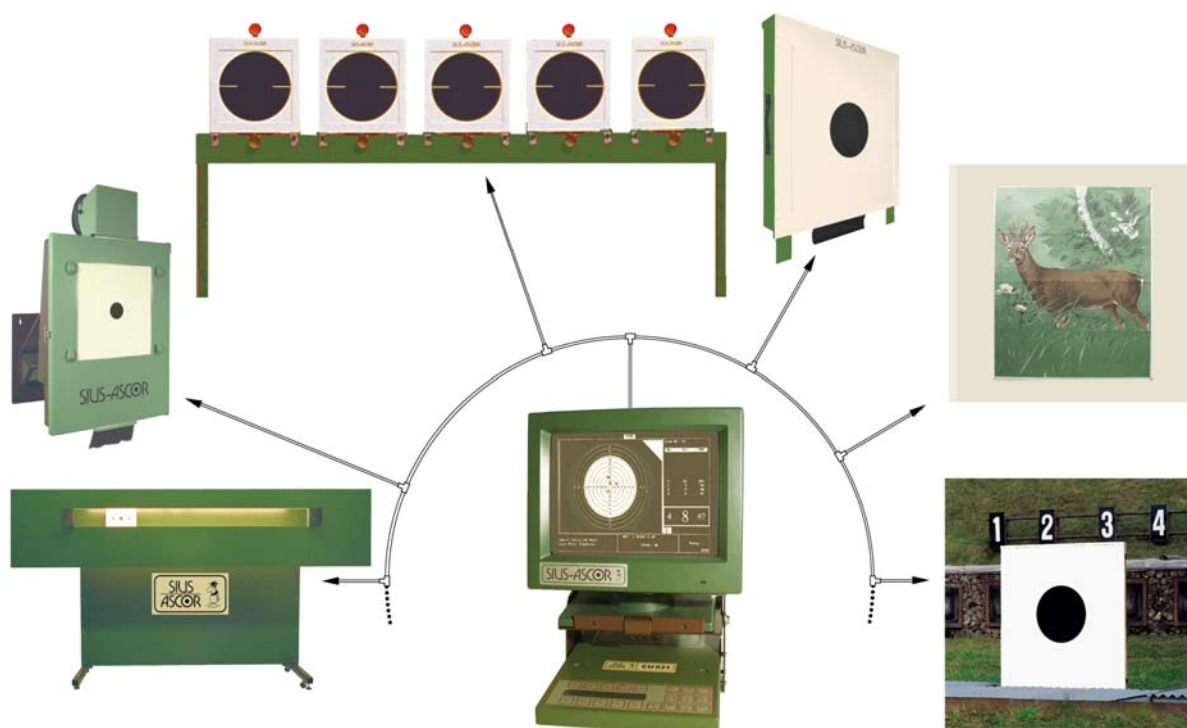


Electronic Targets

User Manual

System7



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Contents

1	About this Manual	4
1.1	How to find Information.....	4
1.2	How to contact Sius AG.....	4
1.3	TypographicConventions.....	5
2	Getting started	6
2.1	Connecting and turning on Devices.....	6
2.2	Connect Target.....	8
2.2.1	More than one Control Unit on the same Network.....	10
2.3	Set Language.....	12
2.4	Set Discipline.....	13
3	Display Overview	14
3.1	Windows Layout.....	14
3.2	Contents of Windows.....	15
3.2.1	Target Window.....	15
3.2.2	Shot Windows.....	16
3.2.3	List Window.....	17
3.2.4	Progress Window.....	18
3.2.5	Statistics Window.....	18
3.2.6	Selection Window.....	19
3.2.7	Status Window.....	19
3.2.8	Title Bar.....	20
3.2.9	Function Key Bar.....	20
4	Concepts	21
4.1	Usage.....	21
4.1.1	Menu (Using the Keyboard).....	21
4.1.2	Barcodes.....	24
4.1.3	PC.....	25
4.2	Settings.....	25
4.3	Filters.....	26
4.4	Program Types.....	27
4.4.1	Control Menu.....	28
4.4.2	Targets (Free Series).....	28
4.4.3	Fixed Programs.....	31
4.4.4	User Programs.....	32
4.4.5	Match (ISSF).....	33
4.5	Special Disciplines: 25 meters.....	34
4.5.1	Centre Fire – and Sport Pistols.....	34
4.5.2	Standard and Rapid Fire Pistols.....	35
4.6	Timer.....	35
4.7	Communication.....	36
5	Maintenance	37
5.1	Reports.....	37
5.1.1	Settings.....	37
5.1.2	Shot Report.....	38
5.1.3	Program Settings.....	38
5.2	Log.....	39
5.3	Target Test.....	40
6	Devices	41
6.1	Scoreboard (SCB).....	41
6.2	LON-Measurement Electronic System (LME).....	42
6.3	LNR-Box (Lane Number Box).....	42

6.4	Time Control Unit (TCU)	43
6.5	Computer (PC).....	43
6.6	Printers (D93, D941).....	44
6.6.1	Self Test.....	44
6.6.2	Date Buffer.....	44
6.7	Barcode Scanner (BCR Reader)	44
6.8	Control Unit (CU941, Control Unit, Handheld, ME)	45
6.8.1	Components.....	45
6.8.2	Startup Functions.....	45
6.9	Shot Sensor (SAB, C88).....	46
6.10	Mechanical Shot Counter	47
6.11	Remot Control (RC941, RC-ZOOM).....	49
6.11.1	Zoom Key (Enter).....	49
6.11.2	Menu Key.....	49
6.11.3	Match Key.....	49
7	Appendix.....	50
7.1	Separate Document.....	50
7.2	Frequently Asked Questions (FAQ).....	51
7.3	Short Explanations.....	52

1 About this Manual

1.1 How to find Information

This manual contains basic information about the SA941 and SA9003 product line from SIUS AG.

You can search for information by means of the list of contents or the glossary (tables, illustrations, drawings and word glossary) in the Appendix to this document.

Additionally there is a separate document "Appendix to the System 7 User Manual". This document lists and explains all the targets, programs, settings and commands for the equipment.

Up to date information can be found on our web site: www.sius.com.

1.2 How to contact Sius AG

Information type	Switzerland	Worldwide
Sales & Administration	+41 (52) 354 60 60	Representatives List
Technical Support	+41 (52) 354 60 60 support@sius.com www.sius.com	www.sius.com

Table 1 Sius AG Addresses

1.3 Typographic Conventions

This document has been produced using the following conventions:

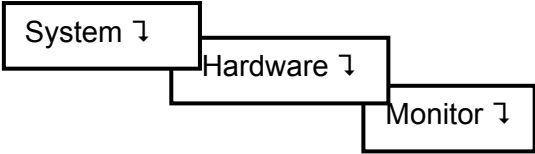
Visual Representation	Meaning
<i>"Italic font in quotes"</i>	Reference to another document.
Italic Bold font in quotes separated with backslashes: "\System\Hardware\Control Unit"	Menu path via the keyboard to access a command or setting on the control unit.
Framed texts, stepped: 	Menu path via the keyboard to access a command or setting on the control unit.
Framed Font: <i>Enter</i> -Taste	Description of a key on the control unit keyboard.
➤ Important information:	This arrow points to information meriting particular attention.
Courier font Practice..... Start: 13:07:09.99	Printouts from a (D93 or D941) printer connected to a control unit.
Numeration in brackets: (Chapter 3.2.3 Designation)	Reference to a chapter in this document.
Words in capital and in quotes „OFFLINE“	Reference to a status of the control unit. The status is displayed in the status window.

Table 2 Typographics Conventions

2 Getting started

2.1 Connecting and turning on Devices

In order to use an Electronic Scoring System, at least one control unit, one monitor and one detection system have to be connected and supplied with power.







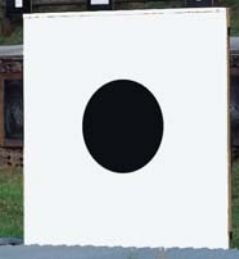
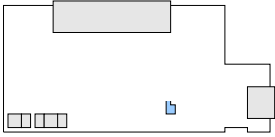


Device	Picture
Control Unit	  CU941 FPE06 (Handheld)
Monitor	  M941 M94
Detection System (Target)	   S10 S25/50 S310
LON Measurement Electronic System (present in each target)	 LON Measurement Electronic System
Printer (optional)	  D93 D941

Table 3 Devices

- The Monitor, depending on the model, must be switched on by its own power switch. Please make sure that the Brightness Control on the underside of the equipment is set to the central position.

At least the following cables must be connected:

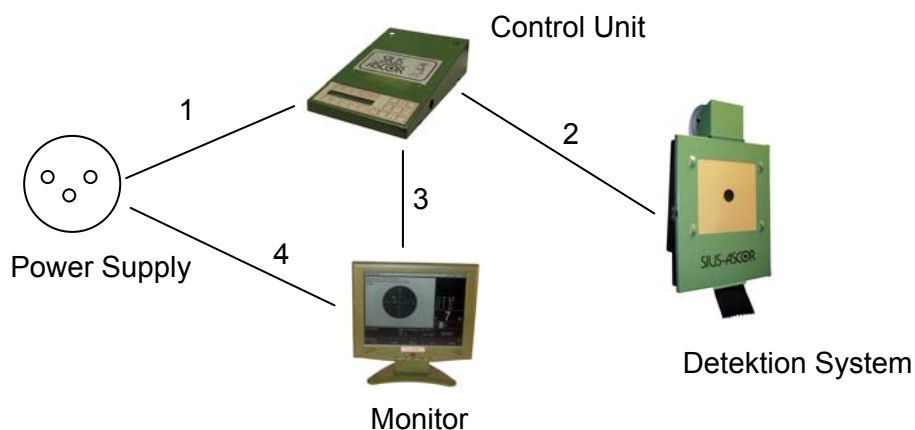


Figure 1 Minimal Cabling

N°.	Device	Connection to	Description
1	Control Unit	Power Supply	Power Supply (e.g. by RJ45 cable)
2	Control Unit	Detektion System	Communication Cable(RJ45 sockets)
3	Monitor	Control Unit	Video Cable (VGA)
4	Monitor	Power Supply	Power supply cable or special power supply cables for M9003

Table 4 Minimal Cabling (Connections)

After turning on and starting up the control unit for the first time the screen content should be as follows:

The version details (Main V7.0i etc.) will differ from the example:

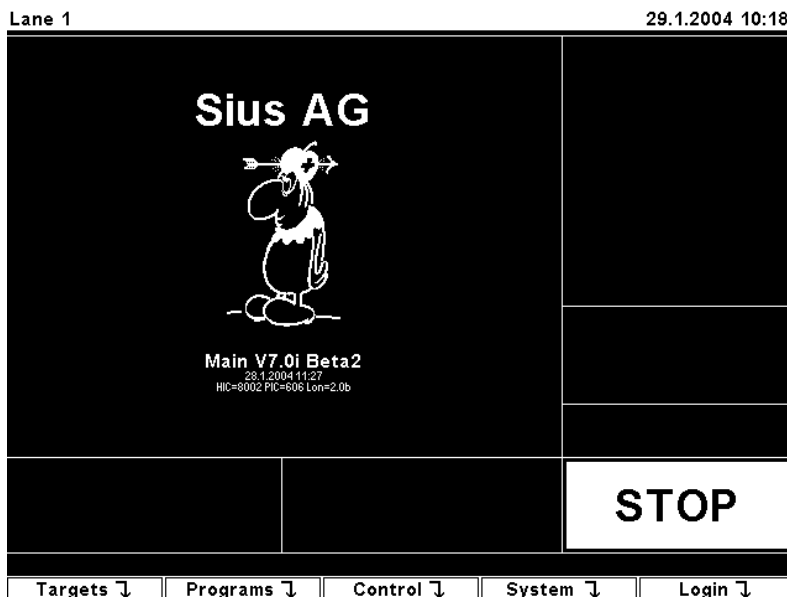
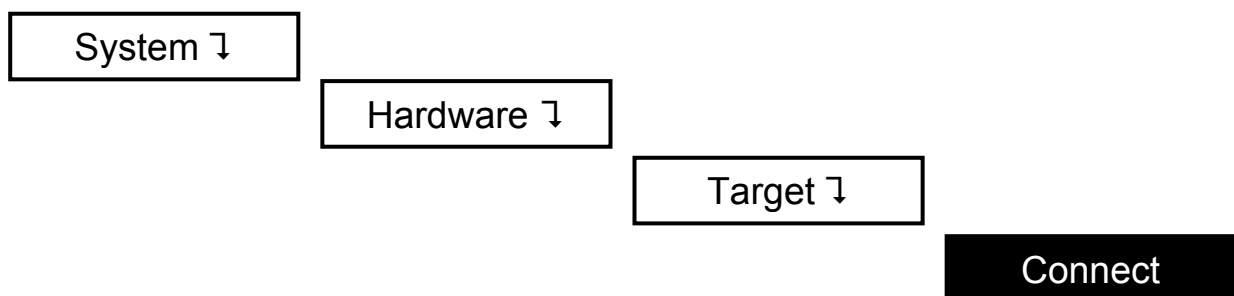


Figure 2 Screen Display after First Startup

2.2 Connect Target

If the status changes to "OFFLINE" (after 2 minutes at the most), the control unit has not detected any target configured to it. In this case first check all the cabling. If the cabling is correct and the Status remains on "OFFLINE", then the target number (Subnet Address) has to be re-programmed. The target number can be set to the address of the control unit. To connect the target use the following command:

„**!System\Hardware\Target\Connect**“



➤ The framed text represents the menu points of the LCD-Menu. They can be selected by pressing the corresponding function keys. The "**!System**" directory can be accessed by pressing the **F4** function key. By doing so, the content of the LCD-Menu changes. Now the "**!.Hardware**" directory is displayed under the function key **F4**. By pressing the **F4** function key you can switch to the "**Hardware**" directory.

➤ By pressing the **Esc** key you can move up one directory level.

➤ By pressing the **Home** key you can return to the home directory at any time.

As an alternative to using the keyboard, you can enter this command by reading the following barcode with the barcode scanner:

System\Hardware\Target\Connection



Figure 3 Connect Target Function

This barcode switches the control unit over to a special configuration mode. The control unit waits for a service PIN message from any LON Measurement Electronic System. This message can be created on the LON Measurement Electronic System, either when the service PIN is pressed or when shooting takes place. However, a shot only triggers a Service PIN message if the LON Measurement Electronic System was not previously configured. Every LON Measurement Electronic System that first reports this Service PIN message is reprogrammed by the control unit to its own target number. This function is only used if the LON Measurement Electronic System does not have its own LNR (lane number box), with which the target number can be permanently entered.

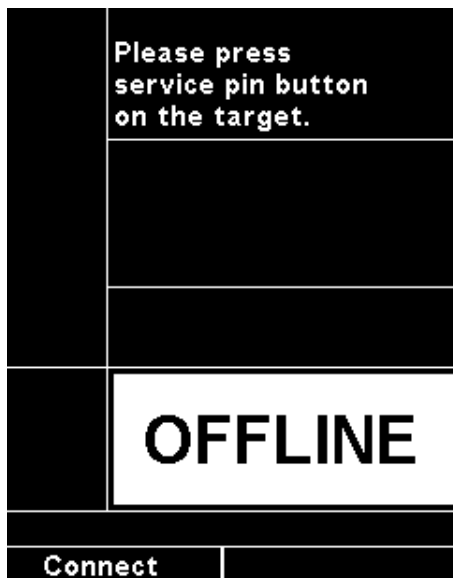


Figure 4 Connect Target

The following text is displayed in the List Window

Press the Service Pin button (small round blue button) on the LON Measurement Electronic System for about 1 second and release it again.

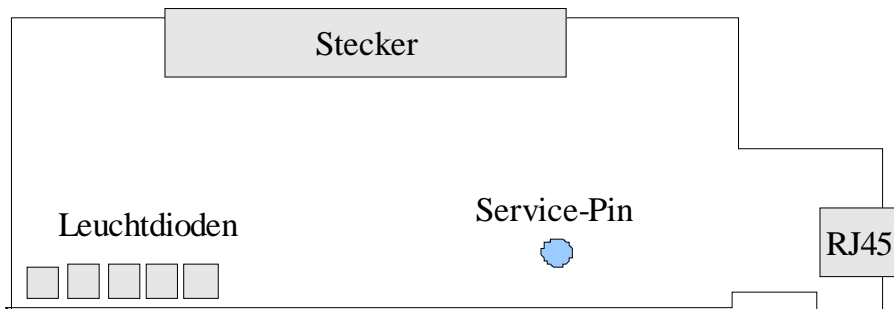


Figure 5 LON Measurement Electronic System with Service PIN

The control unit then confirms the successful configuration with a beep and a message in the List Window. At the same time the status switches from "OFFLINE" to "STOP".

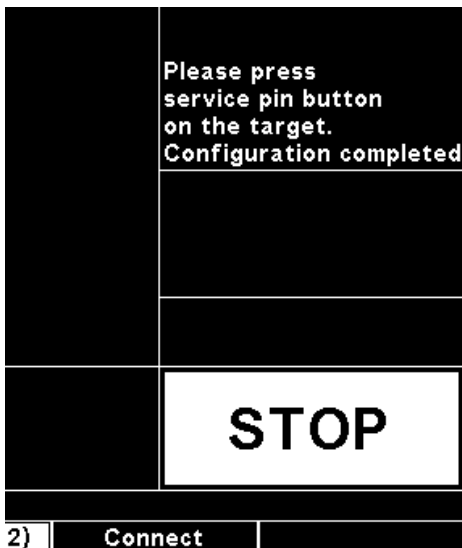


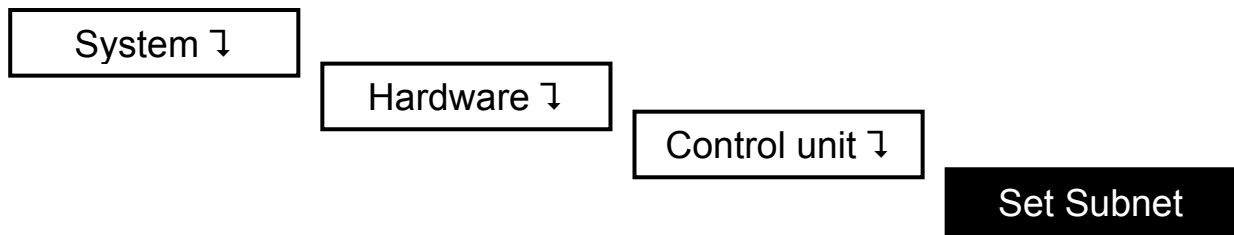
Figure 6 Target Connected

2.2.1 More than one Control Unit on the same Network

- If you need to configure several control units, then all the subnet addresses of the control units have to be set first. Connect one lane after another. Please make sure that only one control unit at a time is waiting for the "Service Pin" message.

If there is more than one control unit connected to the same network, all subnet addresses of the devices have to be set individually. The Lane number (subnet address), which is displayed in the upper left corner of the monitor, has to be unique for all control units. To change or set the Lane number (subnet address) you can go to the following directory via the keyboard menu:

"\System\Hardware\Control Unit\Set Subnet"



On the LCD of the control unit, a edit field appears. The target number (Subnet Address) (can be entered via the membrane keyboard. The target number has to be between 1 and 253. Press the **Enter** key to confirm your input or press the **Esc** key to cancel.

As an alternative to the keyboard operation, you can enter the subnet addresses by reading the following barcode with the barcode scanner:



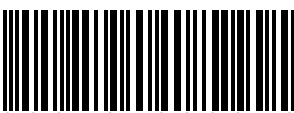
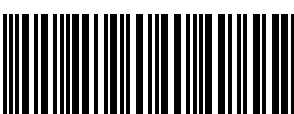
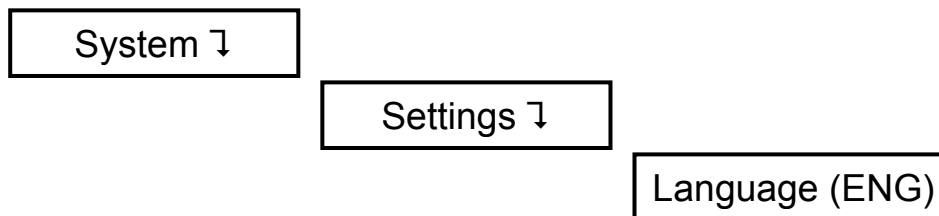
Subnet	Barcode
1	...Hardware\Control Unit\Set Subnet\1..9\1  9 9 0 7 2 7 0 0 0 1 5 8
2	...Hardware\ Control Unit\Set Subnet\1..9\2  9 9 0 7 2 7 0 0 0 2 5 5
3	...Hardware\ Control Unit\Set Subnet\1..9\3  9 9 0 7 2 7 0 0 0 3 5 2
4	...Hardware\ Control Unit\Set Subnet\1..9\4  9 9 0 7 2 7 0 0 0 4 4 9

Table 5 Set Barcodes Subnet on control units

Further barcodes for other subnet addresses can be found in the "Appendix to the System 7 User Manual".

2.3 Set Language

The most basic setting is the Language. This setting can again be selected by means of the keyboard or the barcode scanner. This setting can be accessed under:



"\System\Settings\Language"

The following languages can be set by scanning the following barcodes:

Languages	Barcode
English The menu is set to English.	System\Settings\Languages\English  9 9 0 7 0 2 0 0 1 9
German The menu is set to German.	System\ Settings\Languages\German  9 9 0 7 0 2 0 1 1 6
French The menu is set to French.	System\ Settings\Languages\French  9 9 0 7 0 2 0 2 1 3
Italian The menu is set to Italian.	System\ Settings\Languages\Italian  9 9 0 7 0 2 0 3 1 0

Table 6 Set Language Barcodes

2.4 Set Discipline

The complete program and Target Catalogue with all the corresponding barcodes can be found in the "Appendix to the System 7 User Manual". Four examples are listed here so that the function can be tested:

- After the power supply has been turned on, it is important to wait for 1 minute before shooting begins so that all the devices are correctly synchronised. (If not, it is possible that shots are marked as illegal.)

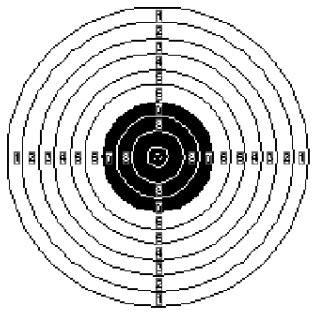

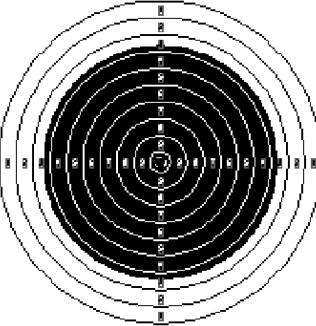

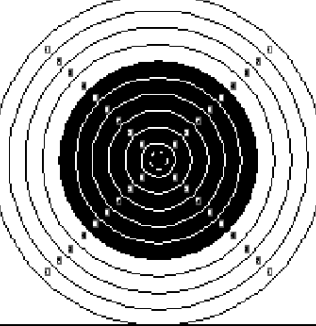

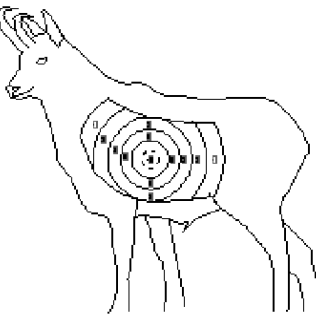

Target	Description	Barcode
	Example 1: 10m Pistol "\Targets\10mVSSF\10mPistol"	 0 6 0 0 0 0 1 9 0 0 0 2 0 3 5 6
	Example 2: 50m Rifle "\Targets\50mVSSF\Rifle"	 0 6 0 0 0 0 1 9 0 0 0 3 0 1 5 3
	Example 3: 300m A10 "\Targets\300mVSSF\A10"	 0 6 0 0 0 0 1 9 0 0 0 0 0 2 7 7
	Example 4: Hunting "\Targets\Other\Hunting\Chamois"	 0 6 0 0 0 0 1 9 0 0 0 1 0 8 5 0

Table 7 Program Examples

3 Display Overview

3.1 Windows Layout

Information on shooting in progress is divided into several windows on the control unit.

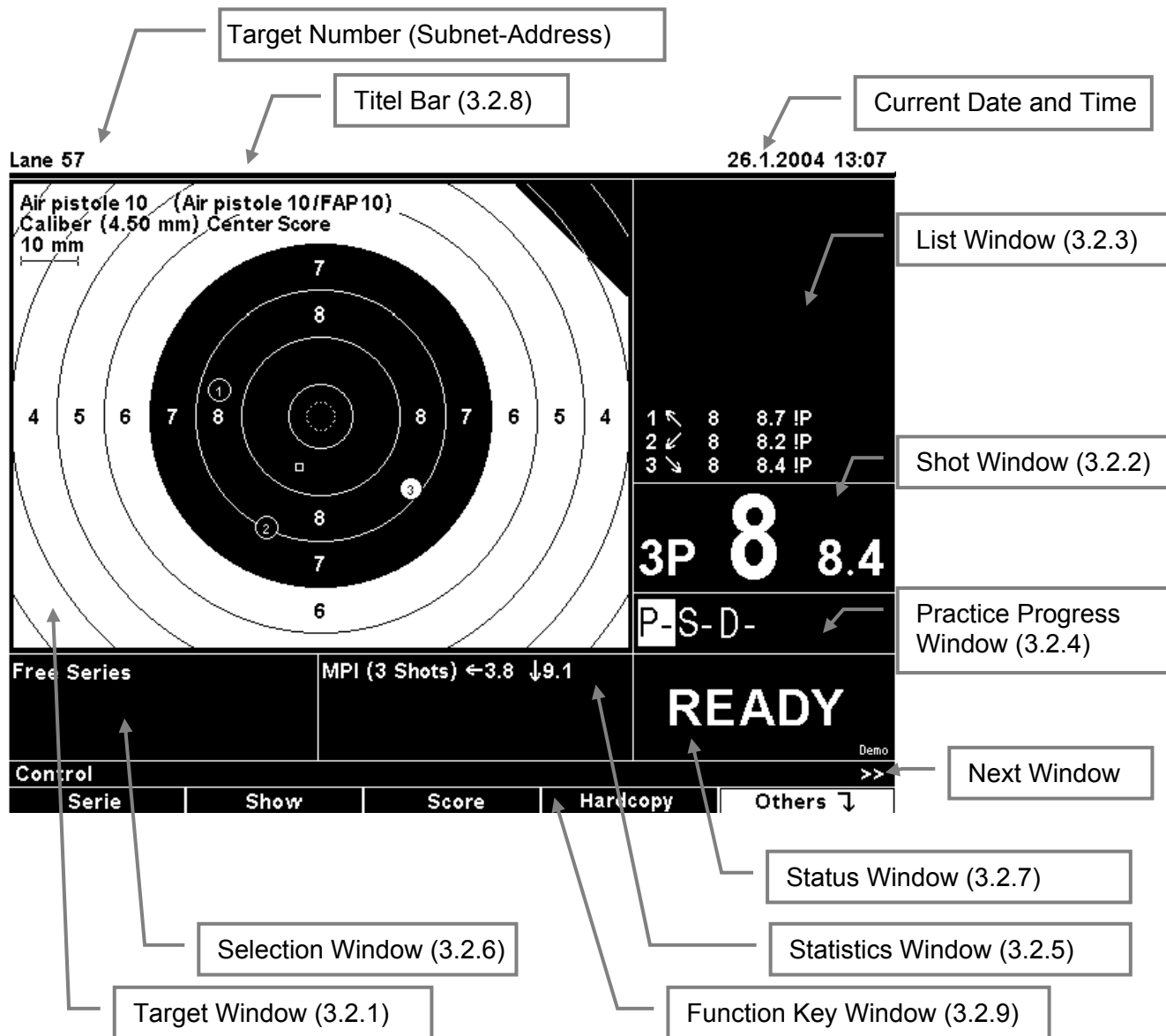


Figure 7 Screen Layout

The position of the windows can be changed in the "Layout" settings. The factory setting is "Classic" display. With the "Stop Left" and "Final" setting, the display layout can be set to the needs of the marksmen and spectators

3.2 Contents of Windows

3.2.1 Target Window

In the Target Window the target name, the target image, the shooting situation and other status information are displayed.

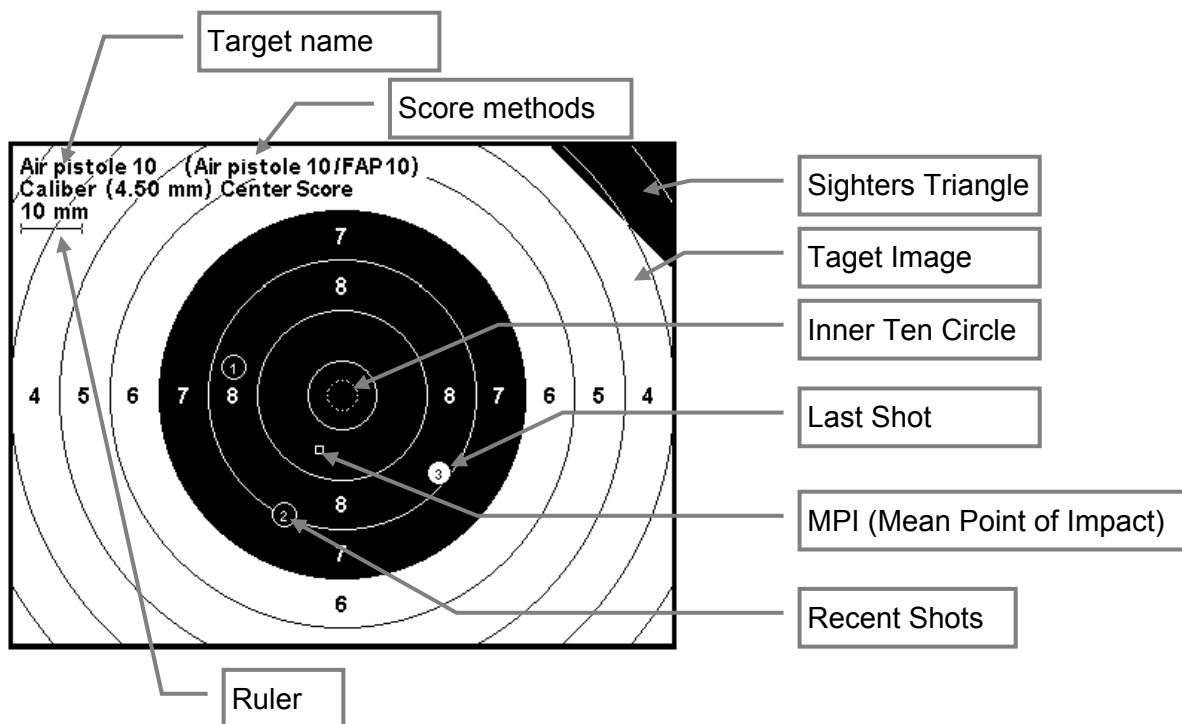


Figure 8 Target Image

In brackets to the right of the Target Name you can see the types of score method(s) (i.e. primary and secondary score; these often correspond to the qualification score in whole tens or the final score in tenths). If, as in the example, the calibre information indicates a center score, then the calibre settings have no effect on the shot value. The shot value in these score methods is calculated independently of the calibre which has been set. The display of the target name and the score calculations can be switched off via the settings.

The sighter triangle indicates that the type of fire is set to "Sighters". Shots fired in this fire type are marked with a "P" and are not taken into account for the overall result.

With the **Zoom** key, different zoom levels can be selected. The ruler changes accordingly.

The symbol for the last shot fired can be set independently of the symbol for all other shots. The symbol "Calibre" was selected as the factory setting for both. The control unit draws the shot holes true to size, as long as the hole is not below a certain minimum size. On holes that are particularly small (e.g. for 300m distances) a cross is drawn instead of a circle. The last shot fired is shown in inverse colour.

Various parameters such as the "Mean Point of Impact (MPI)", supplement the graphical information in the target window. The parameters are optional and can be turned on or off in the parameter settings.

The "ruler" allows the target size to be estimated. This helps to prevent inadvertent shooting at similar looking targets. The depiction of the calibre and of the ruler can be turned on and off in the settings.



Figure 9 Shot Sensor Symbol and Cross Shot Symbol

The shot sensor symbol appears in dimmed form in the lower right corner of the target window as soon as a shot sensor is connected. The display changes to the cross shot symbol if in the past seven minutes a cross shot has been fired. Cross shots can only be detected with the connected shot sensors (chapter 6.9 Shot Sensor).

3.2.2 Shot Windows

In the shot window the last shot fired is displayed in a large font.

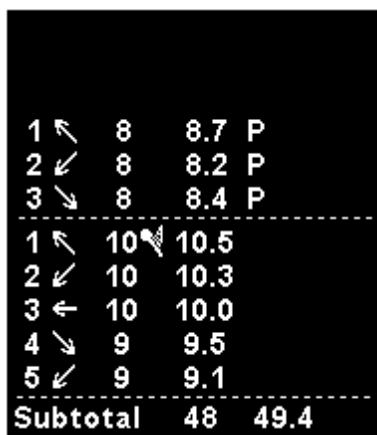


Figure 10 Shot Window

The number on the left shows the Shot Number. A "P" shows that it is a sighter shot. The number in the middle is the primary score and the number on the right is the secondary score. In our example it is the 10th ring score. The layout of the shot window can be changed via several settings.

3.2.3 List Window

In the List Window all shots, various totals and other messages are displayed.



1 ↖	8	8.7	P
2 ↙	8	8.2	P
3 ↘	8	8.4	P

1 ↖	10 ↘	10.5	
2 ↙	10	10.3	
3 ←	10	10.0	
4 ↘	9	9.5	
5 ↙	9	9.1	




Subtotal	48	49.4	

Figure 11 List Window

The number on the left shows the shot number. Sighter shots are numbered individually. The arrow shows the shot position from the target centre. The primary and the secondary scores are next. The display of the secondary score is optional and can be suppressed.

The Flag on the right of the number 10 shows that it is an Inner Ten. On the printout the Inner Ten is marked with "*". The "P" (Probeschuss = Sighters Shot) displayed for the first three shots shows that they were fired as sighter shots.

Shots can have the following attributes.

Symbol	Meaning
	Direction
(12.2 / -4.8)	Shot Coordinates in millimeters
11:33:17.43	Absolute time in hours: minutes: seconds and $\frac{1}{100}$ seconds
(2.5s)	Relative time from the 1 st shot of the group or overtime information on 25 meter disciplines
	Inner Ten
97 !P	! = Demo Shot P = Sighter Shot
	(Frame-Hit)
Miss	Miss (Shot Off signal without Shot On; See Shot Sensor)

Symbol	Meaning
Cross Shot	Cross Shot; See (Chapter 6.9 Shot Sensor)
< / >	Direction (Sweep; Running Target)
S / L	Fast/Slow (Running Target)
OT	Over Time
NAMf	Non-Allowable Malfunction

Table 8 Shot Attributes

3.2.4 Progress Window

The Progress Window is visible as an option. It can be turned on or off in the Settings.

P- S5 P- S5 D2

Figure 12 Practice Progress Window

The content of the Progress Window depends on the chosen discipline. In our example a "pre-programmed discipline" is shown in which the number of shots is fixed. The active group has a white background. The ">>" symbol shows that there are more groups to follow the "D2" group. The display is similar for user programs and for matches. In free program series only three fire types are shown: P (Probe = Sighters), S (Shot by Shot) and D (Deffered). The fire type can be selected at will and the number of shots is not fixed. See (Chapter 4.4 Program Types)

3.2.5 Statistics Window

Various information about the current program shot is displayed in the Statistics Window.

MPI (5 Shots) ←4.1 ↓4.4

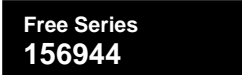
Figure 13 Statistic Window

Depending on the parameters set, the content of the Statistics Window will change. The "Mean Point of Impact " (MPI)" is shown graphically in the Target Window and appears as text in the Statistics Window. The arrows show the position of the MPI and the figures give the distance to the centre of the target in millimetres.

Each parameter has its own form of image. Further explanation can be found under the respective parameters in the "Appendix to the System 7 User Manual".

3.2.6 Selection Window

The selected program and full information on the firer are displayed in the Selection Window.




Free Series
156944

Figure 14 Selection Window

Information about the position and the weapon can also be listed. In the example, the Firer Number and the selected program are shown

3.2.7 Status Window

The Status Window shows whether the system is ready for shooting.



Ready
Demo

Figure 15 Status Window

Several significant statuses are differentiated:

Status	Meaning
"READY"	A program has been selected. The target has been detected and is ready. The system is ready for shooting. After a system startup it is important to wait for 1 minute before shooting begins. The control units require this time to ensure that all the connected devices are correctly synchronised. (
"STOP"	The control unit has been restarted or the last program has finished. Shooting may not start or continue. Shots fired during the Stop phase are declared illegal.
"SHOW"	A series with a number of shots has been shot. The shots are now shown one after another. During the Show phase no shooting may take place. Shots fired during the Show phase are declared illegal.
"OFFLINE"	The control unit switches over to „OFFLINE“ when no shots with the correct target number (subnet address) have been detected. Either the target is incorrectly connected or the incorrect target number has been programmed. How to reset the LON Measurement Electronic System to the correct target number is described in (Chapter 2.2 Connect Target) and in the <i>"Appendix to the System 7 User Manual"</i> under "SystemHardware\Target\Connect" .
"PAUSE"	In ISSF programs the system goes on "PAUSE" after each position. The firer can switch over to the next position with the RC92 (Match Button) or the keyboard.
"RECOVERY"	After an interruption to the power supply the control units restart automatically. If the last program to be shot has not been ended correctly, then the program that was still open is recovered. The competition can then be continued from where it was interrupted.

Table 9 Status Overview

The following additional states may be displayed in small font:

Status	Description
“DEMO“	The control unit is in demonstration mode. With the Ins key demo shots can be generated from the LON Measurement Electronic System. Demo shots are marked with an exclamation mark "!" on the screen and on the printout.
“PRACTICE CONTROL“	The control unit is in a special remote control mode. This mode is used for commanded shooting. In this mode a "PAUSE" Status can only be terminated from a central computer.
“REMOTE“	The control unit is in remote control mode. It is no longer possible to control the unit via a keyboard or a barcode scanner.

Table 10 Status Overview 2

3.2.8 Title Bar

The Target Number, the current date and the time are displayed on the Title Bar. The format of the date can be modified.

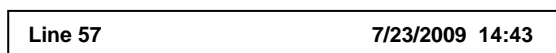


Figure 16 Titel Bar

The Target Number must be between 1 and 253. If several control units are connected on the same network, they must be differentiated by target number.

3.2.9 Function Key Bar

The function keys **F1** to **F5** have different tasks. The keys can be used differently depending on which status the control unit is in.



Figure 17 Funktion Key Bar

In the Function Key Window, the same information is displayed as on the LCD Menu of the keyboard. However, the LCD is limited to four symbols per function key (See the abbreviation glossary in the "Appendix to the System 7 User Manual". Chapter 4.1 (Usage) describes navigation through the menu).

4 Concepts

4.1 Usage

The control unit can be used in several ways. Using the keyboard is the most convenient. All the functions which are available to the control unit can be accessed via the keyboard. The only exception is the user programs, which can be loaded via a Barcode Scanner or from the central computer.

The big advantage of using barcodes is that for inexperienced users, all the most important commands can be collected onto one sheet of paper and usage can be reduced to the most essential only. For a system with several shooting points, this prevents every line having to be adjusted individually

On major, commanded occasions the control units can best be controlled from a central computer. This ensures that all participants operate under the same conditions. Furthermore, a central processor enables efficient data collation.

4.1.1 Menu (Using the Keyboard)

The menu has a tree structure. Similar to a modern computer system, all the elements are stored in directories and folders (commands). The root (Home) is in the centre of the menu overview. The different directories branch out from Home. The further the branches extend in the directories, the more detailed the information and commands become.

The complete structure of the menu is printed as an overview in the "*Appendix to the System 7 User Manual*". This structure also corresponds to the index of barcode descriptions. The following keys are used for navigation within the menu:

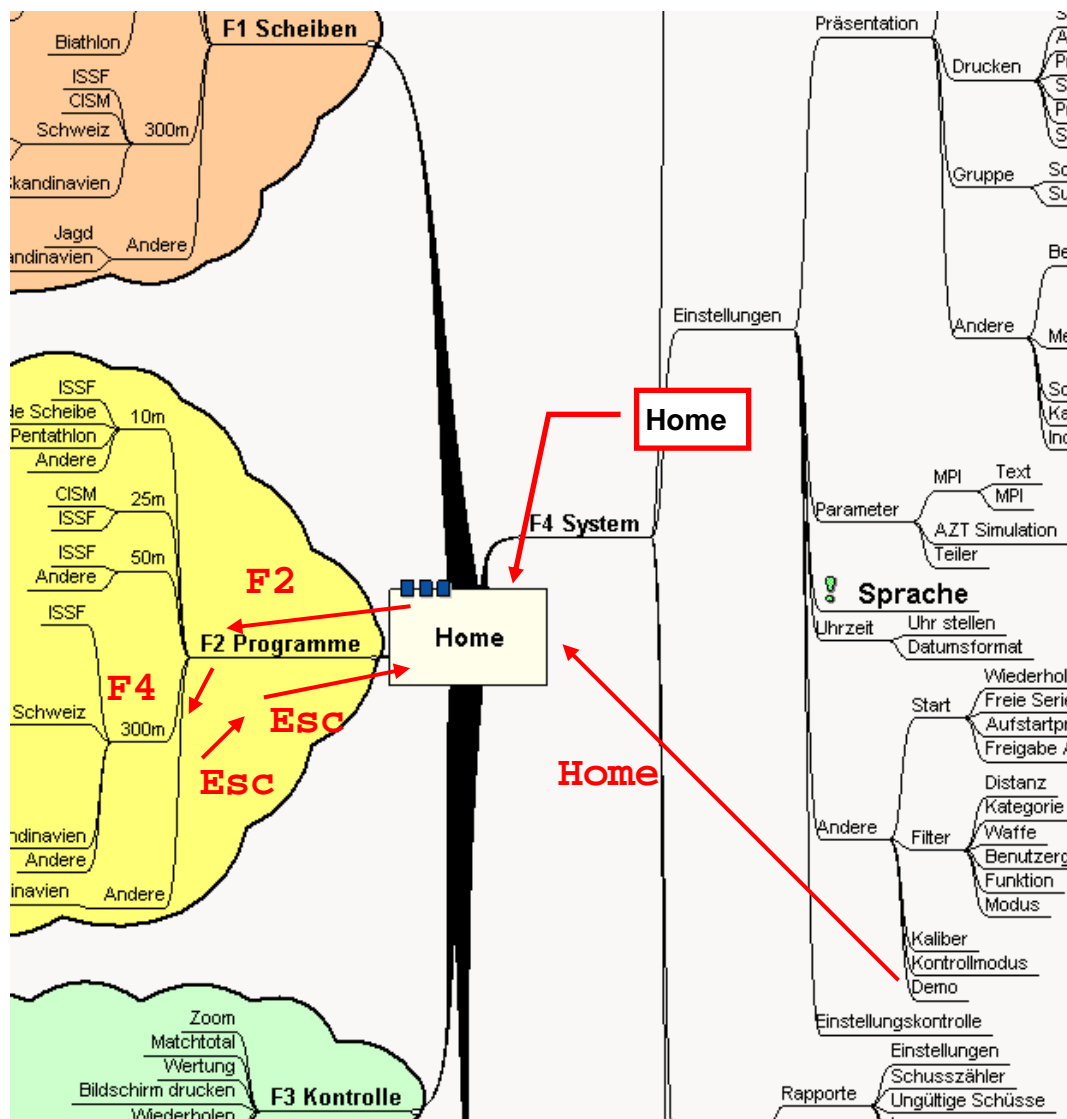


Figure 18 Menu Navigation

Taste	Name	Beschreibung
F1 .. F5	Function Key	You can go into subdirectories or enter commands with the function keys
Home	Home	You can jump back to the Home directory at any time using the Home key. You can also toggle between the Home- and the control directory.
Esc	Escape	With the Esc key you can exit from a directory and move up one step in the menu.

<i>Opt</i>	Option	You can return to the last command used using the Opt key. Frequently used commands can be accessed very effectively this way. You can go back to the menu you came from by pressing the Opt key again. You can also press the Home key to go back to the Home directory.
<i>Help</i>	Help	By pressing the Help key you can display and print out the address and the telephone number of Sius AG as well as information about the software and hardware versions in use. Please keep this printout on hand if you call Sius AG for assistance.
<i>Next Window</i>	Next Window	If there are more than 5 commands available in a menu window (directory), you can access command number six and above by pressing the Next Window key. The ">>" symbol is displayed on the screen and in the menu to indicate that there are further commands available. Pressing the Next Window key will take you back to the first menu window.
<i>Enter</i>	Enter	Some settings can be edited with the number keys on the keyboard. For example, the firer number can be inserted via the number keys. These inputs can be confirmed with the Enter key or cancelled with the Esc key.
<i>UP " ^ "</i>	Move Up	Using the Up key, the second to last shot in a program that has been shot can be called up once more. In this way all previous shots can be discussed.
<i>Down " v "</i>	Move Down	The Down key takes the discussion in the other direction.
<i>Ins</i>	Insert	<p>If the system is in Demo Mode (Demo is displayed in a small font on the bottom right of the Status Window), you can then generate demo shots on the target by pressing the Ins key. This allows the system to be tested without shooting actually taking place.</p> <p>Demo shots in the List Window and on the printout are always marked with "!" so that they can be easily distinguished.</p>

Table 11 Keyboard Functions

When a discipline has been selected, the menu automatically goes to the control menu. In the control menu, all the commands which can be called up for the chosen program are immediately available. See (Chapter 4.4 Program Types).

4.1.2 Barcodes

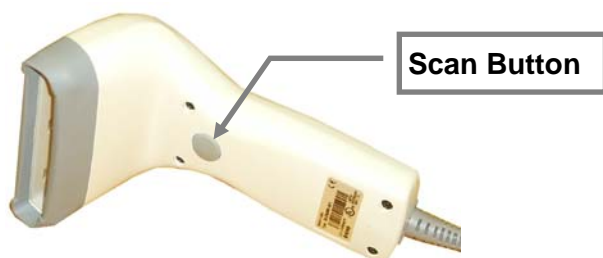


Figure 19 Barcode Scanner

- To scan a barcode, put the barcode scanner straight onto the code you want to scan and lift the scanner one to two centimetres. Press the Scan Button.
- High quality printouts and copies of the barcodes must be used.
- The control unit confirms scanned barcodes with different beep signals. One beep means a valid scanned barcode. Two beeps mean that the command has been accepted but it cannot be put into practice or it is not supported. Three beeps indicate a scan error or an illegal barcode.
- Only barcodes from the "*Appendix to the System 7 User Manual*" or those created by the barcode library can be used. The use of other barcodes can result in a malfunction of the device.

The control unit (the CU941 only) is equipped with a hardware port on the right hand side to connect a barcode scanner. The barcode scanner can carry out all the inputs that can also be made via the keyboard. Moreover, user programs which were previously generated by the computer program barcode library or with SiusData® can also be scanned in.

The barcodes are organised in the same way as the keyboard menu for the control unit. All the available barcodes are listed in the "*Appendix to the System 7 User Manual*". The menu can be used as an additional list of contents.

"Interleave 2 of 5" codes are used as barcodes. The barcodes are protected with a checksum so that scan errors and incorrect codes are automatically filtered.

4.1.3 PC

With the SiusData® PC software, all commands can be sent simultaneously to all the control units connected to the same network. Therefore, it is very easy to simultaneously change the same settings for all control units or download a program. Detailed information can be found in the SiusData® documentation.

Mit der Software SIUSDATA® können alle Befehle, an alle Bedienungsgeräte welche im gleichen Netzwerk angeschlossen sind, gleichzeitig verschickt werden. Es ist mit dieser Funktion einfach, auf allen Bedienungsgeräten gleichzeitig die gleichen Einstellungen zu verändern oder ein Programm zu laden. Die Vorgehensweise wird in der Dokumentation von SIUSDATA® beschrieben.

4.2 Settings

The control unit has many setting options which cover almost all customer needs. Everything from language selection via the booting program to the display varieties can be configured. The organisation of the settings is clearly explained in the menu. The following diagram shows how the settings are managed.

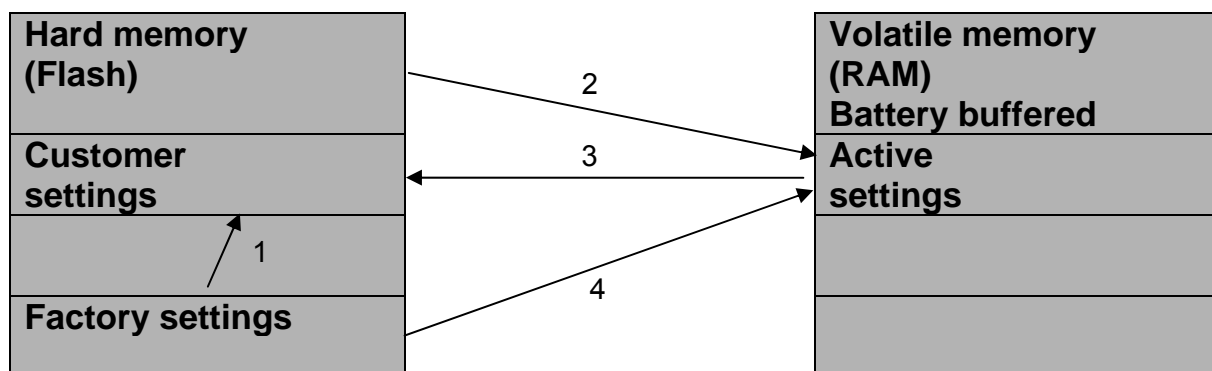


Figure 20 Settings Management

1. Before the first use, all customer settings are set to the same value as the factory settings.
 2. At the first startup, (Cold Start), all the customer settings are copied to the active settings. With the command "**\Settings Control\Customer Settings**", all saved customer settings are copied again to the active settings during use. Changes to the settings which have been made up to this point are reset.
 3. With the command "**\Settings Control\Save Customer Settings**", the active settings are permanently saved to the Customer Settings. This function ensures that the control unit restarts in the configuration defined by the customer even after a battery change.
 4. With the command "**\Customer Settings\Factory Settings**", the active settings are overwritten again by the factory settings. The factory settings are selected so that they are suitable for as many users as possible. The default language is English.
- The Target/Lane Number (subnet address) of the control unit is not reset to 1 by the factory settings.

4.3 Filters

The filter settings are accessible via the following path:
"\System\Settings\Other\Filter":

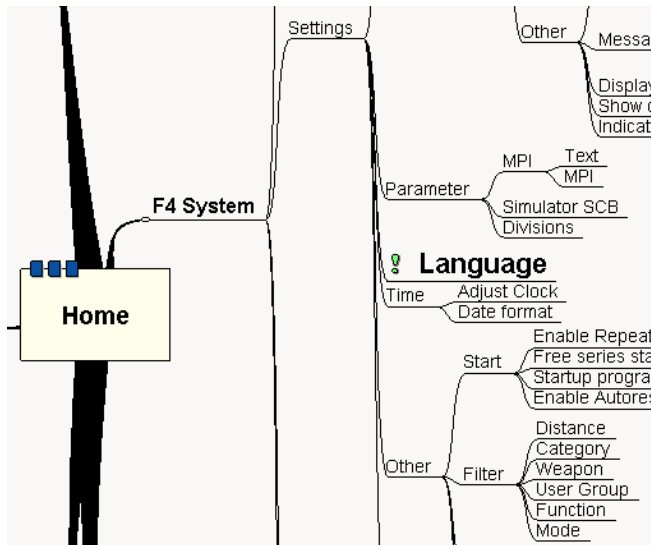


Figure 21 Filter Settings Path

The functionality of system 7 is very comprehensive. In contrast to previous versions, System 7 covers several types of installation. It can be used for sport shooting as well as for hunting. Often, a user only wants to use one part of the functionality. The filter functions were developed so that usage via the keyboard (menu) can be restricted to just this one part.

The filter function can be explained more easily using distances as an example. In the control unit, programs for distances of 10, 25, 50 and 300 metres are available. If a control unit is permanently installed in the 50 metre range, however, it makes no sense for the user to be able to select the 10 metre and 300 metre options as well. A filter makes it possible to filter out the distances which are not needed.

An extract from the menu is shown below in unfiltered format:

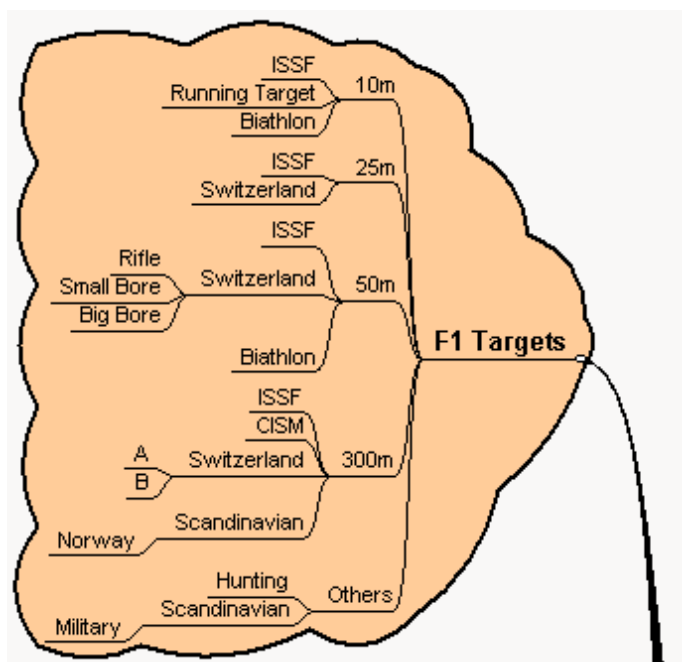


Figure 22 Unfiltered Menu

Under "**SystemSettings\OtherFilter\Distance**" the 50 metre Distance can be set explicitly. All other distances are automatically masked. It is also possible to filter out more than one distance. All the unset distances are masked. The menu in our example is reduced to:

If you press **F1** in the Home directory, you will be taken directly to 50m, because only one single choice is available in the "Targets" directory.

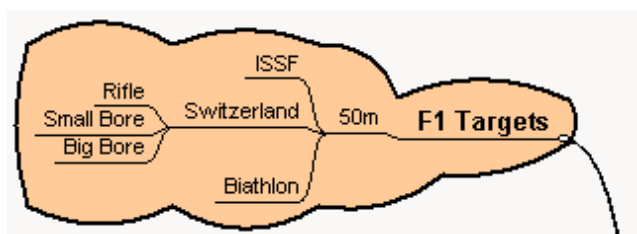


Figure 23 Filtered Menu

The 50 metre ISSF programs can now be accessed with one button less.

In the same way, other criteria can be filtered: In addition to the distance, the Category (ISSF, CISM, SUI, etc.) the Weapon Type (air rifle, air pistol, rifle, pistol) and Functions Group can also be filtered. User Groups are also accessed with a filter. If the "Standard" User Group is selected, fewer functions can be used compared to when the "Expanded" user group is set. Only the "Administrator" can make changes to the hardware configuration and certain analysis functions are reserved for the "SIUS" user group.

The control unit does not have its own user database as is common with many computer systems.

4.4 Program Types

The programs available in the control unit can be divided into four types.

Program Typ	Meaning
Free Series	A free series can be shot for each target image.
Fixed Programs	Frequently used shooting programs are saved as Fixed Programs.
User Programs	With the SIUS barcode library, several outcomes can be programmed for each target picture. These User Programs can only be loaded on to the control units with a barcode scanner or via a PC.
Match	The official ISSF Matches follow additional rules.

Table 12 Program Types

The functions of the specific program types are explained in more detail below.

4.4.1 Control Menu

The control menu contains different commands depending on the program type selected and the system status. The general commands which are often or are always visible are explained first. An explanation of the individual commands is given under the corresponding program type.

Command	Function
"\Zoom"	The profile of the target graphics is enlarged.
"\Print Screen"	If a printer capable of graphical images (Thermo Printer D941) is connected to the system, the current screen content can be printed out as a graphic.
"\Repeat"	"Repeat" only becomes visible if the program is stopped. The previously selected program can be shot once again using " Control\Repeat ".
"\Other\Abort"	A running program can be stopped with " Control\Other\Abort ". The program is summed up and can no longer be continued. An abort also occurs if a new program is loaded whilst another is running.
"\Other\Insert zero Shot"	For installations without a shot sensor, it can be useful and necessary to manually record any shot which has totally missed the target as a zero.
"\Other\Clear Target window"	The image of all the shots that are represented in the target window is erased. The shots themselves, however, remain in the system and continue to affect the shot result.
"\Other\Clear Lists"	The list window can be erased manually using this command. The previously printed results remain valid.

Table 13 General Control Menu Commands

4.4.2 Targets (Free Series)

In a free series, the number of shots that can be fired should not be fixed in advance. The firer himself can trigger group totals or position totals. In this way, the desired programs can be shot. The control unit cannot prescribe the outcome however. This type of use is therefore

particularly suitable for skilled users who are very familiar with the device and the programs available for shooting.

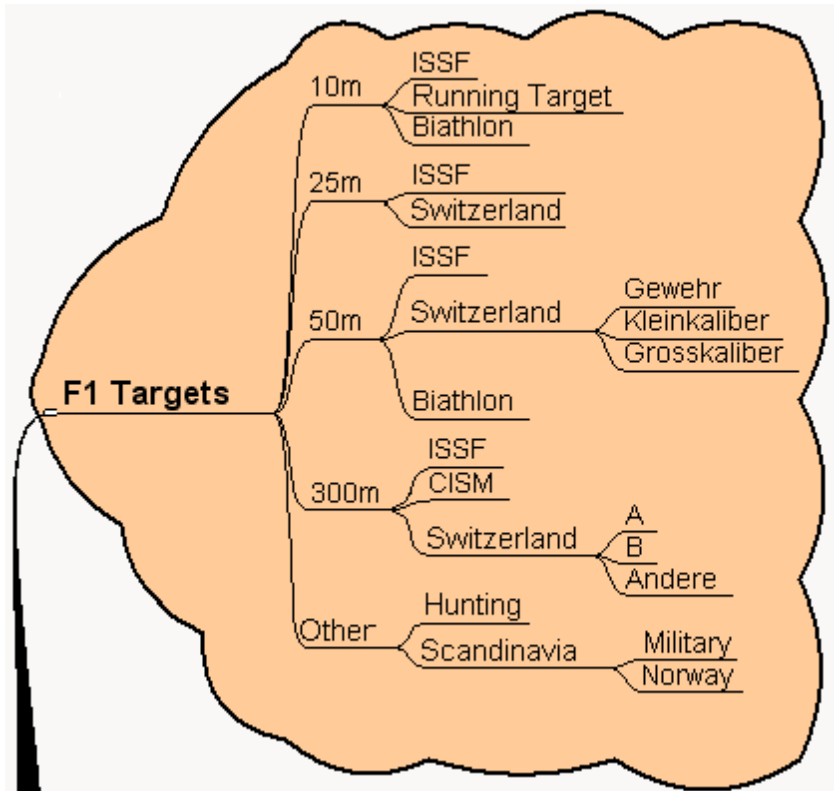


Figure 24 Free Series

Free series are selected via the target image. The target images are stored in the menu according to the distance and the category and this is how they can be called up. After a free series has been selected, the progress window displays the following:

P- S-D-

Figure 25 Free Series Progress Window

The three letters stand for the three different fire types that are available. Under "P", sighter shots can be fired. The shot values of sighter shots are not added to the overall total. Pressing the "**Shot by shot**" key switches over to "S". Shots are shown immediately after each individual shot. In contrast, series shots under "D" (deferred) are only shown when a series group has been concluded or when the "Show" command is explicitly carried out. The hyphen '-' shows that this is an open group. As many shots as desired can be shot. The following commands can be carried out in a free series:

The following commands can be carried out in a free series:

Command	Function
"\Match"	The Match button on the match unit (RC941) switches from "Sighters" to "Shot by Shot", from "Shot by Shot" to "Deferred" and back again to "Sighters".
"\Sighters"	Each free serie starts with sighter shots. Sighter shots are marked with "P". The shot values are not added to the overall total.
"\Shot by Shot"	A new single shot group can be started using " \Shot by shot ". This is also the case if a single group has already been shot. The previous group is summed up and a new group is opened. Thus, a match with 60 shots can be divided up into six groups of ten for example.
"\Total" (Practice Total)	A practice total sums up all the shots since the last practice total or since the start of the program. Several "Shot by Shot" and/or "Deferred" groups can therefore be added together. Shooting can then continue. In a position match, the practice total can be used as a position total.
"\TOTAL" (Match total)	The match total sums up all the shots of the program and ends the program that is running. The status window changes to "Stop".
"\Deferred"	A new series group can be started using " \Deferred ". If this means that a series group in progress will be stopped, this is automatically flagged up before further shooting can take place.
"\Show"	The shots from a series group that have yet to be shot can be called up from the memory using " \Show ". The series group is not ended automatically.
"\Score"	In position matches, a one tenth score is usually used for the final. Insofar as a secondary score exists for the chosen target image (e.g. one tenth rings), pressing the " \Score " command replaces the primary score with the secondary score and the secondary score drops out. If the "Score" command is pressed again, this process is reversed. If a shot is fired in one-tenth score in a program, the total is also given with a decimal point.

Command	Function
"\Other\ Next Primary Score	The primary score can be removed without affecting the secondary score. There are some target images which have more than two possible score methods. In Germany for example, it is customary to operate with a partial score. If a free series is selected and thereby a target image, the most common score is selected first. The firer can subsequently select a different score. .
"\Other\ Next Secondary Score	Just as the primary score can be altered with " Wext Primary Score ", the secondary score can also be altered using " Wext Secondary Score ".

Table 14 Free Series Control Menu Commands

- Alterations to the score method whilst a program is running should be avoided. Program totals are generated which are added together using the various scores.
- The score methods of a free series must be checked after a repeat procedure and should be reset to the correct values if necessary.

4.4.3 Fixed Programs

Fixed programs are stored in the control unit's involatile memory. A fixed program prescribes the order of the shooting groups. The control unit ensures that the planned order is adhered to. Fixed programs are particularly widespread in Switzerland. In the first versions of the Sius scoring systems, only fixed programs were available. The options with fixed programs go way beyond the possibilities of user programs. In a fixed program for example, the exact course of the program, the printout and all other settings can be automatically altered, even during the course of the program. The classic example is the Swiss federal program which prescribes a precise print format. This print format cannot be altered by the user.

The progress window during this fixed program looks like this:

P- S5P-S5 D2 D3 D5

Figure 26 Fixed Program Progress Window

An open "P" sighters group permits any number of sighter shots. Five single "S" shots are shown as having been requested. The federal program will subsequently change the target image from A5 to B4. On the B4 target, sighter shots may be shot again. Thereafter, five single shots are shown followed by a 2, a 3 and finally a 5 series deferred. The currently active section of the program is shown in inverse font.

Fixed programs can only be supplied by Sius AG. A new fixed program requires a new program version on the control unit.

Command	Function
"\Subtotal"	"\Subtotal" serves to close off open groups (the "P" group in the example above) and go to the next group. If the last group in a program is an open group, the program can be ended using "\Subtotal" .

Table 15 Fixed Program Control Menu Commands

- Groups in a fixed program cannot be omitted if a fixed number of shots is required. If shooting is taking place without a shot sensor, then it may be necessary to manage failed shots manually ("**\Other\Insert zero shot**").

4.4.4 User Programs

User programs can be created with the PC software BarcodeLibrary or in SiusData®. That way, individual outcomes can be defined. It is also possible to compile a user program, in which the target image changes during the course of the program. However, it is not possible to change other settings directly with the barcode of the user program. If a program requires a particular expression, it must be installed separately. Via barcodes, user programs can be installed from SiusData® or from the keyboard of the user control ("**Control\Other\Edit Barcode**").

4.5 Special Disciplines: 25 meters

All 25-metre disciplines are pistol disciplines. They are distinguished by being time-controlled and being shot with a light signal and Time Control Units (TCU). Malfunctions are handled according to detailed ISSF rules. Allowed and nonallowed malfunctions can occur. Depending on the discipline, the groups that have been shot are repeated (standard pistols) or subsequently completed (sport pistols) after such weapon malfunctions. In the event of such malfunctions, the rule summaries also establish the procedures according to which the shots to be evaluated must be selected. On the control unit in 25-metre disciplines, an additional directory entry "**\Control\Malfunction**" appears on the control menu.

4.5.1 Centre Fire – and Sport Pistols

For center fire and sport pistol discipline the following commands are to be used:

Command	Function
"\Fill series"	Is not used.
"\Allowable"	Writes an entry in the log (event memory) so that the decision is traceable.
"\Non- Allowable"	Also writes an entry in the log and inserts a zero (NAM – Non-Allowable Malfunction) into the series.
"\Calculate Series"	Is not used..

Table 17 Malfunction Center Fire and Sport Pistols

4.5.2 Standard and Rapid Fire Pistols

The following commands are to be used for standard and rapid fire pistols:

Command	Function
“\Fill series“	Must be printed if a weapon malfunction occurs on the first shot of a series. The series is filled out and must subsequently be recorded, with one of the following commands, as to whether it was an allowable or non-allowable malfunction.
“\Allowable“	Writes an entry in the log and causes the last group to be repeated.
“\Non - Allowable“	Writes an entry in the log and causes the last group to be repeated. On a later calculation, a zero (NAM – Non- Allowable Malfunction) is included in the total as a penalty.
“\ Calculate Series“	With "\Calculate Series", a malfunction is closed off. The shots in question are demarcated and added together as the series total.

Table 18 Malfunction Standard and Rapid Fire Pistols

In the rapid fire pistol discipline (ORF – Olympic Rapid Fire) , shots are fired from one spot onto five targets lying close together. The program only needs to be installed on one of the five control units (Master). The four neighbouring lanes (Slaves) are automatically set for the program. The division into groups of five occurs in the same way. The lanes 1 to 5; 6 to 10; 11 to 15 and so on each form a group. All entries must be served by the Master.

4.6 Timer

With version 7.3a a timer has been integrated. If active it is displayed in the title bar. The following three variants are available to control the Timer:

- Control Unit
- PC
- All ISSF-Matches (except 25m-disciplines) incorporate a Timer which is activated or disabled through the Setting “Programed Timer“.

4.7 Communication

The various devices (control unit, LON Measurement Electronic System, SCB and PC) are connected together via a LON field bus. The devices can communicate with each other via this communications network. The LON Measurement Electronic System transmits the raw data to the control unit so that the control unit can calculate the value of shot and enter it correctly into the current program. This is the most important connection. Without communication from the control unit to the LON Measurement Electronic System, shooting cannot be recorded. The control unit communicates a failed connection to the LON Measurement Electronic System with the "OFFLINE" signal.

As well as the shots, the control unit also communicates other information to the Scoreboard (SCB) and above all to the PC, so that the data from all lanes can be collated and evaluated.

So that the network does not become overloaded, the network is divided into various segments in larger installations with several lanes. The cabling requirements and the installation of routers are described in the installation and maintenance introduction.

In terms of operation, it is important that the devices can be spoken to via an address which is divided into a subnet address and a node address. The node address is defined by the devices themselves. All devices belonging to one lane must be set to the same subnet address (target number). This happens either via an LNR box (lane number) and the corresponding rotary switch or by means of settings and programming such as for the control unit (See "**SystemHardwareControl UnitSubnet**" and "**SystemHardwareTarget-Connect**").

The devices can recognise whether the partner being spoken to is present. Communication with the SCB is attempted. If the SCB does not respond, the communication channel is reduced to a minimum. If the SCB is subsequently turned on, it can take a couple of minutes before it is recognised by the control unit. The content of the SCB is correctly incorporated in the next shooting program at the latest.

5 Maintenance

5.1 Reports

5.1.1 Settings

The settings report has been reduced so that only those settings which differ from the factory settings need to be reported.

<pre> Settings Target/Lane 57: Target Changer: B4 A Filter (Activated): Shoot Type: Free Series Cardinal: Demo (On) Shot Sensor (Off) Language (English) Subnet (57) LongCard: Shot Number.....156944 Weapon Number.....0 Own Shot.....0 Cross Shot0 Missed Shot.....0 Demo Shot.....8 Invalid Shot.....0 Manual 0'er.....0 Shot Counter Test...0 String: Firer Name..... Nation..... Reset Date.....26.1. 13:06 </pre>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Report from the CU941 with the Subnet address 57</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>The B4 target image was reprogrammed to shaft "A" ("B" is the standard)</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>The "Shoot Type" filter has been activated. A free series has been selecteted (The Shoot type filter is an internal filter witch cannot be altered by the user)</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>The "Language" setting has been set to English.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>The firer number and the shot counter are used as settings. They are not saved as customer settings however.</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p>The firer name and the "Reset Date" of the shot counter are used as text settings. They too are not saved as customer settings.</p> </div>
--	--

Printout 1 Settings Report

When a control unit is fully set according to the user's wishes, it is useful to print out the settings report and file it. A control unit that has been repaired or exchanged for example can be reset to the desired configuration using this report

5.1.2 Shot Report

The shot report can be used for settling up. The individual shots are described in detail in the shot report.

Shot Report Target/Lane 57:

26.1. 16:50 - 26.1. 17:31

12 Own Shot
1 Cross Shot
2 Missed Shot
8 Demo Shot
0 Invalid shot
1 Manual zero
4 Shot counter Test



Shooting events between 16:50 and 17:31

Printout 2 Shot Report

The problem of cross shots and missed shots is discussed in more detail in (Chapter 6.9 Shot Sensor and 6.10 Mechanical Shot Counter).

5.1.3 Program Settings

Under "**SystemMaintenance\Reports\Settings**", in addition to the normal settings reports, the "**Settings\Program**" report can also be printed. Various programs can of themselves affect settings. The "**Settings\Program**" report lists the active settings for the chosen program. It is particularly useful in terms of troubleshooting.

5.2 Log

The internal log saves all the incidents which may be needed for documentation purposes and for possible system restoration following an interruption to the power supply. Each incident is detailed on at least two lines. In the top line, the time of the incident is given in hundredths of a second. In the second line, the incident class and a textual description are printed. In the case of shots, the coordinates of the position of the shot are documented in another line.

The most important details of a log printout are explained below:

<pre> Log Report Target/Lane 57 1-26-2004 16:54:05 Version/Release: Main Main V7.1e Final 26.6.2004 13:01 HIC=8002 PIC=606 Lon=2.0b Size 49152:48 Free 47994 13:06:14.12 DiagnosticE Log erased () 13:06:16.60 DiagnosticE Monitor started () 13:07:09.05 Program... Start:Target: 57 (1) Targ 13:07:09.54 Practice...Start: 13:07:09.99 Group..... Start: 13:07:08.72 Shot..... 1 B 8 !P X: -17.65 Y: 4.76 14:51:19.19 Group..... Stop: 14:51:42.26 Shot..... 1 B 10*! X: -2.31 Y: 2.55 14:51:42.25 Shot..... 2 C 10 ! X: -4.57 Y: -2.70 14:51:43.69 Shot..... 3 L 10 ! X: -7.32 Y: 0.44 14:51:43.87 Shot..... 4 D 9 ! X: 4.05 Y: -11.24 14:51:54.69 Shot..... 5 C 9 ! X: -10.12 Y: -11.05 14:52:03.38 Group..... Stop:Subtotal 48 Subtotal 48 </pre>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Subnet address of the CU941 and printout time</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Software- and hardware versions of the CU941</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Amount of memory used by the log and the number of log entries.</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Available log memory</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Diagnosis entry</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Program start – produced when the first shot in the program is fired</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">1st shot event in the program</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Start of the 2nd group</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">* inner Ten</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">! Demo Shot</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">X. / Y: Coordinates in millimetres</div> <div style="border: 1px solid black; padding: 5px;">Conclusion of the 2rd group</div>
---	---

Printout 3 Log Printout

5.3 Target Test

The target test provides software and hardware versions as well as information about the LON Measurement Electronic System which is set to the same target number as the control unit from which the target test is triggered.

```

Target Test Target/Lane 57 28.1.2004 13:39
HIC=0 TIC=0 PIC=12
Light Signal=Not connected
Temperature=27.0 °C
Version/Release 2.0d
Mix=0
Time difference=-60 ms
Running target=Disconnected
    
```

Printout 4 Target Test

The significance of the various values is explained in the following table:

Variable	Value	Description
HIC	Hardware version of the LON Measurement Electronic System	
TIC	Target Index Code	
	0	LON Measurement Electronic System without target
	1	S10-LON
	2	S25/50-LON
	3	25-LON
	4	S110-LON
	5	S310-LON
	6	S305-LON (Keiler 100m Scheibe)
	7	Deltabar 100-LON
	8	Deltabar 128-LON
9	S101-LON	
Variable	Value	Description
MIX	Mounting Index	
	0	Normal
	3	Mounted upside down
	5	Back to front
	7	Upside down and back to front

Table 19 Target Test Data

The PIC is a hardware version descriptor and "Version\Release" is a software descriptor of the LON Measurement Electronic System. The time difference is measured from the time the LON Measurement Electronic System has sent the target test to the time the control unit evaluates the target test. A time difference of less than 100 milliseconds is normal. Greater differences indicate an incorrect time synchronisation.

6 Devices

6.1 Scoreboard (SCB)



Figure 28 Scoreboard

The scoreboard is suitable as a display for spectators, particularly in larger halls. Some installations can display the name, nation and start number of the firer as well as the shot values. The last ten shots are normally displayed along with the group and position totals and the overall total. With System 7, the scoreboards can also be used in free series or user programs.

So that the control unit can drive the scoreboard, the scoreboard must be set to the correct target number (subnet address). The target number can be set with the rotary switch at the back of the unit. Only values between 1 and 253 are permitted. The target number is only taken over when the SCB is switched on. After a change of address, the SCB must be switched off and on again.

After the power supply to the scoreboard has been interrupted, the scoreboard is automatically synchronised with the control unit. Older versions of the SCB software can not synchronise to the control unit automatically in that case the control unit has to be restarted after the scoreboard. After it has been switched on, the SCB displays the following three pieces of information on the right hand side:

Number	Meaning
127	The node address is 127. This is an internal part of the SCB address.
7	The middle number shows the target number set on the SCB by means of a rotary switch at the back.
103	The bottom number gives the software version of the SCB.

Table 20 Meaning of the Numbers on the SCB after Switching On

- So that the scoreboard can be used, the following setting
- **"\System\Hardware\SCB\Active"** must be set at the start of a program. If this setting is turned on during a program, the scoreboard will only be supplied with information from the next program onwards

6.2 LON-Measurement Electronic System (LME)

The LON Measurement Electronic System has the following components. The components can be found via the Target Test. ("**System\Maintenance\Self Test\Target Test**").

Component	Version Examples
Altera (FPLA)	PIC=12
Hardware	HIC=0
Target code	TIC=0
LON Software	2.0d

Table 21 LON-Measurement Electronic System Components

The LON Measurement Electronic System must use the same target number (subnet address) as the control unit belonging to it. The target number can be programmed from the control unit. This procedure is described in (Chapter 2.2 Connect Target) or in the "*Appendix to the System 7 User Manual*" under "**System\Hardware\Target\Connect**".

Alternatively, targets can be fitted with an LNR Box or a LNR Print. In this case, the programming takes place via the control unit.

6.3 LNR-Box (Lane Number Box)

Both the LON Measurement Electronic System and the control unit can, on certain installations, be fitted with LNR Boxes or LNR Prints. An LNR Box or a LNR Print simplifies addressing and thus the interchange of devices.

The LNR Box and the LNR Print supply the devices with a fixed target number (subnet address). The LNR Boxes are designed so they can be left at the point of shooting or where the target is fixed. When the control units have to be moved for some reason, re-addressing does not have to be undertaken at the new installation thanks to the LNR Boxes. At system startup, the control unit and the LON Measurement Electronic System take their address again from the LNR Box to which they are connected and are automatically set correctly.

The control units and the LON Measurement Electronic System would otherwise have to be numbered and placed in exactly the right place again to prevent cross-configuration of the lanes.

6.4 Time Control Unit (TCU)



Figure 29 Time Control Unit (TCU)

The Time Control Unit directs the red and green phases of certain sport disciplines. The relationship between the red and green phases can be individually chosen. The number of phases can also be set. The red/green signal is directly fed in by the LON Measurement Electronic System. The LON Measurement Electronic System highlights its shot reports to the control unit with the corresponding information. The control unit decides on the basis of the program whether the shots should be evaluated.

- The cabling should be handled with care as incorrect wiring can damage the control units!

6.5 Computer (PC)

A normal PC can be connected to the LON network via an "LON Dongle". There are several software products available which have been developed for use with control units.

Product	Area of Uset
Barcode Library	Setting user programs. Catalogue of barcodes for the control unit.
SIUSDATA®	Collecting shot results from a number of lanes, controlling and overseeing a contest and setting user programs.
SIUSRANK®	Startup and ranking program for international contests
LONORG®	Network diagnosis and download software.
SIUSLANE®	Control unit software for the use of a detection system.

Table 22 PC-Software Overview

6.6 Printers (D93, D941)

Both the D93 (matrix printer) and D941 (thermal printer) printers are controlled in the same way. The printouts are identical the only exception is the screen print. The D93 is a dot matrix printer and therefore does not support graphics. Screen prints are ignored on the D93.

Both printers can display 40 characters per line. The D93 matrix printer performs better at very cold temperatures and when copies of printouts must be produced. Print rolls that are perforated in the middle are available for the D93. With the two column print format, double printouts can be produced directly.

6.6.1 Self Test

An internal self test can be launched by holding down the **LF** key (Line Feed) while the power supply is switched on. The quickest way to check the connection from the control unit to the printer is to press the **Help** key on the control unit. The telephone numbers for Sius AG and the current program versions are displayed on the printer. It is possible to use both printers at the same time

6.6.2 Date Buffer

Each printer stores the data that is yet to be printed in a data buffer. When the printer is switched on but has been turned "OFFLINE" due to a paper jam or for any other reason, the data buffer continues to fill with data until it is possible to print again. The data buffer is set to store approximately 500 lines of text. If the printer is unable to take any texts for a longer period of time, data is lost. The data buffer is cleared immediately when the printer is switched off. This does not affect the entries made in the internal log. Thanks to the internal log, a failed program printout can be created again using the "**System\Reports\Reprint**" command.

6.7 Barcode Scanner (BCR Reader)

See (Chapter 4.1.2 Barcodes)

6.8 Control Unit (CU941, Control Unit, Handheld, ME)



Figure 30 CU941 Control Unit

The control unit (CU931 or FPE06) contains the main data processor for each electronic scoring system. Various software programs exist (System 7, USA versions) which can be loaded onto these devices. The use of the "System 7" version is described in this user manual. Other software versions are not explained in the manual.

6.8.1 Components

Component	Version Examples
Print (Print Panel)	Rev3
Altera (FPLA)	PIC606
Hardware	HIC8002
LON Software	2.0b
ME-Software	System V7.0i
Bootstrap-Loader	1.0e

Table 23 Control Unit Components

The LON Software and the Control Unit Software can be loaded with the LONORG® PC Software. This function is not yet available for the bootstrap loader software. The Altera version can be altered by changing an integrated circuit chip.

The above information is printed out on the connected printer when the **Help** key is pressed.

6.8.2 Startup Functions

Aufstartvariante	Beschreibung
Cold Start	<p>A cold start occurs when the contents of the volatile memory (RAM) are lost. This happens when the buffer battery can no longer supply sufficient power to the control unit. A cold start can be forced by pressing the reset button at the back of the control unit with a sharp object (with a paperclip for example) when switching on. The reset button is located inside the casing. It can be reached via the upper of the two small round openings next to the video socket (This button cannot be reached on the handheld version because it has a waterproof casing).</p> <p>During a cold start, the settings are reset to the customer settings and the contents of the log are erased.</p>

Warm Start	<p>A warm start is carried out when the contents of the volatile memory (RAM) have not been lost.</p> <p>During a warm start no settings are changed. The control unit will reproduce any unconsumed programs with the "Recovery" function.</p>
------------	---

Table 24 Startup Types

6.9 Shot Sensor (SAB, C88)



Figure 31 Shot Sensor

The shot sensor for the control unit recognises cross shots (shots from the neighbouring lane onto the own target). The shot sensor informs the control unit when a shot has been fired from a weapon. This message opens a time window. Within this time window, a "Shot On" report must be received from the target. If this message is not received, the firer has not hit his own target and receives a shot with the "Missed" comment. If a "Shot On" message is received without a "Shot Off" having previously been detected, a neighbouring firer has fired on your lane. Such a shot is known as a "Cross Shot" and is displayed in the target window with the cross shot symbol.

The shot sensor is an optional device. It is automatically recognised if it is plugged into the control unit. When it is unplugged, the control unit will work automatically without a shot sensor after a short period of time. A symbol in the target window indicates that a shot sensor is connected. See (Chapter 3.2.1 Display Overview – Target Window).

6.10 Mechanical Shot Counter



Figure 32 Mechanical Shot Counter

The mechanical shot counter is designed so that optimal maintenance can be carried out. The mechanical shot counter counts the number of shots fired per target. This enables the wear and tear on the rubber targets to be calculated. As frequent calculations on the number of fired shots have to be made, the precise functioning of the shot counter is important. The following table shows which shot incidents are counted and those which are not counted (See "**!System!Reports!Shot Counter**").

Shot sensor configuration („-“ = Off; „X“ = On)							
Shot Off Signal (optional shot sensor on control unit)			Shot On Signal (LON Measurement Electronic System)				
			Mechanical Shot Counterr				
			Ownshot				
			Cross Shot				
			Missed Shot				
			Remark				
-	-	-	-	-	-	-	No shot
-	-	X	X	X	-	-	Valid shot without shot sensor
-	X	-	-	[a]	-	-	Shot sensor is switched off but reacts nonetheless
-	X	X	X	X	-	-	Shot sensor is switched off but reacts nonetheless
X	-	-	-	-	-	-	No shot
X	-	X	-	-	X	-	Shot on without shot off à cross shot
X	X	-	X	X	-	X	Shot off without shot on à miss
X	X	X	X	X	-	-	Valid shot with shot sensor
Signal			Effect				

Table 25 Shot Occurences and their Effect

Neighbouring Targets

If a shot is fired from a target with a shot sensor to a target without a shot sensor, the shot is counted on both lanes.

Illegal Shot

Whether a shot is marked as illegal has nothing to do with the detection of the shot. A shot is illegal if no practice has yet been started or when further shooting takes place after a completed practice ("STOP", "SHOW", "PAUSE" phases).

Demo Shot

A demo shot is triggered by the ***Ins*** key provided the equipment is set to "Demo". Demo shots are requested by the LON Measurement Electronic System (from software version 1.2f onwards, demo shots are already recognised as such by the LON Measurement Electronic System in the communications bundle). Demo shots are counted separately. They do not trigger a counting impulse on the mechanical shot counter.

[\[a\]](#) When the shot sensor is switched off, a Shot-Off signal does not trigger a counting impulse (mechanical shot counter). This prevents crosstalk from the shot sensor of a foreign target being included in counting.

[\[b\]](#) For possible shot calculations, it is better if the Shot-Off and not the Shot-On are counted. When the shot sensor is working correctly the number of fired shots can be read directly off the shot counter. The shots can be evaluated better still with the shot report ("**System\Reports\Shot Counter**"). For maintenance purposes, cross shots are counted as having hit the wrong target, in accordance with the above model. The number of cross shots is small however.

6.11 Remot Control (RC941, RC-ZOOM)



Figure 33 Remote Control (RC941)

The Remote Control RC92 can be connected to the control unit. It is intended for the firer so that the most important commands can be given without having to leave position. A simpler version is the RC-ZOOM add-on device. This only has a **Zoom** key.

6.11.1 Zoom Key (Enter)

The **Zoom** key enables the outline of the target to be enlarged, as previously described in the chapter on usage.

6.11.2 Menu Key

If the "**SystemHardwareRC92Match Menu**" setting is turned on, the **Menu** key enables the "control menu" to be shown as a list window directly on the monitor.

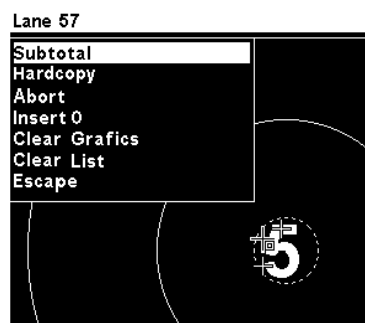


Figure 34 Match-Menü

The **Menu** and **Match** keys enable the selection in this window to be moved upwards and downwards. When the correct command has been selected, the **Enter** key (**Zoom** key) can be used to confirm the command. If no action takes place, the "Cancel" command must be carried out. The menu is immediately faded out if any other occurrence (e.g. a shot or an error message) takes place.

6.11.3 Match Key

In addition to the navigation functions described above, the **Match** key has a particular function during an ISSF position match. Pressing the **Match** key enables the firer to switch from sighters to match individually. He can switch back to sighters provided he has not yet started shooting in the match. This function can be carried out via the RC92 (match unit) or on the control unit. After exceptional sighting shots, the firer can return to the usual program via the **Match** key. In free series, the **Match** key can be used to scroll through the types of fire.

7 Appendix

7.1 Separate Document

The menu with the abbreviations which appear on the LCD, as well as the detailed description of all barcodes, are to be found in a separate document, the "Appendix to the System 7 User Manual".

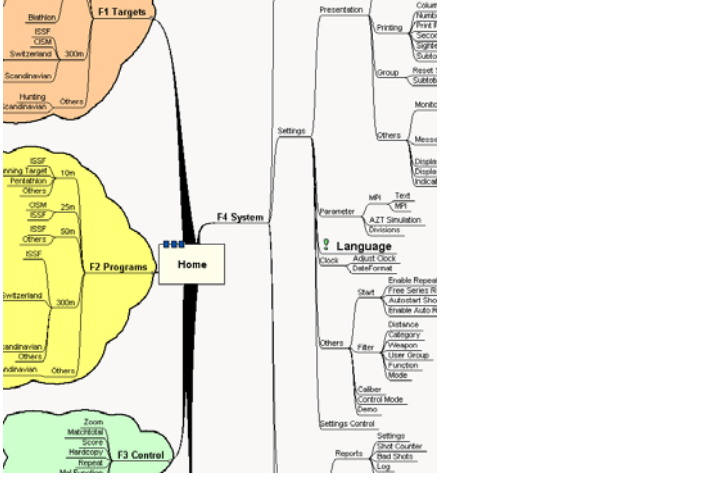





Content	Extract																																													
Menu																																														
Abbreviations	 <p>Shortcuts</p> <table border="1"> <tr> <td>1</td> <td></td> <td></td> <td>Cal</td> <td>Displ</td> </tr> <tr> <td>10</td> <td>Moose</td> <td>14, 15</td> <td>Carb</td> <td>Carb</td> </tr> <tr> <td>3</td> <td></td> <td></td> <td>Catg</td> <td>Cate:</td> </tr> <tr> <td>3*10</td> <td>Rifle 3*10</td> <td>21, 31</td> <td>CFP</td> <td>Cent</td> </tr> <tr> <td>3*20</td> <td>Standard Rifle 3*20</td> <td>21, 22</td> <td>CGaS</td> <td>Clea:</td> </tr> <tr> <td>3*40</td> <td>Free Rifle 3*40</td> <td>21, 22</td> <td>Cham</td> <td>Char</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Clas</td> <td>Clas:</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Clck</td> <td>Clocl</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Clmn</td> <td>Colu:</td> </tr> </table>	1			Cal	Displ	10	Moose	14, 15	Carb	Carb	3			Catg	Cate:	3*10	Rifle 3*10	21, 31	CFP	Cent	3*20	Standard Rifle 3*20	21, 22	CGaS	Clea:	3*40	Free Rifle 3*40	21, 22	Cham	Char				Clas	Clas:				Clck	Clocl				Clmn	Colu:
1			Cal	Displ																																										
10	Moose	14, 15	Carb	Carb																																										
3			Catg	Cate:																																										
3*10	Rifle 3*10	21, 31	CFP	Cent																																										
3*20	Standard Rifle 3*20	21, 22	CGaS	Clea:																																										
3*40	Free Rifle 3*40	21, 22	Cham	Char																																										
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			Clck	Clocl																																										
			Clmn	Colu:																																										
Barcodes with description	 <p>Programs</p> <p>10m</p> <p>ISSF</p> <p>Air Rifle 40 </p> <p>Air Rifle 60 </p> <p>Air Pistol 40 </p>																																													

Table 26 Contents of "Appendix to the System 7 User Manual"

7.2 Frequently Asked Questions (FAQ)

- Why can't a particular command or a particular directory be accessed via the menu?

The use of filters can mask menu areas. Ensure that you have set your filters for your own requirements.

- How can the installation be checked?

*In Demo mode, shots can be requested from the LON Measurement Electronic System by means of the **Insert** key. In this way, communication to the LON Measurement Electronic System and the functioning of the control unit are largely tested. Demo mode can be turned on and off under "\System\Settings\Other\Demo". The current setting is shown in the status window.*

- The control unit remains on "OFFLINE" and shots are not shown in the program that is switched on.

The control unit cannot communicate with the LON Measurement Electronic System. Check the power supply to the LON Measurement Electronic System and the target number configuration. Check the wiring and reconnect the LON Measurement Electronic System (Chapter 2.2 Connect Target) if necessary.

- The control unit always starts up in English.

The settings, including language selection, are saved even when the power supply is interrupted. They are only lost if the buffer battery is insufficient. The control unit shows this in the list window after the startup process and reports during the startup process by three beeps. Check the buffer battery and replace it if necessary. Save your settings as customer settings.

- How can commanded shooting be controlled from a shooting stand?

The control units can be remotely controlled with the SIUSDATA® PC software. All the control units that are connected can be controlled and configured using this software.

7.3 Short Explanations

<i>Item</i>	<i>Description</i>
Control Unit CU941 / Handheld	The control unit contains the computer system of a Sius electronic scoring system. The number 913 indicates the generation of the unit.
Cross Shot	If a firer shoots onto a neighbouring target, a cross shot can be indicated on the neighbouring target. A Miss (0'er) is printed on the own target. This recognition only operates in conjunction with a shot sensor.
Foreign Shot	See Cross Shot.
Free Series	In the main "Target" directory, all the available target images can be selected. This not only selects the target image but also a free series with this image. A free series is a flexible program type.
Group	A group is a program unit which contains a number of shots that must all be shot with the same type of fire. A program usually consists of several groups. A program usually begins with a group for sighting shots, followed by one or several groups.
LME	See LON Measurement Electronic System.
LON Measurement Electronic System	Print plate which is inserted into all LON Measurement Electronic Systems.
Match	A match is a shooting program which runs according to certain rules. The match is used particularly in ISSF disciplines. A match permits various positions and the individual use of sighting shots before each of these positions.
ME	Measuring Electronics; old synonym for control unit.
Passe	Passe is a term used in Switzerland and is another term for "Group".
Program	See Shooting Program.
Target Error	See Cross Shot.
Target Number	See Subnet Address.
Shooting Program	Generic term for "Free Series", "Fixed Program", "User Program" and "Match".
Short Introduction	A short introduction was created as a separate document. Various short introductions exist for the most important programs and commands for various standard configurations.
Stich	Stich is a term used in Switzerland and is another term for "Shooting program".

Item	Description
Subnet Address	The subnet address of all components on one line (lane, "target") must all be set to the same subnet address so that the devices can communicate with each other. The subnet addresses are usually the same as the target numbers.
User Program	A user program is a shooting program which can only be installed using a Barcode Scanner. With the Products Barcode Library and SiusData®, individual user programs can be installed and printed out. The target image and the program progress can be set with a user program.

Table 27 Short Explanations

Index of Illustrations

Figure 1 Minimal Cabling.....	7
Figure 2 Screen Display after First Startup	8
Figure 3 Connect Target Function.....	9
Figure 4 Connect Target	9
Figure 5 LON Measurement Electronic System with Service PIN.....	10
Figure 6 Target Connected	10
Figure 7 Screen Layout.....	14
Figure 8 Target Image.....	15
Figure 9 Shot Sensor Symbol and Cross Shot Symbol.....	16
Figure 10 Shot Window	16
Figure 11 List Window.....	17
Figure 12 Practice Progress Window	18
Figure 13 Statistic Window.....	18
Figure 14 Selection Window.....	19
Figure 15 Status Window	19
Figure 16 Titel Bar.....	20
Figure 17 Funktion Key Bar.....	20
Figure 18 Menu Navigation	22
Figure 19 Barcode Scanner	24
Figure 20 Settings Management	25
Figure 21 Filter Settings Path.....	26
Figure 22 Unfiltered Menu.....	27
Figure 23 Filtered Menu	27
Figure 24 Free Series.....	29
Figure 25 Free Series Progress Window	29
Figure 26 Fixed Program Progress Window	31
Figure 27 Match Progress Examples (3*40 Rifle)	33
Figure 28 Scoreboard.....	41
Figure 29 Time Control Unit (TCU)	43
Figure 30 CU941 Control Unit.....	45
Figure 31 Shot Sensor	46
Figure 32 Mechanical Shot Counter.....	47
Figure 33 Remote Control (RC941)	49
Figure 34 Match-Menü	49

Index of Printouts

Printout 1 Settings Report	37
Printout 2 Shot Report.....	38
Printout 3 Log Printout.....	39
Printout 4 Target Test.....	40

Index of Tables

Table 1 Sius AG Addresses	4
Table 2 Typographics Conventions	5
Table 3 Devices	6
Table 4 Minimal Cabling (Connections)	7
Table 5 Set Barcodes Subnet on control units	11
Table 6 Set Language Barcodes	12
Table 7 Program Examples	13
Table 8 Shot Attributes	18
Table 9 Status Overview	19
Table 10 Status Overview 2	20
Table 11 Keyboard Functions	23
Table 12 Program Types	28
Table 13 General Control Menu Commands	28
Table 14 Free Series Control Menu Commands	31
Table 15 Fixed Program Control Menu Commands	32
Table 16 Match Control Menu Commands	33
Table 17 Malfunction Center Fire and Sport Pistols	34
Table 18 Malfunction Standard and Rapid Fire Pistols	35
Table 19 Target Test Data	40
Table 20 Meaning of the Numbers on the SCB after Switching On	41
Table 21 LON-Measurement Electronic System Components	42
Table 22 PC-Software Overview	43
Table 23 Control Unit Components	45
Table 24 Startup Types	46
Table 25 Shot Occurrences and their Effect	47
Table 26 Contents of "Appendix to the System 7 User Manual"	50
Table 27 Short Explanations	53

Index of Key Terms

A		Function Key	22
Appendix	50	Functions Group.....	27
B		Funktion Key Bar	20
Barcode- Library.....	43	H	
Barcodes	24	Handheld	6
Brightness Control.....	7	Help.....	23
C		Home.....	22
Category.....	27	I	
Center Fire Pistol.....	34	Illegal Shot.....	48
Center score.....	15	Inner-Ten.....	17
Centre fire.....	34	Insert	23
Cold Start	45	K	
Communication	36	Keyboard	21
Communication Cable.....	7	L	
Connect.....	8	Language	12
Contact.....	4	Layout.....	14
Control Menu.....	28	List Window	17
Conventions	5	LNR Box.....	42
Coordinates.....	17	Log	39
Cross Shot.....	16, 47	LON.....	42
CU941	6	LON Measurement.....	6
Customer Settings.....	25	LONORG®	43
D		M	
D93.....	6	M94	6
D941	6	M941	6
Deferred	30	Maintenance.....	37
DEMO.....	20	Malfunction.....	34
Demo Shot	17, 48	Manual.....	4
Devices.....	6	Master	35
Display Overview.....	14	Match.....	33
Distance	27	Match Key	49
E		Mean Point of Impact	16, 18
Enter.....	23	Measurement Electronic.....	42
Escape	22	Menu Key	49
F		Missed Shot.....	47
Factory Settings	25	Move Down	23
Filters.....	26	Move Up.....	23
Firer Number	19	MPI	18
Fixed Program.....	31	N	
Flag	17	Next Primary Score	31
FPE06	6	Next Secondary Score	31
Frame-Hit	17	Next Window	23
Free Series.....	28		

O	SHOW	19		
OFFLINE	Sighter Shot.....	17		
Olympic Rapid Fire.....	Sighter triangle	15		
Option.....	SIUSDATA®.....	43		
ORF.....	SIUSLANE®.....	43		
Own Shot.....	SIUSRANK®	43		
	Slave	35		
P	Sport pistole	34		
PAUSE	Starting up.....	8		
Position.....	Statistic Window	18		
Power Supply	Status Window	19		
Power switch	STOP.....	19		
Printers	Subnet Address.....	8, 11		
Progress Window	Subtotal	32		
	Synchronised.....	13, 19		
R				
Rapid fire pistol.....	T			
RC941	Target Catalogue.....	13		
RC-Zoom.....	Target Name	15		
READY	Target Number	20		
RECOVERY	Target Test.....	40, 42		
Remote Control	Target Window	15		
Repeat.....	Time Control Unit	43		
	Timer	35		
S	Total	30		
S10	TOTAL.....	30		
S25/50				
S310	U			
SAB	User Group.....	27		
Score method	User Program	32		
Scoreboard.....				
Selection Window.....	V			
Service-Pin	Version	39		
Set Discipline.....	Video Cable.....	7		
Settings				
Short Explanations	W			
Shot by Shot.....	Warm Start	46		
Shot counter	Weapon Type	27		
Shot Number				
Shot Report	Z			
Shot Sensor.....	Zoom	16, 49		
Shot Window				