



190 Personal Marksmanship Training System



AFG Training Technology, LLC

Office: (706) 841-2541 **Cell:** (301) 535-2790 **Fax:** (706) 841-2541

E-Mail: fgoza@outlook.com

Website: www.beamhit.net

Version 20160301-00

Table of Contents

System Description.....	3
Specifications.....	4
Warnings and Precautions.....	4
System Components.....	5
Software Installation.....	5
Hardware Setup.....	7
System Configuration.....	8
System Controls.....	11
System Operation.....	19

Copyright 2016 AFG Training Technology, LLC
All Rights Reserved

This manual is subject to change without notice. AFG Training Technology, LLC reserves the right to change or improve any of the products described without notice.

NOTE: The contents of this manual are applicable to **190** Systems shipped with 190 software version **4.5.0** or later.

This technical data is controlled under the Export Administration Regulations (EAR) and may not be exported to a foreign person, either in the U.S. or abroad, without a license or exception from the U.S. Department of Commerce.

System Description

Using laser technology, the 190 System is a completely mobile marksmanship single-target training system that allows shooters interested in becoming more proficient with their own firearms to do so from any computer-accessible location.

This system is packed in its own hard plastic carrying case with 15 foot (4.6 meter) USB cable connection, laser detection device (LDD) and bracket, laser, software, instruction manual, and scaled target set.

The LS-101 laser included with the system is a light but durable laser that is fully adjustable for windage and elevation, and designed for use both by the casual marksman and the competition shooter. It is externally mounted on a caliber specific transmitter rod that is inserted into the firearm's barrel.

By inserting the laser into the firearm and dry firing at the targets, the laser detection device sends immediate feedback to the computer via a USB connection. The target registers hits of the laser and the 190 software reports the user's session performance.

The target records all shot data which can then be saved to any commonly used storage media for later re-view. Data (such as time, score, and dispersion) is shown on the target. Targets may be printed by either a local or network printer. Each shot on the target is numbered and data is displayed by numbered shots. The system is also capable of timed sessions.

The 190 PMTS software includes the following features:

- Time Between Shots
- Shot Group Dispersion
- Save and Print Scores

The 190 PMTS is ideal not only for novice shooters gaining the basic skills of marksmanship but also for competitive shooters building muscle memory and fine tuning advanced marksmanship skills. The cost of ammunition plus time and expense of going to the range for live fire is saved.

Training with this system requires:

A laptop or desktop computer (sold separately) with:

- Intel Pentium processor (minimum 1.5 GHZ)
- Windows 7, 8, or 10 operating system
 - Minimum RAM
 - 7, 8, or 10 - 1GB
 - USB port
 - min. 1024x768 screen resolution

- 1 foot (.3M) minimum to 30 feet (9.1M) maximum training distance from firing line to target. For every 1 foot (.3M) away from the scaled target, it is equivalent to 32.8 feet (10 M) from the full size target represented.

- A firearm: (Shooters train with their own firearms in dry fire mode with optical sights. The system requires no modification to the firearm and it does not interfere with normal firearm function.)

- A laser transmitter rod to match the caliber and type of firearm on which training is conducted. Available laser transmitter rods are listed in the Accessories section.

Intel and Pentium are either registered trademarks or trademarks of Intel Corporation in the United States and/or other countries.

Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

System Specifications

Maximum recommended shooting range: 33 feet (10M)
Interface: USB 2.0
Target Area: 7.7 x 7.0 in (190 x 178 mm)
Power Supply: via USB from computer
Dimensions (LxWxH): 16 x 13 x 4 in (460 x 330 x 102 mm)
Shots per session: up to 30 hits
Weight: 3.9 lb (1.8 kg)
Operating Temperature: 32° - 104°F (0° - 40°C)
Storage Temperature: -14° - 122° F (-10° - 50° C)
Operational Environment: indoors

Warnings and Precautions

Before using this laser and/or system, please carefully read and follow all warnings, safety precautions, and operating instructions listed within this system manual.

LIABILITY LIMITATIONS: AFG Training Technology, LLC, its suppliers, vendors and agents shall not be liable for damages, regardless of their nature, caused by user's negligence or failure to comply with recognized firearms safety procedures.

FIREARMS SAFETY: Before using the system make sure the FIREARM IS UNLOADED and the following firearm SAFETY instructions are followed. Double check that no live rounds are in the chamber, magazine, or cylinder of the firearm. Remove all ammunition from the training area. Always point the firearm in a safe direction and make sure no one is in the line of fire. Remember FIREARMS SAFETY IS YOUR RESPONSIBILITY.

LASER LABELS AND SAFETY: The LS-101 Laser Transmitter meets all Class II Laser requirements and complies with FDA requirements, 21 CFR 1040.10 et. Seq.

System Components



**Carrying Case with
Laser Detection Device
and 15 ft. USB Extension
Cable and Circular
Default Target**

QTY: 1

Part No. MD1504



LS-101 Package

Part No. MDM0000

- **Laser Transmitter**
(QTY: 1) Part No. MD2003
- **Laser Transmitter Rods:**
 - MCR-SM-L** (.22 to .32 Caliber Rifle)
(QTY: 1) Part No. MD2503
 - MCR-SM** (.22 to .32 Caliber)
(QTY: 1) Part No. MD2501
 - MCR-ML** (.357 to .45 Caliber)
(QTY: 1) Part No. MD2502
- **Allen Wrench - 1/16"**
Part No. MD2525 (QTY: 1)
- **Battery: LR44**
Part No. MD2522 (QTY: 3)

Instruction Manual (Available for download from website www.beamhit.net)

Accessory Instruction LS-101 (Available for download from website www.beamhit.net)

System Software License

QTY: 1 (software available as download from website www.beamhit.net with various support options)

Software Installation

Download Software

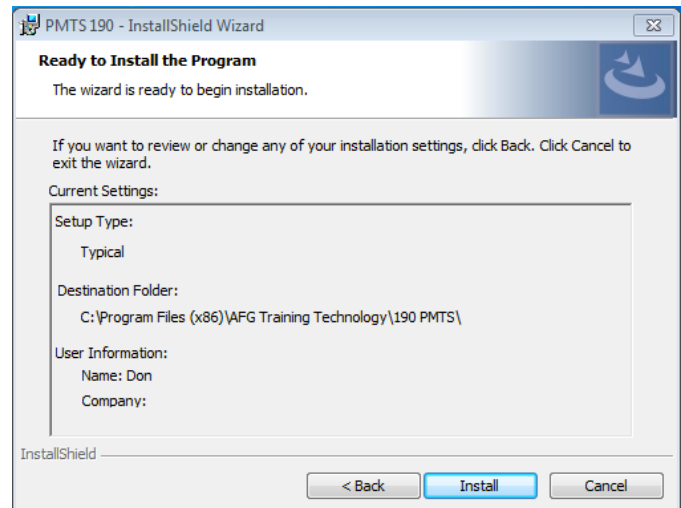
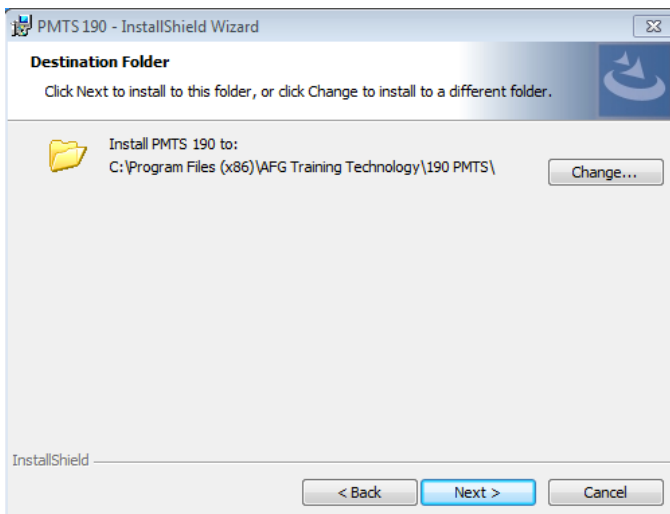
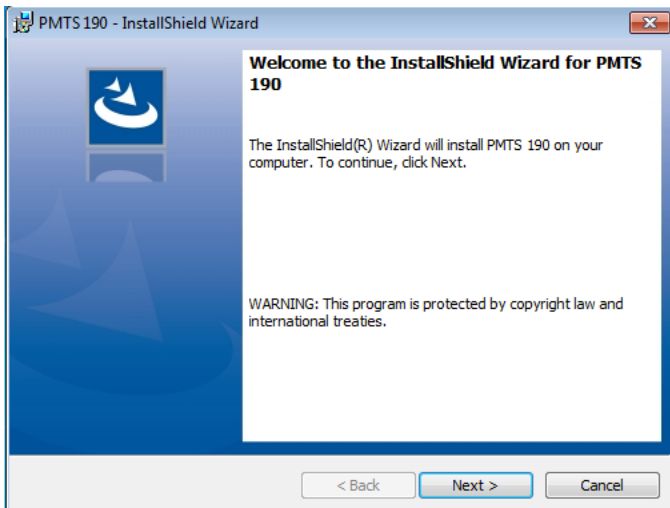
1. Open a browser window on an internet connected computer and navigate to the URL: **<http://www.beamhit.net>**.
2. Select the **190** page under **Products** from the menu and click on the **Download PMTS 190 Software** button. Follow the prompts to download the system setup file to the location of your choosing.

NOTE: *If this is the computer you will use to control the PMTS 190, simply download the file to your hard drive. If you will control the system from another computer, then you will need to download to removable media, such as a thumb drive and use that to install the software on the other computer. The computer and operating system must meet the minimum specifications defined earlier in the System Description pages.*

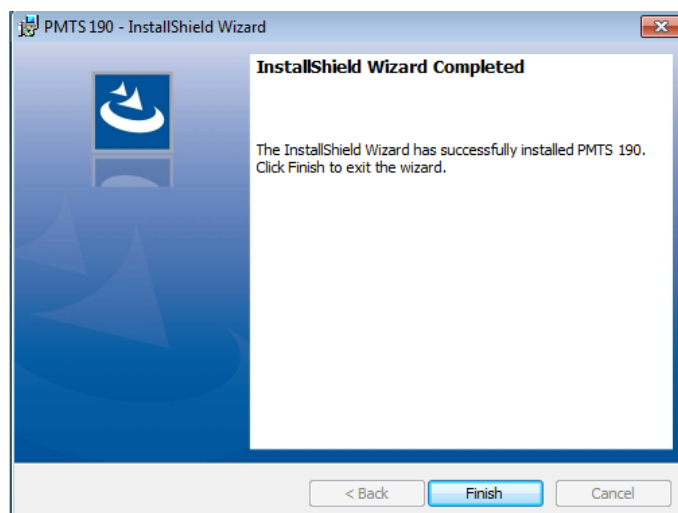
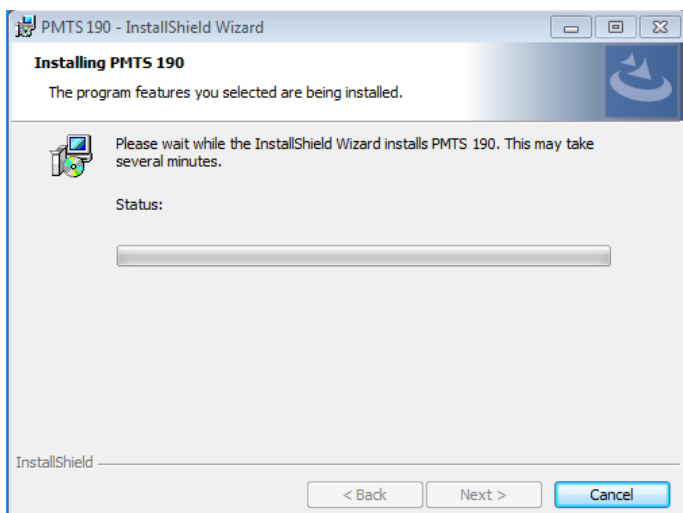
Software Installation

Install Software

1. From the computer you will use to control the PMTS 190, open the file: PMTS_Setup_n_n_n.exe (where n_n_n represents a version number). *This manual is valid for software versions 4.5.0 and above.*
2. Follow the prompts to install the PMTS software, clicking "**Next**" to continue through each of the installation pages.



Software Installation



3. Click "**Finish**" to complete the installation.

Hardware Setup

NOTE: Ensure software is installed on the computer before proceeding with setup. See preceding pages for software installation instructions.

1. Establish a 190 training range.

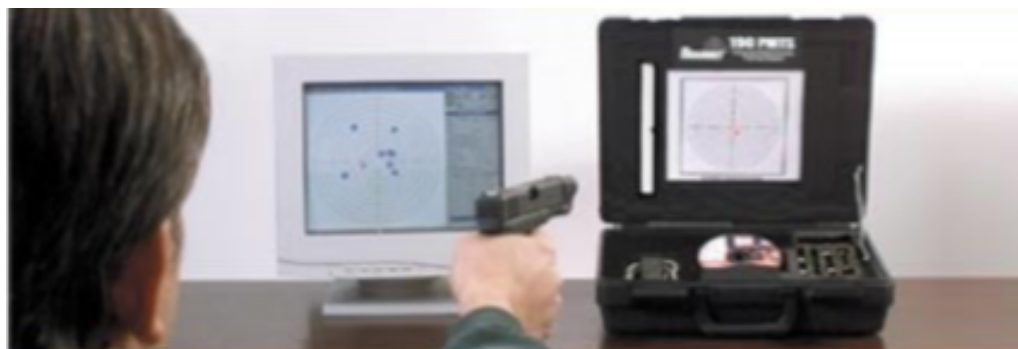
- Place the 190 PMTS case with LDD in a location with an unobstructed view, preferably in a moderately well lit room.
- Set up the computer (with 190 software) within 15 ft (4.6 M) of the 190 System.
- Open the 190 PMTS case and connect the USB cord of the 190 Laser Detection Device into the USB port on the computer. Windows will display the message: "**Installing Device driver Software**". When driver installation is completed, Windows will display the message: "**Your device is ready to use: USB 2.0 Camera**".
- Select a paper target and insert it into the slot on the inside of the case lid.

NOTE: You may need to fold over the leading edge of the target so it displays centered in the opening of the case lid.

2. Prepare the firearm for training. Refer to instructions provided with your laser for installation and operation of the laser supplied with the system.

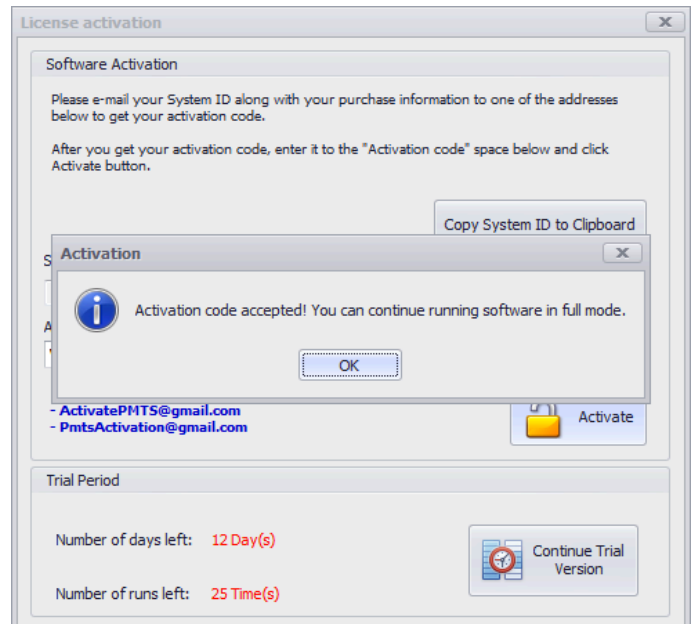
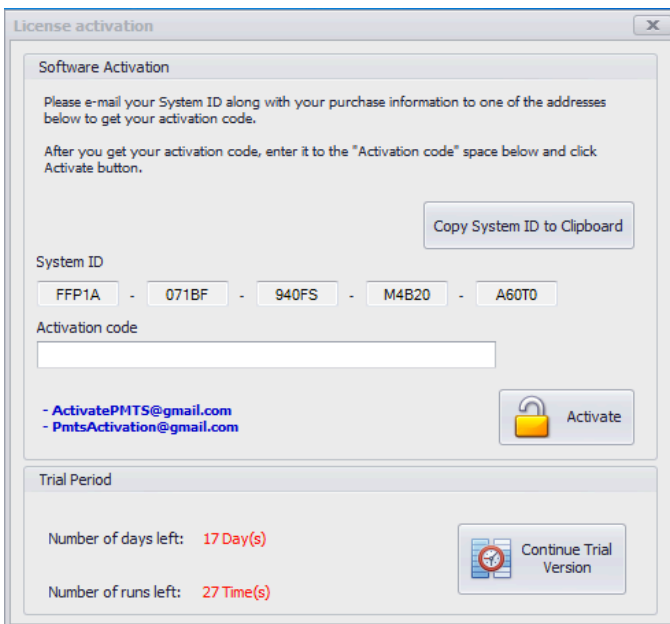


The 190 PMTS shortcut icon will appear on your desktop.



System Configuration

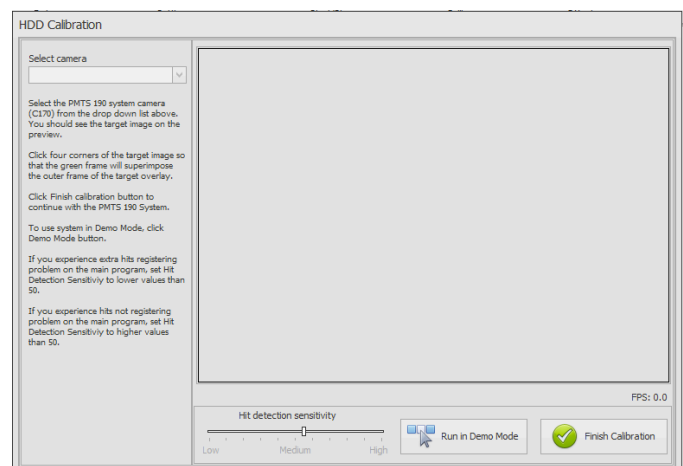
1. To open the software double click the **PMTS 190** icon on the desktop.
2. The first time you open the software the Software Activation screen will appear, with instructions for obtaining your activation code.
 - While awaiting your activation code the software may be operated as a trial version for 30 days or 30 runs.
 - Follow the instructions on the screen to obtain your activation code, then click "**Continue Trial Version**" to use the software.
3. When you receive your activation code, copy/paste in into the box and click "**Activate**". The following screen will appear. Click "**OK**" to continue.



Demonstration Mode

The software will open and the "**HDD Calibration**" screen will appear. Click "**Run in Demo Mode**" to run in demonstration mode and check out features of the software.

NOTE: A mouse click will simulate hits in the demonstration mode. This is useful for learning software functions. Trace and plot are not available in this mode.



System Configuration

Target Calibration

1. Install a target into the target holder of the lid. To print targets, see instructions under System Controls.

NOTE: The leading edge (right side) of the target may need to be folded or trimmed for the target to fit centered in the target window, leaving about 1/4" to the right of the alignment marks.

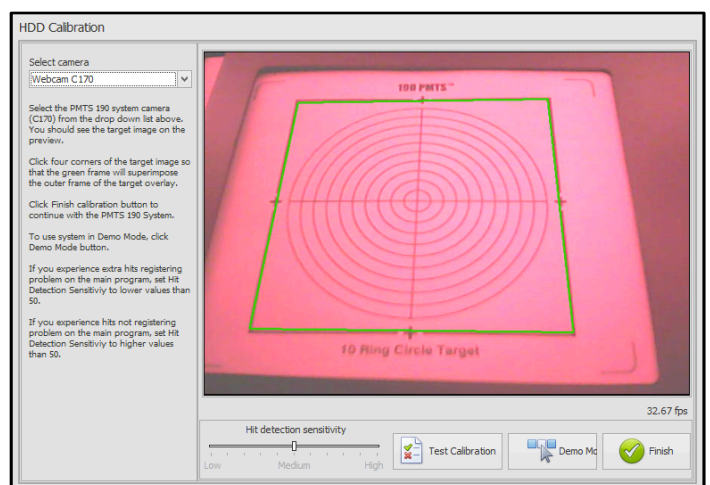
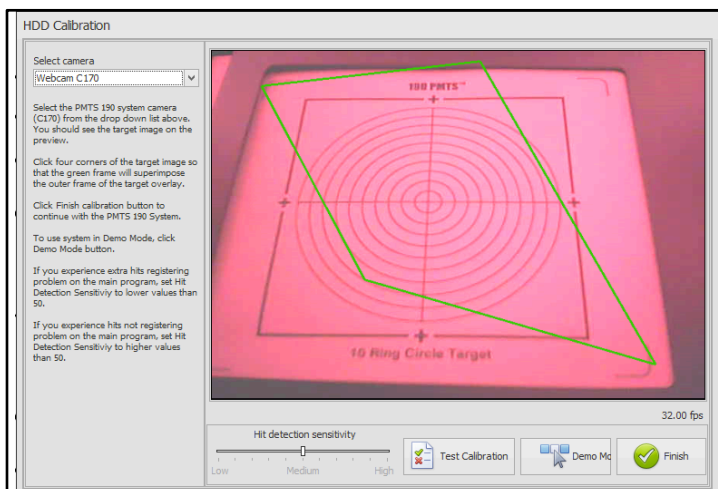
2. Attach the camera to the USB port on your computer and open the software. The calibration screen will appear.

3. From the upper left corner of the window select Webcam 170.

4. Adjust the position and tilt of the camera to ensure a good view of the entire target. You will see a green box. To properly calibrate, the four corners of the green box must be aligned with the four corners of the black outline of the target box. To calibrate, place your cursor in each of the four corners of the black target box and click. This will align the corners of the green box with the black target box.

IMPORTANT: Accurate alignment is critical for your system to accurately display actual hit location.

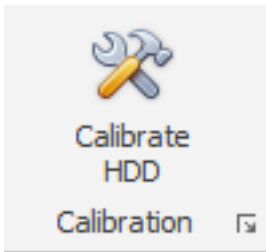
If you leave your system lid open and it is not moved or disturbed and the target has not been moved, your calibration will remain unchanged the next time you use the system. Changing targets will require a quick recalibration.



System Configuration

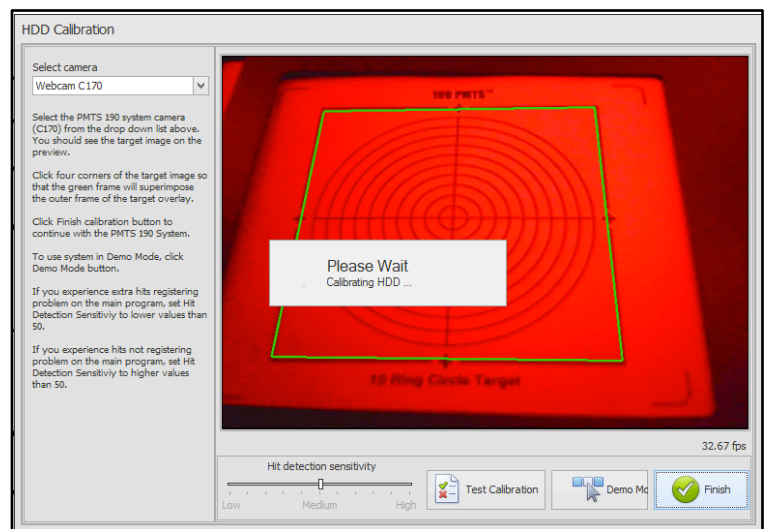
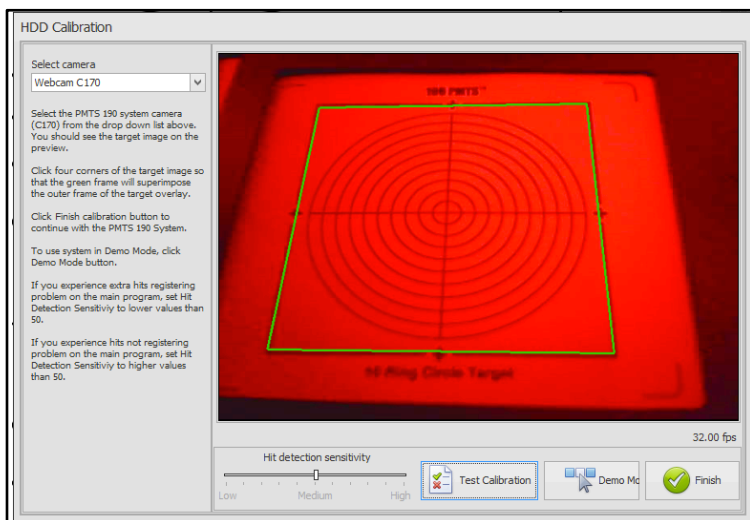
Sensitivity Adjustment

Ambient lighting conditions may require adjustment of the sensitivity from the system default. Improper sensitivity setting may affect hit detection, resulting in the system reporting multiple hits for each shot, or not reporting hits.

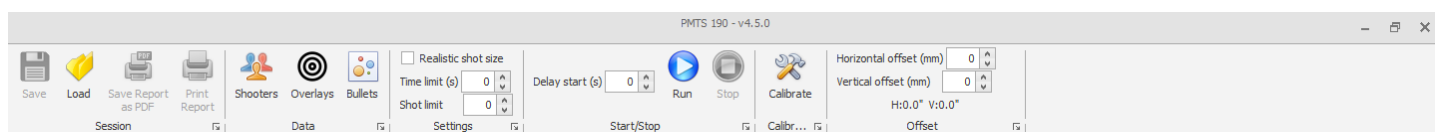


1. From the toolbar select "**Calibrate HDD**". A calibration screen will appear.
2. Select "**Test Calibration**".
3. Slide the Hit Detection Sensitivity bar to the right or left incrementally while firing laser pulses at the target until hits are recorded reliably.
NOTE: in the test mode the test screen will flash when a laser pulse is detected.
4. Click "**Finish**" to continue training.

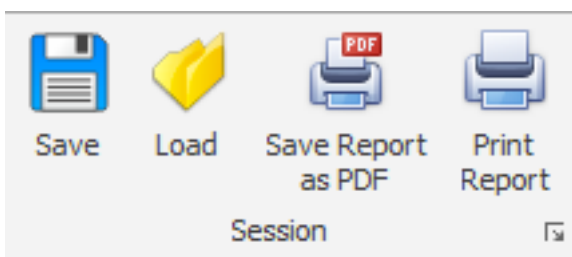
NOTE: Normal indoor ambient lighting is required for system operation. The system may not work properly outdoors. The target must have even lighting with no bright or dark areas. For bright lighting, sensitivity will need to be increased. Extreme brightness may prevent hit detection.



System Controls

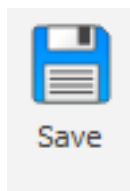


The main action toolbar is located at the top of the screen. This bar contains groups of buttons for controlling the main features of the program. The appearance and availability of the buttons will change depending upon current status of the program. Hovering the cursor over a button will display a hint as to the button's purpose.

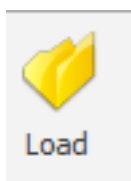
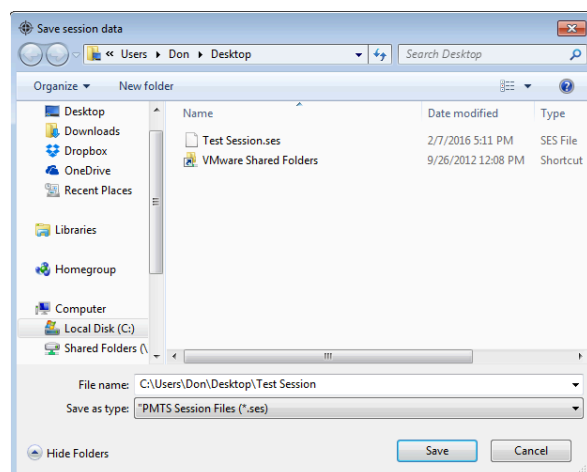


Session Group

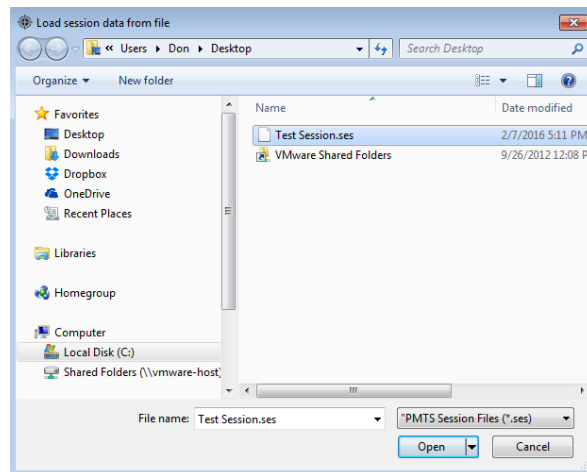
This group includes controls to save or load a session and save or print a report.



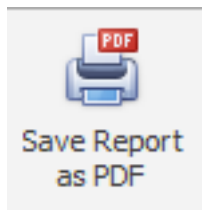
The **Save** control will allow you to save the current session. After stopping a session, click on this control. You will be presented with a "Save Session" dialog box. Select a location, name the session, and click the **Save** button.



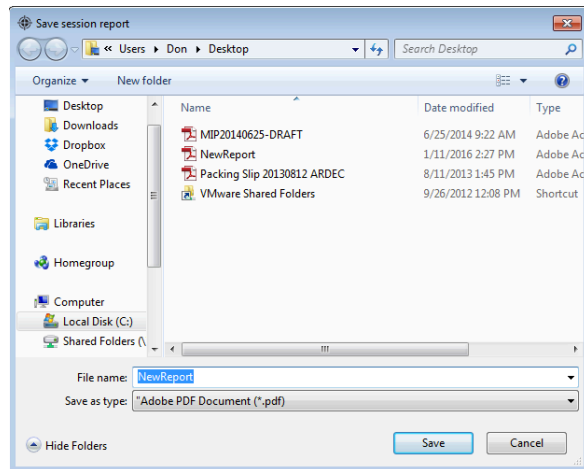
The **Load** control will allow you to load and review a previously saved session. You will be presented with a "Load Session From Data File" dialog box. Select the location and session file you wish to open (from the available .ses files), and click **Open**. The session data will be loaded onto the target and session results. You may review the session, save it as a PDF, or print a report of the session.




System Controls



The **Save Report as PDF** control will allow you to save the current session as a PDF. You will be presented with a "Save Session Report" dialog box. Select the location you wish to save the report, name the report, and click **"Save"**. Session data will be saved as PDF file with data and target image as shown.

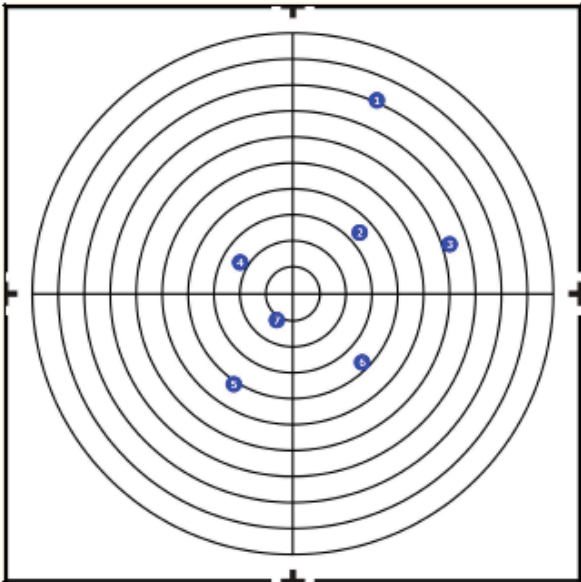




Created by PMTS 190 version 4.3.1.0

PMTS 190 Session Report

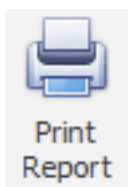
Date/Time	2/7/2016 5:11:06 PM
Shooter	John Doe
Bullet	.118 (3mm)
Overlay	10 Ring Circle Target
Session time	23.12
Total number of shots	7
Total number of hits	7
Total number of miss	0
Total score	46 (65.7%)
Group size	77.4 mm - 3.05"



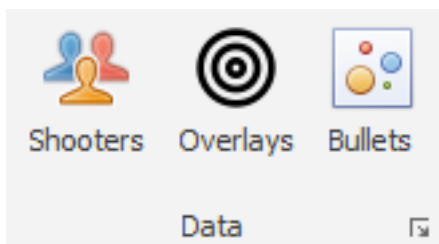
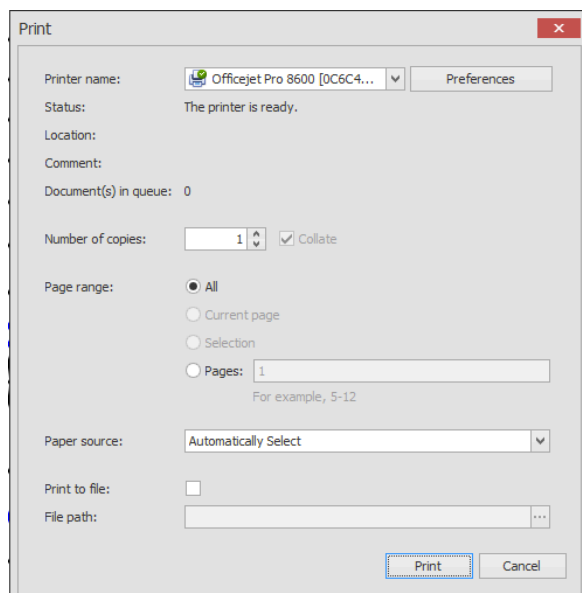
Hit No	Score	Time (s)
1	3	7.3
2	7	9.1
3	4	10.9
4	8	12.6
5	7	14.2
6	7	18.4
7	10	20.3

1/1

System Controls

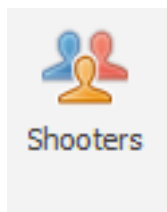


The **Print Report** control will allow you to print a report of the current session. You will be presented with a "Print" dialog box. Select the printer you wish to use, and click "**Print**". Target and session data will be printed in a format same as shown on the previous page.



Data Group

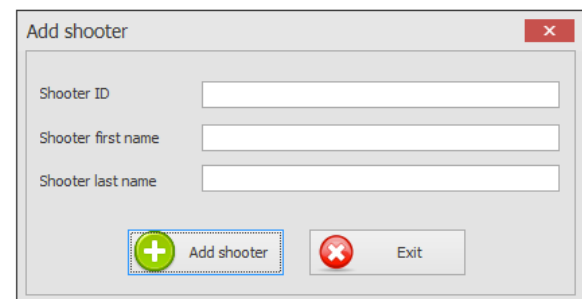
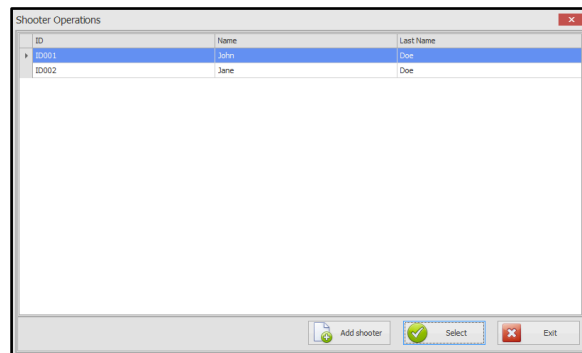
This group includes controls to manage shooter data, overlays, and bullets.



The system will maintain a database of shooters to allow you to track shooter performance. The **Shooters** control will allow you to add or select shooters. You will be presented with a "Shooter Operations" dialog box.

To add a shooter, click the "**Add Shooter**" button; enter the shooter ID, First Name, and Last Name. Click "**Add Shooter**".

To select a shooter, highlight the row containing the shooter and click "**Select**".

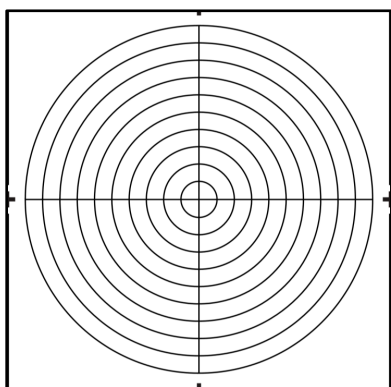
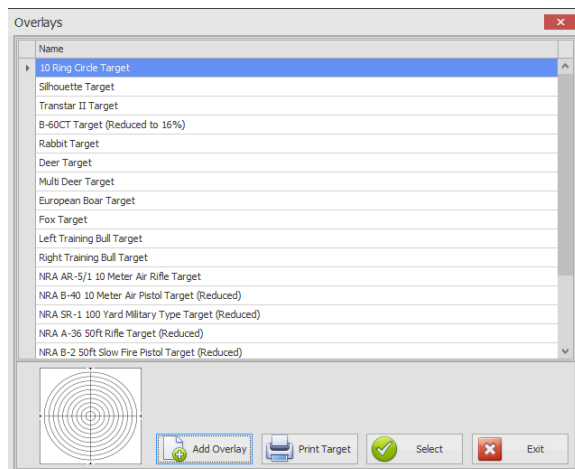


NOTE: If you wish to track shooter performance with various firearms, simply identify the firearm in one of the data fields.

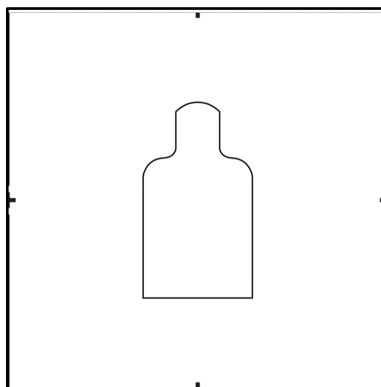
System Controls



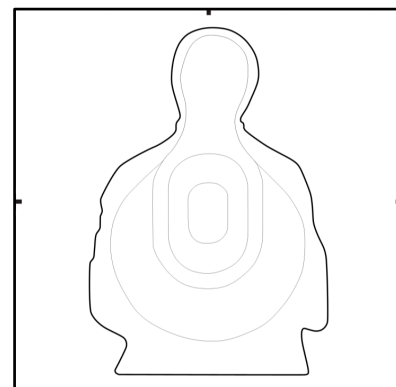
The **Overlays** control will allow you to add and select overlays or print targets. Following are the targets currently available. To select one for a session, highlight the target and click "**Select**". To print the target to a connected printer, highlight it and click "**Print Target**".



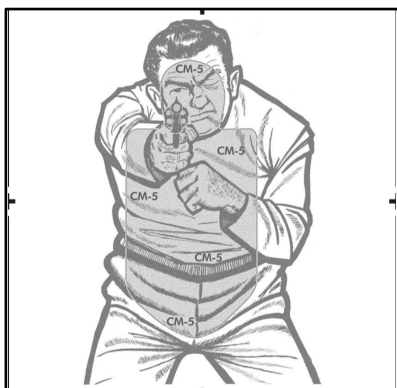
10 Ring Circle Target



Silhouette Target



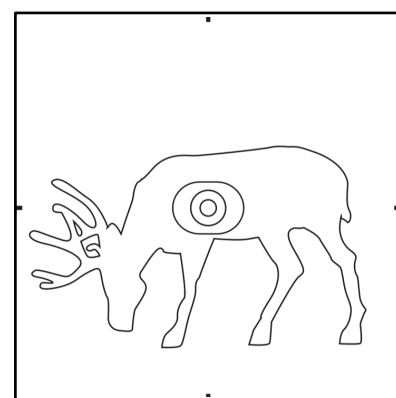
Transtar II Target



B-60 CT Target
(Reduced to 16%)



Rabbit Target



Deer Target

System Controls



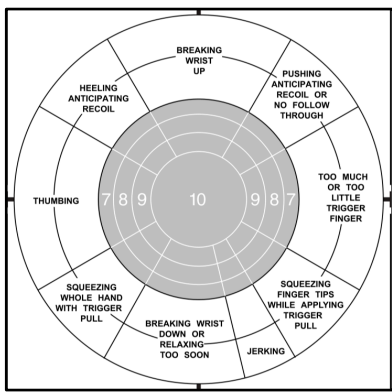
Multi Deer Target



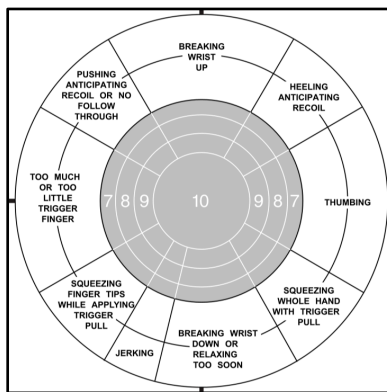
European Boar Target



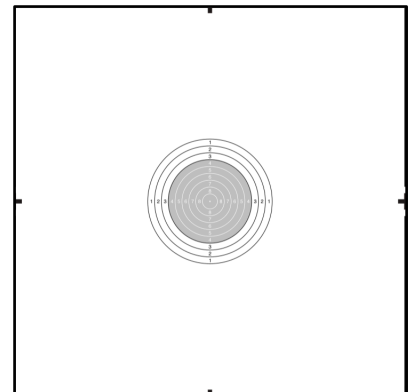
Fox Target



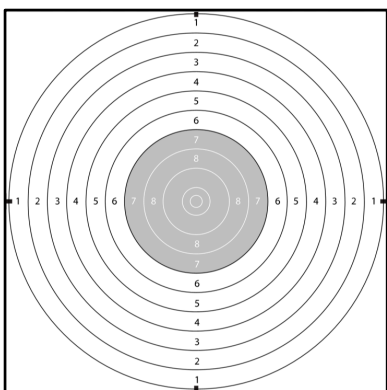
Left Training Bull Target



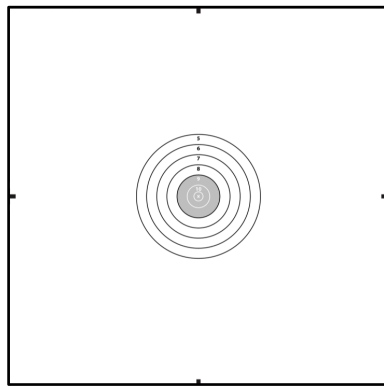
Right Training Bull Target



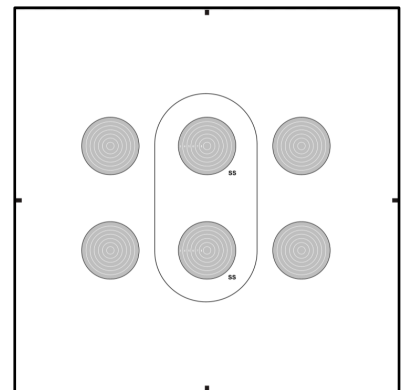
NRA AR-5/1 10 Meter Air Rifle Target



NRA B-40 10 Meter Air Pistol Target (Reduced)

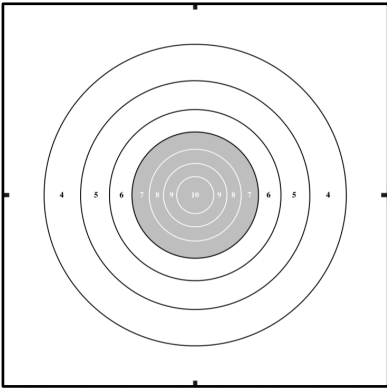


NRA SR-1 100 Yard Military Type Target (Reduced)

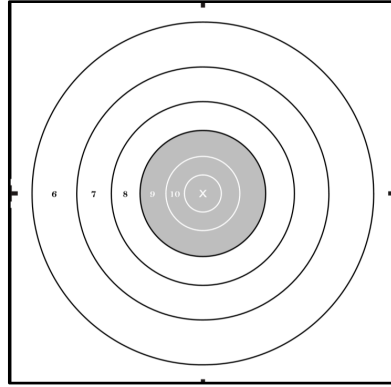


NRA A-36 50 ft Rifle Target (Reduced)

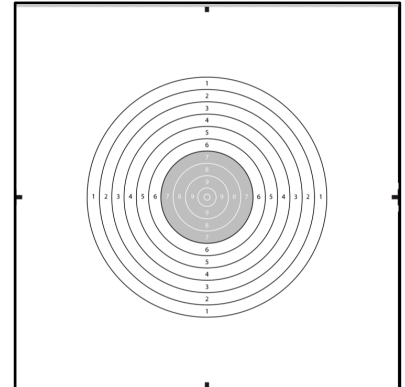
System Controls



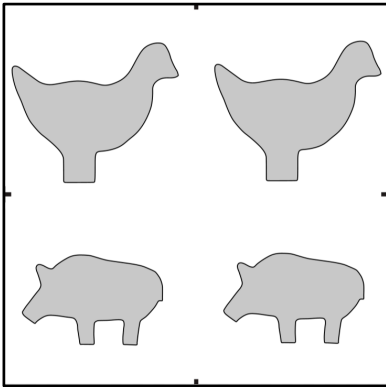
NRA B-2 50 ft Slow Fire Pistol Target (Reduced)



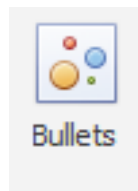
NRA B-3 50 ft Timed and Rapid Fire Pistol Target (Reduced)



NRA B-11 International 50 ft Slow Fire Pistol Target (Reduced)

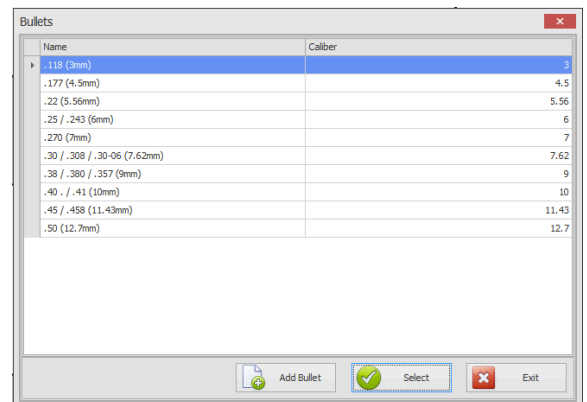


NRA TQ-12 50 ft Pistol Silhouette Target (Reduced)

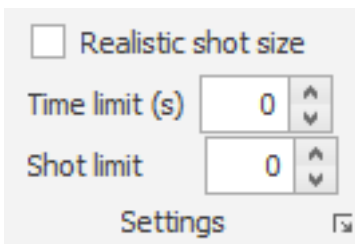


The **Bullets** control will allow you to add and select bullet sizes for the caliber desired. When the "**Realistic shot size**" box is checked in the Settings Group, the hole size displayed will reflect the caliber selected.

Click on a bullet to select the desired caliber and click "**Select**". Click "**Add Bullet**" to add a bullet that is not shown on the list.



System Controls

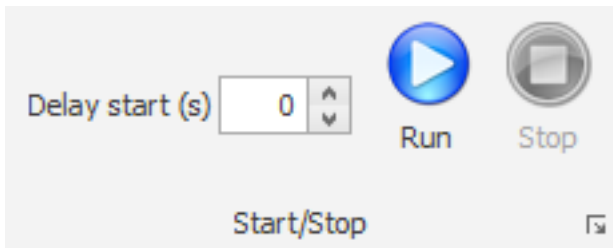


Settings Group

This group includes controls to manage shot size, time limits, and shot limits.

The "**Time Limit**" control will allow you to set a target exposure time in seconds (maximum 999 seconds). Setting a time limit will limit the time during which the software will record hits. The session will automatically stop at the time limit set. Enter the time limit in seconds or press the up/down arrows to adjust.

The "**Shot Limit**" control will allow you set a number of shots after which the session will automatically stop. Enter the shot limit or press the up/down arrows to adjust.



Start/Stop Group

This group includes controls to delay start, run, and stop sessions.

The "**Delay Start**" control will delay the start of the session after the "**Run**" button is clicked. This is desirable to allow the time to get into position. Enter the time in seconds or press the up/down arrows to adjust.

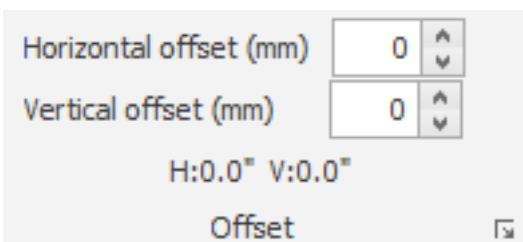
Press the "**Run**" button to start the session.

Press the "**Stop**" button to stop the session.



Calibration Group

This group includes controls for calibration. Click the "**Calibrate HDD**" control to enter the calibration mode. See previous instructions in System Configuration for the calibration process.



Offset Group

This group is not currently active in this version of the software. Once included, it will enable you to adjust horizontal and vertical offsets for laser hits.

System Controls

The **Session Results** area displays a summary of the current firing session, or the session loaded from a saved session. It includes:

Date time: date and time of the session from the system

Shooter: shooter name if assigned

Bullet: the bullet selected for the session

Overlay: the target overlay selected for the session

Group Size: the size of the shot group (in. and mm)

Score (Total and %): total score and % for the target overlay used

Number of Hits: number of hits registered on the scored area of the target

Number of Miss: the number of recorded hits outside of the scored area of the target

Total: the total number of hits recorded on the overlay in the scored and un-scored areas

The hits table at the bottom of this area displays the X/Y coordinates, score, and time for each hit on the overlay.

NOTE: laser hits outside of the overlay will not register in the software.

Session Results

Date time:

Shooter:

Bullet:

Overlay:

Group size: **32.6 mm - 1.28"**

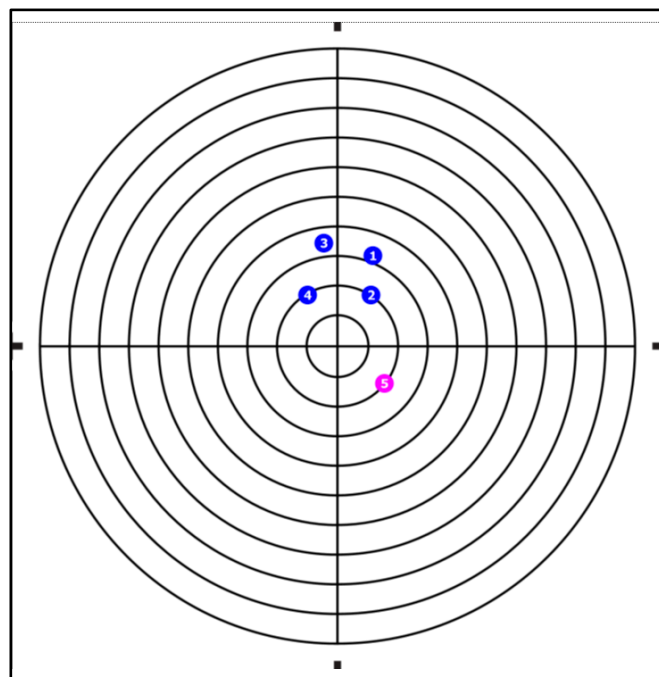
	Total	%
Score	43	86%

Number of hits	Number of miss	Total
5	0	5

Session time: **19.45**

Index	X	Y	Score	Time
1	7.5	19.2	8	15.7
2	7.1	10.9	9	16.7
3	-3	21.9	8	17.6
4	-6.4	10.9	9	18.6
5	10	-8	9	19.5

The target area shows hits on the target in real time during the active session. As shots are fired on the target they are displayed as colored circles, numbered in the order they registered on the target. The most recent hit is indicated as purple, with previous shots in blue.



System Operation

To place the 190 PMTS into operation, set up the hardware and perform system configuration and calibration as described earlier in this manual. The overlay in the software must match the paper target you are using.

If desired, select a shooter and bullet for the session (Data Group). Set any time or shot limits and check realistic shot size if needed (Settings Group).

Prepare your firearm for training (see LS-101 Accessory Instruction).

Select a Delay Start time if needed, then click "**Run**" to start the session. As you dry fire, laser hits on the target will display in the target display and Session Results areas of the software. If a time limit has not been set, click **Stop** to end the session.

NOTE:

Check our website www.beamhit.net for FAQ and troubleshooting tips for this system. Feel free to communicate with us through the **Contact Us** form on the website for any issues not answered there.

LMTS products are manufactured to provide years of dependable use. If for some reason the product needs to be repaired and is still under warranty, please contact AFG Training Technology, LLC at the address shown on the cover of this manual for a return authorization (RMA) number. Remove the batteries and return the product securely packaged. In the event the product is not covered by warranty, you will be notified as to the nature and cost of the necessary repair.

Copyright 2016

AFG Training Technology, LLC All Rights Reserved