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PURPOSE OF THIS MANUAL

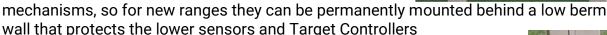
The purpose of this manual is to provide the system administrator the tools and training necessary to effectively setup and operate the Silver Mountain **SOLO** Server system.

SYSTEM DESCRIPTION

1.1 Targets

In the **SOLO** Server system utilizing the S7 server, the targets are the heart of the bullet sensing functions, utilizing state of the art acoustic sensors to measure shot location, angle, and speed. The targets consist of 4 dual microphone sensors, mounting hardware, and cabling.

Microphone sensors can be mounted on existing target frames, custom made frames that improve sensor geometry, or built into the range design for new ranges. Targets do not require pit raising and lowering



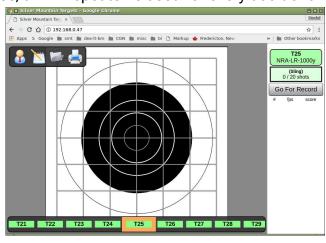


The target controllers in the **SOLO** Server system are **T-SOLO** units programmed to connect to a Server rather than an **F-SOLO** at the firing line. They coordinate all sensor readings, and transmit those readings to the server.

1.3 Server

The S7 server is the brains of the target system. It sits on the firing line, receiving data from up to 7 **SOLO** targets. If more than 7 targets are in use, an R7 repeater is used for every additional 7

targets. It consolidates that data and presents it to the shooter or scorekeeper on the firing line.

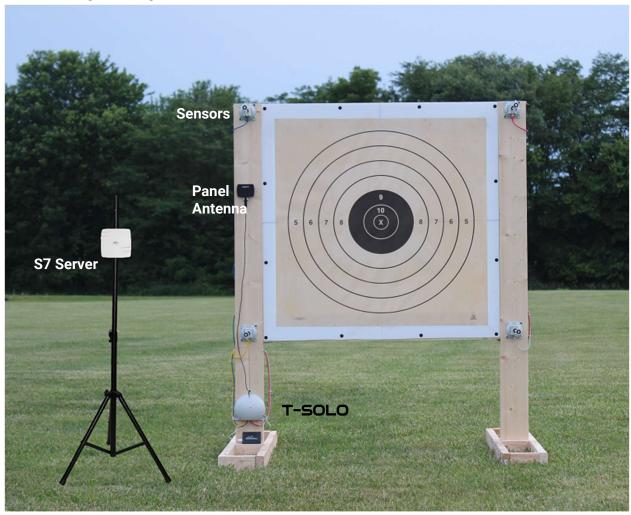






PARTS IDENTIFICATION

2.1 Range Setup



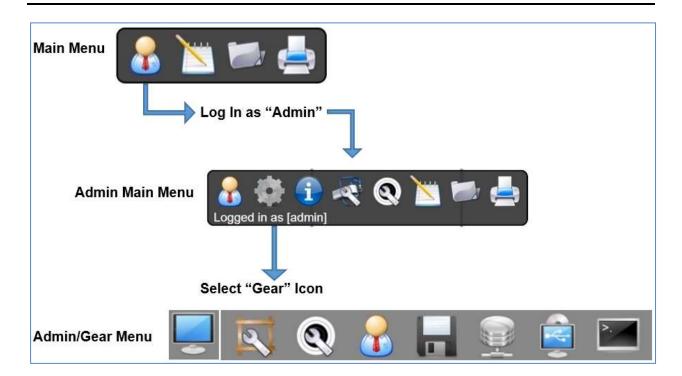
SOFTWARE BASIC OVERVIEW

3.1 Administrator Features and Functions

Administrator functions include all software features surrounding system setup, target frame setup, target selection, user privileges, and other protected features not accessible to the shooter, scorekeeper or range officer.

3.2 Menu Structure

There are only 3 main levels to the menus when logged in as Admin. A shooter or scorekeeper only sees the first level menu.



Main Menu



This menu is accessible to all users. This is the main screen for witnessing and recording shots fired on the target

Users



This icon looks like a man with a tie and is used to log into the system as an advanced user such as Admin, or as a competitor or scorekeeper when individual users are desired.

Notepad



This icon allows the user to enter Plot Mode, displaying horizontal and vertical shot dispersions

Folder



The Folder Icon provides access to saved strings of fire

Printer



Allows printing of displayed targets

Main Menu/Users

When the Users Icon is selected, the user is prompted to enter his/her competitor number or username. If Admin mode is desired, enter "Admin", and the menu expands to the following list.







Provides access to set passwords, select use of F-class targets, and choice of default bullet diameter. Note that selection of any of these submenus will display a "back" icon allowing the user to return to the previous menu.

Gear



This selection provides access to the main Admin submenu. Submenu functions are listed below. In addition, the Administrator can shut down the server, simulate a shot, do visual calibration, or access additional info. There is also a selection for RSTAT Sync All, allowing all shots to be synchronized to an external stats program called RSTAT

Info



Struck out shots are shots that are removed from a string of fire, typically by a Range Officer. These include crossfires. This menu provides a list to any RO of all struck out shots during the match.

Whistle & Wrench



This menu provides the Administrator with target status and primary match choices. These include sighter variables, shots on score, if individual shooters or scorekeepers are to be assigned, F-class delays, user privileges for managing strings, and scorecard settings

Target & Wrench



This menu allows the Administrator to choose which target is currently displayed, from the choices of allowable targets. It also allows the choice of pair or triple firing on a single target.

Notepad



Plot Mode





Allows selection of previously saved strings

Printer



Allows printing of targets

Admin/Gear

This is the main Admin sub menu. Across the top, for all submenu selections, are icons for safe shutdown of the server, simulate a shot, perform visual calibration, or turn on additional shot info

Monitor



Allows the Admin to choose display parameters, unit of measure for shot position, velocity unit, target grid unit, and language.

Frame & Wrench



This selection allows the user to define, hide, rename or copy specific frame parameters for individual targets. This is useful when target frames are not all alike, such as varying shot angles at 2 different firing lines

Target & Wrench



This allows the Administrator to choose which loaded target faces are active for this match. It also allows downloading of additional target faces. Specific choice of a target face for an upcoming string of fire is done in the Target & Wrench icon on the previous level.

Users



This menu allows individual users to be defined, and specific roles assigned.

Disk



Allows the Administrator to download log files, manage saved strings and sensor readings, perform a complete backup of all data, or restore all data from a backup.

Network



This selection allows synchronization of all data to the external program RSTAT

System



This icon looks like a monitor with a USB symbol, and is the main diagnostics menu, and many of the choices should only be used with the support and direction of a Silver Mountain representative. There are locations for the Administrator to enter target frame options for side and plunge angles or non-standard sensor geometry, as well as sensor mapping and frame override.

Command Prompt



This selection allows the Administrator to view the Sensor Triggering Log, which shows which sensors on which targets are firing.

ADMIN USER (USER ICON)



4.1 Logging in as Admin

All sensitive or potentially damaging operations are restricted to the privileged "ADMIN" user. The ADMIN user has full system control. Care must be exercised to avoid accidentally deleting data or changing configurations.

The Admin user has the ability to assign Range Officer roles for those users that need to exercise full operational control over the system (changing target faces, course of fire, etc.) but without the possibility of changing system configuration data.

ADMIN access is only needed for system configuration data, importing, editing, or deleting data (e.g., adding new hardware, calibration, editing configurations, renaming, etc.). All other common match functions can be performed by a Range Officer. For details on RO functions, please refer to the "Range Officer's Guide".

To log in as ADMIN:

- Click the User icon in the top left corner of the main menu
- When prompted with "Enter your competitor number / username:", enter "admin" (all lower case, no quote marks), and click "OK"
- If a password has been set, you will be prompted to enter it, then click "OK"
- Note that additional control icons are now present in the menu
- Note the text "Logged in as [admin]"

To log out:

- click the "user" icon in the top left corner and select "logout"
- Note the menu reverts to a minimal number of icons

A password may be set on the ADMIN account and it is recommended to do so.

- Click the "USER" icon
- Click "Change" and enter desired password
 - Please carefully record the password. If lost or forgotten, Silver Mountain factory assistance will be required for recovery
 - The ADMIN password should be known only by trusted and trained personnel.
 - The ADMIN password does not need to be very long or secure. It is intended to prevent casual or accidental use of the ADMIN account. Choose a password easy to enter in the field on a touchscreen device

TYPICAL ADMIN FUNCTIONS

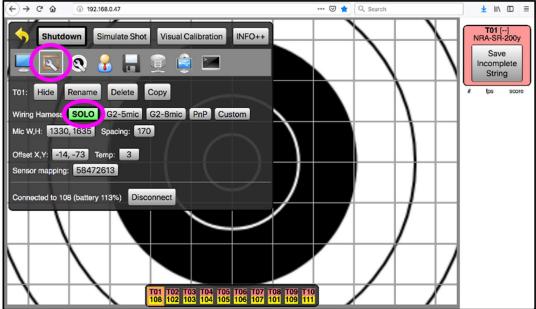
5.1 Adding a New Target Frame

A software "TargetFrame" corresponds to a physical target frame with attached sensors, and carries the associated data needed for the server to gather shot data on that frame. A "TargetFrame" is created by making a copy of an existing frame.

This is needed on initial system installation, or when adding a new target frame. From the Admin menu, click on the Gear icon, then the Frame & Wrench icon



- Select any existing target frame by clicking on the target across the bottom of the screen
- Select the "Copy" button
 - A TargetFrame named "new" will be created and selected
 - Status = yellow (offline; not connected to a sensing unit)
- Select the "Rename" button to name the new frame such as "T01" etc.
 TargetFrames are sorted alphabetically
- Choose the applicable wiring harness type (SOLO, G2-5, G2-8, PnP, etc.), and the correct Mic mapping and Spacing will automatically be set
 - SOLO is for a **SOLO** target system with 8 mics
 - o G2-5mic is for a G2 Target Controller with 5 mics
 - G2-8mic is for a G2 Target Controller with 8 mics
 - PnP is for a Plug-n-Play Target Controller with 8 mics
- For example, "SOLO" has been selected here, which automatically fills in the parameters needed for a **SOLO** sensing unit target (sensor spacing of 170mm and the sensor mapping 58472613).



- Enter Microphone Width and Height values. This is the distance measured between the left side of the upper or lower mics, and distance measured between the tops of the left or right mics. It provides the system with measurements needed to calculate shot hole coordinates.
 - Measurements need to be entered in mm (25.4 x inches, or 10 x cm)
 - No decimals or commas, and a space between the two numbers, i.e., "1330 1635"
- "Connect to:" enter the IP address of the sensing unit
 - Status should change to GREEN
 - "Other G2" may be used if sensing unit is not currently online

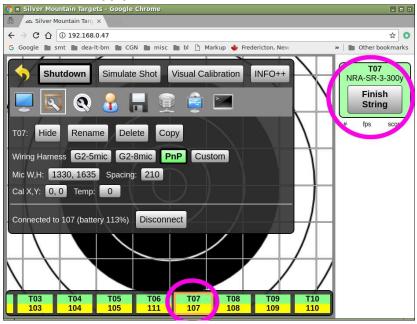
5.2 Sensor, Cabling, and Hardware Validation

Use these procedures prior to calibrating a target, or at any point when diagnostics are needed to confirm that the server:

- Is in communication with sensing unit
- Is able to read each mic individually
- Is able to read correct temperature

To confirm network communication with sensor unit:

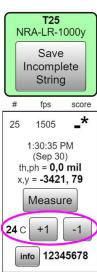
- From the Admin menu, click on the Gear icon, then the Frame & Wrench icon
 - Verify that each target across the bottom of the screen is green, and the selected target is also green in the upper right side of the ShotsList column.



To confirm sensor unit temperature sensing:

- From the Admin menu, click on the Gear icon, then the Frame & Wrench icon
 - Confirm "Temp" calibration button is set to a single digit value, otherwise set it to zero. DO NOT use this screen to set ambient temperature!

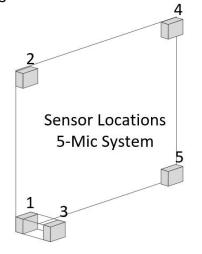
- Confirm that temperature sensor is correctly installed (in free air, and in a shaded location or with sunshade installed)
- Tap any microphone
 - Observe appearance of a measurement reading in the ShotsList column. Select topmost reading
 - If red "SENSOR READING" warning button has appeared, the temperature sensor is faulty; replace the wiring harness.
 - Use "+" and "-" buttons to adjust reported temperature in ShotsList column to agree with observed or estimated local air temperature.
 - Confirm that "Temp:" field is a small single-digit value - almost always in the range of 3 to 5. Note that negative values or large values might indicate a faulty sensor, or sunlight hitting sensor

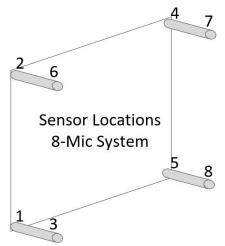


To confirm each mic is working correctly (Tap Test):

- From the Admin menu, click on the Gear icon, then the Frame & Wrench icon
 - With your fingernail, make a light, direct, careful tap on the silver sensor can of mic#1
 - OBSERVE:
 - A large Green "1" shows on the target, and indicates that only mic
 #1 fired
 - You should only receive ONE reading for one fingernail tap. You should not get multiple readings, and you should not have missing readings.

Repeat this procedure for each other mic in the system. For reference, here is the mic numbering scheme for 5-mic and 8-mic systems.





5.3 Target Calibration

Use these procedures to align the e-target's coordinate system with the physical center of the installed target face. This should only be required on the first installation of sensor mounts, or if physical target center has moved.

- Set up the physical target frame for shooting, using a new target face, or paste all holes
- In your Silver Mountain E-target system, sign in as Admin, select the Wrench & Whistle icon and select the corresponding target face.
- Go to firing line and fire one or more shots, with at least one shot being within 10" of the center. Additional shots may be near the center or any other place on the target face.
- CONFIRM that reported bullet speeds agree with expectations
- Go to the physical target and find bullet holes in paper
- From the Admin menu, select the Gear icon, then select the Frame & Wrench icon
- In the ShotsList Column, select the shot closest to center. This will be the shot used for calibration.
- METHOD 1 VISUAL CALIBRATION
 - Click "Visual Calibration" button
 - CLICK AND HOLD anywhere on the target face display
 - Observe that a green ring appears around the shot indicator for the selected shot
 - DRAG that shot until it is in correct location as seen on the physical target
 - repeat as needed
 - Zoom may be adjusted
 - CONFIRM that the calibration shot on the target screen is now shown in the correct position as seen on the physical target. Repeat DRAG and DROP as needed.
- METHOD 2 physical measurement of shot position
 - Measure the location of the bullet hole center, on the physical target. As an option, you may draw vertical and horizontal reference lines to assist in measuring
 - Record the bullet position as two numbers, X and Y coordinates.
 - The X coordinate is how many millimeters the bullet is to the RIGHT of the vertical centerline. If the bullet is LEFT of the vertical centerline, your X coordinate will be a negative number
 - The Y coordinate is how many millimeters the bullet is ABOVE the horizontal centerline. If the bullet is BELOW the horizontal centerline, your Y will be a negative number
 - Click the "Measure" button in the ShotsList column for the calibration shot. Enter your X and Y values, separated by a space
 - CONFIRM that the calibration shot is now shown in the correct position. If not, cancel the shot from the calibration and repeat the MEASURE button.

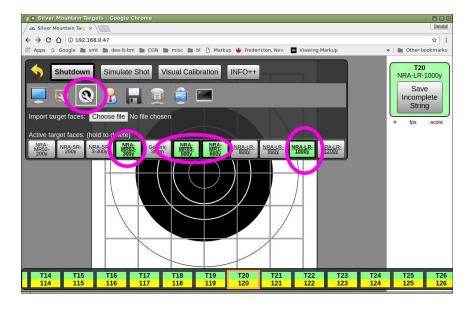
- If other shots were fired, CONFIRM they are also in the correct position. The entire group on the paper should match the entire group on the Silver Mountain Etarget display
- Note, shot(s) used for a calibration offset calculation are highlighted in yellow, in both the ShotsList and screen display
- The CANCEL button can remove a shot from calibration calculation

Target Faces 5.4

Electronic TargetFaces are software-generated and fully programmable. They are available as text files (with a file extension of ".txt" or ".tgt") and binary archive files (file extension ".tgz").

Installing TargetFaces

- Acquire one or more TargetFace definition files from your dealer, or from the SilverMountainTargets.com website
- In Admin mode, select the Gear icon, then select the Target & Wrench icon
 On this person you'll a see "I'm a fine of the Target and the Target are the Target and the Target are the Target and the Target are the T
- On this screen you'll see all target files already loaded into the system
- To import a new target file, select "Choose File"
 - Select a ".txt" or ".tgt" or ".tgz" target face definition file located on your device
 - Select "OK"
 - Observe new TargetFace is now listed
 - o All newly imported or re-imported TargetFace names will be reset to GRAY (inactive) status
- Click on TargetFace(s) to make GREEN/GRAY as desired:
 - GRAY (inactive) TargetFaces will not be available to RO for shooting
 - GREEN (active) TargetFaces will be available to RO
- "Dual-mode" TargetFaces are identified by having their names underlined



Deleting TargetFaces

- Generally, it is NOT RECOMMENDED to delete TargetFaces
 - If a TargetFace is deleted, ALL SAVED STRINGS fired with that TargetFace will ALSO BE DELETED
- If you wish to delete a TargetFace:
 - o In Admin mode, select the Gear icon, then select the Target & Wrench icon
 - CLICK and HOLD on the TargetFace you wish to delete
 - o Confirm with "OK"

5.5 Users - Creating and Managing

"Users" may be created, in order to identify shooters and scorekeepers. This allows identifiable users to be assigned to shot strings, allowing for

- Identification of who fired or scored a shot string
- Restriction of shot management functions (converting sighters, striking shots, saving strings, etc.)

A "User" has the following information:



- "userid" (case sensitive; used to log in)
 - Short is best because each user will have to type this in to identify themselves
 - Long national shooter IDs or NRA numbers are not recommended. Userids need to be frequently entered in the field on touchscreens
 - o a two or three-digit competitor ID or competitor initials work well
- "Real Name" (optional)
- "Password" (optional)
- "Use F-Class Target" For dual-mode TargetFaces, this is a flag to indicate whether the primary scoring rings (iron sights) or alternate scoring rings (F-Class) are used.
- "Bullet diameter" Used to gauge whether or not the edge of the shot hole touches scoring line.

To view, edit or delete users:

In Admin mode, select the Gear icon, then select the User icon



- Choose an existing user, either by selecting from the drop-down menu, or click "Select" and enter the userid
- To edit or delete a user, choose "Delete Profile", "Set Real Name", or "Range officer" as needed.

To create a user:

• In Admin mode, select the Gear icon, then select the User icon



- Click "New User"
- Enter a userid for the new user
- Optionally, "Set real name"
- Optionally, set "Range officer" privilege flag

5.6 Managing Server Data

To download a log of data, or manage stored strings, or to save a backup copy of all data

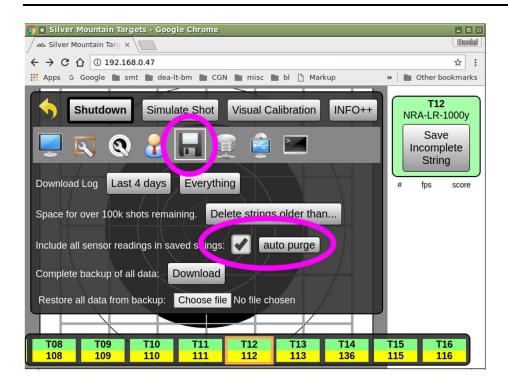
- In Admin mode, select the Gear icon, then select the Disk icon
- Select the desired duration to download a log
- Select "Delete strings older than..." to manage stored strings
- Select the checkbox to include sensor readings in all saved strings
- Select the "Download" button for a complete backup of all data.
 - Note, this is best done from a laptop with internal storage. If using an iOS operating system device, the saved file may not be able to be retrieved.

To restore data from a previously saved backup, select the "Choose File" button, select a backup file from your laptop.

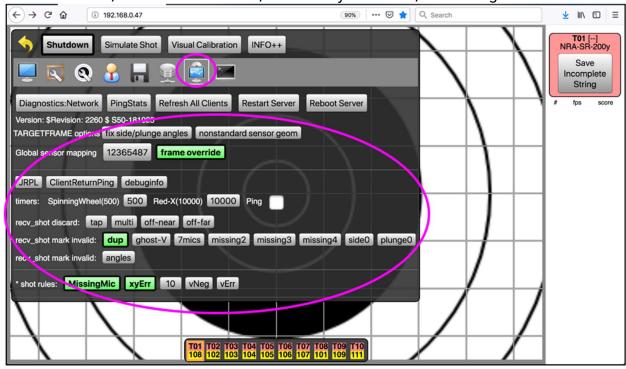
5.7 Recommended Default Server Settings

The following settings are recommended, and should not normally be changed. These are advanced features, and should only be changed with advice and support from a Silver Mountain representative.

In Admin mode, select the Gear icon, then the Disk icon and configure these fields



In Admin mode, select the Gear icon, then the System icon, and configure these fields



5.8 S25 Server Firmware Update Procedure

Unlike an SMT "G2", a firmware upgrade on an S25 Server will ALWAYS destroy all user data (settings, TargetFaces, TargetFrame configurations, calibrations etc.) Therefore, you should ALWAYS make a complete backup of all the server's data before

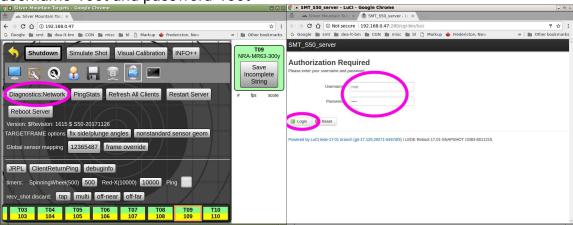
proceeding. In Admin mode, click on the Gear icon, then the Floppy Disk icon. Then under "Complete backup of all data" choose "Download".



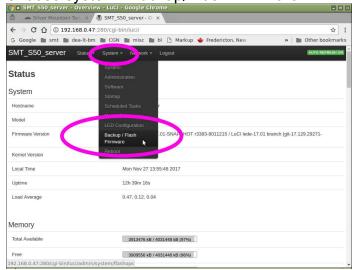
Consult your SMT dealer for advice on when to do a firmware upgrade and which version to use. Obtain a firmware file from the Silver Mountain Targets website.

Select the System icon, select the "Diagnostics:Network" button, and log in with

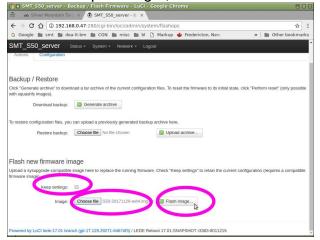
username=root and password=root

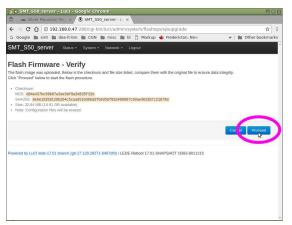


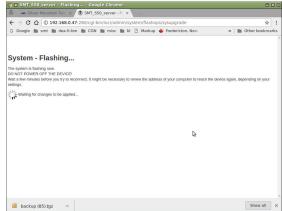
Choose System->Backup/Flash Firmware



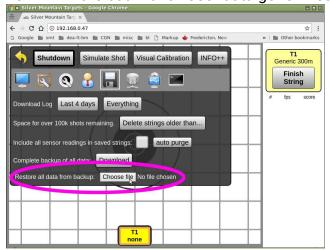
Un-tick "keep settings", select the firmware file, and upload it with "Flash image...":





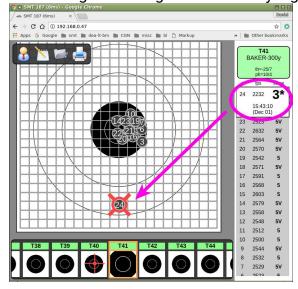


Click "Proceed" and wait several minutes. Note that the "System - Flashing...." screen will never change. It is safe to close this screen at any time. When the firmware update is completed, you will be able to access the ordinary web page, which will now have the new firmware but with all user data gone. Restore your user data:



5.9 "*" Shots

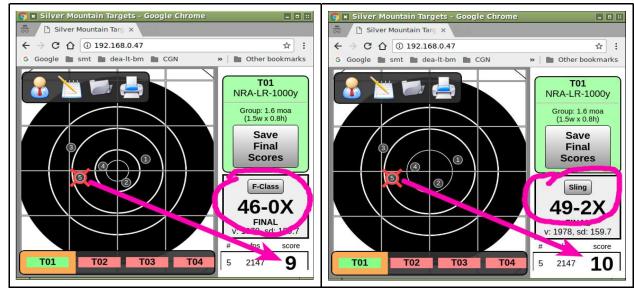
When the system detects an anomaly in the shot calculations, such as an extreme angle, lack of a reading from one of the sensors, abnormal velocity, etc., it will flag that shot with an asterisk in the ShotsList column. This assists the range officer in addressing a challenge to the shot by highlighting that shot from all others.



5.10 Dual Mode TargetFaces

Some TargetFace definition files are identified as "DUAL-MODE" on the Silver Mountain Targets web site, and include TWO sets of scoring rings, to support F-Class and iron sight ("sling") shooting.

These permit F-Class or iron sight scoring rings to be manually selected, using the "Sling" or "F-Class" button. This is the same string, scored on the left using the F-Class rings and on the right using the iron sight rings:



If the "assigned shooter" mode is in use then the correct scoring rings will be automatically selected when a shooter is assigned to a target.



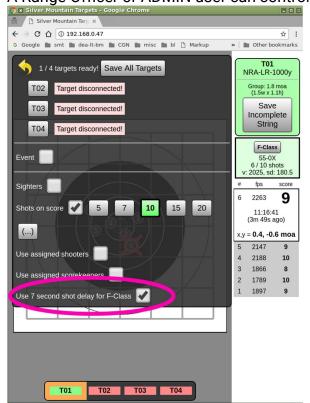
5.12 F-Class 7-Second Delay

An optional 7-second delay is available when DUAL-MODE TargetFaces are in use and the F-Class scoring rings are selected. The shot value and shot position will not be shown until a 7-second delay has elapsed. During this time a countdown timer is shown:





A Range Officer or ADMIN user can control this via the "WRENCH-WHISTLE" menu.



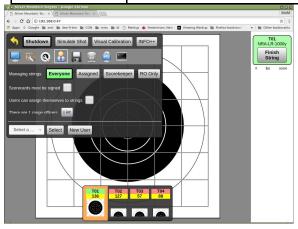
5.13 Managing Strings of Fire

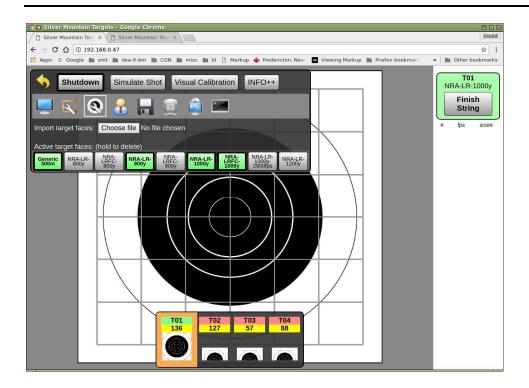
The "Manage String" privilege is required for the following operations:

- Saving a finished string
- Saving an incomplete string (not enough shots)
- Saving a string with too many shots
- Converting sighters
- Striking out shots

This privilege may be granted to:

Mode	Save/Convert/Strike Available to		
Everyone	Anyone. May be logged in, or may be guests (not logged in).		
Assigned	Scorekeepers, shooters. Also RO users and ADMIN users		
Scorekeeper	Scorekeeper. Also RO users and ADMIN users		
RO Only	Only RO users and ADMIN users		





OTHER SPECIFIC ADMIN FUNCTIONS BY MENU

6.1 User Icon

Logout

Allows Admin user to log out, returning to normal, non-admin menus

Change or set Password

Change or set the Admin password

Use F-class target

If selected, this enables a selection box for F-Class or Sling, for any target containing dual scoring rings

Bullet Diameter

Selection of default bullet diameter for scoring of shots close to rings

6.2 Gear Icon

Shutdown

Selecting this will perform a software shutdown of the server

Simulate Shot

Allows a user to tap the screen of his display device and simulate a shot on target

Visual Calibration

Allows a shot displayed on the screen to be dragged and dropped to calibrate a target. More info can be found in section "5.3 Target Calibration"

Info ++

Selecting this will display detailed measurement and calculation information for each shot.

Gear Icon Sub Menus

6.2.1 Monitor Icon

Display Selections

Stats:

Circle:

Mean POI:

Shot XY:

XtraStats:

Position Unit Selections

MOA

Mil

Inch

MM

Velocity Unit Selections

FPS

M/S

Grid/Scope Unit Selections

MOA

Mil

Language Selections

English, French, or German

6.2.2 Frame & Wrench Icon

This submenu contains information on the following fields. More detailed information can be found in section "5.1 Adding a New TargetFrame"

Hide, Rename, Delete, or Copy a TargetFrame.

Wiring Harness selections for standard mic configurations.

Mic W/H & Mic Spacing

Cal X,Y, & Temperature for calibrating a TargetFrame

Disconnect from a TargetFrame

6.2.3 Target & Wrench Icon

This submenu allows import and activation of individual TargetFaces. More detailed information can be found in section "5.4 TargetFaces"

6.2.4 Users Icon

This submenu allows creation and configuration of users. More detailed information can be found in section "5.5 Users – Creating and Managing"

6.2.5 Disk Icon

This submenu contains functions to download logs, manage stored strings, backing up and restoring data. More detailed information can be found in section "5.6 Managing Server Data"

6.2.6 Network Icon

This submenu allows all data to synchronized with the external program "RSTAT"

6.2.7 System Icon

This submenu contains many advanced functions that should not normally be changed. These are advanced features, and should only be changed with advice and support from a Silver Mountain representative. Specific details of recommended settings can be found in section "5.7 Recommended Default Server Settings"

6.2.8 Command Prompt Icon

This submenu displays a Sensor Triggering Log, showing a global view of all sensor triggerings on all targets, useful for diagnostic analysis.

6.3 Wrench & Whistle Icon

6.3.1 Save All Targets

This selection will save all current strings on all targets, clearing screens in preparation for the next string of fire.

6.3.2 Sighters

This section allows the Range Officer or Admin to choose if sighters are part of the upcoming shooting session, and if so, how many there are, and if they are convertible.

6.3.3 Shots on Score

Defines the number of shots expected in a string of fire

6.3.4 Use Assigned shooters

Selecting this checkbox requires that a logged-in user be "assigned" to a target as shooter in order for the string to be considered valid and complete.

6.3.5 Use Assigned Scorekeepers

Selecting this checkbox requires that a logged-in user be "assigned" to a target as scorekeeper in order for the string to be considered valid and complete.

6.3.6 Use 7 second shot delay for F-Class

Turns on a 7 second delay for F-Class. More detailed information can be found in section "5.13 F-Class 7-Second Delay"

6.3.7 Managing Strings

Defines what assigned user roles can manage strings of fire. More detailed information can be found in section "5.13 Managing Strings of Fire"

6.3.8 Scorecards must be signed

Defines that scorecards must be signed when running a match or practice in "Login Mode". This requires that the shooter "sign" his scorecard before it can be saved and submitted as complete by the scorekeeper. Ordinarily ticked "yes".

6.3.9 Users can assign themselves to strings

Allows individual users to assign themselves to strings. This box should normally be checked, as if it is not, then Range Officers must be involved in assigning shooters and scorekeepers to targets.

6.4 Target & Wrench Icon

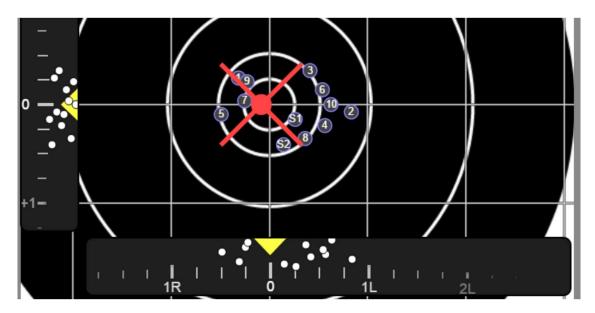
Detailed information can be found in section "5.4 Target Faces" on importing and activating targets for an upcoming shooting session or match. This menu allows the Admin or Range Officer to select from those activated targets for the current string of fire. Clicking on a TargetFace once will select that face for the selected target. Clicking on a TargetFace twice will select it for all targets.

The "Number of shooters" selection defines if 1, 2, or 3 shooters will fire on a single target, for pair or triple firing.

6.5 Notepad Icon

Plot mode provides the same functionality as a mechanical plotter with the added convenience of marking each shot for you.

This is a memory aid useful for visualizing your group and recording scope settings for each shot. It will not tell you what to set your scope to, calculate your group center, or predict the wind.



The size of your group is the dispersion of your shots had you not touched your scope settings for the entire string. This is very useful for understanding the precision of your aim, your rifle, and the wind effects.

Moving the sliders will move your group around and show you where your shots would have landed had you fired with this setting for all shots. This may help you visually determine which setting is optimal for the next shot.

The white dots on the sliders mimic the functionality of graphing. Each dot represents where a shot landed relative to your scope setting on the elevation and windage axes separately. Equivalently, this shows you what scope setting would have landed this shot in the center.

To use plot mode:

- Using the sliders, set the scope elevation and windage to match what you have on your scope BEFORE firing each shot.
- As you adjust your scope, adjust the plot immediately to help keep them synchronized.

If you fire a shot with different settings than recorded, select the shot in the list and adjust it with the pop-up.

6.6 Folder Icon

This menu selection will allow the user to select a saved string and recall it onto the TargetFace.

6.7 Printer Icon

Allows printing of the displayed target





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