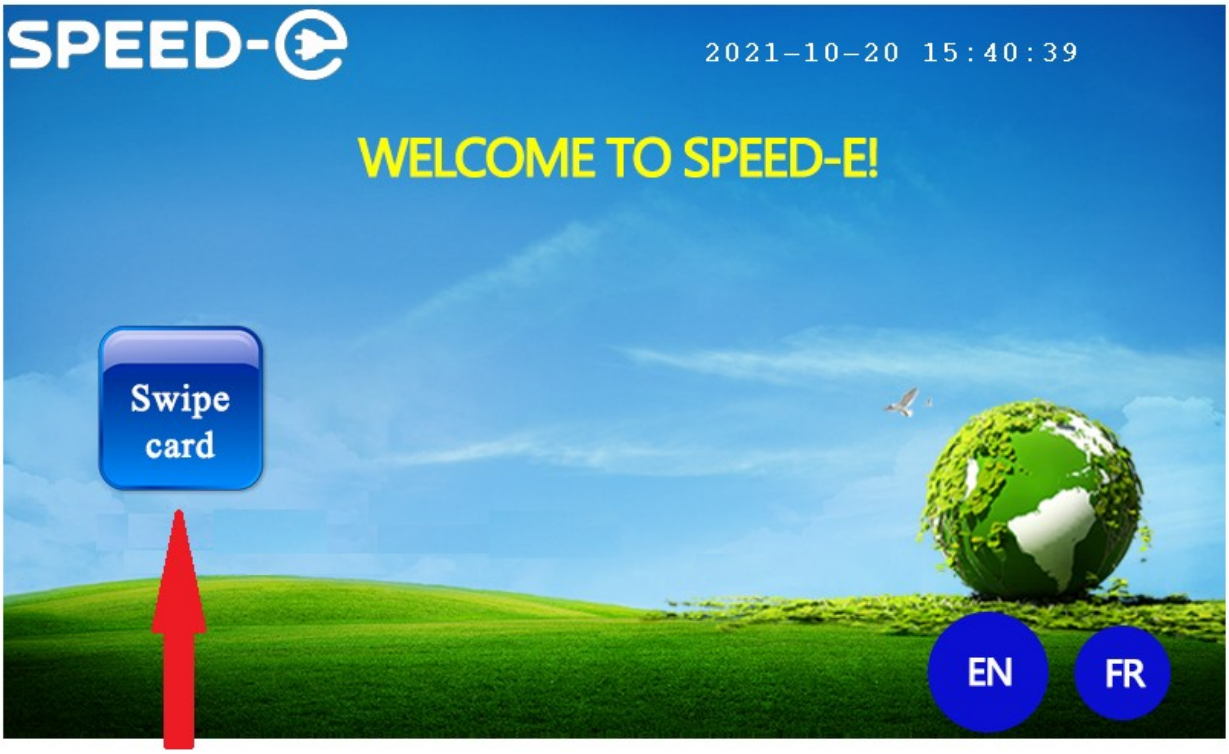

Figure 8. Home screen

Before starting the charging, the user must first insert the charging connector to the EV charging port.

The charger's user interface supports one of the following modes to start the transaction (configured at the commissioning):

1) Card reader disabled, auto start, no vehicle validation
2) The scanned card validated locally to allow the transaction,
3) The scanned card or the MAC address of the vehicle validated remotely through an OCPP server
4) User authorizes a transaction through the OCPP server (for example, by scanning a QR code with an app)

At the start of the charging, the charger tries to establish the communication with the EV, showing the wait screen (Figure 9).

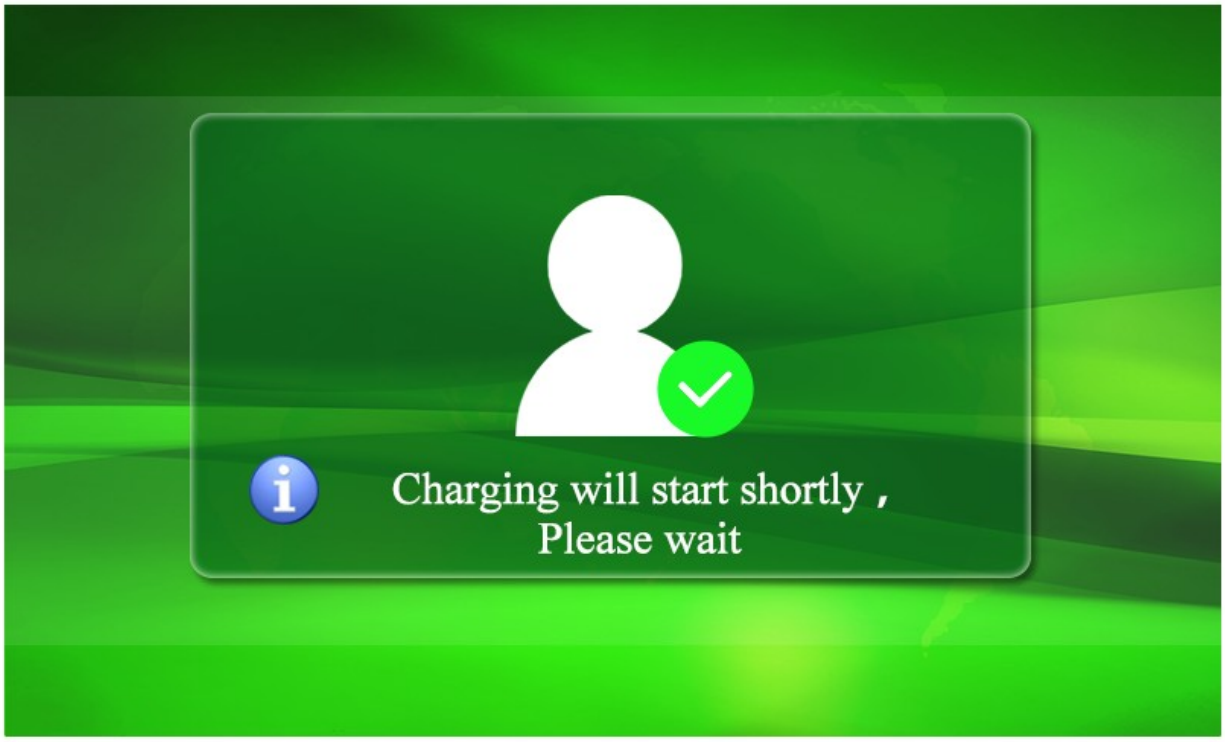

Figure 9. Wait screen

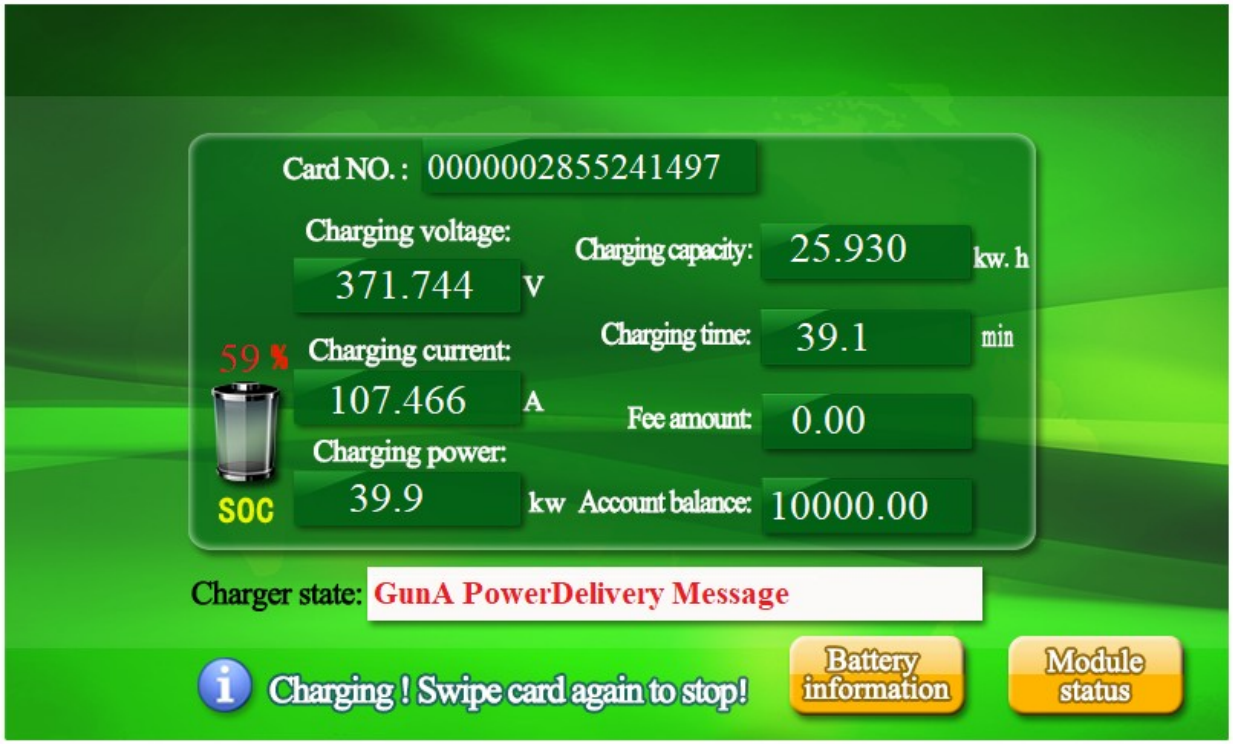

Figure 10. Charging screen

After the communication is established, the charger displays the main charging screen, shown in Figure 10, and moves through the sequence: insulation check – precharging – charging. The information available during the charging includes:

- SoC
- Actual output voltage measured by charger
- Actual output current measured by charger
- Actual output power measured by charger
- Total charge delivered during the charging session
- Total charging time (includes the startup)

While charging, user may press button “Battery information”, which shows extended information read from the BMS.

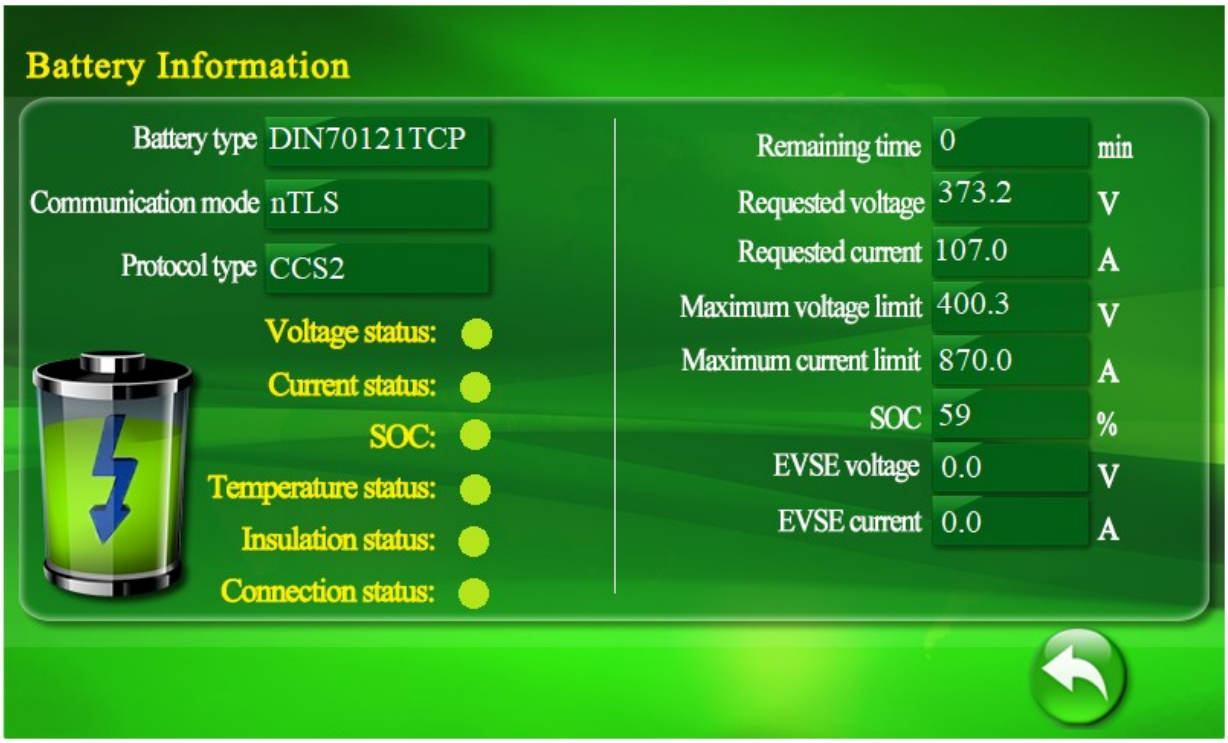

Figure 11. Battery information screen

The charging may end by one of the following normal conditions:

- Full charge
- Scanning of the card used to initiate the transaction
- Pressing a button on the touch screen (if the card reader is disabled)
- User presses trigger in the gun to unlock

Abnormal conditions include:

- Emergency stop pressed
- Insulation failure detected
- Loss of communication with the vehicle
- Operating conditions out of range (e.g. overheating)
- A hardware failure of any subsystem

If a transaction is ended by the user, the system returns to the home screen. To continue charging of the same vehicle, the user must unplug and plug back the gun.

Maintenance instructions

It is recommended to check at least twice a year the condition of the filters in the air inlets and outlets (see Figure 7 for details). The filters are accessible and can be replaced or removed for cleaning from the outside of the charger.

There are no user-serviceable parts inside the charger.

If the charger requires any service, please contact the tech support:

tel: +1-514-821-2992

e-mail: techsupport@sanki-america.com