

D Broad

Maintenance System



Instructions to change user parameters

1. Preparations

- Laptop computer

You can run this program on Windows 7 or a later. This program require a USB 2.0 port on your laptop.

- Copy this software, D-Broad maintenance on your laptop.

Warning: Using this software incorrectly may cause serious accidents. Be sure to limit the distribution and the operation to the person who understands how to use this software well.

- ◇ Copy "DaihenApplication.exe" into any folder on your laptop.
- ◇ If you want to use this software in Japanese, locate "ja-JPYDaihenApplication.resources.dll" on the same directory.



Figure 1 Example of copying to C:\d-broad

- ◇ Beforehand, install the USB driver software "CP210x_VCP_Windows Driver".

- USB cable

To connect a "receiving unit" to your laptop, use "USB Type A – USB mini B" cable. The picture below illustrates the cable. On the right side of the picture, a Type A plug to put into laptop; and on the left side, a mini B plug to put into the receiving unit.

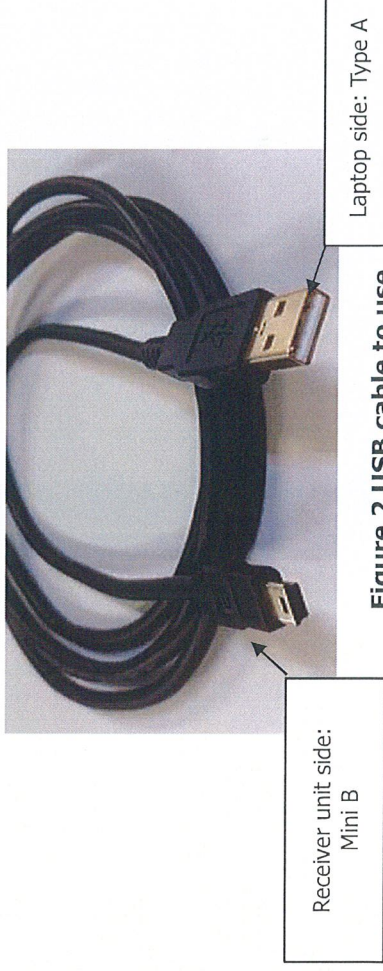


Figure 2 USB cable to use

- Crosshead screwdriver

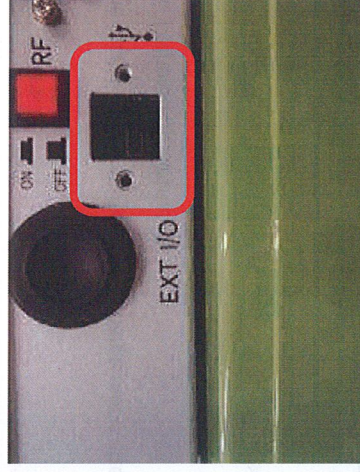
To open the cover of "receiving unit", use a crosshead screwdriver. Be careful not to strip the screw thread.

2. Pre-works

For your safety, make sure of the followings before connect the USB cable.

1. Turn off main control of your AGV (until your works are completed).
This is because of avoiding unexpected running of AGV. Make sure AGV not to run if you connect the power of an AGV main control and it of "D-Broad receiving unit".
2. Turn off your D-Broad transmitting unit (until your works are completed).
Make sure to turn off your transmitting unit especially when it is near to you.
3. Turn off your D-Broad receiving unit.
Make sure to turn off your receiving unit before connect the USB cable to it.
4. Open the cover of USB access port on your receiving unit.

The receiving unit has a cover with two screws on the USB access port. To remove this, use a crosshead screw driver.



3. Connecting the USB cable

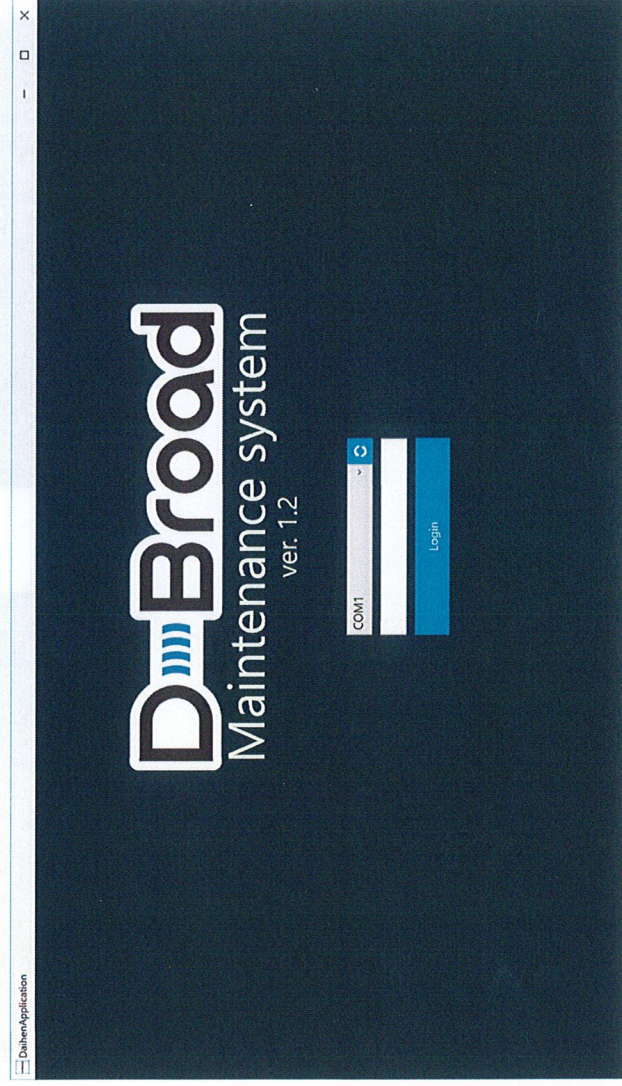
1. Put the plug into the access port

Be careful not to damage to the cover or any other parts.



2. After connect the cable, turn the receiving unit ON.
3. **To disable auto charge mode, press "RF OFF" switch, if you use D-Broad CORE. Turn off "RF" switch, if you use D-Broad Slim.**
The receiving unit starts in auto charge mode after it is turned on. You cannot change the parameters in this mode.
4. Run "DaihenApplication.exe".

After launching this software, the screen below will appear.

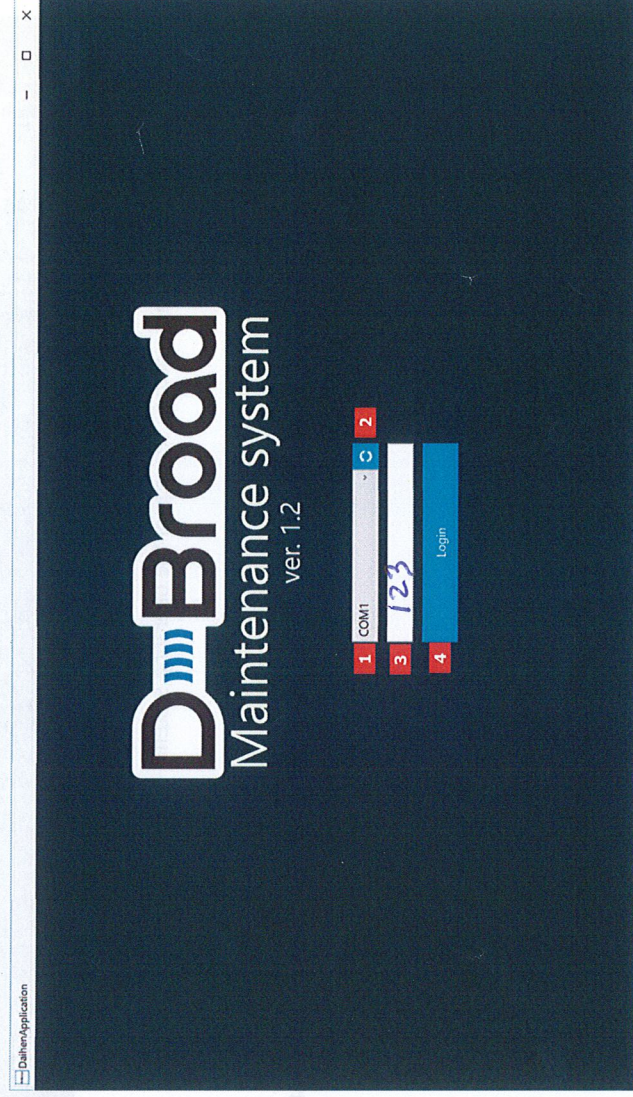


4. Establish connection to the receiving unit

Make sure that your laptop and the receiving unit are connected with a USB cable correctly.
To establish connection, follow three steps below.

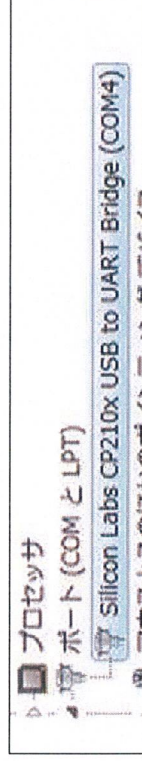
1. Select a COM port to connect from [1] pulldown on the figure blow. If your laptop have two COM ports or more, confirm the COM port name with using other software like Windows' device manager.
Note: If the COM port is not appeared on [1], press [2] to refresh COM ports.
2. Enter the password "123" in the field [3].
3. Press [4]: Login button.

If there are no problems for the connection or the password, you will proceed to next screen.



- [1] Pull down to select a COM port
- [2] Refresh the list of COM ports button
- [3] Password input
- [4] Login button

When you check with Windows' device manager, the receiver unit should be displayed as below (in this case, COM port's name is "COM4").





[1] Language setting

Note: Default language is set according to settings of the operating system.

[2] Logout button

[3] Auto charge mode status

“ON” indicates “in auto charge mode” or “now charging”. You can change the parameters only in the status of “OFF”.

[4] Pull-down to select the class of commands.

[5] Command button (GET)

[6] Parameter value input area

[7] Command button (SET)

[8] Button to “get all before saved values”.

[9] Button to send all values.

[10] Button to save the parameters

[11] Command explanations.

[12] Button to write the logs to a file.

5. Check automatic charging mode

In automatic charging mode, you cannot change any parameters. Check the automatic charging mode.

Make sure [3]: automatic charging mode indicator indicates "OFF". If you use a permission signal for power supply of I/O, turn off the signal from the outside.

The screenshot shows the 'Command List' screen in the DAIHEN Maintenance system. The top left corner displays the system name and language. The top right corner has a 'Log' button. The main content area is titled 'Charging parameters' and contains a table with the following data:

Parameter	Value	Action
Charging method	CC	Set
Max voltage	30.00	Set
Max current	30.00	Set
Max time	3600	Set
(CV) Max time	3600	Set
Full voltage	30.00	Set

Below the table are buttons for 'Get current settings' and 'Send settings'. The bottom section is titled 'BPTRAN Charging method' and includes instructions: 'Specify the charging method. 1: Constant current charging (CC charging) Capacitor etc. 2: Constant current constant voltage charging (CCCV charging) Lead, Li battery etc.'

If it indicates "ON" and background of this software is red, you cannot send commands except "Debug information". In this case, turn off the "RF" switch on the receiving unit. Then select "Debug information" from [4]: pulldown and press [23]: Automatic charging mode to get automatic charging status. After that, confirm [3]: Automatic charging mode indicator indicates "OFF".

The screenshot shows the 'Command List' screen in the DAIHEN Maintenance system. The top left corner displays the system name and language. The top right corner has a 'Log' button. The main content area is titled 'Debug informations' and contains a table with the following data:

Parameter	Value
Display errors	Capa I CN error, Dalz TM error,
ADC digits	358.31, 0.00
Display error numbers	06.07,
Display rDA messages	
Program version	Ver3.20 CANM SLIM Demo
Auto mode	ON

Below the table are buttons for 'Get current settings' and 'Send settings'. The bottom section is titled 'Auto mode' and has a red background.

6. Get current settings

Next confirm current settings of parameters of your receiving unit. Though this software loads parameters automatically each time it launches, get current settings by following steps below when some parameters are not loaded correctly.

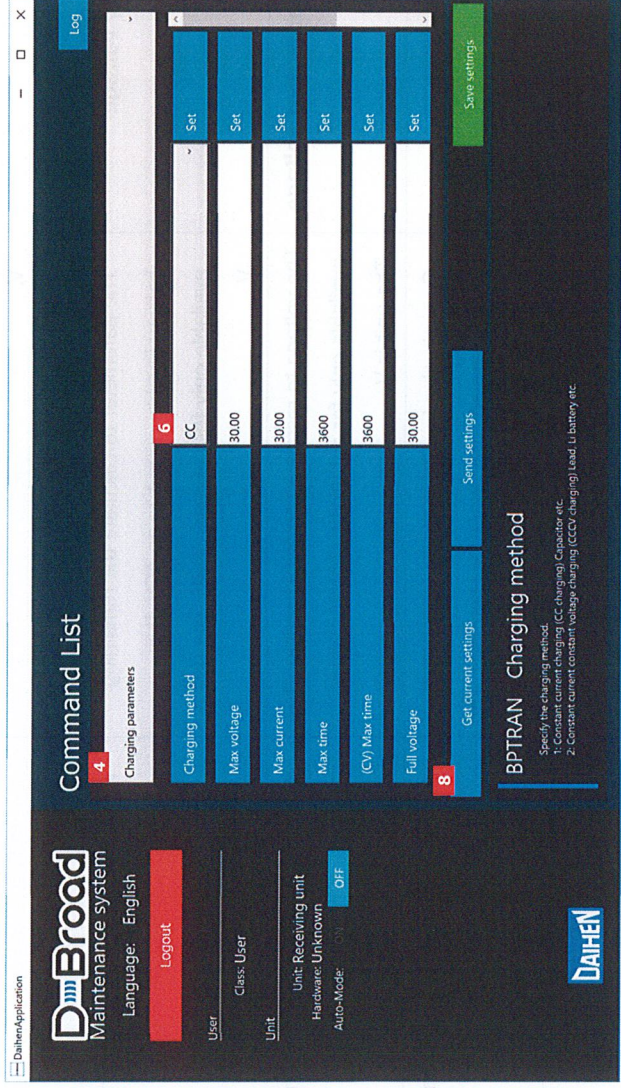
There are two ways to load current parameters explained below, and operations in this page do not make any changes of parameters.

Note: Select "Charging parameters" from [4]: pulldown. Detail of every parameter is explained in following pages.

1. Press [5]: Command button (GET) labeled with the parameter name. Current parameter will appear in [6]: Parameter value input area.



2. Alternatively, press [8]: Get all current settings button. All parameters in "Charging parameters" will be loaded and displayed in each [6]: Parameter value input area.



7. Changing parameters

With this software, you can change charging batteries-related parameters and unit settings-related parameters. Choose “Charging parameters” or “Unit parameters” from [4]: pulldown list to check or change them.

All parameters you can change are listed below. For more detail, read the section 12, Parameter detail.

Table 1. Charging parameters

Parameter	Description	Value to set
Charging method	Battery charging method.	“Constant Current(CC)” or “Constant Current and Constant Voltage (CCCV)”
Max Voltage	For CC, the voltage to stop charging. For CCCV, the voltage for constant voltage charging. The unit is V.	A decimal value between 1V and 60V.
Max Current	The current value for constant current charging. The unit is A.	A decimal value between 3A and 60A for CORE, or 3A and 30A for SLIM respectively.
Max time	The time span from starting charging to stopping in seconds.	An integer value between 1 and 72000. Alternatively -1 as unlimited.
(CV) Max time	The time span from a start of CV charging to stopping in seconds (only for CCCV charging).	An integer value between 1 and 72000. Alternatively -1 as unlimited.
Full voltage	The parameter to calculate the remaining battery level to output to an AGV. It is available only for D-Broad CORE. The unit is	A decimal value between 1V and 60V.

	V.	
Empty voltage	The parameter to calculate the remaining battery level to output to an AGV. It is available only for D-Broad CORE. The unit is V.	A decimal value between 1V and 60V.
Recharge start voltage	The voltage to restart automatic charging. It is available only for automatic charging mode. The unit is V.	A decimal value between 1V and 60V.
End current	Current value to stop charging after switching to CV charging (only for CCCV charging). The unit is A.	A decimal value between 3A and 60A.

Table 2. Unit parameters

Parameter	Description	Value to set
CAN ID 1	CAN ID of the device.	Any 32-bit integer value.
CAN ID 2	CAN ID of the device.	Any 32-bit integer value.

Other than these, you can check debug status with "Debug information". You can only check the status and not change it.

Table 3 Debug information

Parameter	Description
Current(A)/Voltage(V)	The current and voltage of the battery. These values will be displayed in the form of "<current>,<voltage>". The units are A and V respectively.
Display errors	The errors currently occurring (separated by commas).
ADC digits	The values read from ADC.
Display error numbers	The error numbers currently occurring (separated by commas).
Display IrDA messages	IrDA messages will be displayed.
Program version	The version of the program running on the device.
Auto mode	Indicate whether auto-charging mode is "ON" or "OFF".

For example, the following instructions show how to change "Charge current (A)" to "15A".

1. Find a row you want to change from column [5], put the value into [6] parameter value input. e.g. Look for "Charge current (A)" put "15" into parameter value input (1).
2. To activate this setting, press [7]: SET button on the right of the value input. e.g. Press the button (2) on the right of (1).

Command List

Language: English

Unit: User

Unit: Receiving unit

Hardware: Unknown

Auto-Mode: OFF

Parameter	Value	Action
Charging method	CC	Set
Max voltage	30.00	Set
Max current	30.00	Set
Max time	3000	Set
(CV) Max time	3600	Set
Full voltage	30.00	Set

BPTRAN Charging method

Specify the charging method

1. Constant current charging (CC charging), Capacitor, etc.

2. Constant current constant voltage charging (CCCV charging), Lead, Li battery, etc.

Get current settings | Send settings | Save settings

Note: If the value you put is invalid or out of minimum-maximum range, the [6]: value input area will be surrounded by red lines and value will not be sent. Correct the value and press [7]: SET button again.

You can change and set other parameters with the same procedure.

Note

Only with completing instructions so far, those parameters are not actually saved in the flash memory on receiving unit yet.

When you shut down the receiving unit without doing the instruction explained in next section, the parameters you sent will be lost.

8. Save parameters

After you set the parameters, press [10]: Save settings button (green one) to save these values in the flash memory on the unit. Stored values in the flash memory will not be lost even after unit is turned off.

DAIHEN
Maintenance system
Language: English
Logout

User: _____
Class: User

Unit: _____
Unit: Receiving unit
Hardware: Unknown
Auto-Mode: ON OFF

Command List

Charging parameters

Charging method	CC	Set
Max voltage	30.00	Set
Max current	30.00	Set
Max time	3600	Set
(CV) Max time	3600	Set
Full voltage	30.00	Set

Get current settings Send settings **10** Save settings

BPTRAN Charging method

Specify the charging method.
1. Constant current charging (CC charging), Capacitor, etc.
2. Constant current constant voltage charging (CCCV charging), Lead-Li battery, etc.


Note

If you made mistakes to change, turn off the receiving unit without completing instructions explained in this section. Then restart this software and follow steps so far again.

9. Check settings

Here, make sure the values are correctly set and saved. End this software and turn off the receiving unit. Then follow procedures from section 3 to 6 again.

After that, confirm the values you set are displayed correctly.



The screenshot shows the 'Command List' interface for the 'Daihen Maintenance system'. The interface is divided into several sections:

- Top Left:** 'DaihenApplication' logo, 'Daihen Maintenance system', 'Language: English', and a 'Logout' button.
- User Information:** 'User: Class: User', 'Unit: Receiving unit', 'Hardware: Unknown', and 'Auto-Mode: OFF'.
- Command List:** A table with columns for 'Charging method', 'Value', and 'Action'. The 'Max voltage' row is highlighted with a red box.
- Buttons:** 'Get current settings', 'Send settings', and 'Save settings'.
- Bottom Section:** 'BPTRAN Charging method' with instructions: 'Specify the charging method. 1. Constant current charging (CC charging), Capacitor etc. 2. Constant current constant voltage charging (CCCV charging), Lead, Li battery etc.'

Charging method	Value	Action
Max voltage	30.00	Set
Max current	30.00	Set
Max time	3600	Set
(CV) Max time	3600	Set
Full voltage	30.00	Set

10. Output logs to a file

This software has a function to output the operation logs of the unit, error logs and current parameters set to the unit. Press [12] Output log button on the top-right in this screen.



The operation logs, error logs and current settings will be saved on your desktop in the file named

"wpt_logs_yyyyMMdd_HHmss.txt" according to the time when the button was pressed (y: year, M: month, d: day, H: hour, m: minute, s: second).

11. Other notes

- **This parameter changing software can be run only on the receiving unit controlling software version 3.10 or later.**
- Even if you set incorrect value by mistake, you can retry by restarting the software, only before pressing "Save settings" button.
- If you need to use this software with D-Broad CORE, please contact our sales staff before use.

12. Parameter details

12.1. Charging method

Select a charge mode of the battery. There are two options: "Constant Current (CC)" and "Constant Current and Constant Voltage (CCCV)". Follow a catalog or a manual of the battery to select.

- Constant Current (CC)

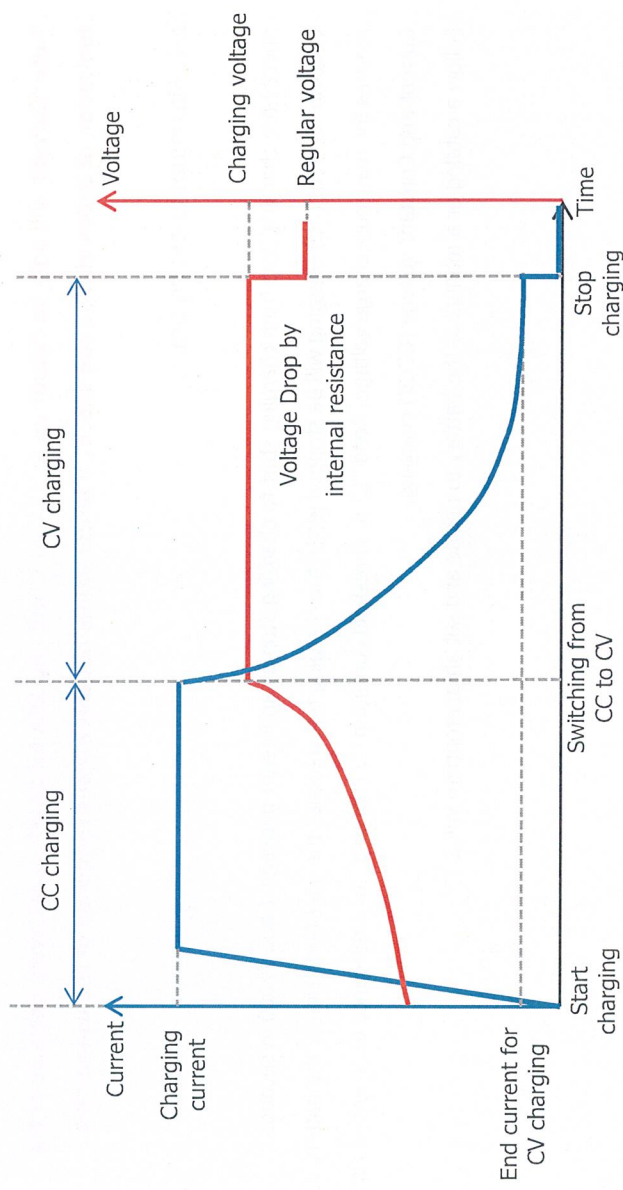
Charging is performed with constant current and terminated when reached to full charged voltage. While capacitors can be fully charged, general lead batteries can be charged to only about 70 to 80% in this method. The figure below shows that charging is performed only during "CC charging" and stopped when the voltage reaches the specified value or charging time reaches the maximum charging time.

This method is suitable for batteries that has little internal resistance and no voltage drop after charging.

- Constant Current and Constant Voltage (CCCV)

Charging is performed with constant current first, and performed at constant voltage after reaching the full charged voltage. The charging current decreases gradually during "CV charging" because of a characteristic of the battery that it cannot absorb the current very well as it approaches full charge. This method supplements a voltage drop caused by internal resistance with constant voltage after the voltage reaches fully charged voltage. Specify the CV full charge current or charge term (maximum charging time or time to charge with constant voltage) to be used to stop charging.

This is a popular way to charge lead batteries. The figure below shows that charging will stop when the current reaches the specified value of the CV full charge current.



12.2. Charge voltage

Specify the maximum charge voltage (V) as a decimal number between 1V and 60V.

Setting an inappropriate value may cause overcharging, damaging the battery or shortening the battery life. Follow a catalog or a manual of the battery to decide and set an appropriate value.

- With Constant Current (CC) charging

Charging will be stopped when the battery's voltage reaches the specified value or charging time reaches the maximum charging time.

- With Constant Current and Constant Voltage (CCCV) charging

When battery voltage reaches this value, that does not judge charging have finished, but have been switched to CV charging. Charging is controlled in this mode not to exceed the specified value and charge current.

12.3. Charge current

Specify the maximum charge current (A) as a decimal number between 3A and 60A. Follow a catalog or a manual of the battery to decide and set an appropriate value.

- With Constant Current (CC) charging

Charging will be controlled to keep current at the specified value.

- With Constant Current and Constant Voltage (CCCV) charging

Charging will be controlled not to exceed both of the specified value and charge voltage.

Note: Current will only be output up to 30A for CORE and 15A for SLIM respectively because of the limitation of D-Broad. You can specify a larger value, but this causes reduction of the usage rate.

12.4. Maximum Charging time

Specify the charging time from charging start to charging stop as an integer between 1 and 72000 in seconds.

Constant Current (CC) charging will be stopped when the charging time reaches the specified value or the battery voltage reaches the maximum charge voltage. Read "12.6. Threshold current in CV charging" for a reference to an end of Constant Current and Constant Voltage (CCCV) charging.

Follow a catalog or a manual of the battery to decide and set an appropriate value.

12.5. CV Charging time

Specify the charging time after switching to CV charging as an integer between 1 and 72000 in seconds. It is available only for Constant Current and Constant Voltage (CCCV) charging.

Read "12.6. Threshold current in CV charging" for a reference to an end of Constant Current and Constant Voltage (CCCV) charging.

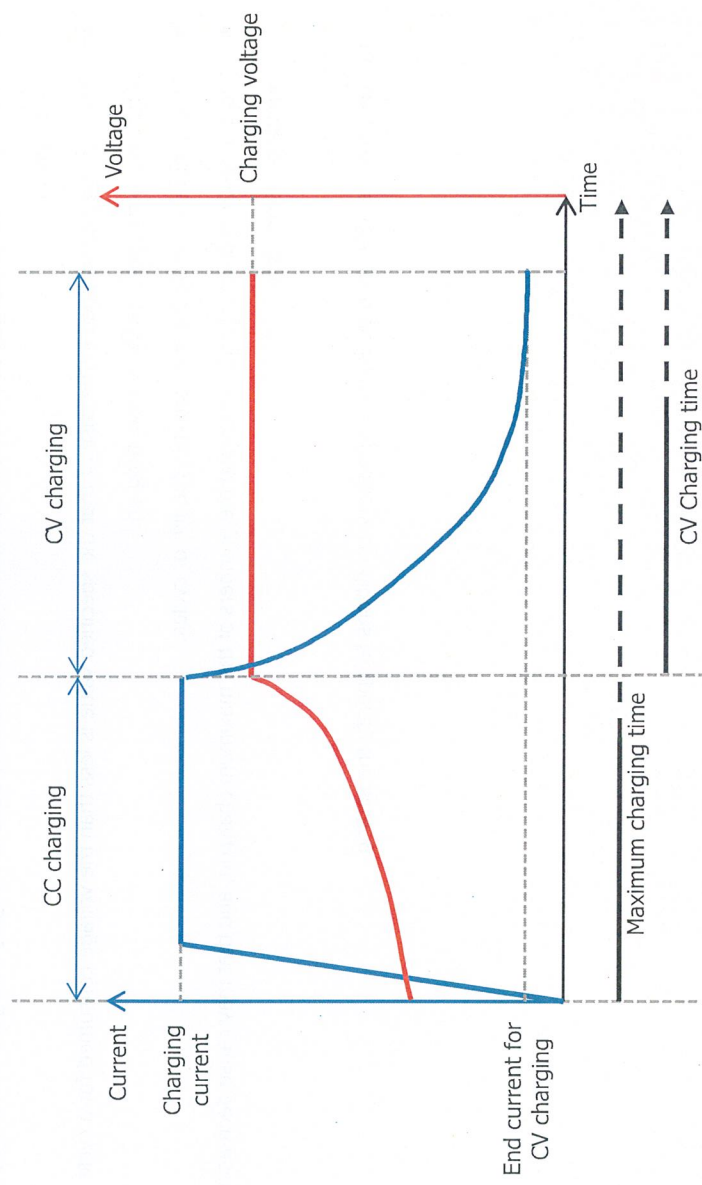
Follow a catalog or a manual of the battery to decide and set an appropriate value.

12.6. Threshold current in CV charging

Specified the threshold current (A) to be used to stop charging after it has switched to CV charging as a decimal between 3A and 60A. It is available only for Constant Current and Constant Voltage (CCCV) charging. When the charging current fall below the specified value in CV charging, charging will stop. Follow a catalog or a manual of the battery to decide and set an appropriate value.

Constant Current and Constant Voltage (CCCV) charging will be stopped when either that the maximum charging time is expired, that the CV charging time is expired or that the charging current fall below the specified value.

The figure below illustrates the relation between the maximum charging time, CV charging time and the Threshold current in CV charging.



12.7. Maximum measurement voltage

Specify the maximum level of voltage to measure remaining battery level to output to AGV as a decimal value between 1V and 60V. This parameter is necessary only for D-Broad CORE. Since the voltage level varies depending on the battery, follow a catalog or a manual of the battery to decide and set an appropriate value.

12.8. Minimum measurement voltage

Specify the minimum level of voltage to measure remaining battery level to output to AGV as a decimal value between 1V and 60V. This parameter is necessary only for D-Broad CORE. Since the voltage level varies depending on the battery, follow a catalog or a manual of the battery to decide and set an appropriate value. The value specified here must be the lowest level of voltage at which AGV can be operable. Refer to the specifications of AGV.

12.9. Restart charging voltage

Specify the voltage (V) to restart charging as a decimal value between 1V and 60V. It is available only for auto charge mode. Charging will be restarted automatically when the battery voltage falls below the specified value. If not, auto charge will not be started.

This parameter may affect the AGV operations or the battery life.

According to the value,

- The battery will be charged all the time in the case of that the value is close to charging voltage, and that may cause overcharging.
- The AGV may be stopped in the case of that the specified value is less than the voltage consumed for a cycle returning to the place of the transmitting unit.
- More a number of charge may shorten the life of cycles.
- More a depth of discharge may decrease the numbers of the maximum charging, and that may cause decreasing the numbers of the cycles.

Carefully consider AGV operations and the battery conditions to specify the setting.

15. Frequently asked questions

Q1. Regardless of which COM port I select, "Connection error" is always displayed.

A1. Has CP210xUSB driver been installed?

If CP210xUSB driver has not been installed, disconnect the USB cable connecting your laptop and D-Broad and install the driver.

Q2. "Password incorrect" is displayed.

A2. The password you put is incorrect. Put correct one.

The password could have been changed by the administrator. Contact the correct password.

Q3. Usage ratio will be changed when I change a parameter by this software.

A3. For your safety, usage ratio will automatically be set to the calculated value when you change "Current".

Q4. I need to reset all parameters to the value at delivery.

A4. Since we set them at the factory according to your individual specifications and ship it, you may not be able to reset by yourself. Please contact our sales staff first.

Q5. There are various kinds of parameters, and I do not understand well.

A5. Please contact our sales staff before you set parameters by yourself.
