

## **EV Charging Solutions**

E-mobility products  
and services tailored for  
a wide range of charging  
applications.





## Volex is a leading integrated cable manufacturing and electronics manufacturing service specialist for performance-critical applications and power products.

Our products and services are as diverse as the customers we serve. Each helps to enable the increasingly sophisticated digital world in which we live. Providing power and connectivity for both complex machinery and everyday items, from data centre high-speed interconnects and power distribution, radiation oncology treatments, industrial lasers, right through to electric vehicles for the 21st century, Volex is integral to a vast universe of modern manufacturers.



## Volex EV charging solutions.

Volex offers EV charging cables that are designed for residential and public charging applications around the globe and have the approvals and certifications relevant for all specific EV market sector and regulatory requirements worldwide.

Through our vertically integrated core competencies across our global manufacturing and production locations, our customers are ensured security of supply as they continue to ramp up volumes to meet EV market demands.

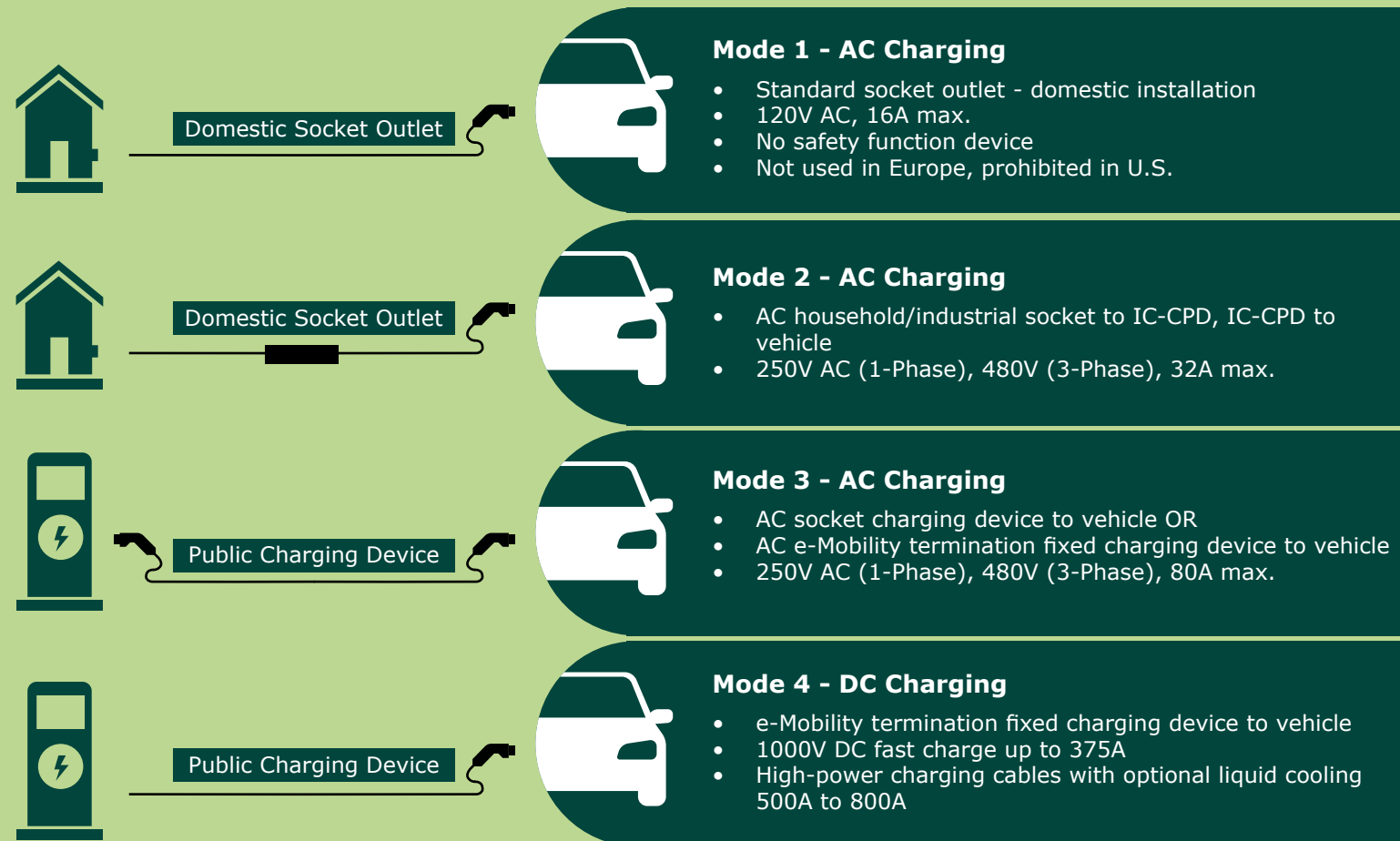
## Global reasons for doing business with Volex:

- Total system solution design, manufacturing and delivery provider
- Tariff-free manufacturing options
- Local engineering and sales support in over 20 countries
- Quick turnaround and customer response time
- Cost competitive without sacrificing performance and quality
- Partnership for mutual benefit

## Volex EV charging proposition:

- Regional and country-specific compliance and certifications
- IATF approved manufacturing sites
- Vertical integration solutions
- Automotive standard quality processes and commitment to end user safety
- Engineered solutions for customised application specific requirements
- HALT testing capabilities

## EV Charging Modes & Function





### Cable Characteristics:

- Compliant with RoHS 2.0 and REACH
- Media resistance
- Abrasion resistance
- Hydrolysis-resistant plastics
- Flame-resistant
- Halogen-free
- Flexible materials
- Flex bend performance

### Volex Cables Have the Following Approvals:



## Spotlight on Volex Integrated Manufacturing Services for EV Charging



### Enabling an exceptional user interface







A user interface needs to provide clear and concise information, be able to monitor and display the progress of charging and enable easy-to-use user interaction. Environmental conditions dictate that display information must remain easily viewable in all situations.



### Developing and designing the EV chargers for today and tomorrow

Volex has a wealth of experience in designing and developing advanced, robust industrial systems with integrated displays that will meet and exceed the challenges of electric vehicle charging stations. Volex can supply, design and integrate all components and sub-systems for EV chargers including power management, embedded computing, displays, network connectivity, cabling and mechanical fixtures and fittings.

### Volex can provide fully integrated display solutions with outstanding optical performance utilising:

 <p><b>High-performance IPS TFT displays, complying with IP65 standards</b></p>	 <p><b>Optical bonding to enhance optical performance and increased system robustness</b></p>	 <p><b>Integration of optical filters including UV &amp; IR protection</b></p>
 <p><b>Up to IK10 rated touch-focused user interfaces</b></p>	 <p><b>Multi-touch capacitive and resistive touchscreens</b></p>	 <p><b>Complete display sub-assemblies</b></p>

Volex can support both new and existing customers with an extensive range of display technology, embedded computing systems, cabling and manufacturing capabilities. From Concept to Production, Volex can provide design, development and manufacturing services for EV charging and infrastructure solutions.



## Mode 2 EV Charging Grid Cords | AC Charging | Worldwide Solutions

- Precision temp sensing embedded on plug end
- IP67/IP68 (SR cable entry and plug interface, mated)
- Operating Temp: -40°C to +90°C
- High durability (UV resistant)
- USCAR38 and USCAR21 compliant terminations
- Custom reliability and EV standards testing

Designed to meet industry standards, regulatory, and country-specific compliance requirements ensuring compatibility with various regional grid plug interfaces



## AC Charging Cables

- J3400, J1772, IEC62196 & GBT 20234
- 32/40A, 48/50A, 63A & 80A (16A upon request)
- 250V AC, 1-phase and 3-phase
- Tethered versions available and untethered Mode 3
- CE, UL, VDE and E.V. READY approvals
- Terminal interfaces sealed when mated
- IP67 compliant, unmated
- Variants available upon request

Functional, one-piece unibody housing design with best handling



## DC Charging Cables

- J3400, CCS1, CCS2 & GBT
- Up to 350kW / 350A, 1000V DC
- Bi-directional cable options available
- CE, UL, VDE and E.V. Ready approvals
- Integrated sensor technology for monitoring
- Efficient power transmission and long-term stability
- Variants available upon request

Light-weight ergonomic design for enhanced reliability, functionality and aesthetics



## Infrastructure AC Socket Outlets | Mode 3 – EU Type 2

- 32A (1-phase) 250V & (3-phase) 480V
- Integrated temperature sensing and locking actuator for enhanced safety
- Rear-mounted installation
- Protective covers compliant with IP54
- Long term stability with silver-plated contacts
- Interlock secured during charging
- Accommodate EU Type 2 (IEC 62196) connectors
- Variants available upon request

Modular design for uniform, space saving installation



## Charging System Assembly & Box Build

- Global footprint with low-cost manufacturing & non-tariff production
- Extensive engineering resources to develop new methods, materials, and sourcing options
- Wire and cable manufacturing
- PCBA in-house capability
- Wire harness assembly
- Low & high pressure injection moulding
- Various inventory management & logistics solutions
- Capable of supporting wide range of volumes

Fast and Affordable solutions from integration to final assembly



## High Voltage Cable Production & Wire Harness

- Vertically integrated high voltage and battery cable production
- Polymer compounding, wire extrusion and cable manufacturing
- Cable materials include Silicone, XLPO, XLPE, PVC, TPU and PA
- Braided & aluminum shielding capabilities for single and multi-core cables up to 120 mm<sup>2</sup>
- Harness applications include:
  - Auxiliary Harnesses
  - Battery Harnesses
  - Charging Harnesses for AC and DC Applications
  - E-Motor Harnesses

Manufacturing excellence for custom wire harnesses and cable assemblies



## Vehicle Charging Inlets

- Compatible with charging connectors for AC & DC charging
- Designed to enable faster and reliable charging for vehicles across all regions
- Optional protective cap
- Flexible mounting options
- Compliant with regional approval standards for automotive applications
- Designed for 1000V applications up to 900A
- IP67 Degree of Protection
- Embedded temp sensing features

Universal mounting design with high durability



## Charging Adapters

- Compatible with all relevant vehicle inlets for automotive Electric Vehicles
- The adapter locks in while charging, ensuring no unplanned disconnections or thefts
- Includes an interlock safety pin preventing accidental removal of charging connector while charging
- Compliant relevant automotive and regional standards
- Level 3 speeds up to 800A
- Rated for up to 1000V

Unibody design with compact size for ease of use



Regulatory	Application	Description	Operating Temperature	Nominal Voltage	Current	Supply	Number of Cores + Cross Section [mm <sup>2</sup> ] / [AWG]	Nominal Outer Diameter [mm]
Europe & China						Europe & China		
EN 50620 GB/T 33594 CQC	AC Charging (Domestic & Public Use)	H07BZ5-F EYU / EYUPU	-40°C to 90°C	450 / 750V AC	1-Phase	max. 13A	3 x 1.5mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	11.00
						max. 16A	3 x 2.5mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	12.05
						max. 32A	3 x 4.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	11.50
						max. 32A	3 x 4.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	15.35
						max. 32A	3 x 6.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	16.32
						max. 63A	3 x 16.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	21.45
	DC Charging (Public Use)	EVDC-REYU	1000V DC	DC Connection	max. 13A	5 x 1.5mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	11.10	
					max. 16A	5 x 2.5mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	14.65	
					max. 32A	5 x 4.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	15.10	
					max. 32A	5 x 4.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	18.85	
DC Charging (Public Use)	EVDC-REYU	1000V DC	DC Connection	max. 32A	5 x 6.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	19.95		
				max. 32A	5 x 6.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	21.60		
				max. 63A	5 x 16.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	21.60		
				max. 150A	2 x 35.0mm <sup>2</sup> + 1 x 6.0mm <sup>2</sup> + signal wires (0.75mm <sup>2</sup> )	28.20		
DC Charging (Public Use)	EVDC-REYU	1000V DC	DC Connection	max. 250A	4 x 35.0mm <sup>2</sup> + 1 x 6.0mm <sup>2</sup> + 2 x 1.5 mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	29.50		
				max. 250A	4 x 35.0mm <sup>2</sup> + 1 x 16.0mm <sup>2</sup> + 2 x 1.5 mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	31.0		
				max. 250A	2 x 70.0mm <sup>2</sup> + 1 x 16.0mm <sup>2</sup> + 2 x 4.0mm <sup>2</sup> + signal wires (0.75mm <sup>2</sup> )	33.80		
				max. 350A	4 x 50.0mm <sup>2</sup> + 1 x 6.0mm <sup>2</sup> + 2 x 1.5 mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	38.10		
Japan						Japan		
PSE	AC Charging (Domestic & Public Use)	OOCTF/F (TPE)	-40°C to 90°C	450 / 750V AC	1-Phase	max. 12A	3 x 1.25mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	8.30
						max. 16A	3 x 2.0mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	9.60
						max. 30A	3 x 5.5mm <sup>2</sup> + signal wires (0.5mm <sup>2</sup> )	12.20
North America						North America		
UL 62 (UL Recognised)	AC Charging (Domestic & Public Use)	EVE (TPE)	-40°C to 90°C	600V AC	1-phase	max. 40A	3 x AWG10 + signal wires (AWG22)	12.00
						max. 50A	2 x AWG8 + 1 x AWG10 + signal wires (AWG22)	14.50
						max. 80A	2 x AWG6 + 1 x AWG8 + signal wires (AWG22)	19.10
UL 62 (UL Listed)		EVJT (PVC) EVJE (TPE)	-40°C to 105°C	300V AC		max. 12A	3 x AWG16 + signal wires (AWG18)	10.50
						max. 16A	3 x AWG14 + signal wires (AWG18)	11.10
						max. 20A	3 x AWG12 + signal wires (AWG18)	12.20
UL 62 (UL Listed)	EVT (PVC) EVE (TPE)	-40°C to 105°C	600V AC	max. 40A	3 x AWG10 + signal wires (AWG18)	15.80		
				max. 50A	2 x AWG8 + 1 x AWG10 + signal wires (AWG18)	20.90		
				max. 80A	2 x AWG6 + 1 x AWG8 + signal wires (AWG18)	24.00		
UL 62 (UL Recognised)	DC Charging (Public Use)	EVE (TPE)	-40°C to 105°C	1000V DC	DC Connection	max. 150A	5 x AWG5 + signal wires (AWG18)	27.00
						max. 250A	4 x AWG3 + 2 x AWG8 + signal wires (AWG22)	30.05
						max. 350A	4 x AWG1/0 + 1 x AWG6 + signal wires (AWG18)	36.50

\*Customised designs available upon request

# Testing Capability

Volex has the necessary experience and expertise to carry out thorough testing of all products using high-performance equipment



## MECHANICAL

Mechanical testing evaluates the durability and structural integrity of components like cables, connectors, and enclosures, ensuring they can endure wear, impact, vibration and harsh conditions

- Durability
- Bending/Flexing
- Pulley Flexing
- Twisting
- Tensile Strength
- Elongation
- Crush Resistance
- Tumbling barrel
- Abrupt Pull
- Ink Printing Durability



## ENVIRONMENT

Environmental testing assesses the performance, durability, and safety of equipment under conditions like temperature, humidity, dust and water exposure to ensure reliability in various climates.

- Oil and Air Ageing
- Compatibility
- Water Resistance
- Copper Corrosion
- Deformation
- Heat Shock
- Shrinkage
- Hot Set
- Cold Impact



## RELIABILITY

Reliability testing assesses long-term performance, durability, and failure rates under continuous use and environmental stresses to ensure dependable operation and low maintenance.

- Bending/Flexing
- Cross Section
- IPX7
- Drop
- Thermal Dunk
- Durability
- Thermal Cycling
- Air/Temp. Ageing
- High/Low Temp.
- Thermal Shock
- Humidity Cycling
- Salt Spray



## FLAME RESISTANCE

Flame resistance testing assesses equipment materials' ability to resist ignition and combustion, enhancing safety during overheating or electrical faults.

- Flame (VW-1/FT-1/FT2)
- 1KW Flame (GB/IEC/EN)
- Glow Wire



## ENVIRONMENTAL SUBSTANCE

Environmental substance testing ensures components are free of hazardous materials and meet regulations, reducing pollution and harmful exposure.

- RoHS1.0 (Cd/Pb/Hg/Cr6+/PBBs & PBDEs)
- Halogen Free (Br/Cl)
- RoHS2.0(4 DOPs)
- FTIR (Similarity)



## ELECTRICAL

Electrical testing verifies functionality, safety, and compliance by assessing voltage, current, insulation, grounding and electromagnetic compatibility for safe, efficient power delivery.

- LLCR
- Dielectric Voltage
- Insulation Resistance
- IR Constant (Ki)
- Jacket Resistance
- DC Resistance
- Volume/Surface Resistivity
- LCR



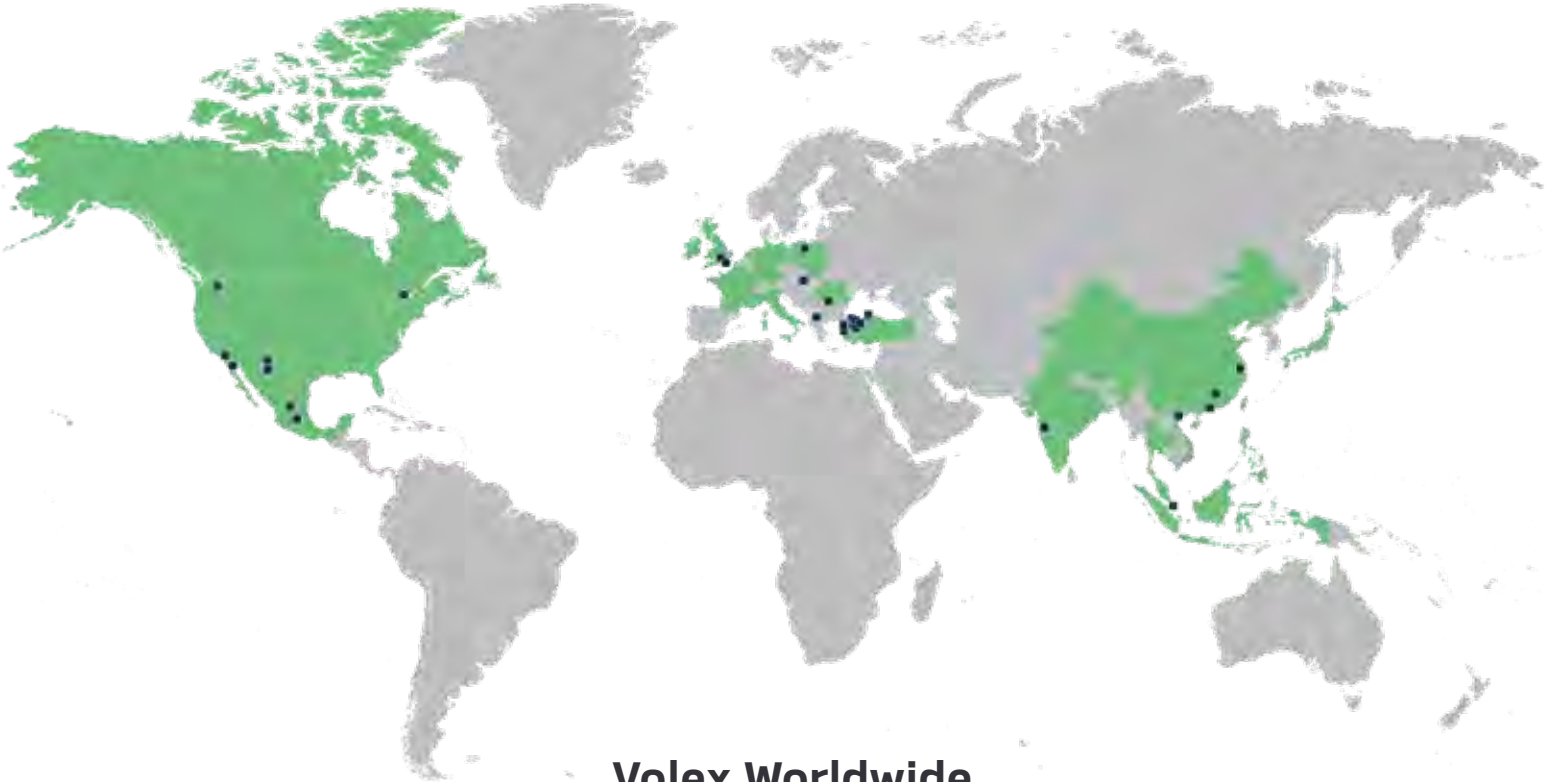
## SIGNAL INTEGRITY

Signal integrity testing checks data signal quality and stability between the vehicle and station, ensuring accurate communication, synchronization and efficient charge control.

- Attenuation (SDDxy)
- Cross-Talk (COM)
- ERL/ICN/PSXT
- Return Loss
- Impedance
- Delay
- Inter-,Intra-Skew
- Eye Diagram



## GLOBAL SUPPORT



### Volex Worldwide

■ Factories / Warehouses ■ Countries / Territories

## CONTACT INFO

### Americas

Tel: +1 501 438 1313

### EMEA

Tel: +44 7768 924844

### China

Tel: +86 159 5019 6906

### Asia-Pacific

Tel: +65 6904 1545

### India

Tel: +91 99406 10637

[sales@volex.com](mailto:sales@volex.com) | [www.volex.com](http://www.volex.com)

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