



Smart equipment and Systems for **electric vehicle** charging

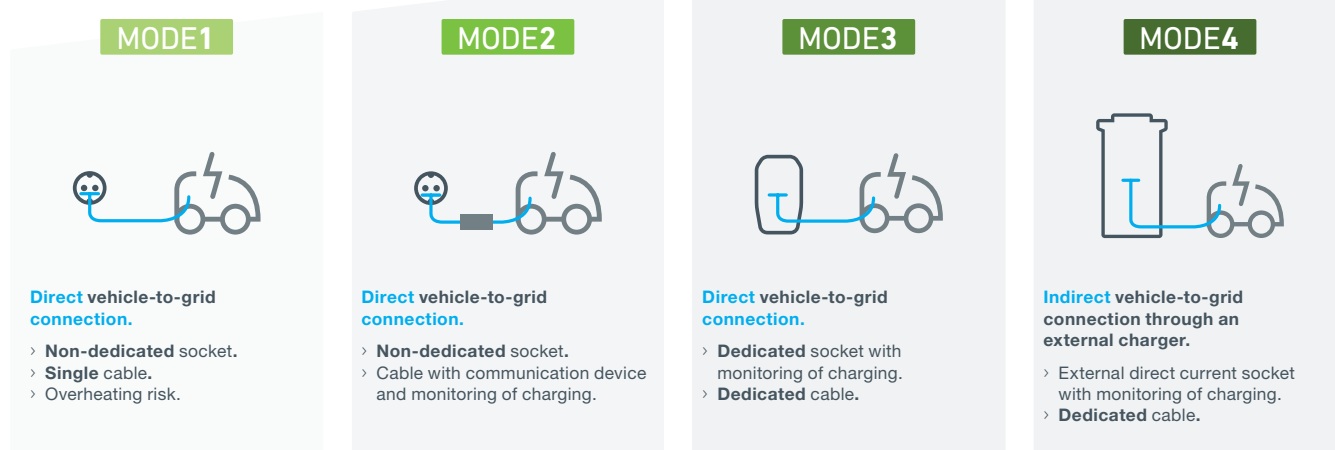


The electric vehicle, the smartest option for a sustainable future

The emergence of Electric Vehicles (EV) has sparked a wide-ranging media explosion that encompasses energy, technology, economic and environmental aspects, which represents a great opportunity in each and every one of these fields.

One of the aspects that generates the most concern is related to the charging infrastructures and their availability. CIRCUTOR has designed and developed a series of smart units and systems to charge all types of electric vehicles.

Charging modes



Connector types

	Connector type	No. of pins	Maximum voltage	Maximum current	Regulations	Features
AC	I	5 (L1, L2/N, PE, CP, CS)	250 V _{ac} Single-phase	32 A single-phase (up to 7.2 kW)	IEC 62196-2	SAE J1772 Regulation
	II	7 (L1, L2, L3, N, PE, CP, PP)	500 V _{ac} Three-phase 250 V _{ac} Single-phase	63 A three-phase (up to 43 kW) 70 A single-phase	IEC 62196-2	For single-phase or three-phase charging
DC	IV	9 (2 Power, 7 signal)	500 V _{dc}	120 A _{dc}	IEC 62196-1 UL 2551	Fast charging in DC In compliance with JEVS G105 Type CHAdeMO
		9 (L1, L2, L3, N, PE, CP, PP, DC+ DC-)	850 V _{dc}	125 A _{dc}	IEC 62196-2 IEC 62196-3	Combined AC/DC connector Type COMBO 2 CCS

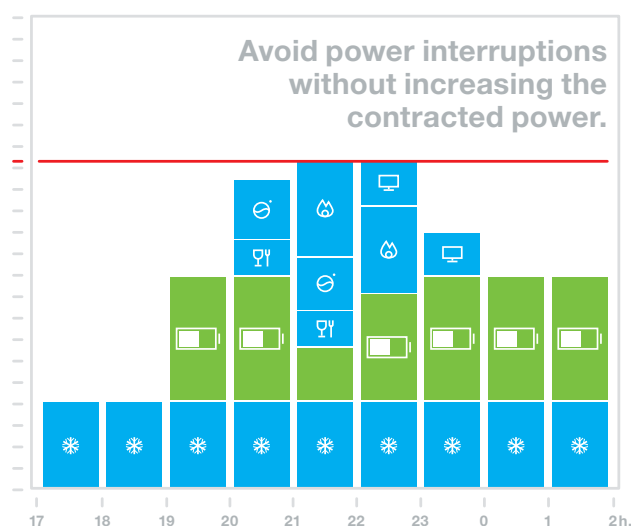
CirBEON system: Smart Charging

The **CirBEON** system consists of a smart sensor for controlling the charging power of the vehicle. Installed under the automatic main switch (IGA), it detects the power consumed and operates the Wallbox so that it does not exceed the maximum contracted power. The Wallbox reduces or increases the power consumed when charging the electric vehicle, depending on the instructions of the eHome CirBEON sensor, thus avoiding outages due to excess power.

Optimal solution for domestic charging.

Dynamic power adjustment

The vehicle's battery always charged



eHome

› WallBox for domestic charging



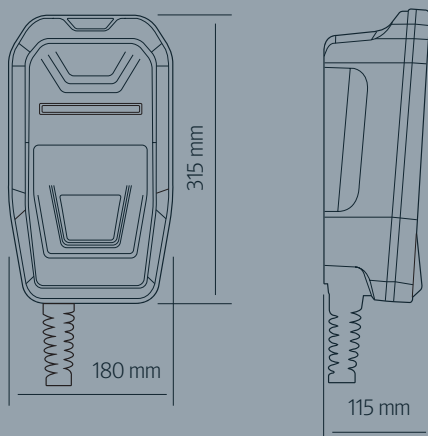
The eHome range was designed to be installed in domestic environments. Optimised for offering a great cost/quality ratio and for easy and intuitive use.

eHome charges the car in mode 3 with a Type I or Type II connector, and can also be equipped with protection elements, increasing its robustness and safety, or an energy meter can be incorporated to control the charging consumption of the vehicle.

eHome can also incorporate a CirBEON smart sensor for controlling the vehicle's charging power, ensuring that the contracted power is not exceeded (preventing disconnection), reducing the charging costs.



› WallBox for domestic charging



Features

The eHome range comprises two versions: the more basic eHome for simple installations, and the eHome for installations that require extra features, such as earth leakage protection, energy meters for submetering with MID certification or that can be locked with a key. All eHome versions incorporate the following features:

- › Light indicator of the state of charge (blue, green and red)
- › Indication of end of charging
- › Charging in Mode 3
- › Available with two types of connector (Type I SAE J1772 and Type II Mennekes), with cable, connector and support
- › Two types of maximum power: 3.6 kW / 7.2 kW
- › Maximum adjustable power
- › Dimensions: 315x180x115 mm
- › Self-extinguishing ABS plastic box
- › IP 54 / IK 10 protection.

The whole eHome range can incorporate a CirBEON smart sensor for controlling the vehicle's charging power.



References

Type	Code	Power	Current	Connector	Features
eHOME T1C16	V25000	3.6 kW	16 A	Type I	
eHOME T1C32	V25010	7.2 kW	32 A	Type I	
eHOME T2C16	V25020	3.6 kW	16 A	Type II	
eHOME T2C32	V25030	7.2 kW	32 A	Type II	
eHome T1C32-A	V25011	7.2 kW	32 A	Type I	Earth leakage protection Type A 30 mA Access to the protection elements with a key
eHome T1C32-A MID	V25012	7.2 kW	32 A	Type I	Earth leakage protection Type A 30 mA Energy meter; MID certification Access to the protection elements with a key
eHome T1C32-B	V25013	7.2 kW	32 A	Type I	Earth leakage protection Type B 30 mA Access to the protection elements with a key
eHome T2C32-A	V25031	7.2 kW	32 A	Type II	Earth leakage protection Type A 30 mA Access to the protection elements with a key
eHome T2C32-A MID	V25032	7.2 kW	32 A	Type II	Earth leakage protection Type A 30 mA Energy meter; MID certification Access to the protection elements with a key
eHome T2C32-B	V25033	7.2 kW	32 A	Type II	Earth leakage protection Type B 30 mA Access to the protection elements with a key

They include a 5 m cable and support for the cable.

WallBox

> WallBox for indoor charging



The WallBox range was designed for indoor and outdoor environments with some kind of roof. This range goes one step further than the eHome range, as they are more robust and have features for more advanced and complex installations, such as multi-user car parks, vehicle fleets or private car parks.

WallBox charges the car in Mode 1, 2 or 3 with Schuko connectors, Type I or Type II, and it can be equipped with communications, access control, prepayment systems and other specific features of the aforementioned applications.

WallBox eBasic can also incorporate a CirBEON smart sensor for controlling the vehicle's charging power, ensuring that the contracted power is not exceeded (preventing disconnection), reducing the charging costs.



> WallBox for indoor charging

Features

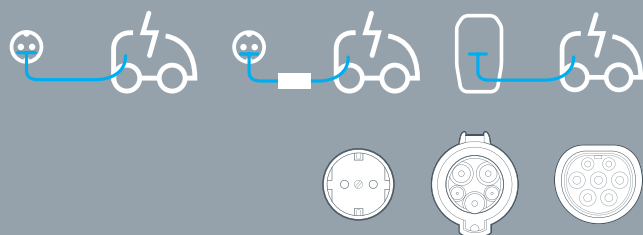
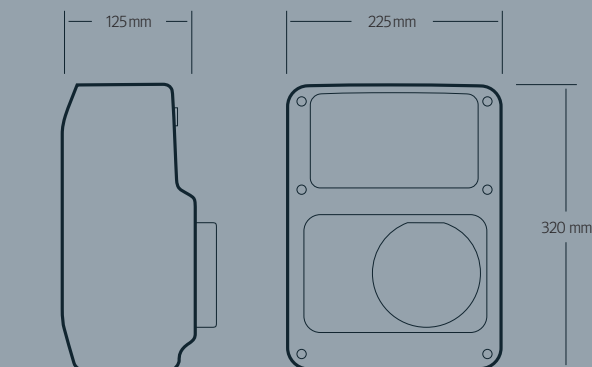
The WallBox eBasic range is the simplest version from this extensive range of charging boxes. Among its main features, the following can be highlighted:

- > Light indicator of the state of charge (blue, green and red)
- > Indication of end of charging
- > Available with three types of connector (Schuko, Type I SAE J1772 and Type II Mennekes), with cable, connector and support
- > Three types of maximum power: 3,6 kW / 7,2 kW / 22 kW
- > Dimensions: 320 x 225 x 125 mm
- > Self-extinguishing ABS-PC plastic box
- > IP 54 / IK 10 protection.

The whole WallBox eBasic range can incorporate a CirBEON smart sensor for controlling the vehicle's charging power.

The WallBox Smart range is the most advanced version of these units, incorporating a series of powerful improvements that converts them into smart unit:

- > Alphanumeric display with information about use, integrated energy measurement, data server and management applications.
- > Ethernet, GSM and GPRS/3G communications



References

Type	Code	Charge mode	No. of connectors	Connector type	Electrical features	Features
WB-eBasic-T2C32	V26030	3	1	Cable+Type II	230 V _{AC} , 32 A, 7,2 kW 400 V _{AC} , 32 A, 22 kW	-
WB-eBasic-T2S32	V26040	3	1	Type II	230 V _{AC} , 32 A, 7,2 kW 400 V _{AC} , 32 A, 22 kW	-
WB-eBasic-T2S32-A	V26041	3	1	Type II	230 V _{AC} , 32 A, 7,2 kW	Earth leakage protection Type A 30 mA Access to the protection elements with a key
WB-eBasic-MIX	V26050	1, 2, 3	2	Schuko, Type II	230 V _{AC} , 16 A, 3,6 kW 400 V _{AC} , 32 A, 22 kW	-

Type	Code	Charge mode	No. of connectors	Connector type	Electrical features	Communications	Internal memory	Keypad
RVE-WBM-Smart	V23015	3	1	Type II	230 V _{AC} , 32 A, 7,2 kW	Ethernet	Yes	-
RVE-WBM-Smart-TRI	V23025	3	1	Type II	400 V _{AC} , 32 A, 22 kW	Ethernet	Yes	-
RVE-WBMC-Smart	V23032	3	1	Cable(*) + Type II	230 V _{AC} , 32 A, 7,2 kW	Ethernet	Yes	-
RVE-WBMC-Smart-TRI	V23035	3	1	Cable(*) + Type II	400 V _{AC} , 32 A, 22 kW	Ethernet	Yes	-
RVE-WB2M-Smart	V23500	3	2	Type II	230 V _{AC} , 32 A, 7,2 kW	Ethernet	Yes	-
RVE-WB2M-Smart-TRI	V23530	3	2	Type II	400 V _{AC} , 32 A, 22 kW	Ethernet	Yes	-
RVE-WB-MIX-Smart	V23315	1, 2, 3	2	Type II + Schuko	230 V _{AC} , 32 A, 7,2 kW 230 V _{AC} , 16 A, 3,6 kW	Ethernet	Yes	-
RVE-WB-MIX-Smart-TRI	V23325	1, 2, 3	2	Type II + Schuko	400 V _{AC} , 32 A, 22 kW 230 V _{AC} , 16 A, 3,6 kW	Ethernet	Yes	-
RVE-WBM-Touch-TRI	V23045	3	1	Type II	400 V _{AC} , 32 A, 22 kW	Ethernet	Yes	Yes
RVE-WBMC-Touch-TRI	V23050	3	1	Cable(*) + Type II	400 V _{AC} , 32 A, 22 kW	Ethernet	Yes	Yes
RVE-WBC-Smart	V23115	3	1	Cable(**) + Type I	230 V _{AC} , 16 A, 3,6 kW	Ethernet	Yes	-
RVE-WBC-Smart-32	V23116	3	1	Cable(**) + Type I	230 V _{AC} , 32 A, 7,2 kW	Ethernet	Yes	-
RVE-WBC-Touch	V23125	3	1	Cable(**) + Type I	230 V _{AC} , 16 A, 3,6 kW	Ethernet	Yes	Yes
RVE-WBC-Touch-32	V23126	3	1	Cable(**) + Type I	230 V _{AC} , 32 A, 7,2 kW	Ethernet	Yes	Yes
RVE-WBS-Smart	V23215	1, 2	1	Schuko	230 V _{AC} , 16 A, 3,6 kW	Ethernet	Yes	-

* Support for cable, 4-metre cable and type 2 connector directly from the side of the car in accordance with IEC 61196-2.

** Support for 5-metre cable and type 1 SAE J1772 connector, directly from the side of the car in accordance with IEC 61196-2.

For 3G communications, please ask.

URBAN

› Posts for outdoor charging

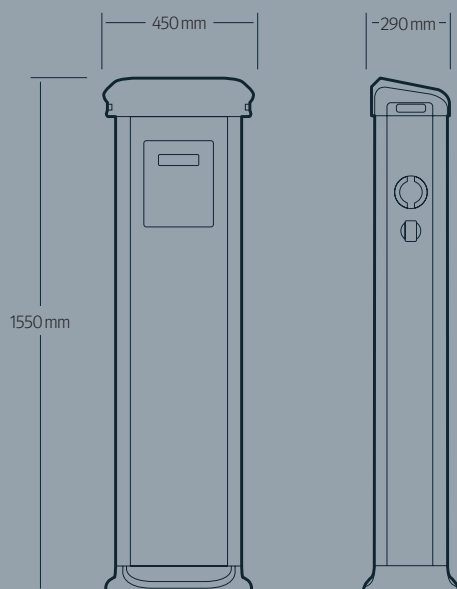


URBAN posts are designed for charging in outdoor car parks where the objective is both a robust and attractive unit. They have all the necessary electrical protection elements defined by the current standard for user safety.

The URBAN 10 range includes competitive units with a Plug&Charge facility for those projects that require simple charging. For its part, the URBAN 20 offers advanced features that enable remote monitoring and advanced management from the unit via protocols such as OCPP.



› Posts for outdoor charging



Features

The URBAN range consists of two groups: the URBAN 10 has the most competitive posts while the URBAN 20 features the posts with the most advanced features. All the units have these features according to their type:

- › Light indicator of the state of charge (blue, green and red)
- › Available with three types of socket
- › (Schuko, Type II Mennekes and Type II with cable)
- › Various types of maximum power: 3.6 kW / 7.2 kW / 22 kW
- › Maximum adjustable power
- › Dimensions: 450 x 290 x 1550 mm
- › Tamper-proof aluminium and ABS plastic enclosure
- › IP 54 / IK 10 protection
- › Circuit breaker protection (curve C) and Type A differential relay

The URBAN 20 also has the following options:

- › Alphanumeric display with information about use
- › Built-in energy measurement system, data server
- › Internal meter with MID certification
- › Identification by RFID
- › Ethernet and 3G communications (optional)
- › Blocking of Type II connector
- › Power balancing between sockets (only Type II)
- › Integration under OCPP protocol.



References

Type	Code	No. of connectors	Connector type	Power supply	Electric features
URBAN M11	V10610	1	Type II	Single-phase	230 V _{a.c.} , 32 A, 7,2 kW
URBAN T11	V10611	1	Type II	Three-phase	400 V _{a.c.} , 32 A, 22 kW
URBAN M12	V10612	2	Type II, Type II	Single-phase	230 V _{a.c.} , 32 A, 7,2 kW 230 V _{a.c.} , 32 A, 7,2 kW
URBAN T12	V10613	2	Type II, Type II	Three-phase	400 V _{a.c.} , 32 A, 22 kW 400 V _{a.c.} , 32 A, 22 kW
URBAN T12-MIX	V10614	2	Type II, Schuko	Three-phase	400 V _{a.c.} , 32 A, 22 kW 230 V _{a.c.} , 16 A, 3,6 kW
URBAN M21	V10620	1	Type II	Single-phase	230 V _{a.c.} , 32 A, 7,2 kW
URBAN T21	V10621	1	Type II	Three-phase	400 V _{a.c.} , 32 A, 22 kW
URBAN M22	V10622	2	Type II, Type II	Single-phase	230 V _{a.c.} , 32 A, 7,2 kW 230 V _{a.c.} , 32 A, 7,2 kW
URBAN T22	V10623	2	Type II, Type II	Three-phase	400 V _{a.c.} , 32 A, 22 kW 400 V _{a.c.} , 32 A, 22 kW
URBAN T22-C2	V10626	2	Type II cable, Type II cable	Three-phase	400 V _{a.c.} , 32 A, 22 kW 400 V _{a.c.} , 32 A, 22 kW
URBAN T24-MIX	V10627	2	Type II / Schuko, Type II / Schuko	Three-phase	400 V _{a.c.} , 32 A, 22 kW / 230 V _{a.c.} , 16 A, 3,6 kW 400 V _{a.c.} , 32 A, 22 kW / 230 V _{a.c.} , 16 A, 3,6 kW

RAPTION

› Fast charging stations

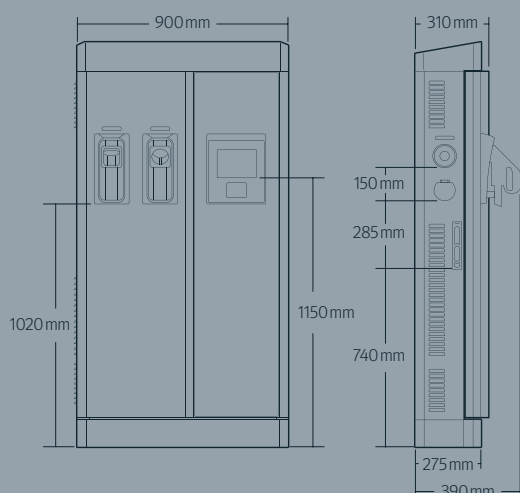


Fast charging stations for direct current electric vehicles with CHAdeMO, CCS Combo2 and Type 2 alternating current connectors. The RAPTION fast charging units enable opportune charging whenever fast charging is required and sufficient power is not available. They operate with outputs of up to 50 kW, allowing their use in simple installations and saving additional costs in the fixed power charge. Depending on the capacity of the batteries, they can charge partially or totally in a reduced period of time.

Special attention has been paid during the design of the units to the ease of their installation and maintenance, resulting in cost and time savings. They feature updated power electronics and Ethernet and 3G communications, as well as a screen that facilitates user interaction and remote management from the control centre.



› Fast charging stations



Features

- › IP 54 / IK 10 protection
- › Smart charging system
- › Three-phase power supply 400 Vac, 50 / 60 Hz
- › Maximum output power: 22 kW and 50 kW according to type
- › Connector blocked during charging (Mode 3 and Mode 4)
- › Standard charge in 30 ~ 45 minutes
- › 8" TFT tamper-proof touchscreen
- › Light indicator of the charging state via beacon
- › Energy consumption meter in kWh and charging time displayed on the screen
- › RFID identification and pre-payment
- › Embedded SCADA monitoring and management software
- › Remote control and monitoring of the unit via XML
- › Ethernet connection (10/100 Base TX)
- › 3G communications
- › Compatible with OCPP 1.2 and 1.5 protocol



References

Type	Code	Charge mode	No. of connectors	Connector type	Electrical features
RAPTION 22 CCS	V17010	4	1	CCS Combo2	550 V _{d.c.} , 56 A _{d.c.} , 22 kW
RAPTION 22 CHA	V17015	4	1	JEVS G105	550 V _{d.c.} , 56 A _{d.c.} , 22 kW
RAPTION 22 DUO	V17020	4 4	2	JEVS G105, CCS Combo2	550 V _{d.c.} , 56 A _{d.c.} , 22 kW 550 V _{d.c.} , 56 A _{d.c.} , 22 kW
RAPTION 22 TRIO	V17030	3 4 4	3	Base type II, JEVS G105, CCS Combo2	400 V _{a.c.} , 32 A _{a.c.} , 22 kW 550 V _{d.c.} , 56 A _{d.c.} , 22 kW 550 V _{d.c.} , 56 A _{d.c.} , 22 kW
RAPTION 50 CSS	V17110	4	1	CCS Combo2	500 V _{d.c.} , 125 A _{d.c.} , 50 kW
RAPTION 50 CHA	V17115	4	1	JEVS G105	500 V _{d.c.} , 125 A _{d.c.} , 50 kW
RAPTION 50 DUO	V17120	4	2	JEVS G105, CCS Combo2	500 V _{d.c.} , 125 A _{d.c.} , 50 kW 500 V _{d.c.} , 125 A _{d.c.} , 50 kW
RAPTION 50 TRIO	V17130	3 4 4	3	Base type II, JEVS G105, CCS Combo2	400 V _{a.c.} , 32 A _{a.c.} , 22 kW 500 V _{d.c.} , 125 A _{d.c.} , 50 kW 500 V _{d.c.} , 125 A _{d.c.} , 50 kW
RAPTION 50 TRIO 63	V17131	3 4 4	3	Cable type II, JEVS G105, CCS Combo2	400 V _{a.c.} , 63 A _{a.c.} , 43 kW 500 V _{d.c.} , 125 A _{d.c.} , 50 kW 500 V _{d.c.} , 125 A _{d.c.} , 50 kW

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