



Your Construction
Technology Provider

Field Reference Guides SCS900 GNSS 900MHz Version 3.72

SITECH Rocky Mountain
www.sitechrockymtn.com



SITECH TECHNOLOGY DEALER TRAINING CHECKLIST

System: SCS900 GNSS 900Mhz

Version: 3.72

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Training Acknowledgement:

Customer Signature

Date

SITECH Representative

Date

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SCS900 Semi-permanent Base Station Post Set-up

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1. Material List

- 4"x 4" x 8' or 10cm x 10cm x 2.5m pressure treated wood post
- 1ea. bag of cement
- 1" x 1' or 2.5cm x 30cm galvanized pipe
- 1" or 2.5cm galvanized T
- 1" or 2.5cm galvanized mounting plate,
- 4" x 5/8" or 10cm x 1.587cm course bolt
- 2ea. 5/8" or 1.587cm flat washers
- 1ea. 5/8" or 1.578cm lock washer
- 1ea. 5/8" 1.587cm course nut
- 4ea. 2" or 5cm wood screws



2. Determine Base Station Location

- Must be in a safe location outside of the work area
- Should be centralized to the entire project
- Should be at the highest possible elevation
- No obstructions such as trees, building, vehicles, above the 15° Elevation Mask

3. Dig a hole approximately 2' or 60cm and 10-12" or 25-30cm diameter

4. Mix the bag of cement

5. Plumb up the wood post and add the cement

6. Assemble the arm by screwing the T connector on one end of the pipe and the mounting plate on the other end.
7. Mount the arm on the wood post using the 4 wood screws. Ensure the T connector is plumb.
8. Place one flat washer on bolt; Insert the bolt into the T connector; Place the 2nd flat washer, lock washer and nut on the bolt and tighten.
9. Attach the Zephyr Antenna to bolt, do not over tighten.
10. Use the Yellow GNSS cable to connect the Zephyr Antenna to the Base Station.
11. Setup the Base Station (See FRG Base Setup)



SCS900 Create a New Site and Work Order

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1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Press **“SCS900 V3”** 
4. Select **“New Site”** and **Name Site** in the Site pull down menu
5. Select the desired units for **“Distance and Angles”**
6. Select **“Coordinate Order”** **“Azimuth”** **“Stationing”** and Press **“Next”**
7. If a site map is available on the collector check the checkbox and browse to the file
8. If a calibration file is available on the collector check the checkbox and browse to the file
9. If a control point file is available on the collector check the checkbox and browse to the file
10. To define coordinate system check the checkbox and select the desired coordinate system
 - If a site calibration is to be performed do not select a Coordinate System.
11. Press **“Finish”**
12. Select **“New work order”**
13. Name the work order and instructions (optional) and Press **“Finish”**
14. Select **“(No design needed)”** if no design files are on the collector.
 - Select **“New Design”** if design files are on the collector then browse to the design files
15. Press **“Accept”**

SCS900 Create New Design from a Hard Disk / USB

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press “**Windows Icon**” 
3. Press “**SCS900 V3**” 
4. Select “**Site and Work Order**”
5. Select “**New Design**”
6. Enter the Design Name
7. Check the box next to Select design file
8. Browse to the location on the Hard Disk that holds the design surface file
9. Highlight then tap “**Accept**”
10. Check the box next to Select design map
11. Browse to the location on the Hard Disk that holds the design map file
12. Highlight then tap “**Accept**”
13. Check the box next to Select stakeout points
14. Browse to the location on the Hard Disk that holds the stakeout point file
15. Highlight then tap “**Accept**”
16. Press “**Finish**”
17. Press “**Accept**”

SCS900 Configure Information Bars

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1. Information bars are configured for each type of routine performed in SCS900 (Measure, Stakeout)
2. From the measure SCS900 screen Press 
3. Press “Settings” 
4. Press “Configure Info Bars” 
5. Information Bar 1: Check the following boxes and use the up and down arrows to order them as listed below
 - **Northing, Easting, Elevation, Antenna / Target height**
6. Information Bar 2: Check the following boxes and use the up and down arrows to order them as listed below
 - **Cut/Fill 1, Reference Station, Reference Offset, Design elevation 1**
7. Press “Accept”

SCS900 Start Base 900MHz before Site Calibration

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Press **“SCS900 V3”** 
4. Select **“Site, Work Order and Design”** Press **“Accept”**
5. Select **“Base, Bluetooth”**
6. Select Model and SN of the Base or select **“Scan for device”** if your device is not listed
7. Select Correction Method **“Radio in Receiver”**
8. Select Network ID for the base to broadcast on and Press **“OK”**
9. Allow the base station to scan the network to ensure nothing else is on the radio channel
10. Select the Base position **“Unknown position”**
11. Enter a Base name and Press **“OK”**
12. Select the Antenna type of the antenna being utilized
13. Select the Measure method **“Bottom of antenna”**
14. Enter the Vertical height **“0.00 usft”** or **“0.000m”** and Press **“Accept”**
15. Select Corrections method **“CMRx”** and Press **“Accept”**
16. Review Info. screen then select **“OK”**

SCS900 Start Base 900MHz after Site Calibration

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Press **“SCS900 V3”** 
4. Select **“Site, Work Order and Design”** Press **“Accept”**
5. Select **“Base, Bluetooth”**
6. Select **Model and SN** of the Base or select **“Scan for device”** if your device is not listed
7. Select Correction Method **“Radio in Receiver”**
8. Select the **Network ID** of the Base Station and Press **“OK”**
9. Allow the base station to scan the network to ensure nothing else is on the radio channel
10. Select the Base position **“Control point”**
11. Select the Point name from the map or Point name drop down list and Press **“OK”**
12. Select the Antenna type of the antenna being utilized
13. Select the Measure method **“Bottom of antenna”**
14. Enter the Vertical height **“0.00usft” or “0.000m”** and Press **“Accept”**
15. Select Corrections method **“CMRx”** and Press **“Accept”**
16. Review Info. screen then select **“OK”**

SCS900 Start Base IBSS before Site Calibration

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Press **“SCS900 V3”** 
4. Select **“Site, Work Order and Design”** Tap **“Accept”**
5. Select **“Base, Bluetooth”**
6. Select Model and SN of the Base or select **“Scan for devices”** if your device is not displayed
7. Select Correction Method **“IBSS”**
8. Receiver internet option Select **“Other”**
9. Enter you TCC Organization and Device Password
10. Select the Base position **“Unknown position”**
11. Enter Base name and Press **“OK”**
12. Transmit via radio select **“No”** and Press **“OK”**
13. Select the Antenna type of the antenna being utilized
14. Select the Measure method **“Bottom of antenna”**
15. Enter the Vertical height **“0.00 usft”** or **“0.000m”** and Press **“Accept”**
16. Select Corrections method **“CMRx”** and Press **“Accept”**
17. Review Info. screen then select **“OK”**

SCS900 Start Base IBSS after Site Calibrated

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Press **“SCS900 V3”** 
4. Select **“Site, Work Order and Design”** Tap **“Accept”**
5. Select **“Base, Bluetooth”**
6. Select Model and SN of the Base or select **“Scan for devices”** if your device is not displayed
7. Select Correction Method **“IBSS”**
8. Receiver internet option Select **“Other”**
9. Enter you TCC Organization and Device Password
10. Select the Base position **“Control point”**
11. Select the Point name from the map or Point name drop down list and Press **“OK”**
12. Transmit via radio select **“No”** and Press **“OK”**
13. Select the Antenna type of the antenna being utilized
14. Select the Measure method **“Bottom of antenna”**
15. Enter the Vertical height **“0.00usft”** or **“0.000m”** and Press **“Accept”**
16. Select Corrections method **“CMRx”** and Select **“Accept”**
17. Review Info. screen then select **“OK”**

SCS900 Start Rover using Internal 900Mhz Radio

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Press **“SCS900 V3”** 
4. Select **“Site, Work Order and Design”** Press **“Accept”**
5. Press **“Home”** 
6. Press **“GPS”** 
7. Press **“Connect”** 
8. Select **“Rover, Bluetooth”**
9. Select **Model** and **SN** of the Rover
10. Select Correction Method **“Radio in Receiver”**
11. Select Base Station Broadcast Network ID
12. Select Base Station Name
13. Specify if using Quick Release
14. Enter Antenna height and Press **“Accept”**

SCS900 Rover using IBSS

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Double Press **“SCS900 V3”** 
4. Select **“Site, Work Order and Design”** Press **“Accept”**
5. Press **“Home”** 
6. Press **“GPS”** 
7. Press **“Connect”** 
8. Select **“Rover, Bluetooth”**
9. Select Model and SN of the Rover
10. Select Correction Method **“IBSS”**
11. Enter Organization and Password, Press **“OK”**
12. Select IBSS base from pull down list, Press **“OK”**
13. Specify if using Quick Release
14. Enter Antenna height and Press **“Accept”**

SCS900 Rover using VRS

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Double Press **“SCS900 V3”** 
4. Select **“Site, Work Order and Design”** Press **“Accept”**
5. Press **“Home”** 
6. Press **“GPS”** 
7. Press **“Connect”** 
8. Select **“Rover, Bluetooth”**
9. Select Model and SN of the Rover
10. Select Correction Method **“Internet”**
11. Enter the VRS **“Server Address, Port number, User name, Server Password”**
12. Select the Correction Type, Press **“OK”**
13. Specify if using Quick Release
14. Enter Antenna height and Press **“Accept”**

SCS900 Start Rover using CenterPoint RTX

Version: 3.72

1. **Power On** TSC3 Data Collector
2. Press **“Windows Icon”** 
3. Press **“SCS900 V3”** 
4. Select **“Site, Work Order and Design”** Press **“Accept”**
5. Press **“Home”** 
6. Press **“GPS”** 
7. Press **“Connect”** 
8. Select **“Rover, Bluetooth”**
9. Select **Model** and **SN** of the Rover
10. Select Correction Method **“CenterPoint RTX”**
11. Use Default Receiver GPS horizontal and vertical precision **“0.082 usft”**
12. Select **OK**
13. Specify if using Quick Release
14. Enter Antenna height and Press **“Accept”**

SCS900 Enter/Edit Control/Stakeout Points

Version: 3.72

1. From the main SCS900 screen Press **“Home”**



2. Press **“GPS”**



3. Press **“Enter/ Edit Control Points”**



4. To Add a control point select **“Add”**

Add

- Enter **“Point name and code”**
- Select Type either **“1D, 2D, 3D”**
- Enter **“Northing and Easting”** if applicable
- Select Point’s elevation Type either **“Key-in or Extract from point”** if applicable
- Enter Elevation if applicable
- Select **“OK”**

5. To Edit a control point select Edit

Edit

- Edit the desired element of the control point
- Select **“OK”** when finished

SCS900 Site Calibration

Version: 3.72

1. Open the Site, and create a new work order
2. Connect to the rover
3. It will ask you “Rover setup is complete. Do you want to calibrate the site now?” Press “**Yes**”
4. Press “**Add Point**”
5. Select the first point to be calibrated by either pressing it on the screen or selecting from the list  and Press “**Select**”
6. Select your **Measurement method** and enter your **Vertical Height**
7. **Horizontal** and **Vertical Tolerances** should be set to “**0.082 usft** or “**0.025m**”
8. Enter your **Minimum measurement** time (15 Seconds is default)
9. Plumb your rob over the point using a bi-pod then press “**Start**”
10. After the point is measured **repeat steps 4-9** until all control points have been measured

After all points have been measured edit both the horizontal and vertical components of the points until the calibration is within the projects tolerances.
11. Press “**Finish**” after editing is complete
12. Press “**OK**” to the message calibration complete
13. Press “**Yes**” to the question “**Do you want to save the base station location as a control point?**”
14. To check the calibration utilizes the **recheck system** function. Ensure that you are checking on points that where not utilized during the calibration

SCS900 Recheck System Setup

Version: 3.72

1. From the main SCS900 screen Press **“Home”** 
2. Press **“GPS”** 
3. Press **“Recheck System”** 
4. Select control point to check by Pressing the point on the screen or selecting from list
5. Press **“Measure”** 
6. Select Measure method that pertains to your setup
7. Enter Vertical height that corresponds with measure method selected
 - If unsure Press  for more information
8. Set Horizontal and Vertical Tolerance **“0.082usft” or “0.025m”** (default)
9. Select Minimum measuring time **“15 Seconds”** (default)
10. Check that all measured values for deviation from control are acceptable to your tolerances
11. Press **“Accept”**

SCS900 Measure New Control Points

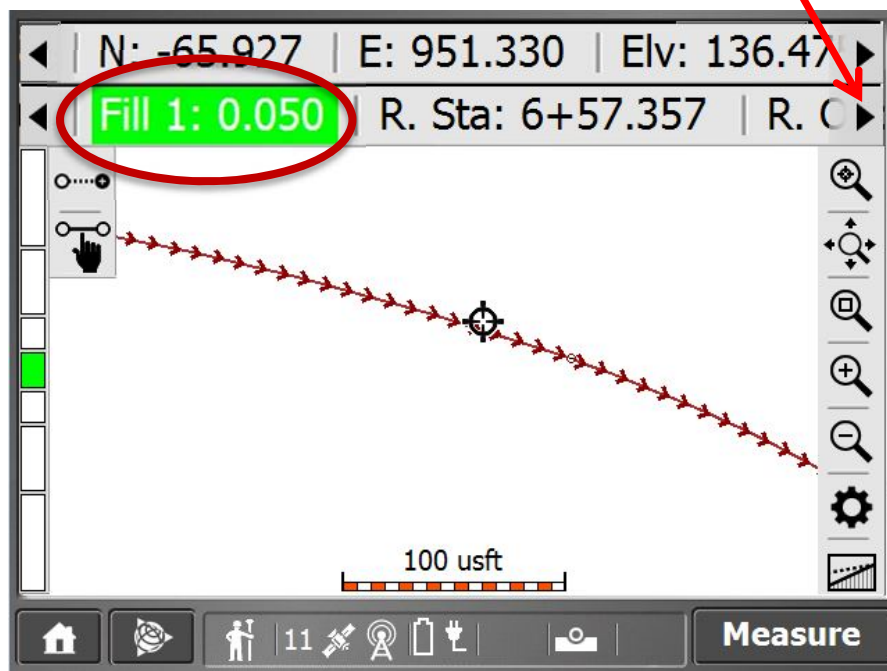
Version: 3.72

1. From the main SCS900 screen Press **“Home”** 
2. Press **“GPS”** 
3. Press **“Measure Control Point”** 
4. Plum the rod over the control point then Press Measure
5. Enter point name and code
6. Select Measure method that pertains to your setup
7. Enter Vertical height that corresponds with measure method selected
 - If unsure Press  for more information
8. Set Horizontal and Vertical Tolerance **“0.082”** or **“0.025m”** (default)
9. Select Minimum measuring time **“15 Seconds”** (default)
10. Press **“Start”**

SCS900 Check Grade GNSS

Version: 3.72

1. Open the Site, Work Order and Design in which you would like to check grade to
2. Press “**Accept**”
3. Connect to the Receiver and Base in which you will utilize to check grade.
4. Press “**Accept**”
5. Plumb the rod over the spot in which you would like to check grade.
 - Must be within a roadway or site model to calculate Cut/Fill Values
6. Cut/Fill information will be located on the second information bar
 - If it does not appear as shown below press the over arrow to scroll.



SCS900 Measure Point: Standing

Version: 3.72

1. From the main SCS900 screen Press **“Home”** 
2. Press **“Measure”** 
3. To select measurement method Press 
4. Press **“Standing”** 
5. Define if you are using the Quick Release
6. Enter the Antenna Height and Press **“Accept”**
7. Navigate to the location you would like to measure and plumb the rod
8. Press **“Measure”** 
9. Define Point name (it is recommended to allow the system to name the point)
10. Define Point code
11. Select point type
 - Surface point is intended to be a point that will help define a surface
 - Feature is intended to be a point that defines a feature on your project
12. Define if you would like the dialog box to Show every time
13. Press **“Accept”**

SCS900 Measure Point: Walking Distance

Version: 3.72

1. From the main SCS900 screen Press **“Home”** 
2. Press **“Measure”** 
3. To select measurement method Press 
4. Press **“Walking”** 
5. Define if you are using the Quick Release
6. Enter the antenna Height: Height should be height of rod + distance held off the ground
7. Record Mode **“Fixed Distance”**
8. Enter Horizontal Interval at which you would like the points recorded
9. Enter Vertical change at which you would like additional points recorded and Press **“Accept”**
10. Navigate to the location you would like to start measuring and plumb the rod and Press **“Start”**
11. Define Point name (it is recommended to allow the system to name the point)
12. Define Point code
13. Select point type
 - Surface point is intended to be a point that will help define a surface
 - Feature is intended to be a point that defines a feature on your project
14. Show every time **“No”** and Press **“Accept”**
15. Walk the desired route in which you would like to collect points.
16. Press **“Stop”** when finished 

SCS900 Measure Point: Walking Time

Version: 3.72

1. From the main SCS900 screen Press **“Home”** 
2. Press **“Measure”** 
3. To select measurement method Press 
4. Press **“Walking”** 
5. Define if you are using the Quick Release
6. Enter the antenna Height: Height should be height of rod + distance held off the ground
7. Record Mode **“Fixed Time”**
8. Enter the time interval at which you would like the points to record
9. Navigate to the location you would like to start measuring and plumb the rod and Press **“Start”**
10. Define Point name (it is recommended to allow the system to name the point)
11. Define Point code
12. Select point type
 - Surface point is intended to be a point that will help define a surface
 - Feature is intended to be a point that defines a feature on your project
13. Show every time **“No”** and Press **“Accept”**
14. Walk the desired route in which you would like to collect points.
15. Press **“Stop”** when finished 

SCS900 Measure Point: Vehicle Distance

Version: 3.72

1. From the main SCS900 screen Press **“Home”** 
2. Press **“Measure”** 
3. To select measurement method Press 
4. Press **“Vehicle”** 
5. Define if you are using the Quick Release
6. Enter the antenna Height: Height should be the distance from the ground to bottom of antenna or bottom of quick release
7. Record Method **“Fixed Distance”**
8. Enter Horizontal Interval at which you would like the points recorded
9. Enter Vertical change at which you would like additional points recorded and Press **“Accept”**
10. Press **“OK”** to the warning after reading
11. Navigate to the location you would like to start measuring and Press **“Start”**
12. Define Point name (it is recommended to allow the system to name the point)
13. Define Point code
14. Select point type
 - Surface point is intended to be a point that will help define a surface
 - Feature is intended to be a point that defines a feature on your project
15. Show every time **“No”** and Press **“Accept”**
16. Drive the desired route in which you would like to collect points.
17. Press **“Stop”** when finished 

SCS900 Measure Point: Vehicle Time

Version: 3.72

1. From the main SCS900 screen Press **“Home”** 
2. Press **“Measure”** 
3. To select measurement method Press 
4. Press **“Vehicle”** 
5. Define if you are using the Quick Release
6. Enter the antenna Height: Height should be the distance from the ground to bottom of antenna or bottom of quick release
7. Record Mode **“Fixed Time”**
8. Enter the time interval at which you would like the points to record and Press **”Accept”**
9. Press **“OK”** to the warning after reading
10. Navigate to the location you would like to start measuring and Press **”Start”**
11. Define Point name (it is recommended to allow the system to name the point)
12. Define Point code
13. Select point type
 - Surface point is intended to be a point that will help define a surface
 - Feature is intended to be a point that defines a feature on your project
14. Show every time **“No”** and Press **“Accept”**
15. Drive the desired route in which you would like to collect points.
16. Press **“Stop”** when finished 

SCS900 Stakeout Points

Version: 3.72

1. From the main SCS900 screen Press **“Home”** 
2. Press **“Stake”** 
3. Select the point to stake by either
 - Pressing the point on the screen
 - Selecting the list icon and selecting it from the list 
4. Press **“OK”**
5. If first time staking a point set the Stakeout setting
 - Horizontal tolerance: Set to project tolerance **“.082’ or 0.025m”** (default)
 - Stake marking method: select from drop down **“Ground Surface”** (default)
 - For more information Press 
 - Working stake length: Length of stake above ground
 - For more information select Press 
 - Cut/Fill interval: Set to round number **“0.50usft or .150m”** recommended
 - Min bottom and top stake spacing: Set to round number **“0.50usft or 0.150m”** recommended
6. Press **“Accept”**
7. Navigate to the point in which you have selected to stake
8. Once you are within the projects horizontal tolerances plumb the rod and Press **“Stake”**
9. Review the Stake Report and Press **“Accept”** to accept or **“Cancel”** to reshoot the point
10. If **“Accept”** is Press the point will be stored

SCS900 Measure and Compute Stock Pile Volumes

Version: 3.72

1. Open the Site, and create a new work order
2. Connect to the rover
3. Start the stock pile topo by shooting the base of the pile
4. Mark the start location of the stock pile base topo
5. Plumb the rod and press **“Measure”** on the main Menu
6. Use default Point Name
7. Enter **“Toe”** for point code
8. Point type **“Surface”**
9. Show every time **“Yes”** and Press **“Accept”**
10. Walk the perimeter of the pile recording a point every 10’-15’ or 3-5m repeating **steps 5-9** until you are back to start point.
11. Measure the top of the pile repeating **steps 5-9**.
 - Change the Point code in **step 7** to **“Top”**
12. Measure any additional defining features of the pile repeating **steps 5-9**.
13. After all points are measured press 
14. Press **“COGO”** 
15. Press **“Review & Edit Data”** 

16. Press



17. Press the **Drop down caret** and select “**Volume boundary**”

▼ Volume Boundary

18. Press each point with a code of “**Toe**” around the base of the pile clockwise or counter clockwise. Note: The first point must be selected again to complete the boundary.

19. Press “**Accept**”

20. Press



21. Select the **Boundary** created in **step 19**

▼ Stockpile	
▼ Expansion	0.000%

22. Press the top **Drop down caret** and select Stockpile.

23. Add Expansion or Shrinkage percent by selecting the second **drop down caret** and adding your percentage

24. Press “**Accept**”

25. Volume Calculations will be displayed

26. Save Volume Calculations enter **Description** and press “**Accept**”



Service and Support

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