

M24LRXX application software installation guide

1 Introduction

This user manual gives the procedures to install the different software drivers required to use your development, demonstration and starter kits.

It also gives a description of the development, demonstration and starter kits, and explains how to connect the RF and I²C readers to your computer.

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2 Installing the *setup.exe*

The *setup.exe* file is used to install all the drivers required by the *M24LRxx_Application_Software* on your computer.

This setup.exe file has to be installed for the development, demonstration and starter kits.

Caution: Please do NOT connect the USB cable(s) to your computer now.

 Double click on the setup.exe file. The window shown in Figure 1 appears. Click on "Next >" to continue.



Figure 1. Setup - M24LRxx Application Software window



Read the License Agreement and click on "I accept the agreement" if you agree (see Figure 2).



Setup - M24LRxx Application Software License Agreement Please read the following important information before continuing.	
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.	
M24LRxx Application Software License All of the documentation and software included in the M24LRxx Application Software package is copyrighted by STmicroelectronics. Copyright (C) 2009 STMicroelectronics. All rights reserved. This software is provided "as-is," without any express or implied warranty. In no event shall the company be held liable for any damages arising from the use	
 I accept the agreement I do not accept the agreement 	
< Back Next >	Cancel

• Browse your computer to select the path where you want to install this software (see *Figure 3*). Then click on Next.

Figure 3.	Installation path	
	🕼 Setup - M24LRxx Application Software	
	Select Destination Location Where should M24LRxx Application Software be installed?	
	Setup will install M24LRxx Application Software into the following folder.	
	To continue, click Next. If you would like to select a different folder, click Browse.	
	C:\Program Files\M24LRxx_Application_Software Browse	
	At least 11.2 MB of free disk space is required.	
	<pre> Back Next > Cancel</pre>	



• A new window opens to create the application shortcuts. By default, select "Next", otherwise, browse your computer (see *Figure 4*).

Figure 4. Creating the program shortcuts

🔂 Setup - M24LRxx Application Software	
Select Start Menu Folder Where should Setup place the program's shortcuts?	
Setup will create the program's shortcuts in the following Start Menu fold	ler.
M24LRxx_Application_Software Brows	:e
<pre></pre>	Cancel

• Define the type of icon you want then click "Next" (see *Figure 5*).

Figure 5. Location of the application icon

🕞 Setup - M24LRxx Application Software	
Select Additional Tasks Which additional tasks should be performed?	
Select the additional tasks you would like Setup to perform while installing M24LRxx Application Software, then click Next. Additional icons: Create a <u>desktop iconi</u> Create a <u>Quick Launch icon</u>	
< <u>₿</u> ack <u>N</u> ext >	Cancel

• Install the user Interface software of the M24LRXX tools (see *Figure 6*).

🔂 Setup - M24LRxx Application Software	
Ready to Install Setup is now ready to begin installing M24LRxx Application Software on your computer.	
Click Install to continue with the installation, or click Back if you want to review o change any settings.	
Destination location: C:\Program Files\M24LRxx_Application_Software Start Menu folder: M24LRxx_Application_Software Additional tasks: Create a desktop icon	
<	≫
< <u>B</u> ack Install	Cancel

Figure 6. Installing the user interface

• The README information of the software is then displayed as shown in *Figure 7*. Please read it carefully.

Figure 7. Software README

Setup - M24LRxx Application Software
When you are ready to continue with Setup, click Next. M24LRxx Application Software README Installation Instructions Installation Instructions Install this M24LRxx Application Software. Install Drivers for Serial EEPROM USB Reader FEIG USB Reader Star USB Reader Install Usb Read
► _ ► _ ► _ ► _ ► _ ► _ ► _ ► _

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- Figure 8. Software installation completion

 Image: Setup M24LRxx Application Software

 Image: Setup M24LRxx Application Software on sour computer. The application may be launched by selecting to installed icons.

 Image: Setup M24LRxx Application Software

 Image: Setup M24LRxx Application Software
- The first step of the installation process is over!

What is the status now?

- The M24LRxx_Application_Sotware is now installed on your computer
- You still have to install the drivers as described in *Section 3: Installing the drivers* specific to the development kit and demonstration kit.

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3 Installing the drivers specific to the development kit and demonstration kit

This section describes how to install the drivers allowing your computer to interface the RF reader and the I²C serial bus reader through the USB ports.

Note: The starter kit does not need any specific installation driver.

3.1 Step1: Installing the drivers for the medium-range RF reader

You should first power up the RF reader and connect its USB cable to your computer. The RF reader is then detected, and the popup messages shown in *Figure 9* appear.

Figure 9. Messages that pop up when the RF reader is connected to the computer

Found New Hardware OBID RCI	
Found New Hardware OBID RFID-Reader Configuration Interface	



The "Found New Hardware Wizard" then starts up and you should follow the procedure described below:

1. The "Welcome to the Found New Hardware Wizard" window opens (see *Figure 10*). Select "Yes, this time only", and click on "Next >".



Figure 10. Welcome to the Found New Hardware Wizard window

2. In the next window (see *Figure 11*), select "Install from a list or specific location (Advanced)", and click on "Next >".

Figure 11. "Install from a list or specific location (Advanced)"



3. As shown in *Figure 12*, select "Don't search. I will choose the driver to install.", and click on "Next >".

Figure 12. Search and installation options

Found New Hardware Wizard	
Please choose your search and installation options.	Ņ
Search for the best driver in these locations.	
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.	
Search removable media (floppy, CD-ROM)	
Include this location in the search:	
C:\Users\Data_Pascal\Applications USB\SPI I2C re 💽 🛛 Browse	
On't search. I will choose the driver to install.	
Choose this option to select the device driver from a list. Windows does not guarantee the driver you choose will be the best match for your backware	nat
the univer you choose will be the best match for your hardware.	
(Back Next) Cancel	٦

4. Then, like in *Figure 13*, select "Show All Devices", and click on "Next >".

Figure 13. Hardware type

Found New Hardware Wizard	
Hardware Type.	
Select a hardware type, and then click Next.	
Common hardware types:	
Show All Devices Show All Devices States States States Batteries Bluetooth Devices Bluetooth Radios Computer Shite drives	
	< Back Next > Cancel



5. In the next window (see *Figure 14*), click on "Have Disk...".

Figure 14. Selecting the device driver

Found New Hardware Wizard	
Select the device driver you	want to install for this hardware.
Select the manufacturer and have a disk that contains the	d model of your hardware device and then click Next. If you e driver you want to install, click Have Disk.
(Standard CD-RDM drives) (Standard IDE ATA/ATAPI cor (Standard keyboards) (Standard system devices)	
This driver is digitally signed. <u>Tell me why driver signing is impo</u>	Ortant
	K Back Next > Cancel

6. Then, click on "Browse..." to locate the file (see *Figure 15* and *Figure 16*).

Figure 15. Install from disk

Install From Disk Image: State of the manufacture's installation disk, and then make sure that the correct drive is selected below. OK Make sure that the correct drive is selected below. Cancel Make sure that the correct drive is selected below. Cancel Make sure that the correct drive is selected below. Cancel State Copy manufacture's files from: Image: State Browse	Found New Ha	ardware Wizard device driver you want to install for this hardware.
Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below. OK Ma Cancel (St (St (St (St (St Copy manufacturer's files from: Image: St Browse	nstall F	From Disk
Copy manufacturer's files from:		Insert the manufacturer's installation disk, and then OK make sure that the correct drive is selected below. Cancel
Browse	(St.	Copy manufacturer's files from:
	B	Browse



7. Select the *ObidUsb.inf* file in the install directory. The default path is: C:/Program File/M24LRxx_Application_Software/Driver/OBID USB driver/

Figure 16. Locate file



Click on "Open" (see Figure 17) and then on "OK" (see Figure 18)

Install From Disk Locate File Look in: DBID USB-Driver Mk (St.	Found New Select	w Hardwa the device	are Wizard e driver you want (to install for thi	is hardware		
Look in: C OBID USB-Driver C C P T T C C C C C C C C C C C C C C C	nst Loc	tall From I cate File	Disk			× ? ×	
	Lo Ma (St (St (St (St (St	ook in: 🗁	OBID USB-Driver		<u>v</u> 0 🌶	P	
File name: obidusb.inf Open	File	e name:	obidusb.inf	. 0	~	Open	

Figure 17. Select the obidusb.inf file and Open

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Install From Disk Insert the manufacturer's installation disk, and then OK OK
Insert the manufacturer's installation disk, and then OK
Cancel M4 [St (St (St (St Copy manufacturer's files from:
C:\Program Files\M24LRxx_Application_Software\ V Browse

Figure 18. Click "OK" to return to initial window

8. The window now displays the OBID drivers that have been selected (see *Figure 19*). Click on "Next >" to install the driver (see *Figure 20*).

Figure 19. The driver has been selected

Found	New Hardware Wizard		
Sele	ct the device driver you want to ins	stall for this hardware.	
.	Select the manufacturer and model of yo have a disk that contains the driver you	ur hardware device and the want to install, click Have D	n click Next. If you isk.
🗹 Sho	v compatible hardware		
Mode	l .		
08	ID RFID-Reader Configuration Interface		
<u> </u>	is driver is not digitally signed! I me why driver signing is important		Have Disk
		< Back Next >	Cancel



Found New Hardware Wizard					
Please wa	it while the wiza	urd installs the	e software		
₽°	OBID RFID-Read	der Configuratior	Interface		
	book Setting a sys	<i>▶</i> tem restore poir	t and backing up	Dold files in	
	case your sy:	stem needs to b	e restored in the f	uture.	
			< Back	Next >	Cancel

Figure 20. Driver installation process

9. When the installation is complete, click on "Finish" (see *Figure 21*).

Figure 21. Installation complete



The drivers allowing your computer to interface the RF reader are now installed. The following step is described in *Section 3.2: Step2: Installing the drivers for the I²C serial bus reader (serial EEPROM USB reader)*.



Advanced information

You can verify that the medium-range RF reader drivers are correctly installed. OBID USB Devices should be detected when the medium-range RF reader is plugged into your computer's USB port.

To check that the drivers are correctly installed, go to Start/Settings/Control Panel as shown in *Figure 22*.



Figure 22. Start > Settings > Control Panel



In the Control Panel folder, double click on System. This causes the System Properties window to open (see *Figure 23*).

Figure 23. System Properties window

System Re:	estore /	Automatic Updates	Remote
General	Computer Nan	ne Hardware	Advanced
	*	System: Microsoft Window Professional Version 2002 Service Pack 2 Registered to: STMicroelectronic	rs XP ≈
Manufacture	ed and supported by	r: HP Compaq 6910 Intel(R) Core(TM); T7500 @ 2.20G 2.19 GHz, 1.96 G Physical Address Support Inform	p Corporate 2 Duo CPU Hz B of RAM Extension ation



Then click on the Hardware tab and then on Device Manager as shown in Figure 24.

jure 24.	Hardy	vare tab					
		System Pro	perties			? 🛛	
		System	n Restore	Automat	ic Updates	Remote	
		General	Compu	uter Name	Hardware	Advanced	
		~ Device N	/anager				
		Ń	The Device M on your compu properties of a	anager lists all t iter. Use the De ny device.	he hardware device wice Manager to ch	es installed hange the	
					Device Ma	anager	
		- Drivers-					
			Driver Signing compatible witi how Windows	lets you make s h Windows. Wii connects to W	eure that installed dr ndows Update lets j indows Update for i	ivers are you set up drivers.	
			Driver 9	digning	Windows L	Jpdate	
		Hardwar	e Profiles				
		R	Hardware profi different hardw	iles provide a w vare configuratio	ay for you to set up ons.	and store	
					Hardware I	Profiles	
				ОК	Cancel	Apply	

Figure 24. Hardware tab



The Device Manager window opens (see *Figure 25*). "OBID USB Devices" should be present.

Figure 25.	Device	Manager	window
------------	--------	---------	--------





3.2 Step2: Installing the drivers for the I²C serial bus reader (serial EEPROM USB reader)

Note that if you do not have to use the serial EEPROM USB reader, you do not need to install these drivers.

To install the drivers: first, connect the USB cable between the I²C serial bus reader and your computer. The I²C bus reader is then detected and the following popup message appears (see *Figure 26*).

Figure 26. Popup message



The "Found New Hardware Wizard" then starts up and you should follow the procedure described below:

10. The "Welcome to the Found New Hardware Wizard" window opens (see *Figure 27*). Select "Yes, this time only", and click on "Next >".

Figure 27. Welcome to the Found New Hardware Wizard window

Found New Hardware Wiz	ard
	Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
	Can Windows connect to Windows Update to search for software? Yes, this time only Yes, now and every time I connect a device No, not this time Click Next to continue.
	< <u>B</u> ack <u>N</u> ext > Cancel



11. In the next window (see *Figure 28*), select "Install from a list or specific location (Advanced)", and click on "Next >".



Figure 28. "Install from a list or specific location (Advanced)"

12. As shown in *Figure 29*, select "Don't search. I will choose the driver to install.", and click on "Next >".

Found New Hardware Wizard	
Please choose your search and installation options.	
Search for the best driver in these locations.	
Use the check boxes below to limit or expand the default search, which include paths and removable media. The best driver found will be installed.	is local
Search removable media (floppy, CD-ROM)	
Include this location in the search:	
C:\Program Files\M24LRxx_Application_Software\dri 🕑 Browse	
⊙ Don't search. I will choose the driver to install.	
Choose this option to select the device driver from a list. Windows does not gue the driver you choose will be the best match for your hardware.	arantee that
< Back Next >	Cancel

Figure 29. Search and installation options

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13. In the next window (see *Figure 30*), uncheck the box in front of "Show compatible hardware" and click on "Have Disk...".

Figure 30. Selecting the device driver to install

Found Nev	v Hardware Wizard		-
Select t	he device driver you want to	install for this hardwa	re.
Show co	lect the manufacturer and model of ve a disk that contains the driver y	your hardware device an ou want to install, click Ha	d then click Next. If you we Disk.
Model			
Serial E	EPROM USB Reader		
▲ This d Tell me	friver is not digitally signed! why driver signing is important		Have Disk
		< <u>B</u> ack	Next > Cancel

14. Then, click on "Browse..." to locate the file (see Figure 15 and Figure 16).

Figure 31. Browsing your computer

Found Nev Select t	v Hardware Wizard he device driver you want to install for this hardware.
Me (St. (St. (St. (St. (St. (St. (St. (St.	Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below. OK Cancel Image: Copy manufacturer's files from: Image: Copy manufacturer's files from: Image: Copy manufacturer's files from:
	<pre></pre>

15. Browse your computer for the *Serial_EEPROM_USB_Reader_driver.inf* file. The default path is:



C:/Program File/M24LRxx_Application_Software/driver/Serial EEPROM USB Reader Driver/

Select the *Serial_EEPROM_USB_Reader_driver.inf* file and then click on "Open" (see *Figure 32*) and "OK" (see *Figure 33*)











16. The window now displays the EEPROM USB drivers that have been selected (see *Figure 34*). Click on "Next >" to install the driver (see *Figure 35*).

Figure 34. EEPROM USB drivers to be installed

Select th	ne device driver you want to) install for this h	ardware.	E Como de la como de l
Sel hav	ect the manufacturer and model ve a disk that contains the driver	of your hardware de you want to install, c	vice and then click click Have Disk.	: Next. If you
Show <u>c</u> or	mpatible hardware			
Serial E	EPROM USB Reader			
A This d	river is not digitally signed!			Have Diek
Tell me	why driver signing is important			Have Disk



17. During the installation, a new windows appears to inform you that the driver was not certified by Microsoft[®]. Click on "Continue Anyway". When the installation is complete, click on "Finish" (see *Figure 36*).

Figure 35. Software installation

Please wait while the wizard installs the software		
Serial EEPROM USB Reader		
Hardwar Line of the second sec	re Installation The software you are installing for this hardware: Serial EEPROM USB Reader has not passed Windows Logo testing to verify its compatibility	
	with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.	





Figure 36. Installation complete

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The drivers allowing your computer to interface the I²C bus reader are now installed.

Advanced information

You can check that the I²C bus reader drivers are installed by going to Start/Settings/Control Panel/System. Click on the Hardware tab and then on Device Manager. In the Device Manager the I²C bus reader should be shown as a USB peripheral (defined as *Serial EEPROM USB Reader*, as shown in *Figure 36*).



Figure 37. Device Manager window

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3.3 Trouble shooting

3.3.1 RF reader driver

You can check that the drivers for the RF and I²C bus readers are correctly installed by viewing the "Device Manager" window.

In the example shown in *Figure 38*, you can see that the OBID is not correctly installed.

Figure 38. Example where OBID is not correctly installed

Right-click on "OBID RCI" and select "Update Driver..." as shown in Figure 39.



Figure 39. Update Driver...

You can now try to reinstall the reader drivers, as explained in *Section 3.1: Step1: Installing the drivers for the medium-range RF reader* for the RF reader, and in *Section 3.2: Step2: Installing the drivers for the I²C serial bus reader (serial EEPROM USB reader)* for the I²C reader).



4 Tool kit descriptions

4.1 M24LRXX development kit

4.1.1 Ordering information

The part number of the development kit is: **DEVKIT-M24LR-A**.

4.1.2 Development kit package

The development kit contains:

• a middle-range RF reader (ISO 15693, RF 13.56 MHz) interfaced via the USB bus and an external power supply to have a greater read range.

Figure 40. RF reader



• an external antenna shown in *Figure 41*.

Figure 41. External antenna



• Serial EEPROM USB reader: I²C bus reader (interfaced via the USB bus). *Figure 42* shows the reader.





Figure 42. I²C bus reader (serial EEPROM USB reader)

• An I²C bus cable to connect the serial EEPROM USB reader and the I²C bus of the reference antenna. *Figure 43* shows the cable to use.





- M24LR64-R's reference antennas:
 - ANT1-M24LR-A: RF antenna size: 75 mm × 45 mm (2.9 in × 1.77 in) shown in Figure 44.
 - ANT2-M24LR-A: RF antenna size: 20 mm × 40 mm (0.79 in x 1.57 in) shown in Figure 45.









Figure 45. ANT2-M24LR-A reference antenna

• M24LR64-R samples in SO8 package (see *Figure 46*).

Figure 46. M24LR64-R in SO8 package



4.2 M24LR64-R demonstration kit

4.2.1 Ordering information

The part number of the demonstration kit is: **DEMOKIT-M24LR-A**.

4.2.2 Demonstration kit package

The demonstration kit contains:

- a middle-range RF reader (ISO 15693, RF 13.56 MHz) interfaced via the USB bus, shown in *Figure 47*.
- an M24LR64-R's reference antenna: PRIM2-M24LR-A, RF antenna size: 20 mm × 40 mm (0.79 in x 1.57 in) shown in *Figure 48*.
- Optional: STM32-PRIMER2 (to be ordered separately) shown in *Figure 49*.















1. Not included in the kit, to be ordered separately.





Figure 50. Connecting your reference antenna to your STM32-PRIMER2

4.3 M24LR64-R starter kit

4.3.1 Ordering information

The part number of the starter kit is: STARTKIT-M24LR-A

4.3.2 Starter kit package

The starter kit contains:

• a reader with an integrated solution for I²C communication (connector) and RF communication (ISO 15693, RF 13.56 MHz) interfaced with a USB bus as shown in *Figure 51*.



Figure 51. I²C & RF reader

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- M24LR64-R's reference antennas:
 - ANT1-M24LR-A: RF antenna size: 75 mm × 45 mm (2.9 in × 1.77 in) shown in Figure 44.
 - ANT2-M24LR-A: RF antenna size: 20 mm × 40 mm (0.79 in x 1.57 in) shown in Figure 45.









• M24LR64-R samples in SO8 package (see *Figure 46*).







4.4 DEMO-CR95HF-A

4.4.1 Ordering information

The part number of the CR95HF demo kit is DEMO-CR95HF-A.

4.4.2 DEMO-CR95HF-A

The DEMO-CR95HF-A is a demonstration kit used to evaluate the performances of ST CR95HF 13.56 MHz multiprotocol contactless transceiver.

The DEMO-CR95HF-A is powered through the USB bus and no external power supply is required. It includes a CR95HF contactless transceiver, a 47 x 34 mm 13.56 MHz inductive etched antenna and its associated tuning components.



Figure 55. DEMO-CR95HF-A demonstration kit

4.5 Connecting the readers and cables to your computer

Once the installation of the software drivers is complete (see previous sections *Installing the setup.exe* and *Installing the setup.exe*), you have to physically connect the readers.

Connecting the RF reader

- first, connect the external antenna to the RF reader
- then, connect the power supply of the RF reader
- you can now connect the RF reader to the USB port of your computer The RF reader is ready to be used. Keep your tag on the external antenna to communicate through the application software.

Connecting the I²C bus reader

- First, connect the I²C bus reader to the USB port of your computer
- then connect the I²C cable from the I²C bus reader to an M24LR64-R tag





Figure 56. External connector pinout of the serial I²C bus reader









Figure 58. Connecting the RF and I²C bus readers

4.6 Web support and references

ST products (M24LR64-R datasheet, application notes, etc.) Serial EEPROM USB reader Software

For further information and copies of the available technical documentation, please contact your nearest ST sales office.

FEIG ELECTRONICS RF readers

http://www.obid.eu/ http://www.feig.de/

eStar RF & I²C reader http://www.estarcorp.net/en/index.asp

STM32-PRIMER2

http://www.raisonance.com/ http://www.stm32circle.com/

You can now enjoy your kit!



5 Revision history

evision history
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Date	Revision	Changes
30-Nov-2009	1	Initial release.
22-Sep-2011	2	Modified title of document. Replaced part number "M24LR64-R" with "M24LRXX" throughout the document. Added <i>Section 4.4: DEMO-CR95HF-A</i> .
28-Oct-2011	3	Changed document title.



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