Product FAQ

GEOSPATIAL

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TRIMBLE MX50

Introduction

This document answers the anticipated frequently asked questions about the Trimble MX50 mobile mapping system. The FAQ is grouped in the following categories:

Marketing

What is new in the Trimble MX50 system?

New, Trimble manufactured profiling lasers are now used for the Trimble MX50 mobile mapping system.

Combination of two precise laser units, panoramic camera, practical Trimble Applanix GNSS/IMU and proven Trimble mobile mapping platform makes the new system suitable for asset management and road maintenance applications being a reliable and cost effective solution to the end user.

What are the key features of the Trimble MX50?

- Practical Mobile Mapping system combining precise LIDAR data and immersive panoramic imagery.
- State-of-the-art Trimble LIDAR technology integrated with a proven and reliable mobile platform.
- Accurate point cloud for such application as road surfaces, highway maintenance or asset management

- Simple system installation and intuitive browser-based operation.
- Complete field-to-finish workflow, provided by Trimble - capture, process, extract and shar.

What are the key applications for the Trimble MX50 system?

- Asset Management - Transportation, Utilities, Cities
- Road Maintenance
- Cities and Municipalities
- Utilities
- Airports
- Telecommunications
- Environment and Natural Disasters

What languages are supported by Field Software that is used for system control and data acquisition?

Trimble Mobile Mapping Field Software TMI supports the following languages: English, French, Spanish, German, Japanese, Korean, Russian to enable system operators to capture data and control mobile mapping devices.

Does Trimble provide office software tools to process MX50 data?

Trimble MX50 is a complete field-to-finish solution and is fully supported by the established Trimble Mobile Mapping workflow. Data is compatible with Trimble Business Center and supported by Trimble MX for feature extraction and data sharing.

At the same time, data flows to the most popular geospatial software packages is established utilizing data export in the most used formats as TMX Publisher PlugIns to ArcMap, ArcGIS Pro, AutoCAD, QGIS, that brings user to the next intelligent level of data integration.

Can MX50 be used to collect street view data?

Trimble MX50 is equipped with a 360 deg camera that produces accurate and immersive panoramic imagery. And yes, users can produce street level imagery.

Find MX50 data sample here: https://geospatial.trimble.com/view-mx50-data-now

Does Trimble provide tools to share mobile mapping data via the web?

Trimble MX Publisher allows users to share mobile mapping data across their organization and give stakeholders access via their web browser. Data is located on an internal company server and can be shared with stakeholders depending upon specific defined account roles and permissions.

Have a look at TMX Publisher Brochure

Is it possible to connect an external sensor to the Trimble MX50 system, such as an external high resolution camera or ground-penetrating radar?

Yes, it’s possible to synchronize MX50 with external sensors, using an external signal connector.

This connector provides the possibility to time-synchronize other systems with the GNSS clock of the MX50 system (PPS and serial interface).

Does Trimble provide tools for semi-automatic feature extraction based on MX50 data?

Trimble Business Center can be used for semi-automatic features extraction from point cloud data. It also provides users with the powerful tool to classify point cloud data automatically.

Trimble MX software for feature extraction provides users with the powerful capabilities to extract objects in 1 - 3 clicks, such as edges, road marking, fences, guardrail, curves, boxes, rail.

Is the MX50 demo dataset available that I can view without special software being installed?

View Trimble MX50 Data Now! ! There is no need to install any application to view data for you.

Technical

What is the maximum camera speed?

10 frames per second is the maximum camera speed supporting data capture at highway speeds up to 110km/hour.

What sensor type is used for the MX50 panoramic camera?

6x High-sensitive 5.1 MP (2464 x 2056), Global Shutter.

How do I control the amount of captured data?

The Trimble MX50 system operator can set laser and camera settings in field software TMI to control the amount of captured data. Depending on project needs and the project environment images can be captured based upon user defined distance or time interval.

Laser measurement capture modes can be selected based upon application requirements; 166 KHz and 500Hz.

Trimble advises careful mission planning prior to data collection. TMI capture software supports the use of imported .kml files to help capture data along the planned project trajectory. Imported .kml files as well as real time mission trajectory are overlaid on a background map that assist the system operator to optimize navigation and ensure complete data capture for the project.

What's the laser accuracy I can expect?

Laser accuracy is 2mm, laser precision is 2.5mm at 30m distance. The difference between accuracy and precision is the following:

- accuracy is the degree of conformity of a measured quantity to its actual (true) value.
- precision is the degree to which further measurements show the same results.

What kind of vehicle do I need for the Trimble MX50?

The MX50 is designed to be used on a wide range of vehicles fitted with rubber wheels and driven on paved surfaces. For harsher environments an optional roof rack fitted with additional shock absorbers is available.

Please note, that bright vehicle colors should be avoided to avoid exposure artefacts. A minimum roof height of 1.60 m for the vehicle is recommended.

Review this simple, but powerful tool when selecting the car to drive MX50 system: Trimble MX Scan Car Selection Tool

How is the Trimble MX50 powered?

Trimble MX50 can be powered directly from the vehicle power supply or using an external battery.

For safe operation of the MX50 system, a reliable 12V - 16V DC power supply should be available in the vehicle.

The power input of the MX50 system should meet the following requirements:

Input Voltage Range: 12 to 16 V DC

DC Current:

- At start-up: 25 A @ 12.8 V
- Steady-state operation: 12 A @ 12.8 V

System Power consumption: operational 150W (max 350W on the system start up)

Typically this can be accomplished using the vehicle's battery and charging system.

When using a car battery it's recommended to use a buffer battery, in addition to the car battery. This prevents the primary battery from going too low. More information about power supply setups described in Trimble MX50 User Guide.

What's the benefit of GAMS?

When the MX50 is started, the navigation unit needs to initialize and establish its heading with respect to the north (orientation of the vehicle). Using a single antenna solution, it takes some time to estimate heading due to the change in the real time position over time and due to the earth's rotation (orientation of the vehicle).

Using the secondary GAMS antenna, the orientation of the vehicle can be determined much more quickly. GAMS is very useful when surveying in an area with challenging GNSS conditions, as accurate heading can be regained quickly when more satellites are available.

What size of data can I expect from the Trimble MX50 (per km, per hour)?

Size of the captured data depends on the capture settings and driving speed during data acquisition.

See some samples of data volumes below:

Example 1

Mission parameter	Value
Vehicle Speed	60km/hour (37.2 mph)
Mission Time	60 min
Laser capture settings, PRR	166 kHz
Camera capture setting	Each 3 meters (distance based option)
Laser 1, file size	4.6 GB
Laser 2, file size	4.6 GB

360-deg camera, file size	130.4 GB

Example 2

Mission parameter	Value
Vehicle Speed	100 km/hour (~37 mph)
Mission Time	60 min
Laser capture settings, PRR	500 kHz
Camera capture setting	Each 5 meters (distance based option)
Laser 1, file size	13.7 GB
Laser 2, file size	13.7 GB
360-deg camera, file size	130.4 GB

What's the benefit of using a DMI?

The DMI helps to estimate when the vehicle was standing still (Zero Update velocities). This assists with trajectory processing in POSPac. POSPac uses this input to eliminate position drift when the vehicle is stopped. Having a DMI will provide some improvement in the overall position error in dead reckoning situations such as tunnels and other GNSS challenged environments.

How many channels does the MX50 GNSS receiver have?

The AP20 has 220 channels. Trimble MX50 receiver provides triple-band GPS L1/L2/L5, GLONASS G1/G2/G3, BeiDou B1/B2, and Galileo E1/E5a+b plus L-band correction services coverage and is specially designed for precision triple frequency positioning. It provides superior multi-path signal rejection, a linear phase response, and tight phase center variation (PCV).

What's the max driving speed Trimble MX50 can collect laser and imagery data?

Trimble MX50 has been designed to collect data at max driving speed 110 km/h (68 mph).

What's the IP rating for a sensor unit of MX50?

The IP rating for the Trimble MX50 sensor unit is IP64.

What are the benefits of OmniStar?

- Ominstar can help during MX50 navigation initialization (if the OmniStar Satellite is visible!). Improved position accuracy leads to a better heading estimation during start-up.
- The vehicle's position on the online-map display will be improved (if Omnistar satellite is available). Attention! Omnistar Satellite might not be always visible during your mission (shadows in the GPS signal

due to vegetation, buildings).

How do I transfer mobile mapping data from the MX50 to my computer?

Trimble MX50 is equipped with an exchangeable 2TB SSD disk. Once you have closed your mission and shut down your system, you can bring this removable SSD containing your mission data to the office. Removing the SSD is very simple - unlock the SSD with the key provided, take it to the office and then use the USB 3.0 cable provided to transfer your mobile mapping data to your processing PC.

Make sure your disk has a free space before each next MX50 mission.

Field and office software

What field software is used with the new Trimble MX50?

TMI (Trimble Mobile Imaging) is the operating software for Trimble Mobile Mapping systems. It is a web-based application and doesn't require a separate installation.

What controlling device can be used to operate the system?

Any device (tablet, laptop, etc) that supports WiFi or LAN connection. TMI software is a web based application and can be run from Google Chrome browser.

Which software do I use for trajectory processing?

Applanix POSPac is used to process Trimble MX50 trajectories. A new feature, released together with the MX50, is the possibility to run trajectory processing from Trimble Business Center directly. This simplifies the workflow and allows all data processing to happen with TBC.

**Note: Applanix POSPac needs to be installed (with a valid POSPac licence) on your processing PC even when you process your trajectories in TBC.*

When do I use TBC and when do I use TMX?

Trimble Business Center is a powerful geospatial software suite that is used to process imagery and LiDAR data.

TBC is used to generate accurate point clouds, process imagery, improve data accuracy through registration to local control points, and align data collected from different mobile mapping runs of the same geographical area. TBC also has features to colorize, clean and classify your mobile mapping point clouds. Additionally, TBC has powerful tools to generate road corridors, digital terrain models, road profiles, road design corridors, establish utility networks, create accurate CAD drawings and export data to other mobile mapping applications like TMX.

Trimble MX software provides users with asset management and GIS capabilities for large feature extraction projects. TMX users can extract objects from MX50 based point clouds and imagery data using many features that will help increase your productivity. TMX supports topological data structures providing workflows to add attribute and metadata to point, line and polygon features during the data extraction process. Query tools allow you to filter and analyze geospatial data. TMX users can connect to existing databases and benefit from using data schemas already created. TMX Publisher allows users to share mobile mapping data across their organization and give stakeholders access to mobile mapping data via a web browser. Data published publicly by TMX can benefit from new data blurring capabilities available during data export from TBC.

Trimble provides an established mobile mapping workflow supported by one geospatial supplier.

Is it possible to use a prepared mission route to navigate in the field?

TMI field software, running on Trimble MX50, allows users to import planned data capture routes for overlay on street mapping along with the real time vehicle trajectory, during your data capture mission. This helps system operators to collect data in accordance with project planning guidance. If there are deviations to the project plan, during data capture, the system operator can add on-the-fly notes to the current mission.

In what formats data can be exported from the field?

Data is stored in the Trimble database format and can be read by Trimble Business Center software.

Is it possible to view point cloud coverage in real time?

Data from all MX50 sensors can be viewed by the system operator in real time. Camera View and LiDAR waterfall views are accessible from the TMI User Interface.

Does the system support background maps to be used for the navigation in the field?

Yes, online background street maps are supported by TMI field software allowing efficient navigation in the field.

What software is used for point cloud registration?

Trimble Business Center provides capabilities to align data collected during different runs of the same area (Run to Run registration). It also provides workflows for users to adjust mobile mapping data to local control points.

What editions or modules of Trimble Business Center do I need to work with the MX50 data?

To post-process and adjust the MX50 data, the Mobile Mapping and Scanning modules are required, and a GIS module is recommended.

All these can each be purchased individually, along with an underlying TBC Survey Advanced edition.

If you are an existing TBC user, and have experience with using other Trimble geospatial equipment, a Trimble Sales representative, or Geospatial Distribution Partner, can help you add capabilities to your existing TBC licence to support mobile mapping workflows.

What software does Trimble recommend for massive feature extraction projects?

Trimble MX Asset Modeler software provides users with advanced GIS capabilities for massive feature extraction projects. TMX users can extract objects from MX50 based point clouds and imagery using efficient data extraction workflows that will enhance productivity. Attribute data can be added to point, line and polygon features during extraction. TMX users can connect existing databases and leverage date schemas already created.

Can MX50 data be combined with an external high resolution camera in Trimble MX software?

Yes, this is possible and would require data being prepared for TMX.

Please contact Trimble Mobile Mapping support team for this request imaging_support@trimble.com.

You will be asked to provide external camera data in the format that is required by TMX software: images, corresponding ASCII file with position and orientation, camera parameters, length distortion parameters.

Does Trimble provide multi user access for the feature extraction office software tools?

Trimble Asset Modeler Client/Server allows multiple user connections to the same mobile mapping data and perform simultaneous feature extraction. This means that multiple people can work on the same project at the same time.

How many customers can connect to the MX50 data via the web and how?

Trimble MX Publisher is used to share data via the web to allow multiple users to access data at the same time.

It's possible to connect up to 100 users at the same time with corresponding Publisher 100 users license.

Can I work with MX50 data in TopoDOT?

After the pre-processing steps are complete in TBC data can be exported to TopoDOT. The export process allows export of a complete mobile mapping mission or selected parts of missions to TopoDOT format.

What laser formats can be exported from the TBC MM?

Various export options are available from TBC software:

- .las.
- .laz
- .e57
- .pod
- .pts
- .ptx
- .rcp
- .tdx

Additionally the TBC Mobile Mapping module contains structured export to TMX and TopoDOT software packages. *(.las format for point cloud data is used)*

What vector formats are available for export from the TMX office software?

The following vector data export formats are available for Trimble MX user:

- .gpx
- .kmz
- .kml
- .dxf
- .oxf
- .shp

Can I use existing databases and data schemas?

Yes, in TBC users can connect to an ESRI geodatabase or shapefile.

TMX software allows connection to existing data schemas on the layers level or connect to the following databases: Microsoft Access v6 or v12, Microsoft SQL server, MySQL, ODBC,Oracle, PostgreSQL . When performing measurements in TMX Publisher smart integration technology using PlugIns can be used to save results in your existing database.

Sales

What is included with the Trimble MX50?

The following hardware components are included in the Trimble MX50 delivery:

1. Shipping carton box 1:

   MX SCAN - Transportation Case, Sensor Unit:

   - Trimble MX50 Sensor Unit
   - MX SCAN- Cable 5 m, Control Unit to Sensor Unit, STD
2. Shipping carton box 2:
   - Trimble MX SCAN Control Unit
   - Trimble MX SCAN Power Unit
   - Trimble MX SCAN Roof Rack
   - MX SCAN - Cable 3 m, Power Unit to Control Unit
   - MX SCAN - Cable 5 m, Source to Power Unit
   - Trimble GAMS Antenna Kit: GAMS (GNSS Azimuth Measurement Subsystem)

The system includes TMI firmware.

1st year of Trimble warranty, field software maintenance and access to Trimble Mobile Mapping worldwide support team.

What are the recommended accessories for the Trimble MX50?

A DMI (Distance Measuring Indicator) is recommended to be used in busy traffic or/and GNSS challenged environments. A DMI helps to estimate when the vehicle was standing still (Zero Update velocities). This assists with trajectory processing in POSPac. POSPac uses this input to eliminate position drift when the vehicle is stopped. Having a DMI will provide some improvement in the overall position error in dead reckoning situations such as tunnels and other GNSS challenged environments.

What mobile mapping software packages are included in the system price?

TMI Field software and 1st year of it's maintenance (access to mobile mapping support team and latest version released by Trimble) is included in the system.

Office software needs to be purchased separately. Please contact your local Trimble sales representative or Trimble Distribution Partner for more information.

Where can I find price information about Trimble MX50 and recommended software packages?

Please contact your local Trimble Sales representative or Trimble Distribution Partner for all price related information.

Service, Support

From where can I access technical documentation for MX50?

Technical documentation can be accessed from the Trimble webpage. Access to Trimble Mobile Mapping online knowledgebase will be given to MX50 users enabling access to 24/7 Trimble technical support.

Trimble User Guide will be delivered to you with the system.

In addition all technical documentation, including Users Guide can be accessed from the Trimble webpage.

Further information will be provided via the Trimble Mobile Mapping online knowledgebase.

Can Trimble access my MX50 remotely to provide support?

In order to increase efficiency of the support w Trimble is providing to our users, remote support capabilities and tools have been developed. System operator can enable our mobile mapping support team to access the system remotely via TMI Admin Interface. To start remote session Internet connection on the Trimble MX50 operation device has to be established.

Are annual calibrations required?

There is no technical requirement for the annual system recalibration.

How do I collect log files from TMI to share with tech support if needed?

Mission log file can be found in the mission folder, when data is transferred to the work station. This log file provides detailed information about the mobile mission specifically.

Other log file can be generated from TMI Administration Interface for the entire Trimble MX50 hardware. In addition to mission logs it has all background events stored. Users can download system logs directly in the field to the tablet or any other device used to access the TMI Administration Interface.

Who do I contact if I need support for the Trimble MX50?

Please contact Trimble mobile mapping support team for any support related information:

imaging_support@trimble.com

EMEA and ROW: +49-7351-474-0237

Americas: +1-289-695-4416 or +1-303-635-9200

APAC: +86-10-8857-7575 ext 824

Can I order a Trimble Factory Check for the MX50 system and what it will include?

An MX50 factory check is available on request but is not a compulsory requirement from Trimble in order to maintain warranty continuity. A factory check helps to avoid interruptions of operation resulting from wear-and-tear caused defects and keeps the quality of the generated data to its desired high quality levels. A Factory check is recommended after two years of operation or 1500 operating hours and needs to be conducted at the Trimble Mobile Mapping Service Center in Germany. The Trimble MX50 Factory Check includes checking all main system components, such as sensors, internal navigational system, and external cables.

Please contact your Trimble Sales representative for sales related questions.

Training

Can I order training for the MX50 solution to be undertaken by a Trimble Trainer?

Yes, training is available and can be ordered by customer in the preferred form, web-based training or on-site training.

What does training on the MX50 system include?

Training can be provided for Trimble MX50 hardware and each mobile mapping software package (POSPac, TBC, TMX). The training agenda covers mobile mapping workflows, best practices, and practical use of the MX50 system. A structured agenda, prepared training materials, training data and exercises allow customers to establish the required knowledge to use their Trimble MX50 and process data with confidence..

Warranty

What is the standard warranty period for the Trimble MX50 mobile mapping system?

Each system delivery includes 1 year of Trimble standard warranty, firmware updates and access to worldwide Trimble mobile mapping support team.

Are Extended Warranty Plans available for the Trimble MX50?

12 or 24 months extensions of the original factory warranty are available.

How long is the additional warranty for MX50?

In addition to the first year of warranty that is included in system purchase a further 4 years of extended warranty can be purchased.