Technical File

The Electric Vehicles (Smart Charge Points) Regulations 2021

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This template is provided to assist sellers of relevant charge points that are subject to the Electric Vehicles (Smart Charge Points) Regulations 2021 ("the Regulations") in meeting the requirements of Regulation 13.

This requires the seller to have a technical file for any relevant charge point that they sell, and to supply a copy of the technical file to any purchaser on request. In the event of bulk purchases, a single technical file can be provided for all identical charge points. Separate technical files are required however if there are any differences in make, model, software version etc between charge points sold.

The seller is not mandated to use this template, but any alternative format must meet the requirements of the Regulations.

This document is the technical file for the following charge point:

Charge point make:	Zaptec
Charge point model:	Zaptec Pro MID
Software version at point of sale:	Zaptec Pro firmware 5.2.0.0 or greater Zaptec App for iOS 5.15.1 or greater Zaptec App for Android 5.17.2 or greater
Seller: *Person responsible for compliance with the Regulations*	Mr Knut Braut, CTO Zaptec ASA Zaptec Charger AS Vassbotnen 1, NO-4313 Sandnes Zaptec UK Company number 13185808
Manufacturer(s): *If different to seller*	Zaptec Charger AS, Vassbotnen 1, NO-4313 Sandnes, Norway

Last update to technical file:	15/02/2024

Description of the smart charge point

This page outlines the general description of the charge point, including a description of its design manufacture, and operation.

(Note: all descriptions must be written in plain English, including written descriptions of any diagrams or drawings used or referred to)

The Zaptec Pro is an AC Electric Vehicle Supply Equipment (EVSE) Mode 3 with overall dimension of 258 x 392 x 112mm and is designed for charging electric vehicles in accordance with IEC 61851-1, charge mode 3.

The maximum output power provided by the EVSE is 22kW. The weight of the EVSE is up to 5kg. The EVSE provides a socket outlet for a single Type 2 connector.

The EVSE provides advanced smart charging and load management capabilities via built-in Wi-Fi, 4G LTE-M and Powerline Carrier (PLC) communications hardware.

Operating manual

Copy of operating manual as available at point of sale can be found *(cross as appropriate)***:**		Attached to this document (hard copy) Installer and user manual
		Attached to this document as a digital file (soft copy)
	X	Available online via hyperlink (soft copy)
Link if available online:	Online version of the latest file for Zaptec Pro Installer Manual: Installer Manual Online version of the latest file for Zaptec Pro User Manual: User Manual	
Version of file received at point of sale if available online:	Last version: 21-12-2023	

Technical solutions implemented to meet the requirements of the Regulations

This section provides descriptions in plain English of the solutions adopted to meet the requirements of the Regulations, including descriptions and explanations in plain English of any diagrams or drawings used.

Information provided here may be appended if appropriate, but any appendages should be listed here with clear indication of which specific requirement(s) they evidence.

Smart functionality

Requirement	Technical solution adopted to meet the requirement
Charge point is able to send and receive information via a communications network	The charge point is able to send and receive information via the following communication networks: • 4G LTE-M1 • Wi-Fi 2.4GHz, IEEE 802.11 b / g / n (static channels 1 to 11) • Powerline (PLC) – HomePlug Green PHY®, 10 Mbit/s Communication is via the following protocols: • MQTT: TCP port 8883 • HTTPS: TCP port 443 • DHCP: UDP port 68 • DNS: UDP port 53 • NTP: UDP port 123

Charge point is able to respond to signals or other information received by it by:
• Increasing or decreasing the rate of electricity flowing through the charge point
• Changing the time at which electricity flows through the charge point
	The charge point is able to respond to signals or other information received by it in accordance with the Application Programming Interface documented here: https://api.zaptec.com
	The charge point increases or decreases the rate of electricity flowing through the charge point by responding to a POST message sent to `/api/chargers/{id}/update`
	containing the charger properties to update
	`{`
	`"maxChargeCurrent": 0,`
	`"maxChargePhases": 1,`
	`"minChargeCurrent": 0,`
	`"offlineChargeCurrent": 0,`
	`"offlineChargePhase": 0,`
	`"meterValueInterval": 0`

	} Valid responses are: 200 Success 401 Unauthorized 403 Forbidden The charge point changes the time at which electricity flows through the charge point by responding to a POST message sent to /api/chargers/{id}/sendCommand/{commandId} containing the charger properties to update. Supported command Ids are: 102 Restart charger 200 Upgrade firmware 506 Stop/pause charging 507 Resume charging 10001 Deauthorize and stop charging Valid responses are: 200 Success 401 Unauthorized 403 Forbidden
Charge point is capable of using this functionality to provide demand side response services, including response DSR services	The charge point is capable of using this functionality to provide demand side response services, including response DSR services. Third parties can control the charge point in accordance with the Application Programming Interface documented here: https://api.zaptec.com
Charge point has at least one user interface, incorporated in the charge point or otherwise made available to the owner	The charge point has three user interfaces. 1. Multi-colour indicator (incorporated into the charge point) 2. Zaptec App (made available to the owner) 3. Zaptec Portal (made available to the owner) The **multi-colour indicator** is clearly displayed on the front of the charge point in the form of an illuminated ring. The **Zaptec App** can be downloaded to a smart phone from either the Apple App Store or the Google Play Store. The **Zaptec Portal** is accessible using a compatible web browser at the following URL: https://portal.zaptec.com

Electricity supplier interoperability

Requirement	Technical solution adopted to meet the requirement
Charge point is configured such that is will not cease to have smart functionality if the owner changes their electricity supplier	The charge point is configured such that is will not cease to have smart functionality if the owner changes their electricity supplier. All relevant settings (including any connection to 3rd party OCPP charge point operators) is fully configurable by the owner by using the Zaptec portal.

Loss of communications network access

Requirement	Technical solution adopted to meet the requirement
Charge point is configured such that, in the event it ceases to be connected to a communications network, it will remain capable of charging an electric vehicle	The charge point is configured such that, in the event it ceases to be connected to a communications network, it will remain capable of charging an electric vehicle If the network connection is lost, the charge point switches to offline mode and is able to charge at a predefined, safe rate.

Safety

Requirement	Technical solution adopted to meet the requirement
Charge point is configured such that it will not allow a relevant person to carry out a specified operation where to do so would or may result in a risk to the health or safety of persons. "Relevant persons" means the owner, or an end-user of the relevant charge point who is not the owner. "Specified operation" means: • Overriding the default mode of charging during the default charging hours • Overriding the provision of demand side response services • Overriding the random delay	The charge point is configured such that it will not allow a relevant person to carry out a specified operation where to do so would or may result in a risk to the health or safety of persons. The charge point security model requires specific Service permissions to change any parameter that could result in a risk to the health or safety of persons by: • Overriding the default mode of charging during the default charging hours • Overriding the provision of demand side response services • Overriding the random delay Only Zaptec authorised employees, installers and designated agents have Service permissions.

Measuring system

Requirement	Technical solution adopted to meet the requirement
On each occasion it is used, the charge point measures or calculates:	The charge point measures the electricity it has imported in kilowatt-hours and the amount of time for

• The electricity it has imported or exported (in watt-hours or kilowatt-hours)
• The amount of time for which it is importing or exporting electricity
	which it was importing electricity. This information can be retrieved by sending a GET message to `/api/session/{id}`
	The SessionEndData is returned in the format
	`{`
	`description:`
	`ISessionEndRequest with optional SessionEnd to allow for both complete and incomplete sessions.`
	`energy number($double)`
	`sessionEnd string($date-time)`
	`nullable: true`
	`sessionId string($uuid)`
	`sessionStart string($date-time)`
	`signedSession string`
	`nullable: true`
	`}`

The charge point is configured such that the owner can view the information in reference to: • Any occasion on which it was used to import or export electricity within the past 12 months • Any month within the past 12 months • The entirety of the last 12-month period • Any occasion on which it was used to import or export electricity within the past 12 months • Any month within the past 12 months • The entirety of the last 12-month period	The charge point owner can view the information in reference to any occasion on which it was used to import electricity within the past 12 months, any month within the past 12 months and the entirety of the last 12-month period via the Installation Charge Report feature in the Zaptec portal. The charge point owner can also view this information by accessing the Charging history feature in the Zaptec app.
The charge point is configured such that it can: • On each occasion it is used, measure or calculate every one second the electrical power it has imported or exported (in watts or kilowatts) • Provide this information via a communications network	On each occasion it is used, the charge point calculates every one second the electrical power it is importing. The charge point makes this information available at the charger level in accordance with the Application Programming Interface documented here: https://api.zaptec.com/help/index.html By sending a GET message to `api/chargers/{chargerId}/state` And monitoring the observation 513, will provide the **TotalChargePower**, which provides the total instant charge power in watts

The charge point is configured such that: • The figures measured or calculated are accurate to within 10% of the actual figure • Any inaccuracies are not systematic	The Zaptec Pro is MID class B tested and calibrated (EN.50470). Each charger is tested for measurement accuracy at the factory and the results of this test are recorded.

Off-peak charging

Requirement	Technical solution adopted to meet the requirement
The charge point: • Has pre-set default charging hours which are outside of peak hours • Offers the owner the opportunity to accept, remove, or change the default charging hours on first use • Offers the owner the ability to change, remove, or set default charging hours any time after first use unless the charge point is sold with a DSR agreement, configured to comply with the requirements of this agreement, and details of the agreement are included in the statement of compliance	The Zaptec Pro must be configured by a service partner before it can provide charging. During the Zaptec app configuration process (performed by the service partner), the service partner is required to select the installation country. If “United Kingdom” is selected, the following settings are applied: • The timer schedule on the charger is configured to disable charging between 8am to 11am and 4pm to 10pm on weekdays (local time) When the charge point owner is granted access permissions to the installation, the service partner can inform the owner that they can use the Zaptec app to: • accept the UK default timer schedule; or • modify the timer schedule; or • disable the timer schedule If the charge point owner chooses to accept the default UK timer schedule, then the timer schedule on the charger is configured to disable charging between 8am to 11am and 4pm to 10pm on weekdays (local time). If the charge point owner chooses to modify the timer schedule, then then the user is asked to select the required daily charging start time and stop time. If the charge point owner chooses to disable the timer schedule, then the timer schedule on the charger is configured to always enable charging. At any time, the charge point owner is able to use the Zaptec app to: • restore the UK default timer schedule; or • modify the timer schedule; or • disable the timer schedule If the charge point owner chooses to restore the default UK timer schedule, then the timer schedule on the charger is configured to disable charging between 8am to 11am and 4pm to 10pm on weekdays (local time) and the user is informed that the UK smart charging defaults have been applied.

	If the owner chooses to modify the timer schedule, then then the user is asked to select the required daily charging start time and stop time. If the owner chooses to disable the timer schedule, then the timer schedule on the charger is configured to always enable charging.
The charge point is configured: • To charge a vehicle during the default charging hours (if any), unless the owner overrides the default mode of charging during this time • Such that the owner can override the provision of demand side response services	Given that a timer schedule is set by the charge point owner, when the local time does not correspond with a time when charging is scheduled, then a visual indication is provided via the multi-colour indicator that charging is delayed. When the local time corresponds with a time when charging is scheduled, then the charger commences charging according to the timer schedule and the randomised delay feature (described elsewhere). When the charger is waiting for the local time to correspond with a time when charging is scheduled and the owner wants to start charging immediately, then the owner is able to manually override the timer schedule in the Zaptec app and start charging immediately. To enable the owner to override the provision of demand side response services, if the charge point accepts a command to start or stop charging via the API, then it will start or stop charging immediately.

Randomised delay

Requirement	Technical solution adopted to meet the requirement
The charge point is configured such that it must operate, at each relevant time, with a delay of random duration up to 600 seconds, determined to the nearest second each time	The Zaptec Pro must be installed by a service partner before it can provide charging. During the Zaptec app configuration process (performed by the service partner), the service partner is required to select the installation country. If “United Kingdom” is selected, the following settings are applied: • The random start delay feature on the charger is configured to apply a random delay of 0 to 600 seconds before commencing charging
The charge point is configured such that the maximum duration of this delay can be remotely increased to up to 1800 seconds if required	If the maximum duration of this delay is to be increased, then this can be achieved by remotely requesting an alternative firmware version incorporating the new delay parameter, up to 1800 seconds.
The charge point is configured such that the random delay will not operate where: • The owner or another relevant end-user has manually overridden it	When the charger is waiting for the random start delay to complete, and the owner wants to start charging immediately, then the owner is able to manually override the delay using the Zaptec app to start charging immediately.

• An equivalent random delay has already been applied to the operation of the relevant charge point • The charge point is responding to a response DSR service	To enable the delay to be overridden if an equivalent random delay has already been applied to the operation of the relevant charge point, or if the charge point is responding to a response DSR service then, if the charge point accepts a command to start charging via the API, then it will start charging immediately.

Security

[Information in this section is only required from 30 December 2022. Before this date, completing this section is optional.]

Requirement	Technical solution adopted to meet the requirement
General principles The charge point is designed, manufactured, and configured to provide appropriate protection: • Against the risk of harm to, or disruption of the electricity system • Against the risk of harm to, or disruption of, the charge point • For the personal data of the owner and any other end-user of the relevant charge point	The charge point is designed and configured to prevent harm to or disruption of the electricity system and charge point, and to provide appropriate protection of the personal data of the owner and any other end-user of the charge point. This is achieved though the adoption of the security measures described in this section.
Passwords The charge point is configured such that where passwords are used on it: • The password is unique to the charge point and not derived from, or based on, publicly available information, or is set by the owner • The password cannot be reset to a default password applying to both the charge point and other charge points	Access to the charge point configuration requires the use of a PIN. All charge points are shipped from the factory with a random PIN. This PIN is not derived from or based on any publicly available information. There is no default PIN and it is not possible to reset the PIN to a default that is shared with other charge points.
Software The charge point incorporates software which is able to be securely updated using adequate cryptographic measures to protect against cyber attack	The charge point incorporates software that can be securely updated. Software updates are provided via a secure over-the-air mechanism that uses cryptographic measures to verify the origin and integrity of the update. It is not possible to bypass this update mechanism or apply updates via a local interface without breaking the physical tamper protection boundary, as described elsewhere.
Software The charge point is configured such that:	The charge point can be configured so that it checks for firmware updates.

• It checks for security updates available when first set up by the owner and periodically after • It verified the authenticity and integrity of each prospective software update by reference to both the data's origin and its contents and only applies the update if the authenticity and integrity of the software have been validated • By default, it provides notifications to the owner about prospective software updates • The owner can implement software updates without undue difficulty	The charge point verifies the authenticity and integrity of each prospective software update by checking: • The authenticity of the update using code signing with an asymmetric key pair. • The integrity of the update using a checksum The update is automatically downloaded if the origin check is successful and only applied if the checksum test is successful. The owner can easily apply an available software update at any time by clicking "Upgrade firmware" in the Zaptec portal or app.
Software The charge point is configured such that: • It verifies via secure boot mechanisms that its software has not been altered other than in accordance with a validated software update • If unauthorised change to software is detected, it notifies the owner and does not connect to a communications network other than for purposes of this notification	The main processor in the Zaptec Pro enforces secure boot, which requires the software to be signed by Zaptec for it to be able to boot. If an unauthorized change is detected, the owner is notified by the charger showing a red warning color on the HMI LED ring.
Sensitive security parameters The charge point is configured such that: • Security credentials stored on the charge point are protected using robust security measures • Software does not use hard-coded security credentials	Any security credentials (e.g. WiFi credentials) that are not part of the software (e.g. public keys for code signing verification – these are protected by secure boot), are stored on an encrypted partition with a key that is unique to each device. The software does not use hard-coded security credentials.
Secure communication The charge point is configured such that communications it sends are encrypted	The charge point is configured to send communications via the following protocols: • MQTT: TCP port 8883 • HTTPS: TCP port 443 • DHCP: UDP port 68 • DNS: UDP port 53 • NTP: UDP port 123 • SSH reverse shell All communication via MQTT, HTTPS and SSH is encrypted using SSL.

	DHCP, DNS and NTP traffic is unencrypted. This lack of encryption is necessary to comply with the requirements for those protocols and does not in any way affect the security of the communications via MQTT, HTTPS and SSH.
Data inputs The charge point is configured such that: • Data inputs are verified so that the type and format of the data is consistent with that expected for the function • If such data cannot be verified, it is discarded or ignored by the charge point in a relevant manner	All data inputs (e.g. Bluetooth commands, or commands from the cloud) are validated on reception. The inputs are discarded if they do not meet the validation criteria.
Ease of use The charge point is configured to minimise the inputs required from the owner in connection with its set-up and operation	The charge point is designed for simple configuration using the minimum number of inputs from the owner for set-up and operation. Initial configuration is done using a simple, intuitive smart phone app. Subsequent detailed configuration, including power management and access control is done using the Zaptec portal. See user guide for more details.
Ease of use The charge point is configured such that any personal data can be deleted from it by the owner without undue difficulty	To request the removal of any personal data, visit https://help.zaptec.com/ and request for your account to be deleted
Protection against attack The charge point is designed and manufactured to provide an adequate level of protection against physical damage to the charge point	The charge point cover is secured using a Zaptec SmartKey. The charge point has been designed and tested to achieve IK10 impact rating. The internal electronics are further protected by a non-removable internal cover.
Protection against attack The charge point incorporates a tamper-protection boundary to protect the internal components of the charge point	The charge point incorporates a non-removable internal cover that forms a tamper-protection boundary that restricts access to the internal electronics.
Protection against attack The charge point is designed and manufactured to provide an adequate level of protection to its user interfaces and against use or attempted use of the charge point other than through the user interface	The incorporation of an optical tamper detection sensor that detects any attempt to gain access to the charge point by removal of the charge point cover.

Protection against attack The charge point is configured such that: • If there is an attempt to breach the tamper-protection boundary, the owner is notified • Its software runs with only the minimum level of access privileges required to deliver functionality • Any logical or network interfaces that are not required for the normal operation of the charge point or otherwise comply with the Regulations are disabled • Software services are not available to the owner unless necessary for the relevant charge point to operate • Any hardware interfaces that are used for the purposes of testing or development, but not otherwise during the operation of the charge point are not exposed	The user is notified in the Zaptec app if there is an attempted breach of the tamper-protection boundary. The software runs with the required level of access privileges to deliver functionality. Only the protocols and interfaces described in "Secure communication" to deliver the required functionality are implemented by the software. No additional interfaces are exposed.
Security log The charge point incorporates a security log – an electronic record which includes attempts (whether or not successful) to: • Breach the tamper-protection boundary • Tamper with the relevant charge point • Gain unauthorised access to the charge point These entries must record the time and date the event occurred (by reference to Coordinated Universal Time).	The charger records and transmits an electronic, timestamped record of the following security-related events to the Zaptec portal: • Charge authorisation (success/fail) • OTA firmware update (success/fail) • Certificate update (success/fail) • Tamper boundrary breach

Test reports

The Regulations do not set a requirement to test charge points, however if tests have been performed which are deemed relevant to evidencing compliance with the Regulations, these should be included in this document.

This page documents the outcome of any tests. Resulting test reports, certifications, or other evidence should be attached to this file.

Name of test	Date of test	Outcome	Certificate attached to file?	Notes (e.g., did test occur via third party?)