



Korteriühistute ümarlaud 26.10.2022 , Urmas Laine

-
- Mida ütleb seadus laadimiskohtade rajamise osas kortermaja juurde?
 - Teooria – mis on AC laadija EV jaoks
 - Kuidas võtta maksimum piiratud amprite tingimustest?
 - Kui nutikas laadija valida?
 - Kuidas korraldada laadimise puhul elektritarbimise arveldamine, et kõik rahu oleksid?

In 2021, one in five new vehicle registrations in Europe was electric

European EV sales annual history
Millions

EE – 2020 1500 täiselektrilist sõidukit
2021 2400 täiselektrilist sõidukit
2022 3200 prognoos



Source:
1. The European Automobile Manufacturers Association (ACEA), accessed 5 January 2022

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Uutele hoonetele peab paigaldama elektriautode laadimistaristu

Ehitusseadustik pg 65

Sellise hoone püstitamisel, mille teenindamiseks on ette nähtud rohkem kui kümme parkimiskohta, paigaldatakse:

- 1) juhtmetaristu igale parkimiskohale, kui tegemist on elamuga;
 - 2) juhtmetaristu vähemalt igale viiendale parkimiskohale ja elektriauto laadimispunkt vähemalt ühele parkimiskohale, kui tegemist on mitteelamuga.
- (7) Kui mitteelamu teenindamiseks on ette nähtud rohkem kui 20 parkimiskohta, tuleb vähemalt ühele parkimiskohale paigaldada laadimispunkt

Mis saab olemasolevatest hoonetest?

- Olulisel rekonstrueerimisel kehtivad sama reeglid, mis uute hoonete püstitamisel, aga taristu tuleb paigaldada juhul, kui rekonstrueerimine hõlmab ka parklat või hoone/parkla elektrisüsteemi.
- Juba olemasolevatele mitteelamutele, mida pole plaanis renoveerida, on määratud üleminekuaeg. Kui hoone teenindamiseks on ette nähtud rohkem kui 20 parkimiskohta, peavad olema varustatud vähemalt ühe laadimispunktiga 2025. aasta alguseks.

Laadimistaristu paigaldamist reguleerib ehitusseadustik ning selle täitmist hakkavad jälgima kohalikud omavalitsused ehituslubade menetlemisel.

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Laadimislahendused

Laadimislahendused

AC sihtkoha laadija

3-22 kW

4-16 hours



DC sihtkoha laadija

20-25 kW

1-3 hours



DC (and AC) kiirlaadija

50-180 kW

20-90 min



Depoo lahendused

Several units 50 to 175 kW+
hours



DC HP, ülikiired laadijad

150 to 350 kW+

10-20 min

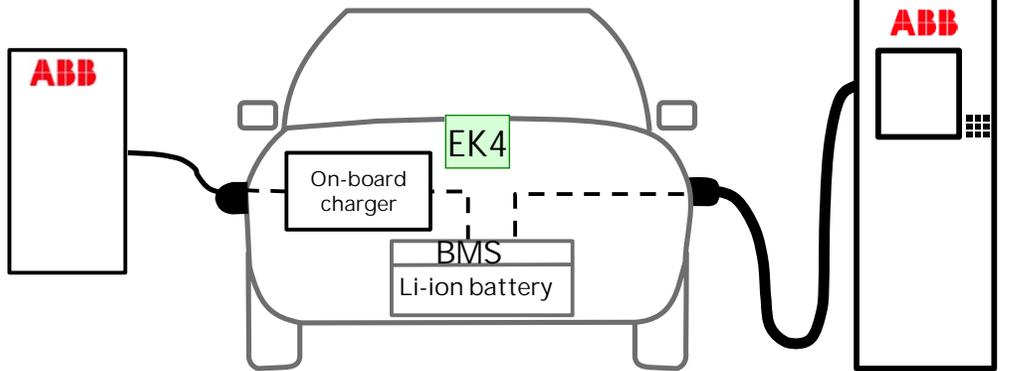


----- Alternate use-cases for depots

Mis on vahet AC laadijal versus DC laadijal

On-board versus off-board equipment

AC Charging



Type of charger	Power delivered	... charges a 40kWh battery in	Driving range delivered per hour
AC Level 1	2.2 -3 kW	13- 18 hrs	c. 11 – 15 km
AC Level 2	3.7 kW	c. 11 hrs	c. 19 km
	7,4 kW	c. 6 hrs	c. 35 km
	11kW	c. 4 hrs	c. 55 km
	22 kW	c. 2 hrs	c. 110 km
Fast chargers („DCFC“)	50 kW	c. 50 min *80% of the battery	c. 290 km *speed for charging to 80%
	150 kW	c. 20 – 30 min *80% of the battery	c. 860 km *speed for charging to 80%

EK4

ac/dc converter (rectifier)

Eirini Kostelidou; 26.02.2020

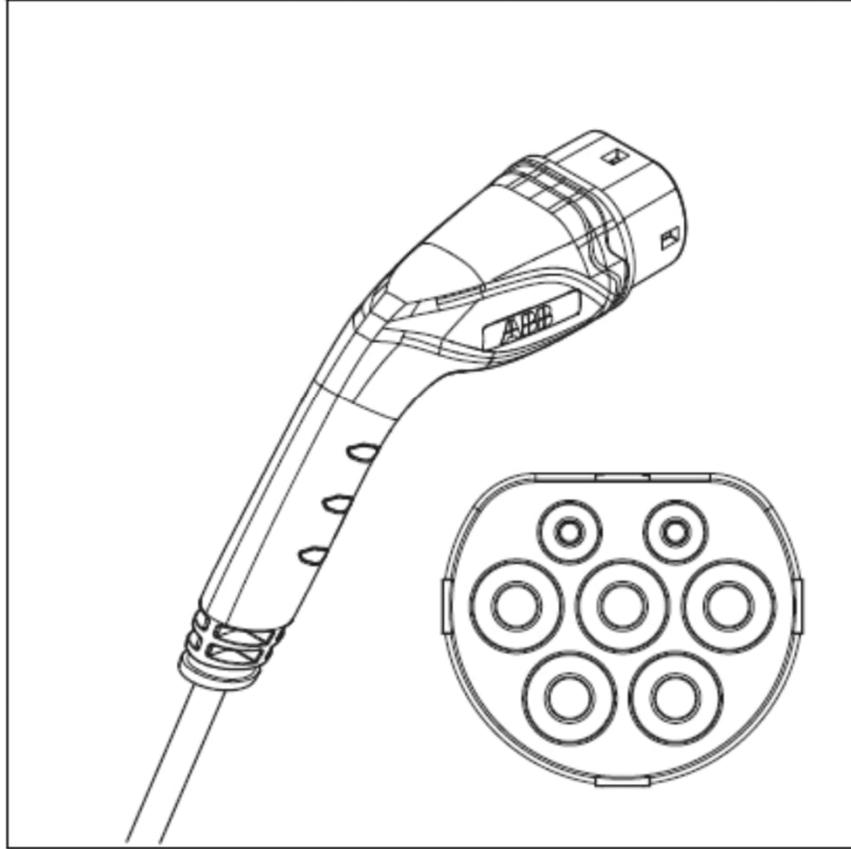
Combined Charging System (CCS) for Europe

Also sometime referred to as "Combo", or CCS-2

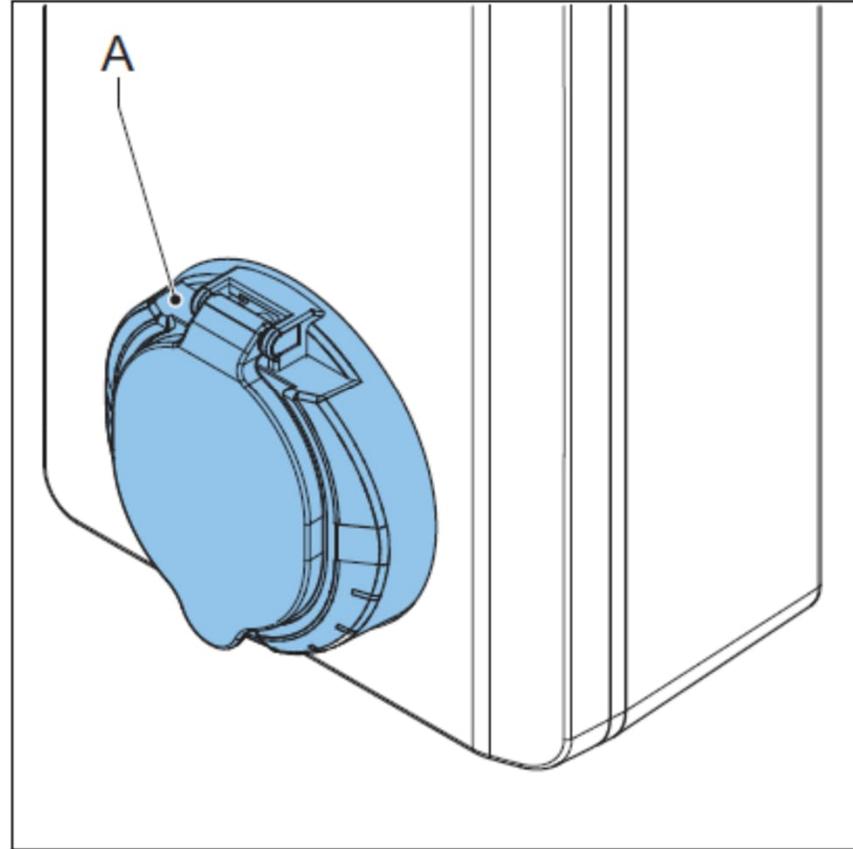


Source of picture: Phoenix Contact

EV charge cable, type 2



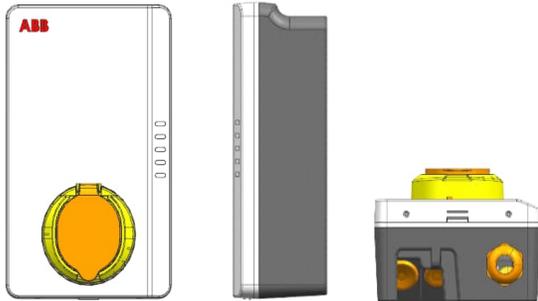
Socket, type 2



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Terra AC Wallbox

Kuni 22kW laadija pistikupesaga või kaabliga



Built in safety

- Ülekoormuskaitse
- Üle- ja alapinge
- Rikkevoolu monitooring
- Piksekaitse
- Maavoolu jälgimine

Metering

- Sisse ehitatud kWh arvesti (1% accurate),
- *MID option*,
- Laadimisvõimsuse juhtimine / tark laadimine,

Connectivity

- 1x Ethernet,
- 1x Bluetooth 5.0
- Wi-Fi
- *4G option*
- OCPP1.6
- RS485 (Modbus)
- Configurable dry contacts

Authentication

- Nutiseadme abil,
- *RFID kaardiga*
- *vabakasutus*

APP

- audentimine & laadimise juhtimine
- Laadija konfigureerimine

Mechanics

- *BxHxD 195x320x110/143mm*
- *Below 2 kg (excluding cable)*
- *UL variants 25ft cable,*
- *CE variants 5m cable*

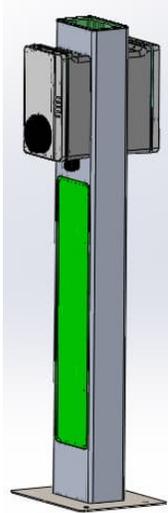
Later:

- 2x Ethernet (daisy chain)
- ISO 15118 (plug & charge and V2G)
- PTB certification
- Display

Jalandid laadijale

Metal Pedestal

- High end product
 - Indoor and outdoor
 - 2 chargers back to back install
 - Power daisy chain
 - DIN rail capability 5 DIN rails
 - Dimensions (mm): 120x210x1410
 - base plate dimensions (mm) 245x345
 - IP54
 - IK10
 - Design according EN 61439-7
 - Pricing available

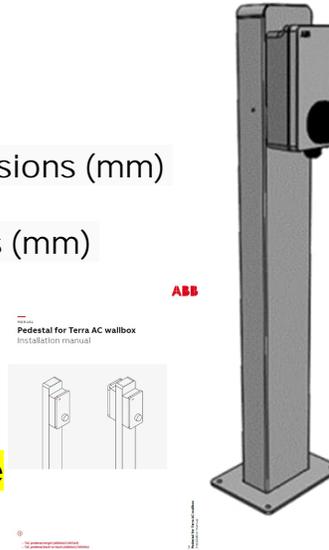


6AGC082326 | TAC rectangular pedestal



Basic Pedestal Single

- Basic product
 - Indoor and outdoor
 - Single charger install
 - IK10
 - Profile + height dimensions (mm) 100x200x1403.
 - base plate dimensions (mm) 245x345
 - Pricing available
 - Installation Manual available in library and web page
 - Images in PIR available soon

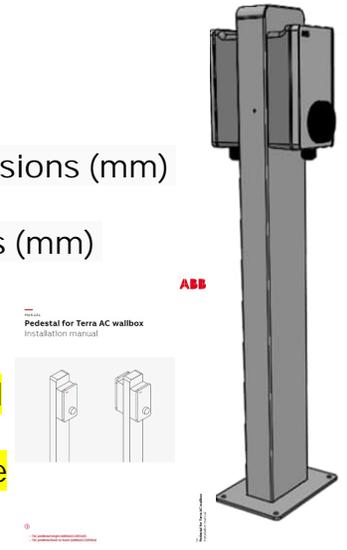


6AGC085345 | TAC pedestal single



Basic Pedestal Back-to-Back

- Basic product
 - Indoor and outdoor
 - 2 chargers install
 - IK10
 - Profile + height dimensions (mm) 100x200x1403.
 - base plate dimensions (mm) 245x345
 - Pricing available
 - Installation Manual available in library and web page
 - Images in PIR available soon



6AGC085684 | TAC pedestal back-to-back

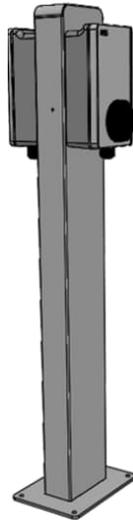


*Pedestal Installation Manual Link: <https://new.abb.com/ev-charging/terra-ac-wallbox/ac-wallbox-manuals>

Jalandid laadijale

Basic Pedestal Back-to-Back

- Basic product
 - Indoor and outdoor
 - 2 chargers install
 - IK10
 - Profile + height dimensions (mm)
100x200x1403.
 - base plate dimensions (mm)
245x345
 - Pricing available



6AGC085684

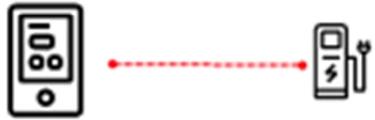
TAC pedestal back-to-back



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Terra AC staatiline ja dünaamiline laadimiskoormuse juhtimine

Static w/ single charger



Static w/ single charger



Hybrid w/ multiple chargers



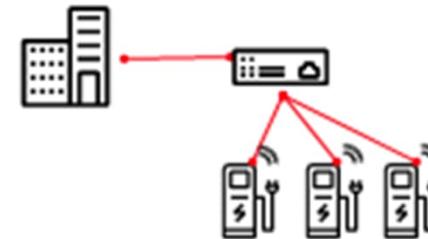
Dynamic w/ single charger



Dynamic w/ multiple chargers



Dynamic w/ multiple chargers via local controller



Staatiline koormuse juhtimine Terra AC

Terra AC Load Management

Static w/ single charger



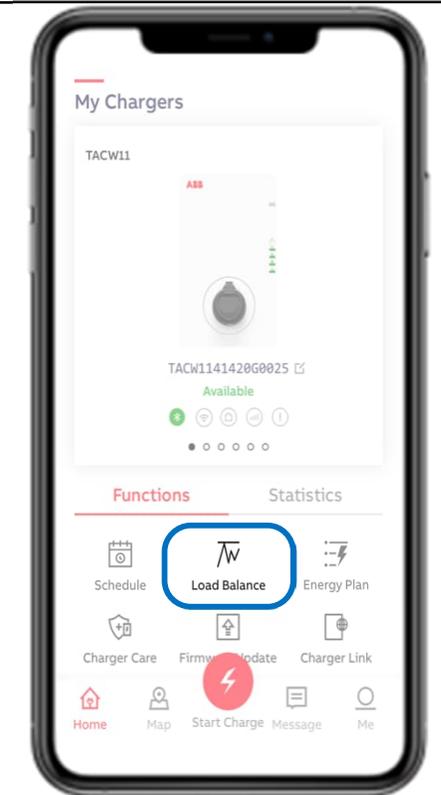
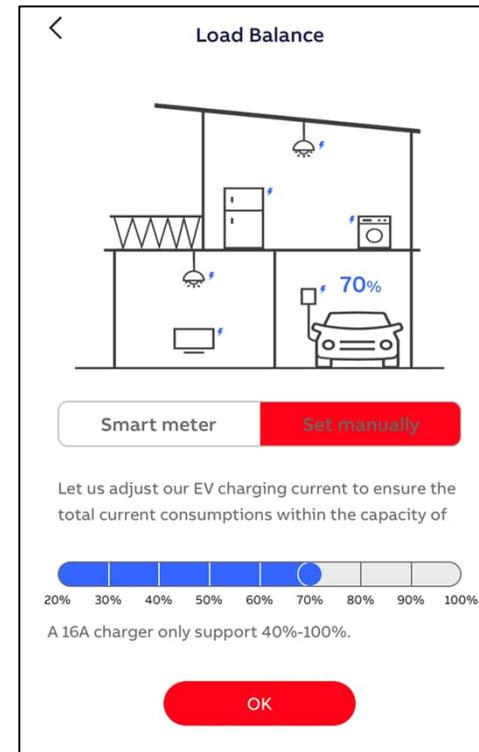
Home / Single use case scenario

- 1 Terra AC
- No connectivity (WiFi, LAN, 4G) needed
- Connection via Bluetooth on the ChargerSync App (EV driver)
- Configuration can be done at any time (even while there is an ongoing charging session)
- Goal is to let the EV driver decide the maximum value of current the EV will charge with*

 no extra hardware needed

*Depends on the EV's SoC

ChargerSync App



Terra AC Load Management

Static w/ single charger



Local business use case scenario

- x number of Terra ACs
- Connectivity (WiFi, LAN, 4G) to ABB backend/server needed
- Connection via internet on the ChargerSync Essentials Operational Portal
- Configuration can be done at any time (even while there is an ongoing charging session)
- Goal is to let the operator(s) of these accounts handle the maximum current of their chargers individually
- If hybrid load balancing feature is on, (static) load balance cannot be used anymore (it becomes grey)



no extra hardware needed

ChargerSync Essentials Operational Portal

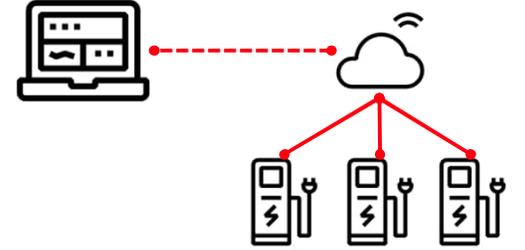
The screenshot shows the 'ChargerSync Essentials Operational Portal' interface. The top navigation bar includes 'Overview', 'Charging Site', 'User Management', and 'Charging Session'. The main content area displays details for a charging site named 'test site Delft'. A red box highlights the 'Hybrid Load Management' toggle switch, which is currently set to 'off'. Below this, a table lists individual chargers with columns for NO., Alias/SN, Connector, Phase, Network, Status, Derating, Current, and Remote Control. The first charger (NO. 1) is highlighted with a yellow box, showing a 'Load Balance' slider set to 11.2A. The second charger (NO. 2) is also visible, showing a current of 32A.

NO.	Alias/SN	Connector	Phase	Network	Status	Derating	Current	Remote Control
1	TACW1141420G0025 TACW1141420G0025			4G	Available	70%	11.2A	
2	TACW741320G0018 TACW741320G0018			4G	Available	100%	32A	

Hübriid koormusjuhtimine Terra AC

Terra AC Load Management

Hybrid w/ multiple chargers 1/4

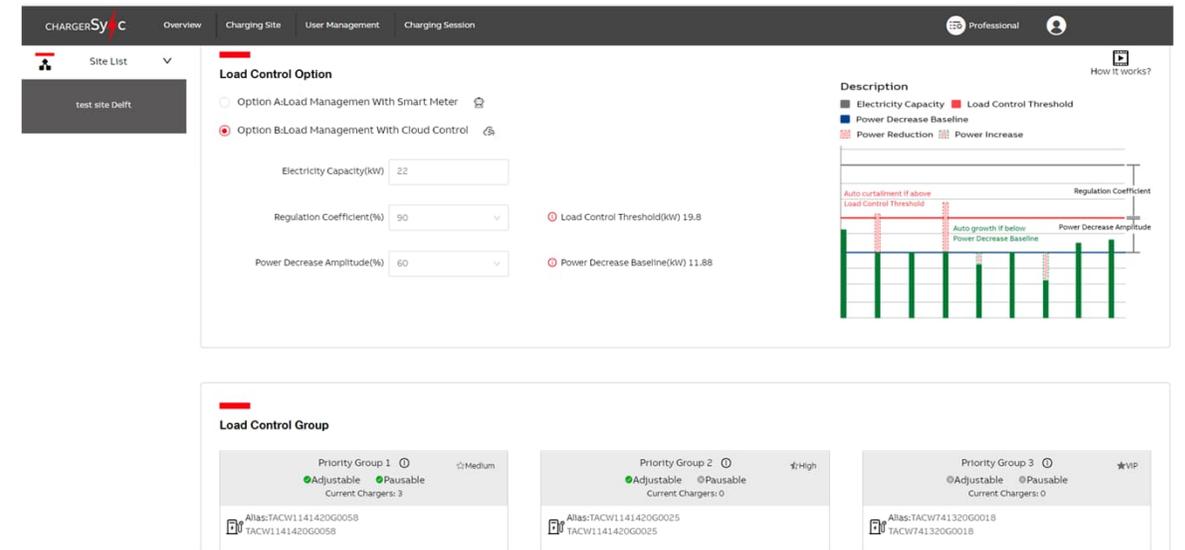


Big accounts use case scenario

- x number of Terra ACs in a charging site
- Connectivity (WiFi, LAN, 4G) to ABB backend/server needed
- Connection via internet on the ChargerSync Network Webportal
- 3 Priority groups for the chargers:
 - Medium (first to decrease current/power, delayed start charging);
 - High (second to decrease current/power, immediately start charging);
 - VIP (could not decrease, immediately start charging)
- Configuration can be done at any time
All chargers in a charging site must be entered in a priority group
- Goal is to let the operator(s) of big accounts handle their charging sites

*Not a free feature

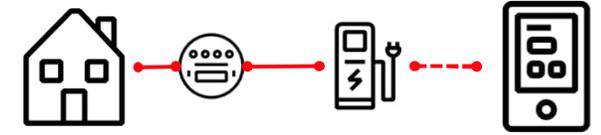
ChargerSync Network* Webportal Hybrid Load Management



— Dünaamiline koormusjuhtimine Terra AC (DLM)

Terra AC Load Management

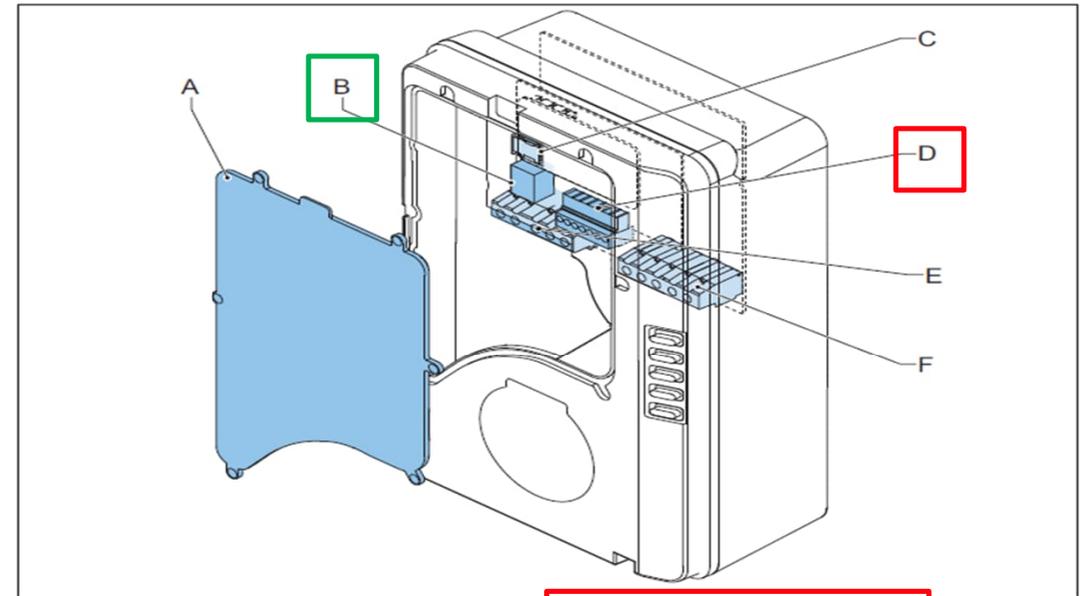
Local Dynamic w/ single charger 1/2



Home / Single use case scenario

- 1 Terra AC
- No connectivity (WiFi, LAN, 4G) needed
- Connection via Bluetooth on TerraConfig App (Installer) for setting the parameters of smart meter
- Connection via Bluetooth on Chargersync App (EV driver) for setting the parameters of the specific use case

Overview of the EVSE, inside

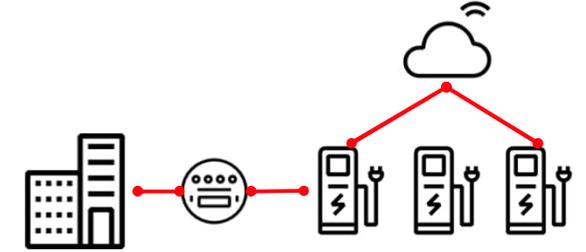


A Maintenance cover
B Ethernet connection
C Socket for a Nano-SIM card

D Smart meter connection
E Terminal block for the AC input
F Terminal block for the EV charge cable or the socket

Terra AC Load Management

Remote Dynamic w/ multiple chargers 1/2



Big accounts use case scenario

- x number of Terra ACs
- Connectivity (WiFi, LAN, 4G) to ABB backend/server needed
- Connection via Bluetooth on TerraConfig App (Installer) for setting the parameters of smart meter
- Connection via internet to Chargersync Network Web portal for setting the parameters of the specific use case
- Only 1 charger is connected to the smart meter.
The meter values are transmitted via the RS485 cable from the smart meter to the paired Terra AC and then to the cloud, which acts like a “master” and the Terra ACs as “slaves” (algorithm on cloud).
- Allocation of the chargers to priority groups (load control group)



extra hardware needed (smart meter)

ChargerSync Network Web portal

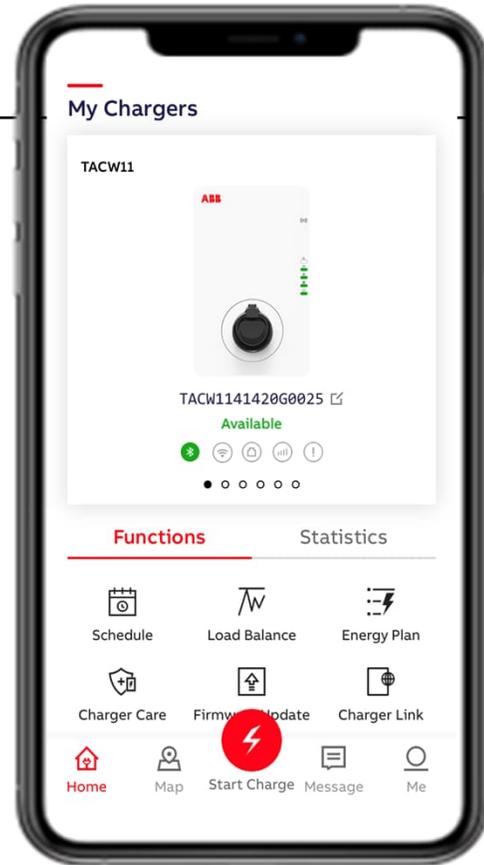
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Digital tools Terra AC

ChargerSync app

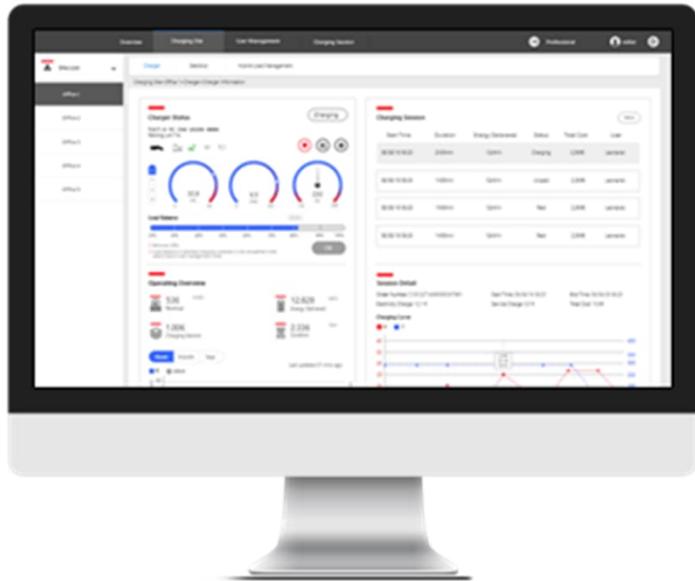
ChargerSync Smartphone App



- Kasutaja on n.ö. adminn ja laadija omanik. Selle app'i abil saab kasutaja laadija siduda enda app'i kontoga. Piirata käsitsi laadimivõimsust, sätestada laadimisgraafiku jms.

ChargerSync Web Portal

ChargerSync Essentials Operational portal (Backend)



Kasutaja on tavaliselt saidi / laadijate rühma kaugadministraator, kes loob konto ja lisab kontole mingi koguse laadijaid ja kasutajaid.

See on n.ö. pilvepõhise koormuse haldamise seadistamise ja jälgimise portaal. Lubades omanikul ühenduda laadijaga, kui laadija on võrgus (LAN / Wifi / 4G kaudu), teha täpsemat seadistamist, vaadata laadimise olekut, statistikat ja vigu.

Kasutatakse erinevate RFID-kaartide kaardistamiseks rühmadena ja kontode prioriteedina

Võimaldab täiendada iga kaarti virtuaalse rahaga ja määrata kulu kWh kohta.

KOKKUVÕTVALT:



- Ka vanemate kortermajade puhul pole veel kõik kadunud, dünaamiline koormusjuhtimine leevendab kuigivõrd kasinat võimsust
- Kindlasti on oluline korralik projekt ja hinnang elektritaristule hoones, eriti peakilbi juures
- Läbi tuleb mõelda, kas hallata ise ühistuga laadijavõrgustikku või tellida teenud mõnelt teenusepakkujalt ja ise mitte pead vaevata
- Lahendusi laadimistaristu ülesehituseks on mitmeid
 - Individaalne otse korteri/ridamaja boksi jaotuskilbist
 - Korteramaja üldisest peakilbist kasutades seejuures haldamiseks backendi või tellida võtmed kätte teenus mõnelt laadimistaristu arendajalt/haldajalt
- ...



<https://new.abb.com/ev-charging/terra-ac-wallbox>

<https://new.abb.com/ev-charging/terra-ac-wallbox/digital-tools>

https://abb-quickstartguide.s3-eu-west-1.amazonaws.com/chargersync_portal_basic_EN/index.html#/

ABB