

wallbox

plug & drive

POWER SHARING SMART

1. Introduction..... p. 3

2. Installation..... p. 6

 2.1. Positioning in the System T/NT - Chargers..... p. 7

 2.2 CAN Cabling (CAN-H/-L)..... p. 8

3. Configuration..... p. 11

 3.1 Master & Slave setup and powering on..... p. 12

 3.2 Master Configuration..... p. 13

4. Operation..... p. 14

 4.1 Status Visualisation..... p. 15

5. Troubleshooting..... p. 17



1. INTRODUCTION

Power Sharing Smart



1. Introduction

What is the biggest problem when installing many chargers?

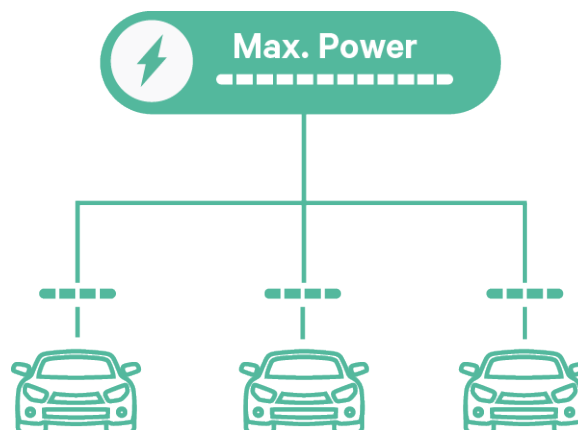
- Available power is limited (upgrade of installation is very expensive).

How do we solve the problem?

- Most efficient distribution of the available power – without extra cost / additional device.

Which factors did we take into account?

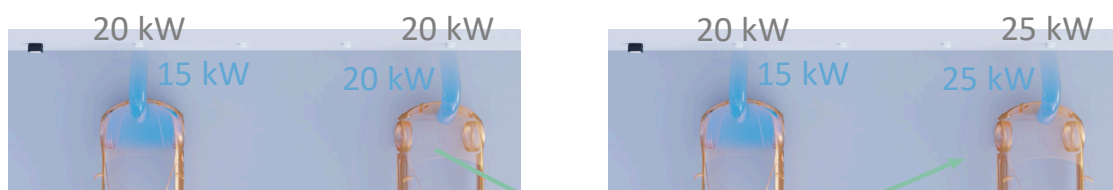
- A car stays longer than it charges – Wallbox will use that available power.
- Each installation has their own characteristics – Wallbox allows a most flexible installation.
- The installation is often not connected to the Internet – Wallbox does not require Internet-connection.
- When connecting many devices, easy troubleshooting is key – Wallbox gives full visibility over the status.



Efficiency

Re-assignment of unused power, example:

- A car uses actually less than it has assigned from power sharing.
- A car is full and will not charge anymore.



Robustness

- If a charger loses connection (due to bad cabling) it can charge with 6 A and Master will say “missing slaves”
- A newly powered on charger will be added to the system within 1 minute.

Flexibility

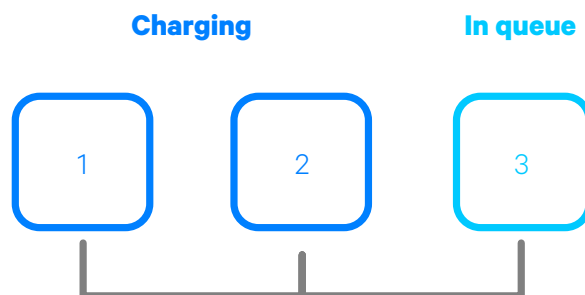
- Connect between 1 and 24 chargers with the Master.
- Any kind of installation .
- Configuration of the system (power/chargers) can be easily changed.
- Up to 250 m distance of communication.

i Possibility to install more chargers than can charge at the same time

“First-come-first-serve” principle

Example:

No. Chargers	3
Max. Current	12 A
Min. Current	6 A

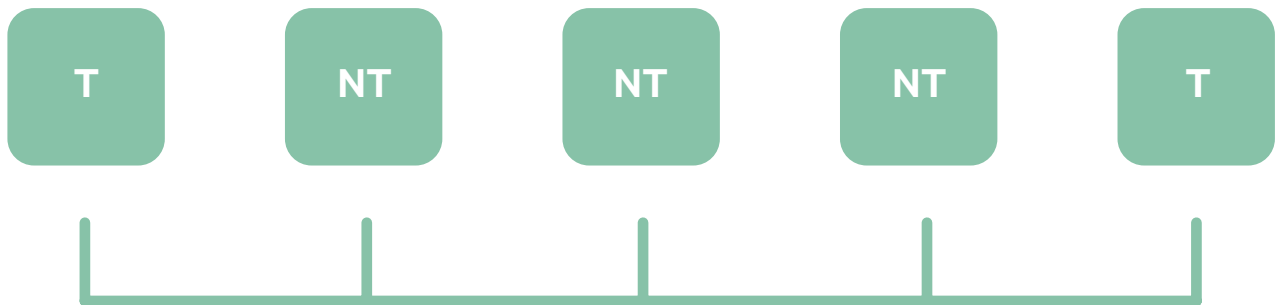


2. INSTALLATION

Power Sharing Smart



2.1 Positioning in the System (T/NT-Chargers)



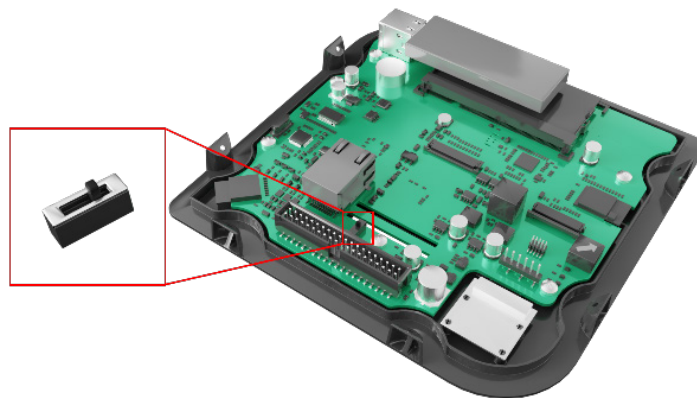
When installing the Wallbox in Power Sharing, the location is important to take into account.

The Power Sharing system includes two Terminating (T) chargers and the rest of Non-Terminating (NT) chargers as shown in the image.

Each charger includes an electric element (resistor) that defines whether it is T or NT:

- **Copper:** The way to turn it from NT to T is to change the switch position it has inside.
- **Commander or Pulsar:** There's a specific order for connecting Commander or Pulsar, which is pointed in the proper charger as NT or T.

Once the location is clear, the charging station can be installed according to its delivered installation manual.



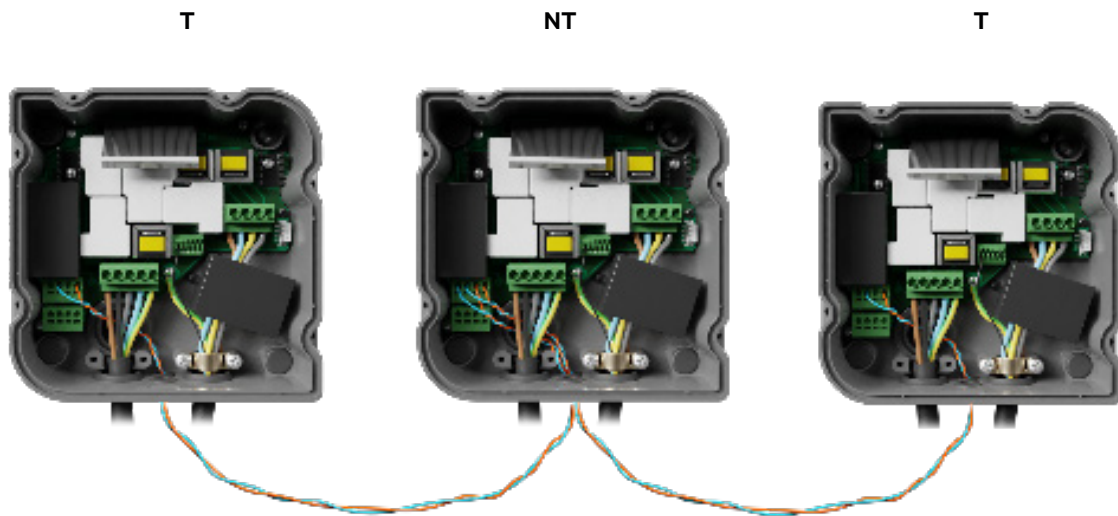
COPPER Terminating/Non-Terminating Switch



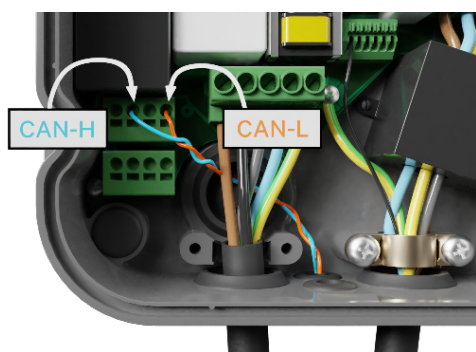
2.2 CAN Cabling (CAN-H/-L)

- The chargers communicate through a cabling system that connects the chargers to the ones next to it.
- The cabling consists of a CAN-low (CAN-L) and a CAN-high (CAN-H).
- We recommend to use the following cable-type: Ethernet Class 5E no shield, 1 pair.
- A total maximum length of 250 m can be installed.

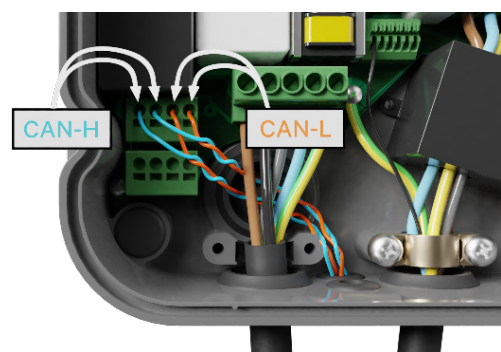
2.2.1 Instalation: Cabling (Copper)



Copper has two slots for input and output cabling so the conjunction is done inside the charger.



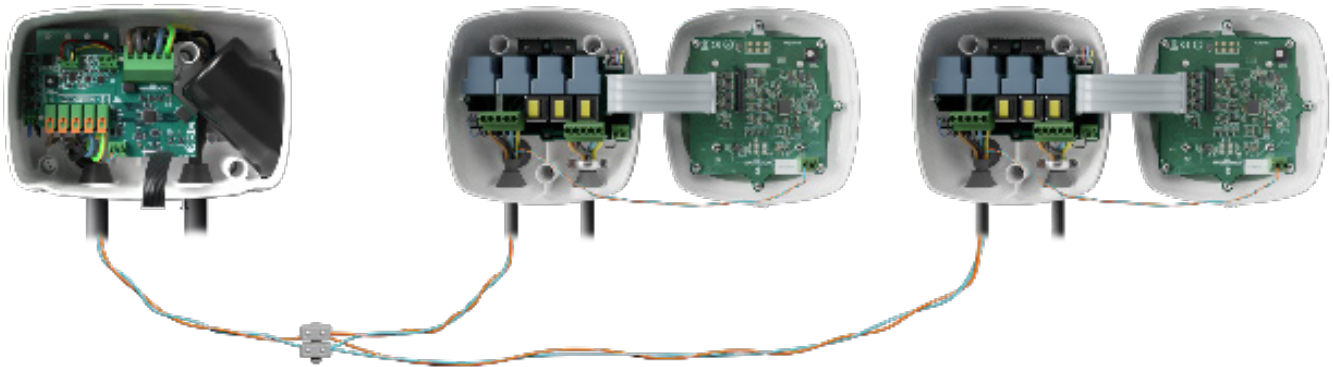
Copper T connection



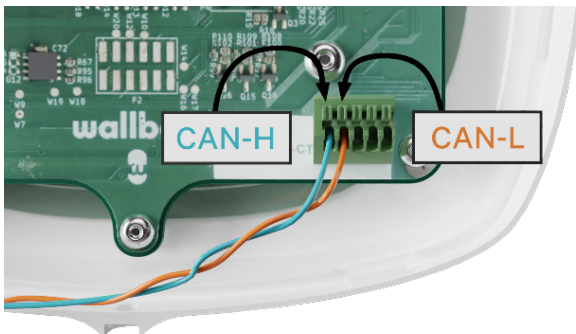
Copper NT connection

- CAN-H must be connected to CAN-H
- CAN-L must be connected to CAN-L

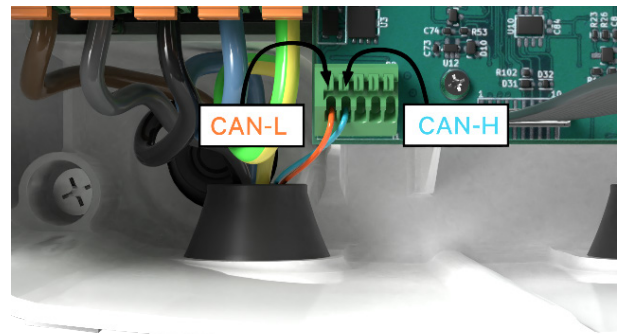
2.4. Instalation: Cabling (Commander/ Pulsar)



Commander and Pulsar only have one slot so the conjunction is done with external terminals.



Pulsar connection



Commander connection

- CAN-H must be connected to CAN-H
- CAN-L must be connected to CAN-L

3. CONFIGURATION

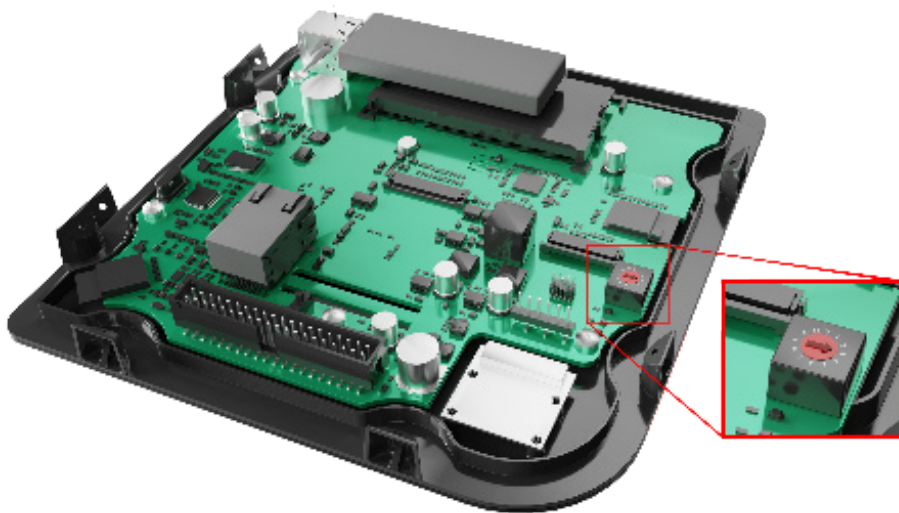
Power Sharing Smart



3.1 Master and Slave setup and Powering On

The selection of the rotary switch determines the role in the power sharing system.

0	Slave
8 or 9	Master
Any other	Normal charger (see installation manual)



The chargers can be configured in the following way:

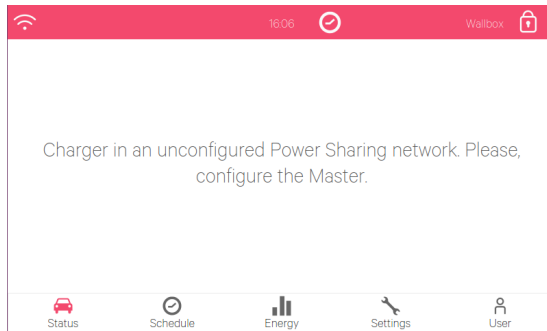
- Any combinations are possible
- The master can be set at any position within the group (T or NT).

Charger	Master	Slave
Copper	X	x
Commander	X	X
Pulsar		x

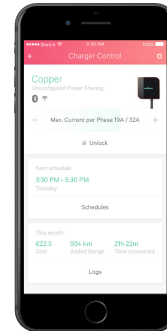


3.2 Master Configuration

Once the system has been powered on, the charger will visualise the state “unconfigured master” by a red LED or the dashboard of the charger.

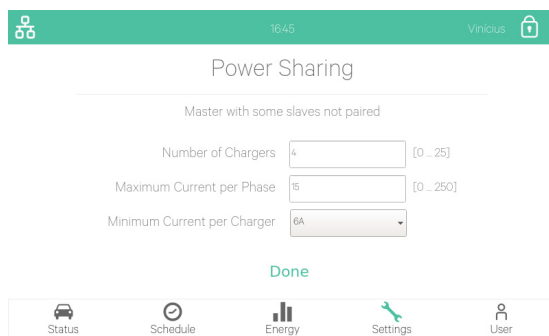


Commander

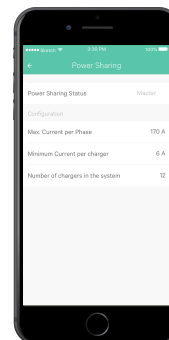


Pulsar / Copper

If you move further to the settings of the Master, the power sharing system can be configured:



Commander



Pulsar / Copper

* If the Master is a Copper, you need to have a myWallbox account and connect via Bluetooth and the App with the charger (see Copper User Guide).
Once connected, select the settings->power sharing to configure the system.

In the Master 3 parameters need to be configured:

- Number of Chargers in the Power Sharing System (to assure that the master knows all chargers connected).
 - This number must include the master charging station
- Maximum Current per Phase
 - This value determines the maximum that your installation can carry. Typically this value can be drawn from the main MCB, that has been installed for this power supply.
- Minimum Current per Charger (6 A or 10 A)
 - While the standards define a minimum current of 6 A (default value), some cars need to have a minimum current of 10 A.



4. OPERATION

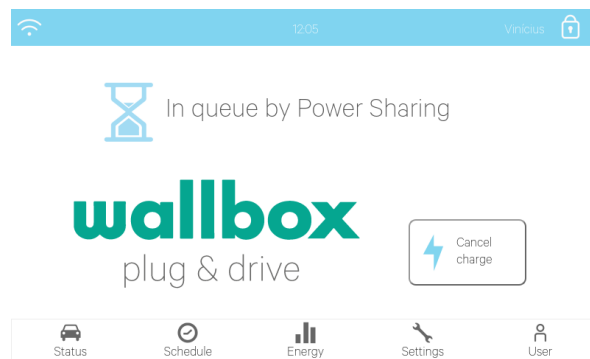
Power Sharing Smart



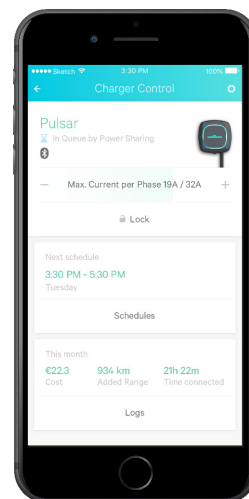
4.1 Status Visualisation

In queue by power sharing: Not enough power available for this charger.

- If the power has already been reduced to the minimum, the newly plugged cars will go into this state
- Once the system has enough power available (e.g. a car is full) it will start charging



Commander

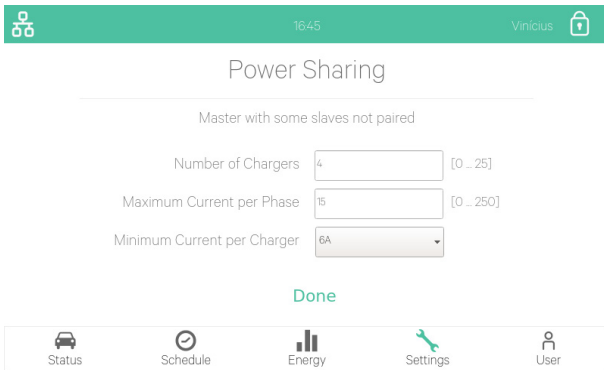


Pulsar / Copper

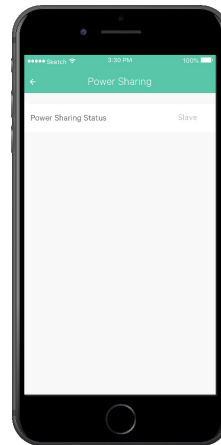


4.1 Status Visualisation

Information about the Power Sharing communication:



Commander
(Settings > System > Power Sharing)



Pulsar / Copper
(Settings > Power Sharing)
Bluetooth is required.

- The master will show the configuration menu.
- The slaves will just show their current status.

PS Status	Description
Slave	Successfully paired slave charger
Unpaired Slave	Slave charger that has not been paired (can charge with 6A)
Master	Master Charger
Master Uncomplete Net	Master charger that is detecting less slaves than have been configured

- Unpaired slave is also visualised as: Pulsar/ Copper visualise with this fast blinking LED.



5. TROUBLE SHOOTING

Power Sharing Smart



5.1 Troubleshooting

Upgrading from older Power Sharing Versions

As Power Sharing is a functionality that is working across our charging stations, and not only on a single one, all chargers must work the same.

Therefore, when upgrading from an older version of Power Sharing, you need to update the Software of all of them. Our user guides explain you the update process.

Once the update of all chargers of the system has been performed, follow the chapter 4 of this manual. After, you are good to go.

Please take into account that the setup of the system (Chapter 1 and 2 of this manual) is kept identical

Charger(s) have a red LED/HALO/top screen

- After the start up, this is the default colour on a power sharing net. If it lasts more than around 30 seconds, then check that the net is configured properly. If not, set the net and wait from 5 to 30 seconds.
- Make sure that the n° of chargers includes the master.
- Make sure that the maximum current per phase is set properly and that is higher than the minimum to be assigned.

Charger(s) have a blinking green LED/HALO or on Commander appears the message “Slave not paired with the power sharing network on the Power Sharing menu”.

- Poor contact on the CAN cables. Check that all the CAN cables are properly connected on the chargers.
- Wrong resistor value between CAN lines. Power off all the charger and measure the Ohm resistor between CAN-H and CAN-L, it must be around 60 Ohms.

Resistor's value between CAN lines is different than 60 Ohms

- If it is higher is because there's only one charger with the terminal resistors. If it is lower is because there are more than 2 charger with terminal resistors.
- Make sure that the two ends of the line have the “T” switch (if there's the switch) selected or that the resistors are on the correspondent chargers.



5. Troubleshooting

Erratic Behaviour

- Poor contact on the CAN cables. Check that all the CAN cables are properly connected on the chargers.
- Wrong configuration on the master.
- Wrong resistor value between CAN lines. Power off all the charger and measure the Ohm resistor between CAN-H and CAN-L, it must be around 60 Ohms.

Charger keeps waiting for current eventhough there's no other car

- The current assignation may last up to 30 seconds.
- Make sure that there are no schedules programmed.



POWER SHARING x.x

