ELECTRIC VEHICLE CHARGING SOLUTIONS

By IdealPrepaid
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ABOUT US

Our company has been involved in transaction processing for the last 20 years and has created the Frontier Platform for supporting more than 350 000 installations around the world processing more than a million transactions a day. The Frontier Platform provides a total solution for the management of utilities including Electricity, Water and Gas. Our platform also supports the management of many other services such as prepaid telephony, gift cards, remittance, bill payment with successful deployment in South Africa, Botswana, India, Canada and Israel.

Our dedication to innovation across various industries, coupled with our unwavering commitment to delivering exceptional customer service, has been the cornerstone of our success. This steadfast approach allowed us to build enduring relationships of trust and loyalty with numerous business partners around the globe. We enthusiastically invite new business partnerships to join us and become an integral part of our ongoing journey.

ELECTRIC VEHICLES

The remarkable growth in Electric Vehicles has not only posed challenges but also created exciting opportunities for us to address. In recent years our Frontier Platform has been expanded to provide solutions for the charging of Electrical Vehicles (EV).

TYPES OF RECHARGE

Vehicle recharge time depends on the available current, the type of charge station and the characteristics of the vehicle. Typical recharge is based on AC current and allows batteries to recharge from 20 minutes to several hours. Faster recharge is based on DC current enabling to achieve adequate battery capacity in 15 to 30 minutes. It is important for drivers to know the features of their vehicle and its recharge capability.

Typical Charging Types and Times

Type	Voltage	Amps	Charging Power	Setup	Km per Hour of Charge	Average Time to get Battery to Full Charge (Hours)	Suitability
Level 1	120VAC	15-20A	1-2kW	1Φ2W Connector: Standard Household (NEMA 5-15)	6.44	8-20 hours	Home or prolonged work place charging
Level 2	208-240VAC	20-80A	3.3-19kW	1Φ3W or 2Φ3W Connector: Specialised e.g. SAE J1772 in USA	32.19	4-8 hours	Home, work place or public charging
Level 3	120- 347VAC converted to DC Output typically 400VDC	60-800A	25-350kW	2Φ3W, 3Φ4W, 3Φ3W Connector: Specialised e.g. CCS,CHAdeMO	337.96	0.5-1 hour	Quick top ups at public charging stations typically along highways for long journeys

Charge Station Location Types

Fixed Parking Location	Shared Parking Location
A charge station may be used in a fixed location where the same owner uses it frequently to recharge their vehicle such as a fixed parking spot in a building or an office. A special meter is installed at the parking spot and the charger is usually privately owned by the owner of the vehicle.	A charge station used in a location which is shared amongst various drivers. This includes gas stations, shopping malls or public parking. A self-service charge station is typically installed in shared locations.

SOLUTIONS FOR BUILDINGS WITH COMMON POWER

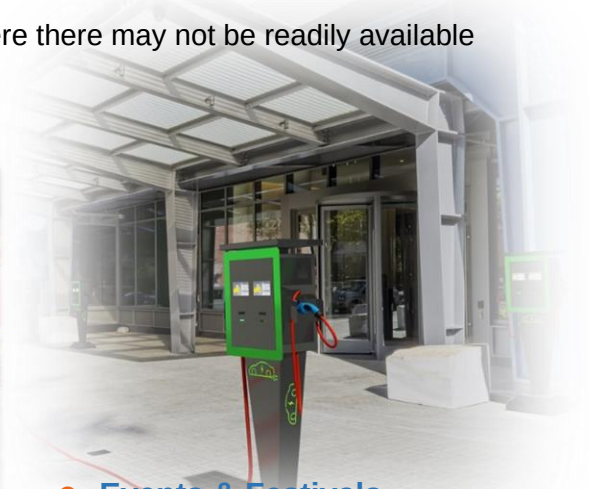
Most buildings don't have power at the parking spot which is specifically allocated to the respective resident. Our prepaid meter connects to the common meter in the building. The owner of the vehicle recharges the meter and the money for the power consumed is transferred to the management company for settlement with the utility provider. A prepaid meter simplifies the monthly accounting and provides regular monitoring of consumption.

The Ideal Solution for Preventing Disagreements Between Residents and their Building Management.

- **Solution For EV Owners in buildings**
- **Quick Installation**
- **Easy Maintenance**
- **Control of Power Consumption**
- **Eliminates administration for the Building Management**

SOLUTIONS FOR PORTABLE CHARGING

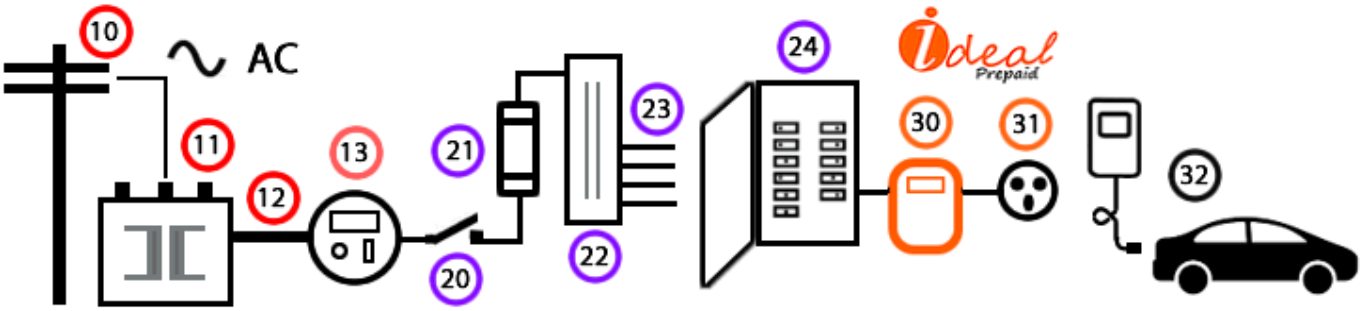
The Frontier charger can function as a temporary portable charging station in situations where it's not feasible to have a permanent, fixed charging installation. The Frontier station is designed to allow for temporary charging solutions when traditional charging infrastructure is unavailable. Portable charging stations can be set up at outdoor events, music festivals, and fairs. Construction workers often need access to charging for their vehicles or equipment at remote job sites where there may not be readily available power sources.



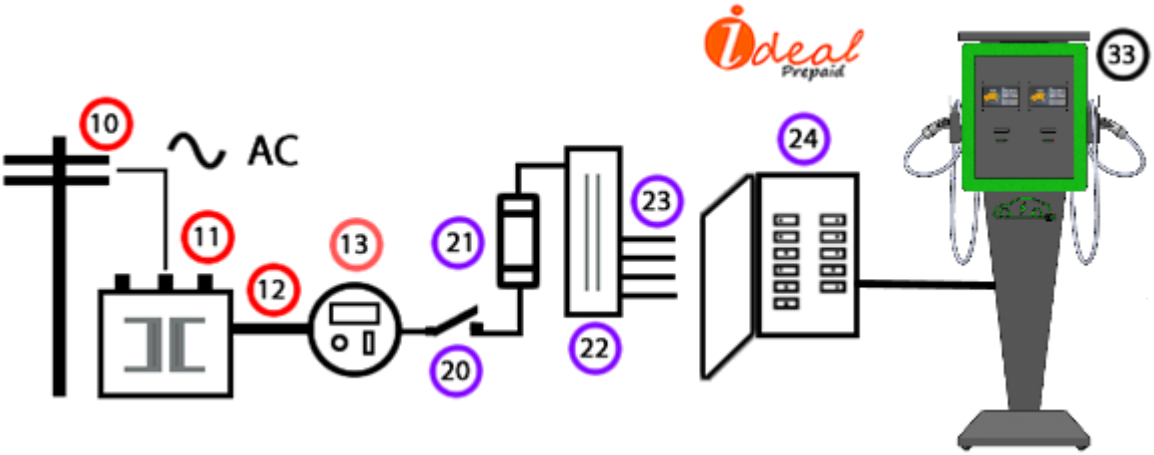
- **Events & Festivals**
- **Trade Shows**
- **Coffee Shops**
- **Convenience Stores**
- **Hotel Lobbies**

EV CHARGE STATION INSTALLATION

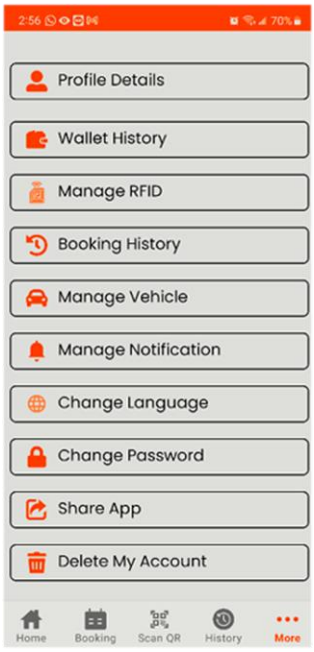
A qualified electrician installs a power line to the desired location of the station or a power outlet which is connected to a designated distribution board. An electrician should be consulted regarding the preparation of the infrastructure which depends on the length and routing of the power lines and any other required equipment.



10-Electricity from Grid **11**-Central Transformer **12**-Main Income Line **13**-Common Area Meter
20-Disconnect Switch **21**-Available Power **22**-Splitter **23**-Power Per Spot **24**-Distribution Panel
30-Frontier Prepaid Meter **31**-Reticulation to plug socket
32-Reticulation to fixed recharge station **33**-Alterntaive reticulation to Frontier Self Service Station



IDEALCHARGE-THE MOBILE APPLICATION FOR USERS



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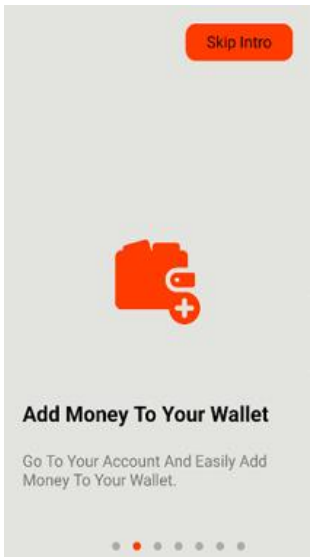

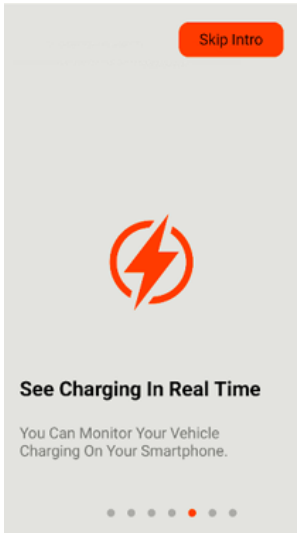

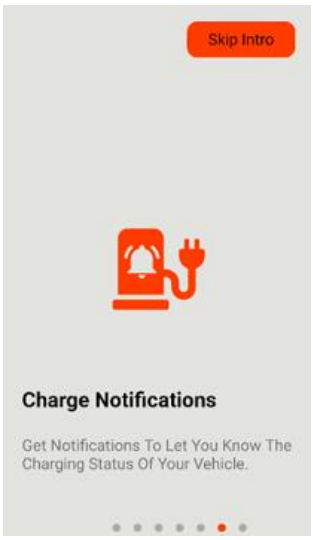

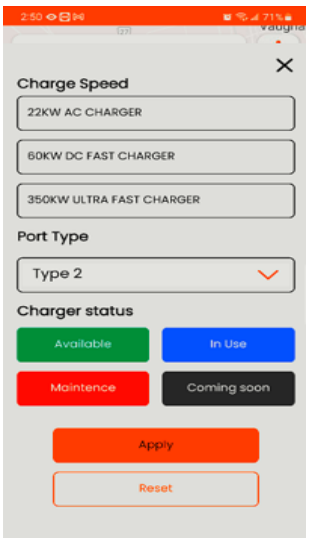

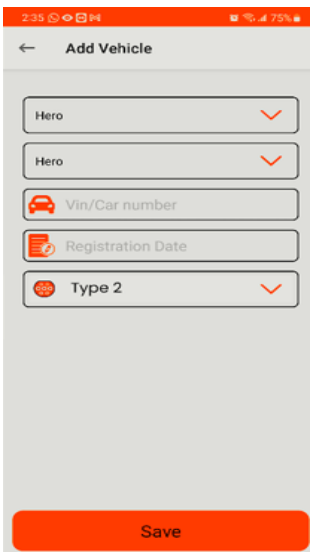

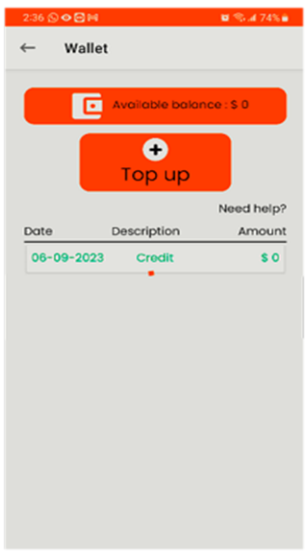

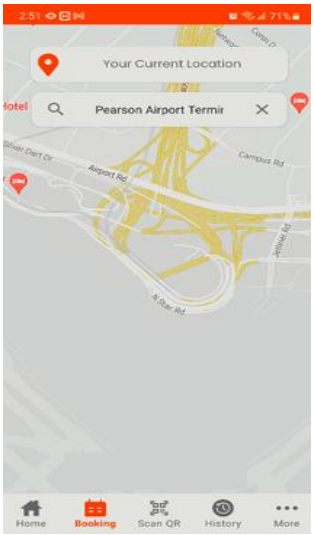

CHARGER SPECIFICATION-FRONTIER EV SRS02-48

Mounting Options	• Indoor or Outdoor • Pole Mount • Base Mount • Wall Mount • Fixed or Mobile Portable Options • Single or Double Charger (Left & Right)
Display	• Interactive 7'' Touchscreen + LCD
Recharge Session Duration	• Flexible Increments of time or kWh
Communication	• WiFi, Cellular WAN (3G, 4G , 5G, LTE)
Certification, Standards and Compatibility	• NRTL • UL 2251 Standard for Plugs, Receptacles and Couplers for Electric Vehicles • UL 2231 Standard for Personnel Protection Systems for Electric Vehicle (EV) • SAE J1772™ Electric Vehicle Conductive Charge Coupler Standard • IEC 62196 International Electrotechnical Commission Standard • IEC 61851 • NEC Article 625 Electric Vehicle Charging System Equipment • Tesla • Chargers (LiquidSky Wattzilla Uno, Duo, Quad etc)
Protocol	• OCPP 1.6J
Safety	• Automatic self test prior to every charge session (UL 2231) • Pilot Line Status Monitor Resistance and diode check for activation (SAE J1772) • Ground Monitoring • Fault sensitivity Min 15ma - Max 20ma trip protection against electric shock (NEC 625.22) (SAE J1772) (UL 2231) • Ground Fault Circuit Interrupt (GFCI) @ 20mA ground fault • 15 minute delay after GFCI event for subsequent recharge • Stuck Relay Detection • Temperature Monitoring and cessation at critical levels.
Temperature Throttling	• Reduction in charging current at increased temperatures & restoration or charging current at when temperature cools.
Power Interlock	• De-energizes the electric vehicle cable connector when the connector is disconnected from the vehicle (NEC 625.18)(UL 2231)(IEC 62196)
Input Plugs	• Cable Connectors NEMA 14-XX Compatible • NEMA 14-30 - 24A maximum charging • NEMA 14-50 - 40A maximum charging • NEMA 14-60 - 48A maximum charging
Input Power	• Voltage Range 90-264V AC 50/60Hz • Peak Power 208 – 264V AC Level2 10kW • Single Phase, Split Phase or Three Phase
Output	• Adjustable 6A to 48A per station
Environment	• Indoor/Outdoor • IP68 Rating • Temperature Range -40°C to 60°C
Vehicle Plugs	• SAEJ1772 • IEC 61851 Type 1 and 2 • United States & Europe

SITE VARIABLES & CONSIDERATION-An Example…

Estimate for Vehicle Charge Station Infrastructure		הערכת מחיר לתשתית עמדות טעינה לרכב
Date		תאריך
Attention		לכבוד
Contact Person		איש קשר
eMail		אימייל
Tel		טלפון
Address		כתובת
Site Description		**תיאור האתר**
Location Type (Residential Building, Offices, Mall)		סוג מיקום (בניין מגורים, משרדים, קניון)
Is this a fixed location charger or a requirement for a mobile option? (e.g. Store, Conference, Exhibition, Car Rental Site)		האם זה מטען במיקום קבוע או דרישה לאפשרות ניידת למשל חנות, כנס, תערוכה, אתר להשכרת רכב?
Does the site already provide dedicated and available power for the desired parking spots?		האם כרגע האתר מספק חשמל ייעודי וזמין למקומות החניה הרצויים?
Parking Type (Fixed spot per person or Shared Spots)		סוג חניה (מקום קבוע לאדם או מקומות משותפים)
Parking Spots		מקומות חנייה
Parking Area Per Level m^2		שטח חניה למפלס מ"ר
Parking Levels		מפלסי חניה
Parking Above Ground		מעל הקרקע
Parking Below Ground		מתחת לקרקע
Requirement for Immediate Recharge Stations		צורך מידי בתחנות טעינה
Parking Spots adjacent to each other	כן לא	מקומות החניה צמודים אחד לשני
Main Building Incomer Line Capacity		קו כניסה ראשי של הבניין
Common Area Distribution Board Recommended Limits		מגבלות מומלצות עבור לוחות הפצה קיימים
Option-A- Direct Line to Common Distribution Board		**אפשרות-א- קו ישיר ללוח הפצה משותף**
An electrical cable is laid from an available common area distribution board to the parking spot. **Benefits:** Simpler installation; No Changes in Parking Positions for fixed spots. **Disadvantages:** Distribution Boards in common areas have limited capacity and generally cannot support more than 3-4 vehicles. It is a limited approach if more people will require recharge stations and becomes less convenient if time or load management is required.		מונח כבל חשמל מלוח חלוקה משותף וזמין למקום החניה. **יתרונות:** התקנה פשוטה יותר; אין שינויים בעמדות החניה **חסרונות:** ללוחות חלוקה באזורים משותפים יש קיבולת מוגבלת ובדרך כלל אינם יכולים לתמוך ביותר מ 3-4 כלי רכב. זוהי גישה מוגבלת אם יותר אנשים ידרשו תחנות טעינה והופכת פחות נוחה בעתיד אם יידרש ניהול זמן או עומס.
Option-B-Designated Parking Location Close to Main Building Incomer Line		**אפשרות -ב-מיקום חניה ייעודי קרוב לקו החשמל הראשי של הבניין**
A electrical cable is laid from the main distribution panel of the building to the nearest parking location. Thereafter it is split to contiguous locations. **Benefits:** Better power distribution and better long term planning. **Disadvantages:** In residential buildings this requires changes in parking locations and negotiations with tenants.		מונח כבל חשמל מלוח החלוקה הראשי של הבניין עד למקום החניה הקרוב. לאחר מכן הוא מחולק למיקומים רציפים. **יתרונות:** חלוקת חשמל טובה יותר ותכנון טוב יותר לטווח ארוך. **חסרונות:** בבנייני מגורים זה מחייב שינויים במקומות החניה ומשא ומתן עם דיירים.
Option-C-Lay new Cables from Main Building Incomer Line to New Sub Panels at Every Parking Level		**אפשרות-ג-הנחת כבלים חדשים מהקו הראשי של הבניין ללוחות משנה חדשים בכל מפלס חניה**
A electrical cable is laid from the main distribution panel of the building to new sub panels located at each parking level. They are then split further to required locations. **Benefits:** Better power distribution to existing parking locations. Allows for easy future installation of charging stations at any parking spot. **Disadvantages:** Requires major infrastructure changes.		מונח כבל חשמל מלוח החלוקה הראשי של הבניין ללוחות משנה חדשים הממוקמים בכל מפלס חניה. לאחר מכן הם מפוצלים למיקומים הנדרשים. **יתרונות:** חלוקת חשמל טובה יותר למקומות חניה קיימים. מאפשר התקנה עתידית קלה של עמדות טעינה בכל מקום חניה. **חסרונות:** מצריך שינויים גדולים יותר בתשתית.