

AN-364

Updating TSL Reader Firmware Over the Network

Application Note



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Introduction

TSL readers can be upgraded directly from the controller's web interface—no need to remove card readers from the wall, reconfigure the wiring or schedule downtime.

The live over-the-network update process is designed to minimize disruption to the site's operation. The reader will remain operational and respond to card badges and PINs as normal while the controller uploads the firmware package via the RS-485 network. The TSL reader then does a quick reboot and comes back online with the new firmware.

This application note covers the prerequisites for using this feature, how to upgrade your TSL reader to a supported version and how to perform an over-the-network firmware update.

Prerequisites

You can only upgrade TSL readers that are connected to Protege GX or Protege WX systems. Ensure that the readers and reader expanders are addressed and online with the controller.

Firmware Files

You can download the latest TSL firmware file (**.bin** format) from the ICT website.

Firmware Versions

The following firmware versions support over-the-network firmware updates:

Component	Minimum Firmware Version
Protege GX Controller	2.08.1498
Protege WX Controller	4.00.2261
Reader Expander	1.12.605
TSL Reader	1.05.382

In addition, if you have the controller and reader expander firmware listed above, you can view the current firmware version of connected TSL readers and tSec readers from the controller's web interface. The readers must be connected by ICT RS-485 or OSDP wiring.

Connection Requirements

TSL readers must be connected to the controller or reader expander via **ICT RS-485** or **OSDP** wiring to support over-the-network firmware updates.

Wiegand wiring does not allow over-the-network updates.

Hardware Support

The first hardware revision of the TSL reader does not support newer firmware. If you purchased TSL readers in 2023/2024, before upgrading you must check whether your TSL reader supports the new firmware version. See [Checking the Firmware and Hardware Version](#) below.

Checking the Firmware and Hardware Version

Before you begin, you should check the current firmware version of your TSL readers. This lets you determine whether the card reader's hardware supports over-the-network firmware updates and what update path you need to follow.

1. Connect the TSL readers to controllers or reader expanders using ICT RS-485 or OSDP wiring.

See the TSL Multi-Technology Card Reader Installation Manual for wiring diagrams and instructions.

2. Log in to the controller's web interface.
3. **In Protege GX:** Navigate to **Application Software**.
In Protege WX: Navigate to **System | Application Software**.
4. Check that the **Current Version** of the controller meets the prerequisites (see previous page), and upgrade if necessary.
5. Open the **Module** dropdown. Check that the **Firmware** of each reader expander meets the prerequisites (see previous page), and upgrade if necessary.
6. Below each reader expander, you will see a list of card readers connected to that expander. The type and firmware version of the readers will help you determine what action you need to take:

Reader Type	Current Firmware Version	Supports Upgrade?	Action
TSL Reader	1.05.374 and earlier	No	The hardware does not support later firmware versions. Do not upgrade.
TSL Reader	1.05.375-381	Yes	First, upgrade the firmware to version 1.05.382 using the separate upgrade tool (see next page). Contact ICT Customer Services to request the upgrade tool. Then, upgrade the firmware to the latest version over the network (see page 7).
TSL Reader	1.05.382 and higher	Yes	Upgrade the firmware to the latest version over the network (see page 7).
tSec Reader	Any	No	You can view the firmware version but cannot upgrade it from the web interface. Contact ICT if you need to upgrade your tSec readers' firmware.
Third-party Reader	Any	No	Third-party card readers do not support over-the-network upgrades. Contact the manufacturer for advice.
Any reader connected by Wiegand	Unknown	No	Readers connected by Wiegand wiring are not displayed in the web interface and cannot be upgraded over the network. Connect the reader using ICT RS-485 or OSDP.
No card readers displayed, or all card readers grayed out	Unknown	No	Check that the controller and reader expander have the prerequisite firmware versions (see previous page), and upgrade if necessary. If the reader expander's address has changed since it was connected to the network, you must power cycle the reader expander before the card readers will appear in the web interface. This is a known issue that will be resolved in a later release.

Updating Firmware to 1.05.382

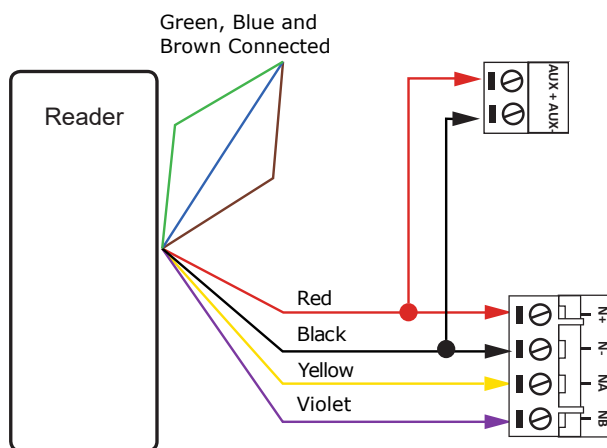
To upgrade your TSL reader from an earlier version to 1.05.382 or higher, you must first upgrade to firmware to version 1.05.382. After this, you can perform over-the-network upgrades.

Contact ICT Customer Services to acquire the TSL reader 1.05.382 upgrade tool. This tool upgrades both the application and boot firmware. You will also need an RS-485 USB Converter to connect the TSL reader to a computer.

Do not allow the TSL reader to lose power during the upgrade process. This can render the device non-functional.

To upgrade the TSL reader:

1. Plug the RS-485 USB Converter into your computer. Open the **Device Manager**. Under **Ports (COM & LPT)**, identify the serial port that the device is connected to (e.g. COM3).
2. Open a command terminal. Type the following command, but do not run it yet:
`"C:\Tools\tsl_otn_support_upgrade_tool_1_5_bd_382_P1B0.exe" --port COM3`
Ensure that you include the correct:
 - File location
 - Executable filename
 - COM port number
3. Put the reader into boot mode by connecting the green, blue and brown wires together.
Alternatively, you can use the Protege Config App to apply the **Device Mode: Firmware Update Mode** TLV within 2 minutes of the reader starting up.
4. Connect the reader to the RS-485 USB converter as pictured below.



5. The LEDs on the reader will rapidly flash blue and red to indicate it is starting in boot mode. When the reader starts flashing more slowly, it is now in boot mode and ready for the firmware update.
You have approximately 30 seconds from the time you power the reader on to load the firmware.
6. **Disconnect the green, blue and brown wires before running the upgrade tool.**
7. On the computer, press **Enter** to run the command.
8. The terminal will show its progress as it upgrades the boot and application firmware. **Do not** allow the TSL reader to lose power during this process.
9. When the process is complete, disconnect the TSL reader from the converter.

Updating Firmware Over-the-Network

TSL readers support over-the-network updates from the controller's web interface.

1. Connect the TSL reader to a controller or reader expander using ICT RS-485 or OSDP configuration.

Readers connected in Wiegand configuration cannot be upgraded over the network.

2. Log in to the controller's web interface.
3. **In Protege GX:** Navigate to **Application Software**.
In Protege WX: Navigate to **System | Application Software**.
4. Open the **Module** dropdown to view the card readers connected to the system. TSL readers that support over-the-network firmware updates are displayed in white. Readers that don't support upgrade are grayed out.
5. Select the reader to upgrade.
6. Click **Upload Firmware** and select the new .bin file.
7. The web interface will show progress as the controller uploads the firmware to the reader. The reader will remain operational and respond to card badges and PINs while it is loading the new firmware.

The warning in the **Update Module Firmware** section does not apply to TSL readers. Updating a TSL reader does not put the network into maintenance mode.

8. When the upload is complete, the reader will flash purple for approximately 10 seconds while it reboots. It will not respond to card badges or PINs during this time.
9. After rebooting, the reader will begin operating as normal with the new firmware. Click **OK** to close the window.

You must refresh the page to see the new firmware version in the **Module** dropdown.

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