Datasheet

Eve Single Plus

Technical specification

Product Variants

	Article no.
EU generic variants	
Eve Single Plus, 3 phase, type 2 socket	904460223
Eve Single Plus, 3 phase, type 2 shutter socket	904460225
Eve Single Plus, 3 phase, fixed charging cable	904460227
Eve Single Plus DE	
Eve Single Plus DE, 3 phase, type 2 socket	904460323
Eve Single Plus DE, 3 phase, fixed charging cable	904460327

Technical Specifications

Number of sockets	1
Types of sockets	• Type 2 socket, in accordance with IEC 62196-2 • Type 2 shutter socket, in accordance with IEC 62196-2 • Fixed charging cable, with plug in accordance with IEC 62196-2 (charging cable holder integrated in product)
Nominal output voltage (+/- 10%)	400 V (3x230 V)
Maximum current	32 A per phase
Maximum power	22 kW
Permissible cos phi	0.9-1
Earthing systems	TN-S, TN-C-S, TT, IT *
Energy meter	4 quadrant meter, MID certified, EN 50470 class B • additional Eichrecht certification (only for Eve Single Plus DE)
Stand-by power consumption	Eve Single Plus: 6.7 W Eve Single Plus DE: 6.3 W
Contactors	Integrated simultaneous activation of all phases Extra safety relay in series for emergency situations
Overcurrent protection	Integrated in firmware, overcurrent response scenarios: 110-125% after 100 seconds 125% and higher after 5 seconds
Residual current protection	Integrated 6 mA DC RCD functionality with disconnection times according to IEC 62955 Peak let through current: 3 kA Let through energy: 6.5 kA^2s

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Overvoltage category	OVC III
Rated insulation voltage U_i	500 V
Rated impulse withstand voltage U_{imp}	4 kV
Rated diversity factor RDF	1
Display	3.5" IPS color display Resolution: 320 x 240 pixels Brightness: 1000 cd/m^2 Contrast ratio: 800:1
Status indication	Integrated in display
Authentication methods	Plug & Power (not available on Eve Single Plus DE) RFID card Autocharge (encoded MAC address) ISO15118 Plug & Charge * * Girocard (only for Eve Single Plus DE) * *

* Caution: not all vehicles support the IT system. In that case, or with 3-phase charging, an isolation transformer is required.

* * Will be available in future firmware releases, also depending on car and back office integration.

Environmental Conditions

Operating temperature *	Eve Single Plus: -25 °C to +55 °C Eve Single Plus DE: -25 °C to +50 °C
Electrical safety class	Class I
Ingress protection	IP55
Impact protection	IK10
Environmental conditions	Indoor / outdoor use
Electromagnetic environment class	E2 * *
Mechanical environment class	M1 * *
Pollution degree	PD2

* More information about the indicated operating temperature:

- The stated charging performance is solely applicable to the charging station itself. The actual performance depends on the vehicle and the grid connection.
- A front cover in a colour other than RAL9016 Traffic White, and the addition of customizations, can increase the heat transfer from solar radiation transferred to the charging station. This also affects the charging performance.

* * according to 2014/32/EU (Measuring Instruments Directive)

Charging stations which are installed outside without protection will be affected by weather conditions and will discolour. Alfen recommends to install the charging stations in a sheltered environment to optimize the lifetime of the product.

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Thermal Current Derating Table

The system uses thermal derating with hysteresis based on internally measured temperature:

- Rising thresholds define when current is reduced due to increasing temperature.
- Falling thresholds define when current is increased again after cooling.
- Charging is disabled when temperature exceeds 77 °C and re-enabled when temperature falls below 75 °C.

Current Reduction (Rising Temperature)		Current Recovery (Falling Temperature)	
Temperature threshold	**Charging current**	**Temperature threshold**	**Charging current**
≤ 70 °C	32 A	≤ 68 °C	32 A
> 70 °C	28 A	≤ 69 °C	28 A
> 71 °C	24 A	≤ 70 °C	24 A
> 72 °C	20 A	≤ 71 °C	20 A
> 73 °C	16 A	≤ 72 °C	16 A
> 74 °C	12 A	≤ 73 °C	12 A
> 75 °C	8 A	≤ 74 °C	8 A
> 76 °C	6 A	≤ 75 °C	6 A
> 77 °C	0 A	> 75 °C	0 A

Information on Radio Frequency

Alfen charging stations are approved according to the Radio Equipment Directive (2014/53/EU). The frequency bands and maximum power of this equipment are listed here. All radio equipment is mentioned in this table, the presence or activation for each radio equipment depends on the specific configuration. These are maximum values for all models and component sub suppliers.

The Maximum power is rated power plus maximum tolerance.

Radio equipment	Frequency / Frequency bands	Max. power
DCS1800/PCS1900	1800 / 1900 MHz	30 dBm
GSM850/EGSM900	850 / 900 MHz	33 dBm
LTE-FDD	B1/B2/B3/B4/B5/B8/B12/B13/B17/B18/B19/B20/ B25/ B26/B27/B28/B66/B85	21 dBm
RFID card reader	13.56 MHz	7 dBuA/m at 10 m
Wi-Fi 802.11 b/g/n *	2.4 GHz to 2.4835 GHz	19 dBm

* Will be available in future firmware releases.

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Communication and Protocols

Controller board	Alfen Hardware Platform (AHP) version 2
Vehicle communication	Mode 3 in accordance with IEC 61851-1 ed. 3 (2017) ISO15118 hardware ready (HomePlug Green PHY)
RFID card reader authentication	ISO/IEC 14443A/B, 13.56 MHz MIFARE Classic 1K/4K, MIFARE Ultralight, DESFire (EV1/EV2) Maximum length: 10 bytes
Mobile communication	LTE Cat-M1 2G Wi-Fi / Wireless LAN (802.11 b/g/n, 2.4 GHz) *
Back office communication	OCPP 1.6 (JSON) OCPP 1.6 (JSON) + Security Whitepaper OCPP 2.0.1 (JSON) (upgradeable) * *
Ethernet	RJ-45: 2×10/100 Base-T 2 ethernet ports for ethernet daisy chaining
Available inputs for Smart Charging	• RJ-11: DSMR 4.0-4.2 and SMR 5.0 (port P1) • RJ-45: Modbus TCP/IP Client (Energy Management System) * or Modbus TCP/IP (external energy meter) • RS-485: Modbus RTU (external energy meter) * • Télé-Information Client (TIC) (Linky smart meter) • Suspend Signal §14a EnWG *

* Will be available in future firmware releases.

* * Ongoing integration, consult the Alfen Knowledge Base for the latest overview.

Available Memory

RFID card	Local list: approx. 1,000 tokens (via the Back office) White list: approx. 1,200 tokens (local)
Transaction database	Approx. 1,500 transactions (of 4 h with 15 min Wh metering values)
Logging for diagnostics	Approx. 1,750,000 lines

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Cyber Security

Default network interfaces	Web Service on port 443, finds charging station using mDNS
Privacy	When using the NFC reader, the charging station will read, process and cache the unique identifier contained within the tag. This data, along with location data (if configured), can be erased in the ACE Service Installer
Specification supported SIM card	Mini SIM card (4G), gold plated APN username and password authentication via: • PAP • CHAP *
Charging Station Management System authentication	TLS 1.2 with x509 certificates. Supported CSMS root certificate algorithms: • RSA-2048/4096 • ECDSA (P-256 or P-384)
EVSE authentication	HTTP Basic authentication • with TLS • with TLS and Client Side Certificates • without TLS
Diagnostic files	Encryption: AES-128-CBC
Firmware update files	Encrypted and signed. Algorithms: Encryption: AES-256-CBC Signature: ECDSA (P-384) with SHA-256
Root certificate	Installed in the factory, updateable through OCPP management system using UpdateFirmware message, or locally with ACE Service Installer
Tamper detection *	Security notification will be sent to the back office

* Will be available in future firmware releases.

Casing

Type	Wall-mounted charging station
Mounting options	Wall mounting Pole mounting (optional)
Material	Polycarbonate UV resistant: UL746c - f1 Flame retardant: UL94 - 5VB
Color	RAL 9016 (Traffic White): front side RAL 7043 (Traffic Grey B): front side (optional) RAL 7043 (Traffic Grey B): rear
Locking	Torx T20 screws

Casing	**Dimensions (H x W x D)**	**Weight**
Eve Single Plus, model with socket	373 x 242 x 138 mm	3.8 kg
Eve Single Plus, model with fixed charging cable	373 x 242 x 173 mm	3.6 kg

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Eve Single Plus DE, model with socket	373 x 242 x 181 mm	4.2 kg
Eve Single Plus DE, model with fixed charging cable	373 x 242 x 216 mm	4.0 kg
Charging cable	5 m / 7.5 m	2.5 kg / 3.6 kg
Packaging *	**Dimensions (L x W x H)**	**Weight**
Box with Eve Single Plus, model with socket	390 x 290 x 210 mm	4.8 kg
Box with Eve Single Plus, model with fixed charging cable	390 x 290 x 210 mm	4.6 kg
Box with Eve Single Plus DE, model with socket	390 x 290 x 270 mm	5.6 kg
Box with Eve Single Plus DE, model with fixed charging cable	490 x 290 x 370 mm	7.9 kg
Box with charging cable 5 m / 7.5 m	390 x 290 x 130 mm	2.9 kg / 4.0 kg

* Eve Single Plus DE charging stations have the fixed charging cable connected to the charging station ex-factory. Non-DE charging stations have the charging cable delivered in a separate box.

Installation Instructions

Residual current protection *	Not included in the charging station 1-phase installation: 2-pole 30 mA Type A RCD 3-phase installation: 4-pole 30 mA Type A RCD	
Over-current & short-circuit current protection *	Not included in the charging station Rated conditional short-circuit current: 10 kA 1-phase installation: 2-pole 40 A MCB or fuse gG 3-phase installation: 4-pole 40 A MCB or fuse gG with disconnection times according to IEC 62955 Peak let through current: 3 kA Let through energy: 6.5 kA^2s	
Nominal input voltage	V_{L1-N}: 230 V (+/-10%) V_{L2-N}: 230 V (+/-10%) V_{L3-N}: 230 V (+/-10%) V_{PE-N}: ≈ 0 V	V_{L1-L2}: 400 V (+/-10%) V_{L1-L3}: 400 V (+/-10%) V_{L2-L3}: 400 V (+/-10%)
Advised cable cross-section of the power supply cable (based on assumed max. 50 m cable length)	10 to 25 mm clamping range of the cable gland 1-phase: 3 cores 3-phase: 5 cores • Solid wire (PVC cable): max. 10 mm^2 per wire • Stranded wire with ferrules (PVC cable): max. 6 mm^2 per wire • All copper conductors: min. 2.5 mm^2	
Advised Ethernet cable types	Cat5, Cat5e, Cat6 or Cat6a	
Nominal frequency	50 Hz	
Earthing system	TN system: separate PE cable TT system: separately installed earthing electrode < 100 Ω spreading resistance IT system: connected to a shared reference (common earth) with other metal parts	

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* For future compatibility with V2X capabilities, the applied upstream protection devices need to be suitable for bidirectional power transfer.

Standard and Selectable Settings Ex-Works

Authorization	Plug & Power (not available on Eve Single Plus DE) RFID card Autocharge (encoded MAC address) * ISO15118 Plug & Charge * / * *
Smart Charging	Off Active Load Balancing + Smart Charging Network *
Personalized display	Off (Alfen logo) On (your own logo) *
Languages supported	English, Dutch, German, French, Spanish, Portuguese, Italian, Norwegian, Swedish, Finnish, Czech, Danish, Hungarian, Icelandic, Latvian, Polish, Romanian, Slovak, Slovenian.
Direct Payment Solution	Off On * • QR code payments • Payment Terminal • Giro-E (only for Eve Single Plus DE) * *

* Optional feature. Adding it will result in additional costs when purchasing your charging station. The default settings are always mentioned first. For more information about the optional features, contact your sales representative.

* * Will be available in future firmware releases.

Accessories

	Article no.
Type 2 charging cable for fixed cable variants, 5 m, 3-phase, up to 32 A (22 kW)	803993445-ICU
Type 2 charging cable for fixed cable variants, 7.5 m, 3-phase, up to 32 A (22 kW)	803993446-ICU
Eve Single Pole	803873036-ICU
Eve Single Duo Pole	803873280-ICU
Concrete base	833829300-ICU
Metal base	803828601-ICU
Additional RFID card	203120010-ICU
Payment Terminal Wall Mount	904464010
Payment Terminal Single pole (Eve Single (Duo) Pole not included)	904460700

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