

Panasonic

Service guide

MAINTENANCE SYSTEM FOR ELECTRIC BICYCLES

Centre driving unit
ENGLISH
For Dealers



Before use, please read this Service guide carefully.
© Panasonic Cycle Technology Co., Ltd. 2014

Contents

Before starting use	3	[Console] screen	22
Caution.....	3	Flow of operations.....	22
Precautions for use	3	[Console] screen	22
Trademarks and licenses	3	[Settings] tab	24
Outline	4	[Operation check] tab.....	25
Introduction	4	[Control unit (Motor unit)] screen	26
Compatible model.....	4	Flow of operations.....	26
Operating environment.....	4	[Battery] screen	29
Connection diagram	4	Flow of operations.....	29
Installing the Application	5	[Battery] screen	29
Operation Methods	7	[Device info] tab	30
Flow of operations.....	7	Other	30
Connection Method	8	Version information display	30
Start-up method	10	How to exit the application	30
Explanation of main screen.....	12	Diagnostic results list	31
Diagnosing the drive unit.....	13	[Console] diagnostic results list.....	31
Delete error	14	[Control unit (Motor unit)] diagnostic results list	33
Saving diagnostic results	15	[Battery] diagnostic results list.....	36
Clearing diagnostic results.....	15		
Reading diagnostic results.....	15		
Printing diagnostic results	16		
Starting up the mailer.....	17		
Electric bicycles system update	17		
Maintenance System update.....	18		
Updating the connection to the electric bicycles	18		
Settings	19		
Flow of operations.....	19		
Starting up the setting screen	19		
Setting the diagnostic results save directory.....	20		
Print settings	21		
Network settings.....	21		
Language settings.....	21		

Before starting use

Caution

Keep the USB authentication key out of reach of infants.

Accidentally swallowing it may cause injuries.

- Seek the advice of a doctor immediately if it has been swallowed.

Precautions for use

Operation cannot be guaranteed under the following usage scenarios as there is the possibility of malfunction.

- If multiple Micro USB cables are connected to a single PC
- If the USB authentication key or Micro USB cable are handled with wet hands
- If a cable other than the dedicated Micro USB cable is used
- If a damaged USB authentication key or Micro USB cable is used

Trademarks and licenses

- Microsoft, Windows and Windows Vista are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.
- Intel® is a trademark of Intel Corporation in the United States and other countries.
- Other names, company names, and product names mentioned in these instructions are trademarks or registered trademarks of the companies concerned.
- Unauthorised reproduction of this software is prohibited.

Outline

Introduction

The MAINTENANCE SYSTEM FOR ELECTRIC BICYCLES application runs on a PC connected to the electric bicycles to diagnose the drive unit, update the firmware, and perform other operations.

This application can be used by connecting the PC to the console on the electric bicycles by the Micro USB cable (Type B plug - Standard A plug) (supplied) and connecting the USB authentication key (supplied) to the PC.

- Pages to be referred to are shown as (→00).

Compatible model

Centre driving unit (with USB port type)

Front hub driving unit (with USB port type)

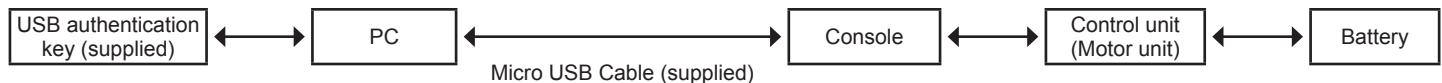
Operating environment

(current as of July 2014)

CPU	Recommend Intel® Core™2 Duo or above
OS	Microsoft® Windows Vista® SP2 (32/64 bit) Microsoft® Windows® 7 SP1 (32/64 bit) Microsoft® Windows® 8 (32/64bit)
Memory	OS 32 bit: 1 GB or more, OS 64 bit: 2 GB or more
Interface	IBM® PC/AT compatible machine with USB2.0 port
HDD	At least 10 GB of free space
Display	Colour: 32 bit Resolution: XGA (1024 x 768) or more Multi-monitor: Only primary monitor supported
User account	Administrator privileges required
Name of software	MAINTENANCE SYSTEM FOR ELECTRIC BICYCLES
Authentication key	Dedicated USB authentication key (supplied)
Connection Cable	Dedicated Micro USB cable (Type B plug - Standard A plug) (supplied)

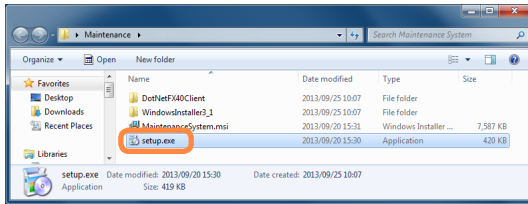
- Even if the system requirements mentioned in these operating instructions are fulfilled, some PCs cannot be used.
- Operation cannot be guaranteed under an OS that the application is not compatible with.
- Operation on an upgraded OS is not guaranteed.
- Operation cannot be guaranteed on a PC that a customer has assembled by themselves.

Connection diagram

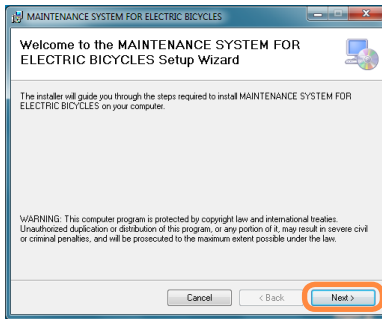


Installing the Application

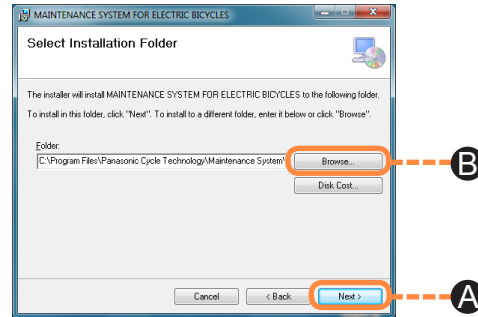
- 1 Insert the CD-ROM (supplied) into the computer drive, and open Explorer.
- 2 Click [Maintenance].
- 3 Double click [setup.exe].
 - In some operating systems, the “User Account Control” screen is sometimes displayed. If it is displayed, select [Yes].



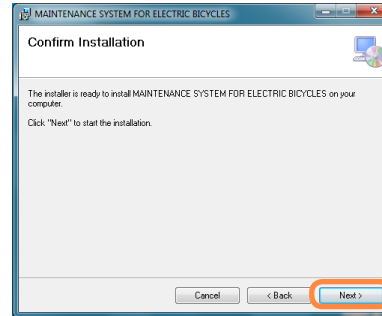
- 4 Click [Next].



- 5 Click [Next] (A).
 - To change the installation directory, click [Browse] (B) and select the directory.

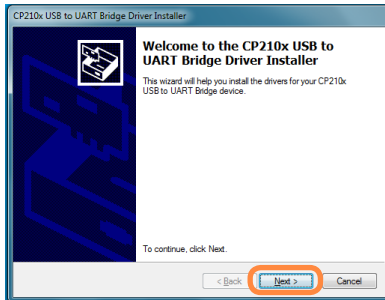


- 6 Click [Next].

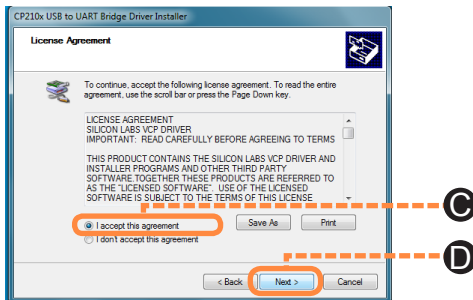


Installing the Application

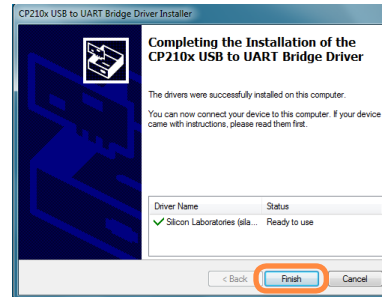
7 Click [Next].



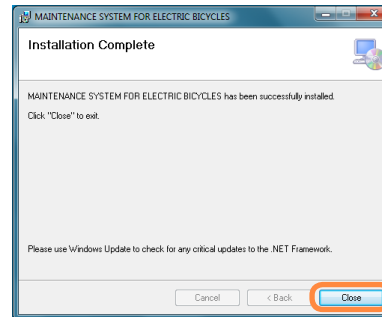
8 When accepting the licensing agreement for the first time, select [I accept this agreement] (C), and click [Next] (D).



9 Click [Finish].



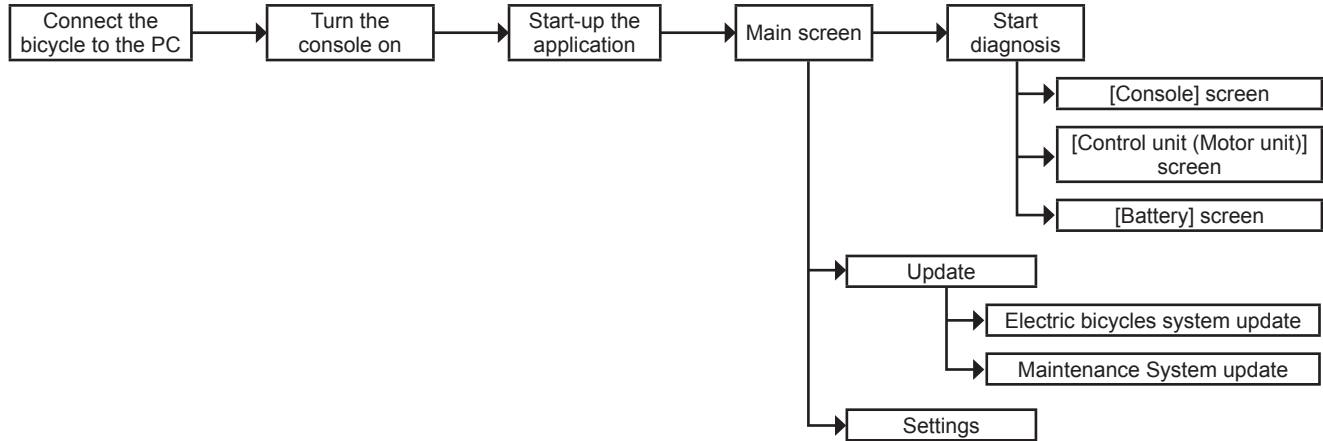
10 This completes installation. When the following screen is displayed, click [Close].



Operation Methods

Flow of operations

Diagram - Flow of operations



Tips

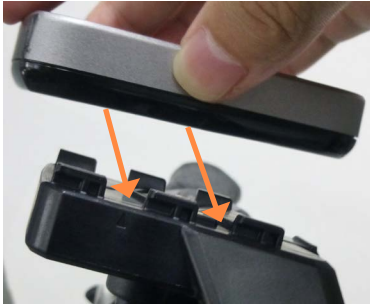
- The console screen, control unit screen (motor unit) and battery screen run by starting up diagnostics.
- The Maintenance System update is run automatically when the application is started up.

Operation Methods

Connection Method

■ Centre LCD type connection method

- 1 Install with the display unit aligned with the concave and convex sections of the cradle.



- 2 Open the rubber cap on the bottom of the display unit.



- 3 Connect the PC to the display unit by the Micro USB cable (supplied), and press the power button on the display unit.



Requests

Always close the cap of the USB authentication key and rubber cap of the display unit after exiting the application.

Operation Methods

■ Side LCD type connection method

- 1 Open the rubber cap on the right side of the console.



- 2 Connect the PC to the console by the Micro USB cable (supplied), and press the power button on the console.



Requests

Always close the cap of the USB authentication key and rubber cap of the console after exiting the application.

■ Side LED type connection method

- 1 Open the rubber cap on the right side of the console.



- 2 Connect the PC to the console by the Micro USB cable (supplied), and press the power button on the console.

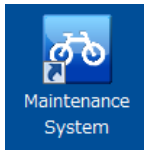


Requests

Always close the cap of the USB authentication key and rubber cap of the console after exiting the application.

Start-up method

- 1 Double click the [Maintenance System] icon on the desktop.



Tips

- Before starting the application, check the connection between the PC and the console.

- 2 Connect the USB authentication key (supplied), and click [OK].



Display when authentication fails



Tips

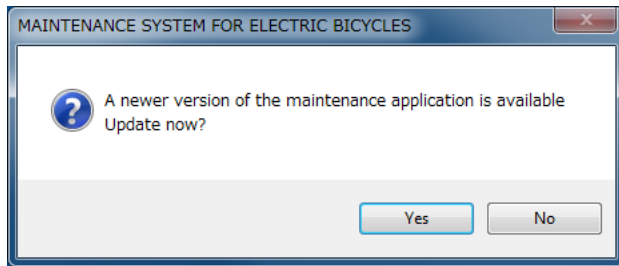
- If the USB authentication key is not recognized, reconnect the USB, wait for a few moments and then restart.

Operation Methods

■ If this screen is displayed

Click [Yes] and perform updates.

For the update method, refer to “Maintenance System update (→18)”.



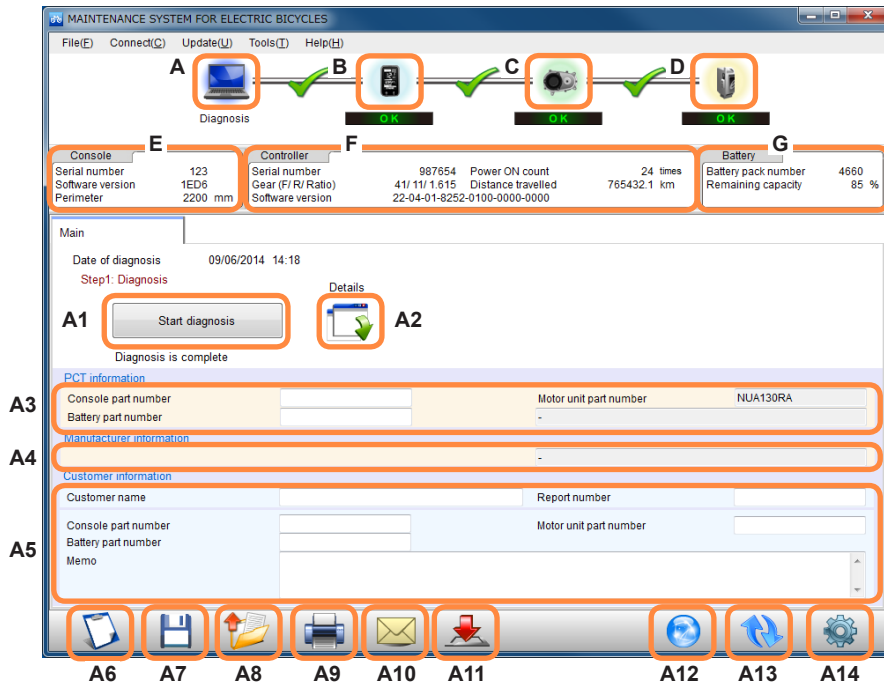
Tips

- To turn off the automatic update confirmation function when starting up the application, refer to “Start-up update confirmation (→21)”.

Operation Methods

Explanation of main screen

In this screen, compensation decision and failure diagnosis can be saved and read after trouble is diagnosed.



- A [Main screen] icon (→12)
- B [Console] icon (→22)
- C [Control unit (Motor unit)] icon (→27)
- D [Battery] icon (→29)
- E [Console] device information
- F [Control unit (Motor unit)] device information
- G [Battery] device information
- A1 [Start diagnosis] button (→13)
- A2 [Diagnostic results redisplay] button
- A3 Maker information
- A4 Manufacturer information (not displayed for 2013 model)
- A5 Customer information input field
- A6 [Clear] button (→15)
- A7 [Save diagnostic results] button (→15)
- A8 [Read diagnostic results] button (→15)
- A9 [Print] button (→16)
- A10 [Mail] button (→17)
- A11 Bicycle update button (→17)
- A12 Application update button (→18)
- A13 [Update] button (→18)
- A14 [Settings] button (→19)


Tips

- The numbers of the icons are used in later descriptions.

Diagnosing the drive unit

Diagnose trouble on the drive unit.

Click the [Start diagnosis](A1) button.

- Diagnosis can also be performed by selecting [Tools] → [Diagnosis] on the menu.
- Failure diagnosis results can be checked again by clicking the  (A2).

■ Diagnosis result

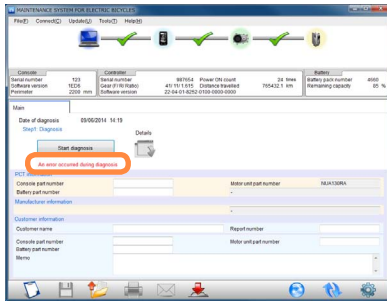
- [OK] is displayed if the diagnostic result is normal.
- [ERROR], [CHECK] or [WARNING] is displayed if judgment ends in error.

For details, refer to “Diagnostic results list (→31)”.

Operation Methods

If the power is turned off before pressing the start diagnosis button, or the Micro USB cable is removed, [An error occurred during diagnosis] is displayed.

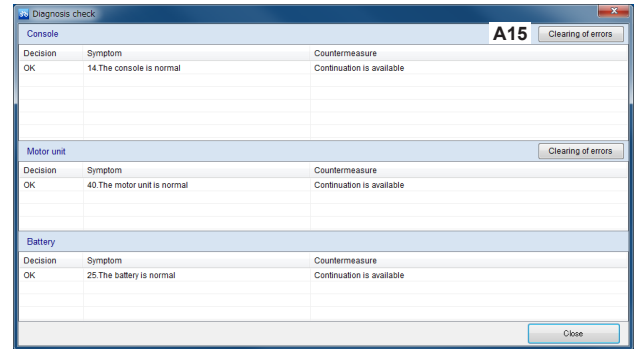
If this happens, check the Micro USB cable connection or the console power, and perform “Updating the connection to the electric bicycles (→18)”.



Delete error

If ERROR, CHECK or WARNING is displayed in the Diagnostic results, the error can be deleted using [A15].

A15 [Delete error] button



Tips

- On certain models, it will not be possible to delete errors.
- It is not possible to delete fatal operation-related errors.

Operation Methods

Saving diagnostic results

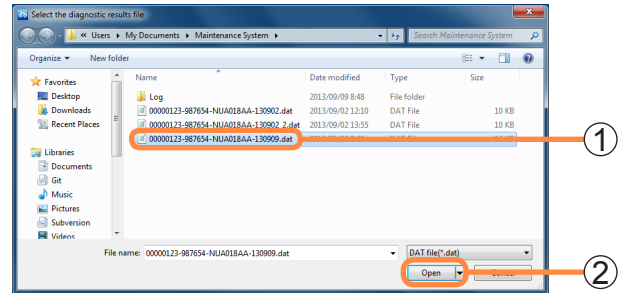
- 1 Click [💾] (A7).
 - Diagnostic results can also be saved by selecting [File] → [Save diagnostic results] on the menu.
- 2 Click [OK] to save.
 - To change the save directory, refer to “Setting the diagnostic results save directory (→20)”.

Clearing diagnostic results


Click [🗑️] (A6) to clear the entire display.

Reading diagnostic results

- 1 Click [📄] (A8).
 - Diagnostic results can also be read by selecting [File] → [Read diagnostic results] on the menu.
- 2 Select the file (①) to read, and click [Open] (②).



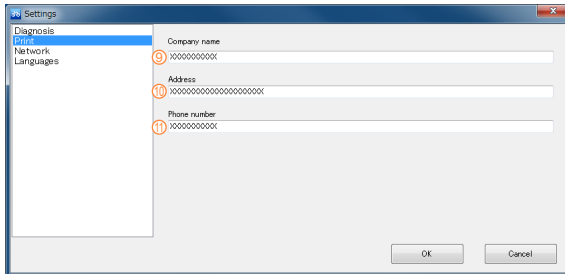
Printing diagnostic results

- 1 Click  (A9).
 - Diagnostic results can also be printed by selecting [File] → [Print] on the menu.
- 2 When the print details screen is displayed, set the print format, and click [OK].
- 3 Details will be printed as follows. Entered details will be printed in positions with the same corresponding number.

Customer details entry box at bottom of main screen

PCT information			
Console part number	① XXXX	Motor unit part number	NUA001RA
Battery part number	② XXXX		
Manufacturer information			
Customer information			
Customer name	③ XXXXXXXXXXXX	Report number	④ XXX
Console part number	⑤ XXXX	Motor unit part number	⑥ XXX
Battery part number	⑦ XXXX		
Memo	⑧ XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX		

Settings screen (Print)



Settings

Diagnosis

Print

Network

Languages

Company name

⑨ XXXXXXXXXXXX

Address

⑩ XXXXXXXXXXXXXXXXXXXXXXXX

Phone number

⑪ XXXXXXXXXXXX

OK Cancel

Printed results (shared)

③ XXXXXXXXXXXX Version 3.0.0.0

Electric Bicycle Inspection Result ④ No. XXXX
2014/06/09 ⑨ XXXXXXXXXXXX
⑩ XXXXXXXXXXXXXXXXXXXXXXXX ⑪ XXXXXXXXXXXX

Measured Date 2014/06/09 9:38

Console **Result : OK**
Symptom 14. The console is normal
Countermeasure Continuation is available

⑤ XXXX **Parts Number :** XXXX **PCT Parts Number :** XXXX
⑥ XXXX **Product Date :** 2015/06/05 **Serial Number :** 123

Motor Unit **Result : OK**
Symptom 40. The motor unit is normal
Countermeasure Continuation is available

⑥ XXXX **Parts Number :** XXXX **PCT Parts Number :** NUA130RA
Product Date : 2012/10/22 **Serial Number :** 987654
Total Distance : 765432.1 km **Power ON Times :** 24 times

Battery **Result : OK**
Symptom 25. The battery is normal
Countermeasure Continuation is available

⑦ XXXX **Parts Number :** XXXX **PCT Parts Number :** XXXX
Design Capacity : 39 mAh **Number of full charges :** 33333 times

⑧ XXXXXXXXXXXX
XXXXXXXXXXXX
XXXXXXXXXXXX

Inspected by X

Starting up the mailer

This function starts up the mailer.

Click [] (A10).

- The screen can also be displayed by selecting [Tools] → [Mail] on the menu.

If the diagnostic results are displayed at “Reading diagnostic results (→15)”, those diagnostic results are attached to a mail.

Electric bicycles system update

This function keeps the software being used by your electric bicycle updated to the latest version.

Click [] (A11) when there are communications between the PC and the electric bicycle.

- The screen can also be displayed by selecting [Update] → [Update to the latest bicycle conditions] on the menu.

Requests

Do not remove the USB cable or press the console buttons during the update.

Tips

- The update will take several minutes.

■ Methods to deal with update failures

The control unit (motor unit) may not operate correctly if there is a failure while updating due to the console power turning off or the Micro USB cable being removed when performing “Electric bicycles system update”.

If this happens, use the following methods to deal with the failure.

1 Check the Micro USB cable connection and the console power, and click [] (A13).

■ If the console update fails

2 The [Upgrade the console switch software] dialogue box is displayed.

■ If the control unit (motor unit) update fails

2 The [Upgrade the motor unit software] dialogue box is displayed.

3 Click [] (A11).

Operation Methods

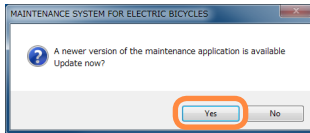
Maintenance System update

This function connects to the internet and keeps the application updated to the latest version.

1 Click [🌐] (A12).

- Updates can also be checked by selecting [Update] → [Diagnosis software update] from the menu bar.

2 Click [Yes] if updates can be performed.



3 The update is started.

Tips

- Use a PC in an area where the internet can be used.

Updating the connection to the electric bicycles

This function is for performing failure diagnosis continuously.

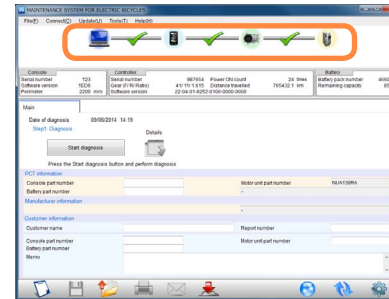
Connect the console to be failure-diagnosed next to the PC, and click [🔄] (A13).

- The connection can also be made by selecting [Connect] → [Reconnect] on the menu.

Tips

- Do not connect the console of two or more bicycles to the PC.
- The screen can also be updated with the F5 key.

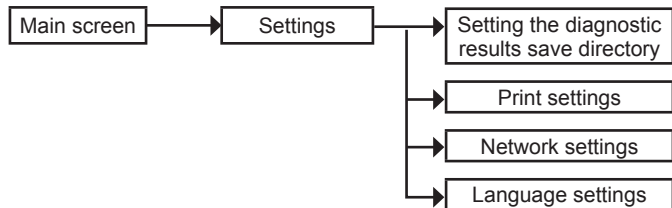
When the connection is successfully made, [✅] is displayed. In this state, diagnostics and other various functions can be used.



Settings

Flow of operations

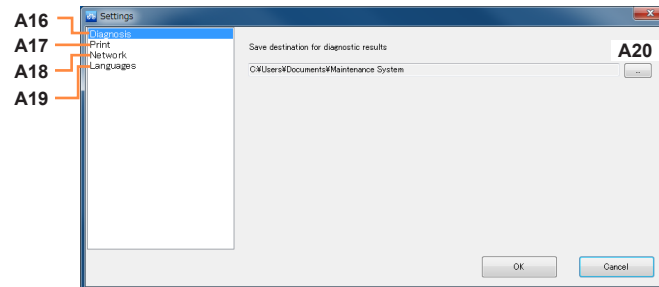
Diagram - Flow of operations in setting screen



Starting up the setting screen

Click [⚙️] (A14).

- The screen can also be displayed by selecting [Tools] → [Settings] on the menu.



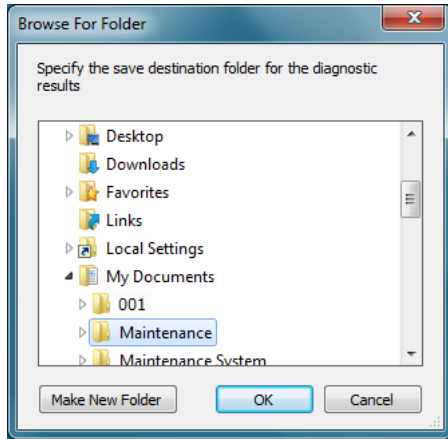
- A16 Diagnosis (→20)
- A17 Print (→21)
- A18 Network (→21)
- A19 Languages (→21)
- A20 [Browse] button

Tips

- The numbers of the icons are used in later descriptions.

Setting the diagnostic results save directory

- 1 Click [A16 Diagnosis] and click [A20/ ...].
- 2 Specify the save destination folder, and click [OK].



- 3 Click [OK].
 - This completes setting of the save directory.

Settings

Print settings

Click [A17 Print].

- Only single-byte alphanumeric characters can be entered.

Network settings

Proxy settings

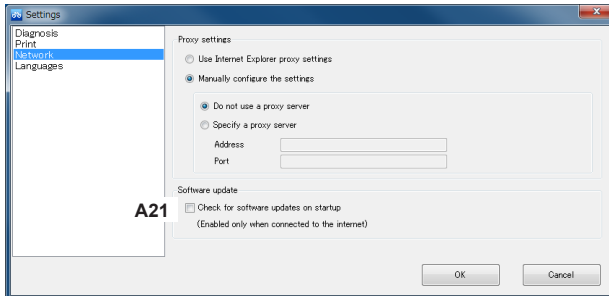
Click [A18 Network] to change the proxy settings.

Requests

- Change this setting only if a proxy server is used.
- This should be run by the system administrator.

Start-up update confirmation

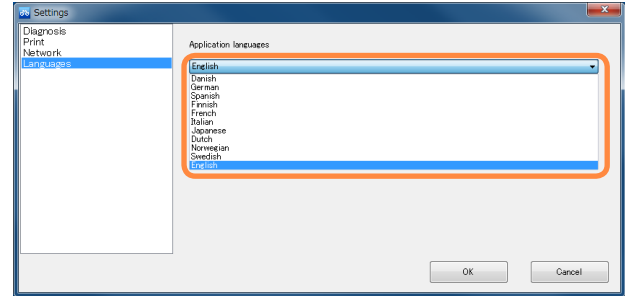
Deselect the [A21 Check for software updates on startup] checkbox if you do not want Maintenance System updates to be checked when the system starts up.



Language settings

1 Click [A19 Languages].

2 Select a language from the list on the right.



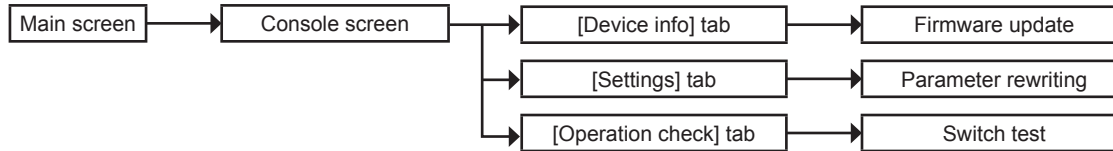
3 Click [OK].

- Restarting the application completes setting of the language.

[Console] screen

Flow of operations

Diagram - Flow of operations in console screen

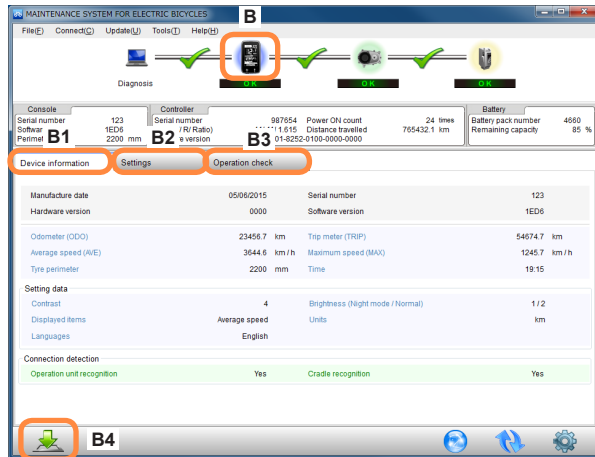


Tips

- Before entering the console screen, perform failure diagnosis.
- The [Settings] tab is not displayed for the side LED switch.

[Console] screen

In this screen, the console can be updated, the settings changed and the operation checked.




- B [Console] icon
- B1 [Device info] tab
- B2 [Settings] tab
- B3 [Operation check] tab
- B4 [Console firmware update] button

Tips

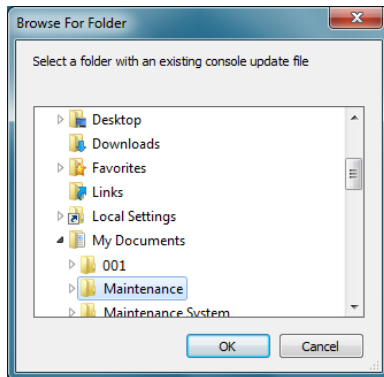
- The displayed content may differ depending on the model.
- The numbers of the icons are used in later descriptions.

■ Firmware update

1 Click [] (B4) to display the folder browse screen.

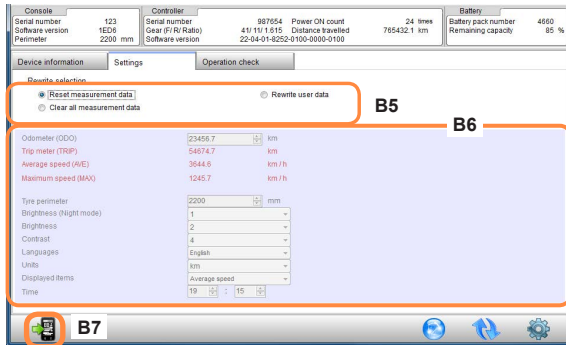
- The screen can also be displayed by selecting [Update] → [Firmware update] → [Console] on the menu.

2 Select the folder containing the firmware, and click [OK].



The [Settings] tab is not displayed for the side LED switch.

Click [B2 Settings].



- B5 Selection of rewrite item
- B6 Setup parameters
- B7 [Write] button

How to rewrite console data

Select the item to rewrite from the [B5 Selection of rewrite item], set a value using [B6 Setup parameters], and click [B7 Write].

Tips

- The rewritable portion is displayed in red.
- The numbers of the icons are used in later descriptions.

[Console] screen

[Operation check] tab

Click [B3 Operation check].

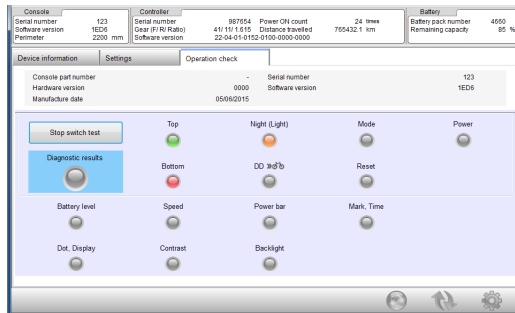
■ Switch test

Test to see if there are any abnormalities in console buttons and display.

1 Click [Switch test].

2 Press the switch on the main unit corresponding to the switch that is flashing in orange.

● If the switch is successfully recognised, the switch test item is displayed in green. If it is not successfully recognised, the item lights up in red.

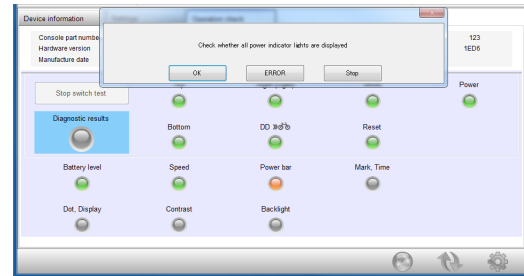


In the following cases, the item lights up in red and the system moves on to the next test.

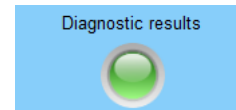
- The wrong switch is pressed 3 times
- No switch is pressed for 5 seconds

3 Check items currently displayed in the dialogue box in the console screen.

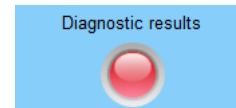
4 Click [OK].



If the Diagnostic results are normal the lamp lights up in green.



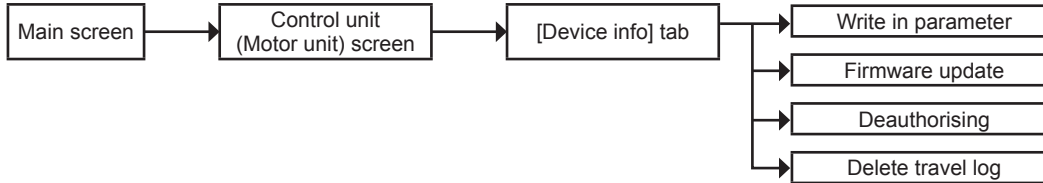
If the Diagnostic results are abnormal the lamp lights up in red.



[Control unit (Motor unit)] screen

Flow of operations

Diagram - Flow of operations in control unit (motor unit) screen



Tips

- Before entering the control unit (motor unit) screen, perform failure diagnosis.
- The displayed content may differ depending on the model.

[Control unit (Motor unit)] screen

In this screen, the control unit (motor unit) can be updated and the travel log can be deleted.

MAINTENANCE SYSTEM FOR ELECTRIC BICYCLES

File(E) Connect(C) Update(U) Tools(T) Help(H)

Diagnosis

OK OK OK

Console Controller Battery

Serial number 123 987654 Power ON count 24 times
Software version 1ED6 Gear (F/R/Ratio) 41/11/1.615 Distance travelled 765432.1 km
Perimeter 2200 mm Software version 22-04-01-8252-0100-0000-0000 Battery pack number 4660
Remaining capacity 85 %

C1

Device information

Manufacture date	22/10/2012	Software version	22-04-01-8252-0100-0000-0000
Unit number	NUA130RA	Serial number	987654
Perimeter	2200 mm	Gear (F/R/Ratio)	41/11/1.615
Power ON count	24 times		
Operating time	617283.5 min		
Travel distance	765432.1 km		
FET3 maximum temperature	69 °C	FET6 maximum temperature	54 °C
Motor maximum temperature	97 °C		

C2 C3 C4 C5

- C [Motor unit (Control unit)] icon
- C1 [Device info] tab
- C2 [Write in parameter] button
- C3 [Motor unit firmware update] button
- C4 [Deauthorising] button
- C5 [Delete travel log] button

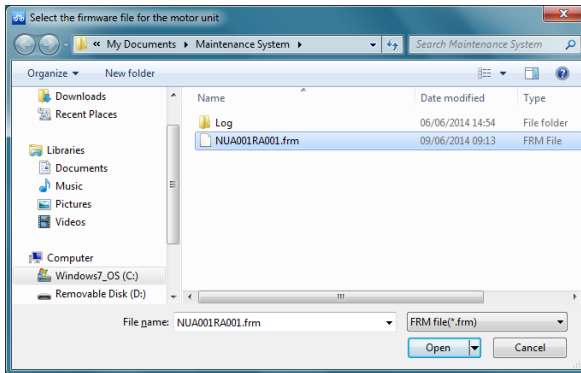
Tips

- The displayed content may differ depending on the model.
- The numbers of the icons are used in later descriptions.

[Control unit (Motor unit) screen

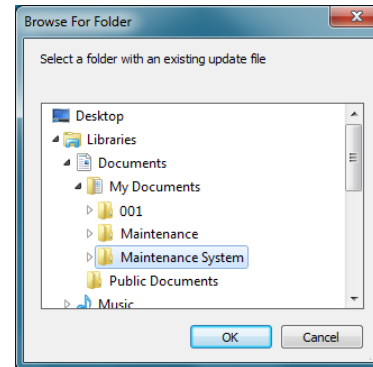
■ How to rewrite control unit (motor unit) parameters

Click  (C2), select an frm file, and click [Open].



■ How to update the control unit (motor unit)

Click  (C3), and select the folder containing the firmware and click [OK].



■ How to deauthorise the console and control unit (motor unit)

Click  (C4).

- This function is not currently available.

■ Delete travel log

Click  (C5).

Restore travel log to factory default settings.

[Battery] screen

Flow of operations

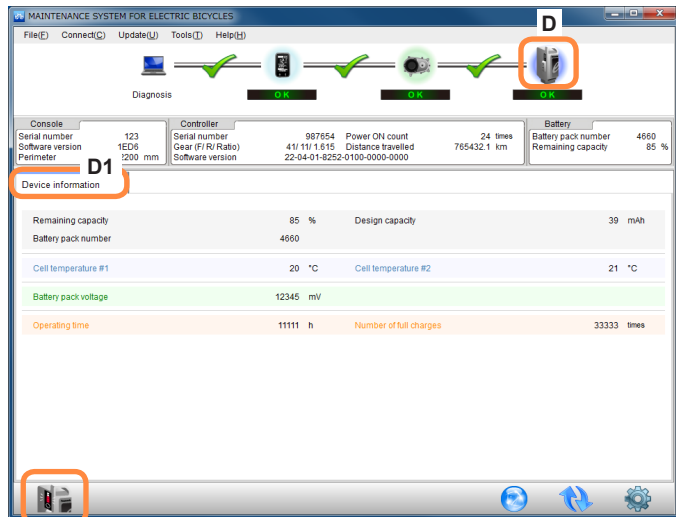
Diagram - Flow of operations in battery screen



Tips

- Before entering the battery screen, perform failure diagnosis.

[Battery] screen



- D [Battery] icon
- D1 [Device info] tab
- D2 [The battery LED lights up] button

Tips

- The numbers of the icons are used in later descriptions.

D2

[Battery] screen

[Device info] tab

Click the [D1 Device info] tab.

- In this screen, the battery device information can be viewed.

■ How to light the battery LED

Click  (D2).

Other

Version information display

Click [Help] → [About] on the menu.

How to exit the application

Click [File] → [Exit] on the menu.

Diagnostic results list

This is a detailed list of diagnostic results displayed at “Diagnosing the drive unit (→13)”.

[Console] diagnostic results list

Judgment	Symptom	Countermeasure
ERROR	1. Failed to update the firmware	1. Update the console software again using the maintenance application 2. Replace the console
ERROR	2. An internal failure has occurred in the console	Replace the console
ERROR	3. A past internal failure has been detected in the console	Replace the console
ERROR	4. An authentication error has occurred between the console and the motor unit (Centre LCD switch)	1. Check the motor unit for a malfunction 2. Check the connection cable between the console and the motor unit 3. Check for dirt on the cradle contact or the display unit contact 4. Check the combination of the display unit and the motor unit (If the display unit has been replaced, perform the authentication reset process) 5. Replace the console
ERROR	4. An authentication error has occurred between the console and the motor unit (Other than centre LCD switch)	1. Check the motor unit for a malfunction 2. Check the connection cable between the console and the motor unit 3. Replace the console
ERROR	5. A communication error has occurred between the console and the motor unit (Centre LCD switch)	1. Check the connection cable between the console and the motor unit 2. Check for dirt on the cradle contact or the display unit contact 3. Replace the console
ERROR	5. A communication error has occurred between the console and the motor unit (Other than centre LCD switch)	1. Check the connection cable between the console and the motor unit 2. Replace the console
ERROR	6. The DD switch button is pushed or there is a short circuit in the DD switch	1. Check that the DD switch is not pushed, and cycle the power 2. Replace the console
CHECK	7. The button battery is dead	1. Replace the button battery, and configure the clock settings 2. Replace the console
CHECK	8. Average speed calculation has failed	Reset the odometer

Diagnostic results list

Judgment	Symptom	Countermeasure
CHECK	9. There is evidence that the software update process has failed in the past	Continuation is available
CHECK	10. A past connection error for an unsupported USB device has been detected	Continuation is available
CHECK	11. A past authentication error between the console and the motor unit has been detected	Continuation is available
CHECK	12. A past communication error between the console and the motor unit has been detected (Centre LCD switch)	1. Check the connection cable between the console and the motor unit 2. Check for dirt on the cradle contact or the display unit contact
CHECK	12. A past communication error between the console and the motor unit has been detected (Other than centre LCD switch)	Check the connection cable between the console and the motor unit
CHECK	13. There is past evidence that power has been supplied with the DD button pushed	Continuation is available
OK	14. The console is normal	Continuation is available

Diagnostic results list

[Control unit (Motor unit)] diagnostic results list

Judgment	Symptom	Countermeasure
ERROR	1. A communication failure with the motor unit has occurred	1. Check the connection cable between the console and the motor unit 2. Replace the motor unit or the console
ERROR	2. There is a problem with the firmware	1. Update the firmware again 2. Replace the motor unit
WARNING	2. There is a problem with the firmware	1. Update the firmware again
WARNING	2. There is a problem with the firmware	1. Update the firmware again
ERROR	3. Abnormalities in the setting values of the motor unit have occurred	Replace the motor unit
ERROR	4. Abnormalities in the setting values of the motor unit have occurred	Replace the motor unit
ERROR	5. Torque sensor failure has occurred	Replace the motor unit
ERROR	6. Torque sensor failure has occurred	Replace the motor unit
ERROR	7. Torque sensor failure has occurred	Replace the motor unit
ERROR	8. Failure of the motor unit rotation sensor has occurred	Replace the motor unit
ERROR	9. A circuit failure has occurred	Replace the motor unit
ERROR	10. A circuit failure has occurred	Replace the motor unit
ERROR	11. A failure has occurred in the temperature detection component	Replace the motor unit
ERROR	12. A failure has occurred in the temperature detection component	Replace the motor unit
ERROR	13. Abnormalities in the setting values of the motor unit have occurred	Replace the motor unit
ERROR	14. Torque sensor failure has occurred	Replace the motor unit
ERROR	15. Torque sensor failure has occurred	Replace the motor unit
ERROR	16. Torque sensor failure has occurred	Replace the motor unit
ERROR	17. Failure of the motor unit rotation sensor has occurred	Replace the motor unit
ERROR	18. A circuit failure has occurred	Replace the motor unit

Diagnostic results list

Judgment	Symptom	Countermeasure
ERROR	19.A circuit failure has occurred	Replace the motor unit
ERROR	20.A circuit failure has occurred	Replace the motor unit
CHECK	21.Torque sensor failure has occurred	1. Do not step on the pedal when turning the power ON 2. Replace the motor unit
CHECK	22.Torque sensor failure has occurred	1. Do not step on the pedal when turning the power ON 2. Replace the motor unit
CHECK	23.An authentication error has occurred between the battery and the motor unit	1. Check the battery connection cable 2. Replace the battery 3. Replace the motor unit
CHECK	24.An communication error has occurred between the battery and the motor unit	1. Check the battery connection cable 2. Replace the battery 3. Replace the motor unit
CHECK	25.A communication error has occurred between the console and the motor unit	1. Check the console connection cable 2. Replace the console
CHECK	26.A communication error has occurred between the speed sensor and the motor unit	1. Check the speed sensor connection cable 2. Replace the speed sensor
CHECK	27.A past authentication error between the battery and the motor unit has been detected	Continuation is available
CHECK	28.A past communication error between the battery and the motor unit has been detected	Continuation is available
CHECK	29.The motor unit has reached the temperature limit in the past	Continuation is available
CHECK	30.The motor unit has reached the temperature limit in the past	Continuation is available
CHECK	31.The battery has reached the temperature limit in the past	Continuation is available
CHECK	32.The battery has reached the temperature limit in the past	Continuation is available
CHECK	33.A past communication error between the console and the motor unit has been detected	Continuation is available

Diagnostic results list

Judgment	Symptom	Countermeasure
CHECK	34.A past communication error between the speed sensor and the motor unit has been detected	Continuation is available
WARNING	35.A past short circuit in the switch wiring has been detected	Continuation is available
WARNING	36.A past malfunction in the crank rotation sensor has been detected	Continuation is available
WARNING	37.The battery voltage is low	Continuation is available
WARNING	38.The battery voltage is low	Continuation is available
WARNING	39.There is evidence that the power has been turned ON while the pedal was being stepped on in the past	Without stepping on the pedal, push the power button and supply power
OK	40.The motor unit is normal	Continuation is available
WARNING	44.Failed to process the vehicle settings	Process the manufacturer's vehicle settings again

Diagnostic results list

[Battery] diagnostic results list

Judgment	Symptom	Countermeasure
ERROR	1. Information cannot be obtained because of an interruption between the console and the motor unit	1. Check the connection cable between the console and the motor unit 2. Replace the motor unit or the console
ERROR	2. Communication between the motor unit and the battery is not established	1. Rewrite if there is a problem with the motor unit firmware 2. Check the connection cable between the motor unit and the battery 3. Replace the battery 4. Replace the motor unit
ERROR	3. There is a malfunction in the battery circuit board	Replace the battery
ERROR	4. There is a malfunction in the battery circuit board	Replace the battery
ERROR	5. There is a malfunction in the battery circuit board	Replace the battery
ERROR	6. There is a malfunction in the battery circuit board	Replace the battery
ERROR	7. There is a malfunction in the battery circuit board	Replace the battery
ERROR	8. There is a malfunction in the battery circuit board	Replace the battery
ERROR	9. Normal charging is impossible due to degradation of the cell	Replace the battery
ERROR	10. Normal charging is impossible due to degradation of the cell	Replace the battery
ERROR	11. There is a malfunction in the battery circuit board	Replace the battery
ERROR	12. There is a malfunction in the battery circuit board	Replace the battery
CHECK	13. A past abnormal current during discharge has been detected	Continuation is available
CHECK	14. A past abnormal current during discharge has been detected	Continuation is available
CHECK	15. A past abnormal current during charging has been detected	Continuation is available
CHECK	16. A past abnormal current during charging has been detected	Continuation is available
CHECK	17. A past abnormal current during charging has been detected	Continuation is available
CHECK	18. There is evidence of high-temperature usage in the past	Continuation is available

Diagnostic results list

Judgment	Symptom	Countermeasure
CHECK	19. There is evidence of high-temperature usage in the past	Continuation is available
CHECK	20. There is evidence of high-temperature usage in the past	Continuation is available
CHECK	21. A past authentication failure with the charger has been detected	Continuation is available
CHECK	22. There is evidence of high-temperature (low-temperature) usage in the past	Continuation is available
OK	23. The battery is normal	Continuation is available
OK	24. The battery is normal	Continuation is available
OK	25. The battery is normal	Continuation is available