



Monitor SDU

User Manual

KM Part No: UM 0097 99 0039_02
18th of May 2006



www.kme.no

This user manual explains how to start up and use the Monitor and the Signal Distribution Unit (SDU).

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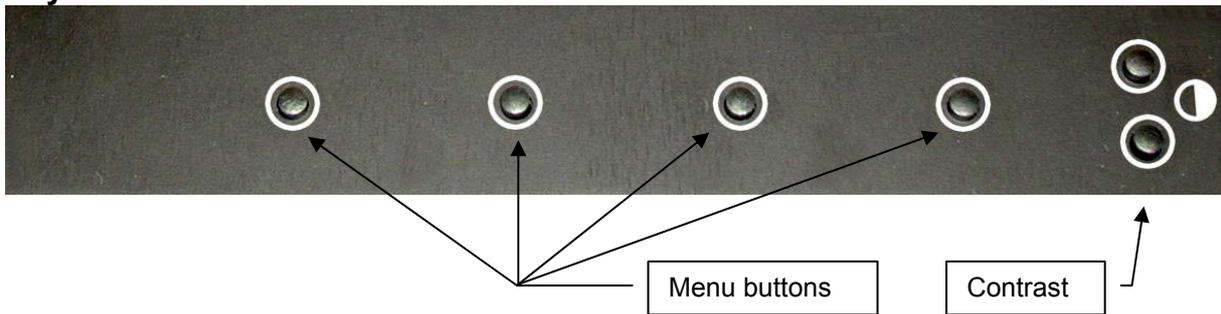
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1. THE MONITOR



Keyboard



Smart-card

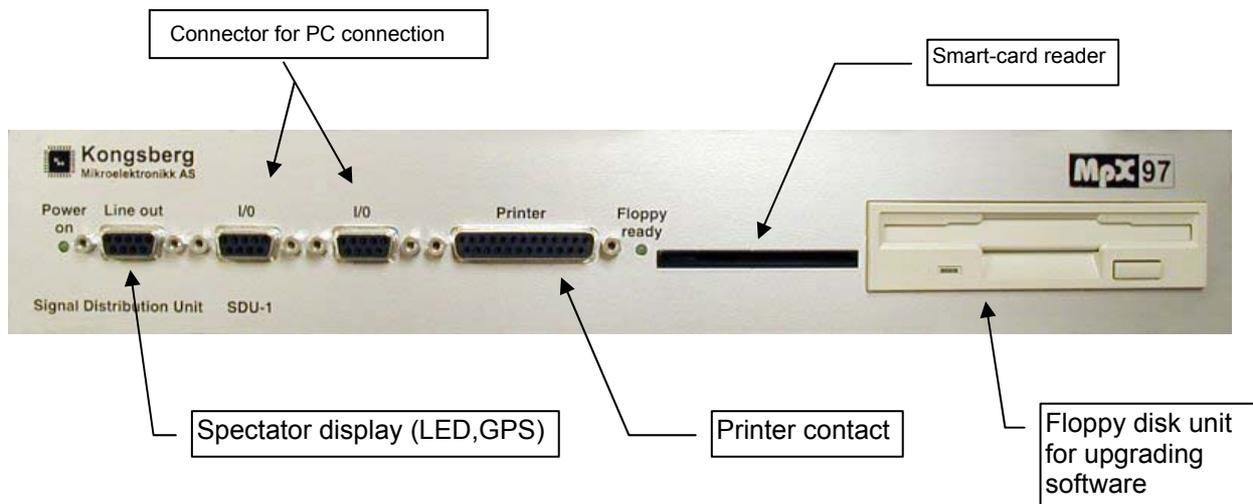


The Smart-card is inserted in the slot on the right side of the display. Make sure that the contact points are turned towards the back of the monitor.

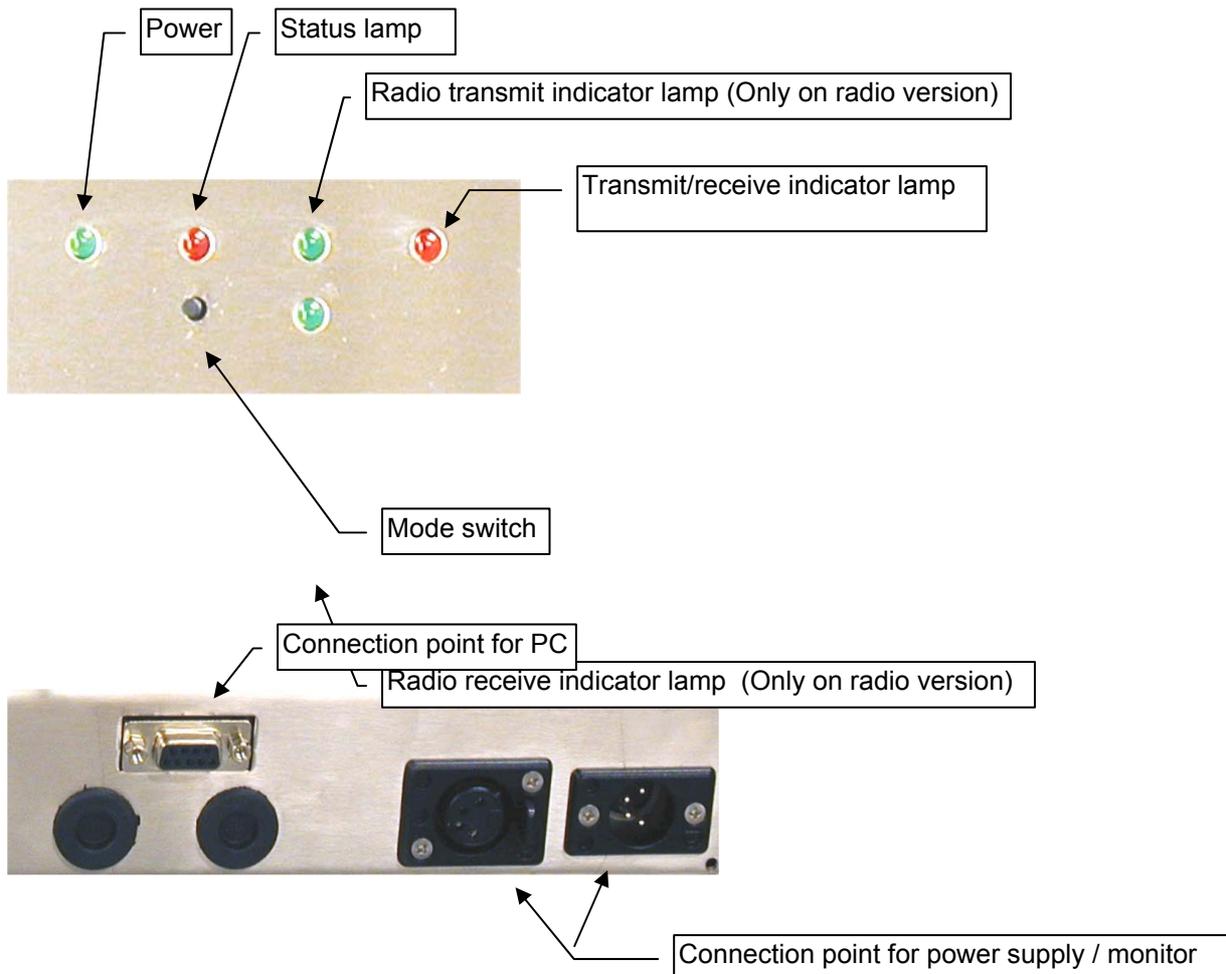
2. SIGNAL DISTRIBUTION UNIT (SDU) MODELS

We have two different models of the SDU.

2.1 The SDU-1 Model

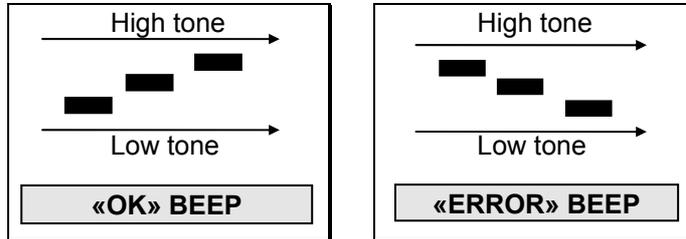


2.2 The SDU-2 Model



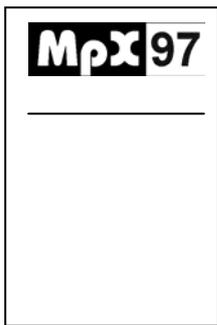
3. ERROR CODES

To indicate errors or correct operation, beeping sounds are used both on the Monitor and Signal Distribution Unit (SDU). Each signal consists of three tones at different tone levels. An OK signal is three short tones in an ascending order. An error signal is three short tones in a descending order.



In addition there is a beep signal for serious error that prevents the program from continuing. It will beep a number of times equivalent of the error code that has arisen. The beep-signal will repeat itself after a short pause. Count the number of beeps and contact the vendor for assistance.

4. SMART-CARD



There are two types of smart-cards:

- User-Card
- Installation-Card

The shooting range receives one Installation-Card. This card is kept by the system administrator. With this card, advanced setups can be done, something the ordinary user won't get access to.

Normally User Smart-Cards are not delivered to the monitors. These cards, programmer and software are delivered when ordered separately.

See *System setup* for how to turn on and off access control with User Smart-card.

5. START-UP

5.1 Power supply

5.1.1 Power model 1



Use the switch to turn the unit on/off.

5.1.2 Power model 2 and 3



This types of power does not have an of/off switch, so the net-cord has to be connected/disconnected to turn the unit on/off. Both units are equipped with self resetting fuses/overload protection.



5.2 The Monitor

The Monitor has no on/off switch, but starts automatically when the power is turned on or the cable is connected. Check the contrast setting if no image appears in the display (it can take up to 30 seconds before the program starts up).

Since there is no on/off switch, there is an added function to restart the monitor without removing the cable or switching off/on the power supply. By pushing the menu button down to the right simultaneously with the menu button down to the left (see picture), the monitor will restart.



At first, when the monitor is turned on, the display light is weak. It will grow stronger as the display heats up. Often the contrast has to be adjusted as the display gets warmer, to secure optimal contrast on the display.

5.3 First time

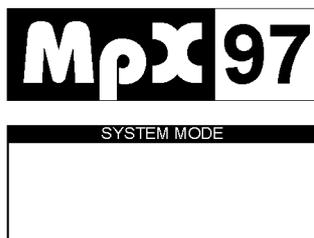
The Monitor and the Signal Distribution Unit (SDU) will at delivery not have any targets programmed and the software will not be the latest version. Enclosed is one or two floppy disks marked "UPGRADE". If there are two floppy disks, they will also be marked 1 and 2. If an existing system is to be expanded the whole system should be upgraded, or there is a big probability that the old and the new units will not work together.

NB!

If there are two floppy disks, it is important to start the upgrading with the disk marked "1".

Follow the directions closely and be aware that the Installation-Card should be inserted in the SDU and not in the monitor.

- Turn off the power to the system and disconnect the monitors.
- When everything is turned off, put the **Installation-Card** in the **SDU**.
- Turn on the power supply.
- Now every monitor has to be started up one by one. When connected, one of the menu buttons must be pushed in and held (it doesn't matter which one it is, but just make sure that it isn't any of the contrast-buttons). While this button is pushed in, turn on the monitor. The button must be held in until the image appears on the monitor display. It will now say "System Mode" on the display. Repeat this start-up sequence on all the monitors.



- When all the monitors say "System Mode" on the display, it is set for the upgrade itself.

- Insert the floppy disk in the SDU.
- Extract and then insert the Installation-Card in the SDU.
- The SDU will now start to read the floppy disk and a message will appear saying "Upgrade in progress" on the monitors. The upgrade might take from 15 seconds to 30 minutes, depending on how much needs to be upgraded.
- When the upgrade is finished, a "Upgrade done" message will be shown on the displays. Make sure that all the displays have this message. If one or more monitors show an error message, these monitors will need to be upgraded again.
- Remove the floppy disk and the smart-card from the SDU and the system will restart.
- If there are two floppy disks, the same upgrade is carried out with floppy disk 2.

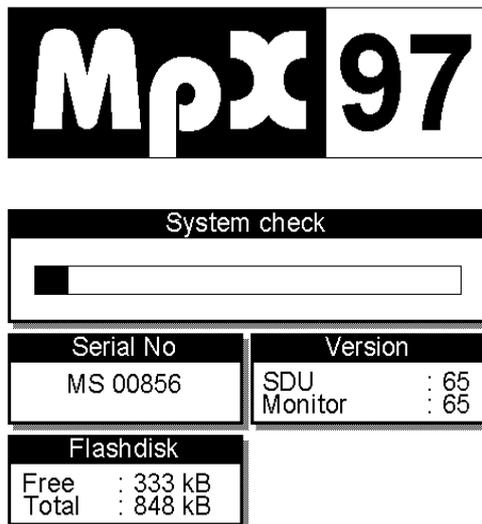
NB!

When the SDU is started up with the Installation-Card in the smart-card reader, it will start up in "System Mode". Same goes for the monitor when a button is pushed in during start up. If only one unit is started up in "System Mode", the units will not communicate with each other.

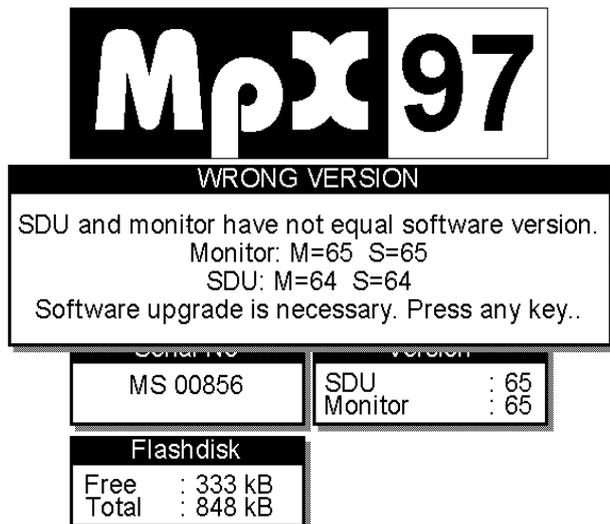
5.4 Normal start-up

5.4.1 System check

The first that happens, after the monitor is turned on, is a system check. This check makes sure that the system units in the monitor are working and that the communication with the rest of the system is working.



If there is different software version on the SDU and the monitor, an error message will appear.



To avoid problems in the communication between the SDU and the monitor, it is necessary to install a version that supports both units. You might use floppy disks that came with the system for upgrade. See "Software upgrade" for upgrading the system software.

NB!

If monitors are borrowed from other installations (other shooting ranges) it may not be the same software version on the two installations. Then the installation with the oldest version must be upgraded before the systems can be interchangeable. A version-conflict must be checked out well in advance before a competition.

5.4.3 Setting the Lane number

After system check, an option for setting the lane number will appear on the monitor.



Setup	
Target No.	1
Date	05 . 02 . 2004
Time	09 : 38

	+	-	Ok
--	---	---	----

+	- Increase target no.
-	- Decrease target no.
OK	- Move on

The lane number can be set from 1 to 99 and must consist with the target number that is set up on the target electronics in the pit. Physical placement of the monitor at the shooters stand has no importance for what lane number is set up.

The lane number will be stored in the monitor. We recommend that each monitor has an assigned place, so you don't have to set up the lane number every time the system is started.

NB!

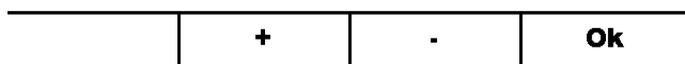
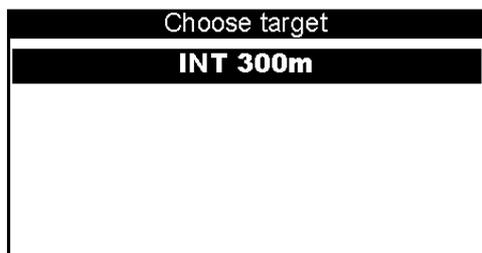
Two or more monitors can **not** have the same target number, except when one or more monitors are set up as slave (See "Monitor system setup").

NB!

Date and time is set up in the monitor system setup. (See "Monitor System Setup").

5.4.4 Choose Target type

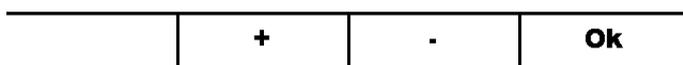
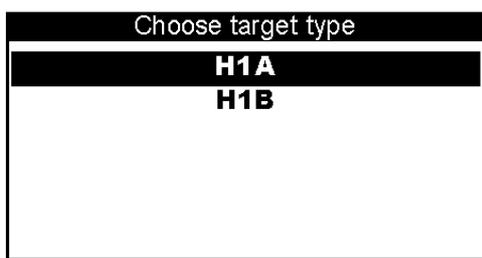
Each SDU contains a target-menu that is unique for each system. Any additional targets-types can be ordered by contacting vendor.



+	- Move up on the list
-	- Move down on the list
OK	- Choose Target type

5.4.5 Choose Target model

If the system has two or more Target-models with the same Target-type, a range of Target models will be displayed.



+	- Move up on the list
-	- Move down on the list
OK	- Choose Target model

NB!

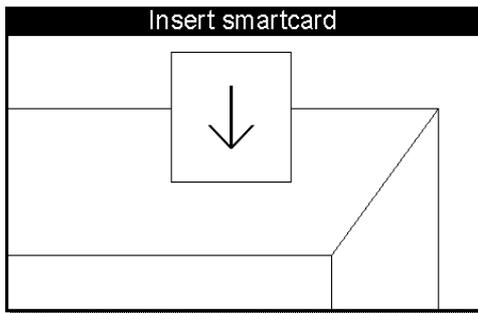
Make sure that the correct Target model is chosen. Even if the wrong Target model is chosen, a hit-point will be calculated - but incorrect.

5.4.6 Getting access to the system

Each monitor can be set up for performing access control or not. If access control is used, each user will need their own smart-card. The access control only applies for training. When control room software (Orion) is used, the access control will not apply. In this case (regardless of access control or not) all the monitors must be started up so they have this Log-On image before the control room software is started.

See “System Setup” to activate or deactivate access control.

5.4.6.1 With access control

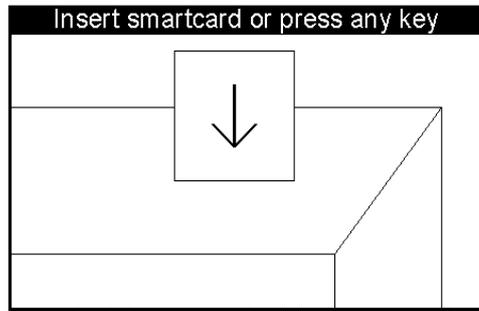


The users must have a smart-card (User-Card) to log on. (if the User-Card has been programmed for a limited number of shots, the number will be counted down for each shot fired. When the card is “empty”, the system will stop marking). If the card is removed or pops out by itself, a warning will be displayed on the monitor when the next shot is fired.



Insert the smart-card to mark off the shot fired, or push a button to disrupt (the shot will not be marked).

5.4.6.2 Without access control



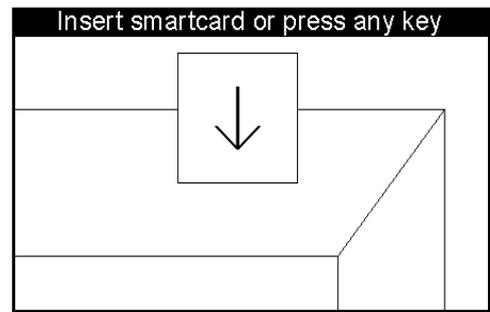
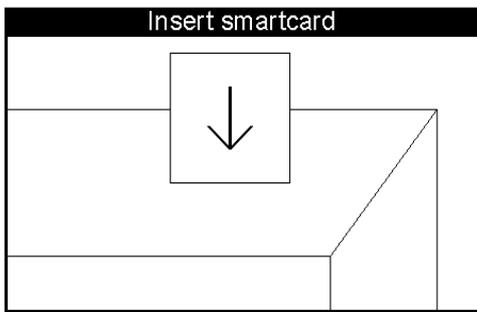
Push a button or insert a User-Card. Even if User-Card has been programmed for a limited number of shots, it will not be counted down during the shooting. All cards have unlimited access.

NB!

To get back to the Log On-window after having logged on, "Menu 3" must be chosen and the "Log off"-choice activated. This applies even if a User-card is used.

5.4 Start-up when certain targets are used.

When targets with integrated target electronic are used (does not have external target electronics) the system should be started normally until:



At this point the system has to “rest” for approximately one and a half minute before further use – i.e. SmartCard is inserted or Orion control room software is started. The reason is that these targets use an extended communication protocol and this “resting period” is used to establish system architecture in the butt. It is therefore also important that the butt is started before the stand.

This “resting period” is not necessary if the monitors proceed to the log-on window without operating the keypad.

Monitors can later be re-started and/or attached without having the “resting period” - as long as the system has been started correctly.

6. TRAINING/PRACTICE

1

1	X.2
2	X.3
3	9.8
4	9.5
5	9.5
6	9.0
7	8.8
8	9.6
9	8.8
10	8.6
8.6	
SUB	89
TOT	0
Xm	-31.1
Ym	13.4

John Ohlsen | INT 300m

MENU 1 | **New series** | **Zoom** | Next 10 shot

Shot no. (1-10)
 Shot value (X.2, X.3, 9.8, 9.5, 9.5, 9.0, 8.8, 9.6, 8.8, 8.6)
 Shot direction compared to target center (indicated by arrows)
 Last shots value (8.6)
 Series sum (89)
 Sum all series (0)
 Average hit point x and y in mm (Xm: -31.1, Ym: 13.4)
 Target type (INT 300m)
 Optional info-field. Here shown with shooters name (John Ohlsen)

Displays menu shown (1-3)
 Menu choice for Menu 1

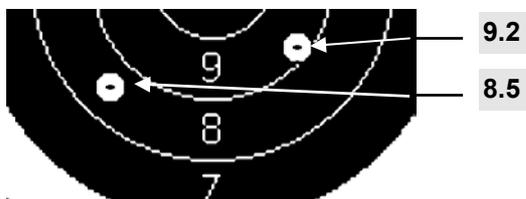
Left button is a menu selector that makes the other three switches changes function. The system consists of three menus (*Menu 1*, *Menu 2* and *Menu 3*).

If personal smart-cards (User-Card) are used, a greeting will be displayed when the card has been inserted. On this greeting, it will also say how many shots are left in the card if it has been programmed for a limited number of shots. If access control is not used, this info will not be displayed.



6.1 Shots value and hit marking

In the column to the right, the shots value is displayed. Each value is divided into 10 levels (the number after the period), where .9 is in the inner rim of the circle and .0 is in the outer rim of the circle. Usually the outer-10 and the inner-10 will be combined on the decimals, so that the outer-10 goes from X.0 to X.4 and the inner-10 goes from *.5 to *.9. The best inner-10 value is *.9.



The following symbols are used to display the shots value:

Symbol	Value of shot fired
1-9	Shot value 1 to 9
X	Outer-10
*	Inner-10

NB!

These values are only valid for the most common 10-divided targets. Targets with other level-dividing and figures have different rules when it comes to decimals and center-hits.

NB!

If "Show shot" is set to "Fixed", there is no connection between the size of the hit-marking (the drawing of the shot) and the gauge that is used for calculating the shots value. The size is selected to give a best possible visual image regardless of the gauge-size. If "Display hit" is set to "Fixed" the visual image of the shot will be displayed in the same size as the gauge – with respect to the target size.

6.2 Average hit point

The average hit point is displayed as a square with a cross in the centre.



The coordinates for the average hit point will be displayed in the lower right corner as Xm and Ym.

Xm	63.4
Ym	47.3

6.3 Menu 1



This is the “Main menu” where the most frequently used functions are.

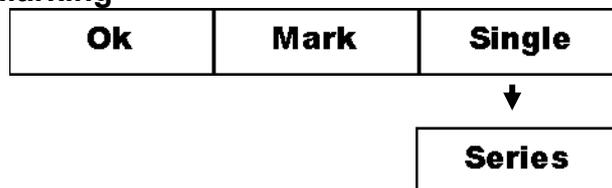
6.3.1 New series

A new menu will appear when “New series” are selected:



In the “New Series” menu, several settings are possible: “Mark shots”, “Sighting shots” and “Position”. Settings are changed with button no. 3 on the display-panel.

Marking



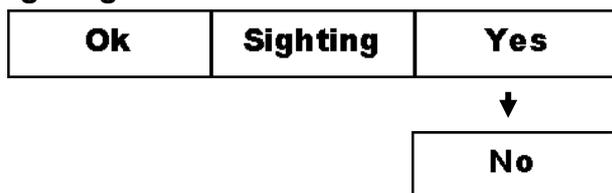
Single Each shot is marked consecutively

Series The shots are marked after the series are shot. When the first shot has been fired, the menu will change to:

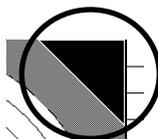


After all shots are fired, one of the buttons is pushed to mark the series.

Sighting shots



Yes The shots will not be summed up and a triangle will be displayed in the upper right corner that indicates test shots.



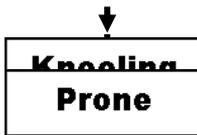
No The shots will be summed up in the sum- and total-field.

NB!

The total value will increase for each counting series. To null out the totals, the monitor must be logged out.

Position





Standing Target with Target-Lift will go to the upper position (standing).

Kneeling Target with Target-Lift will go to the middle position (kneeling).

Prone Target with Target-Lift will go to the lower position (prone).

NB!

If Target-Lift is not used, this option will not have any function.

Finally “OK” is pushed to delete shots and start a new series. If Target-Lift is installed, the Target will go to selected position.

6.3.2 Zoom

The number of zoom-levels will vary from target to target. “Normal” targets will have three zoom-levels.

6.3.3 Next 10 shots

There is only room for 10 shots values in the list to the right on the display. If there are more than 10 shots in the series, this button can be used to select which 10 + 10 shots to show (ex. shots no. 1-10 or shots no. 11-20).

NB!

The Hit-markings will display all the shots that are fired. Use the “Mark series” choice on “Menu 2” to display only the shots that are displayed in the list.

6.4 Menu 2

MENU 2	Mark series	Print series	Save series
---------------	--------------------	---------------------	--------------------

6.4.1 Mark series

The series that is shot will be marked again, with a small pause between each shot.

NB!

It is only the shots that are listed to the right that will be displayed. To display other shots, "Next 10 shots" on "Menu 1" must be used to select the next shots.

6.4.2 Print series

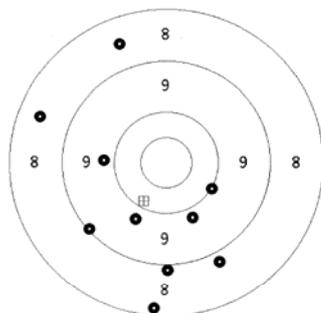
A new menu will be displayed:

Cancel	Last series	
---------------	--------------------	--

Cancel Cancel printing and returns

Last series Prints out the last series

1	Ola Nordmann 07. 02. 1980 21. 33	1/1
---	-------------------------------------	-----



S-S 260
 H 258
 B 172
 X-MID -22.1
 Y-MID -37.9

 TOT 86

 DFS 200m

1	9.8 ←	-59.9	2.4	6	8.4 ↖	-121.3	45.2
2	8.9 ↓	1.6	-104.7	7	8.8 ↘	51.3	-96.3
3	9.8 ✓	-29.3	-55.2	8	8.2 ↓	-12.1	-142.4
4	9.8 ↘	25.2	-53.4	9	X.0 →	43.4	-25.4
5	9.1 ↙	-73.8	-65.2	10	8.5 ↗	-45.8	116.2

Print out example

6.4.3 Save series

A new menu will be displayed:

Cancel	Last series	
---------------	--------------------	--

Cancel Cancel saving and returns

Last series Saves the series in the monitor memory. To save the series on a floppy disk, the shooter must bring a floppy disk and the User-Card to the SDU. On the SDU, the user must first insert the floppy disk, and then insert the User-Card into the Smart-Card reader. When the card is inserted, the series will be transferred from the monitor (or monitors, if the user has used more than one) to the floppy disk. After a while the SDU will give several beeps, to inform that the transfer is finished and the floppy disk and the card can be removed. Just one "Ok"-beep will inform that no series was found.

NB!

The series will only be saved in the monitor and then deleted when the monitor is turned off. So the monitor must not be turned off until the series are saved on a floppy disk.

NB!

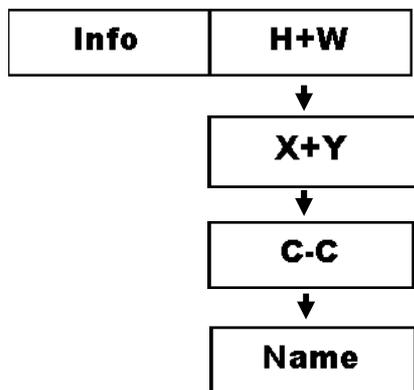
It will not be possible to save series when not logged on with Smart-Card.

6.5 Menu 3



In "Menu 3" there are several settings that can be changed: "Info", "Show shot" and "Target light". What setting to change, is selected with the second key on the display-panel.

6.5.1 Info



On the line above the menu there is an information field where the user can choose what to display.

H+W Height- and width dispersal. The height-dispersal is the distance between the two shots in the series that is the highest and lowest. The width-dispersal is the distance between the two shots furthest to the right and left. Both measures in mm.

H = 221.0 W = 210.0

X+Y X and Y coordinate on the last shot (mm).

Xs = 79.0 Ys = -37.0

C-C Centre-centre dispersal, i.e. the distance between the two shots furthest apart from each other (mm).

C-C = 236.1

Name The shooters name is displayed (programmed into the User-Card)

John Ohlsen

6.5.2 Show shot

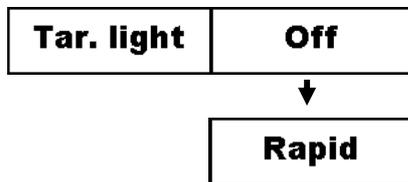


Since the system can handle different calibres, gauges, target types and target models it is possible to choose between two different sizes on the graphical drawing of the shot.

Fixed The shot is drawn up so it is easy to see on all zoom-settings. The drawing of the shot can be both larger and smaller than the gauge. This setting is recommended for targets at 100 meters and up.

Gauge The shot is drawn up with the same size as the gauge.

6.5.3 Target light



On targets with red and green light, a light-sequence can be set up.

Off The light on the target is turned off.

Rapid Light on the target runs according to the rapid-program (7 seconds red and 3 seconds green, that is repeated 5 times). The program starts when "New series" and "Ok" is selected.

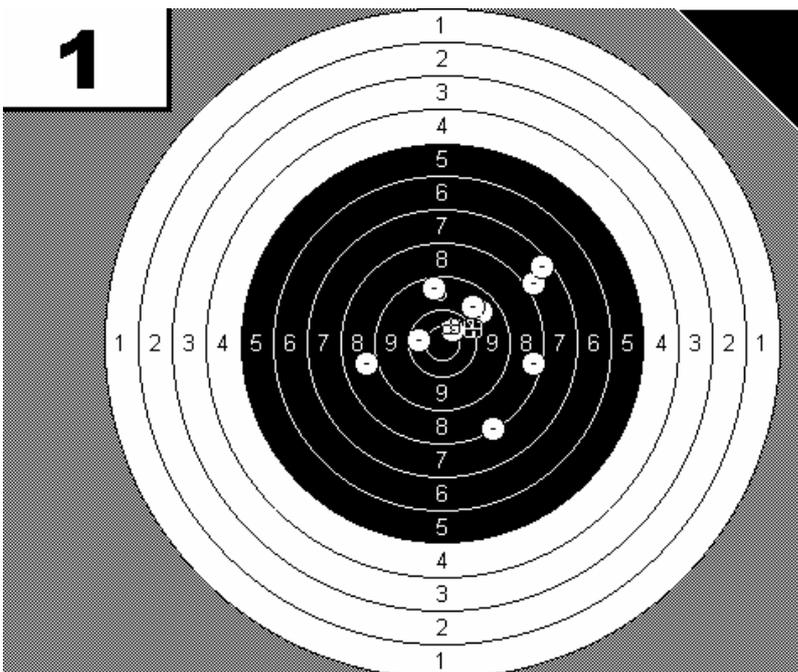
6.5.4 Log off

After having finished shooting, the shooter should log out to make the system ready for the next shooter. Even if not every shooter uses a User-Card, it is recommended to log off to reset the monitor for the next shooter.

NB!
Even if the Smart-Card is removed, the monitor will not log off.

7. CENTRAL CONTROL

1



1	7.8	↗
2	8.7	←
3	*.5	↖
4	8.0	↘
5	X.4	←
6	9.5	↗
7	9.6	↗
8	8.2	→
9	9.4	↕
10	7.3	↗
7.3		↗
SUB	85	↘
TOT	0	↘
Xm	46.6	
Ym	21.6	

John Ohlsen	INT 300m
-------------	----------

Slow
Zoom+
Zoom-
More..

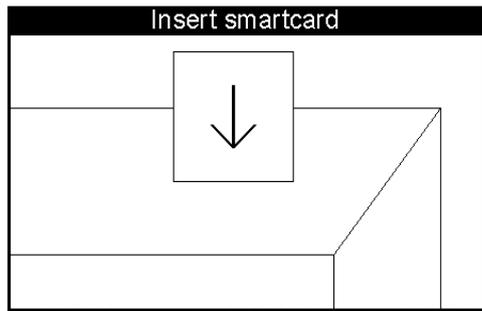
Re-display series	Zoom target	Display next 10 shots
-------------------	-------------	-----------------------

Shot no.
Shot value
Shot direction compared to target centre
Last shots value
Series sum
Sum all series
Target type
Optional info-field. Here shown with shooters name

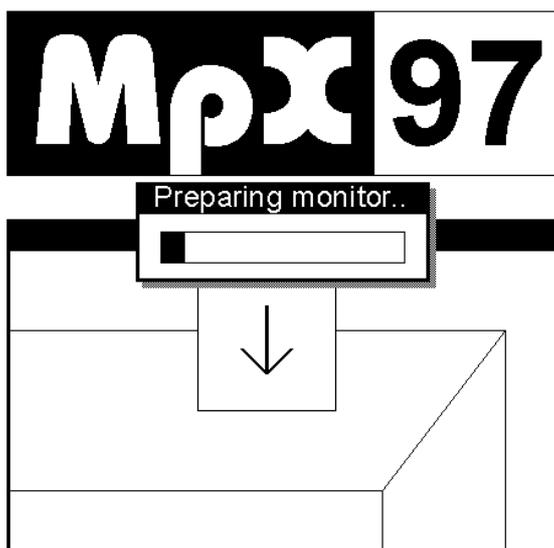
If the control room software (Orion) is used the monitors are controlled from a central PC (Shooters Stand Leader). (See Orion-user manual for more information on this).

7.1 Preparations

When central control is to be used, it is important that all the monitors get a normal start-up (See "Normal start-up"). All monitors shall display the log on picture.



When all the monitors are displaying the log on picture, Orion control room software can be started up. After the System Check has been run on Orion, the monitors will prepare for use.

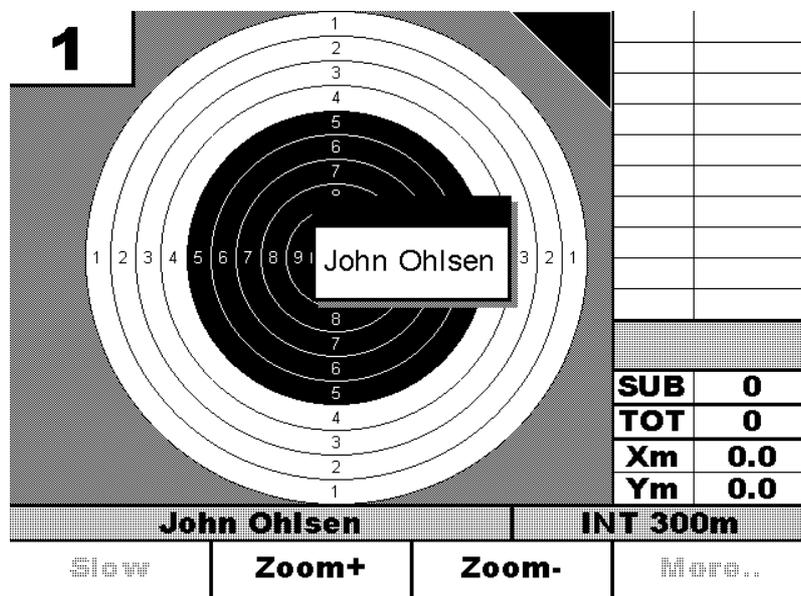


After up to 1 minute preparation, the target image will be displayed on all the monitors.

7.2 Use

The only thing the shooter can do is to zoom the target, re-mark the shots and choose what 10 shots to be displayed. All other options (changing series, test shots, etc.) are controlled by the control room software on the PC.

In Orion it is possible to set up the displaying of the shooters name when a new relay of shooters is loaded.



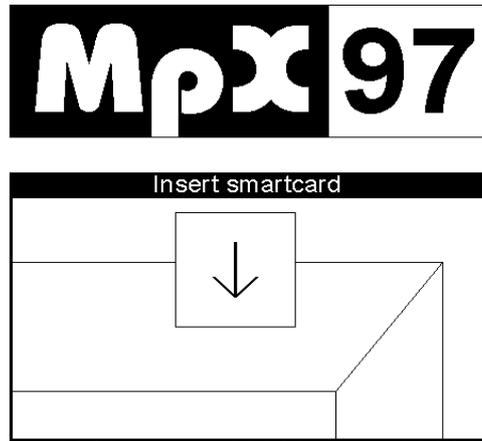
In addition it is set up in Orion what is to be displayed in the information-field and if the position (X,Y) are to be displayed on the average hit point (Se Orion user manual for more information on this).

8. SYSTEM SETUP

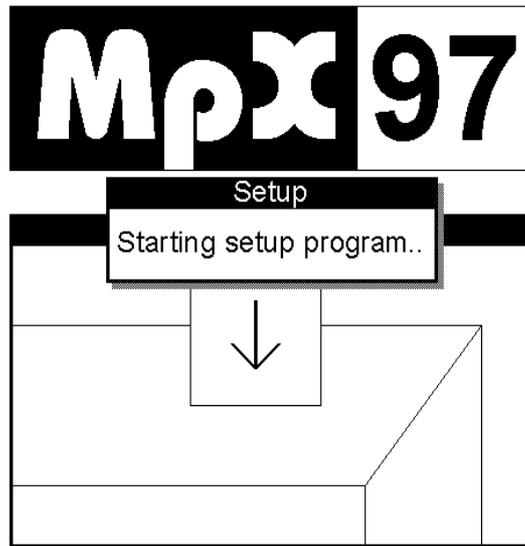
To do some adjustments that the ordinary users shall not have access to; there is a special setup on the monitor. This setup menu is activated by inserting the Installation-card that came with the system.

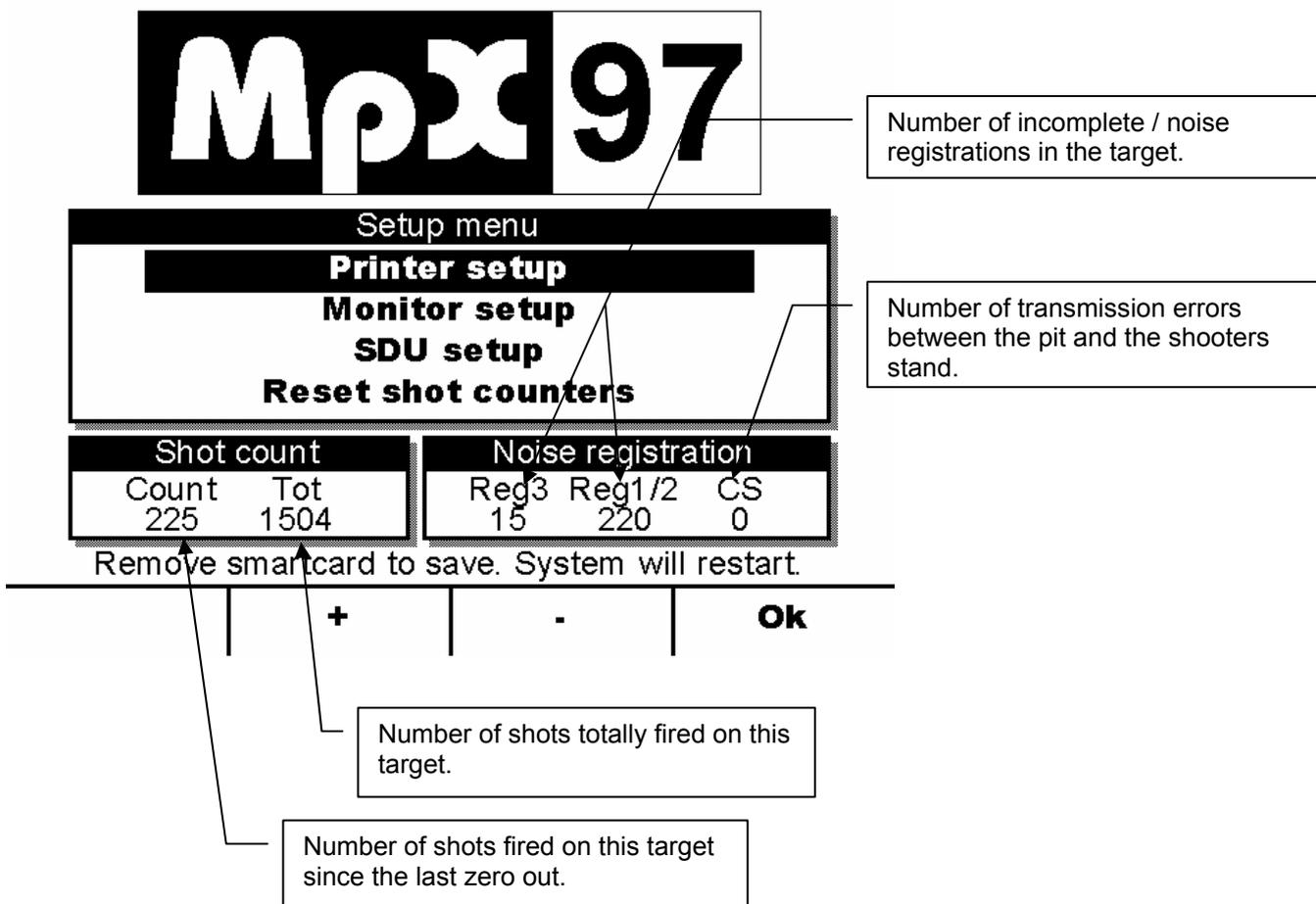
8.1 Start-up

Start up all the monitors as usual so they have the log-on picture on the display.



Insert the Installation-Card in one of the monitors and all the monitors will start up the setup program.





The setup menu will appear on the monitors after a few seconds. It is only on the monitor with the installation-card where all the menu options are valid. On the other monitors it is only options that are special for each monitor that are valid.

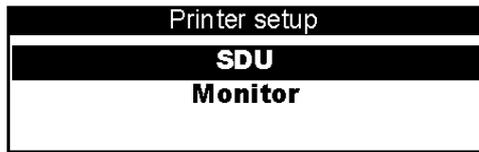
- +** Move marker up
- Move marker down
- Ok** Select/OK

NB!
 The number of shots and the noise registration get stored on the SDU. Therefore it doesn't matter if monitors switch places or are switched between several shooters stands. Be aware that the values will not be correct if the SDU is used on several shooters stands.

8.2 Printer setup

Before printing can be done, the SDU(s) must be set up with correct printer driver. An ordinary DOS PC printer can be connected to the SDU. Windows-based printers can not be used. We recommend using either ink jet printer or laser printer. Because of low printer-speed and low print out quality, we advise against using a dot matrix printer.

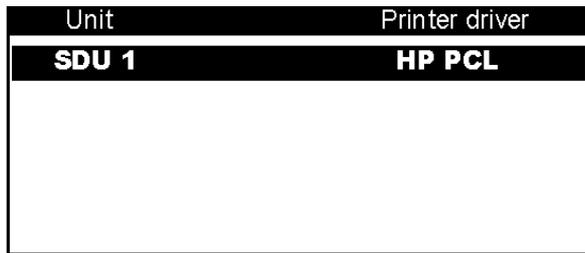
The printer set up has two choices:



Back	+	-	Ok
-------------	----------	----------	-----------

Return	Return to main menu
+	Move marker up
-	Move marker down
Ok	Continue

8.2.1 SDU (Signal Distribution Unit)



Back	+	-	Change
-------------	----------	----------	---------------

Return	Return to printer setup
+	Move marker up
-	Move marker down
Change	Change printer driver

8.2.1.1 Change



SDU	
Driver	HP PCL
Res.	Medium
Printer No.	1

Driver	Res.	No	Ok
Driver		Change driver	
Resolution		Change resolution	
Printer No.		Change printer no. (normally set to 1)	
Ok		Return and store	

Driver

For the printer to function correctly, the right driver must be chosen. You can choose between 4 different drivers. Windows-based printers can not be used.

DRIVER	DESCRIPTION
EPSON 9	Is used by 90% of all dot matrix printers and some ink jet printers.
EPSON 24	Is used by most 24-pin dot matrix printers.
IBM 24	Is used by some 24-pin dot matrix printers.
HP PCL	Is used by 90% of all DOS laser printers and ink jet printers.

Even if the printer is not in the list above, practically all DOS-printers emulate one of these drivers. Check the printer user manual, what driver it emulates. If it doesn't say anything about this, the following drivers are the most common:

DOT MATRIX PRINTER	-Epson 9
INK JET PRINTER	-HP PCL (some Canon ink jet printers uses Epson 9)
LASER PRINTER	-HP PCL

Even if the printer is a 24-pin printer, a 9-pin driver can often be used. This often gives a faster printing.

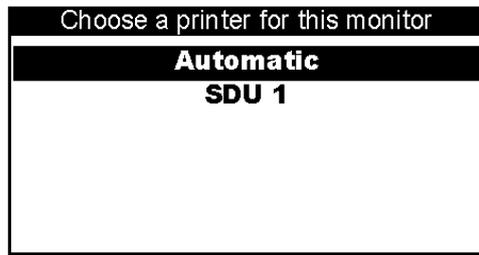
NB!

Some printers that utilize Epson 9/24 driver will not always function correctly because of to little buffer in the printer. It is then recommended to change to a printer that uses the HP PCL-language.

Resolution

It is possible to use three different resolutions on the print-out. These are LOW, MEDIUM and HIGH. Usually MEDIUM is the best choice here. If the printer is a dot matrix printer (EPSON9, EPSON24 or IBM X24), it might be better to use LOW, because it will give a faster printing. HIGH resolution should only be used with a very fast printer.

8.2.2 The Monitor



- | | |
|---------------|-------------------------|
| + | Move marker up |
| - | Move marker down |
| Change | Change monitors setting |

8.2.2.1 Automatic choice

Normally this is the best choice. The monitor then chooses a printer that is available.

8.2.2.2 SDU X (Signal Distribution Unit)

Sets the monitor to print out on an appointed SDU.

8.3 Monitor setup



Monitor setup	
Access control	Yes
Slave	No
Target zero point X	0 mm
Target zero point Y	0 mm
Feeding	0 mm

Next **+** **-** **Ok**

- Next** Move marker to the next setting
- +** Increase/next value
- Decrease/previous value
- Ok** Store monitor setup and return

Each monitor has its own setup that can vary from monitor to monitor.

8.3.1 Access control

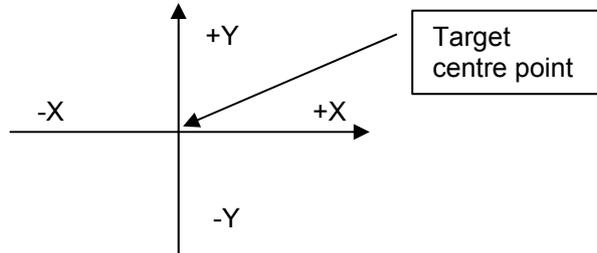
If access control is set up, all users will need a Smart-Card (User-Card) to log on (or a Smart-Card has to be inserted in the monitor at all times). Without access control it is possible to log on without a Smart-Card, only by pushing a key. It will still be possible to log on with a Smart-Card, but if the card has been programmed for a limited number of shots the number will not be counted down.

8.3.2 Slave

Normally, two monitors should not be set to the same lane number. By setting one monitor as a slave, you can do this. The slave monitor will receive the same shot information as the master monitor, but it will not be possible to delete series, activate marking of shots, store and print out. Deleting shots must be done from the master monitor ("New series"), and the same goes for activating the marking of shots.

8.3.3 Target zero point

It is possible to move the electronic centre point of the target with 1mm steps. To do this centre adjustment, the monitor must first be started up in training-mode and the info-field set to display X and Y on the last shot. Put for instance a millimetre-paper on the target where you mark on the paper where the centre of the aiming point should be. Fire a shot and find the shots coordinate on the paper.



Also make a note of the shot's position (X and Y values) given on the monitor. The Target Centre Point (the correction factor) that shall be inserted is calculated with these formulas:

$$\begin{aligned} \text{Target centre point X} &= \text{Monitor X} - \text{Paper X} \\ \text{Target centre point Y} &= \text{Monitor Y} - \text{Paper Y} \end{aligned}$$

Please ensure that the correct sign is displayed for the X and Y coordinates.

NB!

The electronic centre point correction is stored in the monitor, so that if the monitor is moved between several shooters stands, the target centre point should not be set.

8.3.4 Feeding

Setting in mm - how much paper strip/rubber band to be fed for each shot fired on targets with automatic feeding.

8.4 SDU setup



SDU setup	
Date	05.02.2004
Time	13:58
Protocol A	SDU Auto -
Protocol B	SDU Auto -

Next	+	-	Ok
-------------	----------	----------	-----------

- Next** Move the marker to the next setting
- +** Increase/next value
- Decrease/previous value
- Ok** Store SDU setup and return

The SDU setup can be done from the monitor that the installation-card was inserted into.

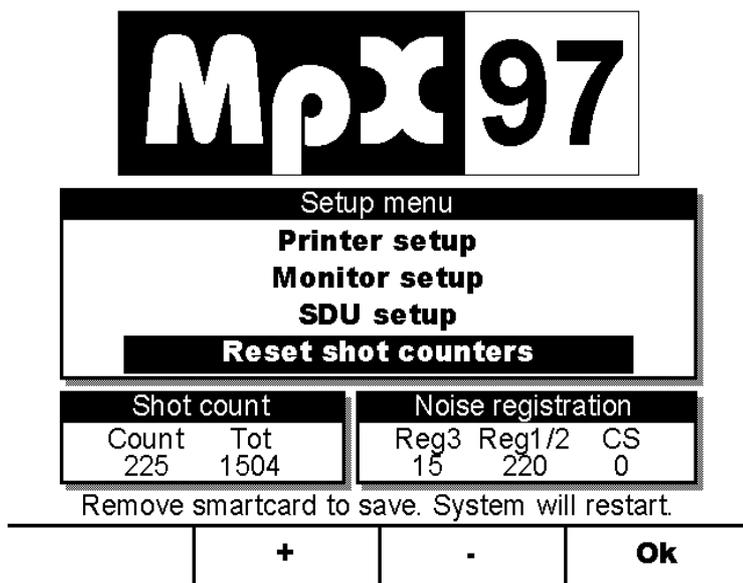
8.4.1 Date / time

All monitors draw date and time from the SDU at start-up. This way all monitors doesn't have change the time-setting for summer-/winter time.

8.4.2 Protocol A and B

“SDU” protocol and “Auto” shall be selected on both channels.

8.5 Delete shot counters



It is possible to delete shot counters and noise registrations, except the total counter. The counters can be used for maintenance purpose.

9. SOFTWARE UPGRADE

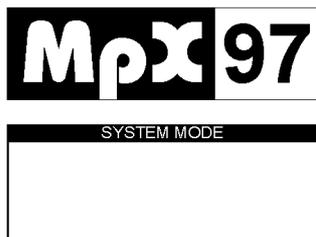
To upgrade the software on the monitor and the SDU, a floppy disk station on the SDU is used together with an installation smart-card (Installation-Card). New software on floppy disks must be available.

Carefully follow the directions below and carry out the instruction in the order it is listed. Be aware that the installation Installation-Card is to be inserted into the SDU and not the monitor.

There are two ways to perform the upgrade: In system mode or from normal start-up. If for instance files are missing during normal start-up, so the monitor does not start correctly, the system **has** to be started up in system mode to be upgraded. Normal start-up will be easier to carry out and is recommended if possible.

9.1 System mode

- Turn off the power to the system and disconnect the monitors.
- When everything is turned off, put the **Installation-Card** in the **SDU**.
- Turn on the power supply.
- Now every monitor has to be started up one by one. When connected, one of the menu buttons must be pushed in and held (it doesn't matter which one it is, but just make sure that it isn't any of the contrast-buttons). While this button is pushed in, turn on the monitor. The button must be held in until the image appears on the monitor display. It will now say "System Mode" on the display. Repeat this start-up sequence on all the monitors.



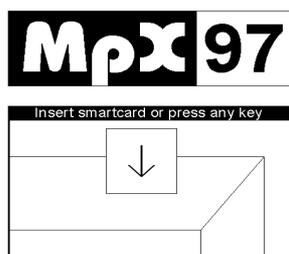
- When all the monitors says "System Mode" on the display, it is set for the upgrade itself.
- Insert the floppy disk in the SDU.
- Extract and then insert the Installation-Card in the SDU.
- The SDU will now start to read the floppy disk and a message will appear saying "Upgrade in progress" on the monitors. The upgrade might take from 15 seconds to 30 minutes, depending on how much needs to be upgraded.
- When the upgrade is finished, an "Upgrade done" message will be shown on the displays. Make sure that all the displays have this message. If one or more monitors show an error message, these monitors will need to be upgraded again.
- Remove the floppy disk and the smart-card from the SDU and the system will restart.
- If there are two floppy disks, the same upgrade is carried out with floppy disk 2.

NB!

When the SDU is started up with the Installation-Card in the smart-card reader, it will start up in "System Mode". Same goes for the monitor when a button is pushed in during start up. If only one unit is started up in "System Mode", the units will not communicate with each other.

9.2 Normal start-up

- Start up the program normally so it says "Insert card" on all the monitors.



- Insert the floppy disk in the SDU.
- Insert the Installation-Card in the SDU.

- The SDU will now start to read the floppy disk and a message saying “Upgrade in progress” on the monitors. The upgrade can take from 15 seconds to 30 minutes, depending on how much is being upgraded.
- When the upgrade is done, it will say “Upgrade done” on the monitors. Make sure all the monitors have this message. If one or more monitor displays an error message, these will have to be upgraded again.
- Remove the floppy disk and then the Installation-Card from the SDU and the system will restart.

NB!

When the SDU is restarted with the Installation-Card in the reader, it will start up in “System Mode”. If the monitors start up normally, they will not obtain contact with the SDU. Remove the Installation-Card and try again.