Leica Viva GNSS
Getting Started Guide

Version 1.0
English

- when it has to be **right**

Leica Geosystems

Introduction

To use the product in a permitted manner, please refer to the detailed safety instructions in the Leica CS10/CS15 User Manual and the Leica GS10/GS15 User Manual.

For detailed descriptions of all functions and settings of the product and applications, please refer to the Leica Viva Series Technical Reference Manual.

Purpose of this manual

This Getting Started Guide is intended as a quick field reference manual for immediately getting started with your Leica Viva Series equipment. The manual explains what you can find in your container, how everything fits together and how to get started on the basic applications.

Quick references to specific topics

Topic	Refer to
What's in my container?	Chapter 1.1
How does the equipment all fit together?	Chapter 1.2
What is this first screen I see when I turn on my instrument?	Chapter 2.1
How do I get to the Main Menu?	Chapter 2.1
How do I select things and move around the screens?	Chapter 2.2
What are wizards?	Chapter 2.2
How do I get started with jobs and codelists?	Chapter 3

Topic	Refer to
How to use the applications?	Chapter 4

myworld @Leica Geosystems

myWorld@Leica Geosystems (**https://myworld.leica-geosystems.com**) offers a wide range of services, information and training material.
With direct access to myWorld, you are able to access all relevant services whenever it is convenient for you, 24 hours a day, 7 days per week. This increases your efficiency and keeps you and your equipment instantly updated with the latest information from Leica Geosystems.

Service	Description
myProducts	Simply add all Leica Geosystems products that you and your company own. View detailed information on your products, buy additional options or Customer Care Packages (CCPs), update your products with the latest software and keep up-to-date with the latest documentation.
myService	View the service history of your products in Leica Geosystems Service Centers and detailed information on the services performed on your products. For your products that are currently in Leica Geosystems Service Centers view the current service status and the expected end date of service.

Service	Description
mySupport	Create new support requests for your products that will be answered by your local Leica Geosystems Support Team. View the complete history of your Support and view detailed information on each request in case you want to refer to previous support requests.
myTraining	Enhance your product knowledge with the Leica Geosystems Campus - Information, Knowledge, Training. Study the latest online training material or download training material on your products. Keep up-to-date with the latest News on your products and register for Seminars or Courses in your country.

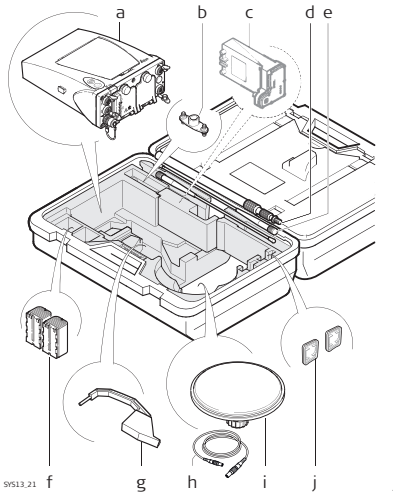
Table of Contents

In this manual

1 Equipment

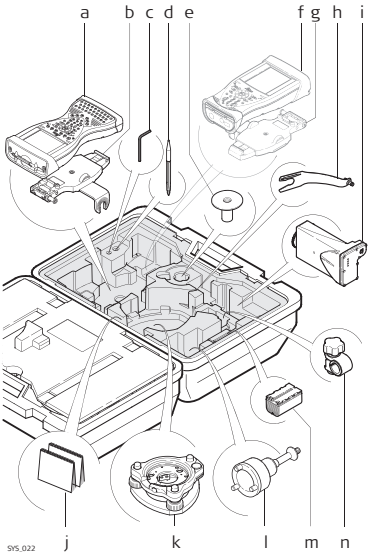
1.1 Container Contents

Container for GS10 instrument and delivered accessories part 1 of 2



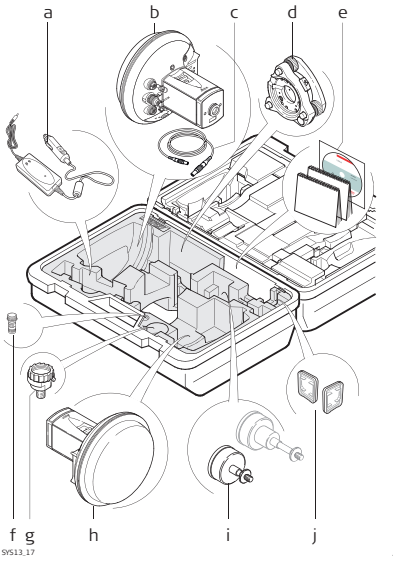
a) GS10 instrument
b) Single/double arm for antennas of devices
c) GFU device such as radio
d) Antennas of device
e) GAD32 telescopic rod
f) GEB221 batteries
g) Height hook
h) Cables
i) Antenna and GAD31 adapter
j) SD cards

Container for GS10 instrument and delivered accessories part 2 of 2



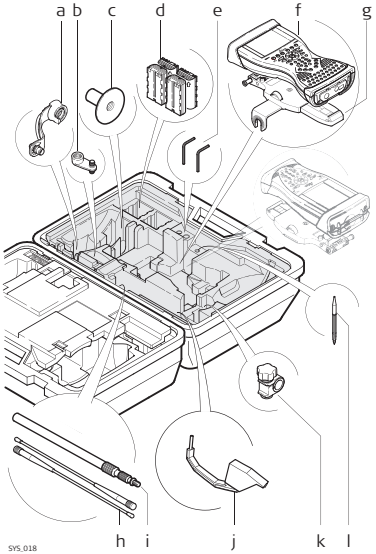
a) CS15 field controller
b) GHT62 holder for CS field controller on pole
c) Allen key
d) Supplied stylus
e) GHT36 base for telescopic rod
f) CS10 field controller
g) GHT62 holder for CS field controller on pole
h) GAD33 arm 15 cm
i) GFU device such as radio
j) Manual & DVD
k) Tribrach
l) GRT247 carrier
m) GEB211/GEB212 battery
n) GHT63 clamp

Container for GS15 instrument and delivered accessories part 1 of 2



a) GDC221 car adapter
b) GS15 instrument
c) Cables
d) Tribrach
e) Manuals and DVD
f) TNC QN-adapter
g) GAD31 adapter
h) GS15 instrument
i) GRT247 carrier
j) SD cards

Container for GS15 instrument and delivered accessories part 2 of 2



a) GAD108 arm
b) GAD34 arm 3 cm
c) GHT36 base for telescopic rod
d) GEB211/GEB212 batteries
e) Allen key
f) CS field controller
g) GHT62 holder for CS field controller on pole
h) Antennas of device
i) GAD32 telescopic rod
j) Height hook
k) GHT63 clamp
l) Supplied stylus

1.2 Setting up as a Post-Processing Base

Use

The equipment setups described following are to be used for static operations over markers.

Description

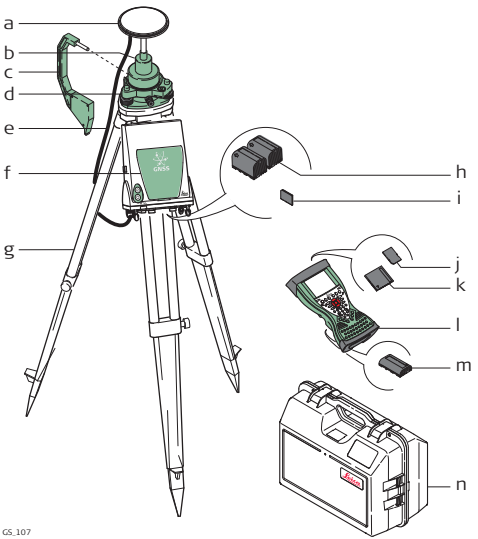
The instrument can be programmed with the CS field controller before use which can then be omitted from the setup.

- GNSS antenna/GS15 instrument is mounted directly using screw fitting. If using stub and adapter, procedures can vary slightly.
- When using the adapter and carrier, ensure that the GNSS antenna and the adapter assembly slide down the full length of the carrier stub. An incorrectly mounted GNSS antenna will have a direct effect on the results.
- GNSS antennas are AS05 or AS10. Procedures/setup can vary if AR25/AT504GG is used.

If the instrument is left in the container during use in high temperatures, the lid should be left open. Refer to the GS10/GS15 User Manual for operating and storage temperatures.

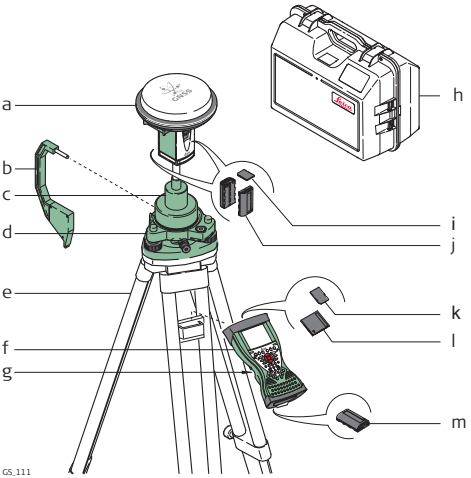
Use an external battery such as GEB171 to ensure operation for a full day.

Equipment setup - GS10



a) GNSS antenna AS05/AS10
b) GRT247 carrier
c) Height hook
d) Tribrach
e) 2.8 m antenna cable
f) GS10 instrument
g) Tripod
h) GEB221 batteries
i) SD card
j) SD card
k) CompactFlash card
l) CS field controller
m) GEB211/GEB212 battery
n) Transport container

Equipment setup - GS15



a) GS15 instrument
b) Height hook
c) GRT247 carrier
d) Tribrach
e) Tripod
f) CS field controller
g) Hand strap
h) Transport container
i) SD card
j) GEB211/GEB212 batteries
k) SD card
l) CompactFlash card
m) GEB211/GEB212 battery

Equipment setup step-by-step

Step	Description	
1.	Set up the tripod.	
2.	Mount and level the tribrach on the tripod.	
3.	Ensure that the tribrach is over the marker.	
4.	Place and lock the carrier in the tribrach.	
	GS10	**GS15**
5.	Screw the GNSS antenna onto the carrier.	Insert the SD card and the batteries into the GS15.
6.	Check that the tribrach is still level.	Press the ON/OFF button on the GS15 for at least 2 s to switch on the GS15.
7.	Insert the batteries into the instrument.	Screw the GS15 onto the carrier.
8.	Insert the SD card into the instrument.	Check that the tribrach is still level.
9.	Connect the instrument to the GNSS antenna using the antenna cable and port ANT on the instrument.	Insert the SD card or CompactFlash card and the battery into the CS field controller.
10.	Connect the CS field controller to the instrument if necessary.	

Step	Description	
11.	To hang the instrument on the tripod leg, use the hook on the rear of the unit. Or place the instrument in the container.	To hang the CS field controller on the tripod leg, use the hook on the hand strap. Refer to the CS10/CS15 User Manual.
12.	Insert the height hook into the carrier.	
13.	Measure the antenna height using the height hook.	
14.	Press the ON/OFF button on the instrument for at least 2 s to switch on the instrument .	

1.3 Setting up as a Real-Time Base

Use

The equipment setups described following are to be used for real-time base stations with the need of normal radio coverage. Raw observation data can also be collected for post-processing.

Description

The GS10 instrument clips to the tripod leg. Connections are made to the GNSS and radio antenna. The radio antenna is mounted on the antenna arm which clips to the GNSS antenna. The GS10/GS15 instrument can be programmed with the CS field controller before use which can then be omitted from the setup.
The GS10 instrument can be used as a DGPS base station, if fitted with the DGPS option, and as a real-time base station.
The connection between GS15 and CS field controller is made via Bluetooth.

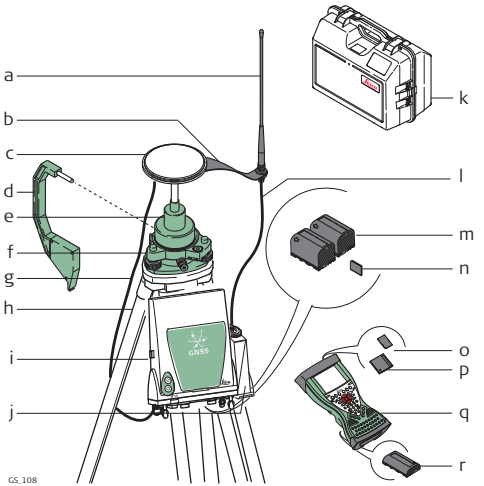
- GNSS antenna/GS15 instrument is mounted directly using screw fitting. If using stub and adapter, procedures can vary slightly.
- When using the adapter and carrier, ensure that the GNSS antenna and the adapter assembly slide down the full length of the carrier stub. An incorrectly mounted GNSS antenna will have a direct effect on the results.

- Standard radio is used throughout the instructions. Digital cellular phones can also be used but the setup can differ slightly.
- GNSS antennas are AS05 or AS10. Procedures/setup can vary if AR25/AT504GG is used.

If the instrument is left in the container during use in high temperatures, the lid should be left open. Refer to the GS10/GS15 User Manual for operating and storage temperatures.

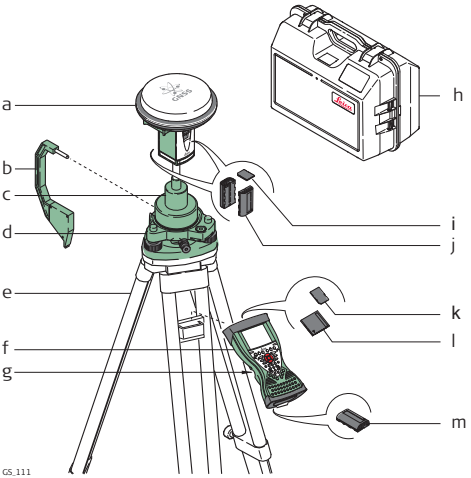
Use an external battery such as GEB171 to ensure operation for a full day.

Equipment setup - GS10



a) Radio antenna
b) GAD33 arm 15 cm
c) GNSS antenna AS05/AS10
d) Height hook
e) GRT247 carrier
f) Tribrach
g) 1.2 m antenna cable (instrument/GNSS antenna)
h) Tripod
i) GS10 instrument
j) Radio in housing
k) Transport container
l) 1.2 m antenna cable (radio housing/radio antenna)
m) GEB221 batteries
n) SD card
o) SD card
p) CompactFlash card
q) CS field controller
r) GEB211/GEB212 battery

Equipment setup - GS15



a) GS15 instrument with built-in radio
b) Height hook
c) GRT247 carrier
d) Tribrach
e) Tripod
f) CS field controller
g) Hand strap
h) Transport container
i) SD card
j) GEB211/GEB212 batteries
k) SD card
l) CompactFlash card
m) GEB211/GEB212 battery

Equipment setup step-by-step

Step	Description	
1.	Set up the tripod.	
2.	Mount and level the tribrach on the tripod.	
3.	Ensure that the tribrach is over the marker.	
4.	Place and lock the carrier in the tribrach.	
	GS10	**GS15**
5.	Screw the GNSS antenna onto the carrier.	Insert the SD card and the batteries into the GS15.
6.	Check that the tribrach is still level.	Press the ON/OFF button on the GS15 for at least 2 s to switch on the GS15.
7.	Insert the SD card and the batteries into the instrument.	Screw the GS15 onto the carrier.
8.	Connect the instrument to the GNSS antenna using the antenna cable and port ANT on the instrument.	Check that the tribrach is still level.
9.	Connect the CS field controller to the instrument if necessary.	Insert the SD card or CompactFlash card and the battery into the CS field controller.

Step	Description	
10.	To hang the instrument on the tripod leg, use the hook on the rear of the unit. Or place the instrument in the container.	Connect the CS field controller to the instrument if necessary.
11.	Insert the height hook into the carrier.	To hang the CS field controller on the tripod leg, use the hook on the hand strap. Refer to the CS10/CS15 User Manual.
12.	Measure the antenna height using the height hook.	Insert the height hook into the carrier.
13.	Clip the antenna arm to the GNSS antenna.	Measure the antenna height using the height hook.
14.	Screw the radio antenna onto the antenna arm.	Press the ON/OFF button on the instrument for at least 2 s to switch on the instrument.
15.	Attach the radio in its housing to port P2 or P3 on the instrument.	-
16.	Connect the radio antenna to the radio using the second 1.2 m antenna cable.	-

Step	Description	
17.	Press the ON/OFF button on the instrument for at least 2 s to switch on the instrument.	-

1.4 Setting up as a Real-Time Rover

Use

The equipment setups described following are to be used for real-time rover with extended periods of use in the field.

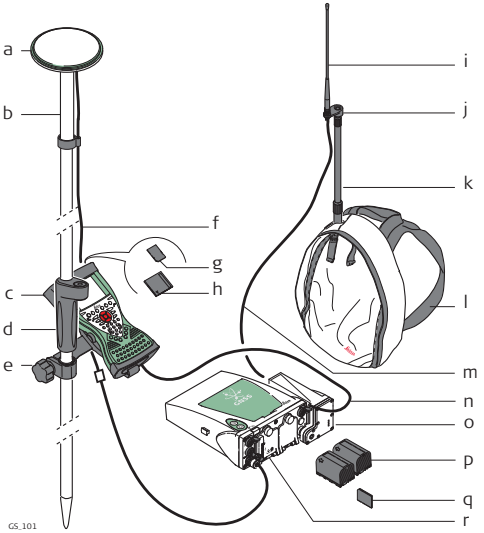
Description

The radio attaches to the GS10 instrument and is placed in the backpack. Connections are made to the GNSS antenna, radio antenna and CS field controller. The cables coming from the backpack can be disconnected when an obstacle such as a fence has to be crossed.
The CS field controller is fixed to the pole with the GHT62. Connection between the GS15 instrument and the CS field controller is made via Bluetooth.

- GNSS antenna/GS15 instrument is mounted directly using screw fitting. If using stub and adapter, procedures can vary slightly.
- When using the pole with stub, ensure that the GNSS/GS15 instrument antenna and the screw-to-stub adapter slide down the full length of the stub before tightening the locking ring. An incorrectly mounted GNSS/GS15 instrument antenna will have a direct effect on the results.
- Aluminium poles are used. They can be replaced with their carbon fibre equivalent without any change to these instructions.

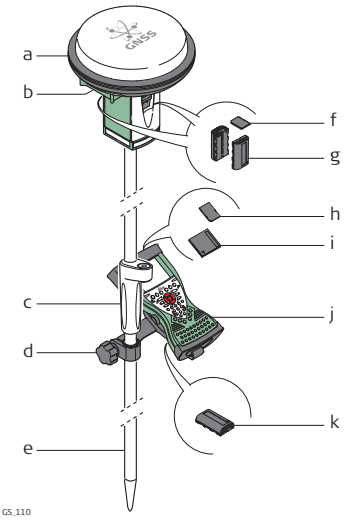
- Standard radio is used throughout the instructions. Digital cellular phones can also be used but the setup can differ slightly.
- GNSS antennas are AS05 or AS10. Procedures/setup can vary if AR25/AT504GG is used.

Equipment setup



a) GNSS antenna AS05/AS10
b) Pole
c) CS field controller
d) Grip for pole
e) GHT62 holder
f) Antenna cable
g) SD card
h) CompactFlash card
i) Radio antenna
j) GAD34 arm 3 cm
k) Telescopic rod
l) Backpack
m) 1.2 m antenna cable (radio housing - radio antenna)
n) 1.8 m, CS to GS10 cable
o) Radio in housing
p) GEB221 batteries
q) SD card
r) GS10 instrument

Equipment setup



a) GS15 instrument
b) Built-in radio
c) Grip for pole
d) GHT62 holder
e) Pole
f) SD card
g) GEB211/GEB212 batteries
h) SD card
i) CompactFlash card
j) CS field controller
k) GEB211/GEB212 battery

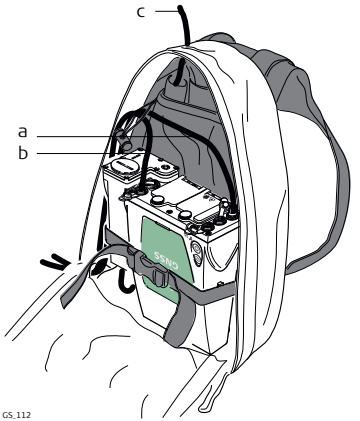
Equipment setup step-by-step

Step	Description
1.	Attach the GHT62 holder to the pole. Refer to "1.6 Fixing the CS to a Holder and Pole".
2.	Insert the SD card or CompactFlash card and the battery into the CS field controller.
3.	Clip the CS field controller into the holder and lock it by pushing the locking pin into the locked position.
4.	Press ON/OFF button on the CS field controller to switch on.
	Proceed with step 5. for **GS10** and with step 24. for **GS15**.
5.	Screw the GNSS antenna to the top of the pole.
6.	Insert the SD card and the batteries into the instrument.
7.	Attach the radio in its housing to port P2 or P3 on the instrument.
8.	Place the instrument in the backpack with the top side facing outwards and the instrument front panel to the top.
9.	Fasten the strap around the instrument.
10.	Push the telescopic rod through the slit in the top of the backpack. Ensure that it is located in the sleeve inside the backpack and push it all the way to the bottom.
11.	Adjust the height of the telescopic rod to suit.

Step	Description
12.	Screw the radio antenna arm onto the telescopic rod.
13.	Connect the first 1.2 m antenna cable to the radio antenna.
14.	Pass the cable through the opening in the top of the backpack and down underneath the instrument.
15.	Connect the first 1.2 m antenna cable to the radio.
16.	Connect the 1.6 m antenna cable to port ANT on the instrument.
17.	Pass the 1.6 m antenna cable through a cable brake and down through the opening in the bottom corner of the backpack flap. Refer to "Position of cables in the backpack".
18.	Draw the required amount of cable out of the backpack and tighten the cable brake.
19.	Connect one end of the second 1.2 m antenna cable to the loose end of the 1.6 m antenna cable and the other end to the GNSS antenna.
20.	Connect the 1.8 m, CS to GS cable to the CS field controller.
21.	Pass the 1.8 m, CS to GS cable through the opening in the bottom corner of the backpack flap and up through a cable brake. Refer to "Position of cables in the backpack".
22.	Plug it into port P1 on the instrument.

Step	Description
23.	Press ON/OFF button on the instrument to switch on.
	GS15
24.	Insert the SD card and the batteries into the GS15.
25.	Press ON/OFF button on the GS15 to switch on.
26.	Screw the GS15 to the top of the pole.
27.	CS field controller and GS15 are connected via Bluetooth.

Position of cables in the backpack



a) 1.6 m antenna cable
b) 1.8 m cable to connect CS field controller and GS instrument
c) 1.2 m antenna cable to connect radio housing and radio antenna

Refer to "1.5 Using the Backpack" for advice on using the backpack.

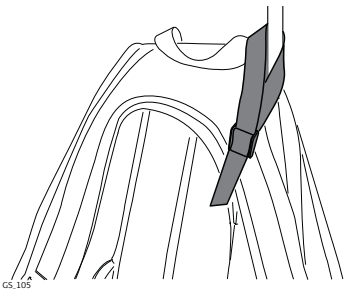
1.5 Using the Backpack

Use

The backpack is used for various applications. The applications are:

- Post-processed kinematic, pole and backpack.
- Real-time rover, pole and backpack.

Antenna pole strap



Ensures that the antenna pole does not sway around and remains as upright as possible.

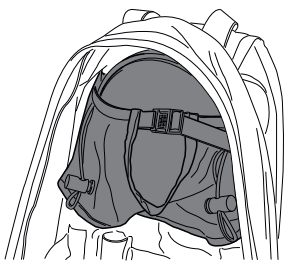
Pass the strap around the pole and fasten using the clip as shown in the diagram.

Hip belt


GS_102

The hip belt
- transfers most of the weight from the shoulders to the hips when properly adjusted.
- contains velcro attachments through which cables can be passed.

Internal net pouch


GS_103

The internal net pouch is designed for
- carrying an AS05/AS10 antenna when not in use.
- storing coiled cables.
- carrying a non-standard radio.
- carrying spare batteries.
- carrying sandwiches.

Use in high temperatures

In high temperatures, it is desirable to increase air flow around the instrument. Therefore the backpack can be kept half or even fully open when in use.

To half open the backpack:

1) Open the backpack halfway.
2) Tuck the flap inside.
3) Secure it with the velcro pad.

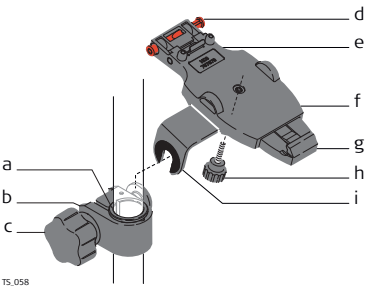
To open the backpack completely:

1) Open the backpack completely.
2) Secure it with the velcro pad.
3) Tuck the flap under the instrument.

1.6 Fixing the CS to a Holder and Pole

Components of the GHT62 holder

The GHT62 holder consists of some components, as shown in the diagram.

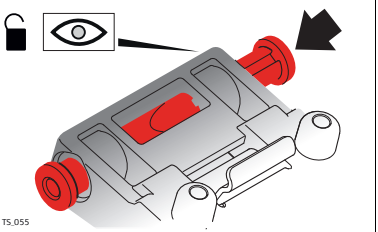


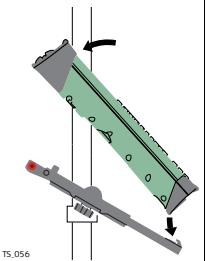
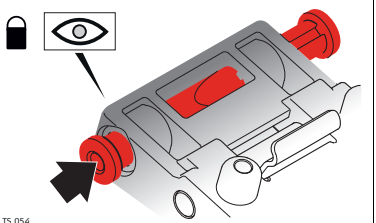
GHT63 clamp
a) Plastic sleeve
b) Pole clamp
c) Clamp bolt

GHT62 holder
d) Locking pin
e) Top clip
f) Mounting plate (extendable)
g) Bottom clip
h) Tightening screw
i) Mounting arm

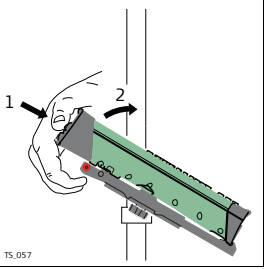
Fixing the CS field controller and GHT62 to a pole step-by-step

Step	Description
☞	If you use the CS15 field controller, extend the mounting plate of the holder first.
☞	For an aluminium pole, fit the plastic sleeve to the pole clamp.
1.	Insert the pole into the clamp hole.

Step	Description
2.	Attach the holder to the clamp using the clamp bolt.
3.	Adjust the angle and the height of the holder on the pole to a comfortable position.
4.	Tighten the clamp with the clamp bolt.
5.	Before the CS field controller is placed onto the mounting plate, ensure that the locking pin is put into the unlocked position. To unlock the locking pin, push the locking pin to the left. 
6.	Hold the CS field controller above the holder and lower the end of the CS field controller into the mounting plate.

Step	Description
7.	Apply slight pressure in a downward direction and then lower the top part of the CS field controller until the unit is clicked into the holder. The guides of the mounting plate aid in this action.  TS_056
8.	After the CS field controller is placed onto the mounting plate, ensure that the locking pin is put into the locked position. To lock the locking pin, push the locking pin to the right.  TS_054

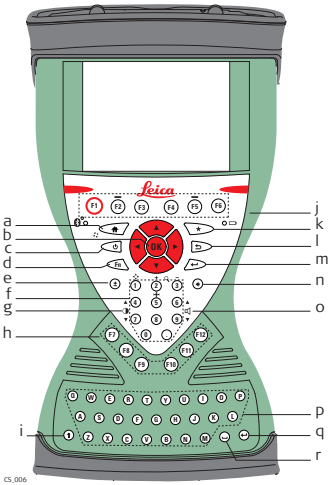
Detaching the CS from a pole step-by-step

Step	Description
1.	Unlock the locking pin by pushing the locking pin to the left of the mounting plate.
2.	Place palm over the top of the CS until fingers grip the bar of the holder underneath.
3.	Push from the top of the CS toward the bar of the holder.
4.	While in this position, lift the top of the CS from the holder. 

2 SmartWorx Viva and Principles

2.1 SmartWorx Viva

Keyboard display CS15



a) Home
b) Arrow keys, **OK**
c) ON/OFF
d) **Fn**
e) ± key
f) Numeric keys
g) Brightness
h) Function keys **F7** - **F12**
i) CAPS Lock
j) Function keys **F1** - **F6**
k) Favourites
l) ESC
m) ENTER
n) Backspace
o) Volume
p) Alpha keys
q) ENTER
r) SPACE

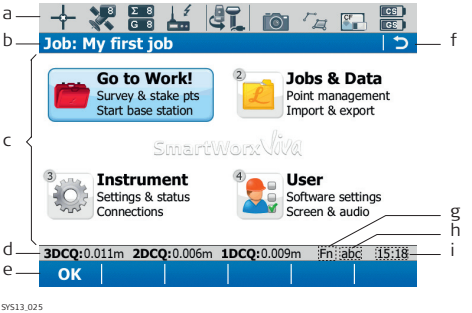
Start using SmartWorx Viva

- Turn on your CS field controller and start SmartWorx Viva.
- Turn on your GS GNSS or TPS instrument.

For information about wizards refer to "Wizards".

2.1.1 Screen

Screen - CS15 field controller



a) Icons
b) Title
c) Screen area
d) Message line
e) Softkeys
f) ESC
g) Fn
h) CAPS
i) Time

Elements

Element	Description
Time	The current local time is shown.
Title	Name of the screen is shown.
Screen area	The working area of the screen.
Message line	Messages are shown for 10 s.

Element	Description
Icons	Shows status information of the instrument. Refer to "2.1.2 Icons". Can be used with touch screen.
ESC	Can be used with touch screen. Same functionality as the fixed key ESC. The last operation will be undone.
Entry mode	The caps mode for upper case letters is active. The caps mode is activated and deactivated by pressing the CAPS key.
Fn	Switches between the first and second level of function keys.
Softkeys	Commands can be ran using F1-F6 keys (only applicable for CS15 field controller). The commands assigned to the softkeys are screen-dependent. Can be used directly with touch screen.

Common softkeys

The softkeys following are used commonly in the Leica SmartWorx Viva software across all applications.

Softkey	Function Key	Description
OK	**(F1)**	To select the highlighted option and to continue with the subsequent screen.
Page	**(F6)**	To change to another page on the current screen.
Help	**Fn (F1)**	To open the Leica SmartWorx Viva online help.
Home	**Fn (F2)**	To move the focus to the top of the list shown in the current screen.
End	**Fn (F3)**	To move the focus to the bottom of the list shown in the current screen.
Quit	**Fn (F6)**	To exit the current application and return to the screen from where the application was accessed.

2.1.2 Icons

Description

The screen icons display the status information of the instrument.

The icons provide information related to basic instrument functions. The icons that appear depend upon which instrument is used and the current instrument configuration.

Icon bar - GNSS Mode

SYS13_023

a) GNSS position status
b) Number of visible satellites
c) Number of satellites contributing to position solution
d) Real-time device and real-time status, Internet online status
e) Current active instrument
f) Camera
g) Line/area/auto points
h) Memory storage (SD card/CompactFlash card/USB stick/internal memory)
i) Battery level (field controller/instrument)

Icons

Icon	Description
Position status 	Displays the status of the current position. As soon as this icon becomes visible the instrument is in a stage where practical operation can commence.
Number of visible satellites 	Displays the number of theoretically visible satellites above the configured cut-off angle according to the current almanac.
Contributing satellites 	Displays the number of satellites that are contributing to the currently computed position solution. ☞ The number of contributing satellites can differ from the number of visible satellites. This difference can be because satellites cannot be viewed, or because the observations to these satellites are considered too noisy to be used.
Real-time device 	Displays the real-time device configured to be used.

Icon	Description
Real-time status 	Displays the status of the real-time device configured to be used.
Current active instrument 	Displays the instruments that are currently configured and active. When more than one instrument is configured, the instrument at the front of the icon is the active instrument.
Camera 	Select this icon to begin the camera function.
Data management 	Select this icon to open the data management pages for **Points**, **Lines** or **Areas**. If there are open lines or areas, a ⊙ symbol will appear in the icon.
Memory storage 	Displays the status of the internal memory or data storage device.

Icon	Description
Battery 	Displays the status and location of the battery.

TPS specific icons

Icon	Description
Automatic aiming 	Displays the current automatic aiming or PowerSearch settings.
Prism 	Displays the selected prism.
Measure mode 	Displays the selected measurement mode. The red laser icon will display when the red laser is active.
Compensator level and Instrument face I or II 	Displays the compensator is off or out of range icons, or the instrument face I or II icon.

2.1.3 Main Menu

Main Menu

OK
To select the highlighted option and to continue with the subsequent screen.

Fn Mode
To switch between GPS and TPS modes

Fn Exit
To close Leica SmartWorx Viva software.

Main Menu functions

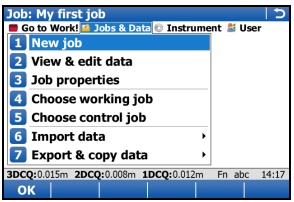
Main Menu function	Description
	**Go to Work!** • To select and start an application.

Main Menu function	Description
	**Jobs & Data** • To manage jobs, data, codelists, GNSS antennas, reflectors and coordinate systems. • To export data from a job on the instrument to a file on the memory device in a customised ASCII format or in DXF format. • To import ASCII, GSI or DXF data from a file on the memory device to a job on the instrument. • To copy points between jobs.
	**Instrument** • To access all configuration parameters related to a survey, the instrument and the interfaces.

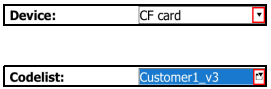
Main Menu function	Description
	**User** • To format the memory device. • To upload files relevant for the instrument functionality, for example, firmware files, language files and licence keys. • To transfer data between the memory device and a standard and simple FTP server. • To view files on the memory device or the internal memory.

2.2 Operating Principles

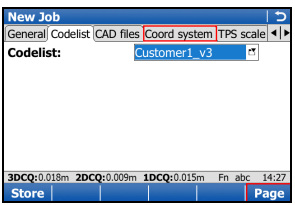
Accessing a menu option

Description	Illustration
There are three ways to access a menu option. 1 Using the touchscreen functionality. Tap on the menu item using the stylus provided. 2 Using the up and down navigation arrows. Move the focus to the menu item. Select **OK**, or press the **OK** button, or the **ENTER** button. 3 Using the numbered keypad. Select the number that corresponds to the menu item. For example, press 1 from the **Jobs & Data** menu to access the **New job** screen.	 

Accessing a selectable list

Description	Illustration
A downward arrow beside a field, indicates there are more choices available in a selectable list. A box and a downward arrow beside a field, indicates that there are more choices and functionality available in a separate screen. To access the list or screen use the touchscreen functionality to tap on the icon, or move the focus to the field and press the **ENTER** button.	

Accessing a page within a screen

Description	Illustration
To access another page within a screen, either: • Tap on the page tab for the page to be displayed, or • Select **Page** until the page is displayed	

Exiting a screen without making a change

Description	Illustration
To exit a screen without making a change, either: • Tap on the return icon, or • Press the **ESC** button	

Wizards

The wizards following are available to make your daily work easier. Each of them lead you through a serious of steps, performing tasks in a specific sequence. For detailed descriptions of the wizards, please refer to the Leica Viva Series Technical Reference Manual.

Wizard	Description
SmartWorx StartUp Wizard	Define the behaviour of your instrument for a general start-up.
RTK rover wizard	Set up your real-time rover.
TPS connection wizard	Connect your CS field controller with your TPS instrument.

Wizard	Description
Working style wizard	Configure the parameters and functions of SmartWorx Viva so that it suits to your preferred method of working and save the settings in a working style.

2.3 Webserver

Description

The Web server is a web-based tool to view the status of and configure the GNSS instruments. The Web server application is integrated into the GS firmware and cannot be deleted.

Access

The Web server from the GNSS instruments can be accessed using the web browser of a Windows device. The Windows device has to be connected first to the GNSS instrument via cable or Bluetooth. Refer to the Leica GS10/GS15 User Manual.

2.3.1 Home

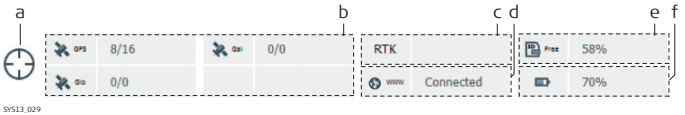
Description

Home function	Description
	**Go to Work!** • To select and start the Wake-up application. Refer to "2.3.3 Go to Work! - Wake-Up".

Home function	Description
	**Current Status** • To view GNSS information of the GS as well as the instrument firmware. Refer to "2.3.4 Current Status".
	**Instrument** • To configure settings for the GS. Refer to "2.3.5 Instrument".
	**User** • To upload and activate firmware, licence keys and languages. Refer to "2.3.6 User".

2.3.2 Icons

Icon bar



a) GNSS position status
b) Number of satellites tracked and available for each satellite system
c) Real-time device and real-time status
d) Internet online status
e) Memory storage (SD card only)
f) Battery level on GS

2.3.3 Go to Work! - Wake-Up

Description

Wake-up sessions are static point occupations, for which the instrument is preprogrammed with a start time and a duration or end time. The instrument turns itself on at the configured start time and the point occupation begins. The point occupation stops and the point is stored after the preprogrammed duration.
In the **Go to Work! - Wake-Up** menu, the actions following can be performed:

- Create/edit a Wake-up session.
- Activate/deactivate a Wake-up session.
- Delete a Wake-up session.

A data storage device must be inserted when the instrument wakes up. If no data storage device is fitted or it is damaged, not formatted or full then the session will not be run.

2.3.4 Current Status

Description

In the **Current Status** menu, the statuses following can be viewed:

- Satellite Tracking status
  - Date and time of the various almanacs on the instrument
  - **Sat**, **Elevation**, **Azimuth**, **S/N1** and **S/N2** and **Health** of every satellite
- Position status
  - **Local time**, **Position latency**, **HDOP**, **VDOP**, **GDOP**, **PDOP**, **Position quality** and **Height quality** (only available if a calculated position is available)
- Battery/memory/raw data logging status
  - Percentage of remaining power capacity of the internal and/or external battery (if connected)
  - Total/free memory for data storage on the SD card
  - Information about the raw data logging
- Instrument status
  - Instrument and firmware (e.g. **Serial no.**)
  - Version (e.g. firmware version of the onboard software)
  - Licencing (e.g. availability of additional instrument hardware options)

2.3.5 Instrument

Description

In the **Instrument** menu, the actions following can be performed:

- Set **Operating mode** (base or rover), select antenna
- Configure **Raw data logging** and **Auto logging of points**
- Configure **Satellite settings**
- Configure **Coordinate system settings**
- Define **Time settings**

2.3.6 User

Description

In the **User** menu, the actions following can be performed:

- **Load firmware**
  - Upload new firmware on the GS instrument.
- **Load licence key**
  - Load a licence key to or delete a licence key from the instrument. A licence key activates the application or the protected options or the software maintenance on the instrument. Licence key files use the naming convention L_123456.key, where 123456 is the instrument serial number.
- **Language management**
  - Select the interface language of the **Web server**. English is always available as the default language of the **Web server** and cannot be deleted.

3 Jobs & Data

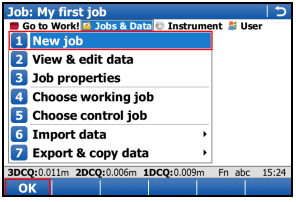
3.1 Creating a New Job

Creating a job step-by-step

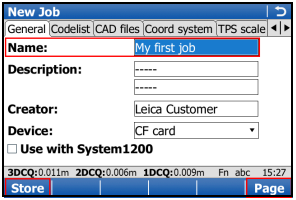
General steps to create your first job in SmartWorx Viva.

Creating your first job

- From the **Main Menu**, select **Jobs & Data** and press **OK**.



- Select **New job** from the **Jobs & Data** menu and press **OK**.



- Enter a name for the job.
- Use **Page** to toggle between the pages to set the proper **Codelist**, **CAD files**, **Coord system**, **TPS scale** and **Averaging**.
- Press **Store** to save the job.

You have finished creating your first job, which is selected as current working job. You will automatically return to the **Main Menu** and are ready to start the next activity.

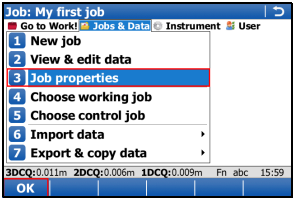
3.2 Creating a Codelist

Creating a codelist step-by-step

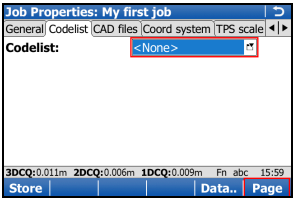
Generals steps to create your first codelist in SmartWorx Viva.

Creating your first codelist

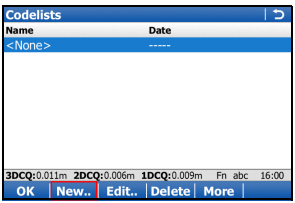
- From the **Main Menu**, select **Jobs & Data** and press **OK**.



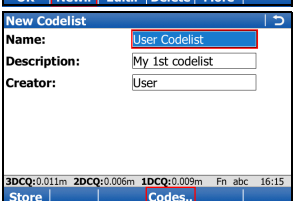
- Select **Job properties** from the **Jobs & Data** menu and press **OK**.



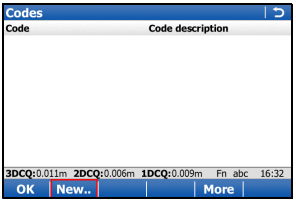
- Press **Page** to change to the **Codelist** page.
- Tap on the selectable list to open the **Codelists** screen.

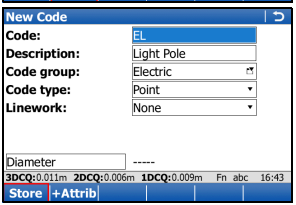


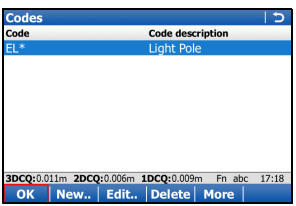
- Press **New..** to create a codelist.



- Type in a **Name** (**Description** and **Creator** are optional).
- Press **Codes..** to open the **Codes** screen.





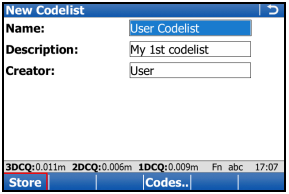


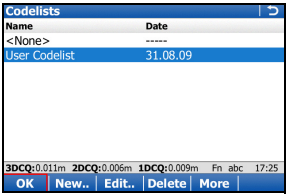
Creating a code

- Press **New..** to create a code.
- Type in a **Code** (EL) and a **Description** (Light Pole), select the **Code group*** (Electric), the **Code type** (**Point**) and the **Linework** (**None**) and create an attribute (Diameter).
- Press **Store** to save the new code.

* The **Code group** has to be created first before it can be selected.

- Press **OK** to return to the **New Codelist** screen.





Storing the codelist

- Press **Store** to save your codelist. You will automatically return to the **Codelists** screen.
- Press **OK** to return to **Job Properties:**, **Codelist** page.
- Press **Store** to save your job and to return to the **Main Menu**.

You have created your first codelist, with a code and a code group and attached it to your current working job.

3.3 Importing ASCII Data into a Job

Objective

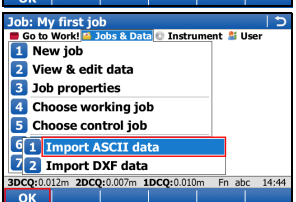
Importing point objects into the working job by using the **Import ASCII data** functionality.

At least one ASCII file with any file extension must be stored in the \DATA directory of the internal memory or data storage device.

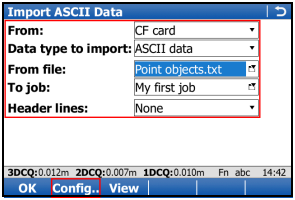
Import ASCII data step-by-step

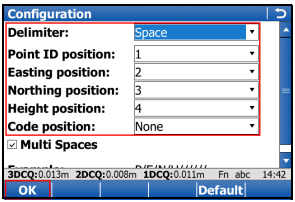
Starting the ASCII Importer

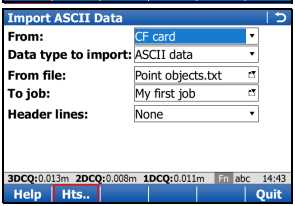
- From the **Main Menu**, select **Jobs & Data**.



- In the **Jobs & Data** menu, select **Import data**, then **Import ASCII data** and access the **Import ASCII Data** screen.





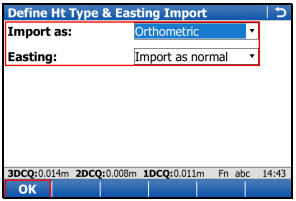


- Select the data storage device, the data type (**ASCII data**), the file to be imported, the working job into which the data has to be imported and define whether header lines have to be considered.
- Enter the **Configuration** screen (**Config..**).

Configuring the ASCII Importer

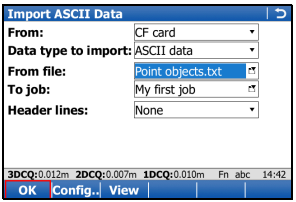
- Select the **Delimiter**.
- Define the position for Point ID, Easting, Northing, Height and Code (if applicable).
- Confirm the configuration settings and return to the **Import ASCII Data** screen (**OK**).

- Enter the **Define Ht Type & Easting Import** screen (**Fn Hts..**).



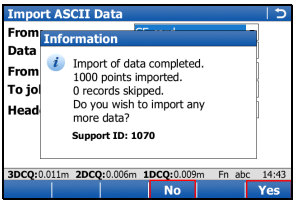
Define height type and Easting import

- Define how heights (**Orthometric** or **Ellipsoidal**) and how the Easting is imported.
- Confirm the configuration settings and return to the **Import ASCII Data** screen (**OK**).



Importing the ASCII data

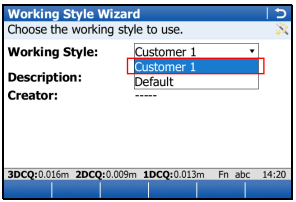
- Import the ASCII data to the working job (**OK**).



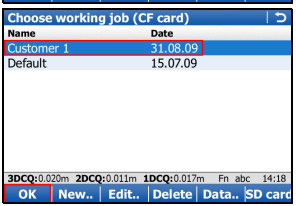
- After importing the ASCII data to the working job, complete the import (**No**) and return to the **Main Menu** or import another ASCII data (**Yes**).

You have completed importing ASCII data into your current working job.

Getting started



- Check that the correct working style (see **User**, **Working style wizard**) is being used.



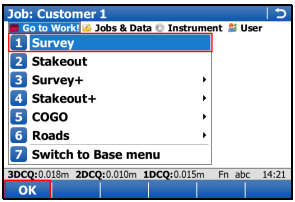
- Check that the correct working job (see **Jobs & Data**, **Choose working job**) is being used.

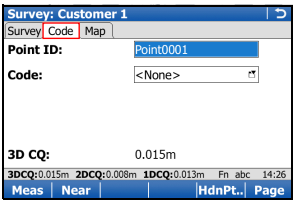
4.1 Survey

Objective

Surveying point objects (fire hydrants, light poles etc.) by choosing codes manually.

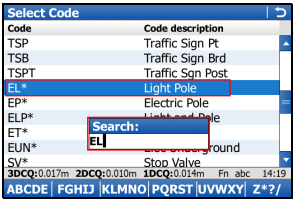
Surveying point objects step-by-step

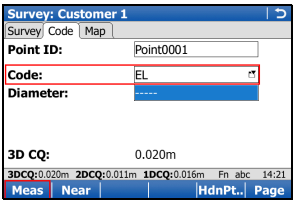


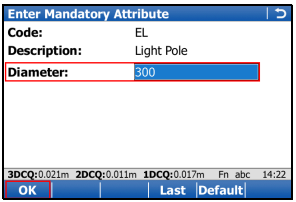


Starting Survey

- In the **Go to Work!** menu, select **Survey** and access Survey.
- Switch to the **Code** page.







Selecting the code

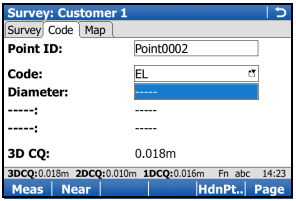
- Highlight **Code** and select the code EL (for Electric Light pole). To select the code EL, toggle to the code or type in the letters to open the drop-down list and search for the code.

You have to enter capitals.

Measuring the point object

- When the code is selected, press **Meas** to measure the point object.

- After the measurement has been stopped the **Enter Mandatory Attribute** screen will appear since the attribute **Diameter** is mandatory and is currently blank.
- Enter a diameter of **300** (mm) and press **OK** to store the point.



You have finished measuring your first point object.

Once the point is stored then the code and attribute value that was stored are displayed.

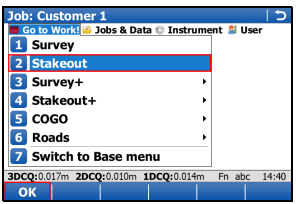
4.2 Stakeout

Objective

Staking out point objects. To make your life easier you will define a filter before staking out the point object. The filter will be defined the way that only points with a certain code and those points which have not yet been staked will be available to be staked out.

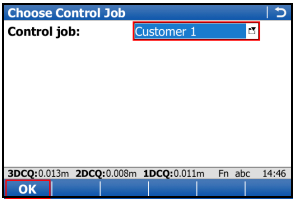
To accelerate the working example, skip the steps regarding the filters and proceed directly with staking out the point object.

Staking out point objects step-by-step



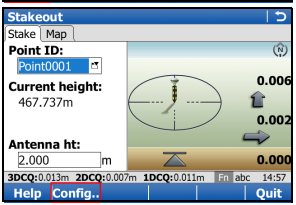
Starting Stakeout

- In the **Go to Work!** menu, select **Stakeout** and access **Stakeout**.



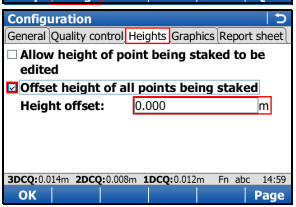
Choose Control Job

- Select the job which contains your point objects to be staked out.
- Press **OK** to enter the **Stakeout** screen.

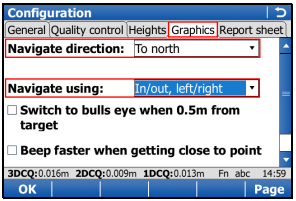


Configuring Stakeout

- Press **Fn Config..** to access the **Configuration** screen.

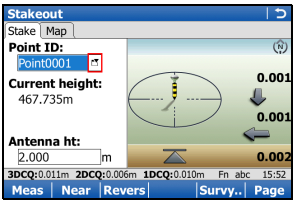


- Configure the following settings:
  - **General** page, **Quality control** page and **Report sheet** page: Leave all settings unchanged.
  - **Heights** page: Check **Offset height of all points being staked** and set **Height offset** to **0.000** m.



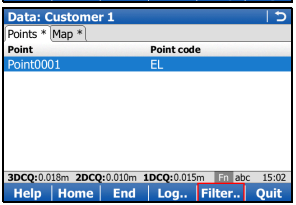
- **Graphics** page: Set **Navigate direction:** Following arrow and **Navigate using:** In/out, left/right.

- Press **OK** to return to the **Stakeout** screen.

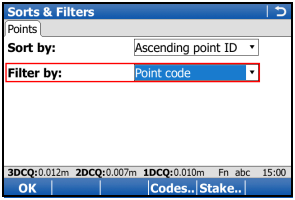


Setting up filters

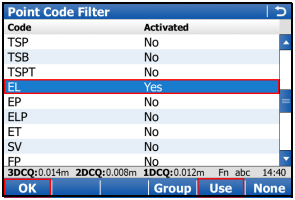
- Tap on the box with the downward arrow right of the Point ID to open the Data screen. All points stored in the control job are shown.



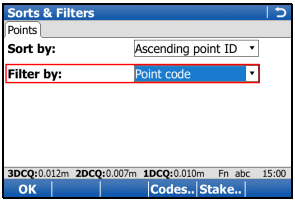
- Press **Fn Filter..** to access **Sorts & Filters** screen.



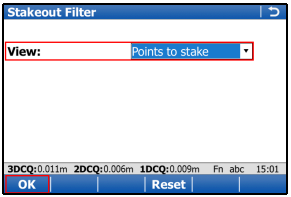
- Set **Filter by: Point code**.
- Press **Codes..** to access **Point Code Filter** screen.



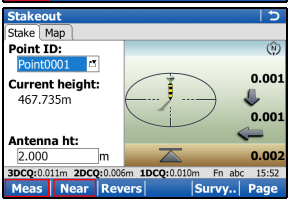
- Press **None** to set all codes to No.
- Highlight code **EL** and press **Use** to activate it.
- Press **OK** to return to the **Sorts & Filters** screen.



- Press **Stake** to access **Stakeout Filter** screen.

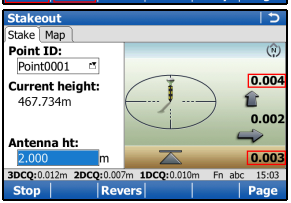


- Set **View: Points to stake**.
- Press **OK** three times to return to the **Stakeout** screen.



Staking out your first point object

- Which is the closest point to you to stake out first? Press **Near** to select the nearest point.
- Navigate to the point and press **Meas**.



- While measuring the point you still can see the differences between the coordinates of the design point and the coordinates of the point you measured.
- The next point in the list to be staked out is displayed after the point was stored.

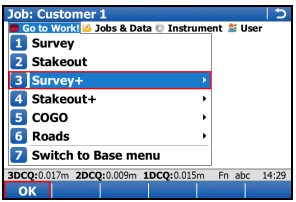
☞ You finished staking out your first point.

4.3 Reference Line

Objective

Measuring or staking point objects (fire hydrants, light poles etc.) relative to a reference line.

Measuring point objects relative to a reference line step-by-step

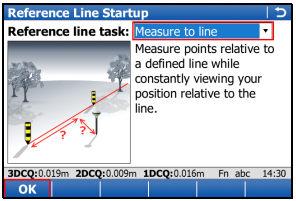


Starting Measure to ref line

- In the **Go to Work!** menu, select **Survey+** and access **Survey+** menu.

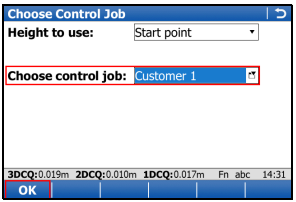
  Staking a reference line can also be accessed under **Go to Work!** / **Stakeout+** / **Stake to ref line**.

- Select **Measure to ref line** and continue (**OK**).



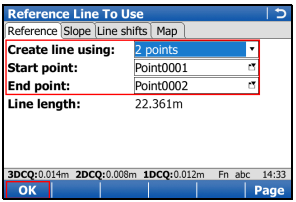
Define the Reference line task

- Set **Reference line task: Measure to line** and continue (**OK**).



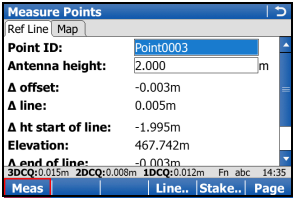
Choose Control Job

- Select the job which contains the points used to define the reference line.
- Press **OK** to access **Reference Line To Use** screen.



Define the reference line to be used

- Set **Create line using: 2 points**
- Select a **Start point**
- Select an **End point**
- Press **OK** to access **Measure Points** screen.



Measure the point object relative to the reference line

- In the **Measure Points** screen, press **Meas** to measure the point.

You have finished measuring your first point object relative to a reference line.

Appendix A Working with Memory Devices

A.1 Formatting a Memory Device

General

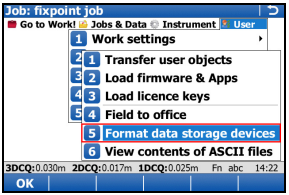
Formatting a memory device before storing data on it, is required if the device is new, or if all data on the device must be deleted.

By activating the format command all data will be lost. Make sure that all important data on the device has been backed up before formatting. If formatting the internal memory, make sure that all important data is first transferred to the computer.

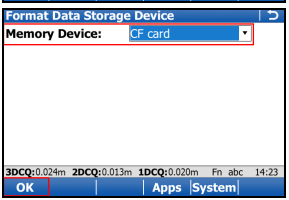
Formatting the memory device will make it incompatible with System 1200 instruments. To become usable with System 1200 again, the device would need to be reformatted on a System 1200 instrument.

To exit the screen without formatting the memory device, press the **ESC** key. This returns to the previous screen without running the format command.

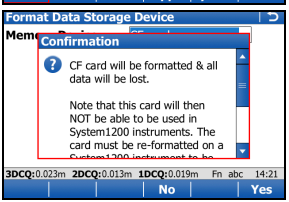
Formatting a memory device step-by-step



- From the **Main Menu**, select **User\Tools & other utilities\Format data storage devices**



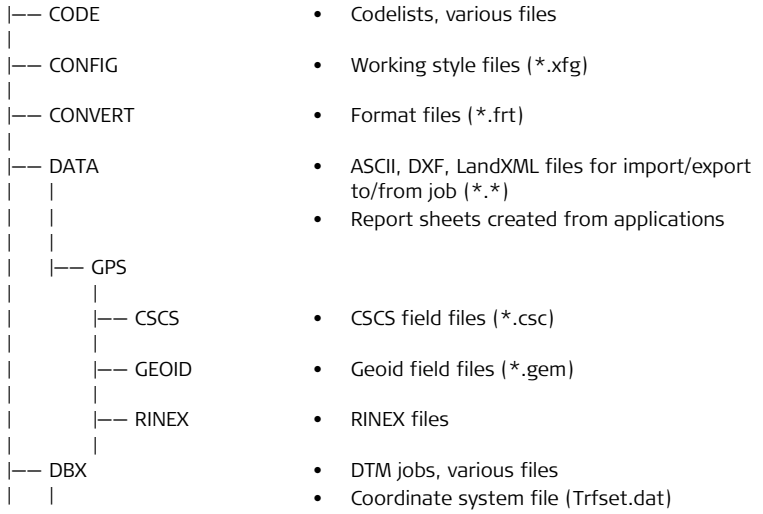
- **Memory Device**: Select the device to format
- Select **OK** to continue with the formatting.



- Select **Yes** to complete the formatting of the memory device, OR
- Select **No** to cancel formatting of the memory device and return to **Format Data Storage Device**.
- Once the formatting of the memory device is completed the system returns to the **Main Menu**.

A.2 Directory Structure of the Memory Device

Directory structure



|—— JOB	• Job files, various files. Jobs are stored in a folder per job.
|—— DOWNLOAD	• Various files, downloaded by **Field to office** application (*.*)
|—— GPS	• Antenna file (List.ant) • GSM/Modem station list (*.fil) • Server list (*.fil)
|—— GSI	• GSI files (*.gsi) • ASCII files for export from job (*.*)
|—— SYSTEM	• Application files (*.axx) • Firmware files (*.fw) • Language files (*.s*) • Licence file (*.key) • System files (VivaSystem.zip)

Appendix B Uploading System Files

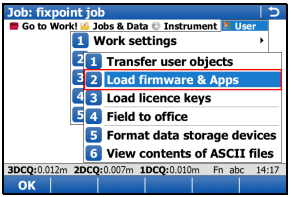
Tips and Tricks

- Uploading objects can take some time. Ensure that the battery is at least 75% full before beginning the upload, and do not remove the battery during the upload process.
- Applications will be installed in English and in any other language that is already loaded onto the instrument. If a new language is loaded after an application has been installed, the application will need to be reinstalled to become available in the new language.
- It is not possible to have more than three language files stored on the instrument. English is always available as the default language and cannot be deleted.

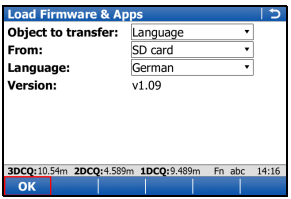
Copy the object to upload into the /SYSTEM directory of the data storage device and insert the device into the instrument.

Firmware files use the extension *.fw, application files use the extension *.axx, and language files use an extension that is individual to each language.

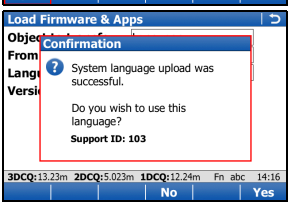
Uploading firmware, applications or languages step-by-step



- From the **Main Menu**, select **User\Tools & other utilities\Load firmware & Apps**



- **Object to transfer**: Select the type of object to upload
- **From**: Select the data storage device where the object is located
- **App** / **Firmware** / **Language**: Select the file name of the object
- Select **OK** to upload the object onto the instrument.



- The upload process can take some time. A message will appear when the upload is complete.

Appendix C Leica Geo Office

Description

Leica Geo Office (LGO) is an office software consisting of a suite of standard and extended programs for the viewing, exchange and management of data.

Jobs, codelists and other related files can be transferred from the instrument or data storage device to LGO for post-processing.

In LGO, the Data Exchange Manager enables data to be transferred between an instrument and a computer. The Import Raw Data function in LGO, imports the data from the computer or data storage device into an LGO project.

Transferring files to LGO step-by-step

Step	Description
1.	• If data is located on a data storage device, insert the device into the appropriate slot or port of the computer. Go to step 7. • If data is located on the instrument, connect the instrument to the computer. This connection can be via the docking station, a USB cable, a Bluetooth connection, or, for TPS, via a RS232 serial cable. Go to step 2.
2.	Select **Tools** / **Data Exchange Manager** to open the **Data Exchange Manager** window.

Step	Description
3.	Right click in the **Data Exchange Manager** window and select **Settings...**. • For a USB connection, ensure that the USB port settings are configured for the instrument type being connected. • For a Bluetooth or RS232 serial cable connection, ensure the instrument interface settings and the computer COM settings are configured correctly. Select **OK** to close the **Setting** window.
4.	In the folder directory on the left of the **Data Exchange Manager** window, open the **Serial Ports** or **USB** COM node to which the instrument is connected. Highlight the object to transfer.
5.	In the folder directory on the right, open the **My Computer** / **Files** folder location. Select a folder on the computer hard drive where the object can be transferred to and saved.
6.	Drag and drop, or copy and paste, the object from the directory on the left side to the selected folder on the right side. All object-specific files will be copied to the selected folder on the computer hard drive.
7.	To import the files into LGO select **Import** / **Raw Data...** or select the  icon from the toolbar.

Step	Description
8.	In the **Import Raw Data** window, select the type of data to be imported in the **Files of type**: drop down list. Values are; • Viva raw data • System 1200 raw data • GSI (Observations) • GSI (Points only) • Database points (DBX, GeoDB) • LandXML ☞ When importing GSI data, click the Settings button to define additional import settings for how the TPS raw data will be imported to a project.
9.	Browse through the folder directory and select the file or folder to import. The file or folder can be on the computer hard drive or on the inserted data storage device.
10.	Select **Import** to proceed to the **Assign** window.

Step	Description
11.	In the **Assign** window, before assigning the data to a project, the following functionality is available: • Select the **TPS** tab to preview the raw data. On this page, it is possible to select or deselect which data is assigned to the project. • Select the **Settings** tab to modify the assign settings. The settings available depend on the type of data to be imported. • Select the **Backup** button to save, if desired, the raw data from a data storage device to the computer hard drive. Select a directory from the browser and select **OK** to confirm. • Select the **Fieldbook** button to generate a Fieldbook Report on the jobs to be imported.
12.	To import the data to a project: • In the **General** tab, select an existing project from the list. OR • Create a new project by right clicking and selecting **New...** from the context menu.
13.	Select the **Assign** button to import the data into the selected project.

Total Quality Management: Our commitment to total customer satisfaction.

Leica Geosystems AG, Heerbrugg, Switzerland, has been certified as being equipped with a quality system which meets the International Standards of Quality Management and Quality Systems (ISO standard 9001) and Environmental Management Systems (ISO standard 14001).

Ask your local Leica Geosystems dealer for more information about our TQM program.

772897-1.0.0en
Original text
Printed in Switzerland

Leica Geosystems AG
Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31
www.leica-geosystems.com

- when it has to be **right**

Leica Geosystems