



## CHARGING SOLUTIONS

Range of electric vehicle  
charging stations

***Ingeteam***

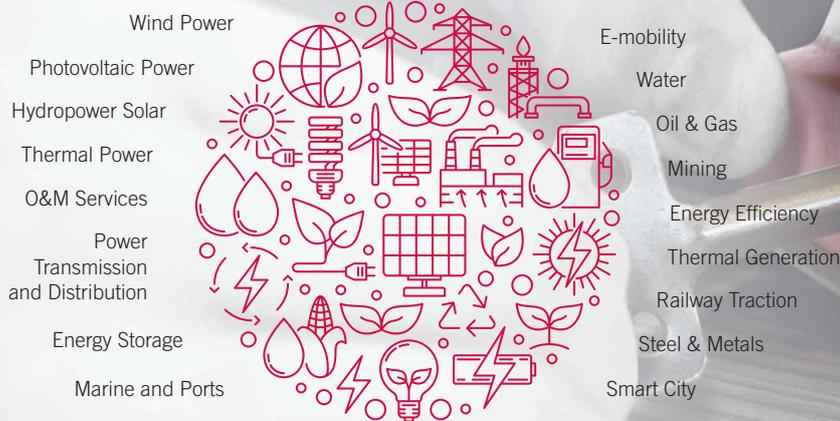
# INNOVATION

## at our customers' service

**INGETEAM** is an international technology group specializing in **energy conversion**.

Its technological development in **power and control electronics** (inverters, frequency converters, controllers and protections), **rotary electric machines** (Indar motors, generators and motor & pump sets), **systems** (integration of electromechanical engineering and automation), and operation & maintenance **services**, allows Ingeteam to offer solutions for sectors such as wind, PV, hydro and fossil fuel power generation, metal processing, marine, rail traction and the power grid, including the substations covering transmission and distribution, always striving to optimize power generation and consumption.

### SECTORS



### CHARGING STATION MODELS

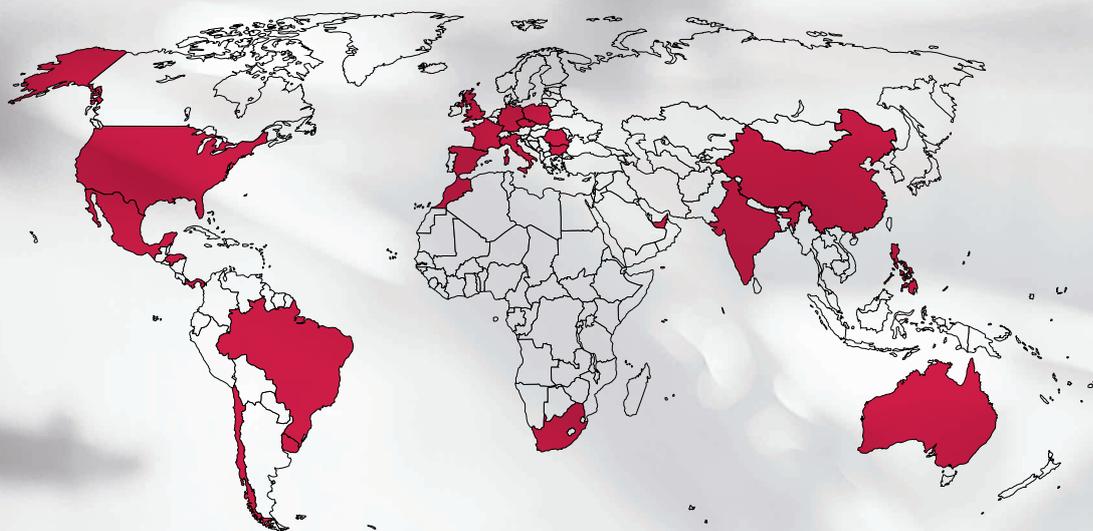
**INGEREV®**

**FUSION**

**RAPID 50**

**RAPID ST**

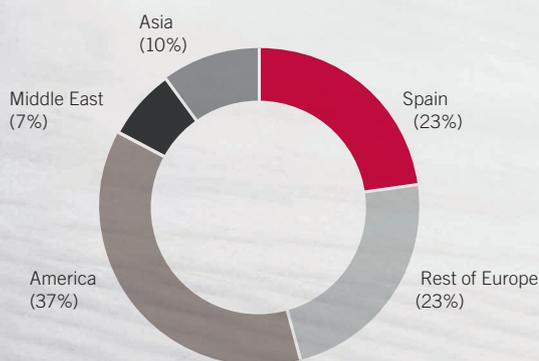




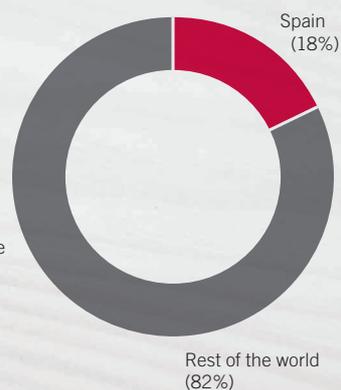
The **INGETEAM** Group operates throughout the world, with permanent facilities in **24 countries**, employing around **4,000 persons**. R&D&i is the backbone of its business activity, in which more than 5% of the company's turnover is invested annually.

We have been present in the **E-Mobility** sector since 2011, thanks to the development and supply to our customers of AC and DC charging stations under the **INGEREV®** brand, with the **FUSION, RAPID 50 AND RAPID ST 200/400 MODELS**.

**GLOBAL SALES**



**FINAL DESTINATION PRODUCT / SERVICES**



# FUSION

# THE CHARGING STATION



The **FUSION** range is available in two models, **FUSION Street** for ground mounting and **FUSION Wall** for wall mounting.

This dual equipment range has been designed to cover all electric vehicle charging demands in public and private settings alike.

Its standard features include Ethernet and WIFI communications, as well as the latest generation advanced functions such as Dynamic Load Management 2.0 (DLM 2.0) and OCPP protocols.

INGEREV FUSION Street / Wall model options

	FS1MW / FW1MW	FS3MW / FW3MW	FS1AW / FW1AW	FS3AW / FW3AW
GRID	Single phase	Three phase	Single phase	Three phase
MID Wattmeter	✓	✓	✓	✓
Type A manua RCD	✓	✓		
Type A auto-reclose RCD			✓	✓
C Curve MCB	✓	✓	✓	✓

## FEATURES

- Floor and wall mountable models, suitable for outdoor installation.
- Single phase and three phase models, with up to 32 amps per charging socket.
- Multiple charging sockets available, Mode 1 + 2 sockets, cables and Mode 3 sockets
- MID wattmeter.
- RGB LED status indicators.
- Multi-language colour screen.
- RFID reader.
- Ethernet and WIFI.
- DLM 2.0.
- Compatibility with OCPP.
- Updates through USB.
- Thermal-Magnetic Differential circuit breakers.
- Front door for ease of operation and maintenance.
- Ethernet switch to minimize the cost of Ethernet cabling.
- Warning message in the event of an outage.
- Possible customization with vinyl decals on all four faces<sup>(1)</sup>.
- General breaker for the rapid disconnection of the charger.
- Security lock with key.
- Door-opening sensor.
- Automatic software updates (OCPP, ISO15118,...) for the entire product life.

## OPTIONS

- Remote communication via 3G/4G.
- DC current leakage detector.
- Smart DLM 2.0.
- Communication Modbus TCP.

Notes: <sup>(1)</sup> Large surface for vinyl decals <sup>(2)</sup> 5m optional.

## CONNECTOR TYPES



**N2**  
Type 2 Socket



**S2**  
Type 2 Socket with shutters



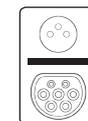
**N3**  
Type 3A Socket



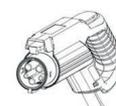
**N4**  
CEE 7/3 type F (Schuko) Socket



**N7**  
CEE 7/5 type E (Schuko) Socket



**S5**  
N7 and S2

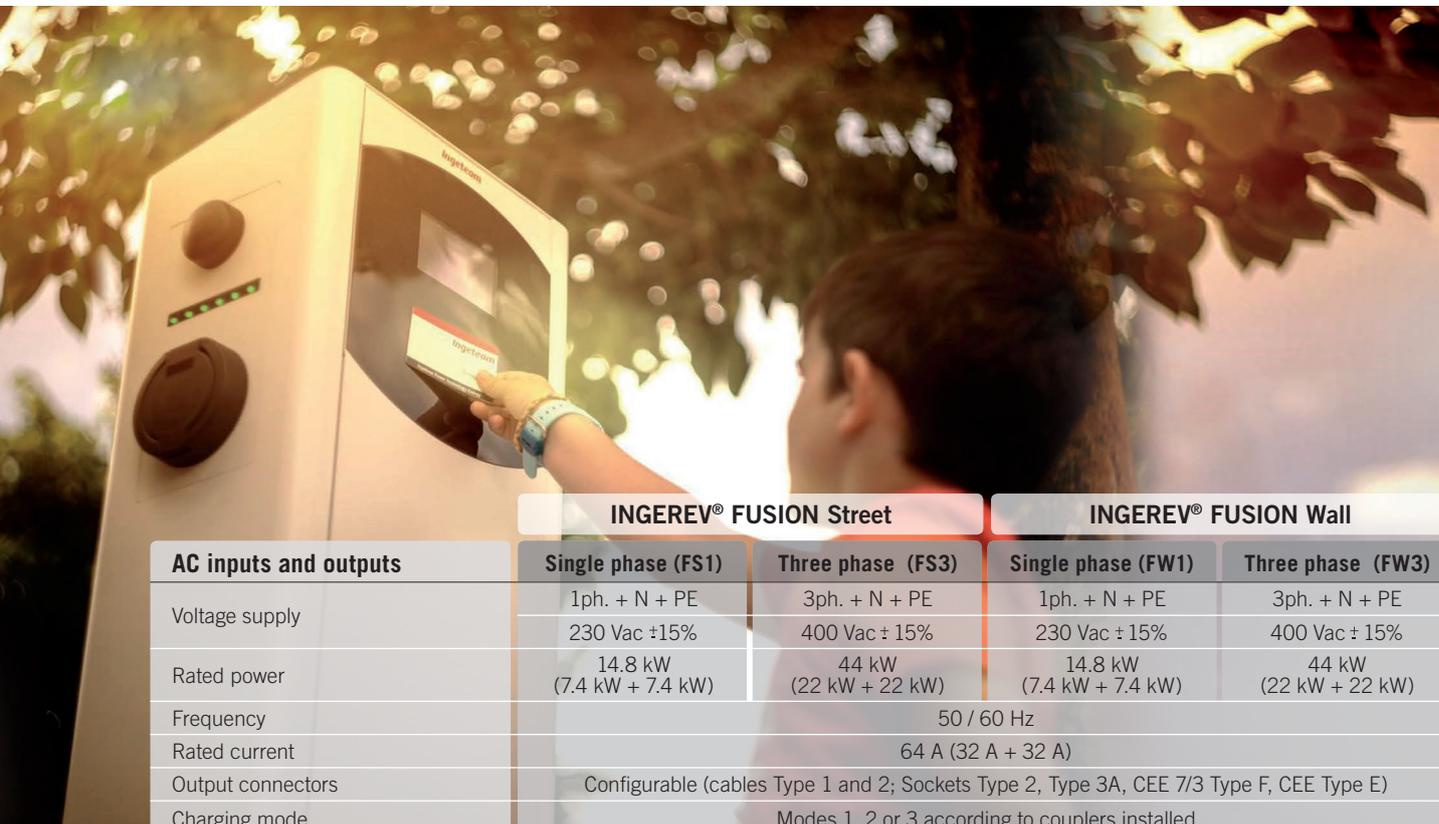


**C1**  
Type 1 cable - 4m<sup>(2)</sup>



**C2**  
Type 2 cable - 4m<sup>(2)</sup>

# for public and private installations



	INGEREV® FUSION Street		INGEREV® FUSION Wall	
AC inputs and outputs	Single phase (FS1)	Three phase (FS3)	Single phase (FW1)	Three phase (FW3)
Voltage supply	1ph. + N + PE 230 Vac ±15%	3ph. + N + PE 400 Vac ± 15%	1ph. + N + PE 230 Vac ± 15%	3ph. + N + PE 400 Vac ± 15%
Rated power	14.8 kW (7.4 kW + 7.4 kW)	44 kW (22 kW + 22 kW)	14.8 kW (7.4 kW + 7.4 kW)	44 kW (22 kW + 22 kW)
Frequency	50 / 60 Hz			
Rated current	64 A (32 A + 32 A)			
Output connectors	Configurable (cables Type 1 and 2; Sockets Type 2, Type 3A, CEE 7/3 Type F, CEE Type E)			
Charging mode	Modes 1, 2 or 3 according to couplers installed			
<b>Standards and safety</b>				
General standards	IEC-61851-1, IEC-61851-21-2, IEC-61000			
Overcurrent	MCB curve C 40 A			
Indirect contacts	RCD 30mA type A <sup>(1)</sup> / DC current leakage detector (optional)			
Over-voltage	Over-voltage protection Type III			
<b>Functionalities and accessories</b>				
Communications	Ethernet Switch and WIFI 3G/4G (optional)			
Communications protocol	OCPP			
HMI	4.3" TFT multi-language color screen RFID (MIFARE Classic 1K&4K, MIFARE DesFire EV1, NFC)			
<b>General Information</b>				
Consumption in stand-by mode	<10 W			
Energy metering	2 x MID wattmeters			
Operating temperature	-25 °C to 50 °C			
Humidity	<95%			
Maximum altitude	2000 m.			
Weight	33 kg (2 x Type 2)	33 kg (2 x Type 2)	24 kg (2 x Type 2)	24 kg (2 x Type 2)
Dimensions (height x width x depth)	1,400 x 320 x 215 mm	1,400 x 320 x 215 mm	800 x 320 x 215 mm	800 x 320 x 215 mm
Enclosure	Galvanized steel. RAL 9003			
Protection rating	IP54 / IK10			
Marking	CE			
Directives	Low Voltage Directive: 2014/35/EU EMC directive: 2014/30/EU			

**Notes:** <sup>(1)</sup> Manual or auto-reclose protection depending on the model.

# RAPID 50

## The rapid multi-standard



Due to the considerable increase in the number of hybrid and electric vehicles already on our roads, there is a need to add new rapid charging stations to the present charging network.

This network requires equipment that is compliant with the highest quality standards and that offers the best performance in terms of power management, communications, reliability and efficiency, such as the INGEREV® RAPID 50. This is the ideal rapid charging point for service stations and also for other busy areas such as shopping malls, car parks, vehicle rental companies, restaurants, etc.

Given that the RAPID 50 is compatible with the CHAdeMO, CCS and type 2 standards, it is able to charge any type of hybrid or electric vehicle. The INGEREV® RAPID 50 Trio model offers the possibility of simultaneous AC and DC charging, with dynamic power management between both couplings and even between various FUSION or RAPID units in the same installation.

	Trio (RTM50)	Duo (RDM50)	One (ROM50)	One+ (RCM50)
CCS	✓	✓	✓	✓
CHAdeMO	✓	✓		
AC 43 kW	✓			✓

### FEATURES

- Rapid charging in CCS Type 2 up to 50 kW.
- Rapid charging in CHAdeMO up to 50 kW.
- Rapid charging in AC Type 2 up to 43.5 kW.
- RFID reader.
- 7" colour touch screen.
- Sturdy steel enclosure for exceptional resistance in even the most adverse ambient conditions.
- Possibility of simultaneous AC and DC charging.

### COMMUNICATIONS

- Communication Modbus TCP.
- Compatibility with OCPP.

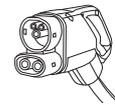
### SAFETY

- RCD and MCB protections against indirect contacts, short-circuits and overloads.
- Automatic software updates (OCPP, ISO15118, etc.) for the entire product life.
- Highly visible emergency button to guarantee safety of use.

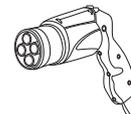
### OPTIONS

- Remote communication via 3G/4G.
- Auto-reclose RCDs.
- Cable locking system for AC connectors and DC connectors alike.
- Contactless card payment solution (Ingenico).

### CONNECTOR TYPES



**CCS**  
COMBO Type 2



**CHADEMO**  
1EVS 6105



**AC 43 kW**  
Type 2

# CHARGING STATION

	INGEREV® RAPID 50 Trio	INGEREV® RAPID 50 Duo	INGEREV® RAPID 50 One	INGEREV® RAPID 50 One+
<b>AC input (DC output)</b>				
Voltage	3 phase + N + PE; 400 Vac ±15%			
Frequency	50 Hz			
Rated current	77 A + 63 A	77 A	77 A	77 A + 63 A
Rated power	53 kW + 43.5 kW	53 kW	53 kW	53 kW + 43.5 kW
Efficiency	>94%			
Power factor	>0.98			
<b>DC output values</b>				
Voltage range	50 - 500 V			
Maximum current	125 A			
Maximum power	50 kW			
DC Connectors	CCS Type 2 / CHAdeMO		CCS Type 2	
<b>AC output values</b>				
Voltage	400 Vac	-	-	400 Vac
Maximum current	63 A	-	-	63 A
Maximum power	43.5 kW	-	-	43.5 kW
AC Connector	Cable Mode 3 Type 2	-	-	Cable Mode 3 Type 2
<b>Standards and Safety</b>				
General standards	IEC 61851-1, IEC 61851-23, IEC 61851-24, CHAdeMO 1.0.0, DIN 70121, ISO 15118, IEC 61000			
Indirect contacts	Differential protection AC Load: 30mA Type B DC Load: 30mA Type A	Differential protection 30mA Type A	Differential protection 30mA Tipo A	Differential protection AC Load: 30mA Type B DC Load: 30mA Type A
Overcurrents	MCB Curve C			
Overvoltages	Surge arresters Type III <sup>(1)</sup>			
<b>Functions / Accessories</b>				
Communication	Ethernet Switch 3G/4G (optional)			
Communication protocol	OCPP			
HMI	7" TFT touch screen RFID (MIFARE Classic 1K&4K, MIFARE DESFire EV1, NFC)			
<b>General information</b>				
Cooling system	Forced ventilation			
Consumption in stand-by mode	<100 W			
Cable length	3.2 m <sup>(2)</sup>			
Operating temperature	-25 °C to + 60 °C			
Humidity	0 - 95% - non-condensing			
Weight	620 kg			
Dimensions	785 x 700 x 1,900 mm			
Enclosure	Chapa de acero galvanizado. RAL 9003			
Environmental protection rating	IP55 / IK10 (display and ventilation grid IK08)			
Marking	CE			
Maximum operating height	2.000 m			

**Notes:** <sup>(1)</sup> Class II Optional <sup>(2)</sup> 3.8 m optional.

# RAPID ST

## The ULTRA-RAPID



**Ultra-rapid charging stations play a key role** in the complete expansion of e-mobility.

The Ingeteam ultra-rapid charging station solution is based on an innovative DC distribution architecture, for maximum simplicity of the installation as well as the easy integration of storage and PV energy.

It offers all the advantages of the latest generation SiC electronics, while combining an extremely compact size, high efficiency and reliability.

INGEREV® RAPID ST200 and ST400 are the ideal ultra-rapid charging points for service stations with a high turnover. Compatible with the CHAdeMO and CCS standards, they are the perfect solution for charging all types of e-vehicles.

	ST200 ONE	ST400 ONE	ST200 DUO	ST400 DUO
Connectors	1	1	2	2
Simultaneous charging				✓

### FEATURES

- Ultra-rapid charging in CCS up to 400 kW.
- Super-rapid charging in CHAdeMO up to 100 kW.
- RFID / NFC card authentication.
- 7" color touch screen.
- Ambient light.
- Simplicity and efficiency in the integration of storage systems.
- Built-in DC wattmeter.

### COMMUNICATIONS

- Communication Modbus TCP.
- Compatibility with OCPP.

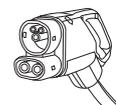
### SAFETY

- Highly visible emergency button to guarantee safety of use.
- Automatic software updates (OCPP, ISO15118, etc.) for the entire product life.

### OPTIONS

- 21" advertising screen.
- Contactless card payment solution (Ingenico).
- Complete supply of satellites, central inverter and sub-station.
- Remote communication via Ethernet and 3G/4G.

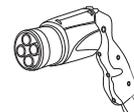
### CONNECTOR TYPES



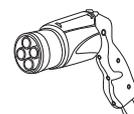
**CCS 250**  
CCS 250A



**CCS 500**  
CCS 500A



**CHA125**  
ChadeMO 125A



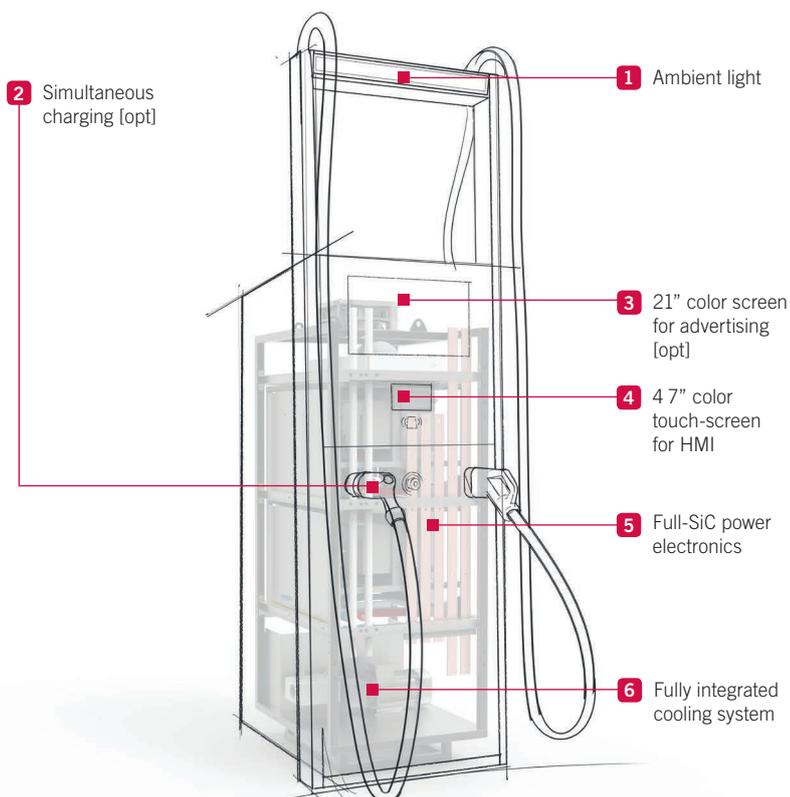
**CHA200**  
CHAdeMO 200A

# CHARGING station



## ADVANTAGES OF THE DC BUS ARCHITECTURE

- Distance of up to 120 metres between the central inverter and the satellites, free and unobstructed charging area.
- Half the installation footprint of other architectures.
- Integrated cooling in all elements, for maximum installation simplicity.
- Scalability, the system can be easily extended by connecting new satellites to the DC bus.
- Flexible power balancing (DLM) between all the satellites.
- All the satellites can always charge simultaneously with no need to sacrifice power modules in order to divert the energy to another satellite with a higher demand.
- The ST200 satellites can be upgraded to ST400 by simply adding a new power module.

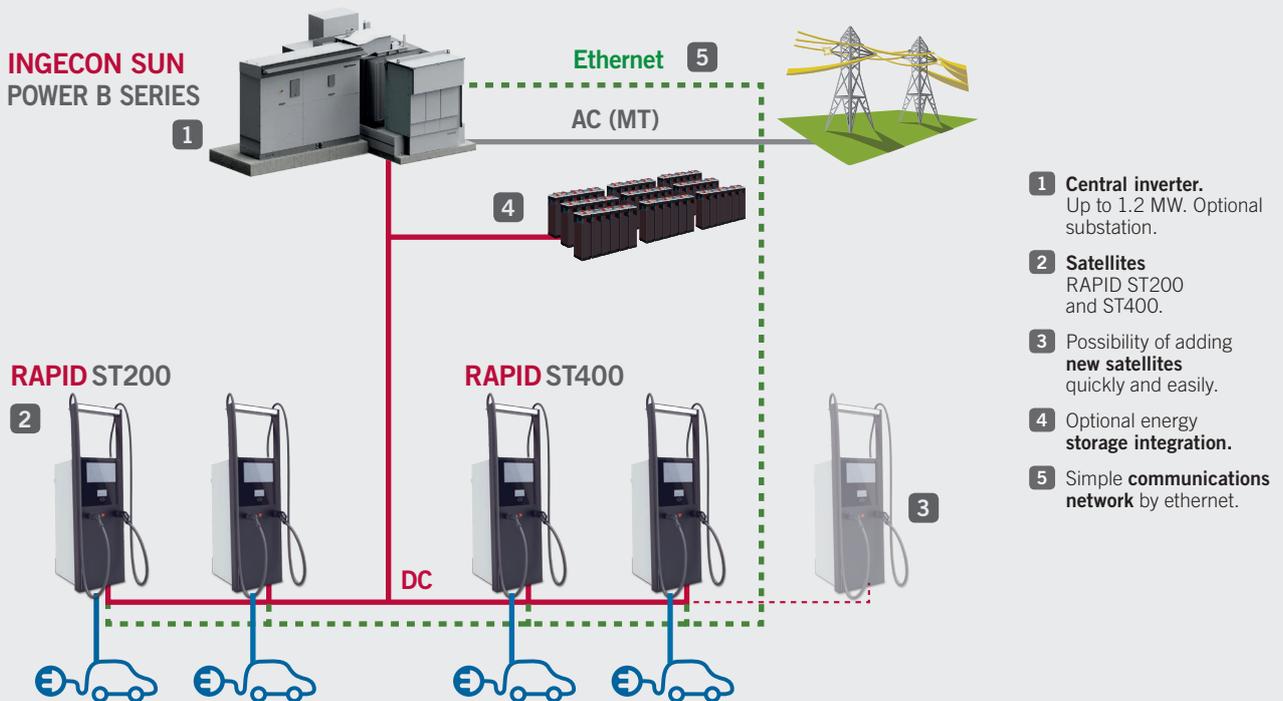


**RAPID ST**

# Central inverter AND SATELLITES



DIAGRAM OF THE INSTALLATION



# RAPID ST

Charging Satellites		
Input (DC)	INGEREV® RAPID ST200	INGEREV® RAPID ST400
Rated input current	300 A	600 A
<b>DC output</b>		
Voltage range	50 - 1000 Vdc	
Maximum current	250 A up to 500 Vdc, 200 A up to 1000 Vdc	500 A up to 500 Vdc, 400 A up to 1000 Vdc
Maximum power	200 kW	400 kW
Connectors	CCS Type 2 / CHAdeMO	
<b>General information</b>		
Cooling system	Integrated liquid cooling	
Auxiliary power supply	3P+N 400V	
Length of cables	4.8 m	
<b>Standards and Safety</b>		
General standards	IEC 61851-1, IEC 61851-23, IEC 61851-24, CHAdeMO 1.0.0, DIN 70121, ISO 15118, IEC 61000	
Indirect contacts	Continuous monitoring of insulation	
Overvoltages	Type III surge arresters	
<b>Dimensions and weight</b>		
Dimensions	840 x 670 x 2400 mm (WxDxH)	
Weight	430 kg	530 kg

Central inverter	
Input (AC)	1110TL B400
Power at @35 °C / @50 °C	1,020 kVA
Current at @35 °C / @50 °C	1,600 A / 1,472 A
Rated voltage	3P 400 V IT System
Frequency	50 / 60 Hz
Adjustable Power Factor	Yes, 0-1 (leading /lagging)
THD (Total Harmonic Distortion)	<3%
Overvoltage protections	Type II surge arresters
AC breaker	AC MT breaker, door operated, remote tripping or motor driven
<b>Storage</b>	
Battery voltage range	580 - 820 V
<b>Dimensions and weight</b>	
Dimensions	2820 x 825 x 2270 mm (WxDxH)
Weight	1560 kg

General data	Installation
Operating temperature	-20 °C to +60 °C
Relative humidity (non-condensing)	0 - 100%
Protection rating	IK54 / IK10 (display and ventilation grid IK08)
Corrosion protection	C5H
Maximum altitude	4,500 m (for installations above 1,000 m contact the sales department)
Product marking	CE

# DLM 2.0

## OPTIMIZED USE OF



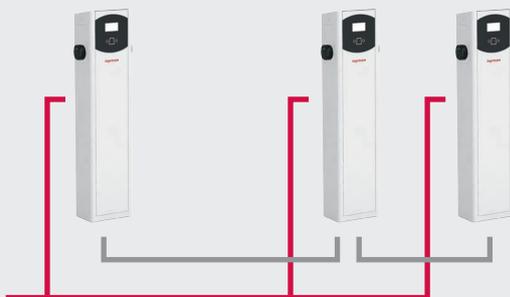
**Dynamic Load Management 2.0 (DLM 2.0)** is the latest generation dynamic management system for the INGEREV®, supplied as standard in all the FUSION and RAPID models.

DLM 2.0 allows all the couplings on each charging station to share the total power defined for the equipment in the most balanced and dynamic way possible, also permitting the interconnection of a group of charging points and the definition of a maximum power output for the whole group. This ensure that the assigned threshold is never exceeded, regardless of the number of vehicles charging simultaneously.

It is therefore possible to **optimize the use of the existing installation**, either through the power contracted or through any other limitation on the installation.

### CHARACTERISTICS

- Multiple charging points, either interconnected in series or at a hub.
- Set maximum installation charging power.
- Instantaneous charging powers adjusted according to the number of vehicles charging and their consumption.



— AC  
— UTP

### DLM BASICS

**DLM 2.0 dynamically manages the power at each socket in the installation**, based on the number of sockets in operation, the types of sockets or connectors used at each charging point and the current actually demanded by each vehicle. This is all evaluated in real time.

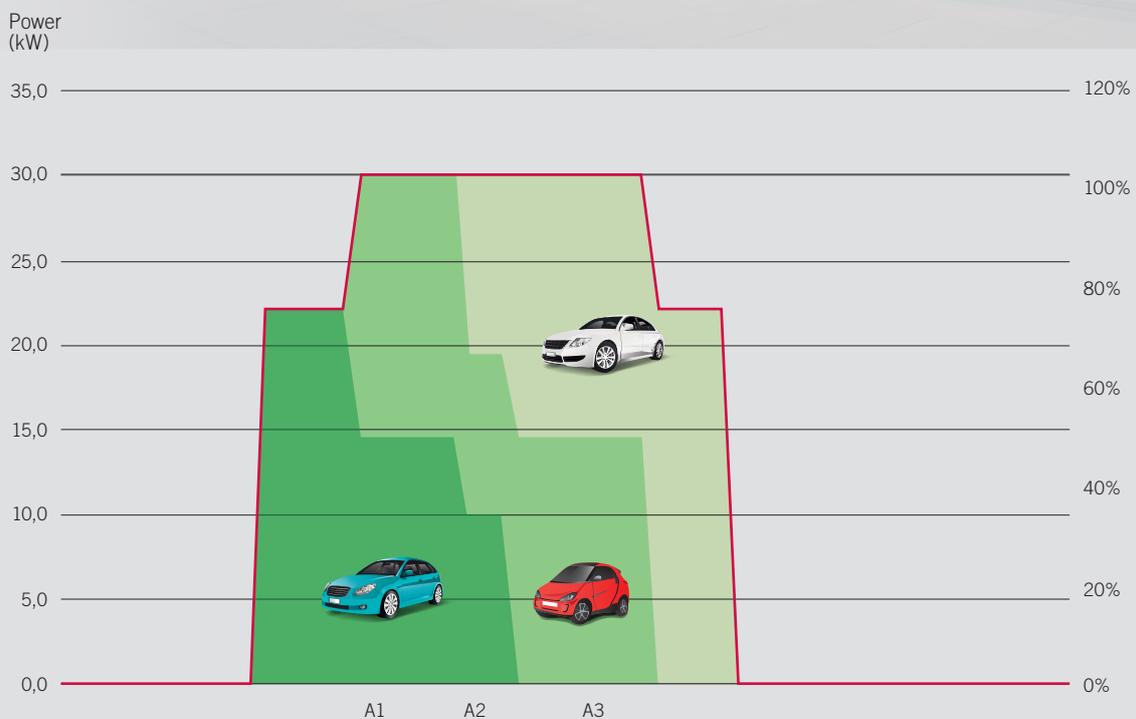
It is a dynamic, adaptive system, given the fact that if one of the vehicles is not consuming the current assigned by the system then, after a given time, the current not being consumed is assigned to the rest of the vehicles connected, for maximum use of the power available.

It is possible to combine AC points with DC points in the same group of charging stations.

# the available power



## DLM 2.0 Dynamic Load Management



■ Charging of vehicle 1   
 ■ Charging of vehicle 2   
 ■ Charging of vehicle 3   
 ■ Maximum grid power   
 ■ Total charging power

# SMART DLM 2.0

## THE SMART



**Smart DLM is the latest development of the DLM 2.0 system** in the INGEREV range for the smart and dynamic management of the power in an installation that includes charging stations and also other loads such as those that are characteristic of an office or industry.

It consists in a network analyzer, installed at the desired management point and connected to an INGEREV unit. All the FUSION and RAPID models are compatible with Smart DLM and it is even possible to combine models.

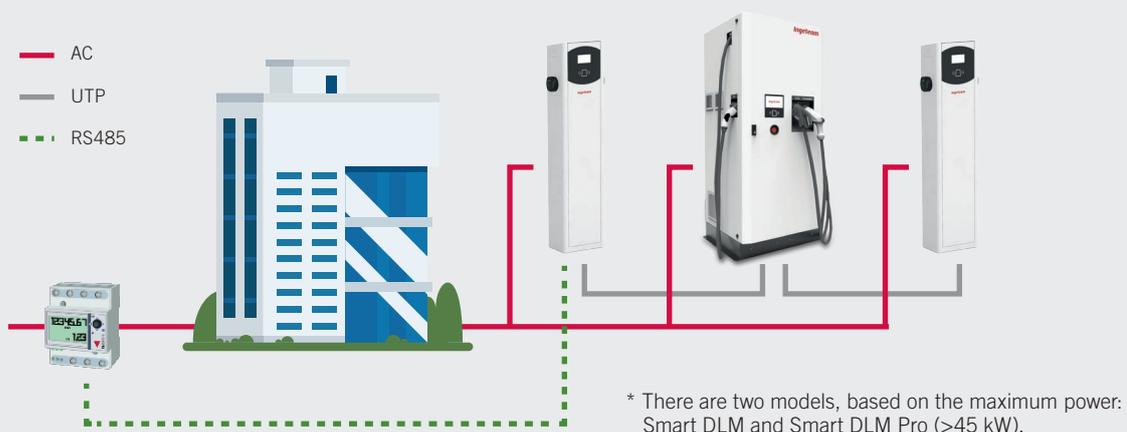
The Smart DLM **allows for the real-time dynamic adjustment of the overall power of the chargers**, which will jointly adjust their power to adapt to the other consumptions of the installation.

In this way it is possible to management the power demand and avoid or minimize the need to increase the power contracted.

**The Smart DLM system makes a continuous analysis of the power consumed by the entire installation, including the charging stations.**

### CHARACTERISTICS

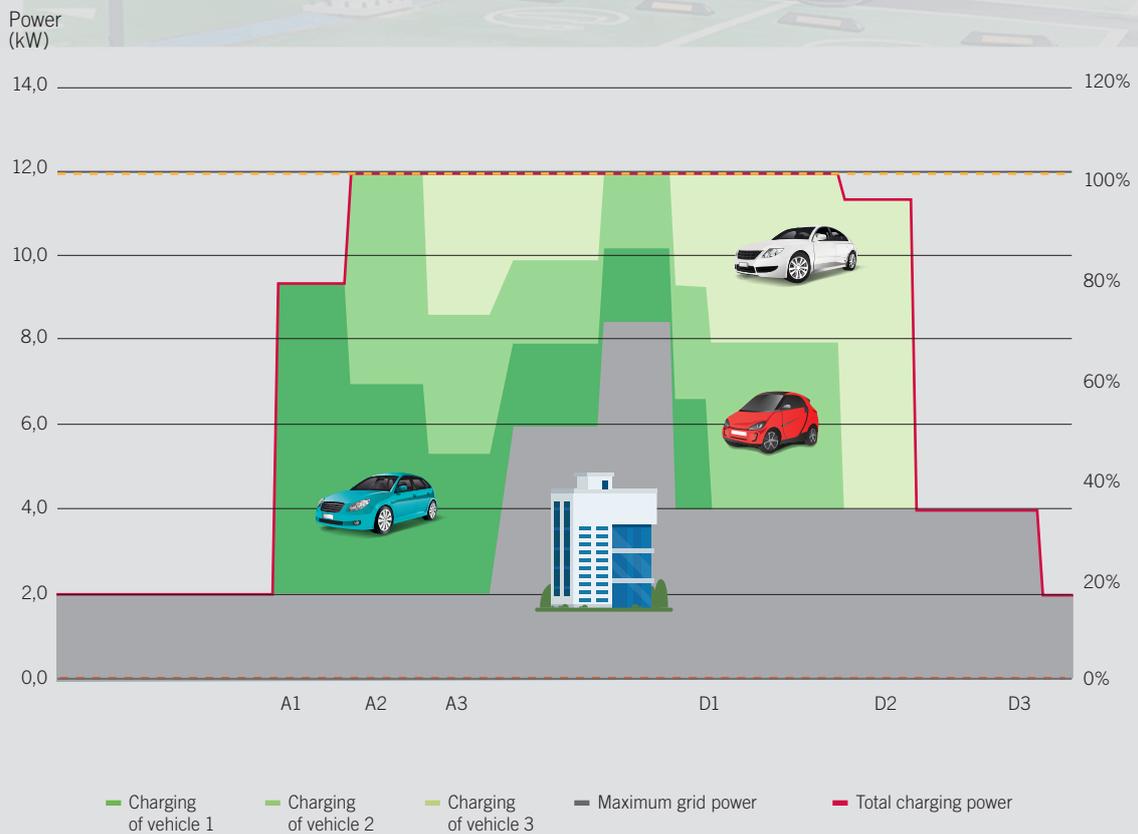
- Multiple charging points, either interconnected in series or at a hub.
- Set maximum power to be supplied by the grid.
- Instantaneous powers adjusted according to the number of vehicles loading and the total consumption of the installation.



# power



Smart Dynamic Load Management





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