



**OWNER'S MANUAL**

**240V EV CHARGING STATION**

cLCus



## LIST OF CHANGES

DATE	AUTHOR	DESCRIPTION	REVISION#
Jul 15th 2020	G.Fauteux	Initial version	1.00
Feb 1st 2021	G.Fauteux	Added table 4 Gage conductor - current	1.01
May 11 <sup>th</sup> 2021	G.Fauteux	Added error messages	1.02
March 1 <sup>st</sup> 2022	G.Fauteux	Updated for pcb v300 and load sharing	2.00



## IMPORTANT SAFETY INSTRUCTIONS

<b>SAVE THESE INSTRUCTIONS</b>	<b>WARNING</b> — When using electric products, basic precautions should always be followed, including the following. This manual contains important instructions for Models BR240V-x32 et BR240V-x48 that shall be followed during installation, operation and maintenance of the unit. When the instructions are exactly the same for all models, specific model numbers are not required to be specified:
	• Read all the instructions before using this product
	• This device should be supervised when used around children.
	• Do not put fingers into the electric vehicle connector.
	• Do not use this product if the flexible power cord or EV cable is frayed, has broken insulation, or any other signs of damage.
	• Do not use this product if the envelope or the EV connector is broken, cracked, open, or shows any other indication of damage.
	• Not for use in commercial garages where a COMMERCIAL GARAGE is defined as a facility, or portion of a facility, used for the repair of internal combustion engine vehicles, in which the area may be classified due to vapors of flammable liquids (gasoline) being present
	• The installation must be done by an electrician according to electrical code from your locality.

# TECHNOVE

## SYMBOL



### **CAUTION**

Risk of electric shock. Do not remove cover or attempt to open the enclosure. No user serviceable parts inside. Refer servicing to qualified service personnel.



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## 1 COMPANY

The company technoVE Inc. designs and manufactures components and products for electric vehicles and recharging. This manual is for the owner and installer of the electric vehicle charging station 240 VAC.

## 2 CONTACT

Customer service : 1-888-370-1907  
info@technove.ca  
Technical support : 1-888-370-1907  
support@technove.ca

## 3 PRODUCT

The charging station for electric vehicle is a 208 / 240 Vac terminal conforms to standard SAE1772. The terminal can be installed indoor or outdoor. The BR240V product family is divided into two charging powers, 32A and 48A.

## 4 CERTIFICATION

Conforms to :

- C22.2 NO. 280-16 - Electric vehicle supply equipment (Tri-national standard, with UL 2594 and NMX-J-677-ANCE-2016)
- CAN/CSA-C22.2 NO. 281.1-12 (R2017) - Standard for safety for personnel protection systems for electric vehicle (EV) supply circuits: General requirements (Tri-national standard, with UL 2231-1 and NMX-J-668/1-ANCE)
- CAN/CSA-C22.2 NO. 281.2-12 (R2017) - Standard for safety for personnel protection systems for electric vehicle (EV) supply circuits: Particular requirements for protection devices for use in charging systems (Tri-national standard, with UL 2231-2 and NMX-J-668/2-ANCE)
- FCC part 15 subpart B (2019)
- ICES-003 (2016) Class A



## 5 DATA SHEETS

<b>BR240V-I32 / BR240V-R32 et BR240V-I48 / BR240V-R48</b>
<b>Power supply:</b> 208 / 240 VAC 60 Hz • 12 A to 32 / 48 Amp. continuously
<b>Charge current vs circuit breaker:</b> to set-up <b>208/240Vac - x32 :</b> 12 (15), 16 (20), 24 (30), 32 (40) <b>208/240Vac - x48 :</b> 12 (15), 16 (20), 24 (30), 32 (40), 40 (50), 48 (60)
<b>Output power:</b> 2500 to 7700 (x32) / 11500 (x48) Watts according to set-up.
<b>CCID 5ma :</b> UL 2231
<b>Over voltage protection</b>
<b>Relay fault detection</b>
<b>Temperature:</b> -40°C to +40°C
<b>Derating power at 60°C</b>
<b>Plug :</b> SAE J1772 32A / 48A <b>EV Cable :</b> AWG #10 type EVE, AWG #8 type EVE – 7,5m
<b>Dimensions:</b> 230 x 150 x 75 mm
<b>Enclosure:</b> Aluminum 3.8 mm industrial enclosure
<b>Protection :</b> NEMA 3R (capable NEMA4x)
<b>Display</b> LED indicator or screen 2 x 20 in option
<b>Option:</b> - WIFI module with technove App - RFID module

Table 1 Data sheets





## **6 INSTALLATION INSTRUCTIONS**

### **6.1 GROUNDING INSTRUCTIONS**

NOTE: To connect the ground wire, if you are using a conductor with insulation, be sure to remove this insulation to properly crimp the wire. Improper grounding will cause intermittent problems.

Note 2: A grounding conductor connected directly to the bottom of a panel is not recommended. The connection must be made on the terminal provided for this purpose. Improper grounding will cause intermittent problems.

Note 3: Grounding conductors on a multi-panel installation must be bonded together.

#### **6.1.1 Grounding instructions for cord set installation**

This product must be grounded. In the event of a malfunction or break, grounding provides a path of least resistance to electric current, which reduces the risk of electric shock. This product is equipped with a cord containing a conductor and a grounding plug. The plug must be inserted into an appropriate outlet, properly installed and grounded in accordance with local codes and ordinances.

**WARNING** - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Consult a qualified electrician or technician if you are in doubt as to the quality of the ground. Do not modify the plug provided with the product - if it does not fit the outlet, have a proper outlet installed by a qualified electrician.

#### **6.1.2 Grounding instructions for permanent installation**

This product must be connected to a grounded, metallic and permanent wiring network, or an equipment grounding conductor must be added to the circuit and connected to the equipment grounding terminal or to the power supply conductor of the device.

### **6.2 Outdoor**

This device shall be mounted at a sufficient height from grade such that the height of the storage means for the coupling device is located between 600 mm (24 inches) and 1.2 m (4 feet) from grade.

# TECHNOVE

## 6.3 Indoor

This device shall be mounted at a sufficient height from grade such that the height of the storage means for the coupling device is located between 450 mm (18 inches) and 1.2 m (4 feet) from grade.

## 6.4 EV charging station with cord set

A charging station equipped with a power cord must be installed near the socket as follows:

- For Canada, within 1.8m (6ft.)
- For the United States and Mexico, less than 300 mm (12 in.)

## 6.5 Wall Installation

Install the fixture supplied with the terminal and use the appropriate screws (4) to support a weight of 30 kg. The wall can be concrete, brick, steel or timber stud. The height above the ground must be

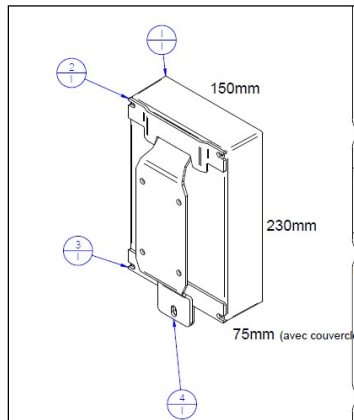
- For Canada: at least 50 mm (2 in.) above the ground
- For the United States and Mexico: at least 457 mm (18 in.) above the ground.



Figure 1 Wall fixture

Hang the terminal on the support. Add the locking screw or a padlock as appropriate.

# TECHNOVE



**Figure 2 Assembly rear view**

# TECHNOVE



## 6.6 *Electrical Installation*

### 6.6.1 IMPORTANT SAFETY INSTRUCTIONS

<b>SAVE THESE INSTRUCTIONS</b>	<b>WARNING</b>
	• Always use the connectors supplied with the unit.
	• A dedicated terminal circuit is required.
	• The size of the circuit breaker depends on the configuration of the mini-switches located inside the unit.
	• Check that there is no power supply on the installation circuit before open the enclosure.
	• The conductors for the power supply must be stripped according to table 3.
	• Use copper conductors only.
<b>CAUTION</b>	To reduce the risk of fire, connect only to a circuit provided with 120% of values in amperes maximum branch circuit overcurrent protection in accordance with the CSA C22.1–15 Canadian Electrical Code, Part 1 and ANSI/NFPA 70 National Electrical Code.

# TECHNOVE

## 6.6.2 Circuit breaker selection guide table

NO Switches	DESCRIPTION	Breaker Circuit	Position OFF ←	Position ON →
1	DISPLAY or LED		DISPLAY	LED
2	CCID (always ON)		ON	OFF
3	Voltage Vac		208	240
4,5,6	Power 12A 208/240V	15A	5,6	4
4,5,6	Power 16A 208/240V	20A	4,6	5
4,5,6	Power 24A 208/240V	30A	4,5	6
4,5,6	Power 32A 208/240V	40A	6	4,5
4,5,6	Power 40A 208/240V	50A	4	5,6
4,5,6	Power 48A 208/240V	60A	---	4,5,6

Table 2 Circuit breaker selection guide

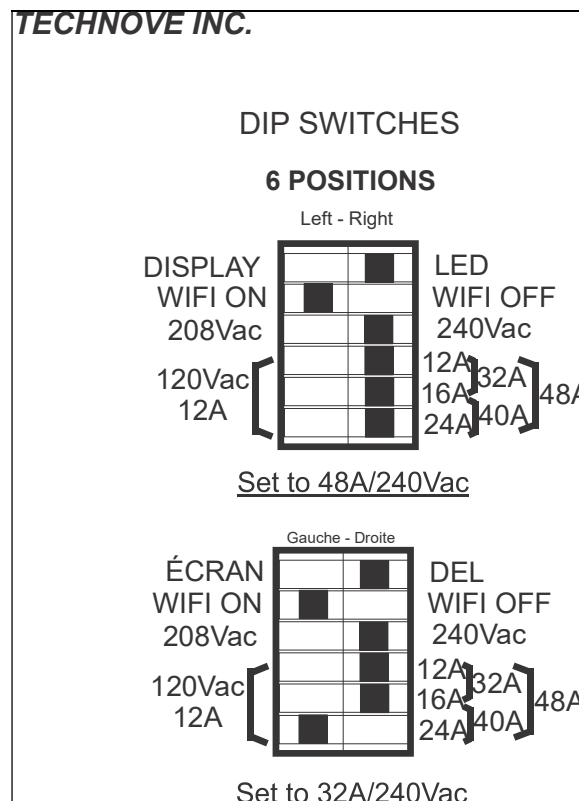


Figure 3 Dip switches - Example 48A and 32A

## 6.6.3 Model with cord set

- Use the plug supplied with the terminal.

# TECHNOVE

- To install the cord in the device, refer to the section below. Only a licensed technician or electrician is allowed to do this.
- Plug the cord plug into the compatible power receptacle.

## 6.6.4 Permanent connected model

- Use AWG, 60 ° C or AWG, 75 ° C copper conductors, depending on your local electrical code.
- Remove the 4 screws located on the front of the case and lift the cover by replacing the sealing bead.
- Disconnect the communication cable connecting the cover.
- Do not disconnect the connector connected to the main circuit.
- Prepare the power cable as follows:

Identification	Description	Wire Size		Wire Stripped	
		Model 32A	Model 48A	MOLEX (Black with screw) Lgth	Torque (mm) (#8 / #6)
Line 1 (L1)	Black	8 AWG	6 AWG	12 mm	35 / 45 lbs-in.
Ligne 2 (L2)	Red or other	8 AWG	6 AWG	12 mm	35 / 45 lbs-in.
Neutre	White	-----	-----	-----	
Mise à la terre (GND)	Green or bare	10 or 8 AWG	10 to 6 AWG	10 mm if required	

**Table 3 Power cable preparation**

- Make the connections as described in the Table above.
- Once the cable has been installed, screw the clamp on the clamping collar as far as possible without excessive force.
- Locate the mini-switches and place them according to the desired configuration. See the current selection table for the value of the switches.
- Reconnect the communication cable connecting the cover.
- Replace the cover with the 4 screws, replacing the sealing bead. Screw with 20 lbs-in torque.

## 6.6.5 Installation at lower power

In Canada, it is permitted to set the maximum power of the charging station to a lower power and to install conductors sized for this purpose. Here is the table.

Maximum Current (A)	Maximum Power (kW)	Circuit Breaker (A)	Conductor Gage (AWG)
12	2,9	15	14
16	3,8	20	12
24	5,8	30	10
32	7,7	40	8
40	9,6	50	8
48	11,5	60	6

Table 4 Gage (AWG) Conductor - Current (A)

## 6.7 Installation with load sharing

The load sharing installation can be done in two ways.

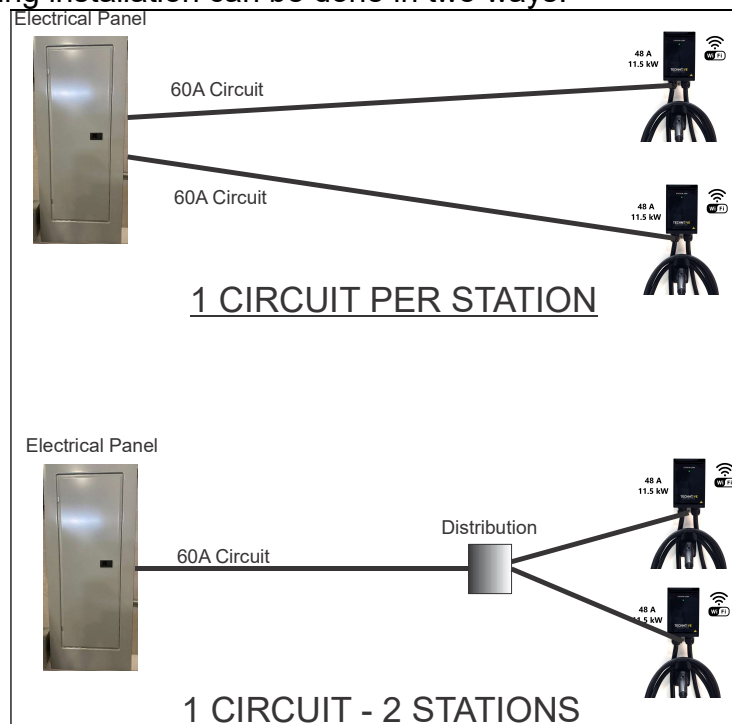


Figure 4 Connection topology

- Each of the terminals can be powered by a separate circuit or circuit breaker. The size of the circuit breaker is specified in table 4.

# TECHNOVE

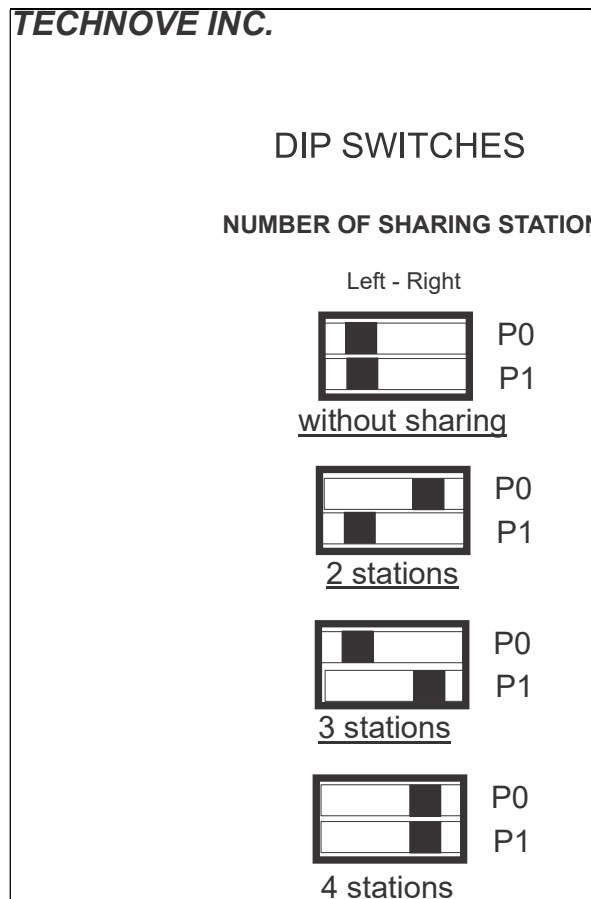
- Two to four terminals can be supplied on the same 40A, 50A or 60A circuit breaker via a junction or distribution box. The terminals must be configured (mini-switch value from 0 to 3) in sharing, version 3.00 of BR240V-I48 or BR240V-I32:
  - a. P= 0 : without sharing
  - b. P=1 : 2 shared terminals
  - c. P=2 : 3 shared terminals
  - d. P=3 : 4 shared terminals.

Breaker	STARTING CHARGING CURRENT			
	without sharing	2 sharing	3 sharing	4 sharing
40 A	32	16	10.66	8
50 A	40	20	13.33	10
60 A	48	24	16	12

**Tableau 5 Starting charging current**

- Power sharing can only be done with TechnoVE charging stations.
- Synchronization takes place when you configure the terminals in the appTechnove or appTechnovePRO.
- This activates dynamic sharing in order to optimize the use of the circuit.
- Thus the maximum authorized power of the circuit will be distributed according to the number of connected vehicles excluding those whose charge is finished.
- In the event of a network failure, the terminals return to the value of the initial current.
- The LED indicator of the shared terminal turns YELLOW when in standby.





**Figure 5 Dip switches - Load Sharing Selection**



## **7 OPERATING INSTRUCTIONS**

### **7.1 Standard model with LED indicator**

- On power up, the indicator is RED. Once the correct functioning checks have been completed, the indicator turns GREEN.
- When charging, the indicator turns BLUE which means " vehicle connected"
- The blinking BLUE indicates "in charge".
- The fixed RED indicator means "starting up".
- The flashing RED indicator means "in error".

### **7.2 Standard ev charging station with WIFI**

- Connect the coupler to port J1772 of the vehicle.
- The charging process starts automatically if the automatic mode is on (by default).
- At any time, you can disconnect the coupler and put it back on its base.
- Refer to WIFI User's Guide available on web site "technove.ca INFORMATION section".

### **7.3 Standard ev charging station without WIFI**

- Connect the coupler to port J1772 of the vehicle.
- The charging process starts automatically.
- At any time, you can disconnect the coupler and put it back on its base.

### **7.4 Model with screen display (no more available)**

When powering up, the charging station indicates the type of station, 240V, the maximum power configured in amperes (48 A.) and in kilowatts (11.5 kW).

Subsequently, the display switches to the screen saver to protect the screen. When you plug in the vehicle, the following information will be displayed:

- Top line:
  - Power in kilowatts
  - Power of the charging current in amps.
- Bottom line:
  - Cumulative energy in kWh
  - Current session energy in kWh



## **7.5 Chip card reader ev charging station (RFID)**

### **7.4.1 Configuration**

**One of the cards supplied with the device is identified as "CONFIGURATION". This card allows you:**

- 1. Produce the list of users with their energy consumption in kWh.**
- 2. Add a user.**
- 3. Remove a user.**
- 4. Activate the terminal permanently.**

### **7.4.2 Procedure**

- Present the configuration card at all times when the coupler is not connected to the vehicle.
- NOTE: Presenting the configuration card means "YES".
- Waiting 10 seconds means "NO".
- To add a user:
  1. Present the card to call up the menu.
  2. Present the card to confirm the menu.
  3. Wait for "ADD A USER"
  4. Present the card to confirm.
  5. Présent the new cards.
  6. Wait the end.

### **7.4.3 How to start charging**

# TECHNOVE

- Present any card at any time when the coupler is not connected or after having connected it.
- Follow the instructions.
- If you are using the configuration card to activate the station, simply wait 10 seconds to start the session.
- When the session is activated, a message indicates "OK" with the number of the user's card.



## 8 USER MAINTENANCE INSTRUCTIONS

### ***8.1 Models permanently connected***

This product requires no maintenance for permanently installed models.

### ***8.2 Models with power cord***

We recommend that the plug be maintained at the contacts. Every six months, disconnect the plug and check the condition of the contacts. If there are traces of oxidation, please clean the contacts before reconnecting.

### ***8.3 Error messages and other symptoms***

<b>MESSAGES / SYMPTOMS</b>	<b>DESCRIPTION</b>	<b>ACTION</b>
Synchronization Error	WIFI module tries to communicate with main board	Wait or do a restart
CCID defective	Main board detects that CCID module is not working	Call service
Ground fault detected	CCID module detects a ground fault with electrical connections.	Remove EV connector and try again
Charging is limited to 32 Amps or less	Two possible causes: Internal parts are defectives Too high internal temperature may cause reducing power.	Do a restart / If persistent call the service
Unknown Error	Two possible causes: 1. An error is transmitted by the vehicle 2. An internal terminal error due to a component fault	Do a restart / If persistent call the service



## 9. MOVING AND STORAGE INSTRUCTIONS

- When receiving and installing your charging station, make sure to unwind the cable and store it properly on the support provided with a large loop. The cable must not be twisted. Three or four loops maximum are recommended.
- After each use, the coupler J1772 and the EV cable must be stored on a suitable support. As the J1772 coupler is NEMA3x protective, it is preferable to place it away from bad weather such as rain, snow and ice. In winter, we recommend the use of a protective pouch for the coupler.
- Do not bend the EV cable within a radius of less than 15 cm (diameter of 1 foot or 30 cm).
- Do not close a door on the cable, unless you have adequately protected it.
- Do not pass the vehicle connection cable through a wall.



## **10 Limited Warranty**

TechnoVE Inc.'s warranty covers all faults or malfunctions of your charging station, EV cable and plug J1772 for a period of three (3) years from the date of purchase, in normal use and under the terms of this document.

Fixing or part replacement will be done at TechnoVE's plant. The customer is responsible to ship the package. Return shipping fees are at TechnoVE charge.

Other accessories are warranted for a period of one (1) year.

Any modifications made to the product could void the warranty as well as any non-compliant installations and storage (see section 9). Check with the manufacturer if necessary.

It is also possible to have your terminal repaired at your installation with travel costs depending on the distance.



## **11 Customer service**

To reach the customer service, email to [support@technove.ca](mailto:support@technove.ca) or call 1-888-370-1907.