

# SURGE PROTECTION FOR EV CHARGING STATIONS

POWER QUALITY

GLOBAL SPECIALIST IN SURGE PROTECTION



## EV-SPD

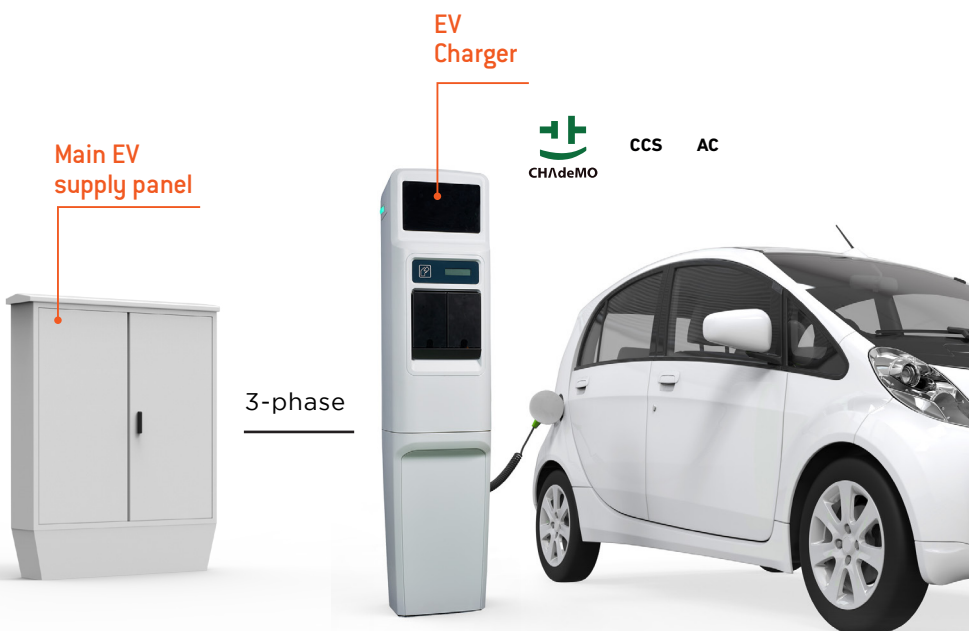
THE SPECIFIC CONCEPT FOR PROTECTION OF EVSE INSTALLATIONS

### EV SUPPLY EQUIPMENT

Continuity of service (COS) of EV supply equipment is a key aspect for successful deployment of EVs.

By their very nature, EV installations are both sensitive (limited impulse withstand capacity) and exposed to overvoltages.

Mersen's specific EVSE protection concept mitigates the risk of property damage and provides COS. Peace of mind.



# SURGE PROTECTION FOR EV CHARGING STATIONS



## SPD

STPT12-12K275V-4PGM	
Device	Lightning current arrester
Location	Main EV supply panel (grid), AC
Protection	Transient overvoltages (direct impact)
Specs	Type 1+2, 12,5kA Imp (10/350)
Standard	IEC 61643-11



## POP

POP-230V-SR-4P	
Device	POP power freq. overvoltage protector
Location	Main EV supply panel (grid), AC
Protection	Temporary overvoltages
Specs	3Ph+N, 230V, shunt relase actuation
Standard	EN 50550



## SPD FOR EV



STPT23-40K275V-4PG-EV-M	
Device	Surge protection device
Location	EV charger, Converter, C-high location
Protection	Transient overvoltages (induced)
Specs	Type 2+3, 20kV, In (8/20), 40kA I <sub>max</sub>
Standard	IEC-61643-11, extreme durability for EV

\*Consult for PCB mounted SPD options.



## GROUND

GMD-230V	
Device	Grounding system monitor
Location	EV charger, AC side of converter
Protection	Monitor ground connection EV charger
Specs	Adjustable remote alarm thresholds
Standard	EN 61557-3



## SIGNAL SPD

STS485-15V-3WI / STS-NET-CAT6	
Device	Surge protection device
Location	EV charger, network communications
Protection	Data communication: Charger-Operator
Specs	RS485 protocol, EoL/ Ethernet Cat.6
Standard	IEC 61643-21



## GRID

### MAIN EVSE SUPPLY PANEL

Several EV-chargers are supplied with power from a dedicated LV main panel.

Two coordinated steps of surge protection ensure the best performance of the lightning protection system.

Therefore a SurgeTrap® T1+2 lightning current arrester is used in the panel as the first step.

Mersen's POP device protects all downstream EV-chargers from temporary overvoltages.

## EV CHARGER

### AC SIDE OF THE CONVERTER

EV-chargers contain expensive and sensitive electronics.

They are installed outdoors, exposed to lightning induced overvoltages ("C-High locations").

SurgeTrap® T2+3 EV is a specific EV SPD to increase the impulse withstand capacity of EVSE electronics from typical 4-6kV values up to 20kV. This ensures extreme durability. Tested > 200x10kA.

The ground connection of the EV-charger is monitored by Mersen's GMD to ensure effective operation of SPDs and other (protection) devices.

## EV CHARGER

### NETWORK COMMUNICATIONS

Networked communications in the EV-chargers allow for data communication, especially between the EVSE and the operator/utility (billing, AMI, smart charging).

Signal line surge protectors are typically required for RS485 and Ethernet communications.