SECUTEST® PSI

GOSSEN
METRAWATT
CAMILLE BAUER

SECUTEST PSI

1 Cover of chart compartment

2 Metal flap for paper advance

3 Paper roll

4 RS-232 connection socket for PC or bar code reader

5 Knurled screws

6 Ribbon cassette

7 Printer cover with chart tear-off edge, foldable

8 Ribbon cable with RS-232 plug for connection of the PSI module to the tester

9 Pilot light, lights in battery mode

10 Battery compartment for 4 x 1.5 V Mignon cells (rear)

11 Clear key ⬅ to delete single characters or complete lines in connection with the shift key ⬆ (16)

12 Key FF for chart advance

13 Enter key ENTER to conclude the entry and go to the next entry prompt

14 Space key ▢▢▢▢ to enter spaces

15 Storage key STORE to store the last test protocol

16 Shift key ⬆ for a keyboard shift lowercase/uppercase letters
Key ▪' shifts to period (.)
Key ▪– shifts to underline (_)

17 Key PRINT to activate the PSI module and to start printing

18 Flap to fix the probe lead in the lid of the SECUTEST 0701S

Combined keyboard instructions for protocol entry

⬆ + ⬅	Deletes the line on which the cursor is positioned.
⬆ + 1	All text entries are deleted, provided the cursor is positioned in an active text entry section
⬆ + STORE	The protocol stored last is deleted, provided no PSI module window is active.
⬆ + 0	A reset is made, the PSI module is initialized, all stored data is deleted! This is only possible in the **Setup** menu under **Clear memory**.

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1   Applications

The PSI (**P**rinter **S**torage **I**nterface) module is a special accessory for the SECUTEST 0701S appliance tester. It is installed in the lid of the SECUTEST 0701S and fastened with two knurled screws (5).

The test results determined with the SECUTEST 0701S according to DIN VDE 0701 are directly transferred to the PSI module via the ribbon line (8) and stored there. All measured values for approximately 200 protocols (amount of one working day) can be stored in this memory.

Printing out of the test results can be made directly at the site in the form of clear hardcopy measurement and test protocols including date, time and texts entered from the keyboard.

Via a serial RS-232 port (4), the stored measured values can be transferred from the SECUTEST PSI to the PC and archived, processed there (e.g. for the preparation of invoices), or printed directly into a pre-made form. Transmission of the data to the PC is also possible without the appliance tester.

2   Safety features and safety precautions

When the SECUTEST PSI is properly used, the safety of both the user and the unit is assured.

In order to meet the legal rules for electromagnetic compatibility (EMC), an electrically conductive plastic material is used for the case for shielding. Touching of the PSI module under normal operation causes no danger as contact-hazardous voltages do not appear in the printer.

Caution!
The case of the PSI module has electrically conductive characteristics that are similar to those of metal. It must not come into connection with live parts.

Read the operating instructions carefully and completely before you use your unit and follow them in all respects.

Meaning of the symbol on the unit

The symbol on the unit has the following meaning:

Warning of danger
(Attention, note documentation!)

3 Getting started

3.1 Installing ribbon and batteries

Before getting started insert the ribbon (see section 13.4, page 40).

To store the data in the PSI module and to transmit the data to the PC, four commercially available 1.5 V Mignon cells according to IEC LR 6 are required when the PSI module is not powered from the appliance tester.

☞ **Note**

Only alkaline-manganese cells that comply with the IEC LR 6 standard are to be used. The use of manganese-dioxide cells is not recommended as their lifespan is too short.

Always replace the complete battery set. Dispose of the batteries in a way that protects the environment.

The battery compartment (10) is located at the rear of the printer.

➪ Free the catch by exerting lateral pressure on the clamping bow of the cover of the battery compartment and remove the cover. The battery holder falls out of the battery compartment when you tilt the module.

➪ Insert four 1.5 V Mignon cells into the battery holder with correct polarity according to the given symbols.

➪ Insert the equipped battery holder into the battery compartment.

➪ Attach the cover of the battery compartment to the battery compartment and engage it by exerting a slight pressure.

☞ **Note**

When replacing the batteries, stored data is saved in the memory even if no voltage is applied for about 5 minutes.
If no batteries were inserted for a longer period of time, e.g. after delivery from the factory, a reset should be performed. This makes for a defined condition to the established. See combined keyboard instructions on page 3 for making a reset.

3.2 Installing the PSI module

➪ From the lid of the SECUTEST 0701S, remove the cover on which the symbols are printed. For this purpose, press the cover to the side.

➪ Insert the PSI module into the lid and fasten it with the two knurled retaining screws (5).

➪ Connect the module to the connection socket of the RS-232 interface of the appliance tester via the ribbon cable (8).

➪ Below the PSI module there is a compartment provided for the storage of the probe lead. Lock the flap (18) inserted in the module on the hinge of the lid so that the probe lead will not fall out when the lid is closed.

3.3 Activating the PSI module

To activate the PSI module, a connection to the RS-232 interface of the SECUTEST 0701S must be made and the appliance tester must be connected to the line.

Press once **PRINT** (17)

```
➤ return

  LCD printout

  Statistics . . .
  Protocol . . .
  Setup . . .

▲▼ select                    1%
↵  execute
```
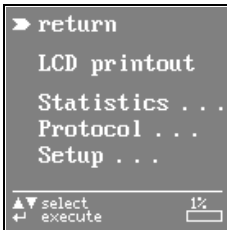
Selection and execution of the functions listed in the menu is made by means of the corresponding keys on the appliance tester.
The other operating controls and connectors should remain unchanged while the PSI module is active so that the data traffic will not be disturbed.

The menu item "Return" causes a return to the display presented prior to activating the PSI module.

The display ⌐10%⌐ shows that 10 % of the storage capacity are already occupied. When 99% of the memory are filled, the memory should be cleared and deleted (storage space for approximately 5 protocols left).

4 Presettings

Upon selection of the menu item „Setup"
you can perform the following settings:

```
➤ return
  LCD printout
  Statistics . . .
  Protocol . . .
  Setup . . .

▲▼ select        1%
↵  execute
```

4.1 Setting the clock

```
Date    16.01.95

Time    14:34


0..9 Enter date
ENTER Confirm entry
↵ Return to Setup menu
```
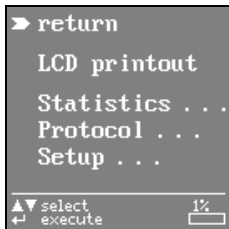
4.2 Enter and delete top and bottom lines

```
Top lines:
-


Bottom lines:




▲ Delete top lines
▼ Delete bottom lines
↵ Return to Setup menu
```

From the keyboard, you can enter optional texts which – prior to and/or after the test result – are to be automatically included in the printout. For top and bottom lines, each 5 lines of 24 characters each are available.

The top and bottom lines are the same for all test results in the memory.

Enter the texts from the keyboard.
Data entry is also possible via bar code readers (see section 7, page 20).

⇨ You will get to the next line at a time by pressing the ENTER key
⇨ You can delete the top and bottom lines with the ▼ and ▲ keys

4.3   Clear memory

To clear the memory, press
the ENTER key (13) on the PSI module.

To stop, press the
↵ key on the SECUTEST 0701S.

```
Sure to delete
memory ?


    YES   --> ENTER
    NO    --> ↵


↵ Return to Setup menu
```
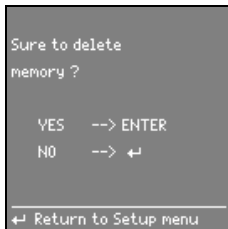
5 How to display, print and store protocol

☞ **Note**

Storage of the results of the safety and function tests **as well as their entry into protocol and statistics is only possible after tests according to DIN VDE 0701; that is, the function switch must be set the "AUTO", "SK I", "SK II", "SK III" or "T 240" position!**
With the switch set to "MENU" and "FUNCTION TEST", only the display shown on the LCD at a time can be printed out and the result of the last function test at a time can be stored (see section 10, page 34).

You can load the result of the last test according to DIN VDE 0701 at a time into the PSI module, store it there under an Ident Number, enter it and print it out. The protocol of the last test can be printed out several times.

The results of a complete working day (approximately 200 protocols) can be stored in the memory of the PSI module. Pressing the **STORE** key (15) several times makes for the same record to be overwritten again and again.

The test protocol automatically contains the test result including the measured values and limits as well as information on the visual inspection. Further specific information on device under test, customer and repair can be integrated in the test protocol by entries from the keyboard or via a bar code reader (see section 7, page 20).

The protocol is presented on the LCD in several windows.

5.1 How to display protocol, enter and store texts

☞ Request the PSI module via the **PRINT** key

☞ Select **Protocol** and confirm with **↵**

First, the test result including measured values and limits is shown. The display contains available data only.

In further windows that can be selected with the **▼** and **▲** keys, you can display information on the visual inspection as well as enter texts via the keyboard, and bar codes via the bar code reader (see section 7, page 20). A maximum of 24 characters can be entered into one line.

End the text entry of a line by pressing the **ENTER** key. At the same time, this brings you to the next line.

☞ To store, press the **STORE** key.
↵ returns you to the PSI menu.

When storing the protocol, the successive ident number is output between date and time.

```
16.01.95                    14:58

VDE measurements passed
Functional test passed

          MEAS. VALUE  LIMIT
INCL. OPER. ERROR
RPE       0.054      < 0.300   Ω
RINS      > 310.0    > 0.500   MΩ
UINS      0537       > 0500    V
IELC      00.18      < 07.00   mA
∆I        00.19      < 03.50   mA

▼ Visual inspection
↵ return
```

```
on test socket  PC I
Heating elem./capacitor

Visual inspection
Passed




▲ Meas. values
▼ Functional test
↵ return
```

Results of the function test

```
Functional test

Pmax      18 W
LF        0.34
Imax      0.23 A
W         0.000 kWh
t         00:00:01

▲ Visual inspection
▼ Test item
↵ return
```

Information on
the repair
Max. 10 lines of
max. 24 characters each

```
Information on repair
-




▲ Customer
↵ return
```

Figure at left:
Info on the DUT
max. 24 charact. each

```
Information on item
Type of unit:

Manufacturer:

Type:

Ident number:
-
▲ Functional test
▼ Customer
↵ return
```

Figure at right:
Info on the customer
max. 24 charact. each

```
Information on customer
Name:
-
Street number:

Zip code:

Town:

▲ Test item
▼ Repair
↵ return
```

If there is no data available in the appliance tester
when the menu item **Protocol** is called up,
the following message appears:

```
No data

available

to print

or to save

↵ return
```

5.2 Automatic protocol storage

All test results are automatically given a successive ident number* provided the **Autostore** function is active. After the safety test as well as after the function test, a note is displayed at a time to show that the test data is stored.

⇨ Open the **Setup** menu in the SECUTEST 0701S with the PSI module deactivated (switch position MENU), and there select the **Configure** menu.

⇨ Move the cursor to **Autostore**: Press ⏎, this switches the function on or off.

```
RPE        VAC/DC
RINS       UPROBE
IELC       R
IPROBE     IClip-on
ΔI         Temp
UL-N       ➤ Setup...

▲▼ Select
⏎  Start
```

```
CONFIGURE
➤Return

Visual inspection   on
Sound sig. error    off
Sound sig. meas.    off
Line pol. revers.   off
UPE-N test          off
Classification      off
Part 200            off
°C / °F / K...      °C
Autostore           off

▲▼ Select
⏎  Start
```
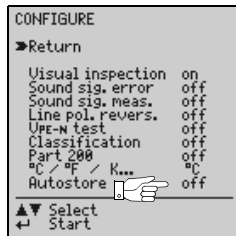
* It consists of a max. of 24 numerals. Only the first four numerals are used; counting begins with 0001.

5.3 Quick protocol storage

If many measurements are to be made successively and the results are to be evaluated later, the function "Quick protocol storage" is offered. This function can only be used after a test (safety test and/or function test).

⇨ Activate the PSI module with **STORE**
This brings you directly to the enter field for the ident number. Here, you can enter a max. of 24 digits and confirm with **ENTER**.

⇨ To store, press the **STORE** key once more.

The protocol is stored in thedatabase of the PSI module together with all available data. Empty data fields are ignored. At the same time you return to measuring mode to immediately start the next measurement.

```
Information on item
Type of unit:
-
Manufacturer:

Type:

Ident number:
               👉▯

▲ Functional test
▼ Customer
⏎ return
```
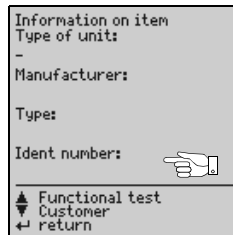
☞ **Note**
If a Reset has been made accidentally after the test, e.g. by changing the position of the function switch or pulling the interface cable off, the ident number must again be entered in the protocol. The data is saved.

5.4 Requesting stored protocols

A list of all stored protocols can be requested at any time in order to display and print out the contents of individual protocols at a later date. The first column contains the successive numbers, the second one the ident numbers. The first 14 characters of the ident number are shown as a maximum.

⇨ Open **Protocol** and confirm with ⏎ .

⇨ Press the Help key **i** (13) on the SECUTEST 0701S.
  A list of the already stored protocols appears.

⇨ Select the desired protocol using the ▼ and ▲ keys and confirm with ⏎ .
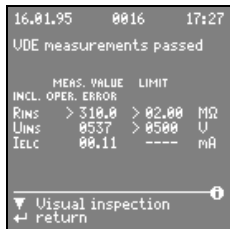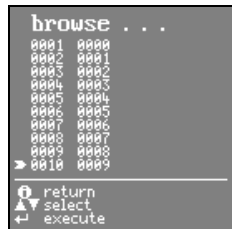
A maximum of 10 stored protocols is displayed. The next 10 protocols at a time are selected by leafing through with the cursor.

In the presentation of the archived protocol, an **ⓘ** on the first bottom line informs you that no more data can be entered here.

5.5 Print protocol

⇨ With the PSI module activated, press the PRINT key (17).

The protocol is printed with all available data, including the entered texts and the entered top and bottom lines. Empty data fields are ignored when printing. The print procedure can be repeated at random.

After printing, the LC display again shows the previous menu.

How to stop the printing process

⇨ Press the PRINT key (17) while the print mechanism is working.

Paper advance

⇨ Press the FF key (12)
  The recording strip is advanced as long as you keep the key pressed.

6 Statistics

All together, statistic data of a maximum of eight equipment classes can be recorded. The statistic data includes the number of the errors occurred as well as their percentage of the total measurement within one class.

The statistics menu appears provided **Statistics** has been selected in the main menu, see section 3.3, page 9.
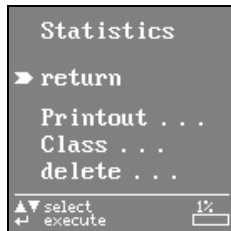
6.1 Getting started for statistics recording

Where statistic data is to be recorded, the associated class designation must be defined prior to a measurement by selection of Class. If a class name is already entered, it must be activated.

⇨ Move the cursor to **Class** and ⏎ the menu **select**: is displayed.

⇨ Move the cursor to the respective class name and ⏎, an underline appears at the end of the text.

⇨ If you want another class name: delete existing characters with ◄ or lines with ▲ + ◄ enter a maximum of eight characters from the alphanumeric keyboard.

⇨ Confirm with ⏎ the cursor moves to the error column.

⇨ Determine with ▲ or ▼ whether only the first or all errors are to be considered. Confirm with ⏎ An arrow appears behind the activated class name.

⇨ Repeat **Return** until a PSI display does no longer appear.

The safety tests as well as the function tests can now be performed for the selected class.

After the start of a protocol recording, the setting **First** or **All** in the statistics menu can no longer be changed.

After each complete measurement, consting of safety test and function test, the measured data must be stored so that it will be available for statistic evaluation. See "How to display, print and store protocol" on page 12. If, after the measurement, **First** or **All** is followed by a ↵ character, statistic data has been stored for the respective class.

All following measurements expand the statistics of the class activated at the time by the additional measured results. If new statistic data is to be recorded for an already existing class, the already stored statistic data can be deleted, see 6.3 Delete statistic data.

6.2   Request and print statistic data

Select the Statistics menu to request statistic data:

⇨ With ▲ or ▼ move the cursor to **Printout** and confirm with ↵,
  the menu **Printout:** is shown.

⇨ Select the class the statistic data of which you wish to see, confirm with ↵.
  The statistic data of the selected class is listed.
  Moreover, in this mode you can go between the statistic data of all classes
  with the aid of the ▲ or ▼ keys.

```
print:
all
return
                  ERRORS
▶ Office            first       ↵
  Private     6     all
                    first
  Klasse D          first
  Klasse E          first
                    all
  Klasse G          first
  Klasse H          first

▲▼ select
↵  execute
```

```
Office - first error
                  Number:    %
Test items:          18    100

Visual error:         1    5.5
Rpe:                 16    88.8
Sum ISO:              0      0
  RINS         □
  IELC         □
  IPROBE       □
  ΔI           □

SUM OF ERRORS:       17   94.4
↵ to statistics menu
```

```
Private - all error
                  Number:    %
Test items:           3    100

Visual error:         2   66.6
Rpe:                  0      0
Sum ISO:              0      0
  RINS         □
  IELC         □
  IPROBE       □
  ΔI           □

SUM OF ERRORS:        2   66.6
↵ to statistics menu
```

⇨ If the page displayed at a time is to be printed out: press **PRINT**.
The page **print STATISTICS** appears. Start of test as well as end of test of the selected class is printed out as test period.

⇨ If all statistics are to be printed out successively: press **Print total**.
Start of test of the first device under test as well as end of test of the last device under test is output as test period, regardless of the associated class.
A prompt appears whether all statistic data are to be deleted after being documented by means of the statistics printout.

Statistics	Statistics
print	all delete ?
	➤ NO
	YES
	▲▼ select
	↵ execute

Statistics printout of a class

01.03.95	12:00
SECUTEST	
< Top lines 1 to 5 settable via PSI >	
TEST STATISTICS:	
Test period:	
01.01.95 11:11 - 21.01.95 14:21	

Class B / first error

	Number	%
DUT:	119	100
Visual error:	5	4.2
Rsl:	17	14.2
Sum ISO:	0	0
Riso	0	
Iea	0	
Isonde	0	
ΔI	0	
ERROR TOTAL:	22	18.4

< Bottom lines 1 - 5 via PSI, 6 - 7 via PC >

6.3 Delete statistic data

⇨ With ▲ or ▼, move the cursor to **Delete** and press ↵.

⇨ Select the class the data of which is to be deleted or

⇨ Select **Delete: total**, the stored statistic data of all classes is deleted!

```
delete:
  all
> return
                ERRORS
  Office         first    ↵
  Private    &   all      ↵
                 first
  Klasse D       first
  Klasse E       first
                 all
  Klasse G       first
  Klasse H       first
─────────────────────────
▲▼ select
↵  execute
```

After all classes are deleted, class A is set active and the error type of each class is set to First.

7 Operation with bar code reader B3261

The bar code reader B3261 (accessory) allows for all information available in bar code form to be quickly, easily and safely entered into the test protocols. This type of data entry permits time-saving and low-cost acquisition of larger amounts of information, e.g. series measurements of devices provided with bar codes.

7.1 Connecting the bar code reader

⇨ Connect the reader to the RS-232 interface (4) of the PSI module.
  A PSI LC display window must not be active!
  The bar code reader confirms the correct connection with a four-fold sound signal.

7.2 Configuring the bar code reader

For operation on the PSI module, the bar code reader B3261 (DL80) must be configured. For that reason, codes (instructions) must be entered. This is possible

– By entering the bar code shown below or

– By entering several bar codes in the order listed in the following table. You will find these codes on the pages "Appendixes 1" and "Appendixes 2" of the operating instructions of the bar code reader.

The following bar code contains all information of the bar code series given in the table.

Enter as described in section 7.3, page 21.

The following bar code includes all information about the bar code line of the table.

Bar code for configuration of the reader for operation on the PSI module

7.2.1 Application of EAN13 codes (e.g. for the SE-Q.base program)

Using EAN13 codes, the 13th digit (test numeral) is disabled when reading the following bar code.

Setting	Code (instruction) from operating instructions	Sound signal	Remarks
Start configuration	Enter configuration mode	4 x	
Set protocol for RS-232 interface to XON/XOFF	C	1 x	Setting is always required for operation with PSI module!
	E	1 x	
	1	1 x	
Each bar code should be read once	B	1 x	Recommended
	C	1 x	
	0	1 x	
Save and end configuration	Esc and save	1 x + 4 x	
In the case of reading errors		3 x	

7.3 Reading bar codes

⇨ Point the reader to the bar code to be acquired (max. distance 1 cm) and press the button on the reader.
A correct reading is confirmed by a sound signal.

8   Battery mode

If the PSI module is **not** connected to the SECUTEST 0701S, only battery mode with the following functions is possible:

– Paper speed
– Data exchange with a PC

☞ **Note**
Even with the PSI module connected, batteries must be inserted so that the data can be saved. Power for all other functions is then supplied by the tester.

Switching the PSI module on

⇨ Press the ⬛ PRINT ⬛ key (17) until the signal lamp (9) lights.

Switching the paper speed on

⇨ Press the ⬛FF⬛ key (12). The paper speed is switched on as long as you keep the key pressed.

Data exchange with a PC

⇨ Connect the PC to the RS-232 connection socket (4) of the PSI module via an interface cable (see section 9, page 24).

Automatic switch-off

The battery is automatically switched off

– If the key for the paper speed is not pressed within 10 seconds after switch-on
– If there is a pause of more than 10 seconds in the data transfer with the PC.

9 Data transmission via the RS-232 interface

Stored protocols, measured values of the function test as well as statistic data can be transmitted to a PC via the RS-232 interface.

⇨ For this purpose, connect an interface cable to the PC at the RS-232 connection socket (4) of the PSI module. Thereby, the PSI module must not be active!

⚠ **Attention!**
Data transmission to a PC via the RS-232 interface is not possible when the PSI module is active for data entry (for top and bottom lines, for protocol texts and for setting the clock)!

☞ **Note**
The software packages PC.doc, PC.base and SE-Q.base are available for data acquisition and data management as well as for protocol establishment with the PC. These packages also include the required interface cable.

☞ **Note**
Data transmission from the PSI module to the PC is also possible when the PSI module is **not** connected to the SECUTEST 0701S and switched to battery mode (see section 8, page 22).

9.1 Interface definition and interface protocol

The interface of the SECUTEST PSI complies with the RS-232 standard.

Technical data:

Baud rate	9600 bd, fixed	Length of characters	8 bits
Parity	None	Stop bit	1
Data protocol	to DIN 19 244, X_ON/X_OFF protocol		

The interface information is processed via an interrupt routine, thus, the PSI module is continuously on standby. In addition, the character $<CR>=0D_H$ is used to signal the end of a message. If hex numbers are to be transmitted, they must be converted into two ASCII-HEX-BCD characters. The characters '_' $(=178_D=B2_H)$ is thus presented as 'B2'.

Control characters:

- ^D Echo on (useful for terminal mode; entry of instructions via termnianl program of an external PC)
- ^F Echo off (for remote control via processing program of an external PC e.g. via DOS software PC.doc)
- ^S / ^Q SW-handshake
- CR Instruction conclusion
- LF Ignored (but sent as line end)

Each message, regardless of being a command or a reply, has the following structure:

<OPERATION><ADRESSE><OPERATOR>[PARAMETER[;PARAMETER]] <DELIMITER$>
<CHKSUM><CR>

<OPERATION> This is the proper command, e.g. IDN? gives the equipment identification.
<ADRESSE> The SECUTEST PSI knows the address states "Not addressed" and "Address assigned" (with IDN).

Instructions without addressing: (general instructions)
The SECUTEST PSI always reacts (e.g. to read the actual address with IDN?).

Instructions with addressing: In a non-addressed state, the SECUTEST PSI does not always react, in an addressed state only when the sent address agrees with the actual address.

<OPERATOR> Shows whether it is
  a request ... **?**
  an assignment... **!** or
  a response ... **=**

<PARAMETER> Four basic types are distinguished:

– TYPE1: **Fixed parameters**, e.g. "ON", "OFF", "M" ...
  They must exactly be written as specified.
– TYPE2: **Variable parameters**, e.g. "GTM5015-S series 12345"
  Random character strings can be transmitted here.
– TYPE3: **Numeric parameters**, e.g. "<-121.0" or "0539" are transmitted with a floating point and may be up to 7 characters long.
  They must always be separated by the delimiter ";".
– TYPE4: **Measuring number** (consisting of type of measurement and measuring range)

**<DELIMITER$>**:As delimiter, the '$' character marks the end of a message.
  It is always followed by the checksum
<CHKSUM> The checksum is always relative to the total previous message including the $ delimiter. It is transmitted with 2 ASCII characters.
<CR> The carriage return (chr$(13)) character concludes a message. With the recognition of <CR>, the SECUTEST PSI tester accepts a message from the input buffer to the working buffer and then performs a syntax test. If this is successful, a reply message is sent.

With the following telegram, the SECUTEST PSI acknowledges whether it has executed an instruction (Y=Yes) or not (N=No). An acknowledgement, for example, is also made when a reply message is not required:

Acknowledge: Instruction executed, transmission format:
Y<ADRESSE><DELIMITER$><CHKSUM> <CR>
Not-Acknowledge: Instruction not executed, transmission format:
N<ADRESSE><DELIMITER$><CHKSUM> <CR>

9.2 Instruction set, validity and syntax

The syntax checker in the tester checks only the first three characters of each instruction. If they are correct, the instruction is accepted.

Parameters and instructions are configured in such a way that there will be no ambiguities. Writing in uppercase or lowercase letters is of no importance. At any rate, the checksum can only be obtained from the actually sent characters.

The parameter x is the address of the device (SECUTEST 0701S or SECUTEST PSI) which is to be addressed. If only one equipment is connected, an address need not be given.

Address range: $0 \leq x \leq 90$

9.3 Instruction list for the PSI module

IDN?	Gives the equipment identification
ESR?	Gives the equipment status
RST!	Clears the entire memory including top and bottom lines, date, time and statistics
MEM!	Deletes the data in the protocol memory
WER?	Gives the complete memory contents that is, the data from the PRO? instruction, completed by the entries in the PSI module
FKT?	Gives the data of the function test
DAT?	Gives date and time
DAT!	Sets date and time
KOP?	Reads the top lines
KOP!	Sets the top lines 1 ... 5
FUS?	Reads the bottom lines
FUS!	Sets the bottom lines 1 ... 5
FOO!	Sets the bottom lines 6 and 7
STA?	Reads the statistic data
STA!	Deletes the statistic data
CLA?	Reads class name and identification byte
CLA!	Changes class name and type of error
PRO?	Reads the data of safety test and function test (see operating instructions SECUTEST 0701S)

Instructions unknown to the PSI module are automatically passed to the SECUTEST 0701S (e.g. in the case of instruction PRO?)

How to read out equipment identity and status

IDNx? The PSI module reports the actual equipment identity to the user
Format: IDNx=x;GMN:SECUTEST PSI:GTM5016000R0001:DD MM YY HH MM SS$ with:

DD:	Day	HH:	Hour
MM:	Month	MM:	Minute
YY:	Year	SS:	Second

ESRx? The PSI module reports the actual equipment status:
Memory occupancy in %
Number of protocols in memory

Ex. of an inquiry:	ESR0?$<CS1><CS2><CR>
Ex. of a response:	ESR0=;034%;0070$
Meaning:	34 % memory occupied
	70 protocols stored

How to delete memory contents

RSTx! This instruction enables resetting of the software of the PSI module to the status of start-up:

The data and program memory is completely cleared,
all pointers are initialized,
the clock is set to 1.1.95 12:00,
the top and bottom lines are deleted,
all protocol data is deleted,
the statistic data is deleted and set to class A / first error.

If all is correct, the PSI module responds with Acknowledge.

MEMx! The memory containing the protocol data of the PSI module is cleared without a safety prompt.

If all is correct, the PSI module responds with Acknowledge.

How to transfer date and time

DATx? This instruction makes for date and time to be reported.
Example of an inquiry: DAT0?$<CS1><CS2><CR>
Example of a response: DAT0=08.03.94:14:53$<CS1><CS2><CR>
System clock is set to 8 March 1994, 14:53 h

DATx! Instruction to set system cock in the PSI module in accordance with the above format.

Example: DATIM0!08.03.94;14:53$<CS1><CS2><CR>

Note the order: Date first, then time,
date in German format,
always two characters for day, month, year and minute,
separation of date and time by delimiter ';'

If all is correct, the PSI module responds with Acknowledge.

How to transmit top and bottom lines

KOPx? This instruction makes for the top line to be read out of the memory (identical for all protocols). 5 strings are always transmitted. Each line is transmitted as one string.

FUSx? This instruction makes for the bottom line to be read out of the memory (identical for all protocols). 5 strings are always transmitted. Each line is transmitted as one string.

Example: 4 top lines have been entered

Inquiry: KOPF0?$CHECKSUMME<CR>
Response: KOPF0=test protocol according to;DIN VDE0701 Part1;
Test person;Erwin Beckenbauer;;$CHECKSUMME<CR>

KOPx!t1;t2;...;t5 Instruction: Overwrite top lines in the data memory of the PSI module.

FUSx!t1;t2;...;t5 Instruction: Overwrite bottom lines in the data memory of the PSI module.
tn > 24 characters causes the line to be broken up after 24 characters, the remaining characters are automatically written to the next line.
If tn is omitted, all characters on the lines 1 to 5 are written. Characters > 5 are ignored.

FOO!<t6><t7> Instruction: Define bottom lines 6 and 7. They are only output in the statistics printout.
Each of these bottom lines may contain a maximum of 24 characters. The bottom lines are checked for validity after each initial start (checksum) and are eventually deleted.

How to output the contents of the function test memory

FKT? The function test memory of the PSI module is output.
If the memory is empty, Not-Acknowledge is prompted.

The PSI module sequentially sends all records of the memory.
A record contains a complete function test of the SECUTEST tester, e.g.:

<Pmax:L:Imax:W:t>\$CS<CR>

If a function test was not made, merely \$24 is shown (24 = CHECKSUM \$).

If several records are stored, after the first record a ';' is sent as delimiter in place of <CR>.
The last record in a response ends with \$CS<CR>.

How to output the contents of the protocol memory

WERx? This instruction is used to output the memory contents of the PSI module. The PSI module sequentially sends all records of the memory. This record contains a protocol which is generated by the SECUTEST 0701S tester, completed by the protocol entries in the PSI module. Should the memory be empty, a Not-Acknowledge is sent.

WERTEx= SECUTEST protocol; date;time;device;manufacturer;type; identnumber;name;street,zip-code;town;repair1; repair2; repair3;repair4;repair5;repair6;repair7;repair8, repair9, repair10;protocol number$CS<CR>

– If several records are stored, after the first record a ';' is sent as delimiter in place of <CR>
– The last record in a response ends with $CS<CR>
– Within a record, the data is separated from each other by the delimiter ';'. If there is no data available, it is omitted in the transmission, but the delimiters are maintained as place holders.

☞ **Note**
The SECUTEST 0701S tester transmits only data that has been acquired. That is why the number of transmitted strings may vary.

EXAMPLE: WERø?

Prompt: VALUESx=PHOENIX;2701000000000000;
0.23;1.0;5.23;0.5;534;500;0.003;7.0;1.37;3.5;10.06.1995;13:45;
Waschmaschine;Siemens;A0815;A1234567;Huber Franz;Untere Kanalstr. 28;
98234;Moosbach;Motor;Pumpe;Kondensator;;;;;;;;0001$CHECKSUMME;
PHOENIX;0602000000000000;7.34;2.00;523;500;0.23;1.0;0002$CHECKSUMME;
TESTER;0602000000000000;7.34;2.00;523;500;0.23;1.0;0003$CHECKSUMME<CR>

Line breaks and spaces in the response transmissions of the examples are for clear presentation only, they are not included in the transmission.
With the first device under test, a Class I test was performed, followed by a function test, and a protocol completely filled in;
with the 2nd device under test, only a Class II test was performed without any entries via the keyboard.
The 3rd device under test was measured with another SECUTEST 0701S tester (name Tester), otherwise protocol same as 2nd device under test.

How to output statistic data

The statistic data stored in the PSI module for the 8 classes can be requested by means of the following instruction:

STAx?

If the statistic data of defined classes is to be requested, the instruction must be completed by the desired class. The options are given in angle brackets:

STAx?<A><;><B><;><C><;><D><;><E><;><F><;><G><;><H>

Response: Number of DUT;percentage thereof(100);number of visual errors;percentage thereof;number R_{SL}; percentage thereof;number sum ISO; percentage thereof; number R_{ISO}; number I_{EA}; I_{Sonde}; number ÿl; number error sum;percentage thereof;class name;identification byte$CS<CR>

      The **identification byte** is composed of:
      01: first error; not yet stored
      02: all errors; not yet stored
      1X: ..... errors; some stored

– If several statistics are requested, in place of <CR> a ';' is sent as delimiter after each statistic.
– The last statistic in a response ends with $CS<CR>
– Within a statistic (of a class), the data is separated from each other by a delimiter ';'. If there is no data available, it is omitted in the transmission, but the delimiters remain as place holders.

Example:

STA0?A;C;D

Response: 103; 100; 0; 0; 2; 1.9; 0; 0; 0; 0; 2; 1.9; Class A; 11; $CHECKSUM;
      ; ; ; ; ; ; ; ; ; ; ; ; ; ; Class C; 01$CHECKSUM;
      1; 100; 0; 0; 1; 100; 0; 0; 0; 0; 0; 1; 100; Class D; 12$CHECKSUM<CR>

Line breaks and spaces in the response transmissions of the examples are for clear presentation only, they are not included in the transmission.

How to output names and identification byte

If only name and identification byte are to be sent, the instruction must be completed by the desired class. If a class is not given, name and identification byte of all eight classes are sequentially sent.

CLAx?<A><;><B><;><C><;><D><;><E><;><F><;><G><;><H>

> The **identification byte** is composed as follows:
> 0000\$000**1**b: **first error**; not yet stored
> 0000\$00**10**b: **all errors**; not yet stored
> **0001**\$00XXb: ..... errors; **some stored**
> **100X**\$00XXb: ..... errors; **........ stored**; active at present!

Example:

CLA?A;C;D

Response: Class A; 11; \$CHECKSUM; Class C; 01\$CHECKSUM;
Class D; 92\$CHECKSUM<CR>

How to delete statistic data

If statistic data of defined classes are to be deleted only, the instruction must be completed by the desired class. **Attention!** If a class is not given, the statistic data of all classes is deleted.

STAx!<A><;><B><;><C><;><D><;><E><;><F><;><G><;><H>
Thereby, the deleted statistics are always set to 'first error' acquisition. The name once stored is maintained.

How to change class name and type of error

CLAx!<A='xxxxxxxx';2><;><B='yyyyyyyy';2><;><C=...
The letters A ... H are used as place holders for the maximum of 8 class names each of which can be assigned 8 alphanumeric characters as well as two types of errors. Two types of errors are possible here.

1: Only the first error is considered in the statistics

2: All errors are considered in the statistics

Apart from the separation between the instructions, a separation must be made between class (A...H) and type of error (1 or 2) by means of a semicolon. Only those letters must be given whose associated class name or type of error is to be changed.

How to change the active statistics

CLAx!<A><B><C><D><E><F><G><H>
Only one option must be given on principle!

Different changes within an instruction

The following applies:

– The following can follow a **change in name**:

... The type of error, separated by a semicolon

... The introduction of another statistic with 'A ... F', separated by a semicolon

... The active statistic (must always be placed at the end), separated by two semicolons

– After a **change in the type of error**:

... The introduction of another statistic with 'A ... F', separated by a semicolon

... The active statistic (must always be placed at the end), separated by two semicolons

– After a **change in the active statistics**:

... Nothing else must be specified !

Example:

Several statistic settings for different classes are to be made in an instruction:

CLA1!A=Hausger.;2;B;2;C=Kühlsch.;1;D=PC;E;2;;C

Meaning: Statistic A: Assign the name 'Household appliances', set to 'all errors'
               Statistic B: Set to 'all errors'
               Statistic C: Assign the name 'Refrigerator', set to 'first error'
               Statistic D: Assign the name 'PC', the type of error is maintained
               Statistic E: Set to 'all errors'
               Statistic C: Activate

10   Print LC display

Each presentation on the LCD can be printed out on the recording strip without any changes. This way, it is possible to print out measured results achieved with the switch set to "MENU" and "FUNC-TION TEST".
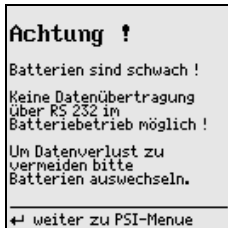
⇨ The presentation to be printed is shown on the LCD.

⇨ Activate the PSI module by pressing the ▌ PRINT ▌ key (17) and call up the menu item "Print LC display" (see section 3.3., page 9).

Stop printing

⇨ Press the ▌ PRINT ▌ key (17) while the print mechanism operates, but not during a print pause.

11   Error messages

When the batteries are nearly exhausted,
the following message appears
when the PSI module is activated.

```
Achtung !

Batterien sind schwach !

Keine Datenübertragung
über RS 232 im
Batteriebetrieb möglich !

Um Datenverlust zu
vermeiden bitte
Batterien auswechseln.

↵ weiter zu PSI-Menue
```

Message when the STORE key (15) is pressed, even though there is no free memory.

12   Specifications

Connection elements

Fasteners

on tester   2 knurled screws for fastening in the lid of the SECUTEST 0701S;
                         transmission of measured data and power supply via ribbon cable and
                         9-pin D-SUB connector, to be connected to the RS-232 interface of
                         the SECUTEST 0701S

Interface   RS-232, bidirectional, 9-pin D-SUB socket, e.g. for connection to a
                         PC or a bar code reader

Data memory

RAM (data)   100 kbytes

Printer

Print mechanism   4-needle matrix printer
Print width   40 characters per line
Real-time clock with date Battery-buffered

Interface

| Type	RS-232, serial, acc. to DIN 19241
Baud rate	9600 bauds
Parity	None
Data bits	8
Stop bit	1

Assignment of the interfaces

The 9-pin D-SUB connector for connection of the PSI module to the SECUTEST 0701S tester has the following pin assignment:

```
1: Enable for remote control „Plus"
2: RXD
3: TXD
4: NC
5: GROUND
6: Enable for remote
   control "GROUND"
7: NC
8: NC
9: +9 V
```
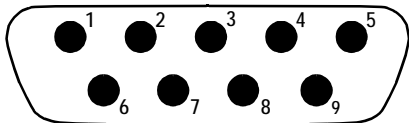
The 9-pin D-SUB **connection socket** for connection to PC, bar code reader, etc., has the following assignment:

```
1: NC
2: TXD
3: RXD
4: Switching input
5: GROUND
6: +5 V
7: CTS
8: RTS
9: NC
```
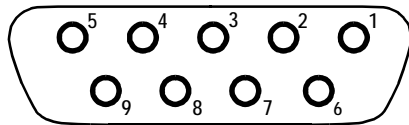
Reference conditions

Battery voltage	$6\ V \pm 0.5\ V$
Auxiliary power	$9\ V \pm 0.5\ V$ DC or $8\ V \pm 0.5\ V$ rectified
Ambient temperature	$+23\ °C \pm 2\ K$
Relative humidity	$50\ \% \pm 5\%$

Storage temperature

Stockage temperature	$-20\ °C \dots +60\ °C$, except for batteries, paper and ribbon
Operating temperature	$0\ °C \dots +40\ °C$
Humidity	max. 75 % RH; no dewing

Power supply

Supply voltage
   with connection
    to SECUTEST 0701S   6.5 V ... 12 V
   with battery mode   4 each 1.5 V mignon cells (alkaline-manganese) acc. to IEC LR 6
Power consumption
   Standby (data buffering),   5 μA ... 200 μA
   Print protocol   < 500 mA
   Paper feed   < 200 mA
   Data transmission to PC   < 100 mA

EMC

EN 50081-1
EN 50082-2

Mechanical configuration

Protection type   IP 20 for the case
Dimensions   240 mm x 81 mm x 40 mm
                           (excl. knurled screws and ribbon cable)
Weight   approx. 0.8 kg

13 Maintenance

13.1 How to reset the PSI module

Should the PSI module no longer react, e.g. due to incorrect operation, it must be initialized:

⇨ Pull the line plug of the SECUTEST 0701S and make a new start. Stored data is saved or

⇨ **If stored data is to be deleted at the same time:**
Select the **Setup** menu and there the menu item **Clear memory**.
Simultaneously press ▲ + 0 .

13.2 Batteries

If, when activating the PSI module, the unit reports that the batteries are nearly exhausted, the complete battery set should be replaced with a new one with the least possible delay to prevent loss of data (see section 3.1, page 8).

⚠ **Caution!**
Exhausted batteries must not be left in the unit.
Dispose of the batteries in a way that protects the environment.

13.3 Recording paper

At regular intervals, check that there is sufficient paper supply. The printer should not be operated without paper as this can cause damage to the print head.
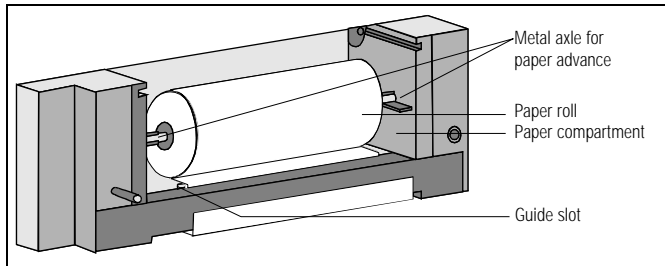
At a high humidity of the atmosphere or at high ambient temperatures, the recording paper in the printer may deform. If this is the case, the print mechanism can no longer transport the recording strip.

In this case, remove the deformed paper plus about another 20 cmand reload the paper.

Type designation for a pack of 10 rolls of recording paper: **PS-10P**

How to load the paper

⇨ Remove the PSI module from the lid of the SECUTEST 0701S.

⇨ First fold up the cover of the paper compartment (1), then the printer cover with the paper tear-off edge (7).

Metal axle for paper advance

Paper roll
Paper compartment

Guide slot

⇨ Take care that the print mechanism can be switched on when the **FF** key (12) is pressed. For this purpose, sufficiently charged batteries must be installed. If the batteries are not to be used, connect the PSI module to the SECUTEST 0701S – e.g. via an interface cable as extension cable.

⇨ Slide the front end of the paper strip into the guide slot of the print mechanism and simultaneously press the **FF** key (12), keep the key pressed until the front end of the paper appears at the paper outlet.
Prior switch-on of the PSI module is required for battery mode (see section 8, page 22).

⇨ First insert the metal axle for paper advance (2) into the paper roll (3), then, together with the paper roll into the two holders at the sides of the paper compartment.

⇨ Fold the paper tear-off edge (7) back and close the cover of the paper compartment (1) so that the catch engages audibly.

13.4 Maintenance case

Special maintenance of the case is not required. Ensure a clean surface. Use a slightly moist cloth for cleaning. Do not use detergents and scouring agents.

13.5 Ribbon

When the printout becomes too pale, you should replace the ribbon.

☞ **Note**
Type designation for a pack of 10 ribbon cassettes: **Z3210**.
You can print about 6 rolls of paper with one ribbon.

How to replace the ribbon

⇨ First fold up the cover of the paper compartment (1), then the printer cover with the paper tear-off edge (7).

⇨ To **remove** the ribbon cassette, exert a slight pressure on the right side of the cassette. The ribbon cassette comes off its holder. Carefully remove the ribbon cassette.

⇨ Insert the new ribbon cassette (6) with the tension screw to the left into the left guide provided for this purpose. A slight pressure exerted on the right side of the cassette makes for the cassette to firmly engage in the holder.

⇨ With the print paper inserted, the paper strip must be threaded through the guide between ribbon and cassette prior to inserting the cassette.

⇨ When you insert the ribbon into the guide, take care that it is smooth and placed completely under the recording paper. The tension of the ribbon can be adjusted by turning the ribbon tension screw.
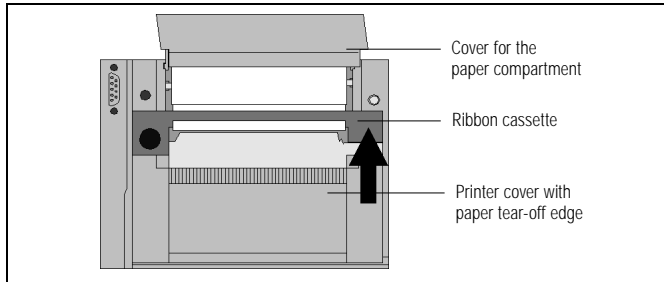
Cover for the paper compartment

Ribbon cassette

Printer cover with paper tear-off edge

⇨ Fold the paper tear-off edge (7) back and close the cover of the paper compartment (1) so that the catch engages audibly.

14   Repair and replacement parts service

When you need service, please contact:

> GOSSEN-METRAWATT GMBH
> Service
> Thomas-Mann-Straße 16 - 20
> D - 90471 Nürnberg
> Telefon (09 11) 86 02 - 4 10 / 4 11
> Telefax (09 11) 86 02 - 2 53
> Telex   6 23 729 gome d

This address is for Germany only.
Abroad, our representatives or establishments are at your disposal.

15   Training

We offer interesting seminars with practical training on the topic "Measurements for testing the protecting devices in power installations and equipment". These seminars also provide detailed information on how to operate the SECUTEST 0701S and the SECUTEST PSI and, moreover, how to perform the measurements specified by DIN VDE.

We will be glad to send you more informative documents.

GOSSEN-METRAWATT GMBH
Bereich Schulung
Telefon (09 11) 86 02 – 4 06
Telefax (09 11) 86 02 – 7 24