### LTI MapSmart (for Android) Interface to



## **GNSS** Receivers

Quick Reference Guide



### Overview

LTI's MapSmart is an application serving the mapping and GIS industry. In addition to a full interface to LTI's laser products/systems, it also easily supports input from Trimble GPS receivers through the use of Android Location Services\*.

#### **Compatible Trimble products**

#### Software used

- R Series: 1,2,8,10
- Catalyst

- GNSS Status ver 3.0.x
- Mobile Manager ver 1.2.x
- MapSmart ver 4.x

#### **Basic Steps**

- Setup Android Device
- Connect Receiver to Device
  - R Series
  - Catalyst
- Configure MapSmart

\*only position and basic satellite information is available





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### Setup Android Device

Instead of routing the GPS data to a Bluetooth Serial Port, it can be sent to Location Services in an Android device. This makes it easily accessible to MapSmart's GPS interface.

- 1. Navigate to Settings / About tablet and locate the *Build number* option (Figure 1)
- 2. Repeatedly tap the value until you see the **Developer** message (Figure 2)
- 3. From the **Developer Options** screen, tap **Select mock location app** and pick the
  - a) **GNSS Status** app from the list for the R Series products (Figure 3)
  - b) Trimble Mobile Manager app for the Catalyst product
- 4. Confirm the selection and then back out of the **Settings** menu (Figure 4)

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|---|---|--|----------------|---|----------------|
| ← About tablet  | ← About tablet  | ← Developer options  |                | ← Developer options   |                |
| System Upgrade  | System Upgrade  | On   |                | On  | •              |
| Status<br>Status of the battery, network, and other information         | Status<br>Status of the battery, network, and other information         | OEM unlocking<br>Allow the bootloader to be unlocked                               | •              | OEM unlocking<br>Allow the bootloader to be unlocked                                |                |
| Legal information   | Legal information   | Running services<br>View and control currently running services                    |                | Running services<br>View and control currently running services                     |                |
| Model number<br>CT7G  | Model number<br>CT7G  | Debugging  |                | Debugging   |                |
| Android version<br>6.0  | Android version<br>6.0  | Select application   |                | USB debugging<br>Debug mode when USB is connected                                   |                |
| Android security patch level  | Android security patch level  | Nothing  |                | Revoke USB debugging authorizations   |                |
| July 1, 2016  | July 1, 2016  | FM Radio   |                | Bug report shortcut<br>Show a button in the power menu for taking a bug report      |                |
| Baseband version<br>MOLY.LR9.W1444.MD.LWTG.MP.V79.P15, 2016/08/08 10:16 | Baseband version<br>MOLY.LR9.W1444.MD.LWTG.MP.V79.P15, 2016/08/08 10:16 | com.android.fmradio  |                | Californiock location op  |                |
| Kernel version  |   | GNSS Status<br>com.trimble.mcs.gnssstatus  |                | Mock location app: GNSS Status  |                |
| 3.18.19<br>tyd@tyd-H97-HD3 #1<br>Tue Sep 27 19:32:02 IST 2016           | You are now a developer!  | Enable view attribute inspection   | -              | Enable view attribute inspection  |                |
| Para number<br>Hv28.NFC.SUS7.A.0927.V1.01                               | Build number<br>HV28.NFC.SUS7.A.0927.V1.01                              | Select debug app<br>No debug application set                                       |                | Select debug app<br>No debug application set  |                |
| Custom build version  | Custom build version  | Wait for debugger<br>Debugged application waits for debugger to attach before exec | uting          | Wait for debugger<br>Debugged application waits for debugger to attach before exect | uting          |
| alps-mp-m0.mp1-V2.39.1_droi6735.65u.m0_P24                              | alps-mp-m0.mp1-V2.39.1_droi6735.65u.m0_P24                              | Verify apps over USB   |                | Verify apps over USB  |                |
|   |   | Check apps installed via ADB/ADT for harmful behavior.                             | •              | Check apps installed via ADB/ADT for harmful behavior.                              |                |
|   |   | Logger buffer sizes  |                | Logger buffer sizes   |                |
| Figure 1  | Figure 2  | Figure 3   |                | Figure 4  |                |

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### **Connect R Series Receiver to Device**

The first time you use a Trimble GNSS receiver, you must pair it with your device. Make sure you have a compatible Trimble receiver paired with your device before continuing.

- Start the GNSS Status utility (version 3.x) and from the Home screen, tap the Menu icon (Figure 5a)
- 6. Select *Source* (Figure 6a)
- Confirm your GNSS receiver is listed under *Recent* connections; and under the *Position Source* tab, select Location Services. Tap Select (Figure 7a)
- 8. From the Home screen, wait for positions to update from the receiver (Figure 8a)



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### **Connect Catalyst Receiver to Device**

The first time you use a Trimble GNSS receiver, you must pair it with your device. Make sure you have a compatible Trimble receiver paired with your device before continuing.

- 5. Start the *Trimble Mobile Manager (TMM)* utility (version1.x) and from the **Home** screen, make sure your Subscription is set properly (Figure 5b)
- 6. Tap the *Connect* icon or swipe left (Figure 6b)
- 7. Slide the **Connect** button On to start receiving data from the antenna (Figure 7b)
- 8. Slide the Share button On and wait for positions to update from the receiver (Figure 8b)

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|--|---|---|---|
| Trimble Mobile Manager :   | <ul> <li>Trimble Mobile Manager :</li> </ul>  | Search Trimble Mobile Manager :   | <ul> <li>Trimble Mobile Manager :</li> </ul>                      |
| <u>♠</u>   | <u>∧ (⊘)</u> ◇  | <u> </u>  | ▲ _ @ _   |
| Summary  | Connect   | Connect   | Connect   |
| GNSS Status<br>Not connected   | Connect 🗩   | Connect (   | Location Sharing Active   |
| Catalyst Sub-meter (Demo)  | Share Catalyst  | 3.5m  | 70cm  |
| Device   | Share Catalyst locations with your regular applications. Catalyst<br>Ready applications do not need this. | Share Catalyst  | Share Catalyst  |
| Marginal : The device may perform poorly with Catalyst,<br>Connected | Share 🗩   | Share Catalyst locations with your regular applications. Catalyst<br>Ready applications do not need this. | Share Catalyst locations with your regular applications. Catalyst |
| Software<br>Up to date   |   | Ready applications do not need this.  | Ready applications do not need this.                              |
|  |   |   | Share   |
|  |   | GNSS Status   | GNSS Status   |
|  |   | Position status<br>Positioning: Autonomous  | Position status<br>Positioning: Differential                      |
|  |   | Location<br>N39*35'27.169"; W104*50'43.304"; 1736.11m   | Location<br>N39°35'27.094°; W104°50'43.093°; 1736.47m             |
|  |   | Horizontal precision (RMS)<br>3.5m  | Horizontal precision (RMS)<br>70cm                                |
|  |   | Vertical precision (RMS)<br>4.0m  | Vertical precision (RMS)<br>80cm                                  |
|  |   | GNSS correction status<br>728 bytes   | GNSS correction status<br>2 sec; 51643 bytes                      |
|  |   | Satellites 🗸  | Satellites 🗸  |
| Figure 5b  | Figure 6b   | Figure 7b   | Figure 8b   |



### Configure MapSmart

If basic information such as number of satellites and HRMS is adequate, Android Location Services can provide the position from the Trimble Receiver to MapSmart.

- 9. Start the *MapSmart* app and tap the **Menu** options (Figure 9)
- 10. Select GPS Settings (Figure 10)
- 11. Under the Device pull-down list, select Location Services, then tap Start Fix (Figure 11)



12. Confirm the positions come in and update from the Trimble receiver. Tap **Submit** and the GPS is ready to use with MapSmart (Figure 12)

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| ← MapSmart               | ← MapSmart                | Categories        | ← GPS Settings |                      |                              |              | ← GPS Settings |         |       |          |                 |                           |              |                        |
| LASERSOFT®               | LASERSOFT                 | GPS Points        | Start Fix      |                      |                              |              |                |         | Pause | HRMS: 1. | 3433249         |                           |              | Looking for satellites |
| MAPSMART®                | MAPSMAR                   |                   |                |                      | Device: Locatio<br>Latitude: | n Services   |                | •       |       |          |                 | Location Services         |              | •                      |
|                          |                           | Materials         |                |                      | ongitude:                    |              |                |         |       |          |                 | 44.6492824<br>-123.103398 |              |                        |
|                          |                           | Help              |                |                      | Altitude:                    |              |                |         |       |          | Altitude:       | 117.51                    |              |                        |
| E New Survey             | E <sup>+</sup> New Survey | MapSmart Settings |                |                      | ntenna Ht: 4.5               |              |                |         |       |          | Antenna Ht:     |                           |              |                        |
|                          |                           | About MapSmart    |                | Start su             | rveys with GPS               | _            |                |         |       | Start s  | surveys with    | GPS                       |              |                        |
| saved Surveys            | Saved Surveys             |                   |                |                      | s                            | ubmit        |                |         |       |          |                 | Submit                    |              |                        |
| Exit                     | Exit                      |                   |                |                      |                              |              |                |         |       |          |                 | $\smile$                  |              |                        |
|                          | Exit                      |                   |                |                      |                              |              |                |         |       |          |                 |                           |              |                        |
|                          |                           |                   |                |                      |                              |              |                |         |       |          |                 |                           |              |                        |
|                          | 1111                      |                   |                |                      |                              |              |                |         |       |          |                 |                           |              |                        |
|                          |                           | 4                 |                |                      |                              |              |                |         |       |          |                 |                           |              |                        |
|                          |                           | AL-               |                |                      |                              |              |                |         |       |          |                 |                           |              |                        |
|                          |                           |                   | - 2            | +                    | Pause                        | 1            | 2 ABC          | 3 DEF 🛛 | -     | +        | Pause           | 1                         | 2 ABC        | 3 DEF X                |
|                          |                           |                   | ,              |                      | Wait                         | 4            | <b>F</b>       | Curro 🔵 | ,     |          | 147-14          | 4                         | <b>F</b>     | C                      |
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| Measurably Superior*     | Measurably Super          |                   |                |                      |                              |              | U              | π       |       |          |                 |                           | 0            | π                      |
| Figure 9                 | Figure 10                 |                   | Figure 11      |                      |                              | Figure 12    |                |         |       |          |                 |                           |              |                        |
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### **Product Resources**

#### https://www.lasertech.com/TruPulse-Laser-Rangefinder.aspx



#### http://www.lasertech.com/MapSmart-Software.aspx



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#### https://geospatial.trimble.com/products-andsolutions/gnss-systems



https://geospatial.trimble.com/products-andsolutions/trimble-catalyst



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### Contact Laser Technology, Inc.

# Questions regarding the interface of Trimble GPS receivers to our laser products?

#### Please contact us at:

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