

ELECTRONIC SPIETH TARGET

Manual

Reserve is made to technical modifications in favour of progress.

Important Instructions

Before installation and initial starting, please read carefully the chapter on design and installation and also the operating instructions.

For perfect functioning of the equipment, it is essential that you consider the information.

Preface

We have the pleasure to welcome you as an operator of ELECTRONIC SPIETH TARGET.

The world-wide triumphal campaign of SPIETH shooting-range equipment has begun more than half a century ago.

The fine quality of SPIETH products is well known all over the world. From 1960 onwards, eight Olympic Games and numerous intercontinental and continental championships have been run with equipment manufactured in Esslingen, fact which means confidence in our products and encouragement for us to realise future projects in line with customers' requirements.

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The experience we have gained during more than 50 years in the field of shooting-sport equipment is quite an essential factor which our customers of all countries of the world have known to appreciate at all times.

ELECTRONIC SPIETH TARGET is outstanding in particular for the many optional accessories to be added such as e.g. for connection of a camera and TV unit to present the spectators a precise image of scores just after every firing.

We do wish you great fun with your ELECTRONIC SPIETH TARGET.

Successful shooting at any time.

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1. Description

The illustration shows various target designs of Electronic Spieth Equipment.

The suitable target for any type of bore is available with various end faces for aiming with direct vision view finder or sight telescope.

- Left: Target for small-bore and any big-bore arms (55x55 cm)
- Middle: Target for any big-bore long arms (130x130 cm)
- Right: Target for pneumatic arms (17x17 cm)





One operator unit only for any discipline

- Top: Monitor with cover flaps
- Bottom: Control panel with printer

Operator unit at marksman's position

The operator unit at the marksman's position consists of a control panel with a printer incorporated and a screen for visual display of scores.

- A program switch at the control panel allows selection of various disciplines.
- The screws shows a graphic of the actual target according to UIT and/or DJV defaults and also the various scores and ring value. Automatical or manual enlargement of the section (ZOOM) may be adjusted in three steps.
- The printer is for printing the actual screenful (HARDCOPY) and for automatic co-copying of scores

The entire data get stored reliably even under conditions of power failure.

Features of operator unit:

- Two turn switches (12) allow max. 64 functions to be selected by the marksman. The operator unit is, therefore, of universal use for any discipline between 10 m and 300 m range. Special-purpose programs are feasible.
- For any discipline, you may select various programs when turning the program selector switches. There are programs for training, qualification and finals.
- The screen shows graphics of the corresponding UIT or DJV target for any discipline selected, that is to say the marksman can see the target image selected on the monitor.
- Display of the UIT target can also be adjusted as a sectional enlargement. There are four different adjustments:
 - 1. Display of the whole target
 - 2. Medium enlargement of the target
 - 3. Display of the inner area of target
 - 4. Automatic selection of enlargement depending on the position hit.
- One target may show the maximum of ten scores. The eleventh score e.g. is registered on another target. The latest score is always marked as a shot hole whereas the preceding ones appear as crosses.
- Preceding series of ten scores get displayed again upon simple operation of the RECALL key (10). The latest 255 scores always get stored, even under conditions of power failure.
- A locating assistant is integrated to facilitate finding of the latest score. The latest score always is located in the centre of a graticule. This is a useful function in particular for large targets and small-bore arms. The system engineer may, switch it off upon request. This locating assistant was forgone for air rifle and air pistol.
- At the side of the UIT target display, there is a numerical listing of the scores displayed. For each firing, there appears the number of shot, the ring value obtained and the position hit viewed from the centre.
- The rings total and rings average of all scores counted from shot nr. 1 onwards are also displayed and updated after each shot.
- For the last shot, the divisor hit is displayed with a resolution of 1/1000. This way, precise firing is feasible for familiarisation with the arms.



- The printer incorporated prints out the scores automatically (please refer to page 9). Shot number, ring value, position hit and sum of the 10 shots series and the total get printed out. The discipline adjusted is shown with shot number 1. The high-resolution graphics printer operating silently does not disturb the marksman not even during competition.
- The actual frame of the screen gets printed out when you press down the HARDCOPY key (8) (for at least 4 seconds). After the competition, you may get additional printouts of any firing images to be studied carefully later on.
- When you press down the Clear key (9) (for at least 4 seconds), you may return to shot number 1 and start the competition period anew.

- The score management of the equipment is designed for several users to fire one after the other without the previous marksman's scores getting lost.
- he control unit can be connected with a PC (1) with quite a comfortable finals or scoring program. Moreover, the
 PC allows to display on the marksmen's and spectators' monitors the start number, name, nationality, difference
 from the best marksman and the actual position. During competition, the PC may lock out the various control
 functions for the marksman. In this (REMOTE) mode of operation, all the functions are being controlled
 simultaneously from a central PC for all the marksman. (Please refer to description of software).
- The screen at the marksman's position is provided with cover flaps on the left and right sides, that is to say, if required, the marksman may cover the additional information and see the target with the scores only.
- On the rear side of the control unit, there is provided a socket for presentations which are attractive to spectators. A TV set (4) may be connected there just via the video input. A video camera to be connected at item 5 allows about the following automatical presentation:
 - Video picture of aiming marksman.

- After each firing, immediate fading in of score, eventually with position (in connection with PC only).

- Automatic return to marksman's video picture after 20 seconds of finals, otherwise after 8 seconds.

- Another contact on the rear side of the control panel is for optional firing log-off (3). This is to avoid any erroneous scoring from the nearest range.
- In the case of power failure, the entire data get stored quite reliably. As soon as current is available again, the equipment will be in just the same condition as before current failure.



Control panel (for explanation please refer to next page)

Control panel for electronic target Type 303

1	Bus connection	Plug connection of data-transmission cable		
2	Monitor connection	Plug connection for contact with marksman's monitor		
3	Firing log-off	Plug connection for firing log-off		
4	Connection for spectators' monitor	Plug connection for contact with spectators' monitor		
5 6	Connection for video camera Indication of remote control	Plug connection for contact with video camera During remote service, control elements and programs are controlled by PC		
7	Indication for lokal control	Ligthing when target is being controlled den by marksmen		
8	Hardcopy key	For printout of shooting image		
9	Clear key	Press down for at least 4 sec. = erase everything. Restart shot nr. 1 restart time		
10	Recall key	Get back the latest series of scores		
11	Zoom switch	 Adjust image section displayed: Test operation. All shots get recorded with X and Y coordinates and with radius and nr. of the target hit. Unused, same function as Zoom 1 Display of whole target Medium enlargement Big enlargement Automatic selection of best suitable image section depending on position hit. 		
12	Program selector switch	Selection of program wanted (New start with shot nr. 1)		
13	Log printer	Printout of the actual score data.		
14	serial output	connection of serial log-devices		

Design of automatic log printout

The entire information on the log printout is given twice. A separation in the middle allows that both marksman and arbitrator get one full set of information each. That partition is as under:

·		Shot number	Ring value
Discipline	Free Rifle Final		
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Position hit Σ 97,8
	Sport Pistol Traini 1 5 ↓	ing15↓	
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Σ72 — Block sum
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Σ 88
	160		

Total

Target for pneumatic and CO₂ arms

Both housing and slewable front door are made of sheet steel. In the housing, there is a 180 x 170 mm shooting opening. The front door is to be locked by a spring bolt on the right side. Four bolts hidden by the front door jut out from the front of the housing. These bolts are to centre the EDELMANN front plate of circular 30.5 mm opening for air rifle or 59.5 mm for air pistol and also the stabilising plate of circular 70 mm opening. The paper roll arranged on top of the housing in a tub on rollers is hidden by the front door. The paper sliding downwards between the housing and the front door gets transported by a spring-cushioned motor with gummed friction wheel below the shooting window. The front plate is located within the area of the battering window in front of the paper web. In the rear, there is the supporting plate to stabilise the paper web when being battered. Above the drive motors there are two bolts for sidewise guiding of the paper web. The four sensors to recognise the position hit are within the housing just behind the batter opening. The sensor to recognise a shot on the front door passes through the housing. It is adjacent to the front door. Moreover, in the housing there is the reference distance for automatic adaptation of the equipment to the various environmental conditions.

Transportation of paper can be regulated by two toggle switches (on the left side in the rear of the housing) viz. by

Rifle Sighters	approx. 1 cm
Rifle Final	approx. 2 cm
Pistol Sighters	approx. 3 cm
Pistol Final	approx. 4 cm.

A knurled catch screw holds the analysing computer safely on the bottom of the housing in the contact strip.

On the rear side, there are two equivalent couplers for the connecting cables. The open part on the rear side is closed by some highly elastic interchangeable rubber foil to be clamped in the side walls by means of fastening bolts.

Both sides of the measuring case are provided with panels for acoustic screening.

The electronic target may be secured in a holder on the wall or fitted to a vertically variable base.



Target for electronic small-bore equipment

The electronic target consists of battering protection and measuring frame. The rectangular battering protection of 55 x 55 cm batter opening is made of steel. The battering protection may be fitted to a base or it may just be connected with the structures via a support. On the rear side of the battering protection there is the front plate put in on screeds. The measuring frame is to be suspended to suitably shaped supports on the battering protection. It is close lying to same.

The measuring frame is made of aluminium profiles with the drive roller for the elastic ribbon at the bottom and the bearing application for the tension roller at the top. Within the vertical profiles, there are the four sensors to recognise the position hit. The drive motor is fastened in the lower wider section. The drive motor is to drive the drive roller via a chain. The reference section and the target computer with plug block are arranged horizontally. An angular, removable cover sheet being held by knurled screws serves to close the said profile section. Between the vertical supports of the measuring frame there is a highly elastic rubber ribbon to cover the whole width of target. The rubber ribbon is tensioned by the removable tension roller at the top.

The outsides of the measuring frame are provided with bolts for suspension to the battering protection. Both height and sides of the measuring frame can be adjusted precisely by set screws. The couplers for the connecting cables show downwards.





Target for electronic big-bore equipment

The electronic big-bore target consists of a measuring frame and a front frame for the target image. The measuring frame is closed by highly elastic special rubber on the front and rear sides.

The sensor arrangement chosen allows precise measuring even when absolute sealing of the photogrammetric camera is not assured. For maintenance of the photogrammetric camera diaphragm you may replace the centre. There are not any particular requirements, because the sensors just cover the blast wave of the supersonic cone resulting from the bullet. The measuring frame with the sensors just has to be built up shot-proof.

The end face for ring-target disciplines is printed on the front attachment frame which is also covered with missileproof special rubber.

The target computer is the same as for air-rifle/air-pistol and small-bore arms. It is arranged in an additional sheetsteel housing.

The design for hunting-sport shooting is the same. Hunting pictures are, however, pasted on the front-attachment plate.

Please consider: When modifying or enlarging existing Spieth equipment for adaptation to hunting-sport shooting to DJV, retrofit the control unit with hunting-picture display. Any other targets are to be connected directly.



Description of accessories

Mains supply unit: The mains supply unit for power supply to the equipment has been adjusted to the national current network. Mains supply units are made available for various power supplies depending on the method of working, single or interconnected operations.

- **Firing log-off:** This is to avoid scoring of any wrong firing which hits on this target from a near-by range. The marksman's firing to the near-by target counts zero (optional equipment).
- **Video camera:** With a video camera connected, you may watch the marksman's aiming on an additional screen. After firing, the score appears automatically for certain time.

PC with plugin card for bus connection with electronic target:

- Software for individual competitions: Transfer of all data from the various electronic targets. Calculation of the prevailing actual ranking list to UIT regulations. Output of actual ranking list to marksmen's monitors, printer, display wall or large-scale display.
- Software for competitions of qualification: Transfer of all data from the electronic targets. Allocation and recording of all marksmen's firing by order of starting numbers, for later use in finals. At the end of qualifying calculating and printing of the ranking-list. Competitors for the finals are fixed.
- Software for testing of arms or ammunition: Easy operation because of MS-Windows program design. An automatic target plate discloses the coordinates of the shot to the PC. Determination of scattering circle, centre of series, X and Y distributions and radial distribution of shots. Storage of data with comments and statements regarding arm, ammunition, tester, date etc.

Design and installation

Important hint:

Connect the equipment with the current network after cabling of the entire components only.

When unpacking the equipment, check with regard to any damages which might have been incurred during transportation.

It is indispensable to care for perfect ground connection of protective wire and for potential compensation within the equipment.

Complete equipment consists of:

1 Monitor				(Art.Nr.: 16290)
1 Control panel with		(Art.Nr.: 16080)		
1 Mains supply unit (standard)				(Art.Nr.: 16254)
1 Target structure		• air pressure	or	(Art.Nr.: 16280)
		 small bore 	or	(Art.Nr.: 16260)
		• big bore	or	(Art.Nr.: 16211)
		 hunting target 		(Art.Nr.: 16440)
1 Target computer	or			(Art.Nr.: 16100)
1 Target computer i	in measuring ho	using for big bore		(Art.Nr.: 16162)
2 End plugs for free	data communi	cation		
	• 1x large (12 po	oles)	(Art.N	r.: 16251)
• 1x small (8 poles)				(Art.Nr.: 16253)
1 Cable from control panel to mains supply unit				(Art.Nr.: 10354)
1 Cable from control panel to monitor				(Art.Nr.: 16257)
1 Cable from mains supply unit to target:				
		15 m	or	(Art.Nr.: 16115)
		60 m	or	(Art.Nr.: 16244)
		115 m	or	(Art.Nr.: 17802)
		320 m		(Art.Nr.: 17803)
1 Paper roll for print	ter			(Art.Nr.: 17465)
Various end faces				
	Air rifle			(Art.Nr.: 16117)
	 Air pistol 			(Art.Nr.: 16118)
• Small bore 50 m, dia.112.5 mm				(Art.Nr.: 16111)
	Small bore 10	0 m, dia. 200 mm		(Art.Nr.: 16112)
	Frontal frame	hunting, various motives		(Art.Nr.: 16390)
	 Passe-partout 	big bore 300 m		(Art.Nr.: 16064)
1 Endless rubber ribbon (for small bore target				(Art.Nr.: 16042)
2 Gap cover (for small bore target only)				(Art.Nr.: 16303)

The following accessories may be added depending on outfit:

1 Foot for monitor and control unit	(Δrt Nr · 16214)
	(Antinii: 10214)
1 Support for target design pneumatic arms	(Art.Nr.: 16227)
1 Wall mounting pneumatic arms	(Art.Nr.: 16241)
1 Target lighting for pneumatic arms	(Art.Nr.: 06390)
1 Firing log-off with cable for big bore	(Art.Nr.: 16410)
1 Firing log-off with cable for small bore	(Art.Nr.: 16090)
1 Battering protection small bore	(Art.Nr.: 16045)
1 Rain protection cover	(Art.Nr.: 17528)
For several systems only:	
1 Bus line target - target	(Art.Nr.: 16245)
1 Bus line control panel - control panel	(Art.Nr.: 16242)

Preparatory measures:

Connect the monitor (connection "In") with the control unit (connection nr. 2) via the short video cable. Please refer to page 7. Erect the units at the marksman's end.

Erect the electronic target in the target area at the distance and level prescribed.

Pneumatic and CO₂ arms

The electronic target 10 m range shall be hung to an angular wall support to be screwed just to the wall. The middle of centre is in line with regulations when the lower edge of the vertical leg of the wall support is mounted 1.4 m above the marksman's position.

Instead of the wall support, you may use a foot which can be adjusted in height. When both target and marksman's position are at the same level, you may adjust the upper part of the foot to the due height the way that a half of a hole in the rectangular tube can be seen.

Two knurled screws on the lower side of the housing are to hold the electronic target on the foot.

Small bore:

The battering protection of the electronic target shall be erected at the distance prescribed. Determine the distance to the rear edge of the battering diaphragm. The due height is preset if the levels of marksman's position and target are in conformity. The foot is provided with balancing screws and with holes for fastening screws. Hang the measuring frame on its hinges upon erection of the battering protection.

Big bore:

Erect the measuring frame with shot-proof sensors at the distance prescribed.

In general:

Connect the control unit with the mains supply unit via the short data-bus cable (approx. 3 m, 9 poles). Then connect the mains supply unit with the electronic target via the long data-bus cable (length in line with shooting range, 12 poles). Make sure that the marked cable end gets plugged in at the target. Both target and control unit have two equivalent connections each. The plug connectors shall be easy-going. Never realise any connection by force.

When laying the cables, make sure that they cannot be hit by bullets or fragments. Batter-proof cables are available for pneumatic and CO2 arms. We recommend, however, to arrange them outside the direct firing area. Put the two end plugs in the free connections at the target and control unit.

Make sure that paper for the printer is put in.

When using special accessories (firing log-off, spectators' monitor or PC for ranking lists), connect them with the corresponding bushes of the control unit too (please refer to diagram page 7).

Make sure that all the plug connections fit correctly. Then connect the monitor and the mains supply unit with the power supply mains.

Switch on the monitor (For this purpose, open the lower flap of the monitor).

The target image is visible now. Readjust contrast, brightness and position of image if necessary. The system is ready for operation now.

Installation of system



Design of system with several electronic targets

When several electronic targets are connected together, the control units at the marksman's position shall be connected by the short bus cables (9 poles) as shown in the drawing. The last unit is provided with an end plug. Proceed the same way with the targets. Connect all the units via the cables (12 poles) and put an end plug in the last target of the series.

Between the marksman's position and the target area, there is required one cable and one mains supply unit only.

When building up, make sure that the numbers on the operator devices coincide with the numbers on the electronic targets. The numbers will be adjusted by a system engineer, and the measuring frames and control units will be marked. An operator control shall be run when switching on a system. The last of three lines to be stated shall be the number of the control unit.

Example: You fire from the operator device nr. 1 to target nr. 1 and from the operator device nr. 2 to the electronic target nr. 2 and so on.

The further design is identical with the design of individual systems.

Installation of several systems:



Installation of several systems with PC



Design is the same as that of several systems. Instead of the terminal resistance, there is just the PC connected with the last operator device.

Electronic SPIETH equipment for pistol 25 m range

The pistol shooting-range equipment is virtually a small-bore equipment with five targets. The difference is to be found in the general mechanic design and the additional connection of light-signal equipment and process timer.



3. Operating instructions

The equipment connected with the current network is ready for operation. Turn the rotary switches in order to adjust the program wanted. (Please refer to the program availability table on the next page).

Function of press buttons

Key 8 (HARDCOPY):

When you press down this key for at least 4 seconds, the actual screenful will be printed out silently by the printer incorporated.

Paper feeding can be obtained by short pressing down.

Key 9 (CLEAR)

When you press down for at least 4 seconds, there will be a new beginning with shot nr. 1. Time 0:00 is started and displayed. Shots carried out before you press down this key may be displayed again by RECALL operation. When you press down CLEAR for short time, the scores displayed upon RECALL will be erased and the actual series are shown again.

Key 10 (RECALL)

••

The screen shows the scores in blocks of 10. From hit 11 onwards e.g. a new block gets started and displayed. Some short operation of the RECALL key is sufficient for new inspection or for printing of the preceding blocks. (One block of SP equipment consists of 12 hits).

The Zoom switch allows to adjust the enlargement wanted of the target image.

= . Trial operation. All shots get recorded with X and Y coordinates and with radius and target number of the target battered.

- = Unused, same function as Zoom 1
- Zoom 1 = Whole target
- Zoom2 = About half the target
- Zoom3 = Centre of target
- Zoom Auto = Automatic Zoom depending on position hit



Programmbelegung

Tabelle 1:

A1	Luftgewehr	Probe O.T. 10S.		
A2	Luftgewehr	20 Schuss	Jugend	
A3	Luftgewehr	40 Schuss		
A4	Luftgewehr	60 Schuss		
A5	Luftgewehr	30 Schuss	Auflage	
A6	Luftgewehr	5 Schuss		
A7	Luftgewehr	10 Schuss		
A8	Luftgewehr	Finale 10 S. M.T.		
B1	Luftpistole	Probe O.T. 10S.		
B2	Luftpistole	20 Schuss	Jugend	
B3	Luftpistole	40 Schuss		
B4	Luftpistole	60 Schuss		
B5	Luftpistole	30 Schuss	Auflage	
B6	Luftpistole	5 Schuss		
B7	Luftpistole	10 Schuss		
B8	Luftpistole	Finale 5 S. M.T.		
C1	Free Rifle	sigthers	KK-Freigewehr	Probe
C2	Free Rifle	60 shots prone	KK-Freigewehr	60 schuß liegend
C3	Free Rifle	fin prone	KK-Freigewehr	Finale liegend
C4	Free Rifle	40 shots prone	KK-Freigewehr	40 Schuß liegend
C5	Free Rifle	40 shots standing	KK-Freigewehr	40 Schuß stehend
C6	Free Rifle	40 shots kneeling	KK-Freigewehr	40 Schuß kniend
C7	Free Rifle	final	KK-Freigewehr	Finale
C8	Free Rifle	final	KK-Freigewehr	Finale
D1	Standard Rifle	sigthers	Standardgewehr	Probe
D2	Standard Rifle	60 shots prone	Standardgewehr	60 schuß liegend
D3	Standard Rifle	fin prone	Standardgewehr	Finale liegend
D4	Standard Rifle	20 shots prone	Standardgewehr	20 Schuß liegend
D5	Standard Rifle	20 shots standing	Standardgewehr	20 Schuß liegend
D6	Standard Rifle	20 shots kneeling	Standardgewehr	20 Schuß kniend
D7	Standard Rifle	final	Standardgewehr	Finale
D8	Standard Rifle	final	Standardgewehr	Finale
E1	Rapid Fire Pistol	sigthers	Schnellfeuerpistole	Probe
E2	Rapid Fire Pistol	60 shots	Schnellfeuerpistole	60 Schuß
E3	Rapid Fire Pistol	60 shots	Schnellfeuerpistole	60 Schuß
E4	Military Rapid Fire Rifle	2*10 shots prone	Mil. Schnellfeuergewehr	2*10 Schuß liegend
E5	Military Rapid Fire Rifle	2*10 shots standing	Mil. Schnellfeuergewehr	2*10 Schuß stehend
E6	Military Rapid Fire Rifle	2*10 shots kneeling	Mil. Schnellfeuergewehr	2*10 Schuß kniend
E7	Rapid Fire Pistol	final	Schnellfeuerpistole	Finale
E8	Rapid Fire Pistol	final	Schnellfeuerpistole	Finale

Eprom Version EPROM Tabelle 1 (Fortsetzung) :

F1	Free Rifle	sigthers	100 m KK Probe	10 Schuß
F2	Free Rifle	40 shots	100 m KK (o.T.)	40 Schuß
F3	Free Rifle	40 shots	100 m KK Finale	40 Schuß
F4	Bigbore 100 m	sigthers	GK 100 m Probe	10 Schuß
F5	Bigbore 100 m	20 shots	GK 100 m (o.T.)	20 Schuß
F6	Bigbore 100 m	20 shots	GK 100 m Finale	20 Schuß
F7	Bigbore Rifle	final	GK-Freigewehr	Finale
F8	Bigbore Rifle	fin prone	GK-Freigewehr	Finale liegend
G1	A36 50 Feed			
G2	A36 50 Feed			
G3	A36 50 Feed			
G4	A36 50 Feed			
G5	A36 50 Feed			
G6	A36 50 Feed			
G7	Bigbore Rifle			
G8	Bigbore Rifle			
H1	Hunting target		Jagdscheibe	Rehbock
H2	Hunting target		Jagdscheibe	Überläufer stehend
H3	Hunting target		Jagdscheibe	Fuchs
H4	Hunting target		Jagdscheibe	Gams
H5	Hunting target		Jagdscheibe	Überläufer 50m
H6	Hunting target		Jagdscheibe	Überläufer 60m
H7	Running target		Laufende Scheibe	
H8	Running target		Laufende Scheibe	

4. Maintenance and trouble shooting

Maintenance

In general:

Your electronic SPIETH Target is a highly developed system which does not require much attendance. You should, however, treat it carefully.

Kindly consider:

Switch off the line current before any handling of the equipment such as changing of target computer or operator device. This applies also to checking of plug contacts.

Care for regular removal of any coarse dirt deposits. When checking the measuring frame from time to time, you may be sure that your electronic Spieth equipment will work perfectly for some long period. You may clean the information system for the marksmen with a moist cloth. Avoid direct contact with water just as for your TV set at home.

Make sure that the plug contacts are kept clean when you erect and disassemble the equipment frequently. The pins of the plug contacts shall not be bent. The connections shall be easy-going. We recommend to clean dirty contacts with cotton tips and contact spray.

Replacement of paper for printer

Tilt the lever on the right side of the printer upwards. Then introduce the paper to the slot of the printer as shown in the drawing. Make it pass through until it appears above the slot. We recommend to fold the paper for introduction in order to facilitate the passing through. Then put the roll in the tub.



Introduction of paper for printer

Replacement of end face of pneumatic equipment

The front door is released when you press down the unlocking button on the right side of the housing. Now open the door and remove the old end face and eventually the supporting plate too. Slide a new supporting plate (diameter of hole 70 mm) onto the centering bolts. Put the paper roll in the paper tub at the top and draw the end over the housing front downwards (to 2-3 cm below the lower edge of housing).

Then slide the suitable front plate (air rifle or air pistol) onto the four centering bolts.

Before closing the front door, make sure that the paper tape is between the lateral guide bolts (above the drive wheel).

We recommend to remove any dirt deposits inside the measuring frame by careful vacuum cleaning.



Replacement of end plate of small-bore equipment

Upon removal of the rain-protection profile (release knurled screws), you may withdraw the end face upwards and replace or change it according to the discipline to be run. When sliding in another end face, take care that it gets pushed in the lower horizontal guide too.

Replacement of rubber ribbon of small-bore equipment

For replacement of the rubber ribbon, unhinge the measuring frame and push the upper tension pulley down from its bearing application and withdraw it sidewise. Now remove the old ribbon withdrawing it sidewise from the frame. Draw the new rubber ribbon across the vertical support and put it uniformly on the measuring frame. Take care that the rubber ribbon runs over the supporting sheets on the side showing towards the marksman but that on the other side, it is being guided underneath.

Then push the tension pulley sidewise in the rubber ribbon and lift it onto its bearing application. The rubber ribbon gets tensioned there.

How to facilitate fitting: Use talcum in order to get the rubber ribbon glide more easily. Put part thereof on the frame and tilt it over then.

In this connection, we also recommend to remove any coarse dirt deposits from the measuring frame.



Replacement of end face of big-bore equipment

of the measuring frame. Use some special gluten. It is indispensible to remove with scissors any remainders of target hanging to inside.

Remove at first any bits of rubber or dirt which had fallen into the measuring frame.

Trouble shooting

Trouble	Elimination
No image after switching on	Check power plug
	Switch on monitor
	Adjust brightness of monitor
	connect monitor to the correct plug.
	Check fuse on rear side of operator device
	LED Local shall light up
Image not sensible	Adjust brightness and contrast
	Adjust image trigger on monitor.
	Adjust V-Hold and H-Hold
	 Check connecting cable between control panel and monitor (socket "IN")
	 Impedance selector switch shall be set at 75
	Ohms
No display upon firing	Check cabling to electronic target
	Insert end plug
	Check sensitivity if firing log-off is connected. Increase if necessary
	System engineer: check address adjustment
	Make sure that target computer fits tightly in
	plug-connection board for electronic target
	Check blinking function of countersunk LED on
	rear side of control unit, press down event. with
	some pointed item the Reset key near the LED.
	 Verify on target computer in measuring frame
	that one LED is lighting and one blinking (visible
	through hole on measuring frame). Make sure
	eventually that Trident plug fits tightly. Open
	measuring frame and make sure that measuring
	board Stop by retention scrow
Monitor displays picture. Control papel not	Cut off power supply. Keen Recall and Clear
functioning I ED Remote lighting	pressed down. Restore power supply
	Afterwards, keep keys pressed down for approx.
	4 sec. more.
No shots displayed	Cut off power supply. Keep Recall and Clear
	pressed down. Restore power supply.
	Afterwards, keep keys pressed down for approx.
	4 sec. more.
	Check data cable towards measuring frame.
	In the case of several targets: Select test functions via the control panel and cheet on all
	the targets. Check print out in order to verify
	functions of target computers
Score gets displayed on a wrong monitor	Correct assignment of targets to the control units
	Change or match addresses
	(by system engineer only)
No print-out of the shot displayed	Arrange paper roll correctly (refer to drawing)
	Set lever of printer in lowermost position
	Set DIP switch SB2 for printer in "ON" position
	(by system engineer only)
Incorrect score of shot displayed	Adjust turn switch correctly to the discipline
	wanted
	Big bore: Check whether bits of lining have
	caused coarse pollution's of sensors in
	photogrammetic camera. Clean if necessary

Zero value displayed upon hit	 Switch "OFF" DIP switch SB1 (by system engineer only)
Image of screen does not Show any shot	 Select suitable Zoom degree. If necessary, adjust Zoom "Auto".
Shots of previous series do not get erased when changing to other disciplines	 Adjust DIP switch SB5 "OFF" (by system engineer only)
No paper feed with air-rifle/air pistol target	 Take care that paper web does not get jammed by guide bolts. Make paper web pass over transport roller.
Scores from the target near-by are displayed in the case of several air-rifle / air-pistol targets	Fasten side shades to the measuring frame

A print-out of the entire targets may be prepared for verification of full functioning of complete equipment (even with several targets).

Adjust test position of a control panel. Fire onto all the targets in order to verify functionability of the various systems. The printer of the operator device in test position will deliver the report (please refer to page 32).

Entrust us with problems if all the measures stated here are without success. Our skilled staff will help you.

Technical instructions for system engineer

The control panel and measuring computer resp. shall be opened by special skilled staff only. Any claims under guaranty will be null and void upon unauthorised opening of the systems.

Signification of switch positions on control panel

OPEN	Block A	ON		Up to 32 systems may be connected with a data
1	n1	0	Addresses A0	line Each system gets an address to be adjusted
1	2n	0	Addresses A1	equally in both control panel and measuring
1	3n	0	Addresses A2	computer in the target.
1	4n	0	Addresses A3	Flease feler to table for aujustifient of address.
1	5n	0	Addresses A4	
	n6			
	n7			
Off	n8	On	Shall always be of	
	Block B			
Off	n1	On	Shall always be off	
Off	2n	On	On = data being sent to printer	
On	3n	Off	On = shots as circles. Off = shots as cr	oss (faster))
Off	4n	On	Help for localisation On/Off	
Off	n5	On	Refer to explanation DIP switch SB-5	
Off	n6	On	Refer to table 2, pistol disciplines with p	process timer
	n7			
	n8			

DIP switch SB-5

OFF (Pre-setting)

- When turning a program selector switch, erasing of

 all shots, storage in Recall memory. Timed
 operations are not affected thereby.
- Turning of a program selector switch does not affect any shots carried out.

ON

- Impossible to erase single shots by short press-ing down of CLEAR key.
- Single shots can be erased by short pressing down of CLEAR key
- Prolonged pressing-down of CLEAR key causes starting of time at 0:00 in either position of switch. Moreover, the entire shots get erased and stored in Recall memory.

Signification of switch positions in measuring computer

ON		OPEN	
0	1n	1	Addresses A0
0	n2	1	Addresses A1
0	n3	1	Addresses A2
0	n4	1	Addresses A3
0	n5	1	Addresses A4
BB	n6	SB/AG	
Off	n7	On	Digital display too
On	8n	Off	Test switch (shall always be off)
	n9		
	n10		

Up to 32 systems may be connected with a data line. Each system gets an address to be adjusted equally in both control panel and measuring computer in the target. Refer to table for adjustment of address

Table:

Adjustable addresses in control panel and measuring computer (to coincide by pairs)

Address	A4	A3	A2	A1	A0
0	0	0	0	0	0
1	0	0	0	0	1
2	0	0	0	1	0
3	0	0	0	1	1
4	0	0	1	0	0
5	0	0	1	0	1
6	0	0	1	1	0
7	0	0	1	1	1
8	0	1	0	0	0
9	0	1	0	0	1
10	0	1	0	1	0
11	0	1	0	1	1
12	0	1	1	0	0
13	0	1	1	0	1
14	0	1	1	1	0
15	0	1	1	1	1
16	1	0	0	0	0
17	1	0	0	0	1
18	1	0	0	1	0
19	1	0	0	1	1
20	1	0	1	0	0
21	1	0	1	0	1
22	1	0	1	1	0
23	1	0	1	1	1
24	1	1	0	0	0
25	1	1	0	0	1
26	1	1	0	1	0
27	1	1	0	1	1
28	1	1	1	0	0
29	1	1	1	0	1
30	1	1	1	1	0
31	1	1	1	1	1

Testing position of Zoom selector switch

For display of the absolute shot position in millimetres with reference to the centre point, you may turn the Zoom switch completely to the left (lettering: **). In that position, all the targets connected with the equipment deliver the X, Y coordinates and radius in 1/100 mm.

Example print-out

Address of control unit



6. Possible extensions

Complete accessories for system

Air rifle equipment

Your air-rifle equipment may be completed by the following:

•	Lighting	Art.Nr. 06390
•	Breastwork	Art.Nr. 11142
•	Vertically adjustable breastwork	Art.Nr. 15600
•	Display wall type Barcelona	Art.Nr. 16231
•	Final wall	Art.Nr. 17100
•	Target support	Art.Nr. 16227
•	PC to list ranking	Art.Nr. 16233
•	Camera	

Spectators monitor

Small-bore equipment

Your small-bore equipment may be completed by the following:

٠	Wind vanes	Art.Nr. 07700-02
٠	Wind-screen fencing	Art.Nr. 16330
•	Breastwork	Art.Nr. 11142
•	Vertically adjustable breastwork	Art.Nr. 15600
•	Display wall type Barcelona	Art.Nr. 16231
•	Final wall	Art.Nr. 17100
•	Shooting table	Art.Nr. 07688
•	Firing log-off small bore	Art.Nr. 16090
•	Foot	Art.Nr. 16045
•	BIOWALL bullet trap small bore	Art.Nr. 11420
•	PC to list ranking	Art.Nr. 16233
•	Camera	

Spectators monitor

Equipment 25 m range for pistol

Your pistol equipment may be completed by the following:

•	Wind vanes	Art.Nr. 07700-02
•	Deposit table for pistols	Art.Nr. 07503
•	Partition wall	Art.Nr. 10498
•	Display wall type Barcelona	Art.Nr. 16231
•	Final wall	Art.Nr. 17100
•	Shooting table	Art.Nr. 07688
•	Process timer	Art.Nr. 15805
•	Firing log-off small bore	Art.Nr. 16090
•	BIOWALL bullet trap big bore	Art.Nr. 11470
•	PC to list ranking	Art.Nr. 16233
	Comora	

- Camera
- Spectators monitor

Big-bore equipment

Your big-bore equipment may be completed by the following:

•	Wind vanes	Art.Nr. 07700-02
•	Wind-screen fencing	Art.Nr. 16330
•	Vertically adjustable breastwork	Art.Nr. 15600
•	Display wall type Barcelona	Art.Nr. 16231
•	Final wall	Art.Nr. 17100
•	Firing log-off big bore	Art.Nr. 16410
•	BIOWALL bullet trap big bore 300 m	Art.Nr. 16255
•	PC to list ranking	Art.Nr. 16233
•	Camera	

• Spectators monitor



ELECTRONIC SPIETH TARGET

Data sheet

Level: 2/11

Power supply: Total current consumption:		230 volts / 50 Hz. approx. 350 mA (monitor included)			
rower input.		00 00			
Graphics processor:					
	Tension: Current consumption	n:	5 V = 660 mA		
	Pulse repetition rate Resolution:	0°C - 70°C :	5 15 MHz 625 x 833 Pixel		
Thermal printer:					
	Tension: Current consumption Temperature range:	n: 5°C - 40°(24 V = 560 mA load / 5 mA rest C		
	Air humidity:		35-85% rel. not condensing		
Monitor:					
	Tension: Temperature range:	5°C - 50°0	220 V / 50 Hz. C		
	Air humidity: TV standard: Screen		35-80% rel. not condensing PAL, 625 x 833 Pixel black/white, 22 cm (diag.)		
Measuring computer	r:				
	Tension: Current consumption Measuring method: Pulse repetition rate Measurement resolu Temperature range:	n: : ution: 0°C - 70°(5 V = 620 mA acoustic, transit time calc 32 MHz 1/1000 mm		
Conveyor motor:	Tension: Current consumption (available for pneum	n: natic and s	24 V = 900 mA load / 5 mA rest mall-bore equipment only).		

Data transmission:	Transmission rate: Transmission method: Data security: Data storage: print-out r	20 kBit/s CAN-Bus Safety pro Multi-stora eport Analysing	t/s 3us, packet transmission prot. with repetition inquiry torage in measuring computer and operator computer, sing PC (if available)			
Measurements and	weights:					
	Control unit complete:		Dimensio	ns :	240x240x400 mm (WxDxH)	
		0.1.1.1	Weight:		approx. 13 kg	
	Measuring frame air pressure:	Outside d	IIM.: Maighti	270x240x	420 mm (VVXDXH)	
			Shooting	area.	$170 \times 170 \text{ mm}$	
	Measuring frame small bore:		Outside d	im.:	670x50x850 mm (WxDxH)	
			Weight:		approx. 12.5 kg	
			Shooting	area:	550 x 550 mm	
	Measuring frame big bore:		Outside d	im.:	1400x80x1400 mm (WxDxH)	
			Weight:		approx. 25 kg	
			Shooting	area:	1300 x 1300 mm	
Suitable bores:						
Measuring frame air pressure: Pneumatic arms, short rifle						
	Measuring frame small bore: Small bore and big bore				oore	
	Measuring frame big bore:		Big bore -	superson	ic. ammunition	
Additional inputs and autouts on control unit						
Inputs and outputs on control unit. Video input PAL standard					andard	
	Outputs:		Firing log-off TV-Chinch, PAL standard			

For optional connection: PC for ranking list or statistic analysation of firing series.

Installation of several units with PC, printer, spectators' monitor and camera for marksmen's watching

