



# NEVI enabled charging solutions

Driving successful EV charging programs across the United States



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ABB E-mobility has the technology and experience to support successful NEVI charging programs

**Infrastructure investment background**

The 2021 Bipartisan Infrastructure Law (BIL) makes the single largest investment in electric transportation in US history – including historic investments in public charging infrastructure (\$7.5B).

**National EV Infrastructure (NEVI) Program**

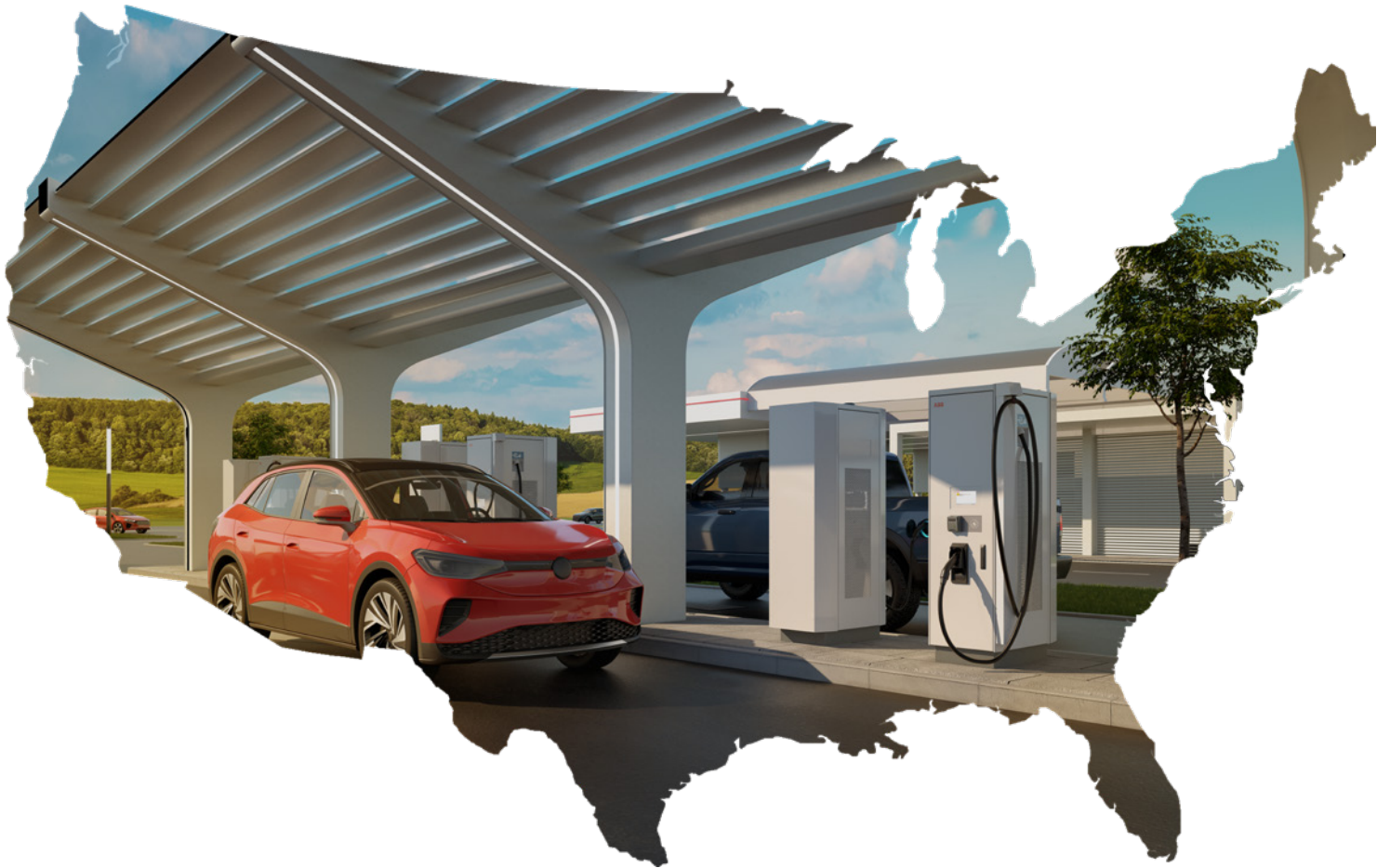
The NEVI program allocates \$5B over five years to all US states based on set formulas published by the Federal Highway Administration (FHWA). States will issue their own requests for proposals (RFPs) from EV charging operators beginning in early 2023, with the bulk of those RFPs expected to be issued in the first of half of the year.

FHWA issued minimum standards and requirements that each state must abide by, along with domestic preference requirements, like the Build America, Buy America rule for EV chargers.

ABB E-mobility has provided feedback to FHWA and State Departments of Transportation throughout the program defining process and is positioned to meet these technical and Build America, Buy America requirements.

# NEVI program requirements made easy

ABB E-mobility is ready to accelerate your NEVI charging plans



COMPLIES WITH

## BABA

Build America, Buy America (BABA) rule from the Federal Highway Administration (FHWA)



ENABLES

## 97%

uptime with a well-resourced service program including SLA and parts planning



ALIGNS WITH

## NEVI

minimum standards for hardware, digital and operational requirements



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# FHWA Build America, Buy America Compliant

## ABB E-mobility Terra 184 and Terra 124 meet Phase 2 requirements, reducing project risk

Our Terra chargers meet FHWA's Build America, Buy America requirements today, eliminating the risk that phase 1 chargers can impose on project timelines.

FHWA issued Build America, Buy America rule requirements for EV chargers funded by the US Department of Transportation, including the NEVI, Corridors, and Community Programs (CFI). The new rules provide for two phases:

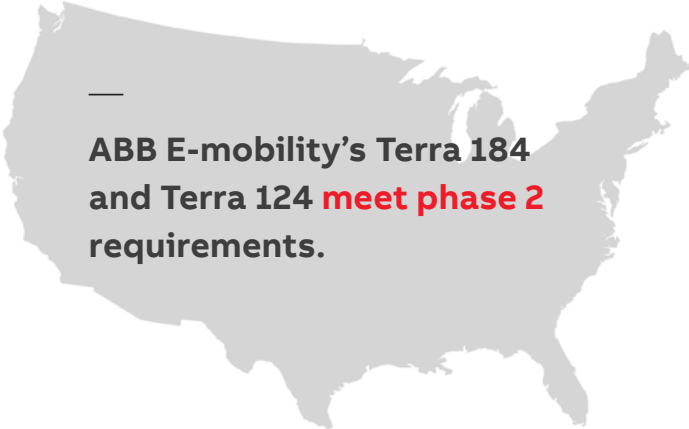
### Phase 1

Beginning in March 2023 and ending on July 1st, 2024, all chargers must be, at a minimum, (1) assembled in the US; (2) installed by October 2024; and (3) must use 100% US origin steel or iron in their housing, if the housing is predominantly made of iron or steel.

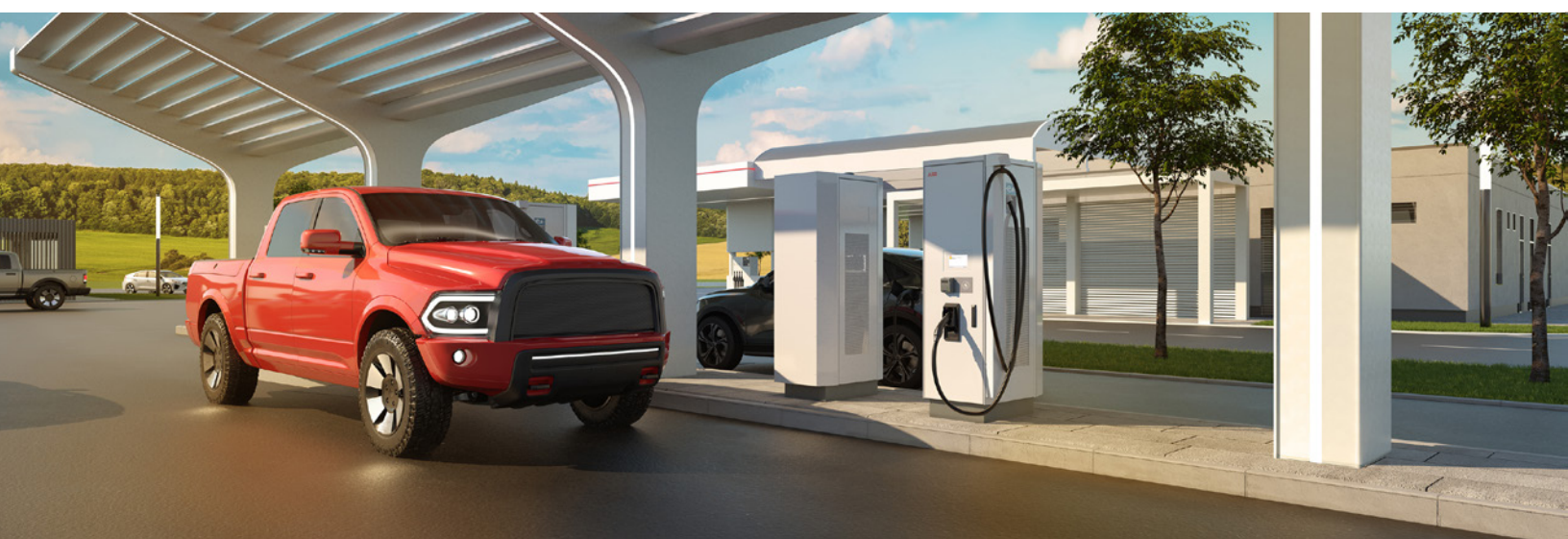
### Phase 2

Beginning on July 1, 2024, all chargers must be, at a minimum (1) assembled in the US; (2) the cost of components manufactured in the United States is at least 55 percent of the cost of all components; and (3) must use 100% US origin steel or iron in their housing, if the housing is predominantly made of iron or steel.

ABB E-mobility's Terra 184 and Terra 124 meet the phase 2 requirements.



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**ABB E-mobility's Terra 184  
and Terra 124 meet phase 2  
requirements.**



# 97% Uptime

ABB E-mobility has the service team and resources to help you deliver 97% uptime

ABB E-mobility facilitates 97% uptime through our comprehensive approach to service. We've developed and deployed a service team that is rooted in critical industries and knows how to deliver on uptime requirements in uncompromising circumstances.

97% uptime is enabled by detailed planning, resource allocation, experienced technicians, not magic wands. At ABB E-mobility we implement best practices in service including:

- (1) 24/7 remote diagnostics and monitoring
- (2) Preventive maintenance and corrective services
- (3) On-call support from trained technicians
- (4) Spare parts availability



To learn more about solutions that meet EV driver expectations while supporting charger operational goals, read the ABB E-mobility white paper, "Charger reliability best practices."

## Keys to charger reliability and uptime

- 1 Round the clock connectivity** with remote diagnostics capabilities and monitoring as well as remote updates and upgrades
- 2 Advanced planning for preventive maintenance and corrective service** programs to support uptime requirements
- 3 On-call support from hardware-OEM trained technicians** within every charging site region
- 4 Availability of spare parts** including a warehousing plan for routine and critical parts can support faster service



## NEVI minimum standards

### ABB E-mobility's Terra 184 enables compliance with NEVI standards

From power capabilities to digital integration, ABB E-mobility chargers support NEVI requirements.

The Terra 184 is the ideal charger for NEVI charging sites. Its all-in-one design and small physical footprint facilitates easier installation and maintenance. Additionally, because the design does not rely on a separate power cabinet that shares power among multiple ports, your charging site is more robust and less susceptible to single points of failure.

Specifications for the Terra 184 exceed 150kW power requirements, deliver high current performance, and include many reliability features, digital capabilities and safety certifications.

Our lengthy experience deploying public charging in varying applications across many charging operator platforms and business models is designed into every charger we deliver.

**1M**

EV chargers sold globally across a wide power range

**50K**

DC fast chargers installed across the globe

**1500+**

talented employees supporting our zero-emission future

**85+**

countries with ABB E-mobility chargers installed

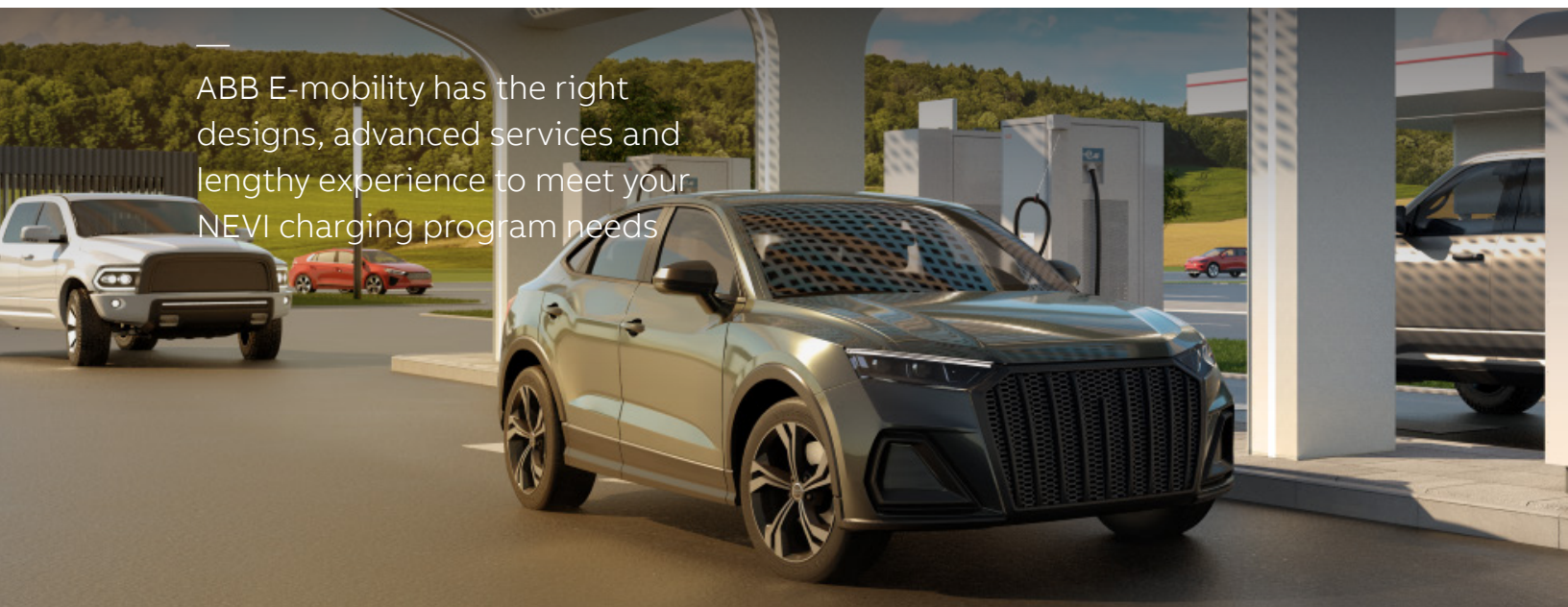
**450**

kW max power in a full range of products and use cases

**13**

years' experience deploying EV charging technology

ABB E-mobility has the right designs, advanced services and lengthy experience to meet your NEVI charging program needs



# Terra 184 chargers

Enabling hardware, digital and operational  
NEVI program standards



## NEVI program requirements

### HARDWARE STANDARDS

- Free vend mode when network is down
- CCS1 Connector
- NACS Connector
- Supports multiple languages including English, Spanish, French and more.
- Major Credit Cards
- 150 kW per port minimum
- Certified to UL Standards for EVSE

### Terra 184



### DIGITAL SPECIFICATIONS

- Cybersecurity
- ISO 15118 / Plug and Charge
- OCPP 1.6J certification (Feb 2024)
- OCPP 2.0.1
- Secure Charge Session Data



### OPERATIONAL REQUIREMENTS

- Qualified Technicians
- 97% Uptime Enabled
- Service Level Agreements (SLA)



### STATE PROGRAM REQUIREMENTS

- NTEP and CTEP Certified
- ENERGY STAR® certification



Specifications		Terra 184 for NEVI programs
Electrical		
Maximum output power	180 kW	
AC Input voltage	480Y / 277 VAC +/- 10% (60 Hz)	
AC input connection	3-phase: L1, L2, L3, GND (no neutral)	
Nominal input current and input power rating	230 A, 192 kVA	
Recommended upstream circuit breaker(s)	300 A	
Power Factor*	> 0.96	
Current THD*	< 5%	
Short circuit current rating	65 kA	
DC output voltage	CCS1: 150 - 920 VDC; NACS 150-920 VDC	
DC output current	CCS1: 400 A (peak); NACS: 375 A	
Efficiency*	96%	
Interface and Control		
Charging protocols	CCS	
User interface	7" high brightness full color touchscreen display	
Authentication	ISO/IEC 14443A/B, ISO/IEC 15393, FeliCa™ 1, NFC reader mode, Mifare, Calypso, (option: Legic); Credit card payment terminal	
Network connection	GSM/3G/4G modem; 10/100 Base-T Ethernet	
Communication	OCPP 1.6J Core and Smart Charging Profiles; OCPP 2.0.1 Core; Autocharge via OCPP	
Supported languages	Multiple languages supported	
Environment		
Operating temperature	-35 °C to +55 °C / -31 °F to +131 °F (de-rating characteristics apply at extreme temperatures)	
Recommended storage	-10 °C to +70 °C / 14 °F to +158 °C (dry environment)	
Protection	IP54, NEMA 3R; indoor and outdoor rated	
Humidity	5% to 95%, non-condensing	
Altitude	2000 m (6560 ft)	
General		
Charge cable	6 m (19.6 ft)	
Dimensions (H x W x D)	1900 x 565 x 880 mm / 74.8 x 22.2 x 34.6 in	
Weight	395 kg / 870 lbs	
Compliance and safety certifications	UL 2202, CSA No. 107.1-16; UL 2231-1, UL 2231-2, CSA STD C22.2 No. 107.1; NEC Article 625, EN 61851, EN 62196; DIN 70121, ISO 15118; IEC 61000-6-3; EMC Class A, FCC Part 15; <a href="#">ENERGY STAR</a> ® certified; <a href="#">NTEP</a> / <a href="#">CTEP</a> ; OCA 1.6J (Feb 2024) FHWA Build America, Buy America compliant	

\*Data shown at nominal output power unless otherwise noted.



# E-mobility charging solutions

## Terra 184 all-in-one DC fast charger

The FHWA Build America, Buy America compliant Terra 184 can deliver up to 180 kW of dedicated power in a compact footprint, without separate power cabinets, perfect for highway stops, convenience stores, retail or fleet use.

**CONNECTED** by cellular modem for 24/7 remote services, receiving updates over-the-air to support every new EV on the road - plus easy remote OCPP integration

**COMPACT** power modules to support increasing demand from more EVs with bigger batteries - in a very easy to service package

**ROBUST** all-weather powder-coated stainless steel enclosure

**LCD** touchscreen with high brightness and graphical visualization of the charging process

**PAYMENT TERMINAL**  
Credit card payment terminal allows all drivers to easily access public chargers and receive receipts

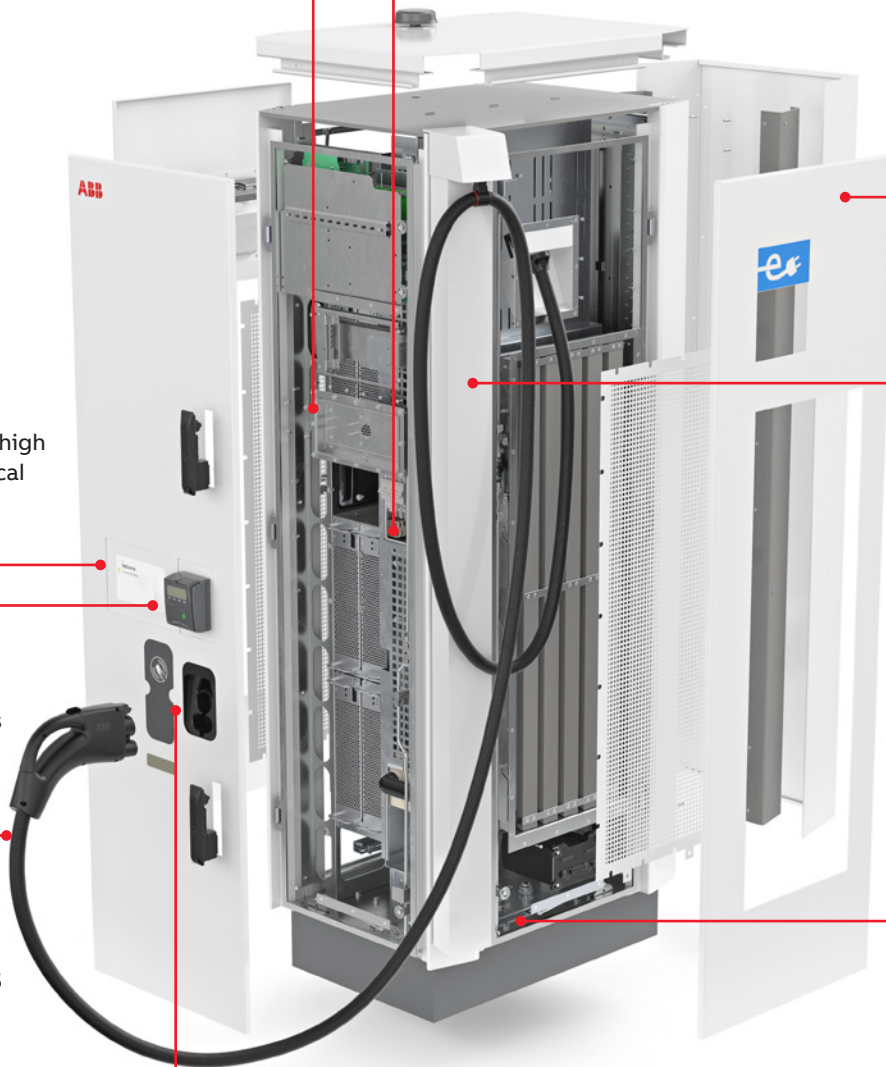
**OPEN STANDARDS**  
Interoperability tested and validated to be fully compatible with all CCS1 vehicles; NACS coming soon.

**HIGH CURRENT CCS**  
Connector can deliver up to 400 A

**CONVENIENT** and hassle-free reach for users – with retractable cable management

**EASY** installation and service design supporting quick start-up as well as fast maintenance and service.

**AUTOMATIC** authentication capability via CCS connector in the vehicle thanks to easy OCPP integration and ISO 15118 functionality



# E-mobility charging solutions

## Terra 184 all-in-one DC fast charger

### Advanced, high power design

- A compact, all-in-one charger up to 180 kW
- High current connectors capable of reducing charge times
- Up to 920 VDC serving every EV
- Modular power module design allows for increased reliability and easier servicing
- Robust all-weather powder-coated stainless steel enclosure

### Safety and certification

- UL certified
- High short circuit current rating
- ENERGY STAR certified
- NTEP and CTEP certified
- OCA 1.6J certified (by Feb 2024)

### User experience

- Interoperable connectors tested and validated
- Bright, daylight readable touchscreen display with graphic visualization of charging session
- Customizable user interface
- Reliable cable management system
- Integrated payment terminal
- RFID authorization modes
- Design enables ADA compliant installations



### Connectivity features

- Always connected, enabling remote services, updates and upgrades
- ISO 15118 enabled
- Designed for quick installation and fast serviceability
- Pre-integrated with OCPP networks, payment platforms and energy management APIs



The Terra 184 designed to enable NEVI programs, is shown here with CCS1 and NACS connectors.

Terra 184 charging times

Vehicle type	Battery profile	Charging time (min)
 Light-duty	60 kWh BEV / 400 VDC	13
	80 kWh BEV / 400 VDC	17
	100 kWh BEV / 800 VDC	22
 Medium-and Heavy-duty	150 kWh BEV / 800 VDC	33
	200 kWh BEV / 800 VDC	44
	300 kWh BEV / 800 VDC	66

Charge times shown are based on vehicle battery management system (BMS) requesting charging power from 20% to 80% under mild environmental conditions. Data assumes vehicles are capable of charging at rated power.



### Power level

- 180 kW DC fast charging



### Charging connectors

- CCS1
- NACS



### Cables & management

- Long cable length
- Reliable cable management system



### User access & payment

- OCPP integration
- Credit card reader
- ISO 15118



### Connectivity & services

- Interoperability validation
- 24/7 remote services
- Service level agreements

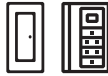
# ABB brings the full solution from grid to charger



Grid



Switchgear



Switchboards



Smart breakers



Chargers



EVs



**1,000+ sites**

EV charging locations electrified by ABB across the U.S.



**Partnership**

ABB partners with multiple U.S. charging operators



**100+ years**

Experience building electric gear in the U.S.



**All 50 states**

Deep experience with utilities in all 50 states and D.C.



**Adaptable**

Easy customization of equipment for each EV install or utility



## ReliaGear™ SB Switchboards

- ABB switchboards safely and reliably distribute power at EV charging sites
- For small to large charging sites, rated 600A-6000A
- Connect multiple energy sources simultaneously – utility, battery energy storage, microgrid, solar, etc.
- Footprints as small as 40" wide by 30" deep
- Future proof – option for expansion
- Additional convenience power outlets
- NEMA 3R rated for outdoor use and weather protection
- All openings covered by brass pest screen
- Sloped roof built for water dispersion and heat mitigation/venting – extending life of equipment
- Fully rated up to 6,500 feet (2000m) above sea level
- Integrated surge protective device – can be remotely monitored and easy to replace if a surge event occurs
- Internal cabinet lighting
- Fast and easy installation, including multiple-section switchboards

## SACE® Emax 2 and SACE® Tmax® XT Breakers

- ABB breakers are the intelligence inside switchboards, maximizing ease of use, integration and connectivity
- World-class breaker technology – compact, advanced capability, high quality, connects to networks or other IoT devices
- Highly capable – no need to purchase additional relays or other external devices
- Remote monitoring both main breaker and feeder data
- Option to remotely control or reset circuit breakers if needed – saving cost and time for service
- Fast install – Spring-loaded plug-in connectors allow ABB breakers to be installed/replaced in less than 20 seconds
- Option to upgrade with software updates



**Meets or exceeds applicable UL/NEC codes**

# ABB E-mobility

Bringing you the technology and experience to enable successful NEVI programs



## SUPERIOR CHARGERS

**The highest quality and widest range of charging technology**

- High quality: components, materials and designs in the widest power range
- Field tested: Built on more than decade of experience in all conditions and use cases
- Safety first: Third party certifications; company-wide health, safety and sustainability mandates.



## SMARTEST SERVICES

**The most flexible provider of smart, networked and remotely serviced chargers**

- Business model enablement: Technology integration and network operations support with round-the-clock connectivity
- High uptime: Remote and field service team for exceptional charger availability
- Future-proof: Always up to date with latest standards and protocols



## RELIABLE PARTNER

**Vast experience designing and deploying EV charging technology**

- Project and service excellence: Dedicated teams to support charger deployment and maintenance
- Human talent: unrivaled engineering and service organization
- Committed: Electrifying transportation for more than a decade





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ABB E-mobility is a global leader in EV infrastructure with a wide range of reliable charging technology, smart connectivity for flexible business integration, and a scaled service organization that can deliver high uptime for customers and users around the world

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