Interface sheet - Cortex Metasoft Studio - CPET ergometer

Service documentation

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1 - List of symbols used

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2 - Validity

This interface form covers:

* Corival ergometers with article number 906900 and 960900
* Excalibur ergometers with article number 925900, 925909, 965910 and 965920
* Angio ergometers with article number 917900 and 967900
* Pediatric ergometers with article number 903900 and 960903
* Recumbent ergometers with article number 929900 and 969900

If your ergometer is not covered by this interface form please contact Lode service: service@lode.nl

3 - Installation

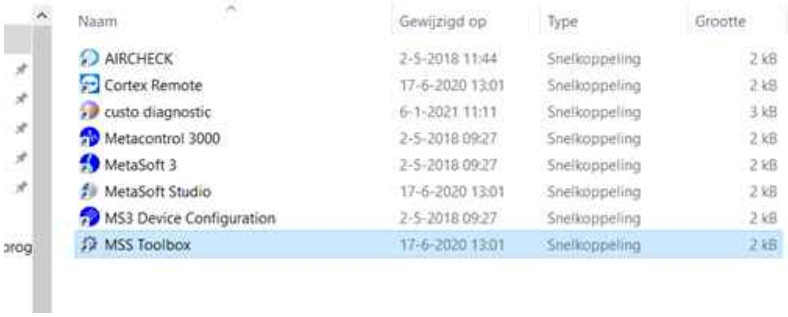
3.1 - Cable Selection

The required cable is a USB A-B cable (Lode art. nr. 930916)

Connect the cable to the ergometer as described in chapter "Hardware setup".
Connect the usb cable to the computer and let Windows install the drivers.

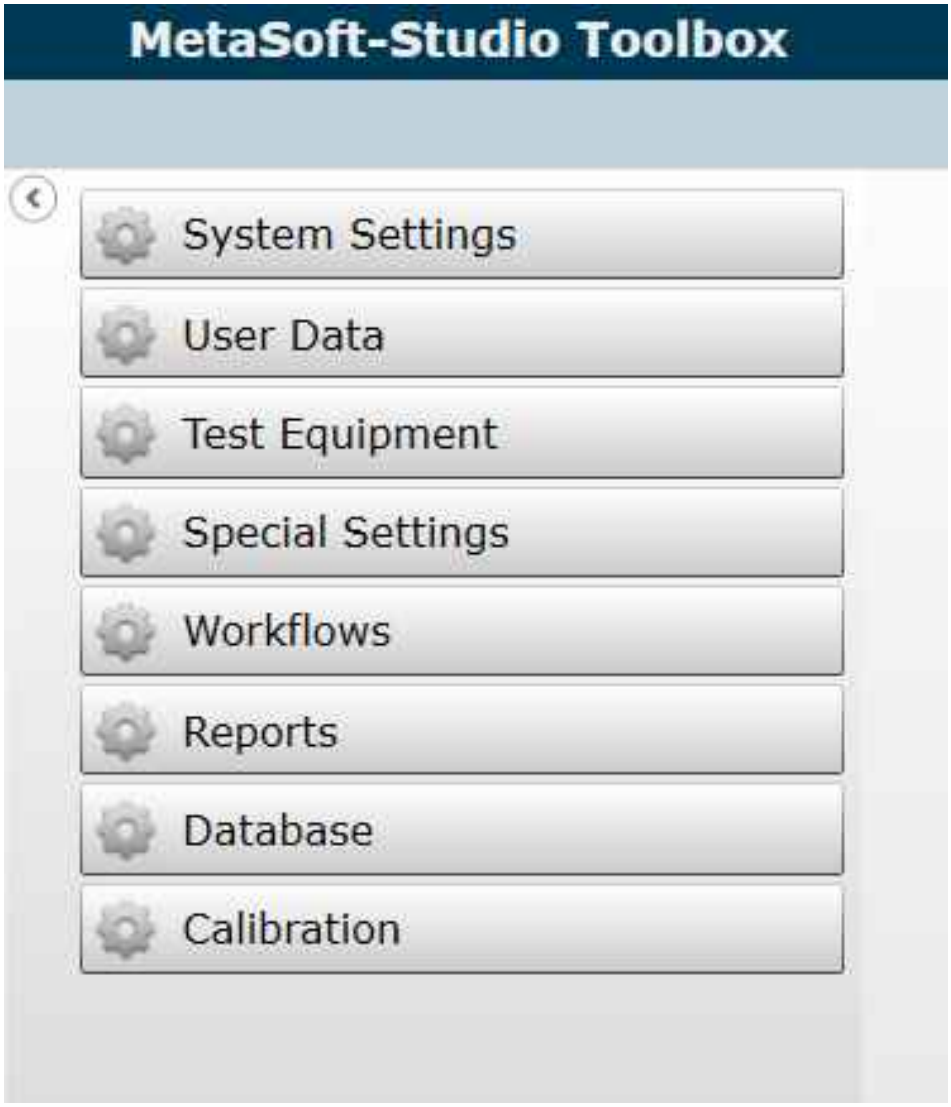
If your driver is not found you can download the FTDI driver here: http://lode.nl/en/article/ftdi-drivers/18
The driver is located under the services tab of the Lode homepage.

3.2 - Software setup



Open MetaSoft Studio (MSS) Toolbox

Log on with administrator rights.
Standard: Operator
'Administrator' and Password 'keep empty'
Press [ok]

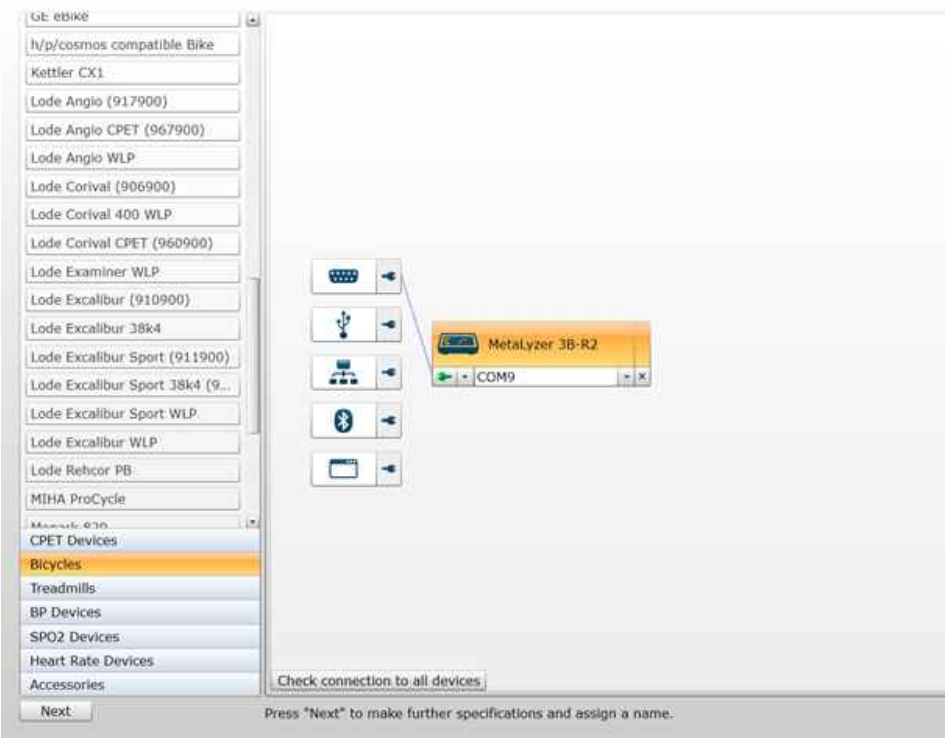


Go to [test equipment]

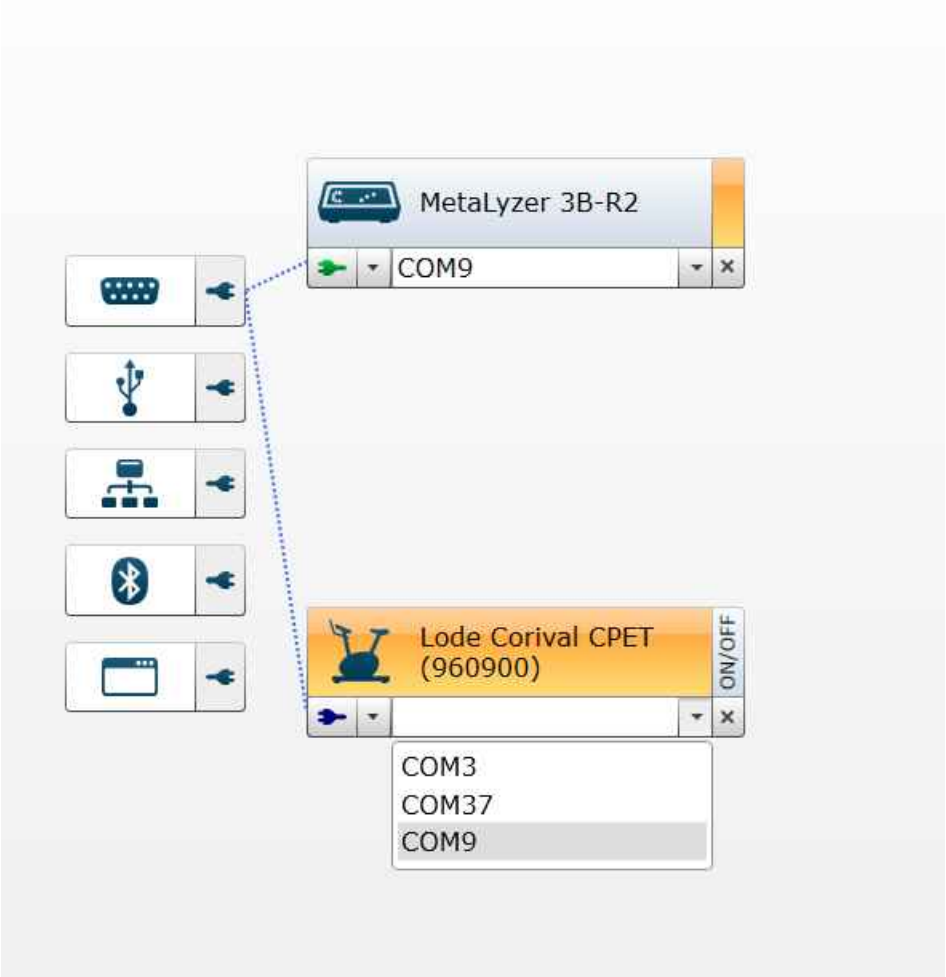
Go to [Device Configurations]

Create a new Device Configuration by clicking [new]

Or add open an existing template on which you want to add the ergometer

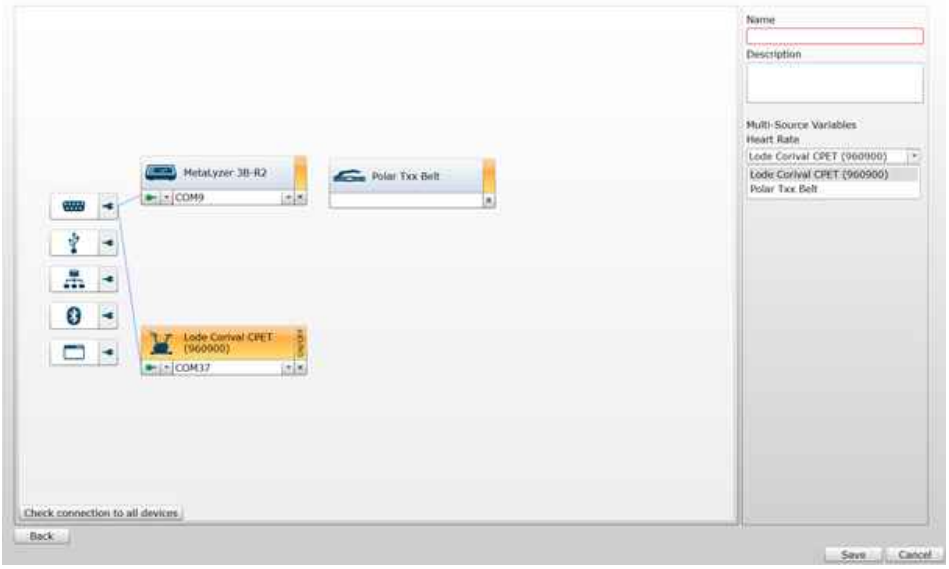


By clicking the tab [Bicycles] you can find the available bicycle ergometers. Select the right ergometer (eg. Lode Corival CPET (960900)) and drag this by 'drag and drop' to the open space on the right side.



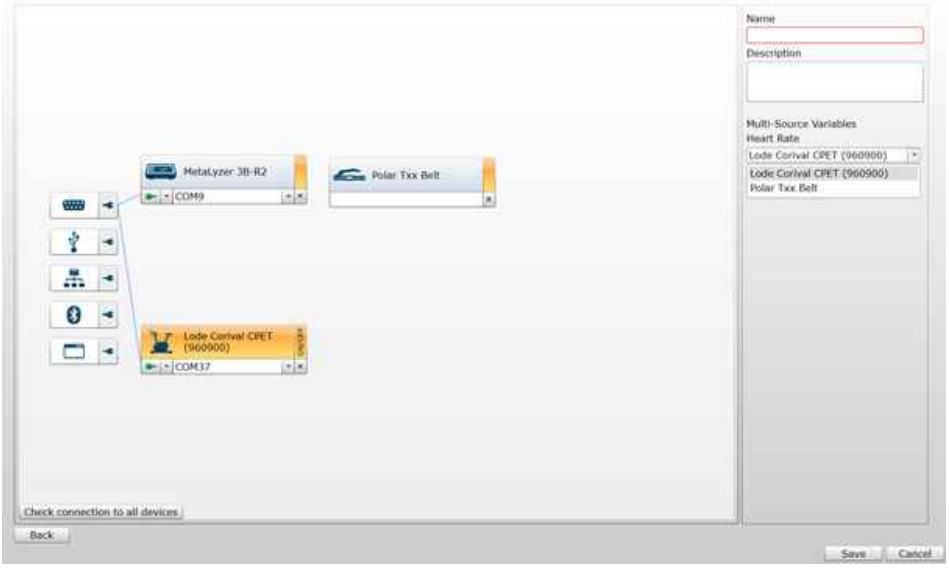
Select the right COM port by clicking the arrow on the right side and then click the left arrow to check the connection.

Note. The following chapter describes the ergometer settings. Make sure those settings are correct before testing the connection.



The next step is to click the button on the left bottom and the screen above wil appear. Here you can fill out the name of the device configuration and you can select the source of Heart Rate. These are the following options":
-Source: Lode Corival CPET (This is the Heart Rate option of the Lode ergometer and that is paired to the Lode ergometer).
-Source: Polar HR belt (This is the Heart Rate opion of Cortex and the belt that is paired with the Cortex device).

If the ergometer has build in Heart rate, SpO2 and/.or NiBP you may activate the checkboxes.



Give the template a name and save it with the [Save] button at the bottom

3.3 - Ergometer setup

The following protocol needs to be set in the Lode ergometer to communicate with the external equipment.

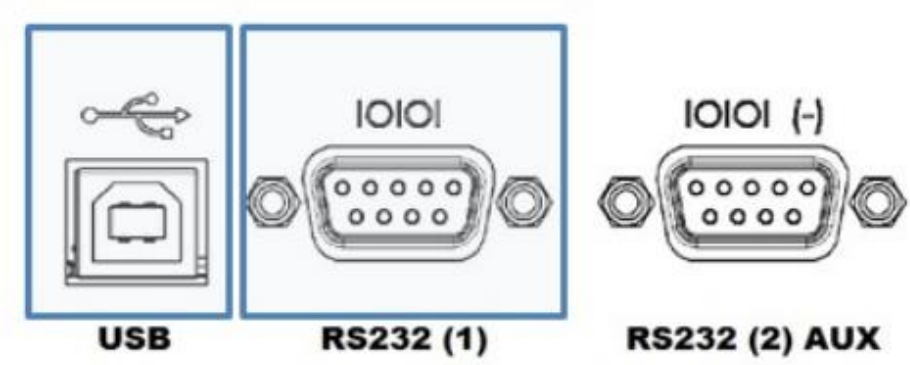
Bicycle ergometer: Lode 38K4

The next chapters describe the procedures to setup these protocols depending on the type of ergometer.

4 - Setting up the hardware

Lode ergometers have two ways of connecting external devices. The cable selection depends on the connection possibilities of the external device. The previous chapter tells you which cable you need. This can be a RS232 cable or a USB cable.

4.1 - Connection overview



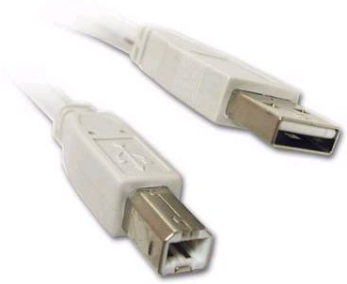
Connect the cable to the USB port if you are using a USB cable.
Please note that you may have to install the FTDI driver on the external equipment. This procedure is only needed if windows fails to instal the driver automatically.
You can find the driver on the Lode website under the Services tab.

Locations:
- For the Treadmill the communication ports are Located on the front side near the power switch.
- For the bicycle ergometer the communication ports are located on the bottom of the bicycle. Tilt the ergometer on it's side to be able to acces these ports.

Communication Module:
Use the single RS232 port to connect the communication module to the external equipment.

Legacy communication card (picture above -> 1 * USB, 2 * RS232)
In case you are using a RS232 cable you must use the RS232 port closest to the USB connector, on the picture indicated with RS232 (1).

4.2 - Connecting with the usb cable



If there is no other connection available you can also use a USB cable to connect.

1. You will need an USB A to B cable (Lode part no. 930916) to establish communication between the Lode ergometer and your stress system or ergospirometrysystem. See picture left.

2. Connect the cable to the Lode ergometer.

3. Connect the cable to the external device.

4.3 - Connecting with the RS232 cable

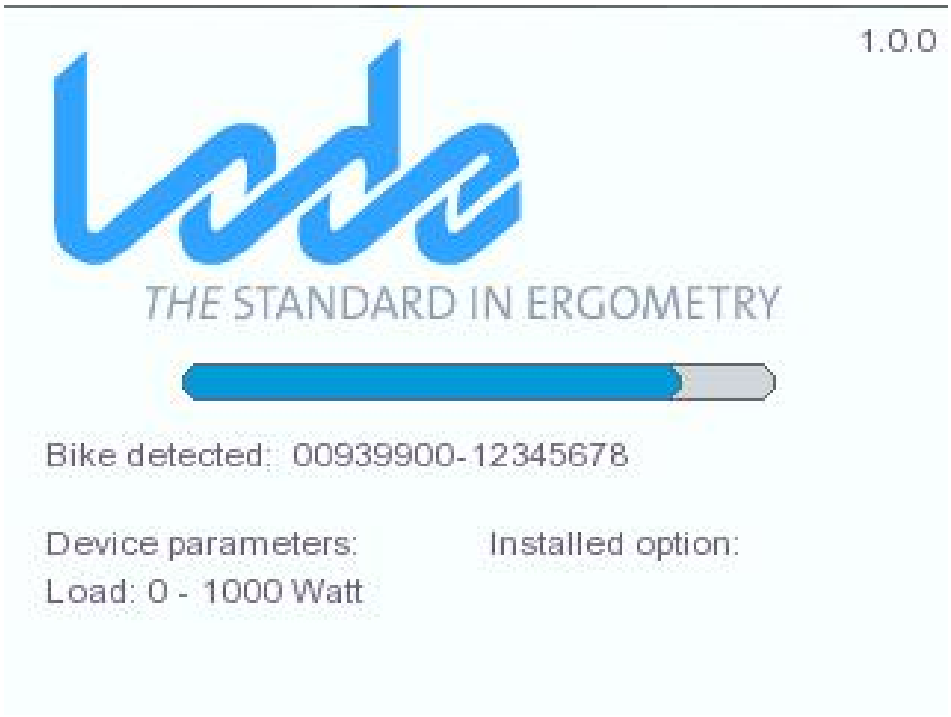
Connecting with the RS232 cable

1. Depending on the external device you may need to use a straight RS232 cable (Lode part no. 930911) or a cross linked cable. The cable selection chapter specifies which cable is needed.

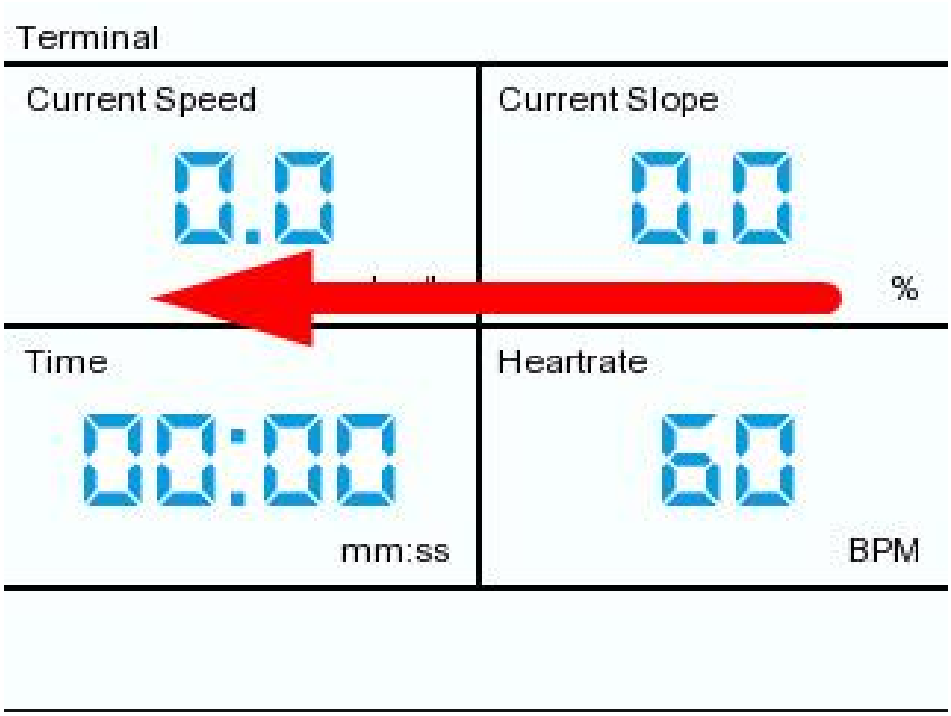
2. Connect the cable to the Lode ergometer.

3. Connect the cable to the external device.

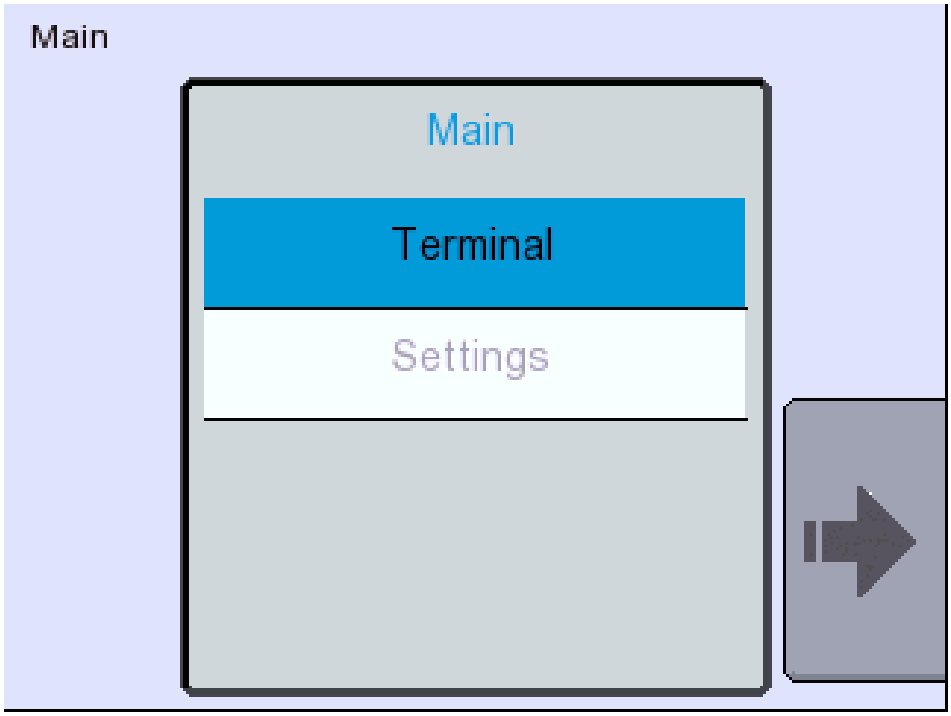
5 - Treadmill or ergometer with 3.5" touch screen unit



Start the Lode ergometer. During start up information about the ergometer, like the kind of device, the serial number and the connected modules is displayed.



After initialisation the terminal mode is automatically displayed. Swipe with your finger over the screen as indicated with the red arrow in the picture to go to the main menu.



Select "Settings" to change settings of the device.

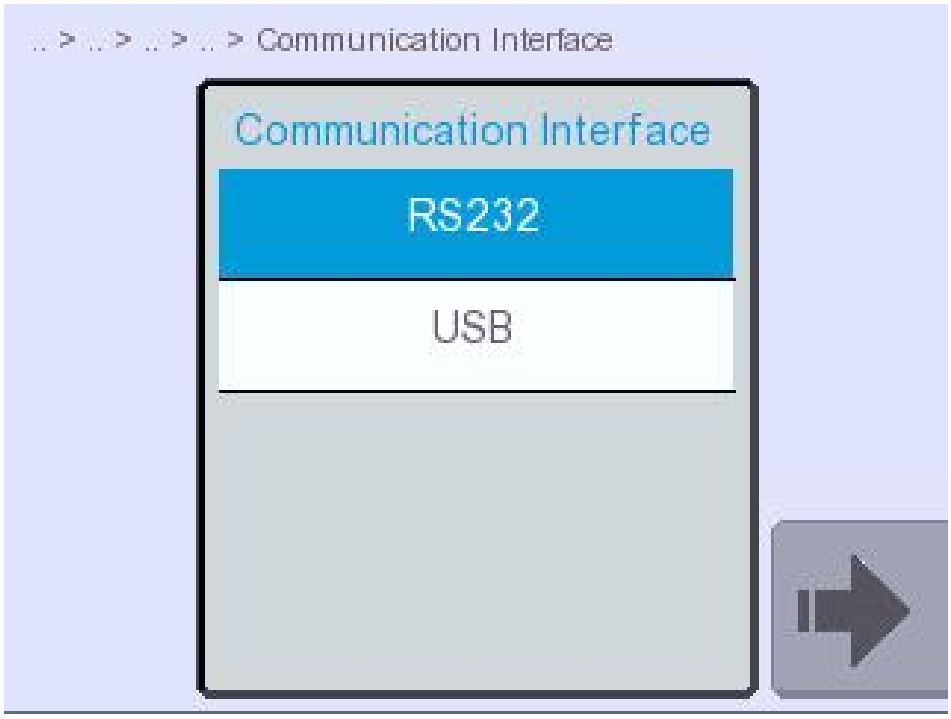
In the Settings Menu you can scroll down and select the following menu's with the up/down and right arrows:

- Language
- Sleep Mode
- Terminal Settings
- Display Settings
- Display Lay-out
- Service

With the Home and Left button you will go back to the Main Menu.

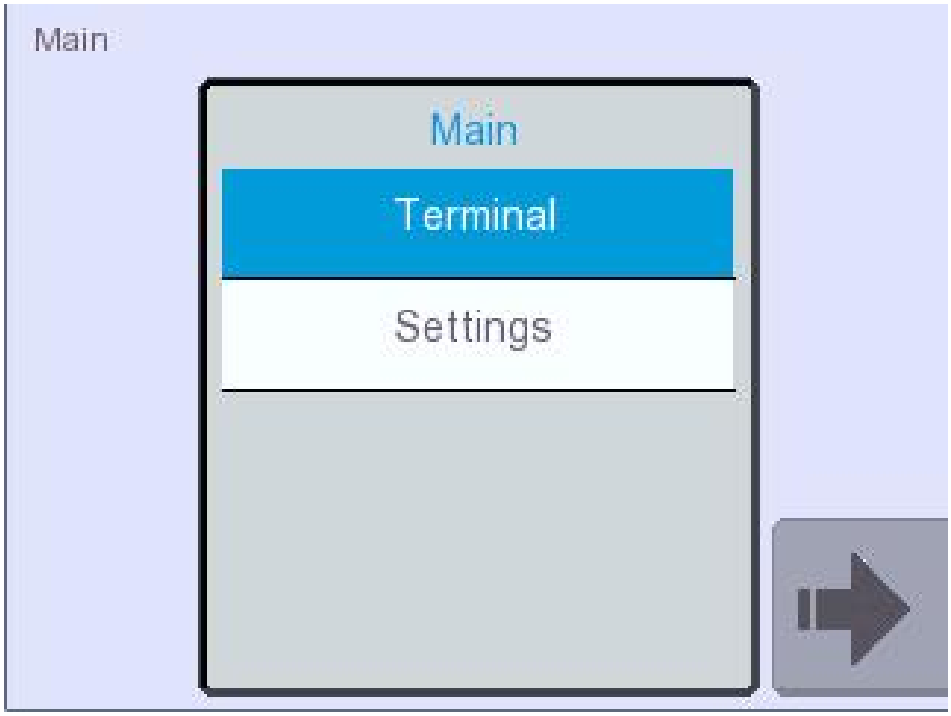
Select the Communication protocol as desribed in "Ergometer setup" chapter.

Select "Default" for the baudrate.



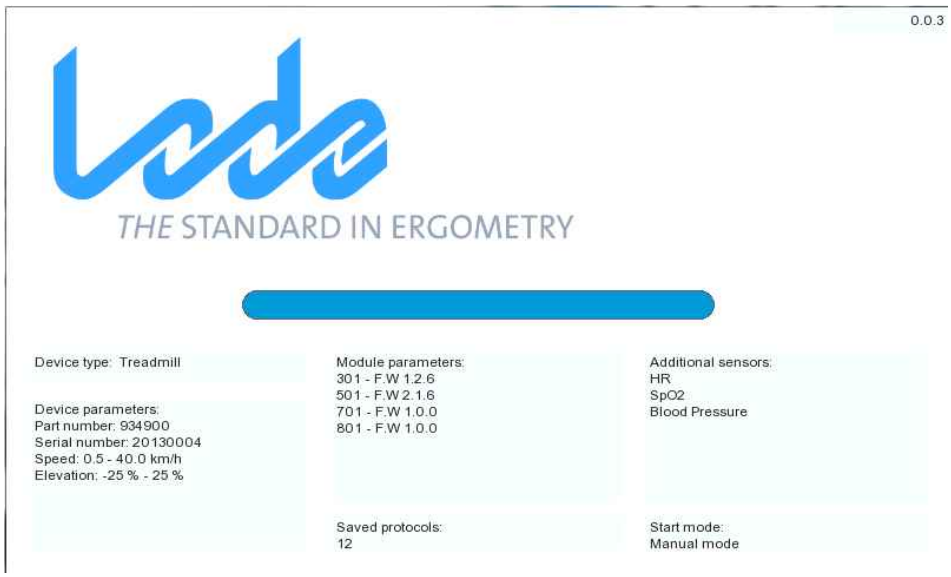
Select "RS232" or "USB" depending in which cable you have connected to the Lode ergometer.

Select the button with the house to go back to the main menu.

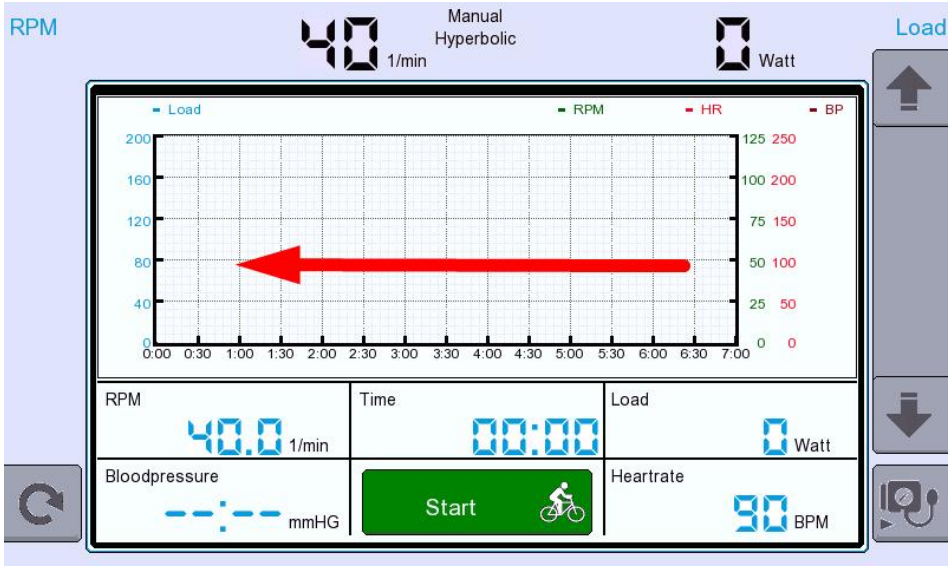


Select "Terminal" to set the ergometer in terminal mode. Your device is now ready for external control.

6 - Treadmill or ergometer with 7" touch screen control unit

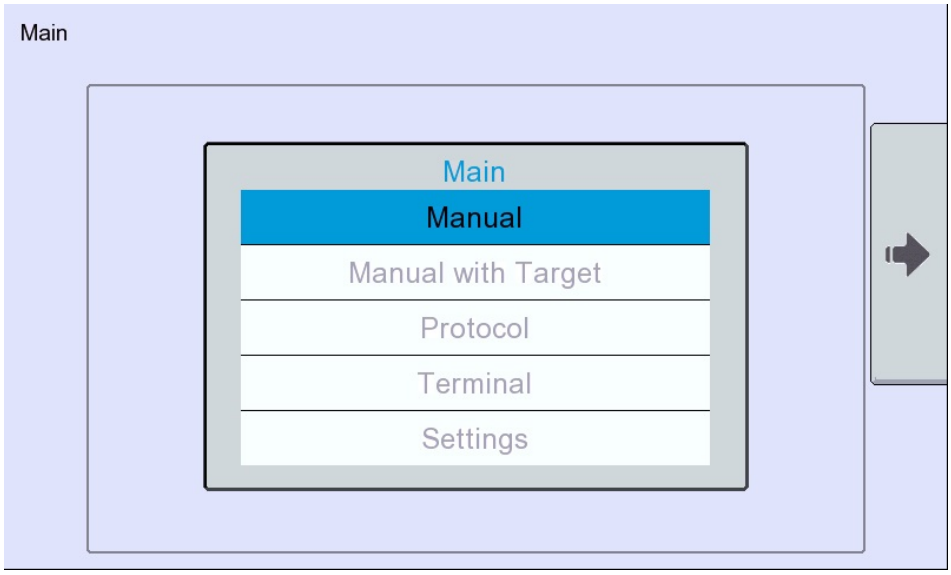


Start the device. Information about the device is shown on the display during boot mode.

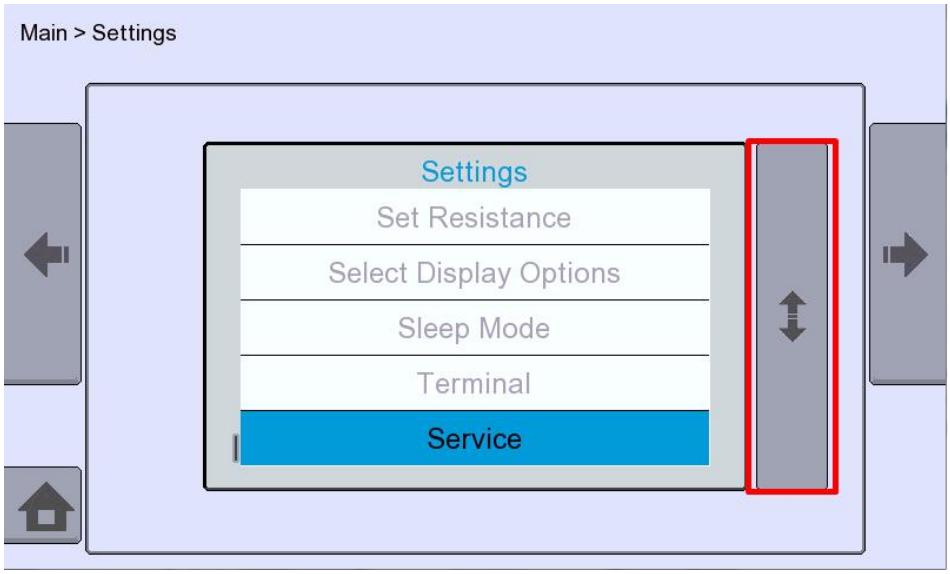


After boot up the device shows the Test window or main menu.

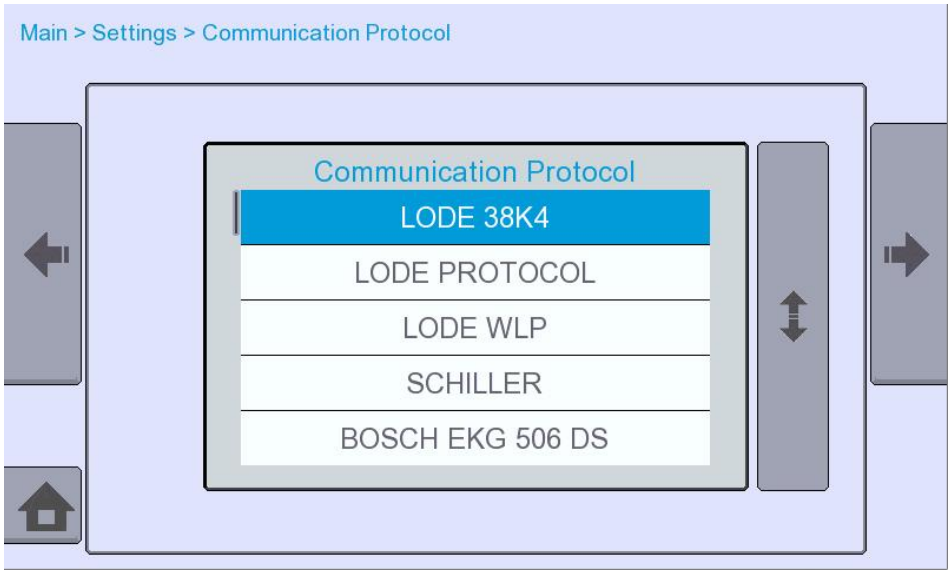
To access the menu from the Test window you need to swipe the graph area of the touch screen as indicated in the picture.



Select "settings" to go to the settings menu.

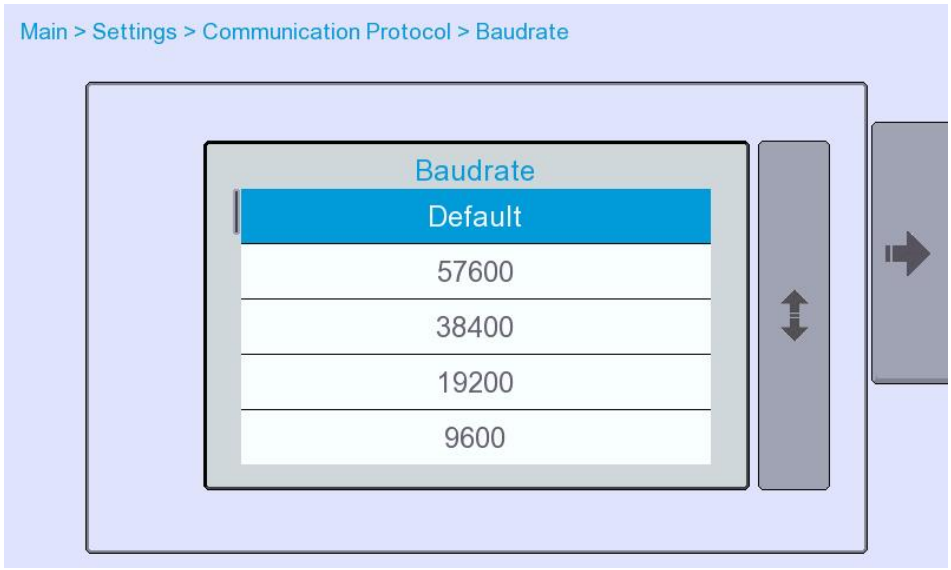


Scroll down using the red marked scroll button and select "Terminal".

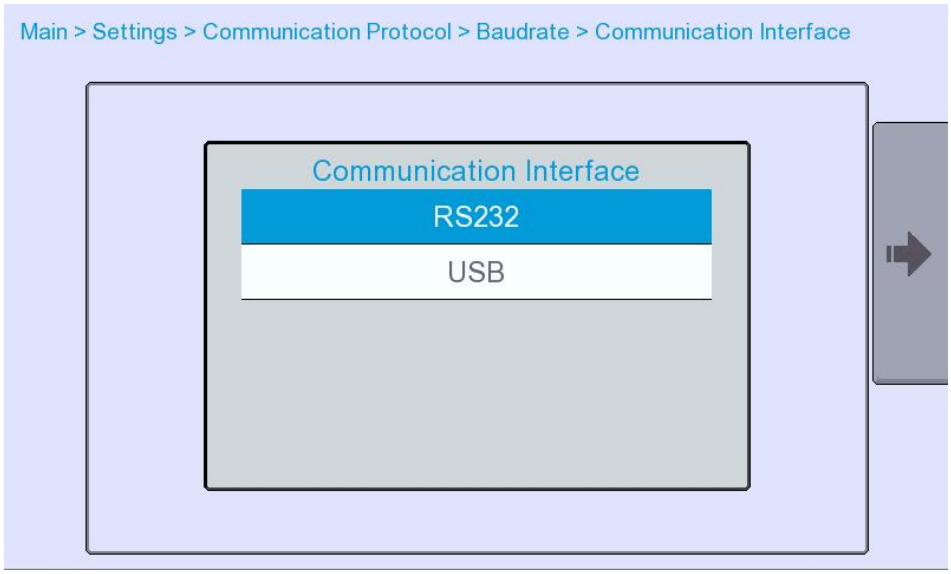


Select the communication protocol ad described in the "Ergometer setup" chapter.

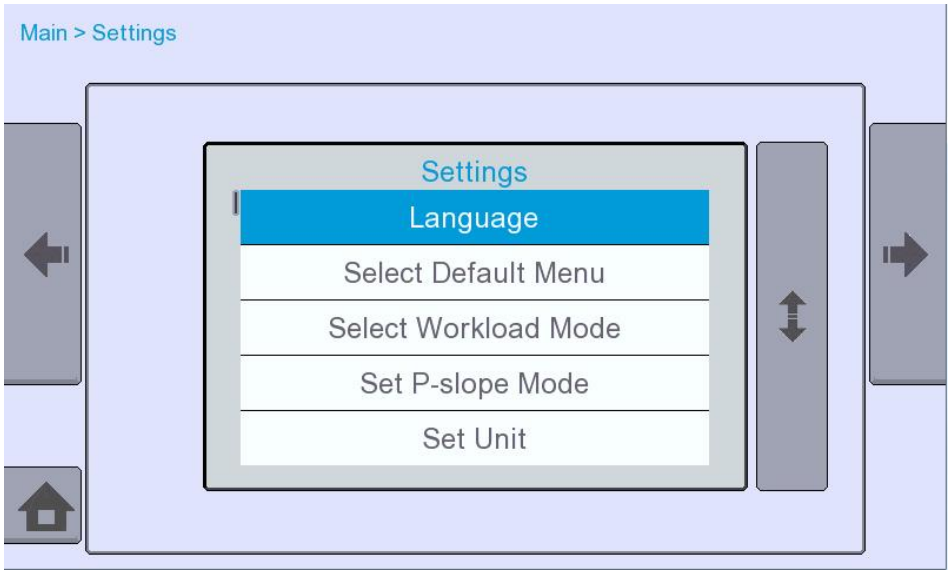
Use the scroll button to view the complete list.



Select "Default" for the baudrate.



Select "RS232"or "USB" depending on the type of cable that you connected to the Lode ergometer.



Press the home button on the left bottom corner and select "Terminal". Your ergometer is now ready for external communication.

optional
Your ergometer can be set to boot up in terminal mode. Follow these steps to activate this function:
- Go to the settings menu
- Select "Default Start Menu"
- Select "Terminal"
- Switch the ergometer off and on. It will boot directly into terminal mode.

7 - Nummerical Control Unit - Treadmill only

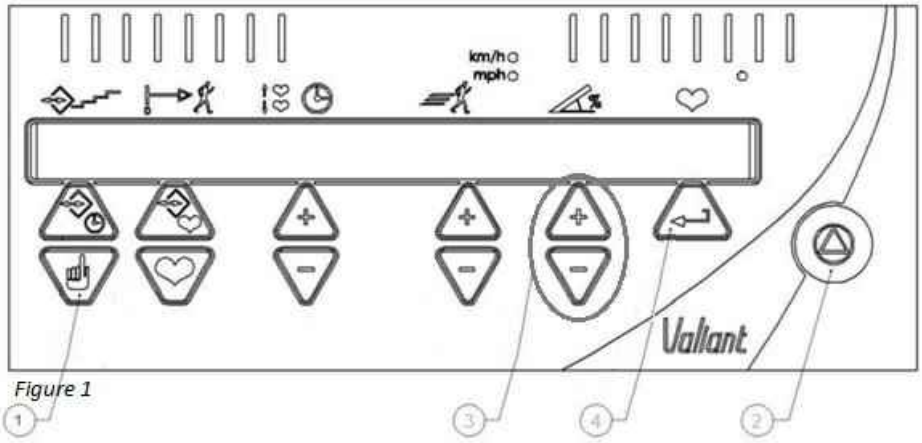


Figure 1

1. Press and hold key #1 and #2 as shown on "Figure 1" for 10 seconds.

2. Press the enter key #4 until the display shows terminal 0

3. By using the "+" and "-" keys for the grade adjustment #3 you can change the "0" behind terminal to "1" to activate the Terminal mode.

4. Press enter #4 and "prot id" will be shown on the display, for Lode protocol this should be set to "1". Set the protocol as described in the "Ergometer setup" chapter.
The following protocols can be selected
Lode = Lode protocol
trAck = Trackmaster communication protocol
UUood = Woodway communication protocol
HPcoS = HP Cosmos communication protocol
gE = GE protocol

5. Press enter #4 and "baudrate" will be displayed to set the correct baudrate, select "0" for auto select. The following baudrates can be set:
Baudrate = 0 (Autoselect dependent on protocol-id)
2400;
4800;
9600;
19200;
38400;
57600

6. Press enter #4 and "interface" will be displayed, you can choose the communication port which you would like to select.

Interface = CIM interface choice. Select "RS232" or "USB" depending on the cable that you connected to the treadmill.
0 = RS232
1 = RS232-AUX
2 = USB

7. Press enter #4; the next step "Neg Elev" is read only and is "1" when a negative elevation option has been added to the treadmill, without a negative elevation option this value shows "0".

Neg Elev = Negetive elevation (read-only)
0 = not present
1 = present

Press the stop button #2 on the control unit or wait 10 seconds to leave the settings menu and let your changes take effect.

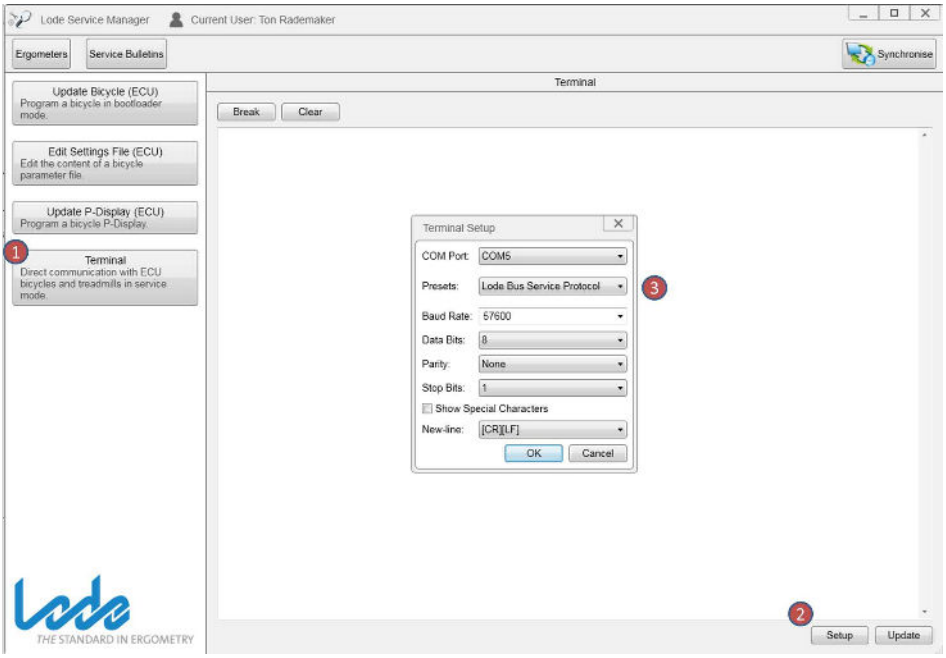
8 - Treadmill or Bicycle without control unit

8.1 - Device without control unit

In case the device does not have a control unit the correct protocol can be set from a computer by using the Lode Service Manager tool that can be downloaded from the Lode website if you are a registered user. http://lode.nl/en/product/getDownload/469

Connect an USB cable from the computer to the USB port of the treadmill or use a RS232 cable from the computer to the RS232 port

Start the Lode Service Manager and login with the same account details that you use to login on the website.



1. Select Terminal

2. Choose Setup to select the COM port on which the device is connected.

3. Select preset Lode Bus Service Protocol

4. Press OK

5. Press Break

6. Switch the device off, wait 10 seconds

7. Switch the device on

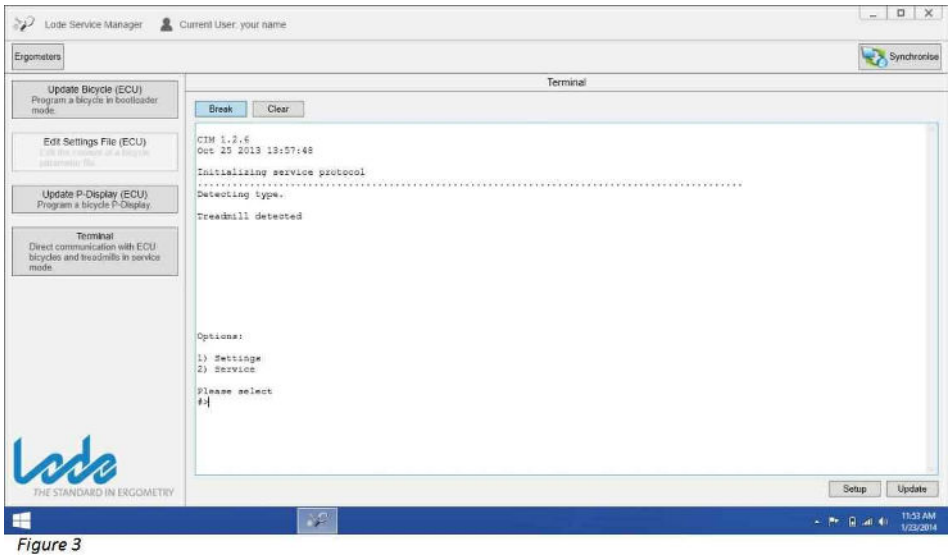


Figure 3

The screen as shown left should show up within 5 seconds after powering up.

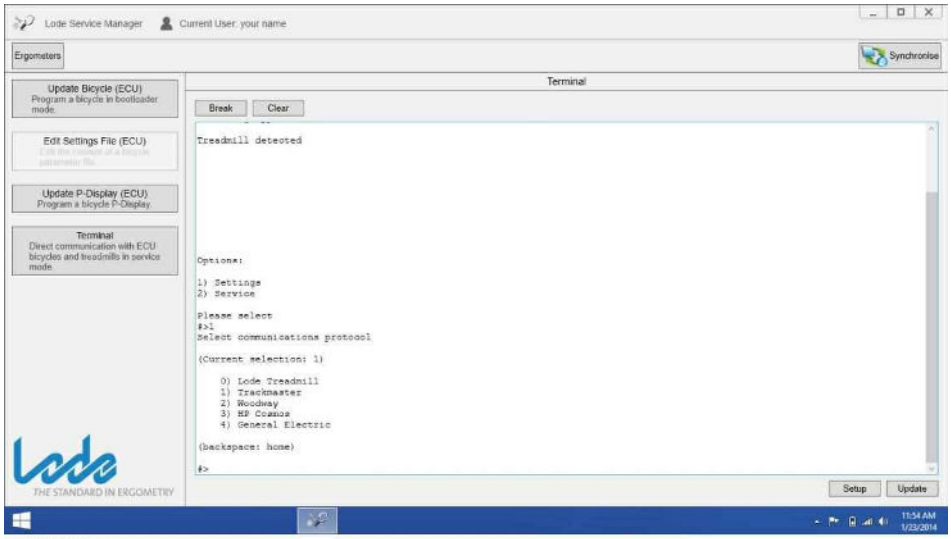


Figure 4

A menu is showed. use the nummerical keys to make your selection. The next menu will automatically come up when a number is pushed.

Select settings (1) and choose the protocol as described in the "Ergometer set-up" chapter.

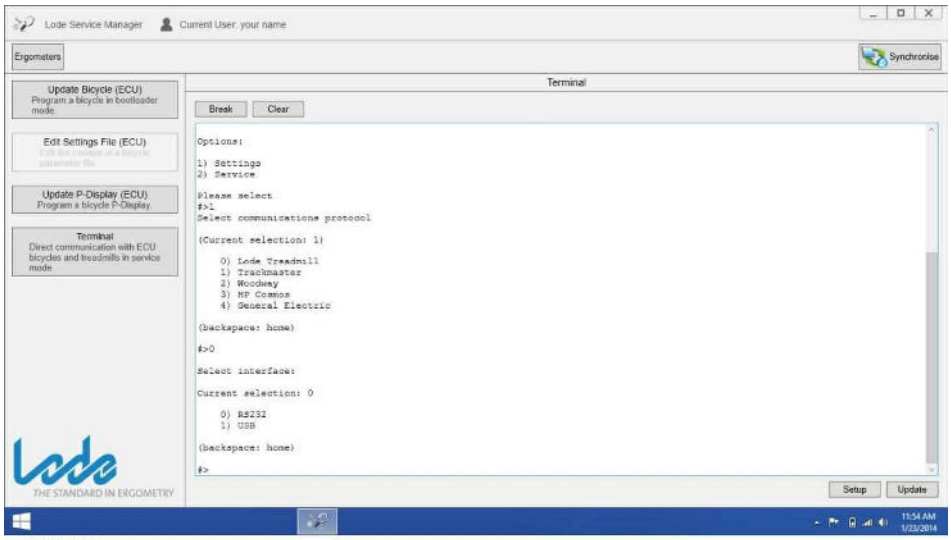


Figure 5

Choose which port you want to use RS232 (0) or USB (1)

This setting refers to the type of cable that you have connected to the Lode ergometer.

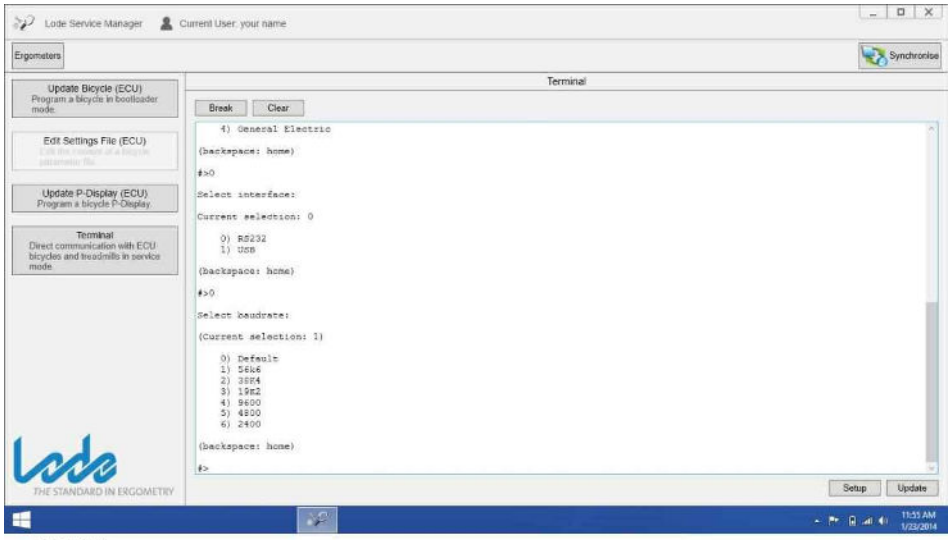


Figure 6

Select default for the baudrate.

Note that Default should always be selected unless different specified by your dealer.

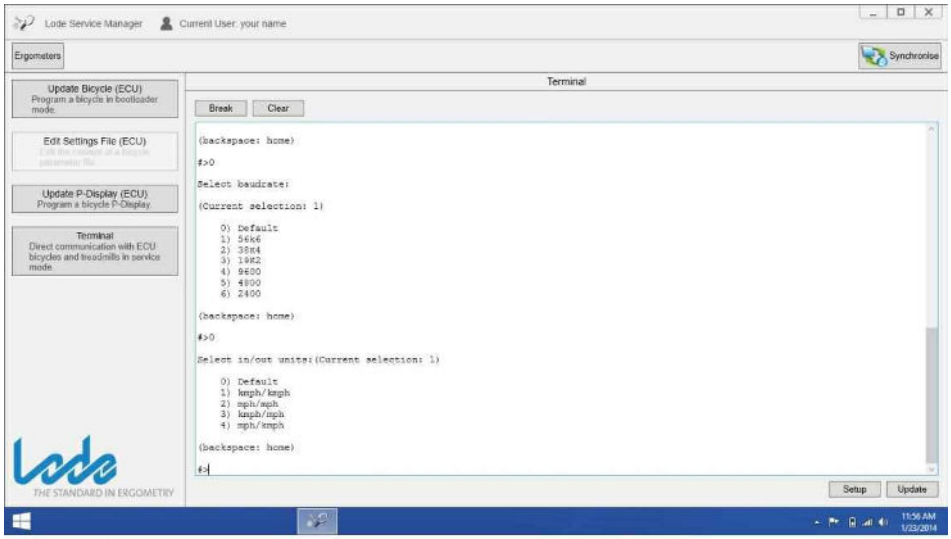
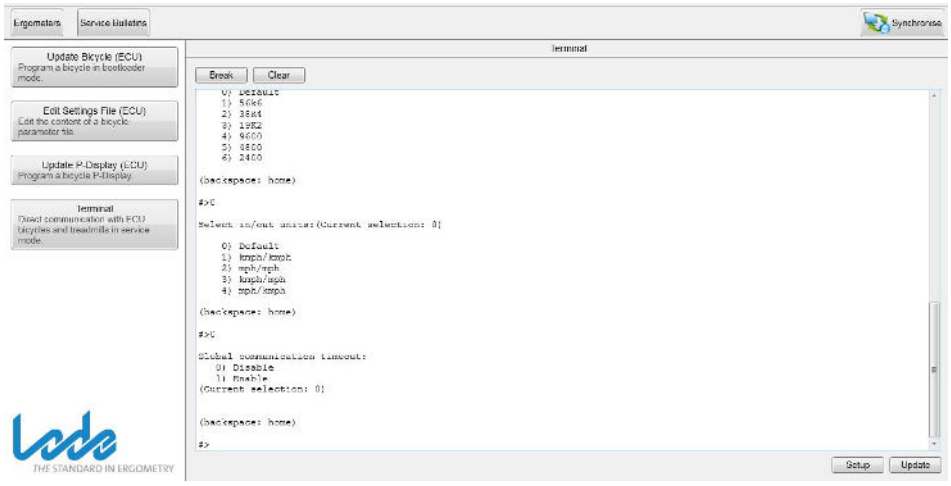
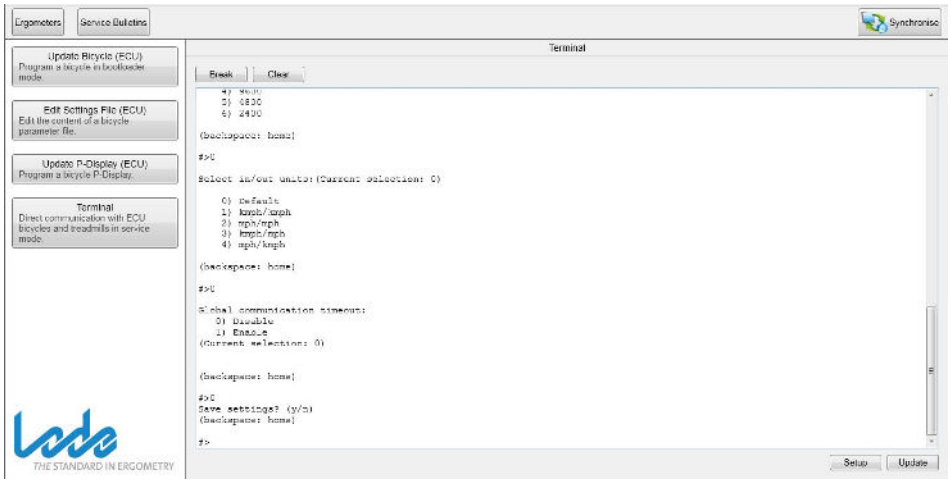


Figure 7

Select the kmh/kmh (1) conversion for if you are using the Trackmaster protocol.
If you are using a protocol other than Trackmaster select "no conversion" (0).



Select "Disable" (0) for Global communication timeout.



Press "Y" to save the new settings and restart the device. Your device is now ready for use with the external controller.

Note that the device is automatically switched to terminal mode when no manual controller is present at the device itself.