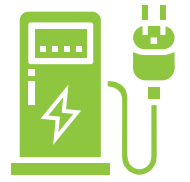




Albario Engineering (Pvt) Ltd.
Energy & Infrastructure



A-Charge
Powered By AEPL

Accelerating e-mobility!

Channel Partner / System Integrator of ABB



ABOUT US

A-Charge is a business owned by Albario Engineering (Pvt) Ltd. that aims at providing EV Charging Solutions for Electric Vehicles. A-Charge feels great pride in introducing itself as the pioneer of charging solutions in Pakistan.

AEPL has joined hands with ABB Power and Automation as **Channel Partner/System Integrator** to provide Turnkey Solutions for EV Charging Infrastructure including Public and Commercial charging (AC, DC, DC fast, and DC high power charging) to customers across the country.

ABB has been serving customers for over a century with reliable energy-efficient solutions for utilities, industry, infrastructure, and transport. Since 2010, ABB is, leading the e-mobility revolution with charging infrastructure for any location combined with connected services. The Company is championing e-mobility for a sustainable future, in which smart, reliable, and emission-free mobility will be accessible by everyone, everywhere.

Albario Engineering (Pvt) Ltd. was established, in Lahore, Pakistan, in 1954, and has been working as a one window solution provider in the fields of Energy, Industrial Solutions, and Infrastructure ever since. The group has decades of Experience in Managing Electrical & Mechanical Turnkey Projects, Up-gradation Packages, Installation, Commissioning and O&M Services in the region.

Pakistan has great potential for Electric Vehicles and the EV Policy incentivizes import and production of EVs in all categories, proposing to convert a significant portion of commercial and domestic vehicles to EVs by 2030.

WHY AEPL

*Clean. Smart. Efficient. EV Charging Stations.
Offering Technologically Advanced Solutions!*

We Are AEPL

Albario Engineering (Pvt) Ltd. has been serving its esteemed clients for decades with reliable and efficient Energy, Infrastructure, and Industrial Solutions. AEPL is dedicated to changing the way the world uses energy. We offer the most advanced Electric Vehicle Charging and Energy Storage Solutions.

Why AEPL?

Web Access: Cloud-Based Access offers 24/7/365 monitoring to support a smooth and seamless charging process by notifying you about battery percentage.

Annual Checks: AEPL offers safety and performance inspection checks annually, which include thorough testing of the operation of each charging point.

Mobile Application: AEPL's mobile application enables customers to access open charging stations, set up notifications, and monitor metrics like charging, user authorization, payment, and network connectivity.

RFID Control: AEPL also offers RFID security to enable the safe exchange of data between keycards and EV charging points and ensure the privacy and security of the latter.

Supporting EV Charging Standards: AEPL provides chargers that conform to all EV Charging Standards to ensure maximum performance and customer satisfaction.

MAIN FEATURES OF ALL ELECTRIC CHARGERS

ABB chargers are durable, reliable, and easy to service. The main advantages include:

- Modular and redundant construction to ensure continuous operation.
- Industry-grade components to ensure a long lifetime and robust operation.
- Futureproof, easily upgradable technology.
- Remote maintenance and support for an effective, timely response to any irregularity.
- Supports the open communication protocol OCPP.
- Stainless steel powder-coated cabinets for durability, even in cold or humid climates.
- User-centered design validated by user tests.
- Remote charger's power management.



THE KEY ADVANTAGES OF CONNECTED CHARGERS

ABB Ability Connected Services offer four key advantages:

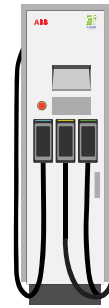
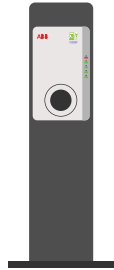
Flexibility: Connect to any charging network, back-office, payment platform, or energy management solution

Upgradability: Benefit from the latest industry standards

High availability of the service: Based on Microsoft Azure's robust platform

Cost efficiency: Avoid development and maintenance costs of proprietary software solution

SUMMARY TABLE



Metrics	AC Wallbox	DC Wallbox	Terra Fast	Terra HP
At a Glance	Superior EV home charger delivering high-value quality with all necessary advanced safety & built-in protections.	Ultra-compact charger; for residential & commercial use, offering safe, smart, and future-compatible fast charging with all necessary built-in protections.	Compact chargers for all types of EVs while going up to 180 kW and serving 2 EVs simultaneously.	Ultra-Fast commercial charging points with higher power demands to meet your infrastructure needs.
Charging Time	4 – 5 hours	1 – 3 hours	20 – 60 min	10 – 20 min
Charging Capacity	4.6 kW – 22 kW	24 kW	50 kW – 180 kW	175 kW – 350 kW
Charging Protocols	Level 2 Connector Type 2	CCS, CHAdeMO	CCS, CHAdeMO	CCS, CHAdeMO
No. Of Vehicles Supported	1	2	2 simultaneously	2 ~ 4 ~ 6 simultaneously
Efficiency	95% at nominal output power	94% at nominal output power	>95% (peak)	≥ 94% at full load
Environment	Indoor / Outdoor with shed	Indoor / Outdoor	Industrial	Indoor / Outdoor
Protection Electrical	Overcurrent, overvoltage, undervoltage, ground fault including DC leakage protection, integrated surge protection.	Overcurrent, overvoltage, undervoltage, ground-fault, surge protection, PE continuity monitoring and leakage current monitor protection integrated.	Overcurrent, overvoltage, undervoltage, ground fault including DC leakage protection, integrated surge protection	Overcurrent, overvoltage, undervoltage, ground fault including DC leakage protection, integrated surge protection
Enclosure	IP54 + IK10	Protection NEMA 3 & IP54 Indoor & outdoor	Protection NEMA 3 & IP54 Indoor & outdoor	Robust all-weather enclosure.
Operating Temperature	-35 °C to + 50 °C	-35 °C to + 55 °C	-35 °C to + 55 °C	-35 °C to +55 °C
Connectivity	Wi-Fi, Ethernet (RJ45), Bluetooth, RS485, 4G / 3G	GSM / 3G Modem. 10/100 Base –T Ethernet	Internet access via 4G / 3G / Ethernet (RJ 45)	4G, Ethernet
Credit Card Support	NA	NA	Yes	Yes

PRODUCTS

Car Charging Infrastructure

Terra AC Wallbox – 4.6 kW – 22 kW

Superior EV home charger delivering high-value quality, futureproof flexibility, and advanced safety & protection.

Main Features & Key Benefits

- Space-saving and easy-to-install design
- Smart functionality for optimized charging
- Remote software updates
- Broad range of connectivity options
- Built-in energy meter for load management
- Complying with IEC standards
- Single phase up to 7.4 kW / 32 A
- Three-phase up to 22 kW / 32 A
- Protection IP54, IK10
- Connectors type 2, socket with or without shutter
- Overcurrent, overvoltage, undervoltage, ground fault, and surge protection integrated.

Terra Fast Chargers – from 50 kW to 180 kW

Compact chargers for all types of EVs while going up to 180 kW and serving 3 EVs simultaneously.

Main Features & Key Benefits

- DC fast charger supporting CCS (type 1 and 2), CHAdeMO 1.2, and GB/T.
- Serving up to 2 vehicles simultaneously, two fast-charging and one AC charging.
- Modular Design from 20 to 50 kW (Terra 24 – 54), and from 90 to 120 to 180 kW (Terra 94 – 124 – 184).
- The 300 A CCS cables allow high power charging speed
- Capable of charging high voltage batteries (up to 920 VDC)
- Simultaneous AC charging via optional 22/43 kW cable (Terra 24/54) or 22 kW socket AC Type-2
- MID and Eichrecht (PTB) compliant metering system for DC and AC outlets available as an option.
- Upgradable with a cable management system.
- IEC 61000 EMC Class B certified for industrial and residential areas.
- Futureproof connection via open industry standards:
- Easy integration in OCPP backends and local control systems via OPC-UA (optional)
- Remote uptime monitoring, assistance, updates, and upgrades
- Easy to use:
 - Daylight readable touchscreen display
 - Graphic visualization of the charging progress
 - RFID/PIN/Remote authorization
- Upgradable with credit card payment terminals

Configurations

- Low power models: Terra 54 (50 kW)
- High power models: Terra 94 (90 kW), Terra 124 (120 kW), Terra 184 (180 kW)
- European, US, Japan, and China versions available, for 400 V, 480 V, and 380 V AC grid inputs
- CCS, CHAdeMO, GB/T, and AC charging
- Continuous current output up to 125 A (Terra 24/54) and 300 A (Terra 94/124/184)
- Different cable lengths available and optional cable management system.



Terra DC Wallbox – 24 kW

Ultra-compact charger; for residential use, offering safe, smart, and future-compatible fast charging.

Main Features & Key Benefits

- CE Variants:
 - 0 – 22.5 kW, 24 kW (peak) / 60 A
- UL Variants:
 - Single Phase: 19.5 kW @ 208 V/60 A
 - 22.5 kW @ 240 V/60 A
 - Three Phase: 0 – 22.5 kW, 24 kW (peak) / 60 A
- Charging voltage: CCS 150 – 920 VDC
- CHAdeMO 150 – 500 VDC
- Protection NEMA 3 & IP54
- Overcurrent, overvoltage, undervoltage, ground-fault, surge protection, PE continuity monitoring, and leakage current monitor protection-integrated
- Easy-to-install design
- A broad range of connectivity options
- Remote software updates
- Certified with EMC Class B protection

Terra HP – 175 kW to 350 kW

Fast charging points with higher power demands to meet your infrastructure needs.

Main Features & Key Benefits

- Ultra-high current of 375 A per individual power cabinet
- Dynamic DC functionality: 500 A per charge post
- Wide voltage range: 150 – 920 V
- Modular System: 175 – 350 kW
- Suited for current and next-generation EVs
- CHAdeMO and liquid-cooled CCS up to 350 kW and 500 A
- 375 A output current per power cabinet to charge fast at 400 VDC
- Dynamic DC to save costs
- Flexible charge
- Scalable installation with integrated galvanic isolation
- Flexible charge cables, advanced liquid-cooling system
- Robust, all-weather enclosure for indoor and outdoor use
- EU and US models available.





HEAVY VEHICLE CHARGING INFRASTRUCTURE

Connector Based

ABB offers a complete portfolio for charging Heavy Electric Vehicles, including buses and trucks with a CCS connector.

Main Features & Key Benefits

- Power Range of 24 kW, 50 kW with Voltage Range from 150 – 920 VDC
- Power Range of 100 kW, 150 kW with Voltage Range from 150 – 850 VDC
- Compliant with OCPP, ISO 15118 / DIN 70121 / IEC 61851-23 & -24
- Remote diagnostics and management tools
- EU and US models available
- Sequential Charging with up to 3 outlets with 100 and 150 kW

Advantages of Sequential Charging:

- High power charging, maximizing vehicle availability
- Smaller grid connection, reduced initial investments & operational costs
- Optimal utilization of installed infrastructure, thus, lowering investments in charging equipment



Pantograph Up

ABB offers an ideal solution to charge Electric Buses with a roof-mounted pantograph.

Main Features & Key Benefits

- Voltage Range from 150 – 850 V
- Power Range of 50 – 100 – 150 kW per outlet for overnight charging
- Power Range of 150 – 300 – 450 – 600 kW per outlet for opportunity charging
- Safe and reliable, fully automated connection
- Compliant with OCPP, ISO 15118 / DIN 70121 / IEC 61851-23 & -24
- Remote diagnostics and management tools

Pantograph Down

ABB offers an ideal solution to charge Electric Buses fully automated following the OppCharge protocol.

Main Features & Key Benefits

- Voltage Range from 150 – 850 V
- Power Range of 150 – 300 – 450 – 600 kW
- Charge in 3 to 6 minutes
- One charger can serve multiple vehicle types & brands
- Safe and reliable, fully automated connection
- Compliant with OCPP, OppCharge / IEC 61851-23
- Remote diagnostics and management tools



ABB CHARGER CARE SLA

Secure the availability, performance, and safety of your EV Chargers

ABB Charger Care

ABB charger care is available for all ABB EV charging products.

Modules:

Several modules are available, including proactive monitoring, preventive and corrective maintenance, training programs, spare parts, and software updates and upgrades.

Main Features & Key Benefits

- Highest uptime and reliability
- Operational savings by remote monitoring, troubleshooting, and repairs
- Quick on-site repairs
- Clear communication and case tracking via ABB Web Tools
- Significant savings on downtime, traveling, transportation, man-hours, and resources

ABB ABILITY™ CONNECTED SERVICES

Enabling your Charging Operation

To run a commercial charging network - in a dynamic environment, it is crucial to connect EV chargers to the Internet.

Main Features & Key Benefits

Connectivity helps EV Charging Network operators to:

- Remotely monitor and configure charge points
- Service the equipment with minimal operational effort
- Increase charger uptime
- Software updates
- Build a flexible charging infrastructure

Charger Connect

- Access to the ABB Ability Connected Services Platform
- Over-the-air software updates
- ABB Service Tools
- Network Operation Centre (NOC)
- Personnel support

APIs for Back Office Integration

ABB APIs are based on OCPP – the industry-wide accepted communication protocol – and are available in:

- Open Charge Point Protocol (OCPP) 1.5 API
- Service API for simpler remote diagnostics
- Basic Demand/Response API

Manage the Charger Connectivity yourself to:

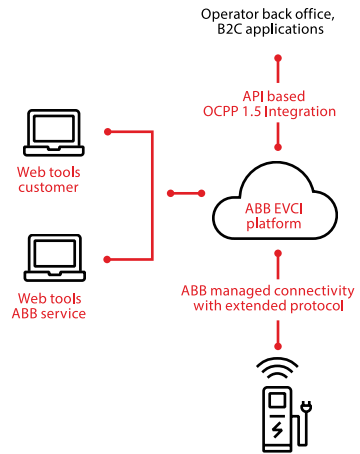
- Minimize the number of unplanned on-site delegations
- Reduce costs
- Increase uptime of the charger network

Web Tools

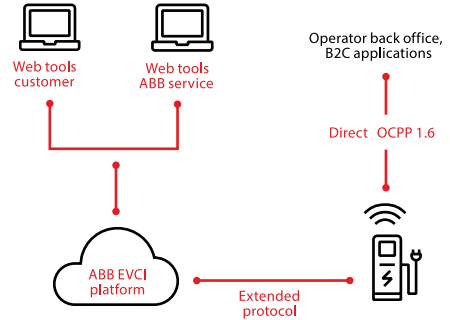
- Configure settings
- Real-time status of a charger
- Valuable insights into usage statistics
- Configure the payment device (currency, language, pricing per session)

All data is available directly via an Internet browser and can be exported; for further processing.

Digital integration - OCPP API Concept



Digital integration - Dual Uplink Concept



SWAPPABLE BATTERY STATION

A-Charge is working to develop a swappable battery station for 3 & 2 wheelers.



Energy & Infrastructure

JOIN THE FUTURE WITH US

Get in Touch

+92 332 740 0246

+92 42 111 00 1954
+92 42 38 09 9991

info@aepl.com.pk

www.aepl.com.pk

91-C, Model Town, Lahore, Pakistan
3.5 km, Defence Road, Lahore, Pakistan

