**Catalogue 2014-2015**
**CirCarLife**
*Intelligent recharging solutions for electric vehicles*

CIRCONTROL
*Mobility & eMobility*

# CIRCONTROL
*Mobility & eMobility*

## History

Company founded in 1997. Circontrol believes that innovation, internationalization, quality, and close contact with the clients is the most effective way to offer the best products and service.

## Activity

Designer and manufacturer of Mobility (Total efficiency on car park solutions) and eMobility (Intelligent recharging solutions for electric vehicles) solutions.

# CirCarLife - Catalogue 2014-2015

## INDEX E

## INTELLIGENT RECHARGING SOLUTIONS FOR ELECTRIC VEHICLES

**ULTRA-FAST CHARGING SYSTEM**

**ELECTRIC VEHICLE CHARGING IN CITY STREETS**

**ELECTRIC VEHICLE CHARGING IN PUBLIC CAR PARKS (INDOORS)**

**ELECTRIC VEHICLE CHARGING IN CAR PARKS (OUTDOORS)**

**ELECTRIC VEHICLE CHARGING IN COMMUNAL BLOCKS**

# CirCarLife
*Intelligent recharging solutions for electric vehicles*

## E1 INTRODUCTION

### E1.1 CHARGING MODES

The EV charging process is regulated by the IEC 61851 and IEC 62196 international standards. These standards define the different charging modes and the type of connection required to charge EVs. All CirCarlife products have been created and designed in compliance with the strictest European regulations and standards, prioritising the end user's safety. CIRCONTROL is a leading and constantly innovating company committed to developing its products and adapting them to market requirements.

## Mode 1

**Technical features**

Standard electrical network connector, non-specific for EVs.

Slow AC charging.

The installation must be protected with circuit breakers and earth leakage protection elements.

Maximum 16 A per phase (3.7 kW - 11kW).

## Mode 2

**Technical features**

Standard electrical network connector, non-specific for EVs.

Slow AC charging.

The installation must be protected with circuit breakers and earth leakage protection elements.

Maximum 32 A per phase (3.4 kW - 22kW).

Special cable with an intermediate electronic device, with a control and protection pilot function.

## Mode 3

**Technical features**

Electrical network connector, specific for EVs.

Slow or semi-fast charging in single or three-phase installations.

Protection elements included in the special infrastructure for EVs.

Maximum 64 A per phase (14.8 kW - 43 kW).

Direct connection of the EV to the charging unit.

## Mode 4

**Technical features**

Electrical network connector, specific for EVs.

Quick DC charging.

Charging station, exclusively used for EVs.

Maximum 400 A per phase (50 kW - 150 kW).

Control and protection elements installed in the infrastructure.

Mode 1

Mode 2 — Built-in cable protection — AC — Communication

Mode 3 — Smart recharging station — AC — Communication

Mode 4 — AC/DC — Communication
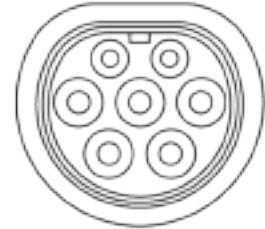
E1

5

# E1.2 TYPES OF CONNECTORS

**Type 1**

SAE J1772 Regulation.

5 pins (L1/N, PE, CP, CS).

Maximum 230Vac 32A single-phase (7.3kW).

**Type 2**

7 pins (L1, L2, L3, N, PE, CP, PP).

Maximum 400Vac 63A three-phase (43kW).

**E1**

**Type 3**

7 pins (L1, L2, L3, N, PE, CP, PP).

Maximum 400Vac 32A three-phase (21kW).

**CHAdeMO**

Indirect connection between the EV and DC supply point. Control and protection elements installed in the infrastructure.

**Combined Charging System Combo 2**

DC connector of the combined AC/DC plug-in charging system:
The inlet of the plug-in connector can also be used for AC voltage charging with a type 2 AC plug. One inlet is required on the vehicle side for AC and DC charging.

# CirCarLife
*Intelligent recharging solutions for electric vehicles*

## E4. MULTIPOINT SYSTEM

**OCPP**
Open Charge Point Protocol

**Description**

The multi-point system of the CirCarLife range has been designed to offer a smart electric vehicle charging solution for car parks with multiple outlet sockets for electrical vehicles.

This solution allows smart electric vehicle charging management of a large number of electric vehicles, controlling different parameters of the electric network and the vehicles connected to it, as well as user and car park manager preferences. In this way, users can get maximum results from vehicle charging in accordance with user requirements by charging under the most favourable conditions in terms of electricity tariffs or by opting for immediate charging.

**COMMUNICATIONS**
RS, Ethernet, Zigbee, PLC, GSM, GPRS

**SAVING AND FILTERING**
Harmonics Filtering
Reactive Compensation

**ENERGY MANAGEMENT**
Measurement
Quality
Consumption
Adapt to electrical tariff
Control of Recharges

**ELECTRIC COMPANY SIGNAL**

**PC SOFTWARE**
Real Time
Multiuser
Graphics
Remote Connection
Web
XNL interface
Alarm's Management
Historical Generation
Multiplatform

**IDENTIFICATION**
RFID
Bar Code
Magnetic Stripe

**INTEGRATION WITH OTHER SYSTEMS**
Payment Systems
Ocupation and guidance
Lighting
Pay and display

## CONTROLLER Series

E4

21

Communication Serial RS-485

Ethernet
3rd system interface

1   2   3   4   (...)

**Sockets** Series

# E4.1 Master controller



## Description

MULTIPOINT SYSTEM has been designed as an extremely flexible system. Its special configuration can cater for specific vehicle charging needs of the current market. In addition, it is a scalable system that can control up to 32 charging stations in its most basic configuration.

The system is composed of the following basic units:
- CCL-CM: CPU (industrial PC with PowerStudio software), 10" Touch Screen
- CCL-SL Charging Station

**E4**

**22**

## CCL-CM offers the following functions

- User interface 10" Touch screen as standard. This is the natural complement of the PowerStudio software, which allows interaction with the user. PowerStudio software, is capable of efficiently managing the power available, controlling the main's harmonics (upper measurement system is needed), charging vehicles in off-peak periods, etc.

- The user can browse through the screens that have been designed with ergonomics in mind to select the parking place, check their charging status, , energy consumed., etc.

- Massive storage for all statistical studies.

- All of the current communications power used nowadays (ICT).

- Modbus Communications Protocol to communicate with the charging bases or other specific Energy Efficiency devices.

- XML Communications Protocol, which enables the integration with other automated parking and car park systems (blue parking areas, car parks in general, access control points, etc.). In addition, it offers remote station management options to parking operators like statistics, remote activation/deactivation, etc.

- Card reader. Built-in prepayment card reader Mifare type as standard, but it can be replaced or complemented with any other reader available in the market.

## CCL-SL Charging Station offers

- The CCL-SL Charging Station it's a wall-mount charging box that guarantees a safe collection of the energy for the energy of the installation operator, prevents fraud and misuse of the energy.

- Also provide reliable measurement system for the user, since only the energy consumed is paid, with an accurate reading of the energy consumed.

- Protects end users against electrical risks. Current is only present during the charging cycle.

- Current antitheft prevention function. The operation is interrupted if the socket is removed during the charging process, so that no more energy will be supplied to the base until the user is identified again.

- In the event of an overload, the maximum current detection and limiting system is activated before the protection circuit breaker is tripped, in order to prevent subsequent maintenance operations.



## The complementary units that offer all other features to the system are as follows:

- Pre-payment cards. Available without credits (paid at a later stage) and pre-charged with 5, 20, 50 or 99 credits.
- Pre-payment cards recharging tools.

There are three models available for the recharging of the CirCarLife cards:
o CCL-Cash: Cashier for the recharging of prepayment cards, able of accepting credit cards and notes.
o CCL-Term: standalone terminal for recharging cards.
o CCL-Soft: Software and USB peripheral reader for recharging cards.

## More options and accessories

• Upper measurement systems used to control the power available to the installation. The energy available can be limited, bypassed or distributed to the different vehicles connected to the main. To be defined, in accordance with the particular conditions of each installation.

• Upper measurement and control systems used to control the quality of energy. Measurement and control of harmonics. To be defined, in accordance with the particular conditions of each installation.

• Any unit of the CIRCARLIFE family (outdoor posts, wall-mount units, two wheels...) can be connected to the MULTIPOINT system (Standard screen must be adapted).

• The MULTIPOINT SYSTEM vehicle charge unit complies with the CE requirements and the current European Union directives for this type of equipment.

## Unit dimensions

These units do not require special anchoring instructions since they are standard in any electrical box installation.
The anchoring structure is prepared for 8 mm lag screws or threaded plugs on the CM box and 6 mm on the SL box.
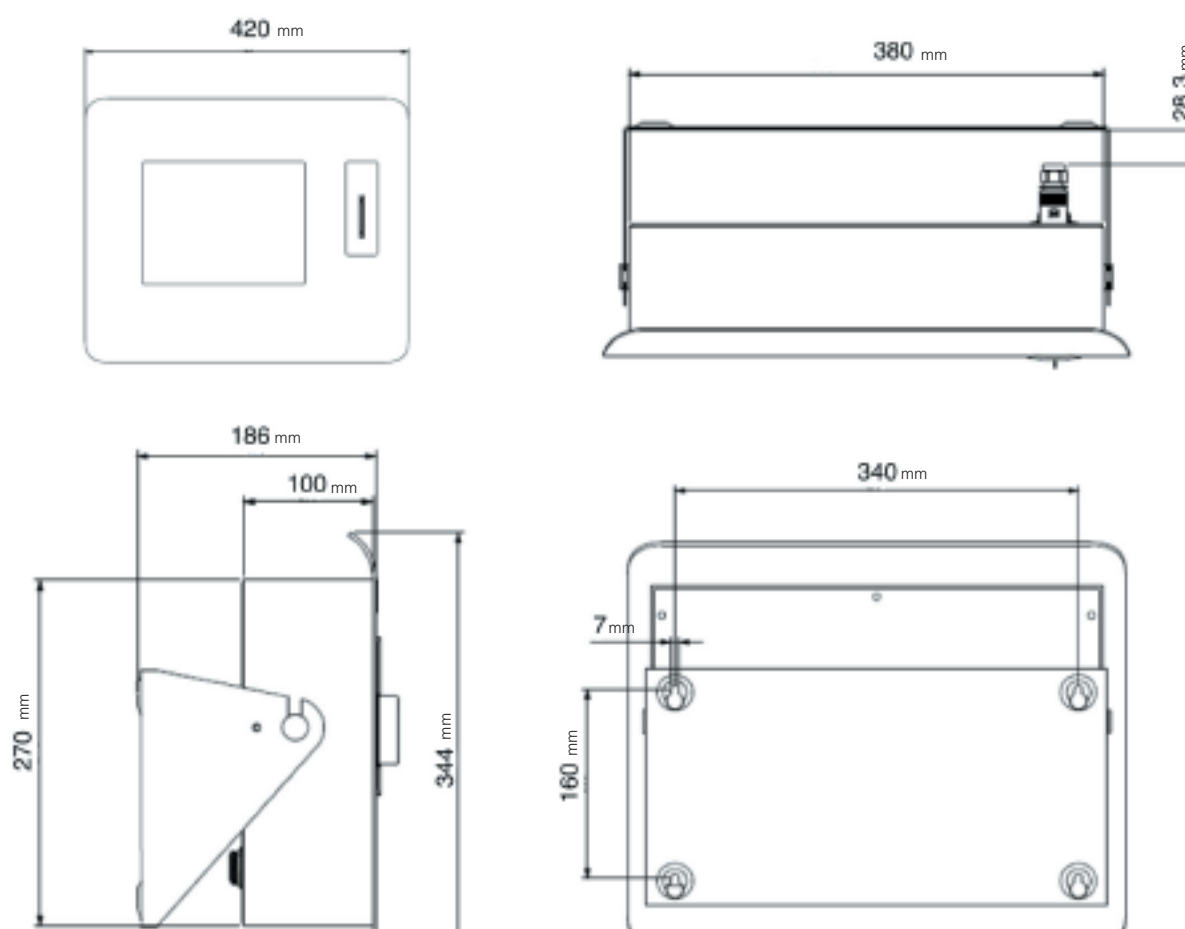
## Technical Features

| Type | Input Voltage | LAN Network | SL Charging Point | Scalable master WB control | Technical Features Page |
|------|---------------|-------------|-------------------|----------------------------|-------------------------|
| CCL-CM | 230V AC 1P+N | Ethernet RJ45 | RS 485 Modbus | 32 WB Points | 69 |

# E4.2 Slave Wallbox

## Description

The multi-point system of the CirCarLife range has been designed to offer a smart electric vehicle charging solution for car parks with multiple outlet sockets for electrical vehicles.

This solution allows smart electric vehicle charging management of a large number of electric vehicles, controlling different parameters of the electric network and the vehicles connected to it, as well as user and car park manager preferences. In this way, users can get maximum results from vehicle charging in accordance with user requirements by charging under the most favourable conditions in terms of electricity tariffs or by opting for immediate charging.

### Technical features of WallBox boxes

Protection degree : IP54

Built-in energy metering system

Compatible with Mode 3 IEC 61851-1. (Certified)

Charge status light indicator (blue, green and red)

Type II or Schuko connectors, in compliance with the IEC 62196-2 regulations
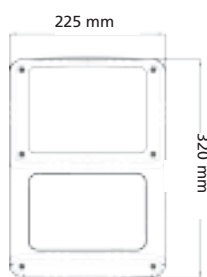
Simple installation. 4-point wall fixing

Self-extinguishing ABS plastic casing

Communications: RS-485

Customised housing finish and logos
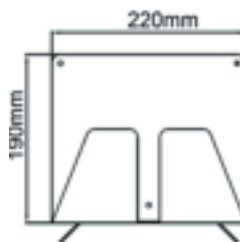
Elegant, aesthetic design

### Unit dimensions

225 mm
109 mm
320 mm
51 mm
125 mm

**WALLBOX CHARGING**

220mm
190mm
190mm

**CONNECTION CABLE SUPPORT**
*INCLUDED ONLY WBC SERIES*

**Techincal Features**

| Type | Num. Sockets | Input Supply Voltage | Output Power | | Output Current | | Charge system | | Technical Features Page |
|---|---|---|---|---|---|---|---|---|---|
| | | | Socket A | Socket B | Socket A | Socket B | Socket A | Socket B | |
| CCL-WB-SL | 1 | 230 Vac | 3,6 kW | _ | 16A | _ | Mode 1 Shucko | – | 70 |
| CCL-WBM SL | 1 | 230 Vac | 7,2 kW | _ | 32 A | _ | Mode 3 Type 2 | – | 70 |
| CCL-WBC 16 SL | 1 | 230 Vac | 3,6 kW | _ | 16A | _ | Mode 3 Type 1 | – | 70 |
| CCL-WBC 32 SL | 1 | 230 Vac | 7,2 kW | _ | 32 A | _ | Mode 3 Type 1 | – | 70 |
| CCL-WB-SL-MIX | 2 | 230 Vac | 3,6 kW | 7,2 kW | 16 A | 32A | Mode 1 Shucko | Mode 3 Type 2 | 70 |
| CCL-WBM-SL TRI | 1 | 400 Vac | 22 kW | _ | 32 A | _ | Mode 3 Type 2 | – | 71 |
| CCL-WB-SL MIX TRI | 2 | 230 Vac | 3,6 kW | 22 kW | 16 A | 32 A | Mode 3 Type 2 | Mode 1 Shucko | 71 |

**E4**

**25**

**Multipoint Controller - CCL-CM**

| Type | CCL-CM |
|---|---|
| Code | 490015 |
| **Power Supply** | |
| Input voltage | 230V AC 1P+N+PE |
| Nominal input power | 60W |
| Input frequency | 50/60Hz |
| **Network connection** | |
| LAN network | Ethernet  RJ45 |
| SL charging point | RS485 Modbus |
| Scalable master WB control | 32 WB points |
| **General** | |
| Enclosure Material | Steel metalic body |
| Operating temperature | -10 to +45c° |
| Operating Humidity | To 95% RH Non-condensing |
| RFID reader system | ISO/IEC14443A/B |
| LCD Display | 10.4" XGA TFT LCD touch screen |
| Interface Integration protocol | OCPP / XML |
| Power limit control | Maximum demand management |
| Net weight | 6kg |
| **Software** | |
| OS | Linux operation system |
| Scada management control | Circarlife scada |
| **Optional devices** | |
| Wireless Comunication | 3G/GPRS |
| Extended Temperature range | Heater (-30 to +50C°) |
| Meter | Utility company own meter |
| AC Analyzer | AC Power Quality Analyzers |
| Harmonics | Active harmonic filter |

## Multipoint Sockets - CCL-WB-SL Single phase

| Type | CCL-WB-SL | CCL-WBM SL | CCL-WBC 16 SL | CCL-WBC 32 SL | CCL-WB-SL-MIX |
|---|---|---|---|---|---|
| Code | 490091 | 490092 | 490057 | 490125 | 490094 |
| Number of plugs | 1 | 1 | 1 | 1 | 2 |
| **Outputs** | | | | | |
| Rated output current | 16A | 32A | 16A | 32A | 32A (Socket A) 16A (Socket B) |
| Rated output | 3,6kW | 7,2kW | 3.6kW | 7.2kW | 7.2kW (Socket A) 3.6kW (Socket B) |
| Output AC voltage | 230V AC 1P+N+PE | 230V AC 1P+N+PE | 230V AC 1P+N+PE | 230V AC 1P+N+PE | 230V AC 1P+N+PE |
| **Inputs** | | | | | |
| Input voltage | 230V AC 1P+N | 230V AC 1P+N | 230V AC 1P+N | 230V AC 1P+N | 2 x 230V AC 1P+N |
| Nominal input current | 16A | 32A | 16A | 32A | 32A 16A |
| Nominal input power | 3,6kW | 7,2kW | 3.6kW | 7,2kW | 25kW |
| Input frequency | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| **Charge system** | | | | | |
| Socket A | Mode 1 & Mode 2 | Mode 3 (IEC 61851) | Mode 3 (IEC 61851) | Mode 3 (IEC 61851) | Mode 3 (IEC 61851) |
| Socket B | - | - | - | - | Mode 1 & Mode 2 |
| **Sockets** | | | | | |
| Socket A | CEE 7/4 (Schuko) or BS1363 (UK) | Type 2 (UNE EN 62196-2) | Type 1 (UNE EN 62196-2) | Type 1 (UNE EN 62196-2) | Type 2 (UNE EN 62196-2) lock system |
| Socket B | - | - | - | - | CEE 7/4 (Schuko) or BS1363 (UK) |
| **Energy Meter** | | | | | |
| | | | Internal meter | | |
| **Cable** | | | | | |
| Cable lenght | - | - | 5 meters | 5 meters | - |
| Cable support | - | - | Metal cable support | Metal cable support | - |
| **Network connection** | | | | | |
| RS485 (scalable) | | | Modbus | | |
| **General** | | | | | |
| Energy Meter | | | Internal meter | | |
| Enclosure Rating | | | IP54 /IK10 | | |
| Enclosure Material | | | ABS | | |
| Operating Temperature | | | -10 to +45C° | | |
| Operating Humidity | | | To 95% RH Non-condensing | | |
| Net Weight | | | 4kg | | |
| Light beacon | | | Three color led Status | | |
| Power limit control | | | Mode 3 PWM control according ISO/IEC 61851-1 | | |
| **Optional devices** | | | | | |
| Extended range temperature | | | Heater (-30 to +50C°) | | |
| RFID reader System | | | ISO/IEC14443A/B | | |
| Connector Lock System | - | Type 2 connector hook | - | - | Type 2 connector hook |

E8

70

## Multipoint Sockets - CCL-WB-SL Three phase

| Type | CCL-WBM-SL TRI | CCL-WB-SL MIX TRI |
|---|---|---|
| Code | 490093 | 490095 |
| Number of plugs | 1 | 2 |
| **Outputs** | | |
| Rated output current | 32A | 32A (Socket A)<br>16A (Socket B) |
| Rated output power | 21kW | 21kW (Socket A)<br>3.6kW (Socket B) |
| Output AC voltage | 400V AC 3P+N+PE | 400V AC 3P+N (Socket A)<br>230V AC 1P+N (Socket B) |
| **Input** | | |
| Input voltage | 400V AC 3P+N | 400V AC 3P+N (Socket A)<br>230V AC 1P+N (Socket B) |
| Nominal input current | 1 x 32A | 32A<br>16A |
| Nominal input power* | 22kW | 25kW |
| Input frequency | 50/60Hz | 50/60Hz |
| **Charge system** | | |
| Socket A | Mode 3 (IEC 61851) | Mode 3 (IEC 61851) |
| Socket B | - | Mode 1 & Mode 2 |
| **Sockets** | | |
| Socket A | Type 2 (UNE EN 62196-2) | Type 2 (UNE EN 62196-2) lock system |
| Socket B | - | CEE 7/4 (Schuko) or BS1363 (UK) |
| Energy Meter | Internal meter | |
| **Network connection** | | |
| RS485 (scalable) | Modbus | |
| **General** | | |
| Enclosure Rating | IP54 /IK10 | |
| Enclosure Material | ABS | |
| Operating temperature | -10 to +45c° | |
| Operating Humidity | To 95% RH Non-condensing | |
| Light beacon | Three color led status | |
| Power limit control | Mode 3 PWM control according ISO/IEC 61851-1 | |
| Net weight | 4kg | |
| **Optional devices** | | |
| Extended Temperature range | Heater (-30 to +50C°) | |
| RFID reader System | ISO/IEC14443A/B | |
| Connector Lock System | Type 2 connector hook | |
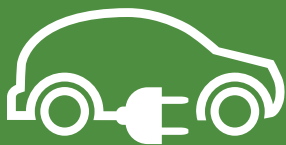
Circontrol has a network of distributors and representative agents all over the world, for further information contact with:

**CIRCONTROL S.A.** (Headquarter)
C/ Innovació, 3 - Industrial park CAN MITJANS
08232 – VILADECAVALLS (Barcelona)
Spain

Tel.:   +34 937 362 940
Fax.:  +34 937 362 941

circontrol@circontrol.com
www.circontrol.com