The SBC Company welcomes you!

Thank you for acquiring the Ballistic Identification System CONDOR™ - I.

This manual will help you acquaint yourselves with function and features of the system, its composition and main elements, precautions, operation conditions and setting-up procedures.

The detailed operation instructions are in the following Appendixes:

- Appendix 1 Telemicroscope
- Appendix 2 Bullet Repository
- Appendix 3 Cartridge Case Repository
- Appendix 4 Administrator Manual

The Data Sheet, which is enclosed to each ballistic scanner, contains its serial number and technical data.

Table of Contents

MAINTENANCE

The scanner of the BIS "CONDOR™ - I" is highly reliable and by correct operating ***does not require special technical maintenance.***

To ensure reliable operation it is necessary:

a) by using to strictly adhere to the rules stated in this manual and its appendixes;
b) protect the scanner's case and other parts of the system from hits and mechanical damages;
c) to carry out regular external examinations of the scanner, cassettes and other devices to reveal mechanical damages;
d) to avoid the connection cables bents especially close to the connectors;
e) to keep the unused cassette and fixing devices in the cases;
f) to remove dust from the optical parts of the cassette for cartridge-cases by a soft brush;
g) by cleaning the scanner and cassettes use a soft dry cloth; if their surfaces are very dirty use a soft cloth slightly moistened with a weak detergent; do not use strong solvents since they can damage surfaces;
h) if necessary to carry out the cleaning of the optical surfaces of the prism in the cartridge-case cassette by ethyl alcohol and a soft brush or a cotton wool wad;

In the case of system failure contact SBC.

OPERATION

Operating the BIS "CONDOR™ - I" is allowed operators studied this operation manual and its appendixes.
It is recommended to study this equipment at the Training Centre of SBC.

Usual procedure for the Data Acquisition Station (DAS) includes the following:

1. Switching on the PC and DAS.
2. Fixing the object under examination using the corresponding cassette and adapters in the scanner.
3. Loading the required application at the DAS or Expert workstation.

The computer is controlled by the “mouse” of a personal computer; the digital parameters are entered by means of the PC keyboard.

How to obtain a sharp image

The sharpness of image for each scanner is set by the manufacturer. In the event of loss of the sharpness or any changes (not depending on the quality of object under examination) it is necessary to contact SBC.

FUNCTION

The Ballistic Identification System (BIS) "CONDOR™ - I" is intended for recording digital images of spent bullets and cartridge-cases of firearms, storing obtained images in the databases and effective carrying out of ballistics examination.

FEATURES

The BIS "CONDOR™ - I" allows to:

- record, process and store high-contrast digital images of the full surface evolvement (or fragments) of side surface of bullets, including deformed ones, with any kind of covering, as well as images of butt-end and side surface of cartridge-cases;
- view the object in “telemicroscope” mode, carry out manual and auto-focusing, change the direction and intensity of lighting;
- carry out a ballistic examination of the object in “manual” mode by method of mark alignment (overlay) using previously saved images recalled from the database;
- carry out an automatic search among images stored in the database and make up a list of the most similar objects for the expert to make the final decision;
- print out images in various versions;
- create regional repositories of spent bullets and cartridge-cases images with accompanying service information and unite them into an integrated information network.

SYSTEM COMPOSITION

Your BIS CONDOR™ - I includes the following:

Hardware

№	Device	Number	Provided by
1	**Data acquisition station (DAS)**:	2	
1.1	Ballistic scanner with accessories, connecting cables and image capture board		SBC
1.2	Power unit		SBC
1.3	PC, set		Custom
2	**Expert work station (EWS):**	2	
2.1	PC, set		Custom
3	**Storage and automatic search server (SAS):**	1	
3.1	Server, set		Custom
4	**Storage and automatic search server (SAS):**	1	
4.1	Server, set		Custom

Standard software

№	Software	Installed on	Provided by
1	Microsoft Server 2003	SAS	Custom
2	Microsoft SQL Server 2005	SAS	Custom
3	Microsoft Windows XP	DAS, EWS	Custom
4	Microsoft Office 2007	DAS, EWS	Custom
5	Antivirus software	SAS, DAS, EWS	Custom

Sequence of the Installation of a Cassette with Objects in the Scanner.

for a cartridge-case: | for a bullet:






NOTE: It is necessary to carefully insert the cassette with the object until the latch snaps into place. If the cassette does not fit in the receiving device, it is necessary to take it out and turn the tooth-type half-coupling. Then re-insert the cassette.

4. Make subsequent operations according to Appendix “**TeleMicroscope**”.

II. Installing a cartridge-case into the scanner

1. Take a cassette for cartridge-case.
2. Install the cartridge-case in the cassette by pulling back the hold-down clamp. Carefully move the cartridge-case toward the prism as far as it would go.
3. Insert the cassette for cartridge-cases with the object under examination into the scanner by opening the scanner cover (moving the latch) – see photos on the page 19.

NOTE: For greater efficiency of the subsequent identification procedure it is necessary to approximately orient the cartridge-case (by turning it around the rotation axis) in the cassette to ensure the equal angle of lighting of the given weapon type representative traces.

NOTE: The cassette with the object is to be inserted with care until the latch snaps into place. If the cassette does not fit in the receiving device, take it out and turn the tooth-type half-coupling. Then re-insert the cassette.

4. Make subsequent operations according to Appendix “**TeleMicroscope**”.

Special BIS software*

№	Application	Function	Installed on
1	SBC: "TeleMicroscope"	Scanner control, specimen pictures acquisition.	DAS
2	SBC: "Administrator"	BIS administration: user and workstation accounting, access right administration, user actions logging, database integrity supporting, backup of the BIS data	Server
3	SBC: "Condor - Autosearch"	Workstation management and integration, automatic search of bullets and cartridge-cases.	Server
4	SBC: Database "Condor_MSSQL"	Data storage of the scanned specimens.	Server

Applied BIS software*

№	Application	Function	Installed on
1	SBC: "Bullet repository"	Comparison of the fired bullets, initiating and results visualization of the bullets automatic search.	EWS, DAS
2	SBC: "Cartridge-case repository"	Comparison of the fired cartridge-cases, initiating and results visualization of the cartridge-cases automatic search.	EWS, DAS

Note: For details see the Software operation manual

Data acquisition station

Apperanace

1 – Power unit

2 – Ballistic scanner

3 – Monitor

4 – Personal computer

5 – Mouse

6 - Keyboard

INSTALLING THE OBJECT UNDER EXAMINATION

Removable cassettes for a bullet and for a cartridge-case shown on pages 13, 14 are used to install the object under examination into the scanner.

I. Installing a bullet into the scanner.

1. Take a cassette for bullet.

2. Install a bullet in the cassette on the corresponding little table* by releasing the clamp*.

NOTE: * To fix bullets in the cassette the delivery kit includes mounting tables to be set up on the upper part of a tooth-type half-coupling depending on the shape (or deformation) of the butt-end of the object under examination and the firearm type, as well as clamp adapters selected according to the object height (or deformation) and the firearm type.

NOTE: By installing a bullet in the cassette one must ensure the approximate alignment of the bullet (its cylindrical part for deformed objects) by slightly releasing the clamp and centering the object with fingers. For slightly deformed bullets alignment can be controlled using the function. The value of shift between the axis of rotation and the bullet axis less than 0.5mm is allowable. After installing the object make sure it is securely fixed by turning the tooth-type half-coupling by hand.

3. Insert the cassette with the object under examination into the scanner by opening the scanner cover (moving the latch) – see photos on the page 19.

INSTALLATION AND COMMISSIONING

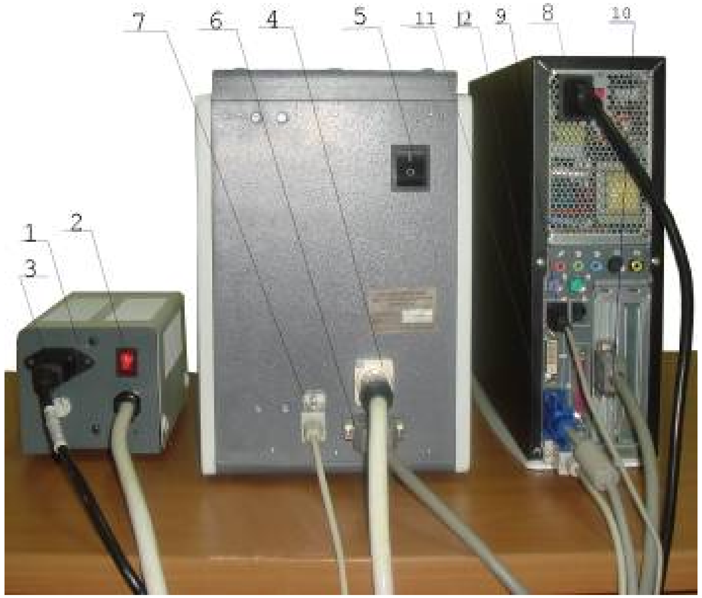
Attention! Following the receipt of the equipment the Customer's representative shall carry out acceptance of the equipment in the presence of the SBC's representative.

The BIS installation and commissioning at its operation place are to be carried out by the experts of SBC.

Scanner check

- After transporting, in case of dramatic temperature difference, it is necessary to wait till the leveling of the equipment and the environment temperatures before switching the system on.
- Unpack the equipment; carry out the external examination to make sure there are no mechanical damages. Check the presence of the whole set of the equipment in accordance with the Packing List.
- Switch on the computer of the DAS and make sure it operates properly. Switch off the computer.
- Connect the scanner to the computer and the power unit by special delivered cables. Make sure the connections are safe.
- Switch on the computer.
- Switch on the scanner.
- Load the application responsible for the scanner operation and make sure the system operation corresponds with the operation manual **(Appendix “TeleMicroscope”)**.
- Switching off is carried out in the reverse sequence, i.e. after switching off the scanner the user closes the “**TeleMicroscope**” application and switches off the computer.

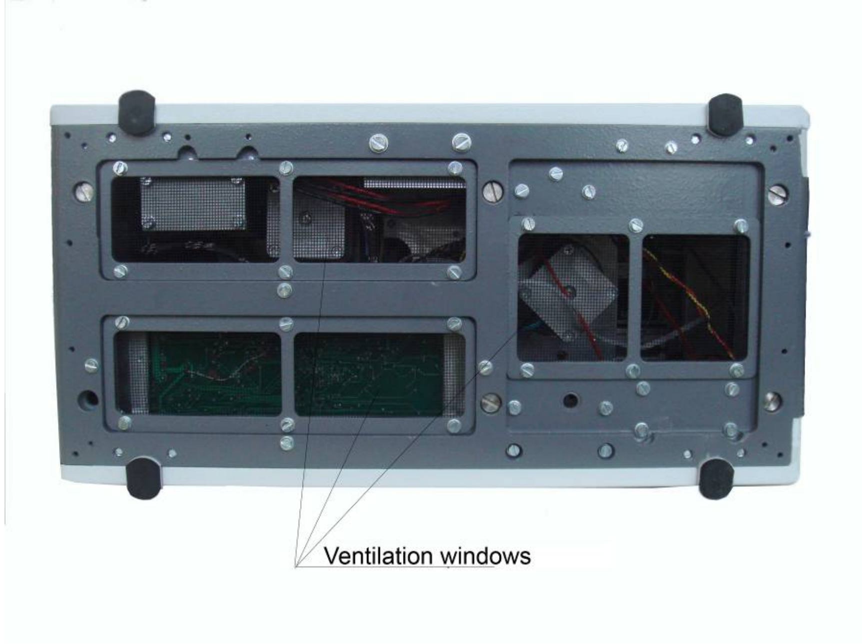
Rear View



Intended Purpose of Elements on the instrument's Rear Panel

№	Description	Purpose, application
1	Power network connector	Connection of the power cable
2	Power switch with lighting	Switching on/off the power unit
3	Fuse holder	ВП+25-1В (2A, 250V)
4	Feeder connector	Connection of the power supply unit
5	Feeder switch	Switching on/off power supply for the scanner
6	Video connector	Connection of the video cable
7	COM (SOM) 1 connector	Connection of the zero-modem cable for scanner control
8	Electric power network connector	Connection of the electric cable to the computer
9	Ethernet connector	Connection of the computer to the local computer network
10	Video connector	Connection of the video cable to the computer
11	Serial port connector	Connection of the zero-modem cable to the computer
12	Video adapter connector	Connection of the monitor

Bottom View



The ventilation windows are designed to ventilate the scanner. The windows are provided with a protective net against dust.

In the case that the object under examination gets inside the scanner it is necessary!

- To switch off power supply;
- To take off one of the protective covers and carefully shake out foreign objects;
- To replace the cover.

Attention! The ballistic scanner of the BIS is a complicated device. Therefore it requires careful treatment.

Mechanical damages of the scanner entail loss of guarantee on the whole system.

It is forbidden to put alien objects or containers with liquids on the scanner case! Ingress of alien objects and liquids inside the scanner can lead to the system breakdown.

It is forbidden to fix objects, exceeding the sizes specified in the technical characteristics or not meant for ballistic examination, into the cassettes.

SERVICE CONDITIONS

The BIS CONDOR™ - I is meant for operation in the laboratory environment at temperature of +15 to +30°C and relative humidity of no more than 80% at temperature of 30°C.

The BIS installation site is to be protected from direct sunlight and from temperature differences.

It is forbidden to install the BIS in the zone of strong magnetic fields.

Slots and openings in the BIS elements are intended for them ventilation. It allows for their reliable operations and prevents overheating. The slots and openings mentioned are to be open for air inflow.

It is prohibited to install the equipment close to heat sources.

PRECAUTIONS

Attention! The system is supplied with power from the outward network 220-230V, 50 Hz.

– **The ballistic scanner must be supplied only from the delivered power unit**.
– It is recommended to use an uninterruptible power supply for the server and PC.
– Plug sockets are to have ground connection.

NEVER connect equipment to an AC outlet that exceeds the allowed voltage.

NEVER use non-rated fuses.

NEVER let metal, wire or other objects touch any internal part or connectors.

NEVER use defective power cables.

AVOID entering water into the ballistic scanner, the power units and PC.

By emergence of the following troubles the power cable is to be disconnected from the network:

a. By the cable or plug damage or deterioration;
b. By ingress of liquid inside the ballistic scanner;
c. If even when following the operation manual there appeared some troubles;
d. By scanner or computer downfall or by their cases damage;
e. By failures in the computer operation.

<u>A Set of Cassettes and Adapters for the Installation of Objects in the Scanner</u>.

Pos.	Description	Appearance	Intended purpose	Application
1	Screw clamp		For the installation of badly deformed bullets and cartridge-cases in bullet and universal cassettes	
2	Little centering table		For centering bullets in bullet and universal cassettes for small-caliber bullets	

3	Small centering clamp		For centering bullets with deformed noses in bullet and universal cassettes for small-caliber bullets	
4	Large centering table		For centering bullets in bullet and universal cassettes for large-caliber bullets	
5	Large centering clamp		For centering bullets with deformed noses in bullet and universal cassettes for large-caliber bullets	
6	Small elastic clamp № 1		For clamping short cartridge-cases and deformed small-caliber bullets	
7	Small elastic clamp		For clamping long cartridge-cases and deformed small-caliber bullets	

Universal Cassettes

Dimensions of objects to be installed:

∅	4 to 25
L	0 to 75

Cassette for the Installation of Cartridge-Cases

Dimensions of cartridge-cases to be installed:

∅	6 to 22
L	12 to 95

Cassette for the Installation of bullets

Dimensions of bullets to be installed:

∅	4 to 25
L	10 to 50

8	Little elastic table		For the installation of cartridge-cases in bullet and universal cassettes	
9	Fluted clamp		For the installation of cartridge cases at an angle in bullet and universal cassettes	
10	Little fluted table		For the installation of bullets with badly deformed rear parts in bullet and universal cassettes	
11	Large elastic clamp № 1		For clamping short cartridge-cases and deformed large-caliber bullets	
12	Large elastic clamp № 2		For clamping long cartridge-cases and deformed large-caliber bullets	

13	Large cartridge-case clamp		Для фиксации длинных гильз в кассете для гильзы	
14	Medium-size cartridge-case clamp		For fixing long cartridge-cases in a cartridge-case cassette	
15	Small cartridge-case clamp		For fixing medium-size cartridge-cases in a cartridge-case cassette	
16	Medium-size cylindrica l clamp		For fixing short and large-diameter cartridge-cases in a cartridge-case cassette	
17	Small cylindrica l clamp		For clamping bullets in bullet and universal cassettes	
18	Conical clamp		For clamping cartridge-cases in bullet and universal cassettes	

19	Large cylindrica l clamp		For clamping bullets in bullet and universal cassettes	
20	Magnifyi ng glass			
21	Tweezers			
22	Bullet cassette		For installing and fixing a bullet when scanning its surface	
23	Cartridge -case cassette		For installing and fixing a cartridge-case when scanning its surface	
24	Universal cassette		For installing and fixing a cartridge-case when scanning its lateral surfaces	