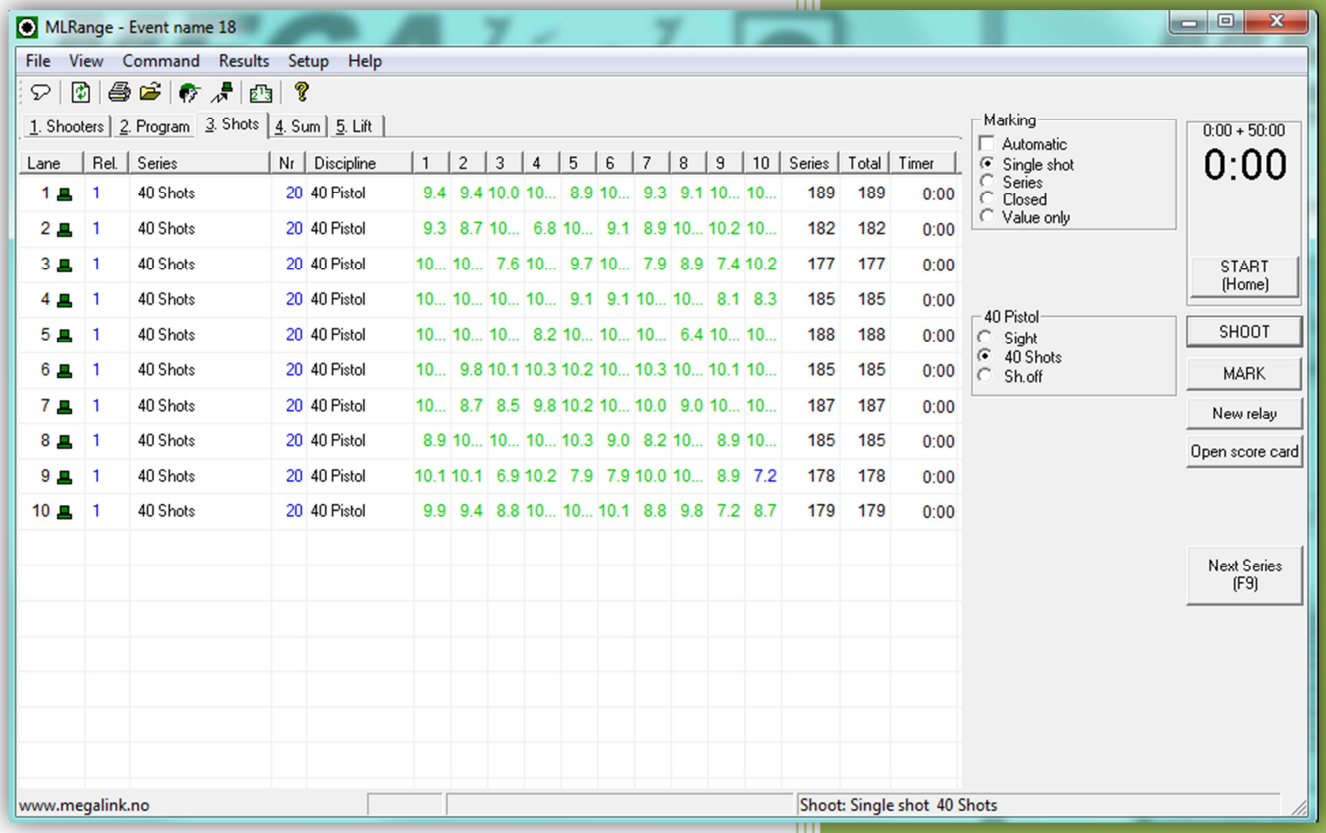
2014

MLRange User Manual



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Rev. 1.0

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Glossary of terms

Athletes – Competitors or participants in a sports competition. Athletes in the sport of Shooting are sometimes called shooters.
Competition – A general reference to a sports contest that may include a series of events (Championship) or may be a contest within a single event.
Course Of Fire (COF) – A description of the stages of competition within an event that specifies (at least) the number of shots in each series and stage, the type of firing and the time limits.
Lane – Lane denotes the shooting position of an athlete and their related target and monitor.
Marking – MLRange controlled display and listing of shots on monitors and public display.
ML2000 – Megalink's electronic scoring system (hardware and software).
MLRange – The central range control application of the ML2000 system.
MLRes – The results management application of the ML2000 system.
MLShoot – The individual training application of the ML2000 system.
MLView – The public display application of the ML2000 system.
Series – A sequence of shots fired within a stage or course of fire.

Installation and basic usage

Introduction:

The MLRange application is the central Megalink Windows program that allows you to control all the Megalink targets and monitors installed on your range. It allows you to configure the current course of fire, track the health and status of your entire range as well as details and exact positioning for every shot detected by your targets. MLRange offers lots of functionality as well as flexibility, so it is important that you study this document carefully as well as keep it readily available for reference.

For additional information, please visit our **YouTube** channel:
Megalink Electronic Scoring Systems
(https://www.youtube.com/user/megalinkscoring)

MLRange can receive shots from the following sources:

- ML2000 electronic target system from Megalink AS. All functionality is available.
- Simulation. Random shots are generated in order to practice on use of MLRange or to test the system before important events.

MLRange operates in one of two modes:

- Competition mode
- Practice mode

PC requirements

General requirements

- **It is recommended that all machines with ML2000 software have the same user account name and password to avoid issues when connecting these machines over a network.**
- 500MHz or faster CPU
- 256MB memory or more
- At least 50MB free disc space
- Windows XP SP2, Windows Vista, Windows 7, Windows 8
- Minimum screen resolution 800x600. Recommended 1024x768 pixels
- Network interface for connection with MLRes and MLView machines (avoid wireless networks)

ML2000

- One serial communication port (with 16650 UART) is recommended for handling up to 20 targets.
  Observe that USB to serial adapter is NOT supported! The Megalink USB adapter that replaces the serial communication adapter must be used for USB ports.

Installation:

Step 1. Download the latest version

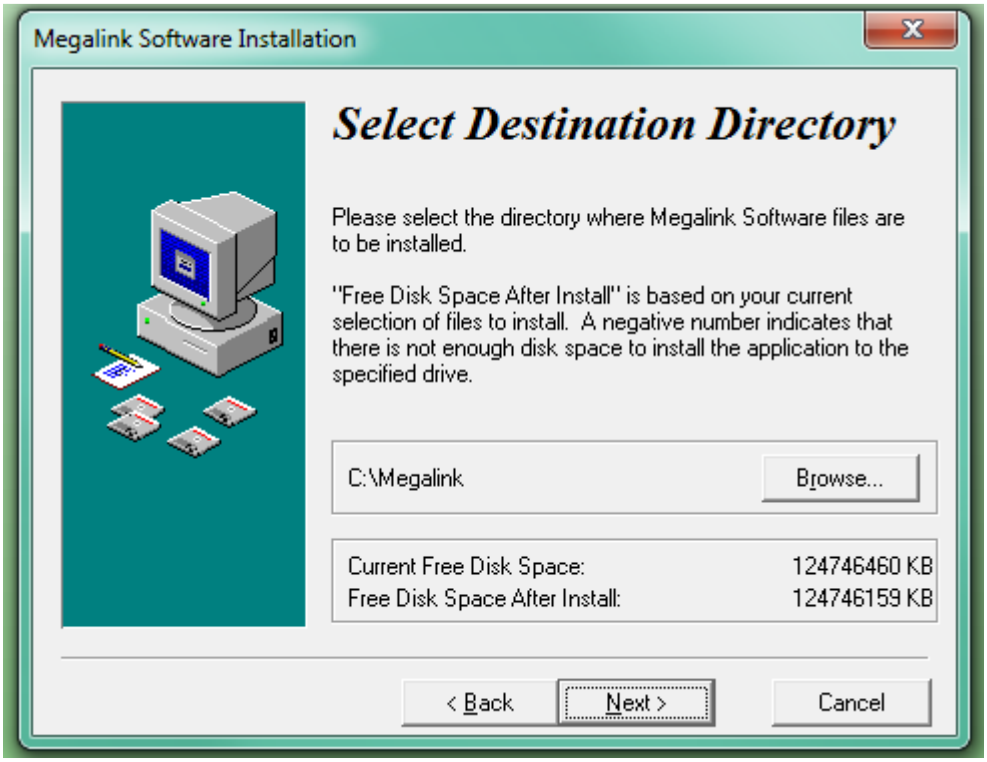
You can download the latest version from our web site at: http://www.megalink.no

Step 2. Launch the installation executable

Double-click the installation file (ex. **MLSetup**XXXX**.exe** – where XXXX is the version number).

Select your language

Installation folder

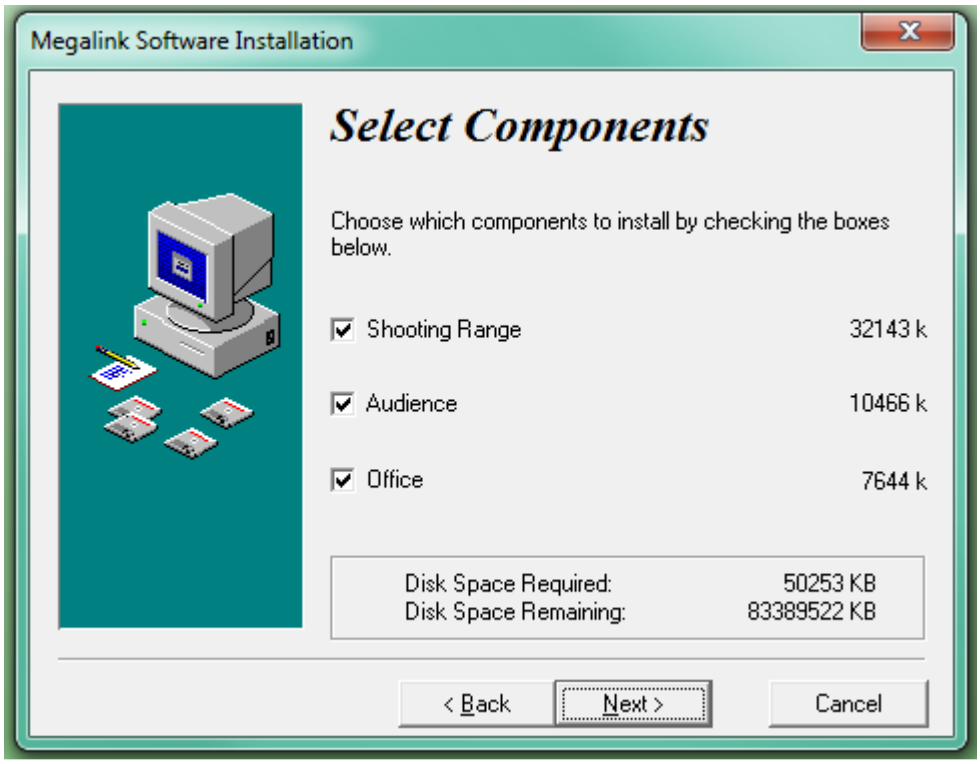


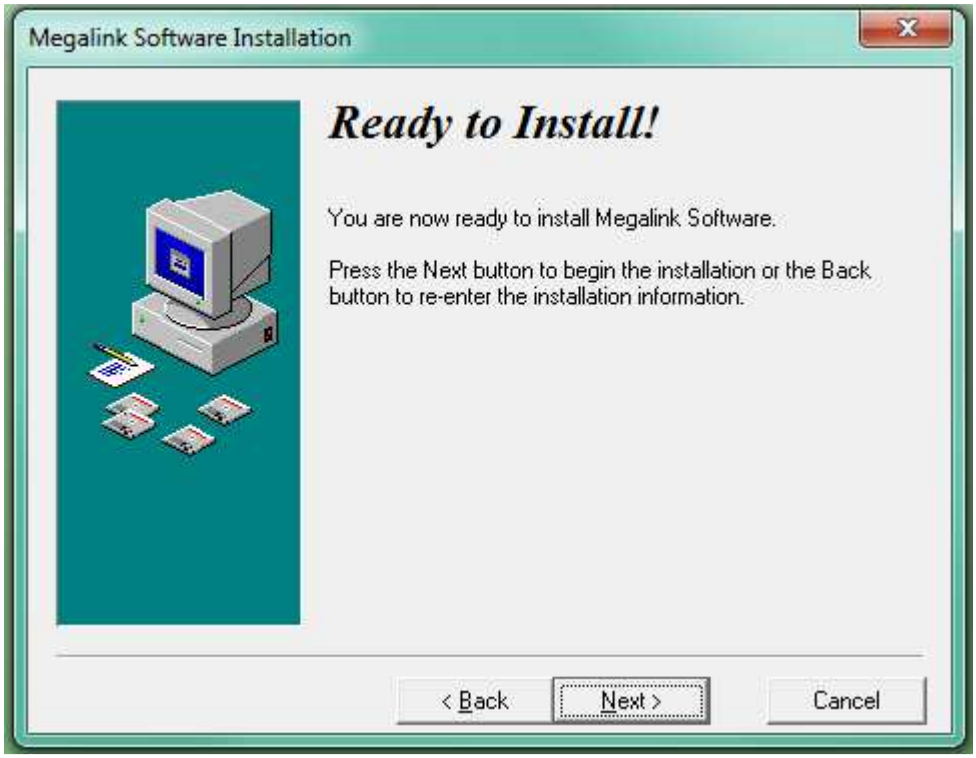
Note: You are free to install the package anywhere you like, but installing on the root of one of your drives will make the folder easier to share between applications on different machines.

Select applications to install

Select the applications that you have licenses for:

Shooting Range = **MLRange**
Audience = **MLView**
Office = **MLRes**





Click **Next** to install


Megalink Software Installation
Installation Completed!
The installation of Megalink Software has been successfully completed.
Press the Finish button to exit this installation.
< Back
Finish
Cancel

MLRange configuration:

Start MLRange

The installation package should have placed shortcuts on your desktop for the applications that you selected to install:

Starting and stopping MLRange

First start-up

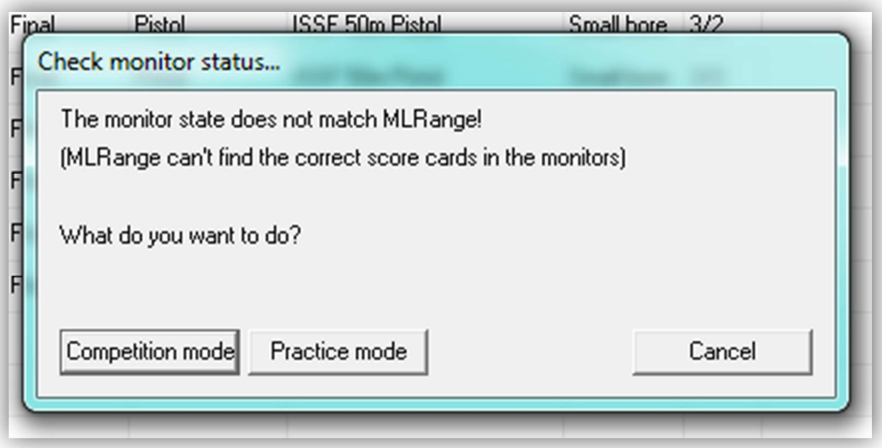
On the first start-up of MLRange you will be guided directly into the following dialogs:

- Interface
- Create event
- Event setup

The Interface dialog is where you specify the communication channels, range and license parameters. After the Interface dialog is completed, an initial event and relay must be created.

Normal start-up

On normal start-up of MLRange, the program will check if the ML2000 display units are in the expected state. If they are not (or if you are in simulation mode), you will see the following dialog:

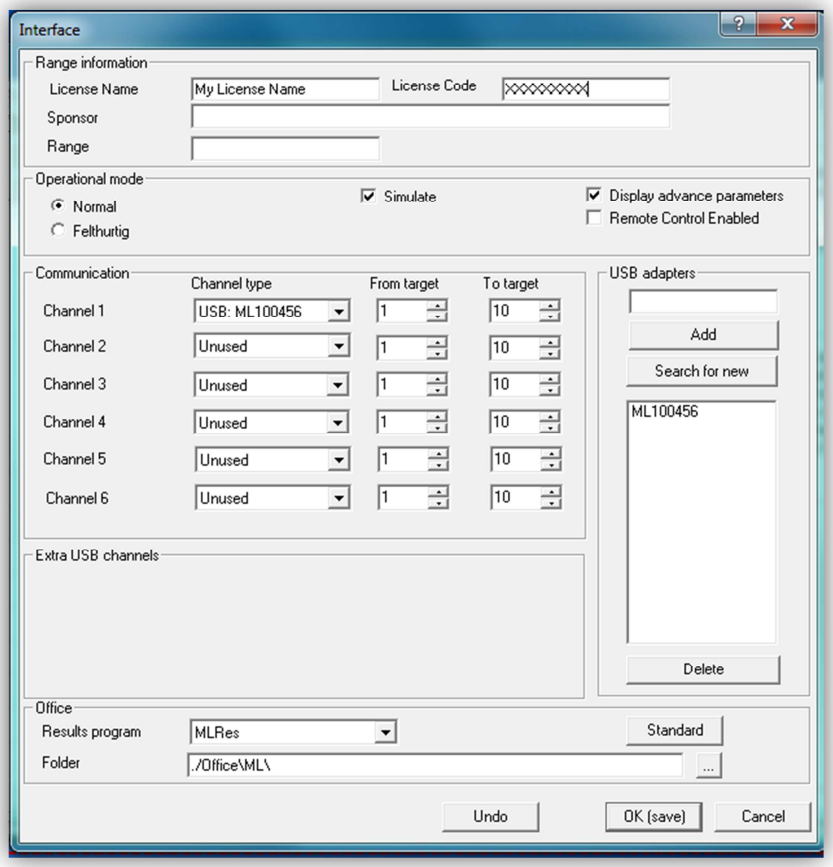


- If Competition mode button is pressed the normal dialog for event selection will appear.
- If the Practice mode button is pressed, all the lanes are set to practice mode.

Interface dialog

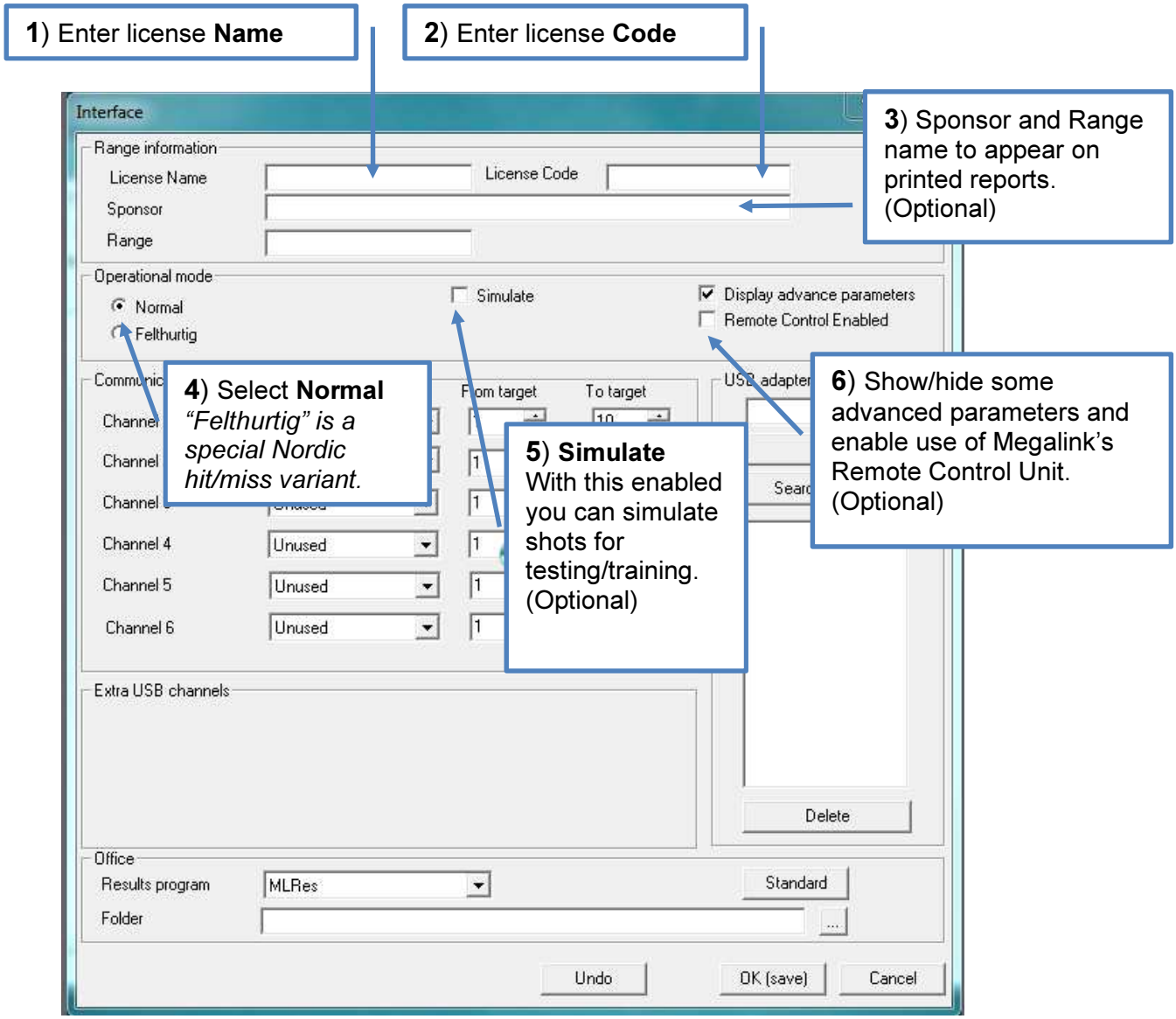
MLRange's Interface dialog is automatically displayed after a new installation. It is here that you specify the license name and code that was provided by Megalink as well as the hardware configuration of your range.

Starting from the top of this dialog, we will look at how each section is used to configure MLRange.



Interface dialog

Range information and operational mode sections



Range information and operational mode

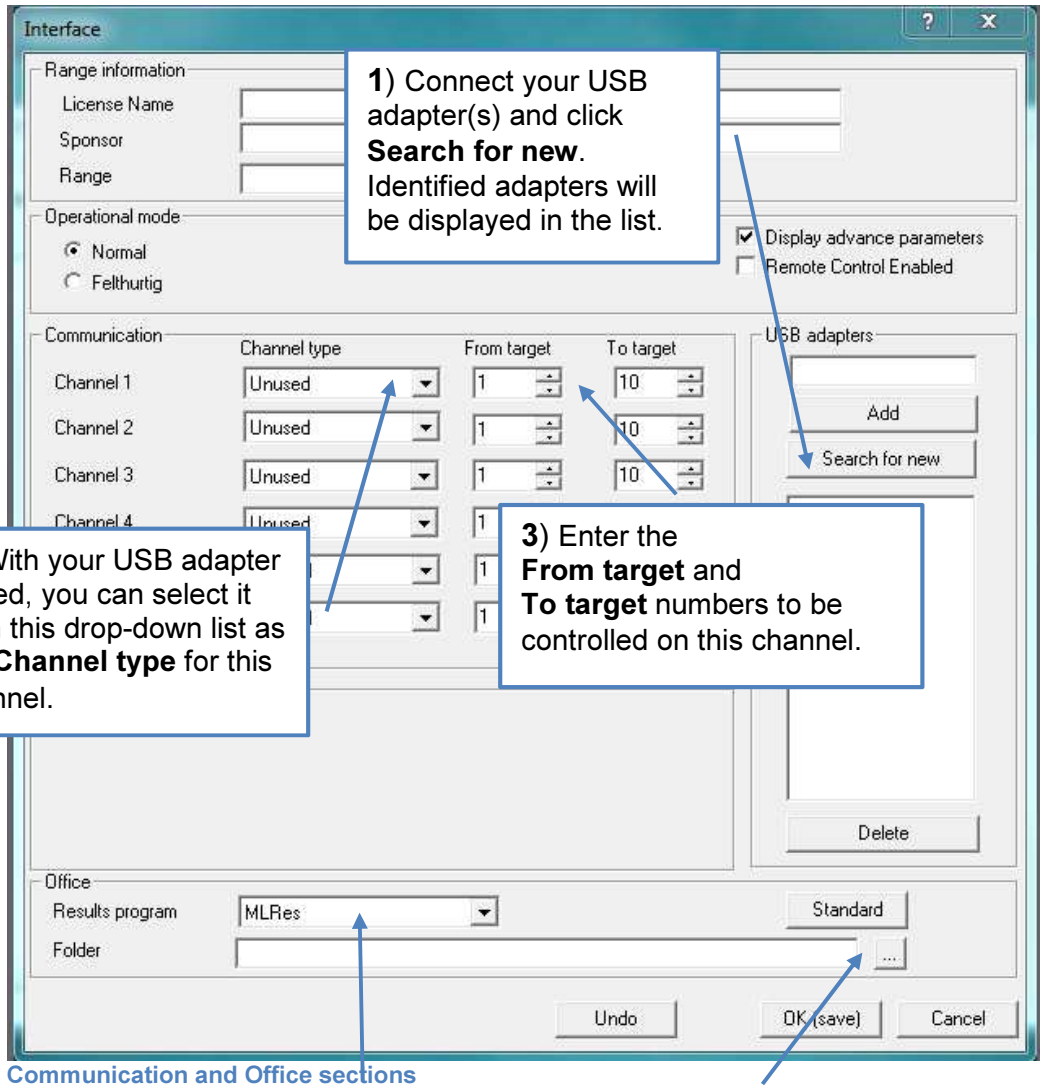
Hardware and software communication sections

The remaining sections are used to set up the interface to the electronic target system and the result management system.

The following main settings can be used for the channels:

- Com1 - Com9 are used for *serial* communication with ML2000
- Megalink USB adapters with specified serial numbers

The interface of MLRange is prepared for use with the Megalink USB adapter. Connected USB adapters are listed and can be added automatically or deleted manually. MLRange can be set up in advance without connected adapters.



Communication and Office sections

Checking communications and hardware status

After you have finished configuration and created an event, the communication status of all your configured lanes will be indicated in the first column of the Lane display view. See Icons for determining communication status for details. If you see any of the problem indicators for any of your lanes, you should first return to the Interface dialog and ensure that your communication channels are set up correctly. Refer to Troubleshooting for additional information.

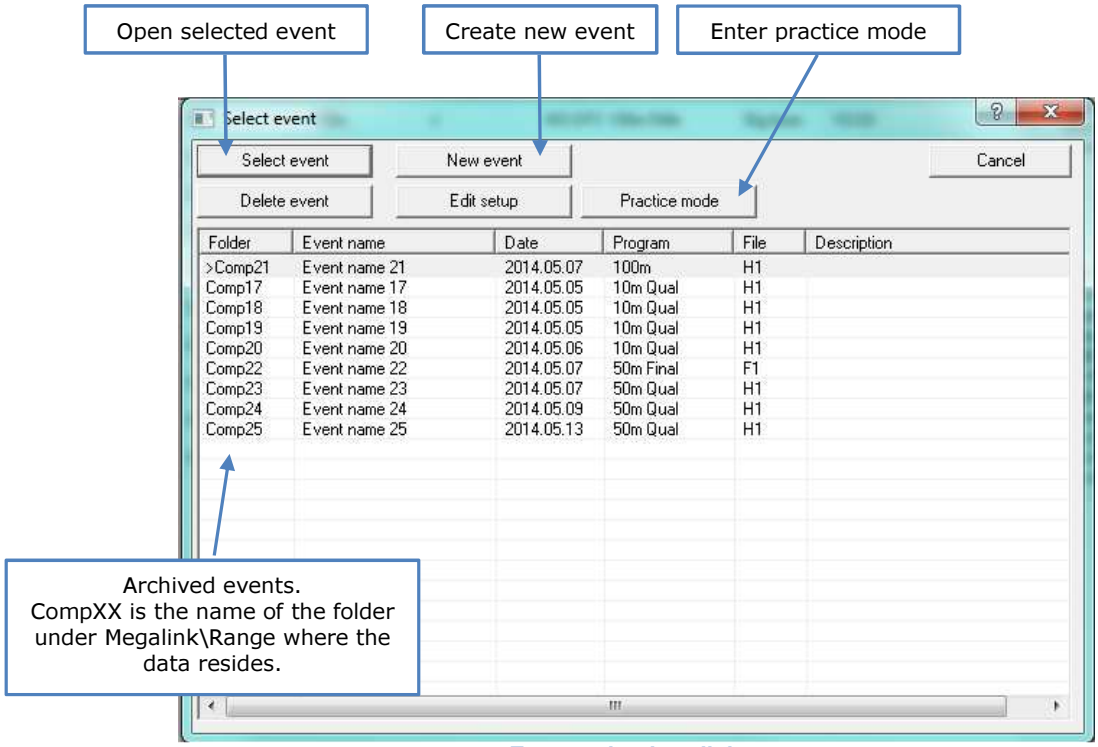
Finishing configuration

When you are finished with your configuration, clock the **OK (save)** button. You can always return to the interface dialog from the main menu **File → Interface**.

Events

Event Selection Dialog

If there are no active or archived events, the Event dialog will appear automatically. You can always access the Event dialog from the main menu **File → Events**. From here, you can create new events, edit event setups, select archived events or enter practice mode.

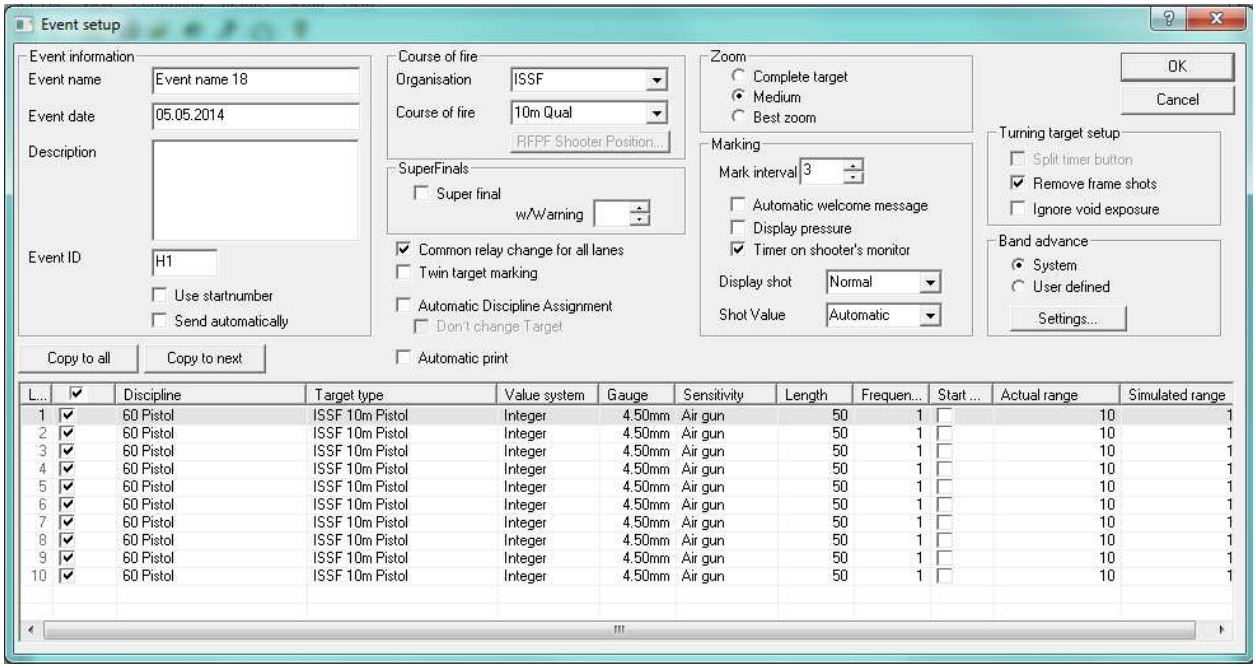


Event selection dialog

NOTE: The currently active event is listed at the top. You cannot delete the currently active event.

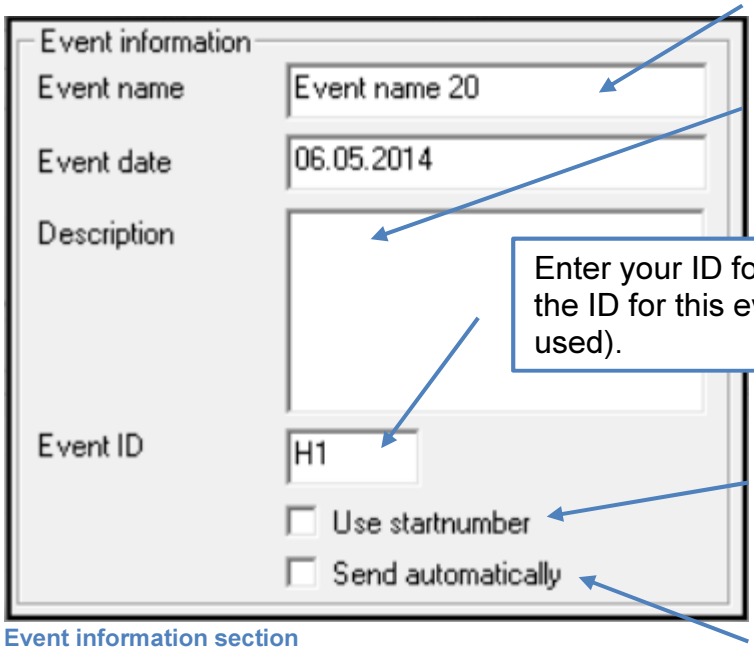
Event Setup dialog

The Event setup dialog is where you set up your shooting event. It is divided into several control sections in the top half, while the lower half is where you select the lanes that will take part in the event as well as specify any lane-specific options.



Event setup dialog

Event information section



Event information section

Enter your name for this event. (max. 30 characters)

Enter your description for this event.

Enter your ID for this event. **NOTE**: Must match the ID for this event as defined in MLRes (if used).

If your shooters have assigned start numbers then check this box.

If you use MLRes and want to publish data automatically then check this box.

Event ID

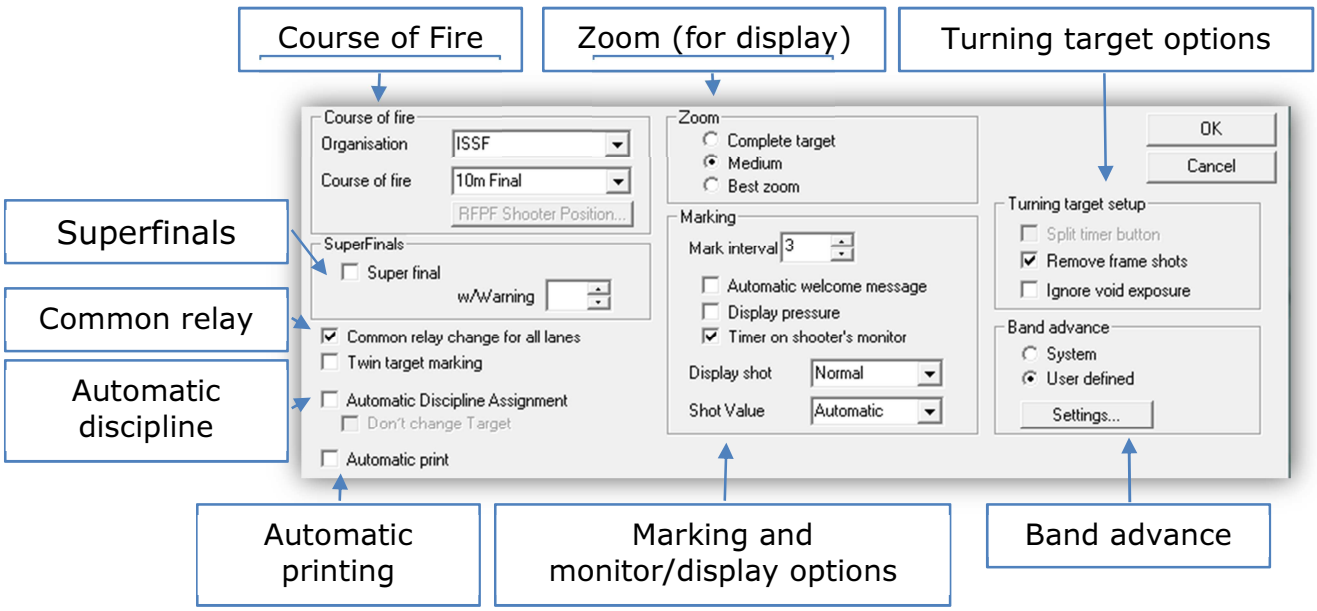
This value is used to identify each event in a large competition. The value must correspond with the same setting for this event in MLRes.

The value must consist of a letter and a number. The letter will usually separate different kinds of shooting while the number separates different shooting ranges.

The following values are recommended as standard values:

H1	Main shooting (qualification) on shooting range nr. 1
F1	Final on shooting range nr. 1
T1	Separate team shooting on shooting range nr. 1
H2	Main shooting (qualification) on shooting range nr. 2
F2	Final on shooting range nr. 2
L2	Separate team shooting on shooting range nr. 2

Event Setup Options



Course of Fire section

The course of fire section is where you make your main selection of the type of shooting event. First select the **Organization** and then select the **Course of Fire**.

Course of Fire section

Once a course of fire is selected, the default discipline is automatically selected for all lanes in the lane selection list.

...		Discipline	Target type	Value system	Gauge	Sensitivity
1	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
2	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
3	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
4	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
5	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
6	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
7	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
8	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
9	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun
0	☑	40 Pistol	ISSF 10m Pistol	Integer	4.50mm	Air gun

Lane selection list

Check the lanes that MLRange should control in the competition. Lanes not checked here will be set to practice mode.

Lane Options

By clicking in the fields of the lane selection list you will expose drop-down lists of allowable options that you can set.

Selecting lane options

These options are selection of Discipline, Target type, Value System for scoring, Sensitivity (Air gun, small bore, big bore) as well as actual and simulated range to target.

Actual and simulated range

Field for actual and simulated range are used for scaling the target image and translating the desired range length.

Actual range	The actual distance to the targets (in meters)
Simulated range	The simulated distance you want the target to be at

If the values are equal there will not be any scaling of the shot position. If the values differ, the position of the shot is scaled according to the ratio Simulated/Actual.

The value in simulated range is used to verify if the selected target is reasonable

- **Target type in red**: The target is usually not used on this range
- **Target type in blue**: The target is reasonable for the simulated range, but the actual range is not equal and the shot positions will be scaled
- **Target type in black**: The target is reasonable on this range and there is no scaling

Note: Actual and simulated range must be equal for official competitions.

Twin target marking

Marking on two monitors from one target can be achieved by activating this option. This mechanism is intended for running target with two alternating firing positions for the same target.

Two mark buttons will appear when activated. One button will start marking on the main monitor while the other starts marking on the twin monitor.

The setup must be done as follows:

- The target and the main monitor are set as number 1
- The main monitor is set as master and covers lane 1 and 2
- The twin monitor is defined as slave for lane 2

If an additional control target is set up behind the main target, the following setup must be used:

- The target and the main monitor are set as number 1
- The main monitor is set as master and covers lane 1 to 3
- The twin monitor is defined as slave for lane 3
- The control target and the control monitor are defined as number 2

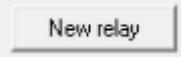
By clicking the **Copy to all** or **Copy to next** button it is easy to copy your settings to any or all lanes.

Finishing Event Setup

When you are finished, click the Ok button. You can always come back and change the setup for this event from the main menu **Setup → Event**. When this dialog closes after creating a new event the New Shooter(s) dialog is displayed to let you load the first relay of shooters.

New Shooter(s) Dialog

New Shooter(s) dialog

The New Shooter(s) dialog is always displayed after creating a new event or when you click the 

button on the command panel.

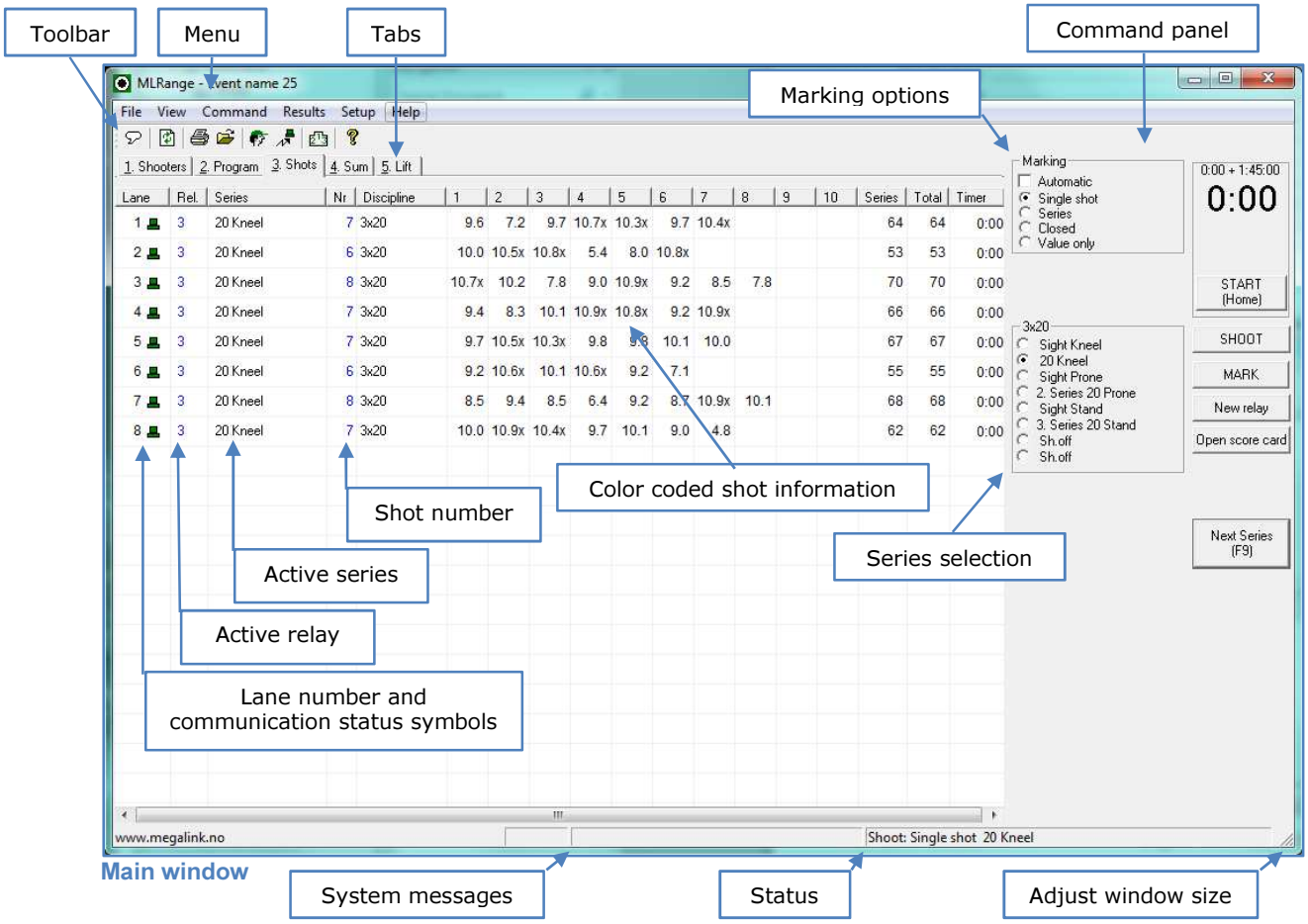
In this dialog, you must verify that the relay number to be loaded is correct, and whether to change shooters for all lanes or a selection of lanes. For relay changes for individual lanes see: Individual vs Common Series/Relay changes

Main Window / Basic Operations

The main window of MLRange presents a tabbed lane display view on the left-hand side to view different aspects of your event. On the right-hand side there is the command panel.

The first column of each lane in the list view has an icon to indicate communications status. Please refer to the communications icon legend to make sure that all your hardware is communicating correctly before proceeding. See Icons for determining communication status for details.

If you see any icons that indicate a problem, open the Interface dialog and review your configuration. Refer to Troubleshooting for additional information.



Menus

File

Language – Select interface language
Interface – Open interface dialog
Events – Open event selection
Course of fire definition… - Open COF dialog
Fetch ML2000 status - Check version numbers and counters
System Administration… - Open administration dialog
Lock CU/DU – Security feature for lane locking
Communication monitor… - Monitor communication activity
Printer setup… - Open printer setup dialog

Exit – Close MLRange

View

Toolbar – Show/hide Toolbar
Statusbar – Show/hide Statusbar
Tabs – Show/hide lane display view tabs
Select View – Select desired tab view

Command

Zoom – Select zoom level for public display (MLView)
Motor advance… - Activate target band advance
Lift… - Open lift control dialog
Lamp adjustment… – Open lamp adjustment dialog
Monitor Operation Mode… - Open monitor operation dialog
Falling target… - Open falling target dialog
For one lane – Lane-specific actions menu
Show message on monitor… - Open monitor message dialog

Results

Send to office… - Send relay data to office (MLRes)
Exchange with external media – Use external media for data exchange
Print score card… - Open print dialog
Open score card… - Open score card dialog
Edit names – Open names dialog for manually entering names (disabled with MLRes in use)
New relay/shooter – Change some or all shooters
Welcome – Show welcome message on all monitors
Show message on monitor – Open monitor message dialog
Update card in monitor – Force update of monitor score card
Fetch from monitor… - This function will verify if all shots have been sent to MLRange. Missing shots are fetched from the display units.
Delete card in monitor… - This function can be used to create a blank score card in the display unit.
Delete card in MLRange… - This function deletes the score card in MLRange. If the shots are stored on the corresponding card in the display unit, the "Fetch from monitor" function can be used.
Delete name in MLRange… - Delete names in the MLRange database. The names are re-fetched from results management system (MLRes).
Final marking… - Open final marking dialog

Setup

Event… - Open event setup dialog
Remote Control… - Open remote control settings dialog
Monitor… - Open monitor settings dialog
User-defined Band Advance… - Open user-defined band advance dialog
RFPF Shooter Position… - Open shooter position dialog for Rapid Fire Pistol Finals

Help –

Help topics… - Open online help
Show version details – Show latest version notes
About MLRange – Show MLRange version number

Toolbar

The buttons on the toolbar can be used as shortcuts to useful functions. All the functions can be reached through the menus (or other methods).

The buttons on the toolbar are as follows:

	Select interface language
	Update the lane display view. The name of the shooters are re-fetched (but not sent to the display units) and the monitors are prompted to report main status again
	Start dialog for printing
	Start dialog for selecting events. Used to select, create, edit or delete events
	Fetch shooters names and send a welcome screen to the display units
	Send results for the active relay to the results management system
	Start the dialog for final marking (single lane marking for closed finals)
	Context sensitive help

Lane display view

1. Shooters | 2. Program | 3. Shots | 4. Sum | 5. Lift

Lane	Rel.	Series	Nr	Class	Cat.	Program	Discipline	Target type	Sensitivity	Motor
1	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
2	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
3	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
4	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
5	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
6	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
7	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
8	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
9	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2
10	1	Sight	1			10m Qual	40 Pistol	ISSF 10m Pistol	Air gun	20/2

Lane display view

The lane display view provides all the information you need to monitor the health and connection stability to your range hardware. You can also see all shot information

appear as shots are detected as well as track shooter scoring and ranking. Each tab will show you different aspects of your current event.

Icons for determining communication status:

	This target is in simulation state
	OK! The display unit communicates well and has responded to the previous request.
	The display unit is not communicating well, but there are no pending responses.
	The display unit has not communicated well for a period of time.
	The display unit has not answered the previous request, but currently communicates well. This state can occur if there are different software versions in the display unit and MLRange. It can also be a one-time incident where the automatic sending of the messages has failed. Try to redo the command.
	The display unit is not communicating well and there is a pending response.
	The display unit has not communicated well for a period of time and there is a pending response. The display unit seems to be out of contact with MLRange.
	The connection between MLRange and the display unit is not working.
	This lane is in practice mode. The display unit is not controlled by MLRange.
	The display unit has lost the contact with the target unit, but the connection between MLRange and the display unit is operational. Press F5 to retest the connection.
	The actual band advance is too little compared to what is expected. This warning is only used for targets with external motor advance.
	No contact with the USB adapter. Verify serial number, driver and USB cable and MLRange interface configuration.
	Currently updating the software in the adapter.

Lane display tabs and columns

In all of the tabs for this view, the first 4 columns are the same:

Lane – Lane number for this row and a symbol that indicates the communication status for this lane.
Rel. – The current relay number
Series – The title of the current series
Nr. – The number of shots detected for the current series

Additional information provided by each tab:

1. Shooters tab
- **Shooter** – Name of athlete
- **Club** – Name of athlete's club/organization/nationality
- **Class** – Athlete class
- **Cat**. – Athlete category
- **Discipline** – The discipline selected for this lane
- **Start** – Starting score carried into competition (if any)

Series – Score for current series
Card – Total score as reported by target
Total – Total score
Rank – Current ranking of athlete/lane
Timer – Shooter clock (right click for lane's clock menu)

2. Program tab

Class – Athlete class
Cat. – Athlete category
Program – The shooting program for this lane (COF)
Discipline – The discipline for this lane (COF)
Target type – Target definition for scoring (COF)
Sensitivity – Air gun, Small bore or Big bore (COF)
Motor – Band advance setting (Length/Frequency)

3. Shots tab

Discipline - The discipline for this lane (COF)
1-10
These ten columns are used to display the shots when they are received from the target system. The shots are always shown with decimal values regardless of the setting of decimal sum.

When the number of shots crosses a 10-shot boundary the line is cleared.

The shots displayed will reflect the modifications done on the score card. A complete overview of all shots on a lane can only be found in the Edit Score Card dialog.

Shot color codes

- **Black**: Normal shot
- **Green**: The pressure values are not perfect, but such shots are normally correctly detected
- **Blue**: The pressure values are suspicious. Often there is a clear reason for this and possible actions to improve should be considered.
- **Red**: The pressure values indicate a possible fault in the detection. Well detected shots can in some situations generate such pressure values.
- **Cyan background**: Manually generated shot (inserted)
- **Light yellow background**: The shot has not been selected as a match shot. Enter "Edit Score Card" to verify and/or correct.
- **Yellow background**: Warning in superfinale
- **Pink background**: Frame shot set as match shot
- [10,2]: Frame shot or shot after target has been turned (square brackets)
- AM/NAM: Accepted Malfunction/Not Accepted Malfunction

Shot Symbol Legend

-  Turned target
-  Frame shot
- Not shot
-  Double shot
-  Super
-  Hidden
-  Inadequate band advance
-  Suspicious temperature
-  Electronic noise
-  Errornous pressure values
-  Suspicious pressure values
-  Non-optimal pressure values
-  Band advance initiated
-  Manually inserted shot
-  Unexpected shot
-  Invalid shot

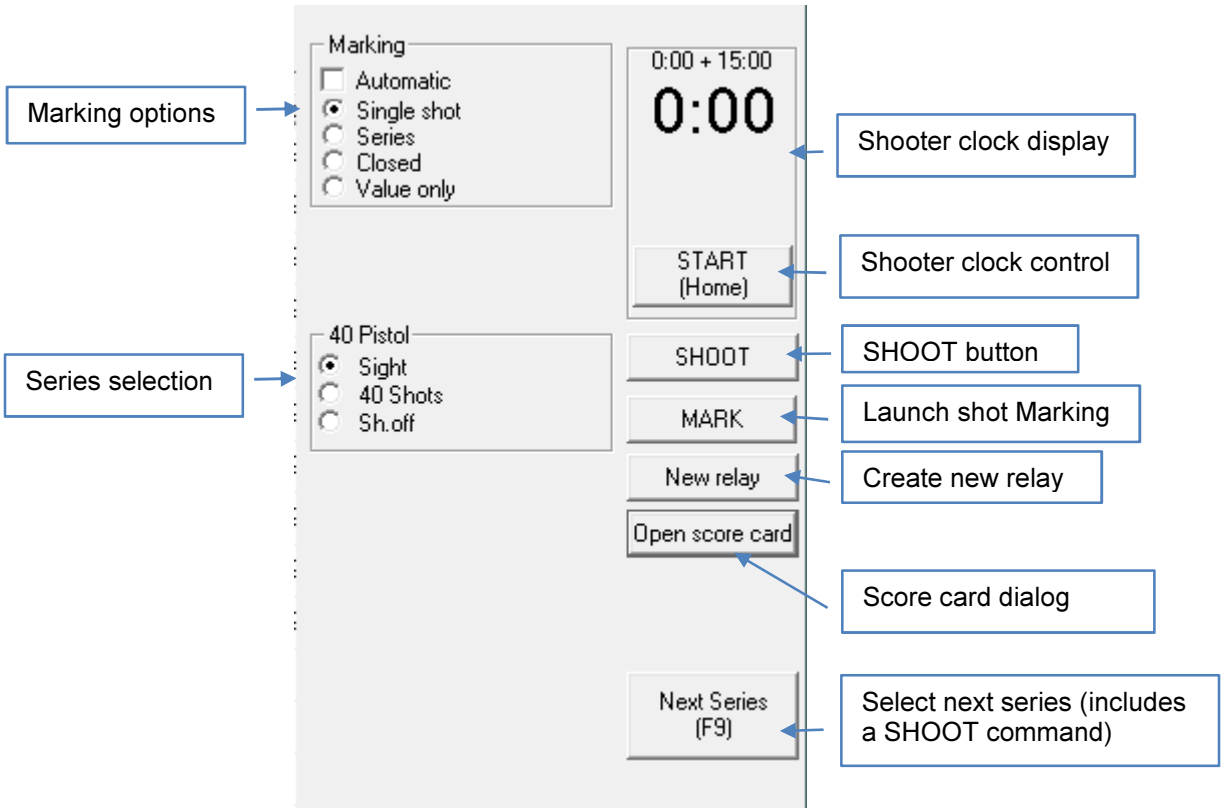
Series – Score for current series
Total – Total score
Timer - Shooter clock (right click for lane's clock menu)

4. Sum tab
Shooter - Name of athlete
Series – Score for current series
Total – Total score
Rank - Current ranking of athlete/lane

5. Lift tab (used if target lift is specified in COF)
Series – Score for current series
Total – Total score
Class – Athlete class
Prone – Lift is in prone position (click to set)
Kneel – Lift is in kneel position (click to set)

Stand - Lift is in stand position (click to set)

Command panel



For details related to marking options, please refer to the section on Marking.

Running a simple event

The following is a simple breakdown of the user actions required in order to operate MLRange for a simple event. It does not cover the commands and announcements that must be made to the athletes. Please refer to the ISSF (or related) regulations for the event you want to run.

Step 1: Series selection

When an event is initially created, the first series is automatically selected. At this point a welcome message is displayed on the shooter monitors. By clicking the SHOOT button in Step 2 this welcome message is removed from the monitors.
For the next series, manually select the next series, or click the **Next Series** button (or F9 key) to advance to the next series.

Step 2: Click the Shoot button

After any series change (or Marking change) you must click the Shoot button to register your changes. If in doubt, click the Shoot button. Repeated clicks do not alter anything.

Step 3: Start the shooter clock (if used)

If the shooter clock is used, Click the **Start** button (or press the Home key). The clock will be displayed on all monitors as well as in MLView (Megalink's public display application). Once the clock is started the text on this button will change to **Stop** and the same button is used to stop the clock.

Step 4: Stop the shooter clock (if used)

The clock will stop automatically when the time specified for this course of fire has expired, but you may stop the clock whenever you want or when you know that all athletes are finished firing.

Step 5: Return to Step 1

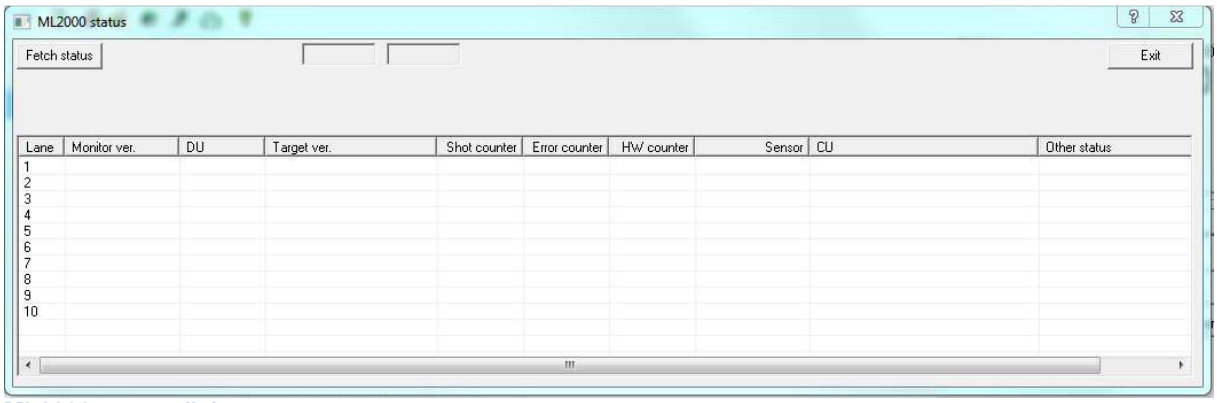
If there are more match series remaining or if you need to enter a shoot-off series to resolve a tie then return to Step 1.

Advanced Topics

ML2000 Status

You can always check the health and status of your monitors and targets with the ML2000 Status dialog (menu **File → Fetch ML2000 status…).**

When you click the **Fetch status** button, the system will gather the following information for each connected lane:
Monitor version – Software version of the monitor
DU – Measured voltage available to the display unit (monitor/DU)
Target ver. – Software version of the target's control unit (CU).
Shot counter – The number of shots registered on this lane.
Error counter – The number of errors events (of all types) detected on this lane
HW counter – Displays two incrementing values (Shots:Resets). Max value for both is 15.
Sensor – Sensor type.
CU – Measured target control unit voltage and internal temperature.
Other status – Additional information.



ML2000 status dialog

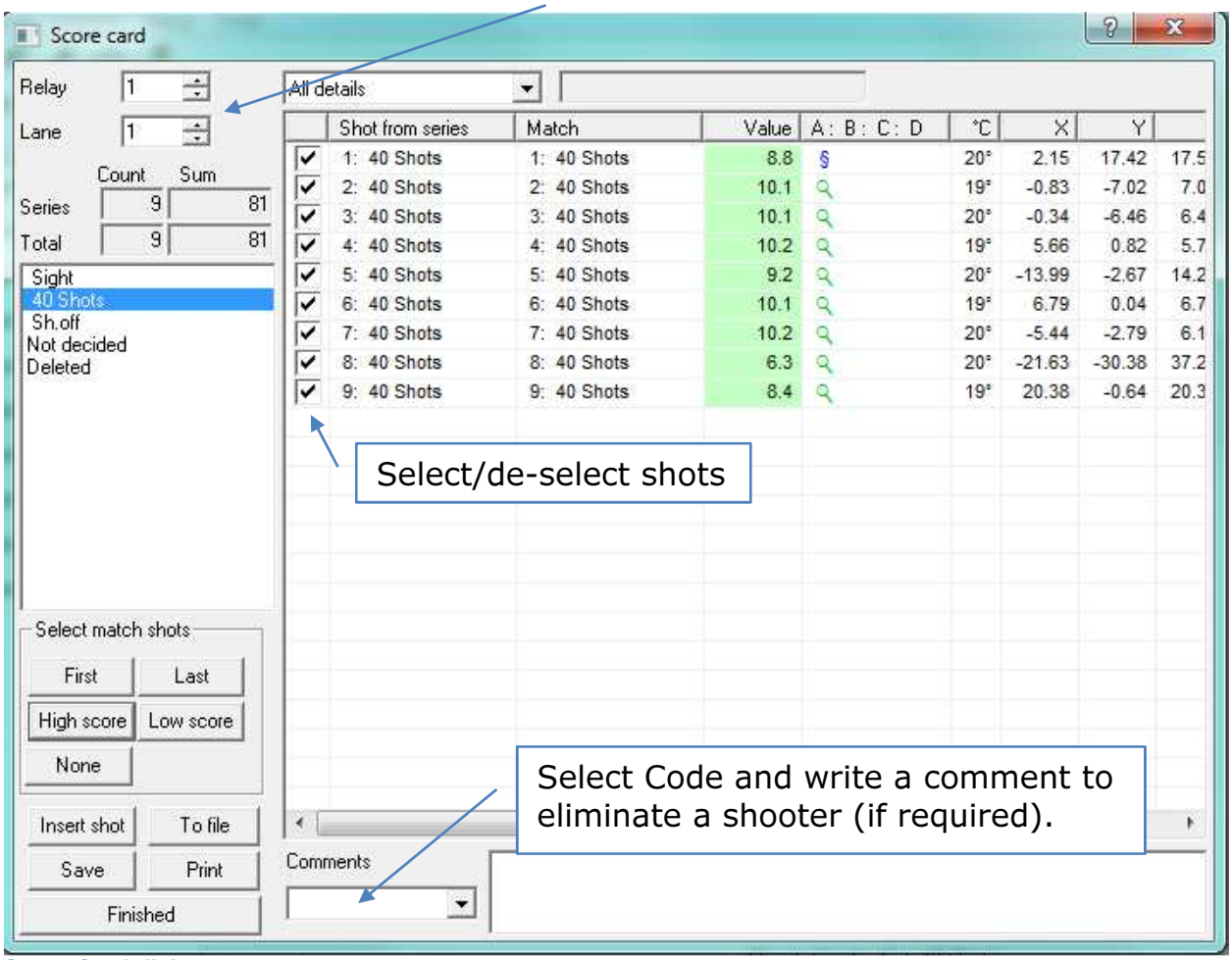
Upgrading Targets and Monitors

Please refer to the following document for details on upgrading targets and monitors from MLRange:

ML2000Man03EN-ConfigurationAndUpgrading.doc

Score Card dialog

To open the scorecard dialog, just click the button on the command panel



Score Card dialog

The Score Card dialog is used to:

1. Select match shots
2. Insert extra shots (for example for missing shots in official events)
3. Copy shots from one lane to another (after moving a shooter to a new lane)
4. Examining shot details for all shots
5. Save the shot log to file or print the log

The procedure for correcting a score card is:

1. Select lane (and relay if necessary)
2. Select the series to be corrected
3. Select the match shots for the selected series
4. Verify the correction by checking the shot count and totals for the series and card
5. Click the Save button to save your changes
6. Note the changes in the range log
7. Exit the dialog or return to step 1 to correct cards for other lanes

Shots can be set to one of three states:

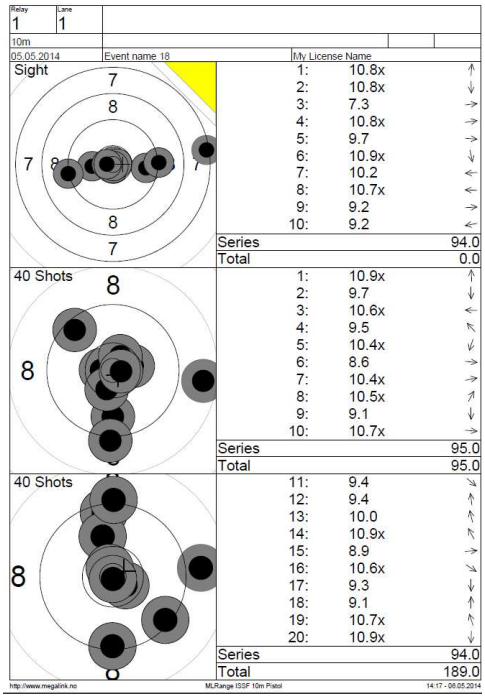
1. Match shot for a given series
2. Deleted - the shot is not included in any report, view or data transfer
3. Not decided - the shot is set to this state if the series is filled up or the series is a sighting series. The shot is displayed on the audience screens as long as the series is active, but removed automatically from the total when changed to the next series.

Special functions:

1. ***Insert shots***. The score value, series and position in series can be specified.
2. ***Copy shots to other lane***:
   - Select shots with the mouse using the Shift or Ctrl key
   - Press Ctrl+C
   - Select the lane card to copy **to**
   - Press Ctrl+V - the shots are pasted in at the end of the card

Reports

MLRange can generate the following type of reports:



Relay	Lane
1	1

10m

05.05.2014 — Event name 18 — My License Name

Sight

1:	10.8x	↑
2:	10.8x	↓
3:	7.3	→
4:	10.8x	→
5:	9.7	→
6:	10.9x	↓
7:	10.2	←
8:	10.7x	←
9:	9.2	→
10:	9.2	←
Series		94.0
Total		0.0

40 Shots

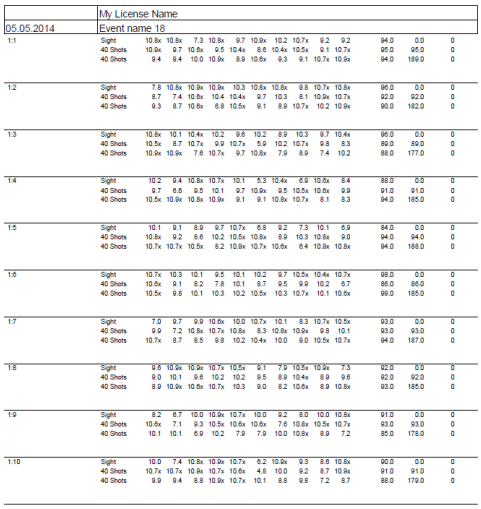
1:	10.9x	↑
2:	9.7	↓
3:	10.6x	←
4:	9.5	↖
5:	10.4x	↙
6:	8.6	→
7:	10.4x	→
8:	10.5x	↗
9:	9.1	↓
10:	10.7x	→
Series		95.0
Total		95.0

40 Shots

11:	9.4	↘
12:	9.4	↑
13:	10.0	↖
14:	10.9x	↖
15:	8.9	→
16:	10.6x	↘
17:	9.3	↓
18:	9.1	↑
19:	10.7x	↖
20:	10.9x	↓
Series		94.0
Total		189.0

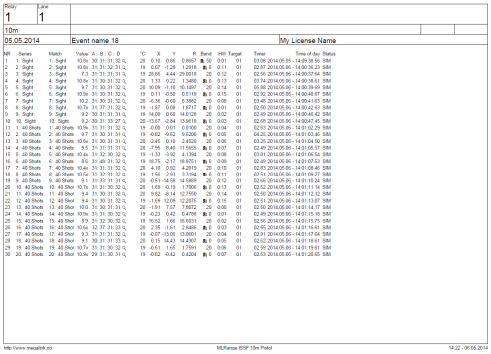
http://www.megalink.no — MLRange ISSF 10m Pistol — 14:17 - 06.05.2014

Graphical score card report



	My License Name													
05.05.2014	Event name 18													
1:1	Sight	10.8x	10.8x	7.3	10.8x	9.7	10.9x	10.2	10.7x	9.2	9.2	94.0	0.0	0
	40 Shots	10.9x	9.7	10.6x	9.5	10.4x	8.6	10.4x	10.5x	9.1	10.7x	95.0	95.0	0
	40 Shots	9.4	9.4	10.0	10.9x	8.9	10.6x	9.3	9.1	10.7x	10.9x	94.0	189.0	0
1:2	Sight	7.8	10.8x	10.9x	10.9x	10.3	10.8x	10.8x	9.8	10.7x	10.8x	96.0	0.0	0
	40 Shots	8.7	7.4	10.6x	10.4	10.4x	9.7	10.3	8.1	10.9x	10.7x	92.0	92.0	0
	40 Shots	9.3	8.7	10.6x	6.8	10.5x	9.1	8.9	10.7x	10.2	10.9x	90.0	182.0	0
1:3	Sight	10.8x	10.1	10.4x	10.2	9.6	10.2	8.9	10.3	9.7	10.4x	96.0	0.0	0
	40 Shots	10.5x	8.7	10.7x	9.9	10.7x	8.9	10.2	10.7x	9.8	8.3	89.0	89.0	0
	40 Shots	10.9x	10.9x	7.6	10.7x	9.7	10.8x	7.9	8.9	7.4	10.2	88.0	177.0	0
1:4	Sight	10.2	9.4	10.8x	10.7x	10.1	5.3	10.4x	6.9	10.6x	8.4	88.0	0.0	0
	40 Shots	9.7	6.6	9.5	10.1	9.7	10.9x	9.5	10.5x	10.6x	9.9	91.0	91.0	0
	40 Shots	10.5x	10.9x	10.8x	10.9x	9.1	9.1	10.8x	10.7x	8.1	8.3	94.0	185.0	0
1:5	Sight	10.1	9.1	8.9	9.7	10.7x	6.8	9.2	7.3	10.1	6.9	84.0	0.0	0
	40 Shots	10.8x	9.2	8.6	10.2	10.5x	10.8x	8.9	10.3	10.8x	9.0	94.0	94.0	0
	40 Shots	10.7x	10.7x	10.5x	8.2	10.9x	10.7x	10.6x	6.4	10.9x	10.8x	94.0	188.0	0
1:6	Sight	10.7x	10.3	10.1	9.5	10.1	10.2	9.7	10.5x	10.4x	10.7x	98.0	0.0	0
	40 Shots	10.6x	9.1	9.2	7.8	10.1	8.7	9.5	9.9	10.2	8.7	86.0	86.0	0
	40 Shots	10.5x	9.8	10.1	10.3	10.2	10.5x	10.3	10.7x	10.1	10.6x	99.0	185.0	0
1:7	Sight	7.0	9.7	9.9	10.6x	10.0	10.7x	10.1	8.3	10.7x	10.5x	93.0	0.0	0
	40 Shots	9.9	7.2	10.8x	10.7x	10.8x	8.3	10.8x	10.9x	9.8	10.1	93.0	93.0	0
	40 Shots	10.7x	8.7	8.5	9.8	10.2	10.4x	10.0	9.0	10.5x	10.7x	94.0	187.0	0
1:8	Sight	9.8	10.9x	10.9x	10.7x	10.5x	9.1	7.9	10.5x	10.9x	7.3	92.0	0.0	0
	40 Shots	9.0	10.1	9.6	10.2	10.2	9.5	8.9	10.4x	8.9	9.6	92.0	92.0	0
	40 Shots	8.9	10.9x	10.6x	10.7x	10.3	9.0	8.2	10.6x	8.9	10.8x	93.0	185.0	0
1:9	Sight	8.2	6.7	10.0	10.9x	10.7x	10.0	9.2	8.0	10.0	10.8x	91.0	0.0	0
	40 Shots	10.6x	7.1	9.3	10.5x	10.8x	10.8x	7.6	10.8x	10.5x	10.7x	93.0	93.0	0
	40 Shots	10.1	10.1	6.9	10.2	7.9	7.9	10.0	10.8x	8.9	7.2	85.0	178.0	0
1:10	Sight	10.0	7.4	10.8x	10.9x	10.7x	6.2	10.9x	9.3	8.6	10.8x	90.0	0.0	0
	40 Shots	10.7x	10.7x	10.9x	10.7x	10.6x	4.8	10.0	9.2	8.7	10.9x	91.0	91.0	0
	40 Shots	9.9	9.4	8.8	10.9x	10.7x	10.1	9.8	9.8	7.2	8.7	88.0	179.0	0

List report

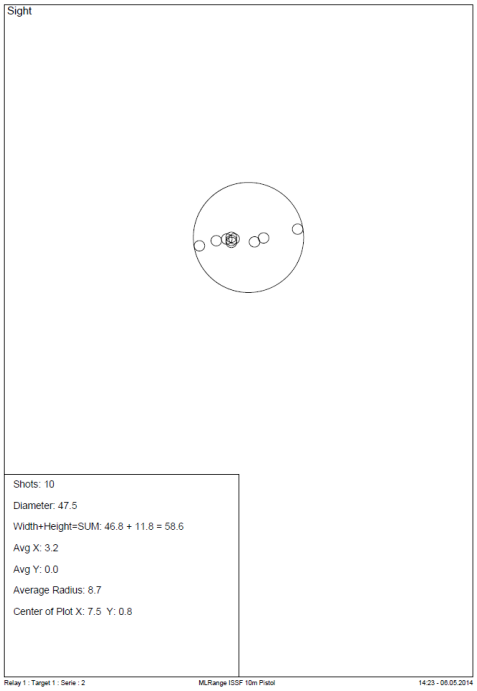


Relay	Lane
1	1

10m

05.05.2014 — Event name 18 — My License Name

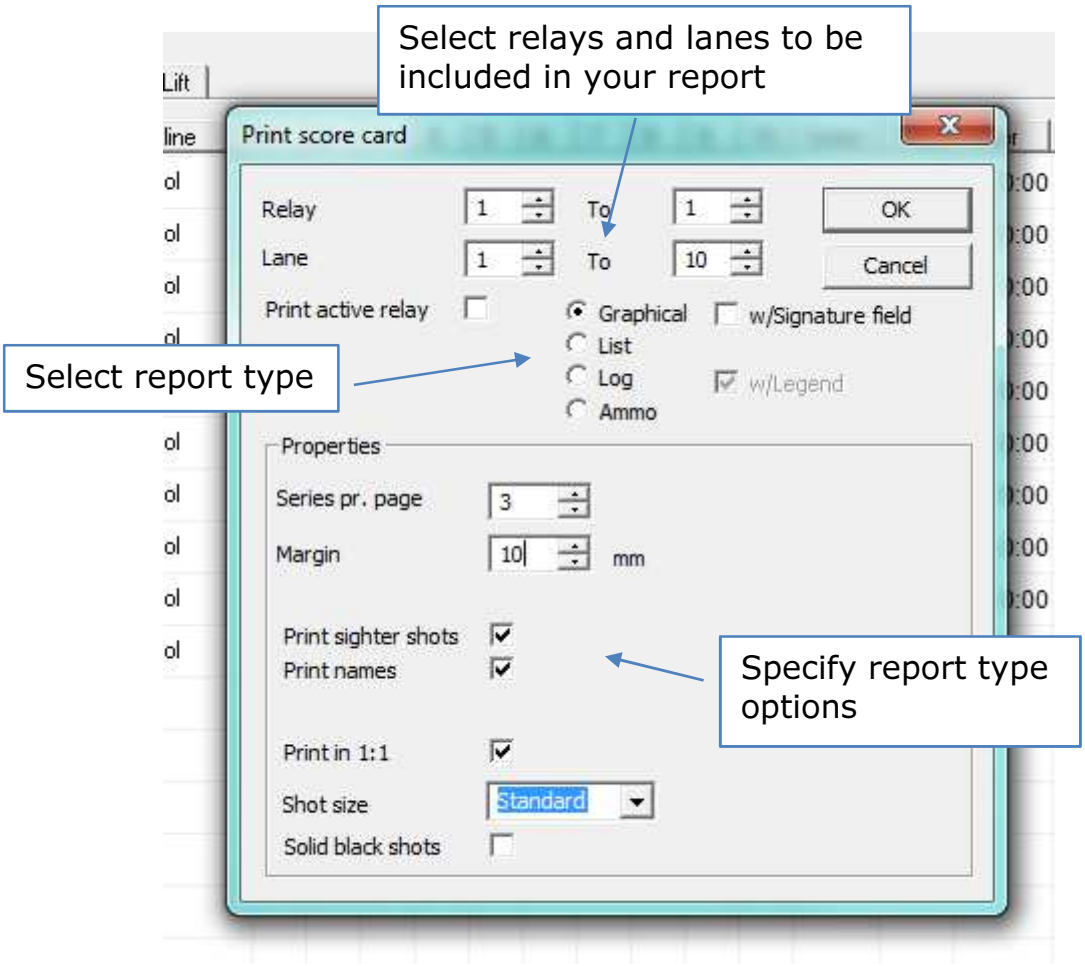
Log report



Ammo test / Precision report

All reports can be easily accessed from the button bar or from the main menu which will launch the Print dialog.

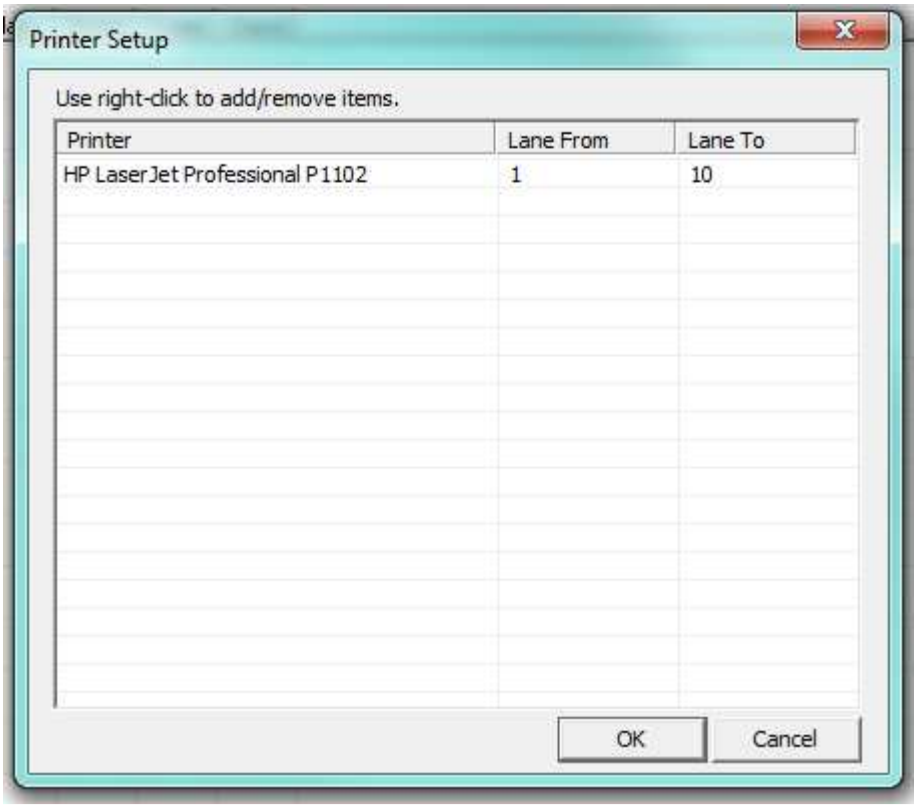
Print dialog



Automatic Printing

MLRange can be set up to print reports automatically. You can also specify that lane-specific reports can be sent to one or more printers on your network.

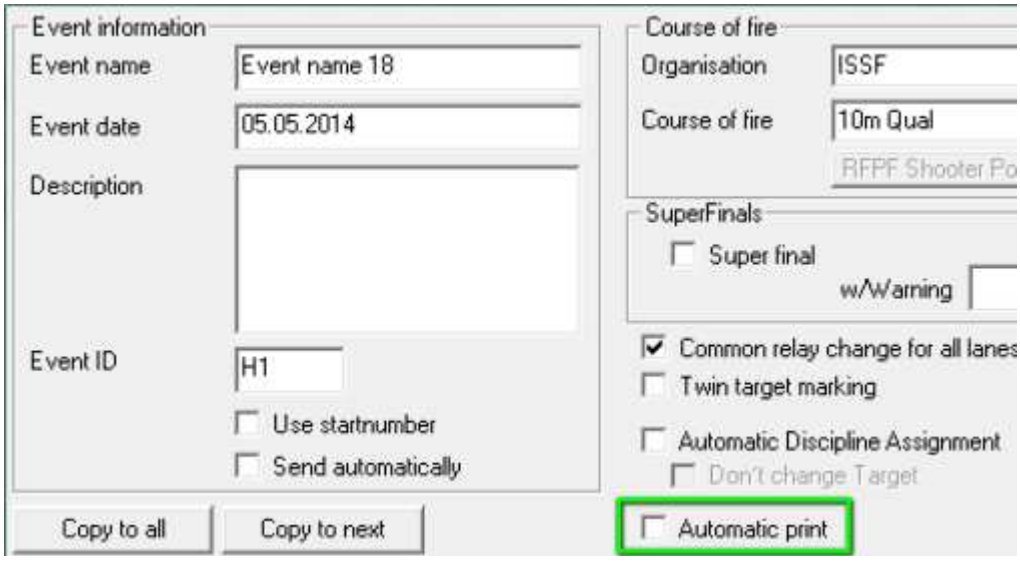
First, go to the Printer Setup dialog which is launched from the main menu **File → Printer Setup…**



Printer Setup dialog

Right-click in this window with your mouse to insert a new printer definition. For your new definition, select your network printer and the lanes From and To that it will print reports for.

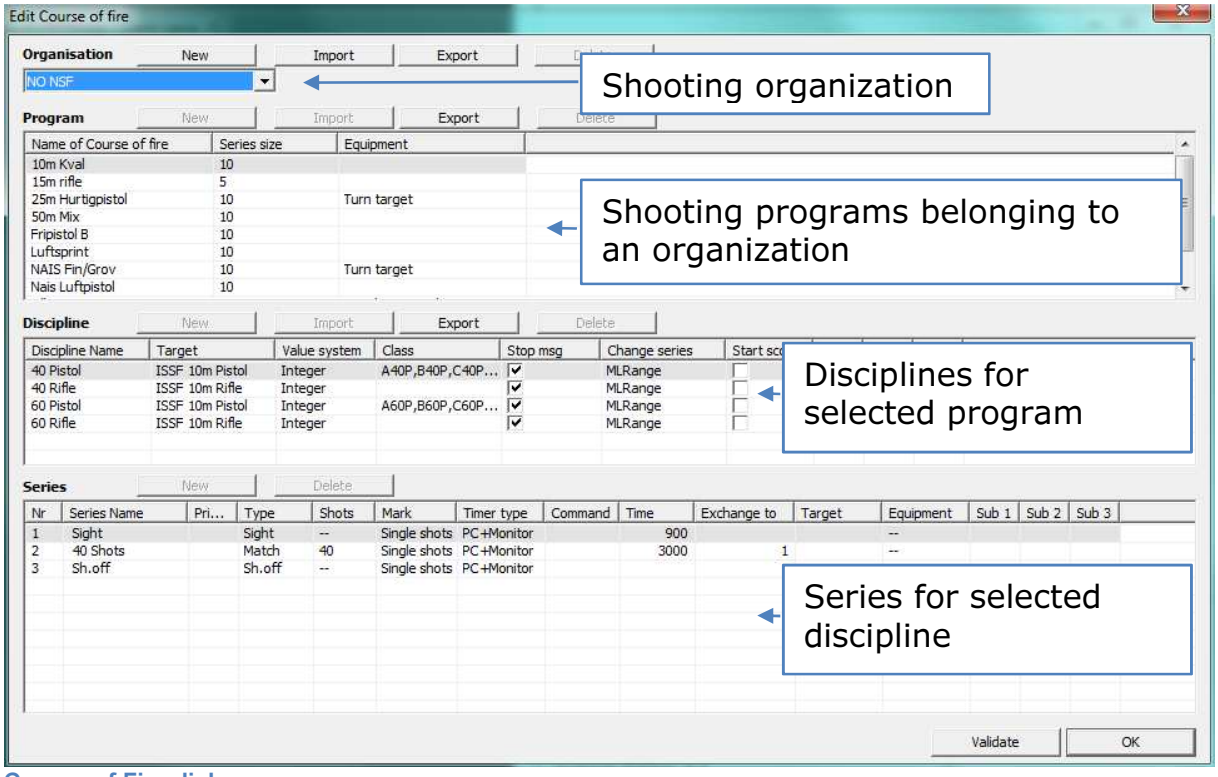
After your printers are specified, open the Event Setup dialog and enable **Automatic print** for your current event.



Course of Fire (COF)

Every shooting event has a course of fire that is either specified by national or international organization or is one that is custom defined. MLRange has a dialog for viewing official courses of fire as well as defining your own. You can launch this dialog from the main menu **File → Course of fire definition…**

Course of Fire dialog



Course of Fire dialog

First, select a shooting organization. Then you can drill down through the shooting programs it contains, the disciplines contained within each program and finally, the series contained within each discipline.

You cannot alter the basic setup of official courses of fire, but you can design your own or alter an official one.

For example, if you wanted to alter the COF displayed above (from the NO NSF organization), all you have to do is click the Export button at Organizational level which will save the entire organization definition to a single file on your PC. You can then click Import at Organizational level to select the same file you just exported, provide it with a new name, load it and enable editing.

Organization Naming

Whenever you import a new organization, the name you provide is *prefaced with an underscore* (ex. _MyCustomOrg). This is to group all custom/editable organizations together in the list and remind you that the organization is both custom and editable.

You are now free to add/remove/alter any programs, disciplines and series with your custom organization.

The **Validate** button at the bottom of this dialog will test your definitions to ensure that they are legal. You will be notified of any discrepancies.

Organizations, Programs, Disciplines and Series

As mentioned previously, the Organization is the main container. Once you have created a custom one by scratch or as mentioned above it becomes full editable. You can export and import the entire organization or any program, discipline or series it contains. You can export programs, disciplines and series from official COFs and add them to your custom one.

Program columns

Element	Description
Program name	Name of the course of fire. Try to use a short, but descriptive name.
Max size of series	This field defines the number of shots to be transferred to the office as a series. Normally this selection will be 0. • If this value is set to 10 then (for example) a 60 shots series will be broken into 10 shot series when sending to office (MLRes) • If this value is set to 10,but the shooting is only 5 shot series, then two and two series will be added together into 10 shot series when sending to office • If the value is 0, there will be no split or aggregate
Time - command	Enter the time (in seconds) from the pressing of the start timer until the shooting time or light signal starts. • Enter 60 seconds for rapid fire pistol with light signals (start the clock on the command LOAD) • For other ISSF events the value 0 is used (start the clock on the command START) **NOTE:** The command time can also be set per series. If set both places the two values will be added. If you need series specific values it is recommended to set this value to 0 and use only the pr. series setting.
Equipment	Enter the variant of external equipment to be controlled (if any). The following options are available: • None • Turning target • Turning target with consolidated marking • Running target • Target lift • Target lift w/auto move

List with series definition for the selected course of fire

Add all the series and enter the corresponding definitions to build the course of fire. The buttons "New series" and "Delete series" are used to add or delete from the bottom of the list.

Note! A maximum of 28 series are allowed!

Series columns

Column	Description
Nr	Number of series (sequential - can't be changed)
Serie name	Name of the series. Find short, but descriptive names that are useful for range officer, audience and printout.
Match shots	Number of shots that are recorded for the match total (max 99) If the number is put in parenthesis, the series will be a shootoff series (no sighting triangle, but still not added to the scorecard total). A sighting series should have 0 in this column From versions up to 9.xx the first series MUST be a sighting series!
Marking	Type of marking: • Single shot: open marking for each shot • Series: each shot is open for the audience while the shooter will get marking when the mark button is pressed in MLRange • Closed: no marking for audience or shooter until the special function for final-marking is used
Shoot time	The value that the timer starts on after the command time has elapsed. There are three possible settings: • No value: the timer stops after the command time has elapsed • 0: The timer starts on 0 and counts up. This option is often used to handle different shooting durations • A value larger than zero: The timer starts on the given value (in seconds) and counts down to 0 A additional command time for the series can be defined by writing command time + shoot time (e.g. "60+300" results in 60 sec. command time and 300 sec shooting time) If the shoot time is put in parenthesis, the shoot time will not be presented on the shooters monitor
Attention time	For turning targets: duration of red light from the start of the series to the first green period
Green	For turning targets: duration of green light in each repetition
Red	For turning targets: duration of red lamp between each repetition (not used with 1 repetition)
Repeat	For turning targets: number of repetitions (of green periods)
Target	Used for rapid fire pistol to define which target to use if the target type "Pistol 25m auto" is selected under Setup→Targets. The following options are available: • Blank: undefined • Precision: the precision target is used for this series if "Pistol 25m auto" is used • Rapid fire: the rapid fire target is used for this series if "Pistol 25m auto" is used

Subsums

Add subsums (subtotals) that will be used by the audience software (MLView). The buttons for "New subtotal" and "Delete subtotal" will add or delete columns at the right side of the list. If the column header is clicked, you can change the name of the subtotal.

When double clicking in the fields of the list you can enter the number of shots that will be included for the given series in the given subtotal (defined by the intersection of the column and the row)

NB! Don't add too many subtotals and keep the names short

Classes

Add classes that will be used by the target lift functions. The buttons for "New class" and "Delete class" will add or delete columns at the right side of the list. If the column header is clicked, you can change the name of the class. Be careful to enter the same class name as used in MLRes.

A blank class name will be used to move the lift to default positions if a matching class can't be found.

When double clicking in the fields of the list you can enter the position of the lift for the given class and series (defined by the intersection of the column and the row).

A blank position will prevent the lift from moving when the Shoot button is pressed.

Exchange

This tab is used to define for which series in MLRes the MLRange series should be sent.

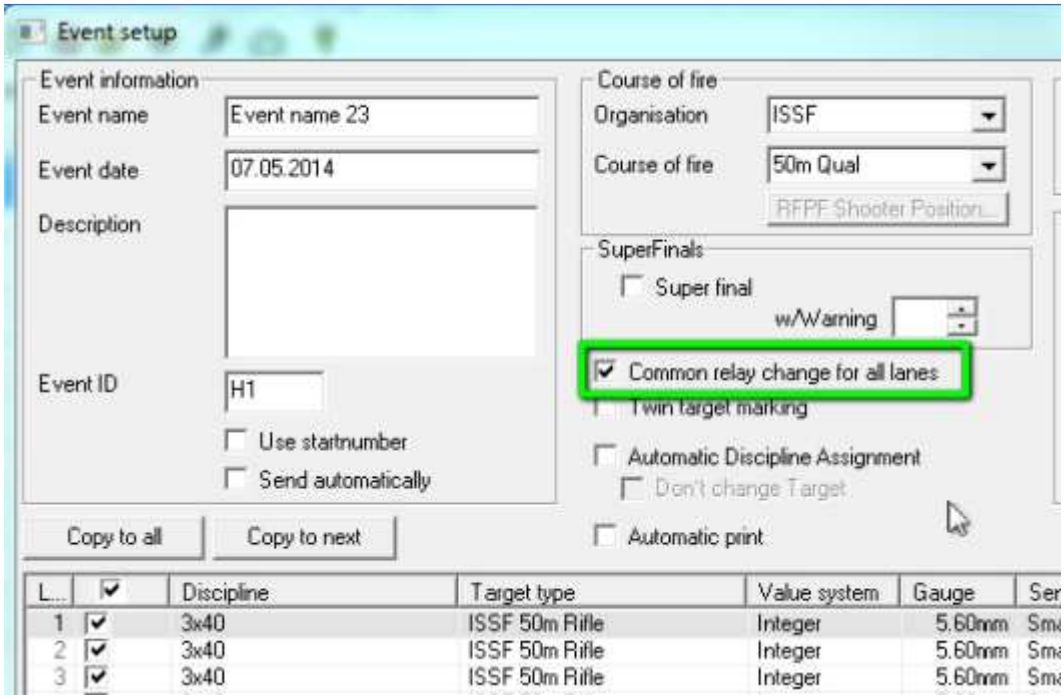
NB! If a number is set in the Match shots column, then there MUST be a number different from 0 in the exchange column.

NB! If the Match shots column is set to 0 or shoot-off (parenthesis), then there MUST be set a 0 in the exchange column.

Individual vs Common Series/Relay changes

MLRange allows you to change series and relay for all lanes or for individual lanes.

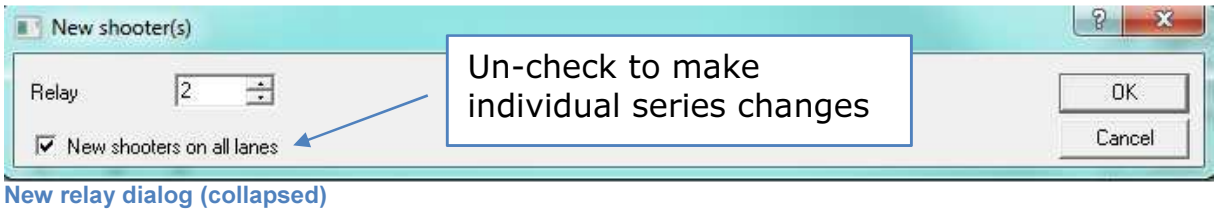
The main toggle for whether series and relay changes are common for all lanes is in the Event setup dialog for your current event.



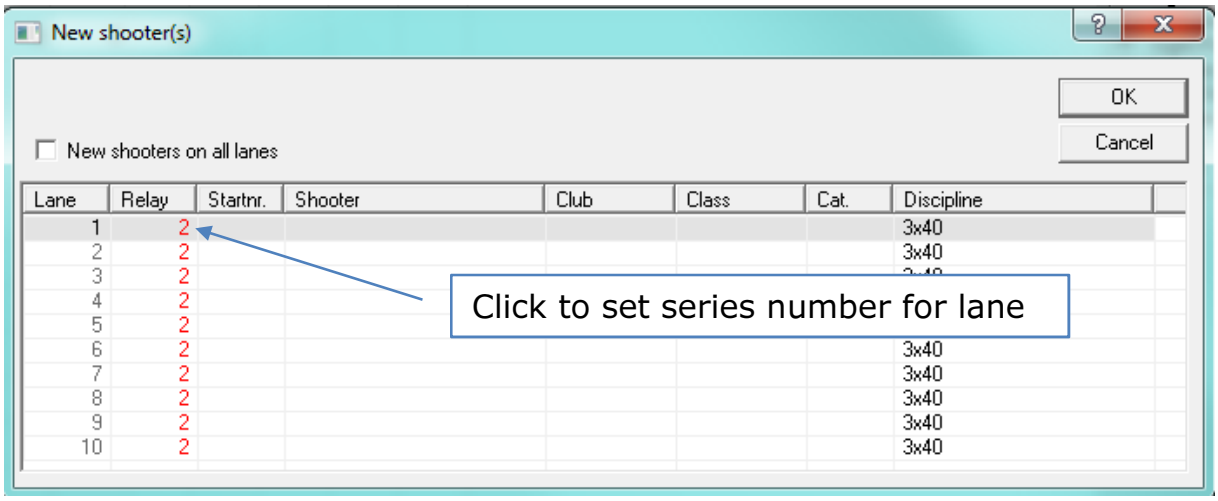
Event setup dialog

With the above control checked, series and relay changes made in the command panel will be common for all lanes.

If you wish to make relay changes to an individual lane, you may do so when the relay dialog appears after clicking the **New relay button** in the command panel or by clicking the menu **Command → For one lane**.



New relay dialog (collapsed)



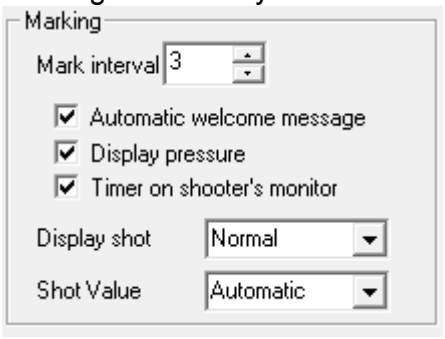
New relay dialog (expanded)

Individual series changes are made from the menu **Command → For one lane**.

Marking

Marking controls shot plotting and listing on the shooter monitors as well as the public display (MLView). For a number of courses of fire, shots are not to be immediately plotted or listed on the shooter display units or in the public display but must be started by the MLRange operator at the proper time after shooting has ceased.

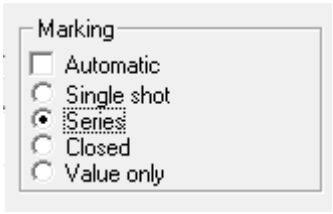
The Marking section of the Event Setup dialog lets you control several aspects of the marking functionality.



Mark interval – Seconds between the plotting/listing of shots on monitors and public display
Automatic welcome message – Welcome message on shooter monitors
Display pressure – Display shot pressure values on shooter monitors
Timer on shooter's monitor – Display shooter clock on shooter monitors
Display shot – Select whether to show the normal shot image or only the gauge of the shots
Shot Value – Select how the shot score is display on the monitors (Automatic, Large, Hidden)

The mark button on the Command panel is used to start marking after a series has been shot.

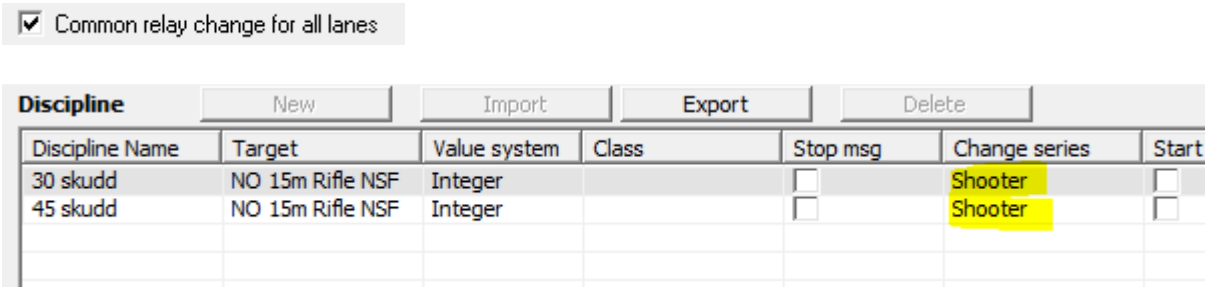
Usually this is used with the marking type Series in the Marking section of the Command panel.



Single shot	Open marking for each shot
Series	Each shot is open for the audience while the shooter will get marking when the mark button is pressed in MLRange
Closed	No marking for audience or shooter until the special function for final marking is used

The mark type is selected automatically when a series is selected. The preset value for each series is defined in the Course of Fire dialog.

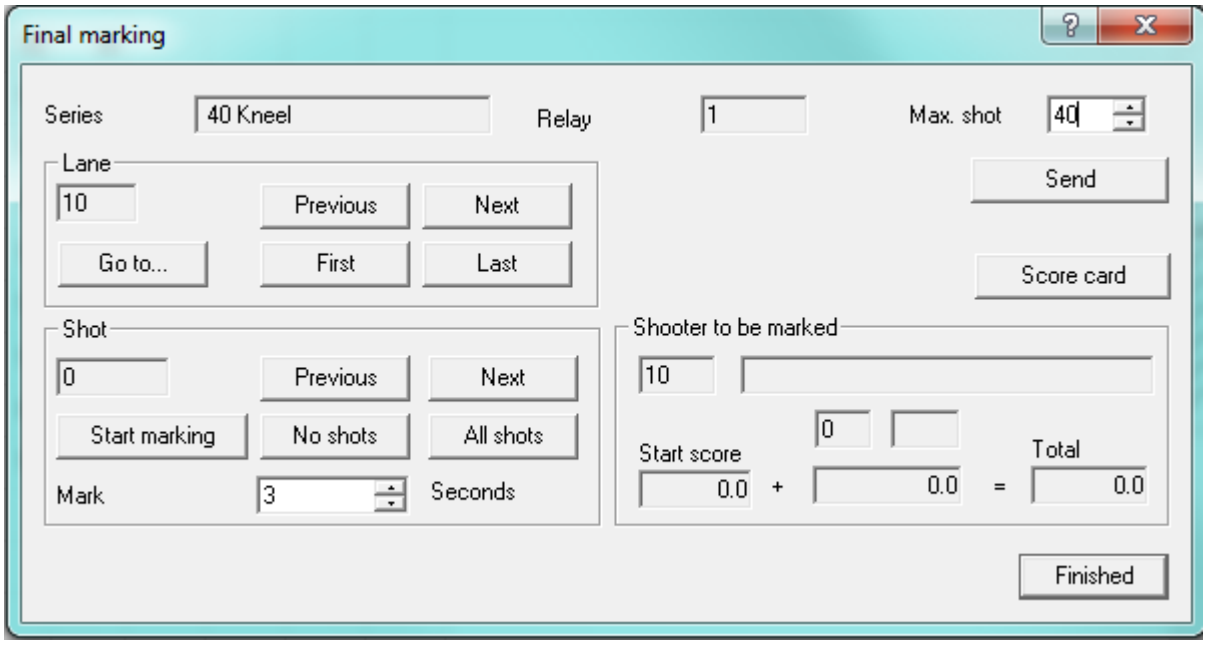
The settings for "Common relay change for all lanes" in the Event Setup dialog and the “Change series” column of the discipline in the COF will influence this behavior (see table below):



Shooter selects series Not common relay change	A dialog pops up and prompts you to select one specific or all targets
Shooter does not select series Common relay change	The command will be done on all targets.

Dialog to control final marking

This dialog is used to control the single target marking for closed finals. The marking for the selected target will appear on all display units at the range and at the audience screen.



Final marking dialog

When the lane number is changed the following information is displayed on all display units:

- Lane number
- Name of the shooter
- Start sum before the shots on the selected lane

When shots are marked the following is displayed on all display units:

- Graphic marking of the shot with automatic zooming
- The shot is added to the shot list
- The score value is displayed with large numbers in the lower right corner
- Series and total sum are updated with the score value

The dialog contains the following information:

- Relay, lane and series
- Name of shooter
- Sum before marking this series
- Shot number and score value for the shot being marked
- Series sum for the final series until the shot being marked
- Total

When the dialog is started, the last available lane and the active series are selected. Only the active series and the current relay can be marked with the final dialog.

Superfinal

A superfinal (or superfinale) is a special Nordic (DFS) finals type.
The procedure for a superfinal is:

1. A number of shooters that have qualified for the final will shoot a single shot on command
2. The shooter with the lowest score will get a warning
3. All shooters will shoot a new single shot and a warning will be given to the shooter with the lowest score
4. A shooter must leave the competition when the allowed number of warnings has been used
5. Two equal values as the lowest score will not generate warning
6. Superfinals are normally used with decimal value system

Warnings are displayed with yellow background in the name field of MLView. A shooter that has left the competition will be displayed with a red background.

The procedure for the range officer is as follows:

1. Wait until all shooters have shot their single shot
2. Press the column header for the last shot in the shot tab of MLRange. A warning will be issued and displayed in yellow or red in the shot list
3. Click a specific shot in the list to add or cancel a yellow or red marking (can also be done in the Open score card dialog)
4. Select a new series when needed (e.g. after 10 shots, after shoot-off etc.)

Simulated shooting

MLRange supports shot simulation. This is intended for practicing on the use of the application and testing a system before a major event.

Use the following procedure to simulate:

1. Create a new event
2. Check simulation mode in the Interface dialog (**File→Interface**)
3. Simulate shots (see description below)
4. Turn off simulation mode when finished

Shot generation is done in the following way:

- Click in column 2-4 at the row of a specific lane in the main window of MLRange. A random shot is generated on this lane.
- Click in the *column header* for column 2-4. One random shot is generated on all the active lanes.

Clicking in the different columns results in the following:

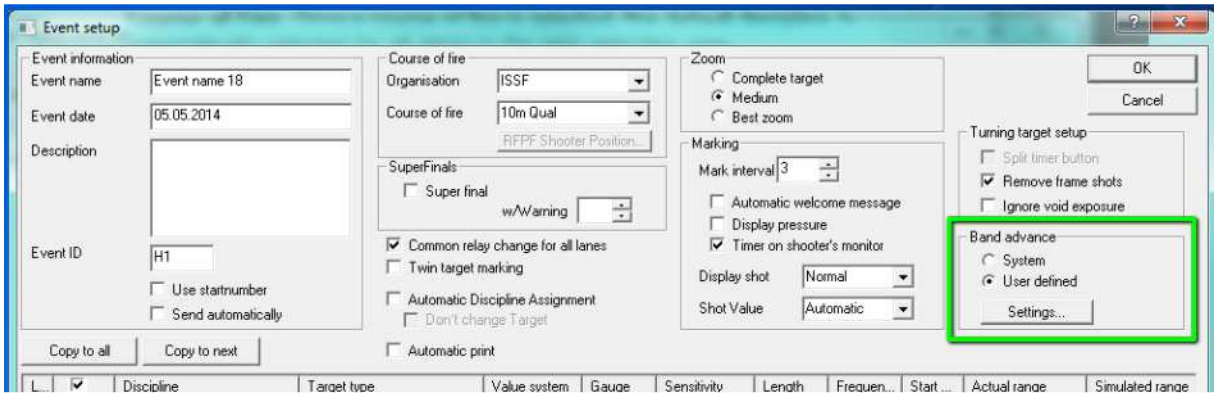
Column 1: Lane	Column 2: Rel.	Column 3: Serie	Column 4: Nr
If simulating running target or turning target, this column will result in turning the direction	Shots with high score values (prone)	Some shots with lower scores	A lot of low and very low scores
	No error situations	Some pressure deviations	High frequency of error situations

Shot generated with simulation is marked with the text "Sim:" in the shot logs.

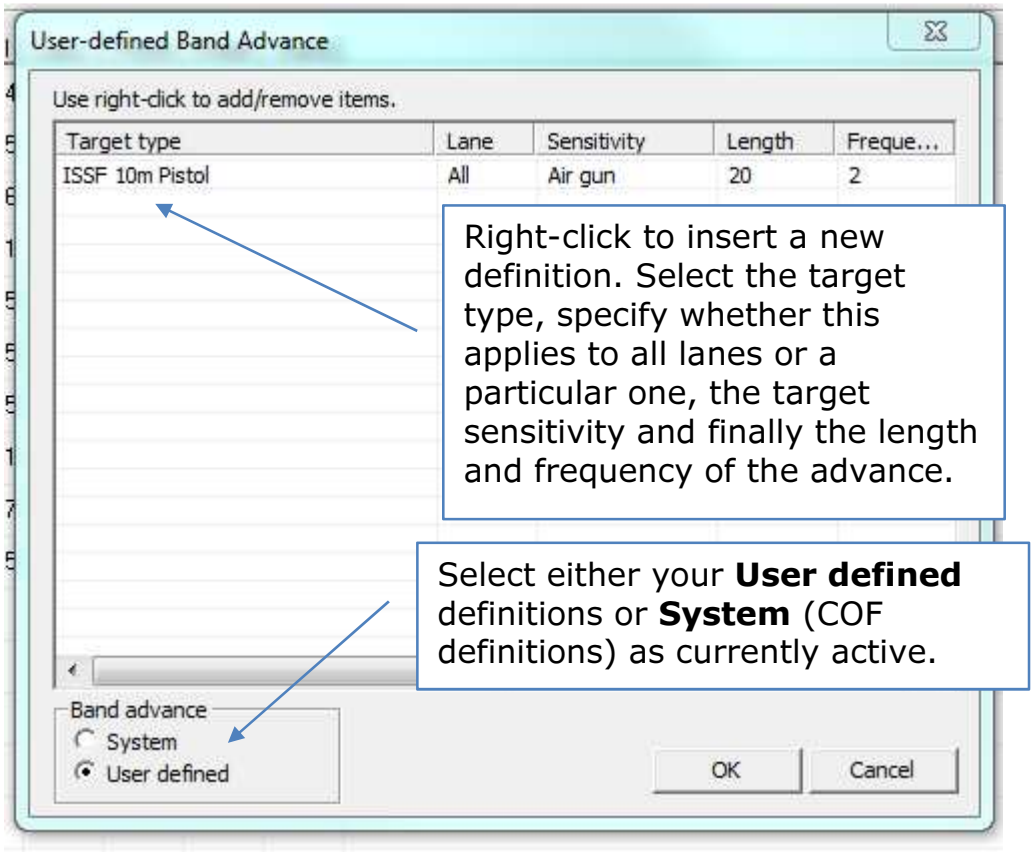
User-defined Band Advance

Band advance refers to the mechanical scrolling of an insulating paper or rubber sheet across the target's face in order to ensure a tight sound chamber and precise shot detection. Band advance is normally defined in the course of fire, but you may override those settings for one or more lanes.

You can access the related dialog either from the menu **Setup → User-defined Band Advance** or from the Event setup control section as indicated below.

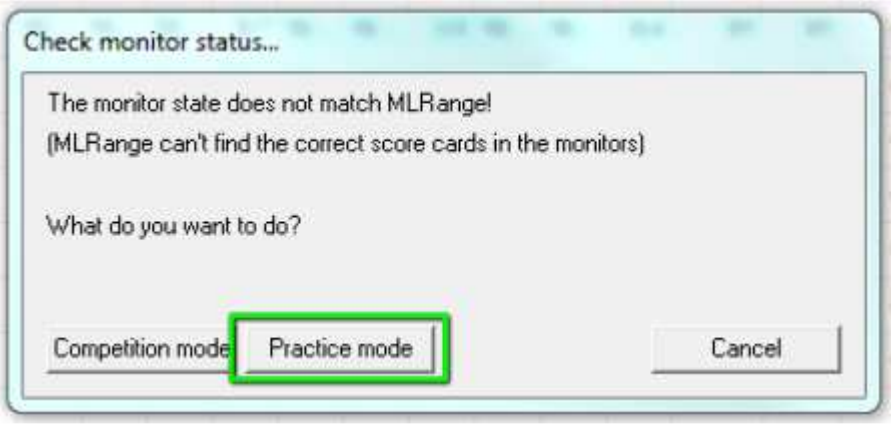


Event setup dialog



User-defined band advance dialog

Practice Mode



This selection is used to set all the targets to practice mode. Each shooter has control over their own lane through their monitor.

NOTE! The function impacts the state of both MLRange and the display units. To obtain a complete change, the display units must be connected when doing the operation.

NOTE! MLRange will verify the state of the display units during start-up. In case of inconsistency, the user will be prompted to decide the proper action.

Target Lifts

MLRange can control Megalink target lifts for short range 3-position shooting.

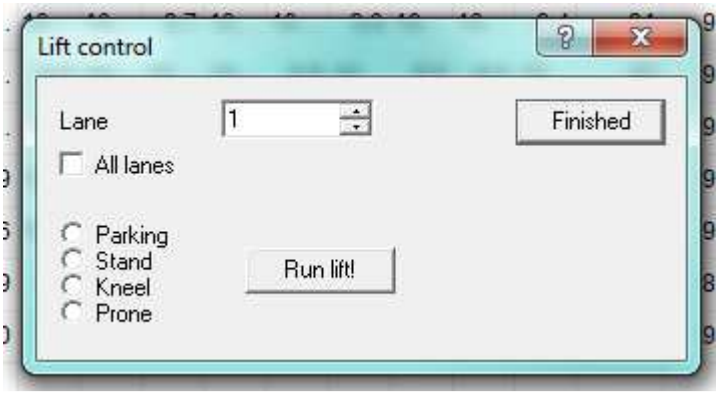
In order to control the target lift, the external equipment must be set to target lift in the Interface dialog.

A course of fire that has been defined to control the lifts must also be selected. There are two variants of this setup:

- Auto move. The system will check if the lift should be moved after each shot. Be careful since the lift will move in the middle of a series after for example crossfire.
- Without auto move. The lifts have to be moved by the shooters or they will be moved semi-automatically to the proper position when the range officer presses the Shoot button in MLRange.

The lifts can also be moved manually (remember that the manual move can be overridden on the next shot if Auto move is used).

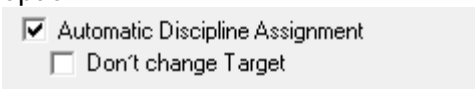
- The shooter can always move the lift in a sighter series
- The range officer can move single lifts by pressing the proper intersection between position (column) and lane (row) at the Lift tab in MLRange. If the column header is pressed, all lifts will be moved to that position.
- The range officer can use the **Command→Lift** menu item to start a dialog to control the lifts.



Automatic Discipline Assignment

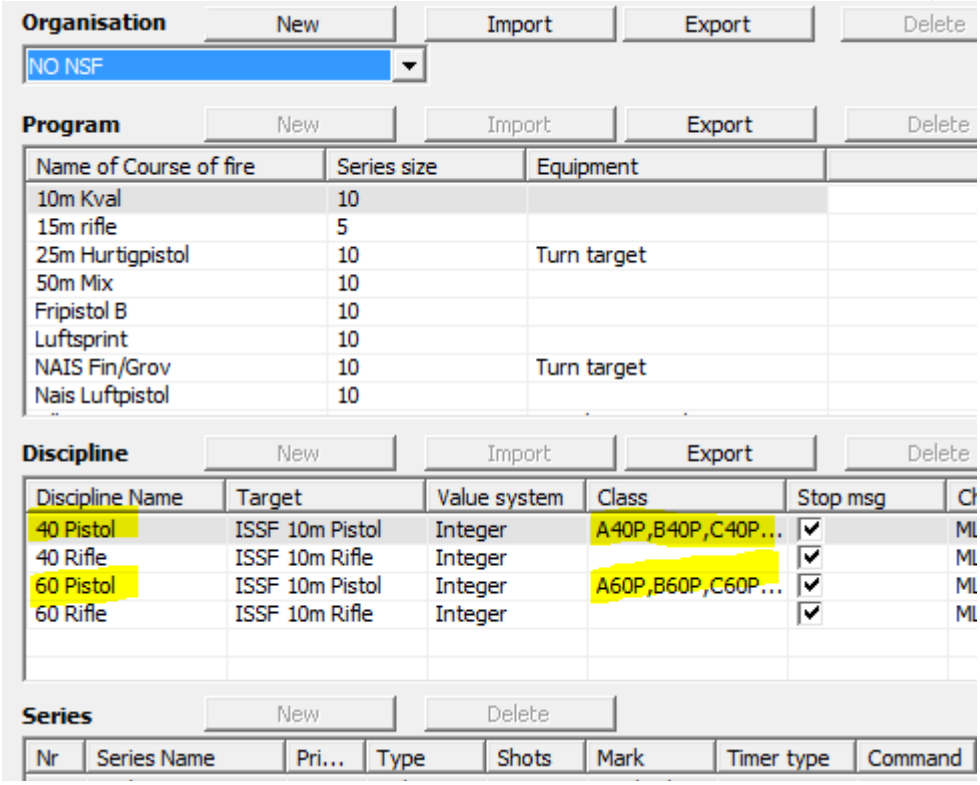
MLRange can automatically assign disciplines to shooters based on the shooters registered class.

To enable automatic discipline assignment, open the Event Setup dialog and enable this option.



Note: Normally both discipline and defined target are applied for a shooter's class, but you can override the target type assignment if you need to by enabling **Don't change Target**.

The discipline to class relationship is defined in the Course of Fire dialog.



Assigning classes to disciplines in the Course of Fire dialog

As illustrated above, shooter classes can be assigned to individual disciplines of a shooting program. If Automatic Discipline Assignment is enabled in the Event Setup dialog then

disciplines will be automatically assigned to shooters as new relays of shooters are loaded (either manually or from event definitions in MLRes.

Finals

Rapid Fire Pistol Finals

Lights for rapid fire pistol targets

MLRange is used to control the lights for "turn" targets used in the rapid fire events for 25m pistol.

Observe that the setting of external equipment must be set to Turning targets in the Interface dialog.

In addition a course of fire with light control must be selected. Two variants of light control are defined:

- Turning target with consolidated marking. This is used to gather all the marking on one display unit and is used for the 5-target rapid fire event. Observe that some of the control mechanisms (e.g. HW counter) must be used carefully in this mode.
- Turning target. This mode is the standard mode for all other 25m events

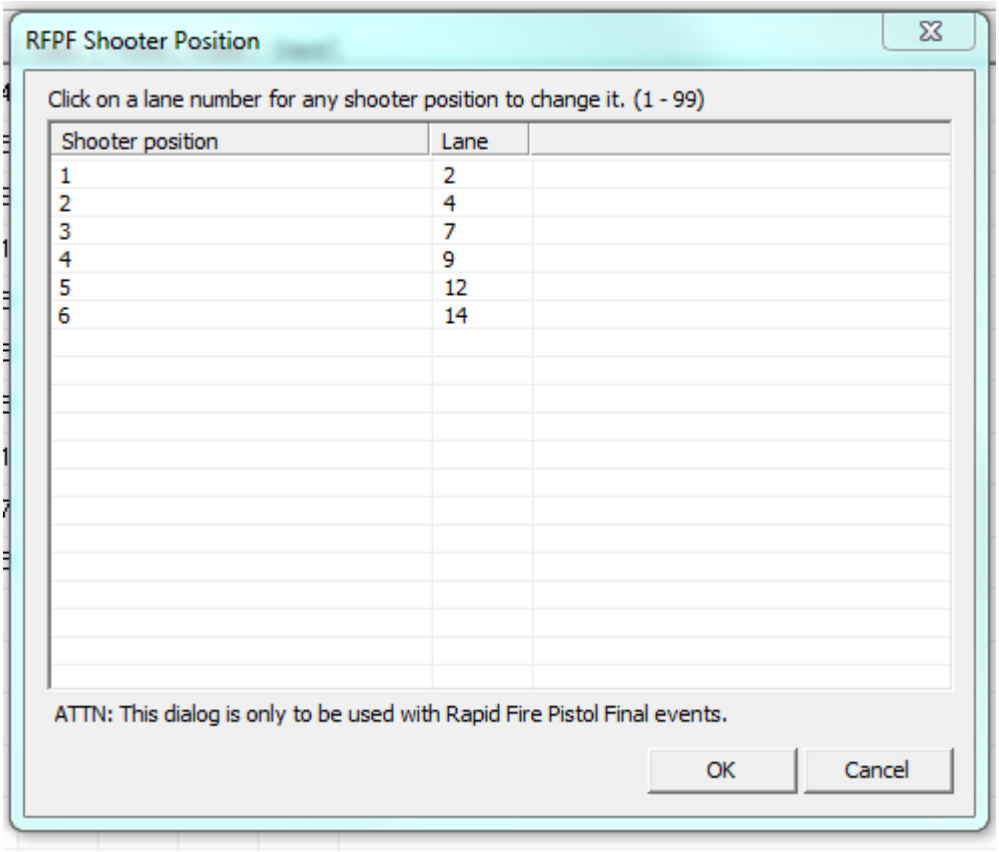
The light system is started on the command "Load" by pressing the clock button in MLRange

If the shooting is stopped by pressing the clock button again, the red lights will be on for 20 seconds.

The intensity on the lights can be adjusted from the Command→Light adjustment dialog.

RFPF Shooter Position dialog

When the 25m Rapid Fire Pistol final COF is selected in the Event Setup dialog, the RFPF Shooter Position button is enabled which lets you open the this dialog.



RFPF Shooter Position dialog

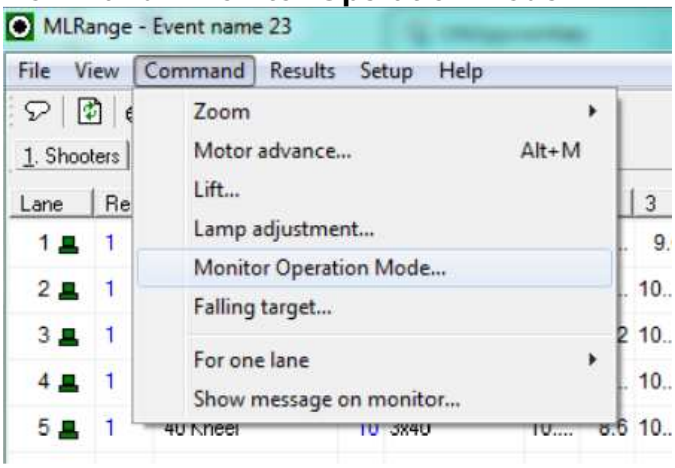
This dialog will display the default assignment of shooters to firing positions based on the lanes you have selected for this final.

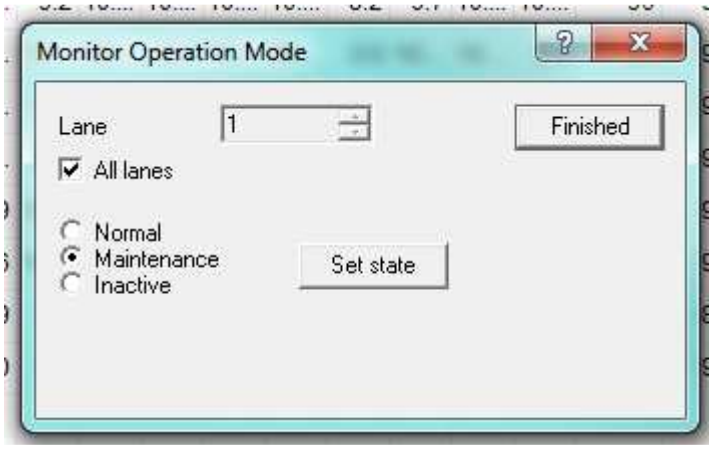
By clicking in the lane column of a given row, you can assign that shooter to a different firing position.

Target/Monitor Maintenance

When performing target maintenance (ex. Changing paper or rubber) it is important to set the monitor for that target in Maintenance mode.

You can open the Monitor Operation Mode dialog from the main menu **Command→Monitor Operation Mode…**





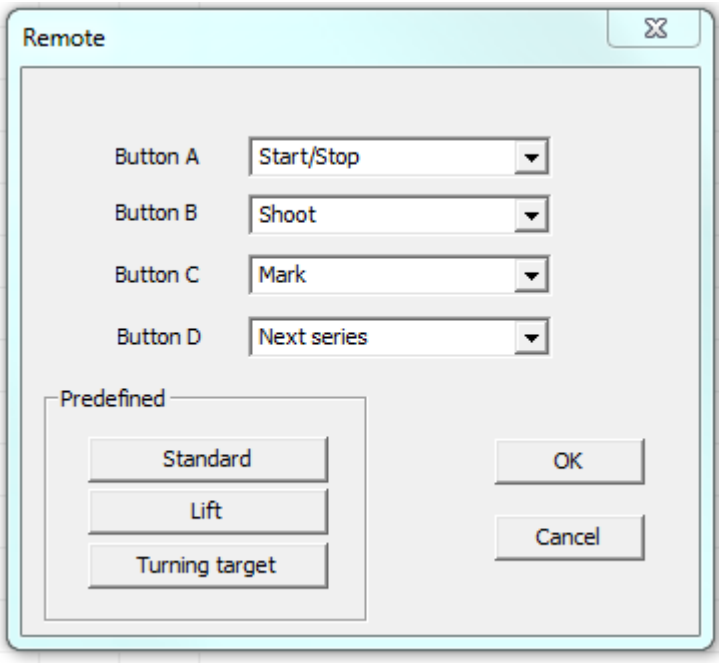
Monitor Operation Mode dialog

In this dialog, you can select all lanes or an individual lane, select **Maintenance** and then click the Set state button to register the change.

When you are finished with target maintenance, return to this dialog and set the monitor mode back to **Normal**.

For details related to upgrading target and monitor software versions from MLRange, please refer to the following document:
ML2000Man03EN-ConfigurationAndUpgrading.doc

Remote Control



MLRes support

MLRes is the Megalink's results management system which operates in close cooperation with MLRange. In MLRes, you can define and the schedule the events of your shooting competition, register shooters and assign them to events, create detailed results reports and much more.

Please refer to the **MLRes User Manual** for details.

MLView support

MLView is Megalink's public display application which works in close cooperation with MLRange.

Please refer to the **MLView User Manual** for details.

ISSF Competitions

For all events

General

- Decide if pressure values are to be shown to the shooters (ISSF recommends off).
- Decide if shots are to be presented with or without the donuts (Megalink recommends automatic mode).
- Decide how decimal portion of shot values should be presented (Megalink recommends automatic mode).
- Make sure that range officers, jury and team leaders are familiar with the chosen monitor presentation.
- Make sure that the relevant regulations for backing targets etc. are understood, planned and followed.
- Make sure that spray paint and/or patches are available in order to conceal shots in front covers, outside targets, etc..
- Make sure that sufficient spare parts are available. In particular, aiming cards and bands, but also critical hardware components.
- Use maintenance mode when working on the targets. This is of particular important during a one stage 25m Pistol match when changing aiming cards between precision and rapid.
- Only technical staff and jury members are allowed to approach the targets during competitions. No shooters, team leader or others are allowed unless an explicit jury approval has been given.
- If a shooter is moved to another target, the shots can be brought to the new target with Ctrl-C and Ctrl-V operation. Remember to include the shots that the jury decides! The shots MUST be copied before the shooter starts with match shots on the new target.

Preparation

- Check versions in target, display and MLRange.
- Check chargers and battery condition.
- Check that all units communicate without problems.
- Verify setting of master monitors.

25m

Preparation

- Check operation of frame sensors.
- Check/adjust the steel front alignment on the target frame.
- Check lamps and adjust intensity.
- Clean lamp contacts for steel front and preserve with contact spray.
- Practice on starting the timer and calling the commands. Use the **Ins**, **Home** and **End** keyboard buttons for the timer instead of the mouse. Commands should be called according to the timer on the PC or monitor.

- The officer calling the command should be in contact with the computer operator or use the MLRange remote control.
- Decide if timer should be used with “Split timer button” or not (ISSF recommends using the Split timer button while Megalink recommends automatic timer without specifically using the split timer button). If the split timer is used, the **Home** button should be pressed *just before* 3 seconds remaining is displayed in the load time.
- Make sure that range officers, jury and team leaders are familiar with the chosen monitor presentation for frame shots, double shots, missing shots and shots that are out of sequence.
- Make sure that the range officer and/or jury are able to understand exceptions like:
    - Frame shots in one target due to debris sprayed from a frame hit on a neighbor target. And also the consequence of double shots on Rapid fire events in such circumstances.
    - Effect of ricochets from dysfunctional bullet catchers.
    - Double shots, from automatic fire and/or cross fire, will be ignored. In case of cross fire, the wrong shot might be included by the system. In case of automatic fire, the target would accept an additional shot to be included to the series (in the unlikely case that the shooter fires 6 shots).

25m Pistol/Center fire – Precision stage

- Calling of “attention” when the red lights are started is optional. Megalink recommends informing the shooters before the competition regarding the details of your chosen method.

Rapid Fire Pistol

- Call “Attention!” just when the red light comes on (start just a fraction before the countdown changes from 3-2-1 to 4-3-2-1-0).
- Call “Three!” when 3 is displayed.
- Call “Two!” when 2 is displayed.
- Call “One!” when 1 is displayed.
- Call “Start!” when 0 is displayed.
- Wait 3 additional seconds and observe that all red lamps turn off and the green lamps turn on.

Rapid Fire Pistol final

- Do not use «Split timer button».
- Before EACH shooter starts:
    - Ensure that the series selection is correct.
    - Select the correct shooter within the segment.
    - Press the **Shoot** button.
    - When the shooter and range is ready, start the timer with the **Home** keyboard button
- Do not call “Attention” when red light starts
- Count the number of shots fired. If too few shots are fired, the results must be corrected to reflect -1 point for each missing shot. All other negative points (except jury penalties) are supposed to be handled automatically.
- Shoot offs are handled with the shoot off *series.*

The following **YouTube** video is available to guide you through the handling of Rapid Fire Pistol finals:
MLRange - Finals: 25m Rapid Fire Pistol (Men)
(https://www.youtube.com/watch?v=TcC9PYlqvgI)

10m/50m/300m

General for qualification

- The shooters are only changing from 'sighter' to 'match'. They should NOT do anything on the monitor after each ten shot sub-series.

50m Rifle 3x40

- The range officer changes to the next sighter series after the matches in each position is finished.
- The shooter only selects when to change from sighter to match.

50m Rifle 3x20

- The shooters selects all transitions between sighter and match series.

Finals

- Verify that the correct start score is present for all shooters.
- Verify that decimal values are shown on monitors, MLRange and MLView.
- Set up MLView as follows:
  - 8 lanes
  - One shot graphical
- Ensure that the range officer and computer operator are communicating during the final.
- Exceptions (cross fire, missing shots, penalties, etc.) MUST be handled immediately and before the next shot is fired.
- Shoot offs after tie-breaks are handled by continuing with shot number 11 etc. on the final series. The shoot-off series can be used, but this will remove the final series score from the monitor and MLView.

Automated Finals

ISSF 10m Air Pistol / Rifle
ISSF 50m Pistol / Rifle Prone / Rifle 3-Position
ISSF 25m Pistol (women)
USA 50ft Rifle Prone / Rifle 3-Position
The above ISSF finals are automated in MLRange with respect to:

- Lane coloring to indicate status
- Athlete eliminations
- Shoot-off resolution

The following **YouTube** videos are available to guide you through the handling of automated finals:

MLRange - Finals: 10m Air Pistol / Rifle, 50m Pistol / Rifle Prone, 50ft Rifle Prone

(https://www.youtube.com/watch?v=v6UeJisS4bs)

MLRange - Finals: 50m Rifle 3-Position, 50ft Rifle 3-Position

(https://www.youtube.com/watch?v=RYHt2lb4h28)

MLRange - Finals: 25m Pistol (Women)

(https://www.youtube.com/watch?v=EqzPCdGoN3s)

Troubleshooting

Problems with exchanging information between the range and the office

- Non-matching Event-ID? (verify under **Setup→Event**)
- Incorrect result management program or incorrect folder to the result management program? (verify under in the Interface dialog)
- Problems in the network (verify cables, sharing and permissions)
- Exchange is not activated in MLRes? (Verify under the tab "Electronic targets" in MLRes)

Unable to control the monitors

- Incorrect license code? Check the Statusbar in MLRange and correct in **File→Interface**.
- Incompatible versions of MLRange and display unit software? Verify the MLRange version under **Help→About** and verify the display version under **File→Fetch ML2000 Status**.
- Incorrect connection between the PC and the display units? The following connection is correct:
  - cable (9-pin DSub) from communication port (native serial port) on PC to the PC-adapter
  - cable (RJ45 plugs) from PC-adapter to the lower right outlet on the PC-connection
- The settings for the communication port are not correct? Find the proper settings from the Windows Command panel and set MLRange from the **File→Interface** dialog. Verify that the PC LED is flashing on the PC-adapter.

Problems with pressure values

- Incorrect sensitivity or target type?
- Sound chamber is not tight due to incorrect assembly or insufficient maintenance
- Systematic and significant low values on one sensor without any other reasons can indicate a defective sensor. Contact Megalink for repair.

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