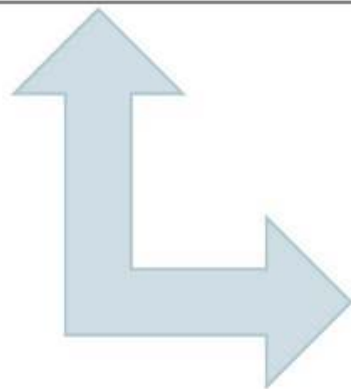
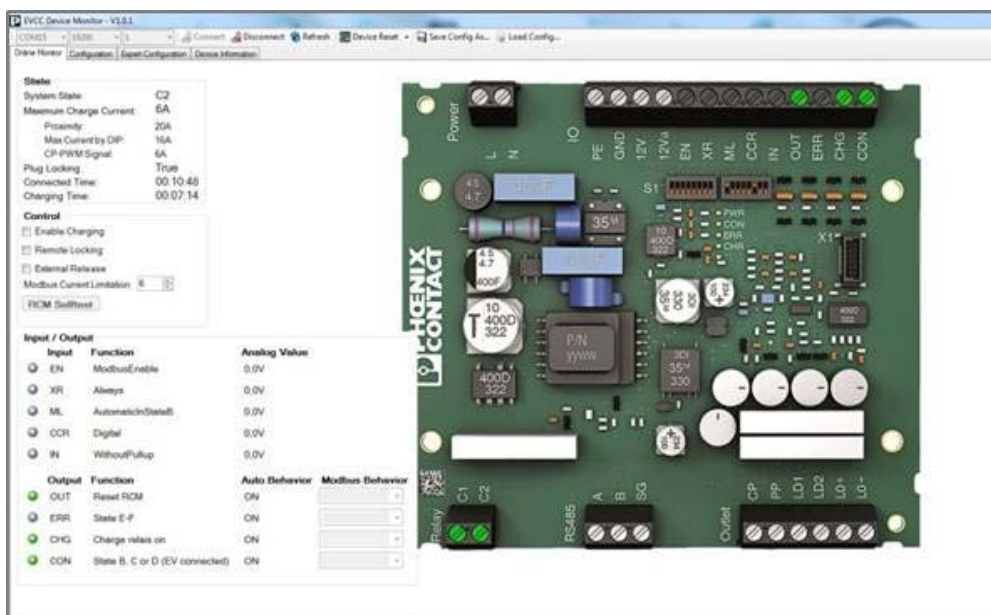


# ***EV CC Device Monitor***

## ***User Manual***



Configuration software tool for the Charge Controller EVCC Basic

March 2017



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## 1. Introduction

The EV CC Device monitor is a software tool for the configuration and set-up of the charge controller EV-CC Basic (EV-CC-AC1-...) from Phoenix Contact for specific applications.

The software provides the following functions:

- Configuration of the charge controller for customer specific applications
- Saving of configuration sets in a configuration file
- Upload of configuration files for duplication of configuration sets
- Remote control and monitoring of the charge controller

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The EV CC Device Monitor may be used only in conjunction with Phoenix Contact charge controller EV CC Basic.

The EV CC Device Monitor may be distributed in any form as long as license information is not modified.

## 2. System Requirements

- Personal computer with operating system Microsoft Windows™ 7 or higher
- Hardware requirements based on .Net Framework 4.5
  - Processor: 1 GHz
  - RAM: 512 MB
  - Disk space (minimum): 4.5 GB
- Microsoft.Net Framework 4.5 or higher. The .NET Framework requires administrator privileges in order to install.

The Microsoft.Net Framework can be downloaded at -> <https://www.microsoft.com/en-US/download/details.aspx?id=30653>



### 3. Getting Started

#### 3.1 Connecting the EV CC Basic to your Computer

In order to connect to the EVCC Basic with a personal computer, adapter like USB-RS485 converter can be used, e.g.

*FTDI USB-RS485-WE-1800-BT KABEL, USB-RS485, SER KONV*

With this cable, connect the EVCC Basic in the following way, see Figure 1.



Figure 1: Connecting the RS385-USB converter to the EV CC Basic charge controller

If necessary, download and install the required driver for this device following the manufacturer’s guideline.

#### 3.2 Software Installation

Download the zip-file at phoenixcontact.net/products and unzip the software package. The software can be started directly out of the Microsoft Windows™ Explorer with a double click on the application *EVCC\_DeviceMonitor*, see Figure 2. In order to start the software, the acceptance of the end user license agreement has to be confirmed.

File Name	Date	Type	Size
EVCC_DeviceMonitor	04.11.2016 15:17	Anwendung	3.105 KB
EVCC_DeviceMonitor.exe	12.07.2016 16:45	CONFIG-Datei	1 KB
log4net.dll	11.03.2016 14:07	Anwendungserwe...	220 KB
log4net	11.03.2016 14:08	XML-Datei	1.161 KB
Modbus.dll	04.11.2016 14:47	Anwendungserwe...	71 KB
PcapDotNet.Base.dll	11.03.2016 14:13	Anwendungserwe...	25 KB
PcapDotNet.Base	11.03.2016 14:13	XML-Datei	135 KB
PcapDotNet.Core.dll	11.03.2016 14:13	Anwendungserwe...	74 KB
PcapDotNet.Core	11.03.2016 14:13	XML-Datei	67 KB
PcapDotNet.Packets.dll	11.03.2016 14:13	Anwendungserwe...	322 KB
PcapDotNet.Packets	11.03.2016 14:13	XML-Datei	1.073 KB
TestEnvironment.dll	04.11.2016 14:47	Anwendungserwe...	60 KB
Tinkerforge.dll	11.03.2016 14:13	Anwendungserwe...	216 KB
Tinkerforge	11.03.2016 14:13	XML-Datei	1.009 KB
Unme.Common.dll	11.03.2016 14:13	Anwendungserwe...	21 KB
Unme.Common	11.03.2016 14:13	XML-Datei	17 KB

Figure 2: Program files of the EV CC DeviceMonitor



### 3.3 Setting up the connection to the EV CC Basic

- Verify and select the assigned COM port of the USB-RS485 adapter

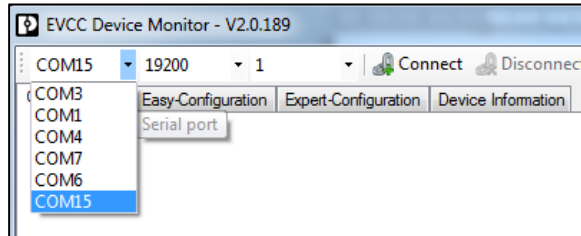


Figure 3: COM-Port selection

- Select baudrate according to the settings at the charge controller EV CC Basic (S2, DIP1). Baudrate 115200 is only available for communication via connector X1 (Modbus ASCII) with a special adapter

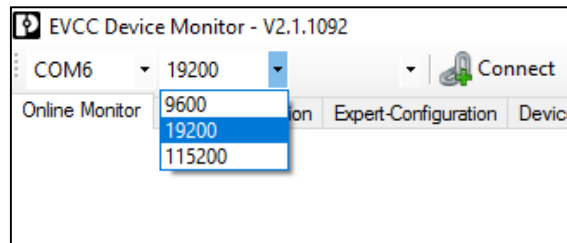


Figure 4: Baudrate selection

- Select device address according to the settings at the charge controller EV CC Basic (S2, DIP 2-6)

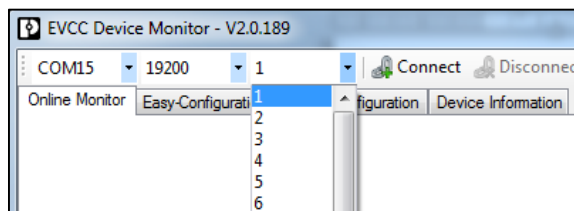
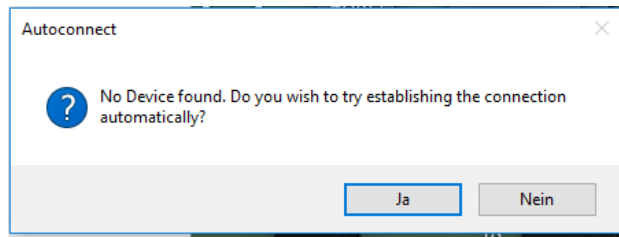


Figure 5: Device address selection

- Press “Connect” in order to establish the connection between your computer and the EV CC Basic. After the connection has been established, the actual status of the connected charge controller is displayed (Figure 6)
- In case the connection could not be established, the EV CC Device monitor offers an auto-connect function, which tests successively all addresses, baudrates and COM-port combinations.



**Figure 6: Autoconnect function**

- Press "Disconnect" e.g. in order to connect to another device with different address

#### 4. Tab “Online Monitor”

At the tab “Online Monitor” the user can see relevant status information and is able to sent control commands to the charge controller

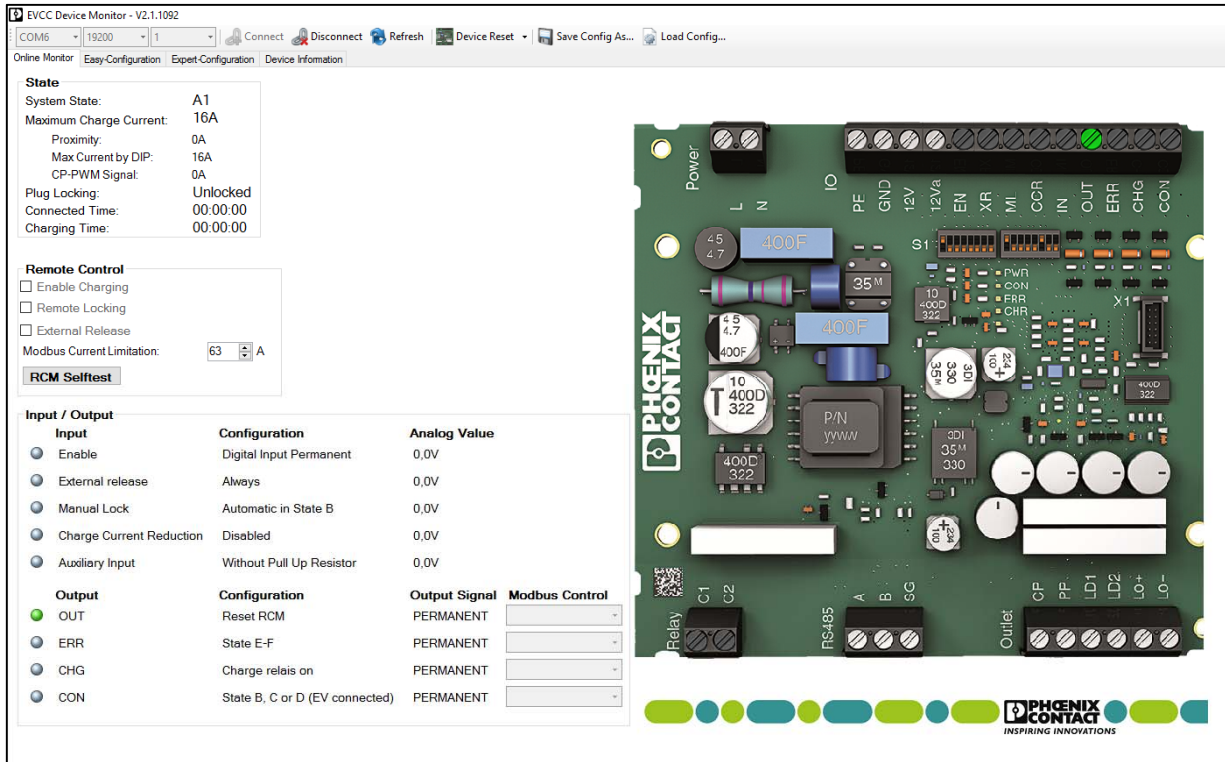


Figure 6: Tab “Online Monitor”

#### Field “State”

Name	Description
System State	System state according to IEC 61851-1, Annex A. Range: A1, A2, B1, ... D2, E0, F0
Maximum Charge Current	Maximum available charge current, based on the comparison of detected proximity, DIP switch settings, CCR input and Modbus command. The lowest value of these is the leading one
Proximity	Detected ampacity of the plug, connected to the charging station. Proximity resistance evaluation based on IEC 61851-1
Max Current by DIP	Maximum charge current based on DIP switch configuration S1, DIP 5+6
CP-PWM Signal	Maximum charge current, actually indicated via the control pilot to the vehicle. “0A” indicates that PWM signal is turned off, e.g. no vehicle connected or charging process not released
Plug Locking	Locking state of plug / socket
Connected Time	Duration, the electric vehicle has been connected to the charging station (State B, C, or D), reset via system state A
Charging Time	Duration, the electric vehicle is connected to the mains (load contactor closed), reset via system state A



**Field "Remote Control"**

<b>Name</b>	<b>Description</b>
Enable Charging	Release of charging process (PWM = ON) via Modbus. Only active, if EN input has been configured for "Modbus Enable"
Remote Locking	Remote locking and unlocking of the plug in the socket outlet. Only active for charging systems with socket outlet
External Release	Remote indication of charging availability (Transition state F -> state A, B) via Modbus. Only active, if XR input has been configured to "Modbus Enable"
Modbus Current Limitation	Remote limitation of the charge current via Modbus. If selected current is higher than the detected proximity or the DIP-switch configuration, the charge current will be limited to the lowest value
RCM Selftest	Initiates a selftest of the connected EV-RCM residual current monitoring device, only active if the charge controller is configured accordingly

**Field "Input/Output"**

<b>Name</b>	<b>Description</b>
<b>Input</b>	
Column "Input"	Input terminals of the charge controller, green button indicates "high"-signal
Column "Configuration"	Displays selected configuration of the input terminals
Column "Analog value"	Analog voltage value at the input terminals
<b>Output</b>	
Column "Output"	Output terminals of the charge controller, green button indicates "high"-signal
Column "Configuration"	Displays selected configuration of the output terminals
Column "Output Signal"	Displays selected output terminal behaviour (PERMANENT, FLASHING)
Column "Modbus Control"	Remote control of outputs via Modbus RTU, only active if output has been configured to "via Modbus". Control options: OFF, ON, FLASHING

### 5. Tab “Easy Configuration”

The tab “Easy Configuration” can be used to do the most typical configurations

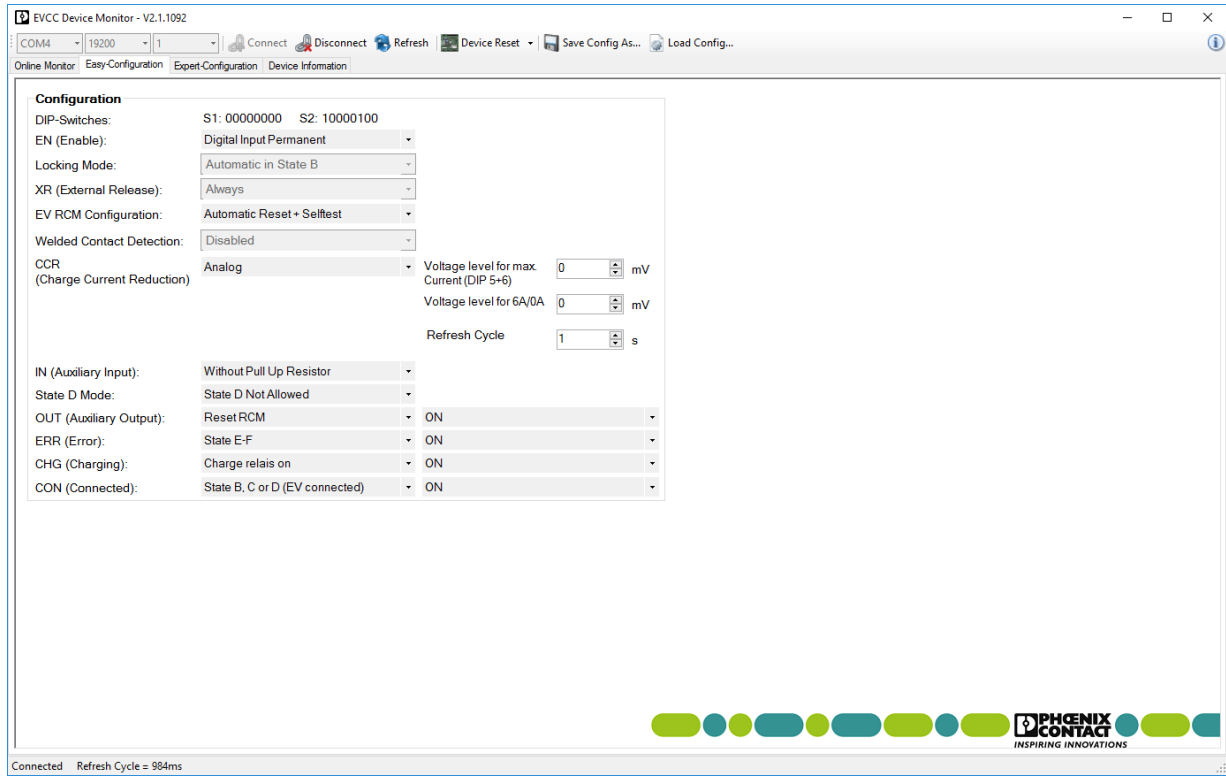


Figure 7: Tab “Easy Configuration”

#### Field “Configuration”

Name	Description
DIP-Switches	Display of DIP switch position: S1=Functional configuration, S2: Modbus communication
EN (Enable)	Configuration of the EN input to release charging process (PWM = ON): - Always: No external signal required to release charging - Digital Input Permanent: Permanent high signal to release charging process - Digital Input Pulsed: Pulsed signal at EN input required to release and terminate charging process - Modbus Enable: Release of charging process via Modbus command
Locking Mode	Defines conditions for the locking of the plug in the socket outlet. Only active, if S1/DIP3=1 - Automatic in State B: Locking / unlocking with the connection / disconnection of the vehicle - Digital Input Permanent: Permanent high signal at input ML to lock the plug - Digital Input Pulsed: Pulsed signal at ML input required to lock and unlock - Modbus Enable: Locking and unlocking via Modbus command

XR (External Release)	<p>Configuration of the XR input to indicate general availability of charging station (Transition from state F to state A,B). Only active, if S1/DIP2 = 1:</p> <ul style="list-style-type: none"> <li>- Always: Availability is always given, no externally forced state F</li> <li>- Digital Input Permanent: XR = 0 -&gt; State F. XR = 1 -&gt; charging station available</li> <li>- Modbus Enable: Availability of charging station indicated via Modbus command</li> </ul>	
EV RCM Config	<p>To be activated, when EV-RCM module is connected to the charge controller, input XR. Only active, if S1/DIP2 = 0</p> <p>Activation options:</p> <ul style="list-style-type: none"> <li>- Disabled</li> <li>- Automatic Reset + Selftest</li> <li>- Automatic Selftest</li> <li>- Automatic Reset</li> <li>- Manual Reset and Selftest</li> </ul>	
Welded Contact Detection	<p>Monitoring the load contactor for welded contacts via signals from an - normally closed - auxiliary contact of the contactor to the input CCR.</p> <ul style="list-style-type: none"> <li>- Disabled</li> <li>- Enabled Via Input CCR</li> </ul>	
CCR (Charge Current Reduction)	<p>Charge current can be temporarily reduced by signals at input CCR. Only active if Welded Contact Detection is disabled:</p> <p>Disabled: Signal at input CCR will not be evaluated for charge current settings</p> <p>Digital: Charge current will be reduced when high signal is detected at input CCR according to table 2-3 of the user manual, depending on settings of DIP switch S1/DIP5+6</p> <p>Analog: Charge current will be reduced based on analog voltage at input CCR. Characteristic defined by "Voltage level for max Current (DIP 5+6)" and "Voltage level for 6A/0A" with linear interpolation</p>	
If "CCR = Analog" is selected:		
Voltage level for max Current (DIP 5+6)	<p>Defines the voltage level (in mV) at which max current - according to DIP-switch settings - is available</p>	
Voltage level for 6A/0A	<p>Defines the voltage level (in mV) at which charge current is reduced to 6A (normative minimum)</p>	
RefreshCycle	<p>Time between update cycles for the adjustment of the charge current (in s)</p>	
IN (auxiliary input)	<p>internal pull-up resistor can be connected to the input</p> <ul style="list-style-type: none"> <li>- Without pullup: Input works as a standard digital input</li> <li>- With pullup: Passive components like PTC-resistors may be used to define the input signal</li> </ul>	
State D Mode	<p>Vehicle in state D, requiring external ventilation (State D vehicles):</p> <ul style="list-style-type: none"> <li>- StateDNotAllowed: Vehicles, charging in state D are rejected</li> <li>- StateDAllowed: Vehicles, charging in state D are accepted</li> </ul>	
Out (Auxiliary Output)	<p>Assigning functions and states to the digital outputs, according the table 9-3 of the manual</p>	<p>Defining the output signal if output is active:</p> <ul style="list-style-type: none"> <li>- OFF: Output disabled</li> <li>- ON: Permanent high signal</li> <li>- FLASHING: 1s periodically high low signal</li> </ul>
ERR (Error)		
CHG (Charging)		
CON (Connected)		



### 6. Tab “Expert Configuration”

FunctionShort	Modbus-Address	Modbus-Value	Function	Coding
EnableChargingConfig	4000	3	Konfiguration Freigabe des Ladevorgangs über Eingang EN oder Modbus-Register. Einschalten des PWM-Signals, wenn alle anderen, hierfür notwendigen Bedingungen erfüllt sind.	Integer 0: Ladefreigabe immer erlaubt 1: Ladefreigabe, wenn Eingang EN = EN (Default) 2: Ladefreigabe bei positivem Signal an Eingang EN. Rücknahme mit dem nächsten Puls 3: Ladefreigabe, wenn in Register 20000 der Wert 1 geschrieben wird. Keine Freigabe (PWM AUS), wenn in Register 20000 der Wert 0 geschrieben wird
ExternalReleaseConfig	4001	0	Konfiguration External Release über Eingang XR oder Modbus-Register. Erstellen des Zustands (nach IEC 61851-1) bei fehlerhafter Verfügbarkeit der Ladestation.	Integer Wenn S1/DIP 2 = OFF: 0: Verfügbarkeit immer gegeben (Default, wenn S1/DIP 2 = OFF, andere Werte unwirksam) Wenn S1/DIP 2 = ON: 1: Verfügbarkeit bei XR = EIN, Status F, wenn Eingang XR = AUS (Default, wenn S1/DIP 2 = ON) 2: Verfügbarkeit, wenn in Register 20001 der Wert 1 geschrieben wird. Status F, wenn in Register 20001 der Wert 0 geschrieben wird
LockingConfig	4002	0	Aktivierung der Verriegelungsfunktion Ladestecker in der Infrastruktur-Ladestation.	Integer Wenn S1/DIP 3 = OFF: 0: Verriegelung erfolgt automatisch, wenn Fahrzeug angeschlossen wird (Status B). Entriegelung, wenn Fahrzeug nicht erkannt wird (Status A). (Default, wenn S1/DIP 3 = OFF, andere Werte unwirksam) Wenn S1/DIP 3 = ON: 1: Verriegelung bei EIN-Signal am Eingang ML. Entriegelung, wenn Signal am Eingang ML = AUS (Default, wenn S1/DIP 3 = ON) 2: Verriegelung bei positivem Signal am Eingang ML. Entriegelung mit dem nächsten Puls 3: Verriegelung, wenn in Register 20002 der Wert 1 geschrieben wird. Entriegelung, wenn der Wert 0 geschrieben wird
WeldedContactDetectionConfig	4006	0	Funktionsaktivierung zur Überwachung des Ladeschlüsses. Bei der Ladeschlüssel-Überwachung über den Eingang CCR muss die Ladestationssperre über den Eingang CCR deaktiviert werden (Register 4012 = 0).	Integer 0: Ladeschlüssel-Überwachung deaktiviert (Default) 1: Ladeschlüssel-Überwachung durch Anwesenheit eines energieführenden Öffners am Eingang CCR.
WeldedContactDetectionDelayConfig	4007	200	Verzögerungszeit zwischen der Abschaltung des Ladeschlüsses und der Ausführung der Ladeschlüssel-Überwachung	Integer in ms Default = 200 ms
AllowStateDVehicleConfig	4010	0	Zulassen von Fahrzeugen mit Ladestatus D (Belüftung erforderlich)	Integer 0: Laden in Status D nicht zulassen (Default) 1: Laden in Status D zulassen
RCMConfig	4011	3	Funktionsaktivierung zur Anbindung des Differentialstrom-Überwachungsgerätes EV-RCM am Eingang XR. S1/DIP 2 muss auf „OFF“ stehen. EV-RCM = - EV-RCM C1-AC30-DCS, 1622450 - EV-RCM C2-AC30-DCS, 1622451 Optionale Zuladestellen im Fehlerfall. Beim Start des Gerätes und nach jedem Ladevorgang.	Integer 0: Deaktiviert 1: EV-RCM-Anbindung aktiviert, automatisches Rücksetzen aktiv, automatischer Gerüsttest aktiv 2: EV-RCM-Anbindung aktiviert, automatisches Rücksetzen inaktiv, automatischer Gerüsttest aktiv 3: EV-RCM-Anbindung aktiviert, automatisches Rücksetzen aktiv, automatischer Gerüsttest inaktiv 4: EV-RCM-Anbindung aktiviert, automatisches Rücksetzen inaktiv, automatischer Gerüsttest aktiv

Figure 8: Tab “Expert Configuration”

At this tab, the configurations of the tab “Easy Configuration” and additional configurations of the charge controller can be made. The detailed description and the allowed configuration parameters are given on this tab and are identical to table 9-2 of the manual.

Changes made on this tab, will be automatically visible at the tab “Easy Configuration”.



## 7. Tab “Device Information”

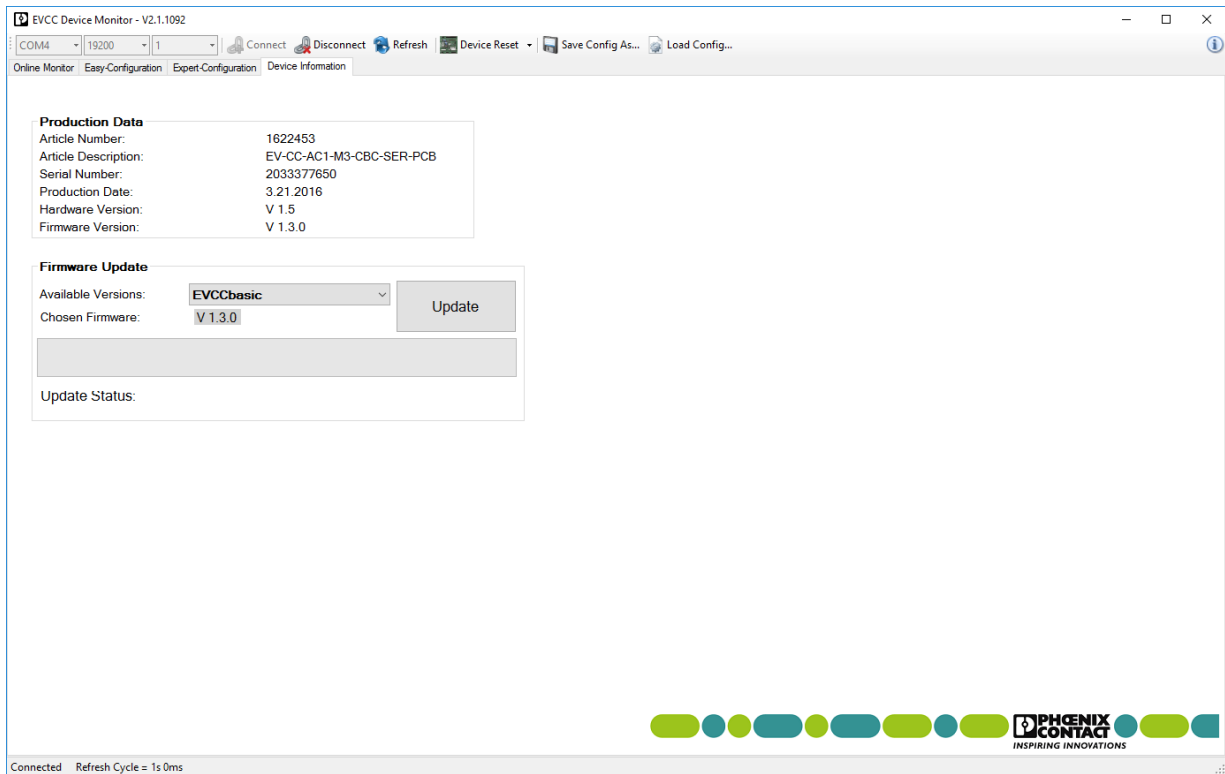


Figure 9: Tab “Device Informationto”

### Production Data

Displays device information like hardware and firmware versions, serial number, and production date

### Firmware Update

Allows the update the controller firmware. Initial controller firmware must be 1.3.0 or higher, otherwise, this function is not displayed.

**“Available Versions”**: Selection of the firmware file, stored in the sub-folder “Firmwares” of the EV CC Device Monitor software folder.

**“Chosen Firmware”**: Displays the firmware version, read out from the selected firmware file

## 8. Save / Load Configuration

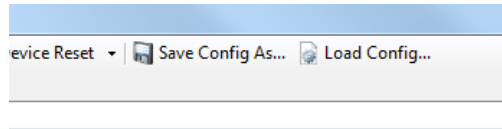


Figure 10: Save and Load Configurations

The entire configuration can be saved in an xml-file by clicking the “Save Config as ...” button, which will open the file dialog.

To duplicate pre-selected configurations, existing configuration files can be loaded onto the charge controller by clicking the “Load Config” button, which will open the file dialog.

## 9. Reset



Figure 11: Reset Options

The following reset options are given:

- Reset: The device will be restarted as under a normal startup conditions
- Reset to Factory: Device will be resetted to factory settings; all changed configurations are getting lost

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Academic software shall exclusively be delivered to students enrolled on a full-time basis at state and state-approved universities of applied science and universities, and to teachers at state-approved colleges. If the software is expressly declared for academic purposes, the licensor grants the licensee the right to use this software only for these specified academic purposes. Use of the software is only admissible within the limits of a qualified group of users. If the licensee has any doubts as to classification as part of a qualified group of users, he has to contact the licensor immediately.

Use of the software for purposes other than those specified in 5.1 is not admissible; in particular a resale of the software and a consequent transfer of rights for other purposes than the specified academic purposes are not admissible.

Selling, renting, leasing or lending software, whose authorization for use is limited to academic purposes, is not permitted for the purpose of realizing profits.

This license shall only remain effective as long as the licensee is an enrolled full-time student or a teacher at a state-approved college. This license shall end once the licensee is not any longer an enrolled full-time student or teacher at a state-approved college.

Furthermore, this license shall end if the licensee infringes any of the provisions of this EULA. The licensee undertakes to destroy any copies of the product upon termination.

#### Infringement of licenses

In the event of a violation of the provisions of clauses 3 to 5 by the licensee, by his legal representatives or vicarious agents, the licensee shall pay to the licensor a contractual penalty of 10% of the total license fee (however a minimum in all cases of €25,000) for each act of infringement, without prejudice to any claims for damages. The licensee shall however remain entitled to prove that the licensor has suffered nominal or no damages.

In the event of an infringement of his licenses, the licensor is entitled to rescind the contract, without prejudice to any claims for damages. In this case, the licensee undertakes to return to the licensor all software including all accompanying material. If any backup copies have been made or any copies have been produced under copying licenses, these have to be destroyed. Any software installed on hardware has to be deleted. Written evidence of the destruction and deletion has to be given to the licensor on first demand.

### Royalties

If the contracting parties have agreed on royalties, the following shall apply:

The royalties are due for immediate payment. In case of default, the licensee shall pay the statutory default interest. The right to assert any further claims for damages shall be reserved.

### Impossibility of performance

The licensor is not accountable for delays in delivery or performance due to acts of God or events which do not just temporarily severely hamper or totally prevent the licensor from performing - this includes disruptions in operations, strikes, blockades, official arrangements, a lack of raw materials, energy supply problems, mobilization of troops, civil unrest etc., even if the licensor's supplier or his suppliers are affected - even in the event of periods and deadlines with binding agreements. These delays entitle the licensor to postpone the delivery or performance by the duration of the obstacle plus an appropriate start-up time or to fully or partly withdraw from the agreement as a result of part of it not yet being fulfilled.

If the licensee has already paid any purchase price in full or in part at this time, the licensor undertakes to immediately refund the payment made to the licensee.

### Warranty claims

If the licensee is a merchant and this is a commercial transaction for both parties to the agreement, the licensee undertakes to inspect the software immediately after it has been delivered by the licensor or after its download, as far as this is possible in the ordinary course of business and, if there is any defect, to immediately give notice to the licensor.

If the licensee fails to give notice of the defect, the product is considered as approved, unless the defect is one which could not be recognized during the inspection.

If such a defect appears, the notice has to be made immediately after the defect has been discovered; otherwise the product is considered to be approved even considering this defect.

To maintain the rights of the licensee, it is sufficient to send off the notice in time. The foregoing provisions shall not apply if and in as far as the licensor has concealed a defect fraudulently.

There is a defect in the software if it does not have the stipulated qualities on the transfer of risk, or if it is not fit for the contractually agreed use.

There is no defect if the licensee has intervened himself, or through any third parties, in the software without the prior written consent of the licensor and the defect has appeared after the intervention. The licensee is allowed to provide evidence of the fact that the software defect was not caused by the intervention. There is also deemed to be no defect if the software is used on hardware or on an operating system which does not meet the requirements which have been laid down in the offer of contract or in the product specifications.

If there is any defect, the licensor is entitled to choose the option of remedying the defect or delivering a substitute for the software (subsequent performance).

The licensor can make subsequent performance conditional on the fact that a part of the agreed royalties which is adequate in proportion to the extent and gravity of the software defect has already been paid by the licensee.

Subsequent performance is considered to have failed after the third unsuccessful attempt. If subsequent performance fails, the licensee is entitled to withdraw from the agreement.

The limitation period for any warranty claims shall be twelve (12) months of intended use. This period commences with the download of the software by the licensee.

Claims made by the licensee due to the expenses required for subsequent performance, especially transport, journey, operating and material costs, are excluded if the expenses rise because the software has been subsequently transferred to a site other than the licensee's branch unless the transfer corresponds to his intended use.

The licensee only has the right of recourse against the licensor in accordance with § 478 of the German Civil Code (recourse of the entrepreneur) in so far as his customer is the consumer and the licensee has not entered into any additional agreements with his customer on legal warranty claims. Item 9.8 applies accordingly to the scope of the licensee's right of recourse against the licensor in accordance with § 478 Paragraph 2 of the German Civil Code.

The licensor is only liable for the loss of data and/or programs to the amount of the costs that would be incurred assuming the licensee carries out regular data back-ups appropriate to the application, thereby ensuring that the lost data can be restored with a reasonable effort.

There are no grounds for liability for all damages if they are not expressly stated in the above conditions and if they have not occurred on the item delivered. Exceptions to this are damages caused through premeditation or gross negligence on the part of the licensor's owner, management staff or vicarious agents or arising from key obligations in the agreement being violated through the fault of the licensor. In the latter case, liability is however only assumed for the typical and foreseeable damage occurring in such cases. The liability disclaimer also does not apply to cases in which errors on the item delivered are responsible for death, bodily injury or damage to health or property when the objects are used privately.

If the licensor is liable for the payment of compensation for defects in accordance with the rules of product liability law (ProdHaftG), the level of liability is only decided upon using the rules of this law. Any liability extending beyond this requires an express written agreement.

The licensor does not grant any warranty. The licensor's staff are not entitled to promise warranty. The licensee can only invoke a promise of warranty from the licensor if this has been confirmed in writing by the licensor himself or his legal representatives.

#### Software pre-releases

The licensor and licensee can agree on the provision of software pre-releases. Software pre-releases can be identified in particular by them being marked "alpha", "beta", "release candidate", "prototype", "patch" or by similar labels. The provision of software prereleases shall be finally regulated in the following, unless any individual arrangements or other agreements have been made:

The software pre-release is given to the licensee for test purposes only. It is not intended for use in the going concern and shall not be used on any EDP systems or networks which are part of the going concern. With the software pre-release, the licensee acquires the right to use this software as provided in clauses 3.2, 3.7-3.12 of this EULA for the period of time it is given to him, but subject to the reservation of point 2 of this paragraph.

The licensee undertakes to notify the licensor in writing of all error messages, operational faults etc., in describing how the fault developed and when and where it appeared.

The licensor is not liable for any damages which are caused by a violation of the above provisions by the licensee, his legal representatives or his vicarious agent.

#### Liability

Liability extending beyond that provided in Item 9 is excluded - regardless of the legal nature of the claim asserted. This applies especially to claims for damages resulting from culpable conduct during contract negotiations, due to other infringements of obligations or due to tortious claims for compensation for damage to property in accordance with § 823 of the German Civil Code.

The limitation stated in Item 11.1 also applies if the licensee demands compensation for futile expenses in place of a claim for compensation for damages rather than performance itself.

If the liability for damages against the licensee is excluded or limited, this also applies to the personal liability for damages of the licensor's workers, employees, colleagues, representatives, and vicarious agents.

Compensation for damages which the licensee incurs when using beta versions, pre-release versions, patches and/or prototypes, that are still at the development stage and have not yet been approved, is excluded, provided not otherwise stipulated in clause 9.11.

The provision under clause 10.4 of the EULA shall remain unaffected.

#### Proprietary rights/defects of title

As far as licensor renders the performance covered by the Agreement in accordance with production descriptions, plans, drawings, instructions or any other documents of the licensee or in accordance with devices obtained from him for reproduction, licensee shall guarantee that with the execution of the order no rights of third parties, especially no industrial property rights or copyrights (hereinafter referred to as "IPR"), are infringed directly or indirectly. In particular, the non-infringement of the rights of third parties shall insofar not constitute a stipulated condition of the delivery or performance to be rendered by licensor. Licensor shall not be obligated to independently verify conflicting rights of third parties. However, licensor shall inform licensee about any rights of third parties that became known to him.

In cases of para. 12.1 licensee shall indemnify licensor against any claims by third parties and compensate any damages that might accrue to licensor upon first request.

In the event a third party asserts a claim against licensor to refrain from further performance, production or delivery of the devices covered by the Agreement in cases of para. 12.1 with reference to a property right position, a right of use or an intellectual property, licensor shall be entitled - without examining the legal position- to withdraw from the order and demand compensation from licensee for his expenses incurred so far.

Any documents, devices and suchlike submitted to licensor that did not lead to the order shall be returned on request against reimbursement of costs. Otherwise licensor shall be entitled to destroy them three (3) months after having placed the offer.

Unless otherwise agreed in writing, the licensor undertakes to only make the delivery in the country of the delivery site, free of commercial proprietary rights and copyrights belonging to third parties. If a third party asserts justified claims against the licensee due to the infringement of proprietary rights by the performances made by the licensor in accordance with this agreement, the licensor is liable to the licensee within the period laid out in Item 9.7 as follows:

The licensor has the option of either effecting a usage right, modifying the performance such that the propriety right is not infringed or an exchange and shall do so at his own cost. If the licensor is not able to do this under appropriate conditions, the licensee is entitled to the legal rights to withdraw or mitigate.

The licensor's obligation to pay compensation for damages is based on Items 9 and/or 11.

The licensee shall immediately notify the licensor of any such claim asserted by a third party in writing and leave any protective measures and settlement negotiations to the discretion the licensor. If the licensee stops using the performance in order to reduce the level of damages or for any other compelling reasons, he undertakes to inform the third party that his ceasing to use the performance is not linked to recognition of an infringement of his proprietary rights.

Claims by the licensee are excluded if he is responsible for the infringement of proprietary rights.

Claims by the licensee are also excluded if the infringement of proprietary rights is caused by the licensee's special requirements, by usage not intended by the licensor or the fact that the licensee has changed the performance or used it in conjunction with products not supplied by the licensor.

In the event of infringements of proprietary rights, the terms of Items 9.6 and 9.8 also apply accordingly for the claims asserted by the licensee which are laid out in Item 12.4 a).

In the event of other defects in title, the terms of Item 9 apply accordingly.

More extensive claims or claims other than those covered by this Item 12 made by the licensee against the licensor and his vicarious agents are excluded on the grounds of a defect in title.

#### Export

It is expressly pointed out to the licensee that in accordance with the relevant export conditions of the Federal Republic of Germany, the European Union and/or the United States of America, exporting the products, information, software and documentation supplied (jointly referred to as products) may be subject to the duty to obtain a permit or may be excluded - e.g. due to their nature or intended use or final destination - and that infringement of such conditions is subject to prosecution. The licensee is therefore responsible for strictly observing all national or international relevant and applicable export conditions and obtaining the approvals that may be required. With regard to this, the licensee in particular undertakes to check and ensure that

if the products may only be supplied for usage relating to armament, nuclear technology or weapons technology and/or supplied to a recipient in the military with the approval of the relevant and in particular national authorities, this approval is obtained in advance in the event of resale;

goods, software or technology originating in the US are not being delivered to companies and persons listed in the Denied Persons List (DPL) of the US Department of Commerce;

deliveries are not being made to companies and persons listed in the Special Designated Nationals and blocked persons List of the US Department of the Treasury or the EU list of terrorists;

the relevant UN resolutions, EC decrees and German laws and lists belonging to the German authorities responsible are observed;

the Entity List of the US Department of Commerce is observed;

no deliveries are made to people who are listed on the Unverified List of the US Department of Commerce.

Should the licensee infringe the above obligations, the licensee will indemnify the licensor from all claims when first requested and will provide all compensation for damages which the supplier or licensors' licensor, third parties or state and/or international bodies or organizations assert against the licensor.

Deliveries and services (contractual performance) shall require that there are no hindrances to performance on the grounds of national or international regulations, especially export control provisions, embargos or other sanctions. The contractual partners shall undertake to produce all information and documents required for export, shipment and import. Delays due to export inspections or authorization procedures shall cause deadlines and delivery times to be suspended. If the required authorization is not granted, the Contract shall be regarded as not concluded with regard to the relevant sections. Claims for damages with respect to the aforementioned exceeding of deadlines shall be excluded.

On request, the licensor shall provide the licensee with details of the relevant points of contact for further information.

#### Setoff/retention

The licensee is only entitled to set off claims against the licensor if his counterclaims have been recognized by declaratory judgement or are undisputed. The assertion of any rights of retention by the licensee based on any claims other than those under this agreement shall be excluded.

#### Terms of business of the licensee or third parties

Any general terms and conditions of business of the licensee or third parties shall not become the subject matter of this contract; this shall also apply if the licensor does not expressly object to them. Inclusion of the terms of business of the licensee or third parties by deliberate action shall be excluded. In particular, the terms of business of the licensee shall not become the subject matter of this agreement by means of acceptance of deliveries or services or by payment.

#### Final provisions

Any amendments and addenda to this contract must be made in writing. This shall also apply to a termination, modification or a renunciation of the written form for this requirement.

This agreement shall be governed by the law of the Federal Republic of Germany, the United Nations Convention on Contracts for the International Sale of Goods (CISG) being excluded.

In the case of any disputes between the contractual parties arising out of or in connection with this agreement, the registered office of the licensor is agreed to be the place of performance and jurisdiction, if this is permitted.

The current version of the General Terms and Conditions of Delivery, Service, and Payment shall apply in addition to this Contract.. The regulations laid down in this EULA shall take precedence in the event of discrepancies.

#### Severability clause

Should individual provisions of this EULA be or become invalid, the validity of the remaining regulations shall remain hereby unaffected. The invalid condition shall be replaced by a regulation whose intended purpose is as close as possible to that of the invalid regulation.

The same shall apply if a loophole requiring regulation or supplementation becomes apparent during the execution of this EULA.

As per February 2012

