

---

# Trimble FX

## 3D Scanner

### User Guide

© Trimble 2009. All rights reserved.

**NORTH AMERICA**

Trimble Navigation Limited  
Power, Process and Plant  
10355 Westmoor Drive  
Westminster, CO 80021 • USA  
+1-800-545-5972 Phone  
+1-720-887-6101 Fax

**EUROPE**

Trimble GmbH  
Power, Process and Plant  
Am Prime Parc 11  
65479 Raunheim • GERMANY  
+49-6142-2100-0 Phone  
+49-6142-2100-550 Fax

# Contents

<b>Safety Information</b>	<b>v</b>
Laser-Related Precautions .....	v
Built-in Laser Safety Features .....	v
General Safety Instructions .....	vi
Safety and Compliance Label Locations .....	vii
Declaration of Conformance.....	viii
<b>Introduction</b>	<b>9</b>
Components .....	9
<b>Setting Up the Hardware</b>	<b>10</b>
Setting Up the Trimble FX .....	12
Connecting the Cables .....	12
Powering on the Scanner .....	13
<b>Maintenance</b>	<b>14</b>
Changing the Fuse.....	14



# Safety Information



**WARNING: THIS IS A CLASS 3R LASER PRODUCT. Before operating the Trimble FX, read all safety and operating instructions carefully.**

---

---

## *Laser-Related Precautions*

- Do not stare into the laser aperture, even if it seems as though the scanner is not operating.
- Do not view the laser beam with optical instruments.
- **Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure..**
- Only factory service personnel are permitted to service the scanner. This includes removing the enclosure. Disassembling the scanner might expose you to dangerous laser light with optical power up to 15mWt at 685nm.
- When not in use, store the scanner so that only authorized users can access it.

## Built-in Laser Safety Features

The Trimble FX comes equipped with a dedicated safety feature intended to reduce the risk of accidentally staring into the focused non-scanning laser beam.

When the unit is turned on, the shutter is closed and the laser is disabled. When the user starts the motors from the Trimble FX Controller application and the motor reaches the speed that guarantees 3R laser light levels, the shutter is opened to enable scanning. The shutter is closed before the motor stops.

## *General Safety Instructions*

- Use only a power source of the specified rating. To ensure proper operation and maximum safety, we recommend using the standard power source supplied with the Trimble FX unit.
- Make sure the AC power adapter is electrically grounded. The 3-wire power cable comes with a standard grounding pin, and must be connected to a properly grounded outlet that accepts a 3-prong connector.
- Improper connection may cause a fire or electric shock.
- Make sure that the scanner is positioned to ensure proper ventilation and operation of the fans.
- Do not touch or access internal moving parts of the scanner deflection system.
- The only maintenance that is required by the user is to clean the outside of the scanner and to replace the fuse as needed. Before cleaning the scanner, turn off power and disconnect the power cable from the electrical outlet. Clean only with a cloth slightly dampened with water. Do not use liquid or aerosol cleaners.
- Do not use USB-2 cables of lengths exceeding 3 meters. This may result in equipment damage due to static electrical discharge.
- Turn off and disconnect the scanner from the power outlet and contact your scanner's service representative if any of the following conditions occur:
  - The power cord has been damaged.
  - Liquid has been spilled on the scanner.
  - The scanner has physical damage.
  - A beam is visible.
  - The scanner is not functioning correctly.

# Safety and Compliance Label Locations

The locations of the safety and compliance labels are as shown below.

Trimble Navigation Ltd.  
10355 Westmoor Drive, Westminster, CO 80021 • USA  
Model: Trimble FX Serial No: \_\_\_\_\_  
Manufactured: \_\_\_\_\_  
Complies with 21 CFR 1040.10 and 1040.11, except for deviations pursuant to Laser Notice No. 50, dated 24 June 2007.



**LASER LIGHT**  
**AVOID DIRECT EYE EXPOSURE**  
CLASS 3R LASER PRODUCT  
PER IEC/EN 60825-1/Ed 2:2007  
15 mW peak at 685 nm

*Laser warning label locations on scanner*

---

## *Declaration of Conformance*

We declare that the product described herein complies with the following European Directives:

- 89/336/EEC Directive on Electromagnetic compatibility
- 73/23/EEC Directive on Low-voltage equipment

The product conforms to the standards:

- EN 61326-1:1997+EN 61326/A1:1998
  - EMC requirements for Class A electrical equipment for measurement, control and laboratory use
- EN 61000-3-2:2000
  - Electromagnetic compatibility (EMC). Part 3-2: Limits – Limits for harmonic current emissions
- EN 61000-3-3:1995
  - Electromagnetic compatibility (EMC). Part 3: Limits – Limitation of voltage fluctuations and flicker in low-voltage supply system for equipment with rated current  $\leq 16A$
- EN61010-1: 2001
  - Safety requirements for electrical equipment for measurement, control and laboratory use; Part 1: General requirements
- IEC/EN 60825—1/Ed 2:2007
  - Safety of laser products. Part 1: Equipment classification, requirements and user's guide

Trimble Navigation Ltd.

# Introduction

The Trimble FX is a 3D scanner that uses laser technology to enable the production of high-resolution geometric models of three-dimensional objects. The Trimble FX combines high accuracy with top performance, and is suitable for a wide range of applications, including, but not limited to, engineering requirements in the power, process and plant environments.



---

## Components

The Trimble FX comes bundled with a powerful software suite, Trimble FX Controller which, when combined with Trimble RealWorks and Trimble LASERGen Office Software, provides you with a complete solution for:

- Controlling the scanner unit
- Analyzing the scan data
- Processing the data and producing compelling deliverables
- Exporting the results to a variety of industry-standard data formats compatible with CAD and other imaging software packages.

# Setting Up the Hardware

The Trimble FX package includes the following hardware:

- The Trimble FX 3D Scanner



- Power supply unit (110/220 VAC In, 18 Vdc output), with cables



- USB-2 connection cable



- USB Key to enable Trimble FX Controller; contains the software installer



- Key, for powering the scanner on and off



---

## Setting Up the Trimble FX

### To set up the Trimble FX scanner:

1. Place a suitable heavy-duty tripod firmly on the ground and ensure that its legs are properly fixed (to prevent the tripod from collapsing during operation). Trimble recommends the Tri-Max tripod.
2. Secure the Trimble FX on the tripod and secure it with the bottom screw of the tripod.

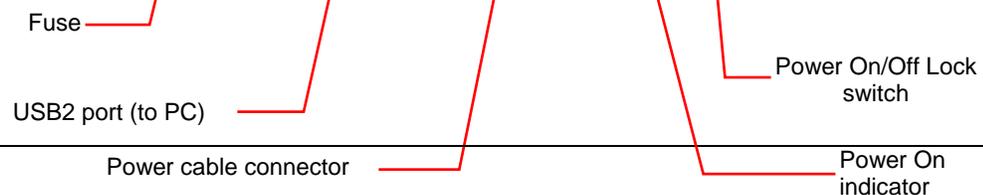


*Tripod 5/8" (survey adapter) screw hole on scanner bottom*

---

## Connecting the Cables

The figure below shows the Trimble FX connector panel where the Power On/Off key switch and interface port connectors are located.



*Trimble FX connector panel*

**To connect the Trimble FX cables:**

1. Locate the USB-2 port on the host computer and plug one end of the connection cable into it. Connect the other end to the Trimble FX's USB-2 port.
2. Make sure that the Trimble FX On/Off switch is in the Off position.
3. Plug the DC cable coming from the power supply unit to one end of the DC extension power cable.
4. Connect the BNC connector end of the DC extension cable into the power connector on the scanner.
5. Plug the AC cord into the power unit and an AC outlet.



*Trimble FX power switch key inserted, cables connected*

---

## *Powering on the Scanner*

**To power on the scanner,** insert the power key into the power switch, then turn the key clockwise to the On position. The indicator light to the right of the power switch will illuminate when power is on.

# Maintenance

---

## Changing the Fuse

If the 3A fuse blows, replace as indicated below.

- ☞ **To access the fuse to replace it**, use a flat head screwdriver to turn the fuse cap counterclockwise to remove the cap.



Fuse cap