

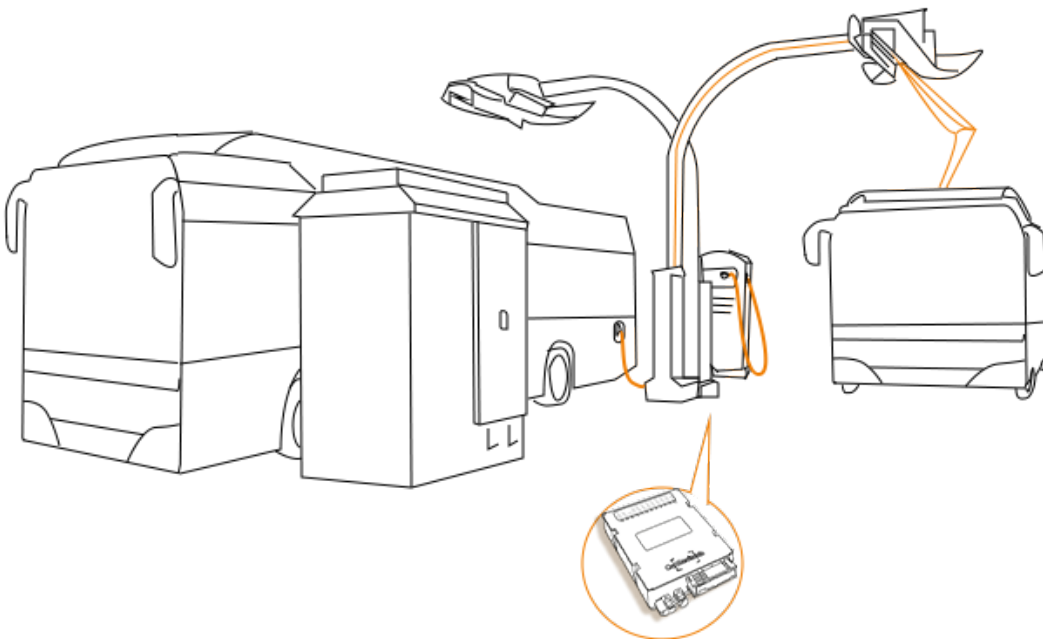
# Flea 4 SECC

## Supply Equipment Communication Controller for Public Transportation



Charging infrastructure for electric buses of transport companies is based on urban planning realities, availability of energy infrastructure as well as operational requirements. This often results in a combination of charging on the route and in depots. The charge points implement different standards, have to be designed redundantly. Additionally, from a management system's point of view, they have to be uniform and convenient to operate. Flea 4 SECC is the ONE generic hardware platform for ALL these charging scenarios. Customizing and integration into the charge point are done with software only – be it a pantograph for fast charging on the line, a standalone charging

station at a terminal stop or one charger among many in a bus depot. Flea 4 SECC embeds all necessary communication interfaces and protocols. The charge management system MOBILEcharge continues the link of the charge controller to the operational process landscape. Thus, the operational business as well as full remote control and maintenance can be ensured<sup>1</sup>. Via OCPP, charging processes are started, stopped and continued, charging profiles are set and firmware is updated. Furthermore, there is an implementation of VDV 261 for the activation of preconditioning in the vehicles via ISO 15118 VAS incl. the necessary IPV6 support.



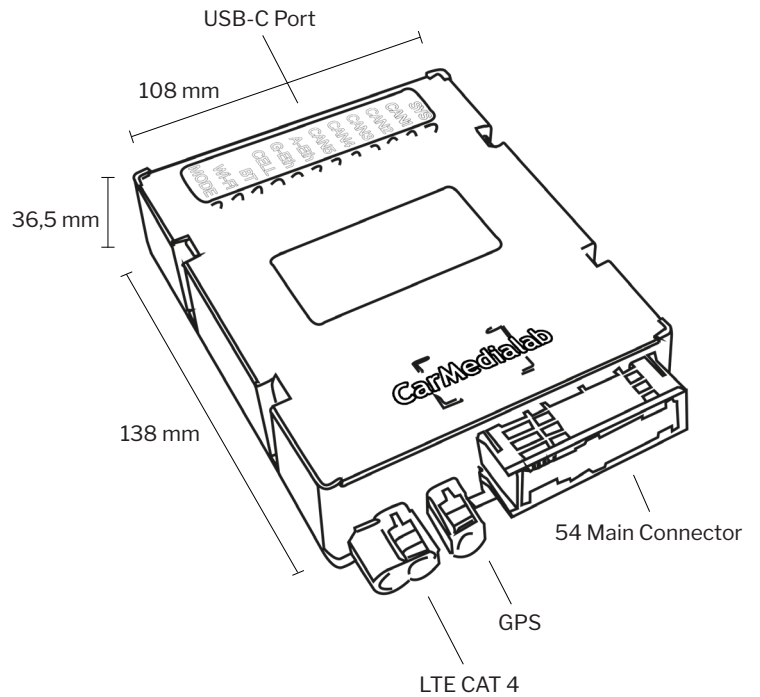
<sup>1</sup> Other OCPP servers are supported.

## FUNCTIONS

- Vehicle charging interfaces according to IEC 61851, SAE J1772, ISO 15118 (AC and DC), ISO 15118-20, DIN SPEC 70121, SAE J3105, OppCharge 1.3.0
- Temperature, lock actuator and feedback
- Plug and Charge, certificates and trust store management
- Server interfaces according to OCPP 1.6J, OCPP 2.0.1
- Diagnostics and remote supervision
- Value Added Services based on VDV 261
- CAN J1939
- RS485 Modbus
- OpenADR 2.0 (VEN only)
- Homplug GreenPHY
- Open system environment and customer's own application development

# Flea 4 SECC

Supply Equipment Communication  
Controller for Public Transportation



## System

Processor	4 ARM Cortex-A53 at 1.2 GHz (64 Bit) 2 ARM Cortex-R5 at 500 MHz
RAM	1 GB LPDDR4 RAM
System Memory	4 GB eMMC 4 ... 32 GB, Internal Micro SD (optional) 16 MB NOR
Sensors	3 D Gyroscope 3 D Accelerometer 3 D Magnetometer (Compass)
OS	Embedded Linux (Yocto based)
Power Supply	12V - 32V (DC)
Operating Temperature	-40°C ... +85°C
Dimensions	152 mm x 107 mm x 36 mm incl. main connector
Wakeup Options	GPIO, CAN (Activity), RTC, Modem Ring

## Connectivity

Cellular	LTE CAT4 (150 MBit/s ↓ 50 Mbit/s ↑) EMEA Region Bands 1, 3, 5, 7, 8, 20 HSDPA Category 24, HSUPA category 6 MIMO 2 x 2, RX Diversity 3G, 2G, Quadband Fallback
Wi-Fi	802.11 a, b, g, n (2.4, 5 GHz)
Ethernet	10, 100, 1000BASE-TX
Bluetooth	BT / BLE 4.2

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Flea 4 SECC implemented in a charging station

## Interfaces

5 x CAN-FD  
1 x PWM outputs IEC 61851, SAE J1772 (control pilot),  
1 x ISO 15118-3 based on Homeplug Green PHY  
1 x OppCharge 1.3.0, ISO 15118-8, ISO 15118-20 Wifi Extension  
1 x DIN 70121:2012  
1 x SAE J3015  
OCPP 1.6J, OCPP 2.0.1  
OCPP local controller, local proxy

## Positioning

GPS, QZSS

72-Channel with Dead Reckoning and Internal Sensors  
GPS, GLONASS, BeiDou, Galileo  
Position Accuracy 2.5 m CEP with SBAS 1.5 m CEP  
Frequency of Time 0.25 Hz ... 10 MHz  
Number on Concurrent GNSS: 3

## Connectors

ELO-54

5 x CAN-FD  
1 x Automotive Ethernet (100BASE-T1)  
3 x Analog Input (0-60 V)  
1 x Digital Output (Open Drain)  
1 x Digital Output (High Side Switch)  
1 x I2C  
2 x RS232  
1 x RS485 Modbus  
1 x PWM outputs IEC 61851, SAE J1772 (control pilot) with  
1 x ISO 15118-3 based on Homeplug Green PHY

USB

USB-C 2.0 (Host or Client, OTG)

Antenna

2 x 2G, 3G, 4G Antenna Fakra  
1 x GPS Antenna Fakra  
1 x Wifi ex. Antenna (optional)

## Power Supply

Overvoltage Protection

36 V

Standby

< 0.5 mA @ 12 V

Hibernation (Warm Start)

< 10 mA @ 12 V

Working

< 500 mA @ 12 V

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## Use Cases

<b>CCS</b> <b>(Combined Charging System)</b>	Both direct current and alternating current charging methods can be implemented with the standardized CCS connector system.
<b>Panto Up</b>	With Panto Up, the current collector is located on the vehicle roof and extends upwards in the direction of the charging station.
<b>Panto Down</b>	With Panto Down, the current guide is mounted on the infrastructure and lowers to the roof of the vehicle for charging.
<b>Wireless power transfer</b>	Non-conductive energy transmission through the means of inductive coils.
<b>Test-Equipment</b>	Equipment for simulating charging processes.

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MOBILEcharge is the world's leading product for charging and load management in public transport. With our own charge controller (Flea 4 SECC), we finally offer a counterpart that can fully exploit the power of MOBILEcharge.