UNION
Instruments




Operating Instruction
Data logger
ESS3 R1 – ESS3 R2 – ESS3 A1

Translation of the original operating instructions

Union Instruments GmbH

Zeppelinstrasse 42

76185 Karlsruhe

Germany

☎ +49 (0)721-680381-0
🖷 +49 (0)721-680381-33
✉ support@union-instruments.com
💻 http://www.union-instruments.com

Item No: 01602199999

Table of contents

1 Indications for explosion proof instruments

• Application area and prescriptions

These indications and warnings must be considered absolute to guarantee an employment without danger. The devices may only be employed for the intended application. Employment is allowed in areas that are potentially explosive by gases or vapours. They are assigned to the explosion group and temperature class, indicated on the type plate. With the establishment and the exploitation of explosion protected control- and measuring-installations, the applicable national regulations and prescriptions have to be considered.

• General indications

For safe exploitation of the device, professional transport, appropriate storing and assembly as well as careful operation and maintenance, is necessary. Any intervention at the device must be carried out by authorized personal, exclusively using original spare parts. The electrical data, stated on the type plate and the test certificate as well as their special conditions have to be considered.

When operated in the open air, it is advised to protect the explosion protected devices against direct water influences.

• Assembly and maintenance

Before assembling, it must be checked, if the indication on the type plate coronds with the required kind of protection for the potentially explosive area. At battery exchange, only an original battery block of the manufacturer with Ex. Protection approval and Ex-characteristic on the packing and the battery block may be used.

2 Technical data ESS3 System

Measuring range pressure:

0… 100	mbar r	r gauge pressure
0… 250	mbar r	r gauge pressure
0… 1	bar r	r gauge pressure
0… 2, 5	bar r / o	r gauge or absolute pressure
0… 10	bar r / o	r gauge or absolute pressure
0… 25	bar o	absolute pressure
0… 100	bar o	absolute pressure

Measuring range temperature:

-10…+40 °C

Other measuring ranges on request

Overpressure protection:	up to 1,3-times the end of the range
Connection:	½“ male thread with 1/8“ female thread
Accuracy:	± 0,4 % of range end val. (optional 0,2 % or 0,1%)
Resolution:	less than ± 0,01 % full scale
Memory:	250 000 measuring values
Power supply:	2 Lithium cells (2 x 3,6V / 7,2Ah)
Power consumption:	Power save: ca. 45uA, active: ca. 20mA
Battery operating time:	ca. 7 years at measuring rate 1 minute
Protection:	IP 67 at ESS3 with gauge pressure sensor IP 68 at ESS3 with absolute pressure sensor
Ex-proof protection:	Ⓔx II 2 G Ex ib IIC T4 Gb
Seal material:	NBR70 or Viton
Dimensions:	ca. 108 x 161 x 77 mm (W x H x D)
Weight:	1200 g
Operation temp.:	-20 ... +60°C
Storage temp:	-20 ... +60°C

IrDA-interface cable serial:

Connection:	9-pin D-SUB female

IrDA-interface cable USB:

Connection:	4-pin USB-connector

3 Introduction

The ESS3 - system (electronic memory recorder) is a further development of the mechanical recorders which have been used for decades in the gas and water industry.

The electronics are capable of simulating and storing all relevant data. The system is independent of power supply and robust built which makes it universal applicable.

There has been given much attention for high accuracy at lower measurement ranges, e.g. 100 mbar. At low temperatures e.g. -15 °C, changes of less than one mbar can be measured very accurate. With special calibration an accuracy of 0,1% can be achieved over the total temperature range of -20 to +40°C.

There are four instrument building groups all based on the same electronics.

1. ESS3 R1:
   Measuring pressure or temperature with one radial sensor port. This type is preferably used for fault analysis in pipe networks or for monitoring gas pressure regulation systems.
2. ESS3 R2:

   Measuring pressure and temperature with two radial sensor ports. This type is mainly used for leak tests of pielines where an additional temperature measurement is required.
3. ESS3 A1:

   Measuring pressure or temperature with one axial sensor port. It is designed for under floor hydrants. Using an optional bayonet adapter the pressure is measured in an under floor hydrant
4. ESS3 S4 station recorder:
   In this instrument 4 measurement values are captured (and optional contacts). All important information in a pressure reducer station can be recorded. They are an important help for real time monitoring.
5. ESS3 DPK
   The pressure test case is a composition of an ESS3 with a battery powered printer. For pressure tests locally at the site, a pressure test can be done and immediately printed. The temperature compensated pressure is calculated from pressure and temperature. This is important for the evaluation of tightness.

The construction of the ESS3 is flexible. The system has a large data memory and a large program memory. The program memory, which controls the operating system, can be updated by the customer himself. Older instruments can be updated with actual software.

The pressure sensors are pre-calibrated in a sensor housing and can be exchanged. The evaluation unit is identical for all measurement ranges.

Both the evaluation unit and the sensor are explosion proof.

4 First time set in operation

At delivery the instrument is in power save mode PWSV. In this mode the power consumption of the ESS3 is very low but it is still active and reacts on input commands. In this mode the instrument is stored.

By pressing the button  **"enter"** for 6 seconds, the system activates and switches to the measuring mode.

Attention: At releasing the button after a short push the function is executed. That applies to all actions of the ESS3 program.

In this mode the other 3 buttons are inactive.

The ESS3 measures and stores the pressure. Usually it measures with the adjustments set by the manufacturer. These are the adjustments that were active before switching the ESS3 in power save mode.

In this mode the instrument can be installed and than it measures with the following pre-adjusted parameters.

Measuring rate	4 sec
Resolution	0,5 %
Storage mode	standard (static)
Upper target limit	off
Lower target limit	off
Average factor	1

4.1 Installation of the connection

The ESS3 has 2 type plates. At the back of the instrument is a serial number for the evaluation unit and at the sensor is a serial number for the measuring range. The customer can change the sensor. Both serial numbers are registered. The pressure must be within the measuring range. Overpressure up to 1,3-times the measuring range is allowed. Valid measurement data are only obtained within the span of -4% to +104% of the range. The measuring range extends the top to approx. 104%, and the bottom to approx. 4% below the zero point. As a result the zero point can be clearly checked.

The ESS3 should then installed via the ½" male thread to a measuring point with internal union nut and may be fitted in any position. Instruments with a measuring range in mbar are position dependent. The zero point should be corrected in the final measuring position.

ESS3 for temperature is attached directly to the sensor, using a union nut. The sensor tip should be placed in the medium either directly or by a dip sleeve. The ESS3 model with a flexible connection to the temperature sensor should be installed in a fixed position and the sensor placed in the measuring medium.

Barometer ESS3 is installed without any connection. The output remains open.

4.2 Working with TfsWin III

The program TfsWin III reads the measurement data of the ESS3 and displays them. The program is indicating how to install the software. After starting the program the following display appears:

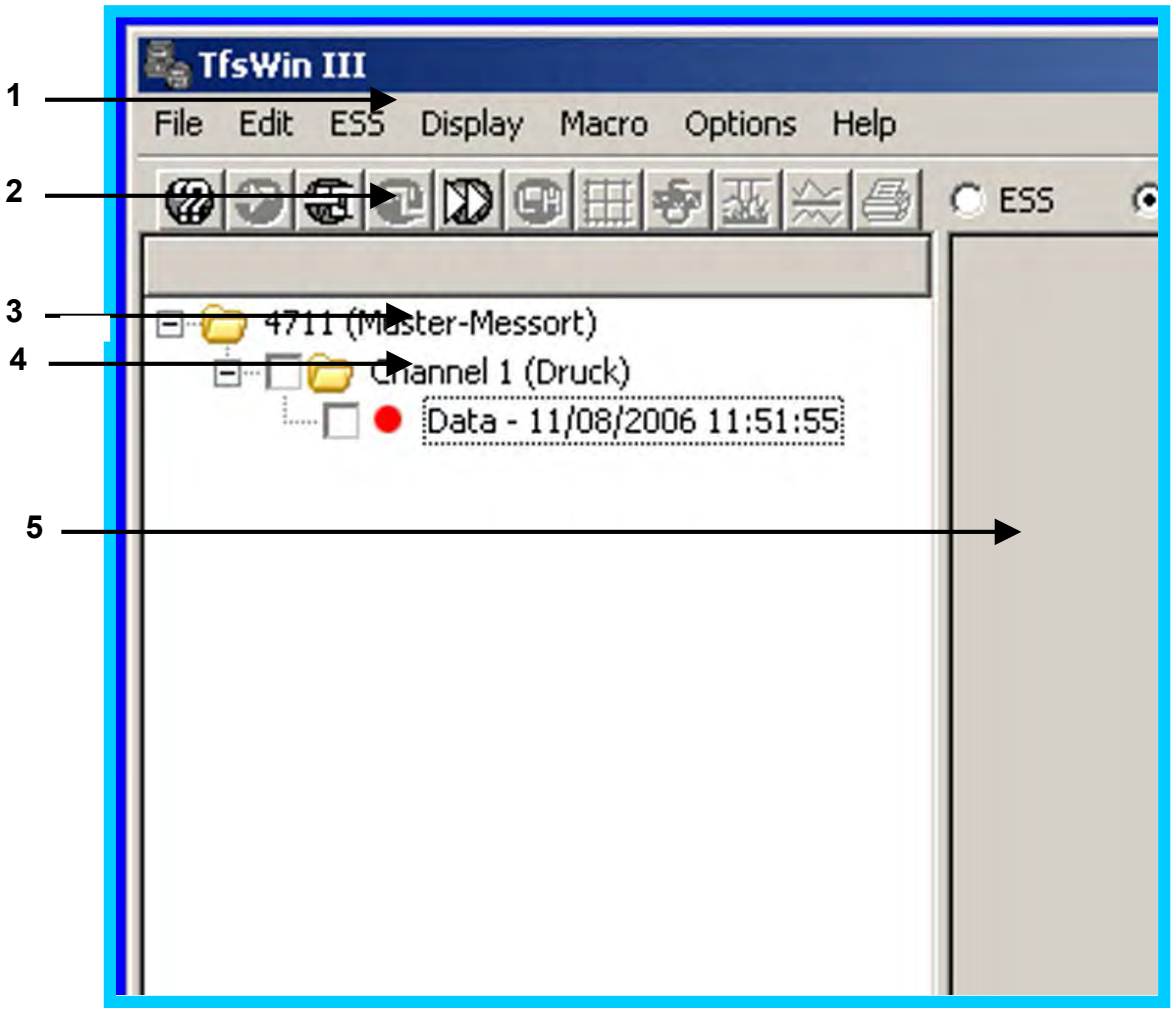


Figure 1: TfsWin III start display

1	Menu bar	2	Icon bar
3	List of measurement places	4	Channel
5	Diagram field		

Example data can be displayed immediately. After marking the map „Channel 1 (Druck)“ in window 2, the parameters are displayed. The diagram (3) is displayed by marking „Data -11/08/2006 11:51:55“.

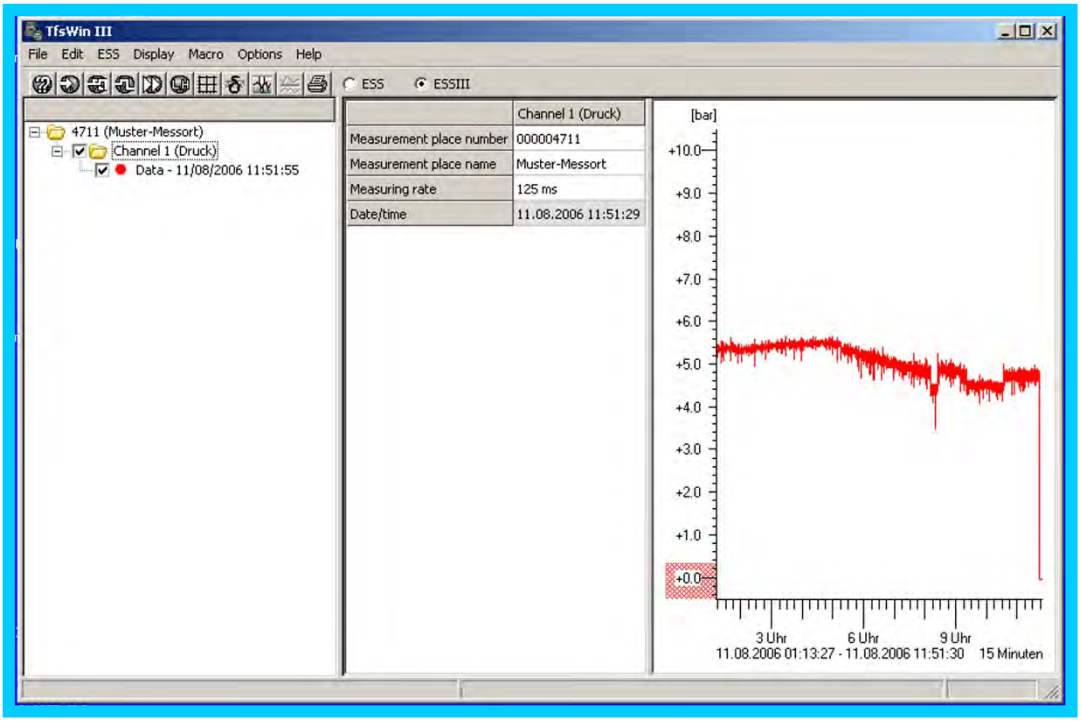


Figure 2: TfsWin III display with example curve

The measurement data is now transferred from the ESS3 to the PC. The IrDA-interface cable is available with an USB interface or with a serial interface. When using a serial interface, communication with the ESS3 can start immediately. With the USB cable the installation of a driver has to be confirmed during software installation.

4.2.1 Transfer to the PC

After the ESS3 has measured for some time, the measurement data can be read. The IrDA-interface cable is connected to the computer interface (serial or USB) and the transfer head is connected to the adapter pins at the ESS3. With menu point `ESS / Receive measurement data (all channels)` the transfer is started. After ending the transfer successfully, with a complete occupied memory this can last about 2 minutes, the curve appears on the screen.

After the first test, in following chapters all functions of the ESS3 and TfsWin III will be explained.

5 Handling the ESS3

Handling of the separate ESS3 for gas, water or temperature is identical. Also instruments R2 with 2 channels (pressure and temperature) are operated in the same way. The DPK III (pressure test case) is equipped with an ESS3 for pressure and temperature. The software adapts itself to the pressure test.

5.1 Overview ESS3 R1

Figure 3: ESS3 R1

1	Display	2	Arrestor ring
3	4 Operation buttons	4	IR window ESS3
5	Adapter pins	6	
7	Field for sensor data	8	Sensor housing
9	G½“ male thread	10	G1/8“ female thread

5.2 Overview ESS3 A1

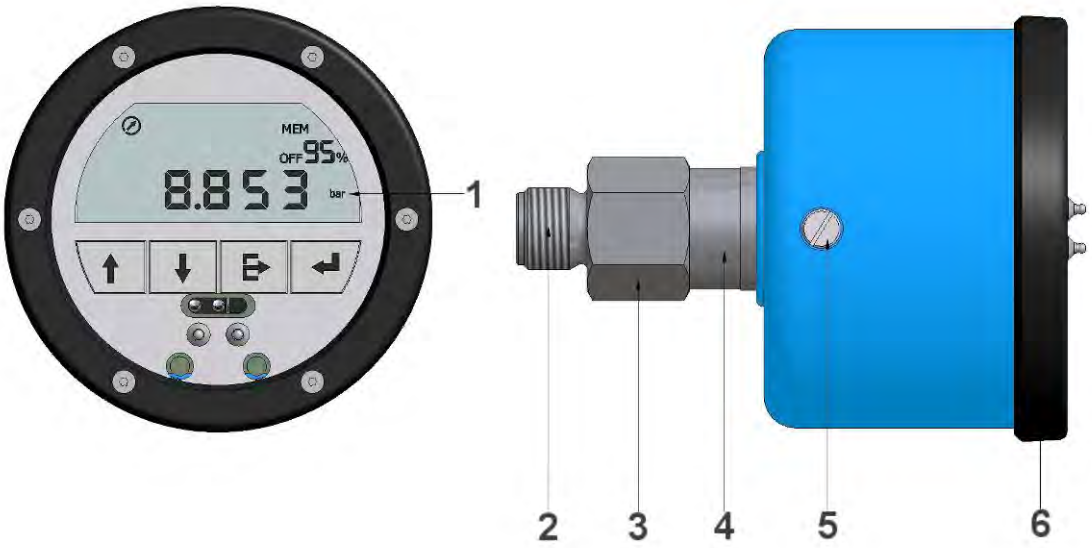


Figure 4 : ESS3 A1

1	LCD-display	2	Connection G½“
3	Sensor housing	4	Field for sensor serial nr.
5	Test screw	6	Front plate arrestor ring

The ESS3 for water pressure is watertight (IP68). It can be mounted directly in a hydrant. For this purpose a bayonet adapter is available which can be tightened with a normal hydrant-key. Even water over floating of the ESS3 is possible for some time.

5.4 ESS3 display indications

All fields for display indications are described. Several segments show symbols and numbers in different formats and text.

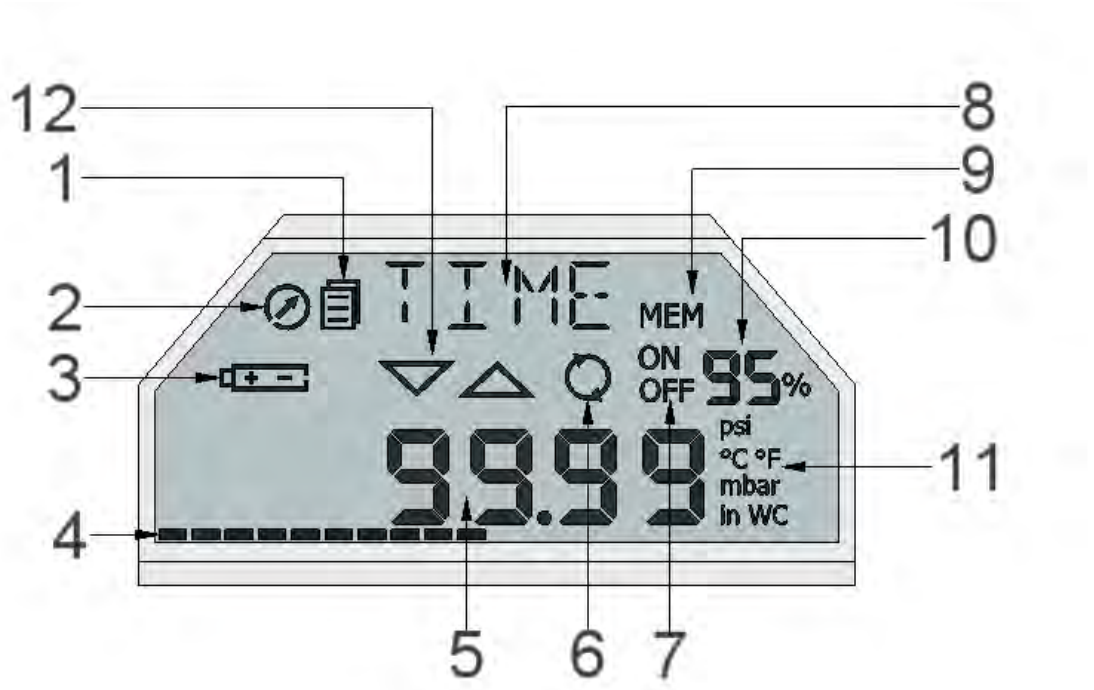


Figure 5: ESS3 display indications

1	Menu mode	2	Measuring rate indication
3	Battery indication	4	Action bar
5	Numeric indication field	6	Storage mode
7	Storage on/off	8	Menu indication field
9	Memory	10	Remaining memory
11	Units	12	Alarm limits

5.4.1 Menu mode

The symbol for menu appears only in the different menu modes and not in the measuring mode.

5.4.2 Measuring rate indication

The measuring rate indication is blinking in the measuring rate. It changes from visible to invisible when 1 cycle is ended.

5.4.3 Battery indication

The battery symbol appears, when the capacity of the battery is at 5%. It basically depends on the measuring rate if the instrument works for weeks or even months. See the table in this manual.

5.4.4 Action bar

The action bar moves from left to right. When the ESS3 needs some time for a certain action, the action bar shows the status. Releasing the button executes the instruction.

5.4.5 Numeric display field

In this segment all numeric indications with the corresponding formats are displayed. The appropriate format, date, number or in special cases even short information, is switched on with the matching menu point.

5.4.6 Storage mode

The memory switches from standard (static) storage to rolling storage.

The standard (static) memory is written until completely full. After deleting the old values, the storage of new values can be started.

The rolling  Memory overwrites the oldest values and stores the actual values. Deleting the memory starts a new measurement.

5.4.7 Storage on-off

Using the memory can be switched on or off. With memory switched off measuring continuous with the current parameters. Values are displayed but not stored.

5.4.8 Menu display field

In this field all menus are displayed. The abbreviations of all menus are described in chapter 5.6.5.

5.4.9 Remaining memory

The remaining memory is indicated in steps of 5%. After the first stored value the indication switches from 100% to 95%.

5.4.10 Units

In Europe the units mbar, bar und °C are intended. In the Anglo-Saxon region the units °F, wc and psi are intended. Software conversion by the manufacturer.

5.5 Measuring with the ESS3

In the measuring menu the menu symbol does not appear. With the buttons **„up“** and **„down“** the current meas.value (1), minimal meas.value (MIN1), maximal meas.value (MAX1) and difference value (DIF1) are displayed. The 1 indicates an instrument with one channel. For an instrument with 2 or 3 channels this indication is 2 or 3. Instruments with 3 channels have 12 different presentations.

MIN-, MAX- or DIF-values can be reset to the current measurement value by pressing ESC for a longer time (2 sec). After the left to right movement of the action bar and releasing the button the value will be updated. The value is recalculated from this time.

The DIF-value shows the difference between the current measurement value and the value at the last reset.

5.5.1 Main menu

By pressing the button

 **“enter“**

you always get in the main menu on the position INFO. The menu symbol appears. With the buttons

 „**up“** or  „**down“**

the three menus of the upper menu level are attended cyclically.

The abbreviations from the main menu have the following meaning:

INFO	Information in the system, only indications
PMTR	Parameters, may be changed.
COMM	Commandos, may be executed.

Each of these 3 parameters leads to a lower menu level with the button

 **“enter“**

5.5.2 Menu INFO - Information

In the menu INFO the instrument´s information is presented. It is not possible to change anything. Changes are only possible in the menu PMTR and with the software TfsWin III.

Because some information is channel-specific, exchange of the channel is excluded. The data, assigned to the individual channel, may be displayed. The CHNL menu is only visible when more channels are available. The menu level consists of 11 menu items

(1. CHNL	Channel choice, if available)
2. RANL	Range low
3. RANH	Range high
4. MEM	Capacity of the memory
5. RMEM	Remaining memory
6. TYPE / NR / SNOE	Serial number and type of the evaluation unit
7. TYPE / NR / SNOS	Serial number and type of the sensor
8. CALI	Calibration
9. DATE	Date
10. TIME	Time
11. VERS	Version
12. BALT	Battery life time

5.5.2.1 RANL/RANH - Range low/high

The lower measurement limit of the channel is indicated. The measuring value can be 4% below this limit, resulting in a negative value. If the pressure gets lower than 4%, the display shows stripes at the lower edge. The upper measuring limit is treated in the same way.

5.5.2.2 MEM (Memory) - Total memory

Here the total available memory is indicated. 250,000 memory places is the default.

5.5.2.3 RMEM - Remaining memory

Here the remaining memory is indicated.

5.5.2.4 SNOD - Serial no. evaluation unit

In a 2 sec. rate the number of the evaluation unit is indicated.

5.5.2.5 SNOS - Serial no of sensor

In a 2 sec. rate the number of the sensor is indicated.

5.5.2.6 CALI - Calibration date

The date of the last calibration is indicated in the format TT.MM.YY. The menu CHNL appears only at ESS3 with multiple channels. ESS3 have the channel numbers indicated in the menu indication field. A single channel instrument displays the number 1.

5.5.2.7 DATE - Date

Here the current date is indicated in the format DD.MM.YY (days, months and years). In the example the date is 23 January 2006.

5.5.2.8 TIME - Time

Here the current time is indicated in the 24h format HH:MM:SS. (hours, minutes and seconds).

5.5.2.9 VERS - Version

The version number of the software is indicated in the format 1.00.00.

5.5.3 Menu PMTR - Parameters

In the parameters menu the measuring rate and the time can be changed. With an ESS with multiple channels the measuring rate is changed for each channel separately. The current channel has to been chosen.

Further parameter adjustments are made with the software TfsWin III.

(1. CHNL Channel adjustment)

2. SMPR Adjustment of the measuring rate

3. CLCK Time adjustment

4. PASS Set password

5.5.3.1 CHNL - Channel

Pressing **„enter“** toggles the channels of a multiple channel instrument. All indications have the channel number as index.

5.5.3.2 SMPR - Sample rate

Pressing **„enter“** the measuring rate is adjusted. Changing the measuring rate is indicated by blinking. Holding **„up“** increases the sampling rate from milliseconds via seconds via minutes and hours to 6 hours maximum. Holding **„down“** decreases in the same way. **„Enter“** confirms the chosen value.

The measuring rates of multiple channel ESS3 must be an integer multiply of the fastest channel. Other values are automatically corrected by the program. The changes will be visible after a new addressing.

5.5.3.3 CLCK - Clock

„Enter“ leads to the indication DATE. Holding **„up“** increases the current date, **„down“** decreases. When the date is confirmed with **„enter“** the time appears in the menu TIME. The current time is set in the same way and confirmed with **„enter“** . After this the menu shows the item TIME.

5.5.3.4 PASS (Password) – Password

Unauthorized access to the ESS3 can be forbidden with a password (four digit number). The default setting is 0000. When this number is changed, it has to be entered at the next access. This number is valid until a new number is set.

5.5.4 Menu COMM - Commands

The COMM menu has 2 menu items.

DEL Delete

PWSVPower save

In this menu 2 commands are executable. They must be confirmed with **„yes“** or **„no“** and **„on“** or **„off“** .

5.5.4.1 DEL - Delete

Deleting is confirmed with **„enter“**, the indication is blinking. Toggle with **„up“** and **„down“**. **„Yes“** deletes all data finally. A new measurement is started, **„no“** returns to the menu.

5.5.4.2 PWSV - Powersave

You should activate Power save when the instrument will not be used for a longer time. It is nearly shut down. Power consumption is at minimum.

“enter“ leads to menu DEL

„up“ or **„down“**

leads to menu PWSV

“enter“ leads to a blinking display, which can be toggled with **„up“** or **„down“** from **„on“** to **„off“**.

or

or

Pushing **„enter“** again confirms the blinking value.

After confirming **„on“** the menu symbol appears for a 120 second count down. In PWSV mode it indicates:

The power consumption of the ESS3 is very low in this mode. The instrument is not completely switched off, it can be reactivated at any time.

To switch from power save to measuring mode, hold **„enter“** as long as the action bar moves from left to right. Pushing **„enter“** shortly leads to the menu INFO. From there PWSV is attended in the usual way and can be deactivated.

5.5.5 All abbreviations in the menus

In this chapter all abbreviations which may occur in ESS3 are listed.

AVRG Average
Meaning: average
Unit number of meas. values
Description
Number of measuring values to be averaged

BALT Batterie life time
Meaning: Batterie life time
Unit: ---
Description :
Date till the battery operates normaly

CALI Calibration date
Meaning: calibration date
Unit: ---
Description:
Indication of the last calibration date of the channel

CHNL Channel
Meaning: channel
Unit: ---
Description:
Set up the active channel

CLCK Clock
Meaning: time
Unit: ---
Description:
Indication of the actual time of the ESS3

CNCL Cancel
Meaning: cancel
Unit: ---
Description:
interrupt of print

COMM Commands
Meaning: command
Unit: ---
Description:
Main menu with submenus

DATE Date
Meaning: date
Unit: ---
Description:
Indication of a date

DAYS Days
Meaning: days
Unit: ---
Description:
Unit of the duration of the pressure test

DEL Delete
Meaning: delete
Unit: ---
Description:
Delete measurement memory

DIF1 Difference value
Meaning: difference value
Unit: unit of the active channel
Description:
Indication of the difference value of the active channel

END End of pressure probe
Meaning: end
Unit: ---
Description:
Status: pressure test has ended successfully

ERR1 Error pressure probe 1
Meaning: error 1
Unit: ---
Description:
Error in pressure test (memory full)

ERR2 Error pressure probe 2
Meaning: error 2
Unit: ---
Description:
Error in pressure test (Pressure test could not be started)

H Hour
Meaning: hour
Unit: ---
Description:
Unit for the duration of the pressure test, measuring rate

INFO Information
Meaning: information
Unit: ---
Description:
Main menu with sub menus

LAL Lower alarm limit
Meaning: lower alarm limit
Unit: unit of the active channel
Description:
set lower alarm limit

LANG Language
Meaning: language
Unit: ---
Description:
language for printouts

LEAK Leaking
Meaning: leaking (untight)
Unit: ---
Description:
Result of a pressure test

LPRF Leakproof
Meaning: leak proof (tight)
Unit: ---
Description:
Result of a pressure test

LAL Lower alarm limit
Meaning: lower alarm limit
Unit: unit of the active channel
Description:
Setting the lower alarm limit

LTL Lower target limit
Meaning: lower target limit
Unit: unit of the active channel
Description:
Setting of the measurement storage in limits (on/off)

LTST Leak test
Meaning: leak test
Unit: ---
Description:
Main menu with sub menus

MAX1 Maximal value
Meaning: maximum value
Unit: ---
Description:
Indication of the maximum measured value

MEM Memory
Meaning: memory
Unit: ---
Description:
Memory capacity of the channel

MIN Minutes
Meaning: minutes
Unit: ---
Description:
Unit of the duration of the pressure test . measuring rate

MIN1 Minimal value
Meaning: minimal value
Unit: ---
Description:
Indication of the minimal measured value

MNTP Minimal test pressure
Meaning: minimal test pressure
Unit: unit of the channel for the pressure test
Description:
Setting of the test pressure of the pressure test

MNTT Minimal test time
Meaning: test time
Unit: s, min, h
Description:
Setting the testing time of a pressure test

MS Milliseconds
Meaning: milliseconds
Unit: ---
Description:
Unit for setting the measuring rate

MXΔP Maximal pressure loss
Meaning: maximal pressure drop
Unit: unit of the channel for the pressure test
Description:
Set the allowed pressure drop for a pressure test

NO Number
Meaning: serial number
Unit: ---
Description:
display of the serial number of device/sensor

LNO Location number
Meaning: Nº. of measurement place
Unit: ---
Description:
Input of the measurement place number

OFF Off
Meaning: off
Unit: ---
Description:
Off

ON On
Meaning: on
Unit: ---
Description:
On

PASS Password
Meaning: password
Unit: ---
Description:
Input of the password

PMTR Parameters
Meaning: parameters
Unit: ---
Description:
Main menu and submenus

POPT Print options
Meaning: printing option
Unit: ---
Description:
Set the printing options (graphic/text)

PRNT Print
Meaning: print
Unit: ---
Description:
Print a pressure test

PRNT Printing
Meaning: printing
Unit: ---
Description:
Printing is in progress

PWSV Powersave
Meaning: power save
Unit: ---
Description:
Status: ESS3 is in power saving mode or switch on or off the saving mode (on/off)

RANH Range high
Meaning: upper value measurement range
Unit: unit of the active channel
Description:
Indication of the upper range value of the channel

RANL Range low
Meaning: lower measurement range
Unit: unit of the active channel
Description:
Indication of the lower range value of the channel

RESO Resolution
Meaning: resolution
Unit: ---
Description:
Set the resolution of the range steps

RMEM Remaining memory
Meaning: remaining memory
Unit: ---
Description:
remaining free memory of values

RSET Reset
Meaning: reset
Unit: ---
Description:
Clears the min/max values
Chancel the printout

RUN Running
Meaning: running
Unit: ---
Description:
Status: ESS3 is executing a pressure test

S Seconds
Meaning: seconds
Unit: ---
Description:
Unit of the duration for the pressure test .
Measuring rate

SHRT Shortcut
Meaning: shortcut
Unit: ---
Description:
Short activation of a pressure test

SMOD Storage mode
Meaning: storage model
Unit: ---
Description:
Setting of the storage model (standard/rolling)

SMPR Sample rate
Meaning: measuring rate
Unit: ---
Description:
Setting of the measuring rate

SNEU Serial number evaluation unit
Meaning: serial No evaluation unit
Unit: ---
Description:
Indication of the serial no. of the device (Type/number)

SNOS Serial number of sensor
Meaning: serial number of sensor
Unit: ---
Description:
Indication of the serial nr. of the sensor (Type/number)

STOP Stop
Meaning: stop
Unit: ---
Description:
Status: „Start measurement later“ is active (measurement is running) or stop a running pressure test

STRT Start
Meaning: start
Unit: ---
Description:
Calm down time up to the start of the pressure test

TEMP Temperature
Meaning: temperature
Unit: ---
Description:
Use temperature channel for the pressure test (yes/no)

TIME Time
Meaning: time
Unit: ---
Description:
Indication/setting of date and time

TYP1 Pressure probe type 1
Meaning: pressure probe type 1
Unit: ---
Description:
Pressure test type 1 – start pressure test

TYP2 Pressure probe type 2
Meaning: pressure probe type 2
Unit: ---
Description:
Pressure test type 2 – start pressure test

TYP3 Pressure probe type 3
Meaning: pressure probe type 3
Unit: ---
Description:
Pressure test type 3 – start pressure test

TYPE Type
Meaning: serial number
Unit: ---
Description:
display of the type number of device/sensor

UAL Upper alarm limit
Meaning: upper alarm limit
Unit: unit of the active channel
Description:
set upper alarm limit

UTL Upper target limit
Meaning: upper target limit
Unit: unit of the active channel
Description:
set upper target limit

VERS Version
Meaning: version
Unit: ---
Description:
Indication of the Firmware version

WAIT Wait
Meaning: wait for start
Unit: ---
Description:
Status: „Start measurement later“ is active (measurement is stopped) or Status: a pressure test is started or a pressure test is evaluated

ZOOM Zoom
Meaning: zoom
Unit: ---
Description:
Setting the zoom for the print (on/off)

01:15 „Time“
Meaning: time
Unit: min:s, h:min or days:h
Description:
Status: time at start of pressure test

6 Working method of the ESS3-System

The pressure (temperature) is recorded by a Piezo resistant sensor (1 x Pt 1000) and converted to an electrical signal. After amplification, an AD converter passes the digital signal to a microprocessor.

The ESS3 records the current pressure in a free selectable time interval (measuring rate) and stores the value according to specific criteria (average factor, resolution) in a not volatile memory. The ESS3 displays the current measuring value without applying the set parameters.

All parameters can be changed by the program TfsWin III. For this purpose the data is exchanged via an infrared link. The functions can be changed at choice.

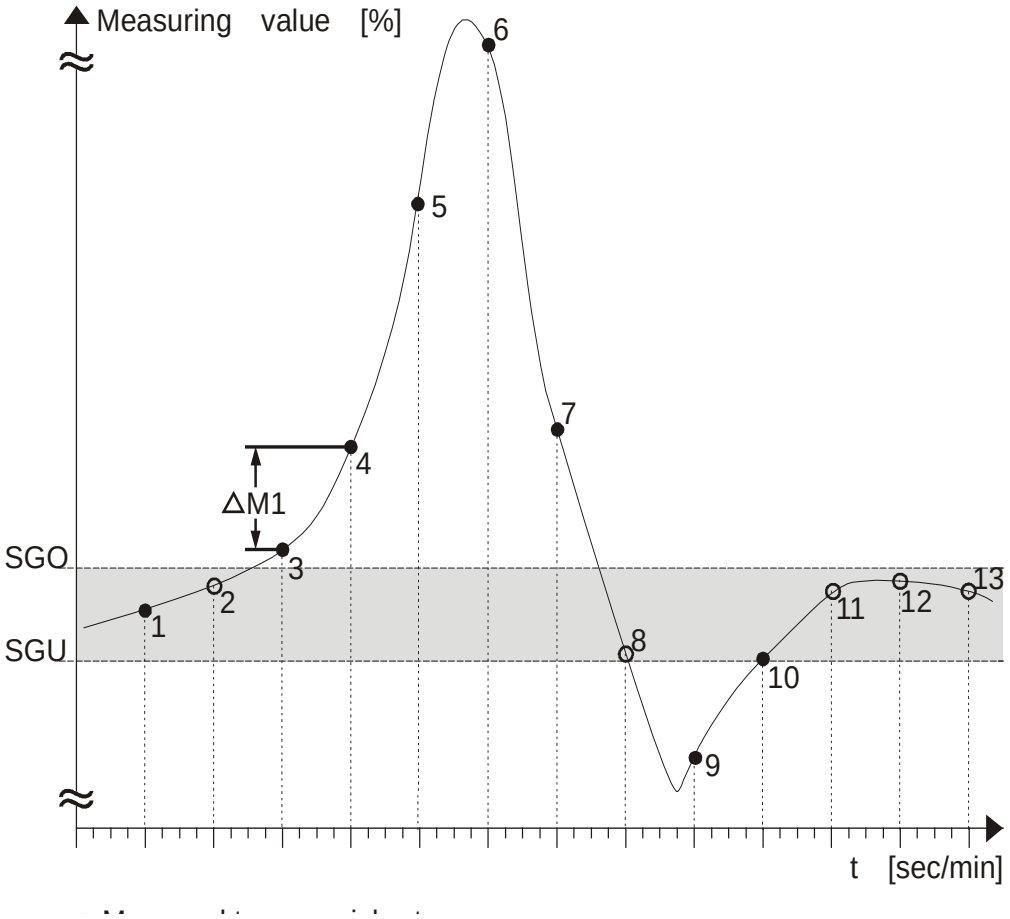


Figure 6: System of measuring point storage

1 Meas. point stored ●

2 Meas. point not stored **O**

6.1 Storing measuring values

The computer can significantly reduce the measurement data without loss of information. The instrument carries out measurements in pre-set time intervals (measuring rate). Only the measuring values which differ from the previously stored measuring value by a free selectable amount (the resolution). The time is continuously registered. This process saves memory space.

6.2 Target limits

Upper target limit (SGO) and lower target limit (SGU) can be preset with the program TfsWin III. Depending on parameter „Store within limits“ only measuring values are stored which are higher than the upper target limit (M3, M4, M5, M6, M7) or lower than the lower target limit (M9).

Measuring points equal to the lower or upper target limit are considered as being within the limits and are stored.

The start value M0 is stored independently of the storage criteria.

The target limits can be deactivated, setting SGO and SGU to an equal value (e.g. 0).

6.3 Alarm limits

Alarm limits can be switched on or off with the program TfsWin III.

6.4 Resolution

The resolution of the measuring range is also a criterion for the storage of a measuring value. If the difference between the measuring value and the previously stored measuring value is less than the resolution, the measuring value is not stored.

6.5 Measuring rate and battery life time

6.5.1 Measuring rate

The measuring rate defines the time interval between two measurements. It can be set from 125 milliseconds to seconds and minutes up to 6 hours. The input of milliseconds, seconds, minutes and hours cannot be mixed. The input value must be in complete seconds, minutes and hours. Measuring rates below 1 second can only be set as a multiple of 125ms.

6.5.2 Battery life time

The measuring rate is decisive for battery life time. Measuring rates of 125 ms are only significant for short time measurements. Table 1 gives examples of measuring rates correlated with the calculated battery life time.

6.6 Measuring average factor

The measuring average factor indicates the number of measuring values to be averaged (e.g. 3, three values are averaged). The new (resulting) measuring value is stored, as far as resolution and target limits allow this.

6.7 Storage of MIN MAX values

The ESS3 stores minimal and maximal values, which are calculated from the time of the last reset

6.8 DIF Value

The Dif-value shows the difference between the current measuring value and the value of the last reset. That gives an overview about falling or rising trend of a measurement.

6.9 Time

The ESS3 has a clock with date and time. At the start of a measurement date and time are stored.

ESS3 knows daylight saving time (firmware 1.12 or later). The curves overlap eachother meaning that at a certain time 2 measurements exist or a gap of an hour.

6.10 Remaining memory

The capacity of the memory is 250,000 measuring values including the relative time. The remaining memory is defined in number of measuring values and can be read with TfsWin III. Not all memory locations are available for data. Every transmission takes some memory space.

A full memory will not accept any new measuring values, the clock continues. Only the rolling memory stores measuring values even if the memory display shows **„0“**. The oldest measuring values will get lost in favour of the newest. The ESS3 has stored its data history. It is equivalent to the length of the rolling memory.

6.11 Resolution of the measuring value

ESS have a resolution of less than 0,01% of the measuring range. Temperature errors in the electronic unit and the sensor and the condition of the sensor membrane determine the final error.

Union Instruments offers optionally ESS3 with a resolution of 0,004 %. (1mbar resolution at a measuring range of 25 bar). E.g. for pressure tests according to DVGW 469 B3.2.

At ESS3 with temperature channel the display resolution is limited to 0,01 °C, independent of the measuring range.

6.12 Zero point correction

The zero point can be corrected with TfsWin III. With a vented unit the ESS3 displays 0. Small deviations may be within the accuracy limits. In case of low measuring ranges (e.g. 0 - 100 mbar) the zero point depends on the sensor´s orientation. The zero point should be adjusted in the measurement position (horizontally or vertically).

7 TfsWin III

TfsWin III transfers, manages and changes all parameters in the ESS3. With the ESS3 buttons only a few specific parameters may be changed and indicated.

7.1 Installation of the program

The program is running on Windows XP, Vista, 7 and 8. The Setup CD starts automatically. With deactivated auto run start setup.exe in the CD´s root directory.

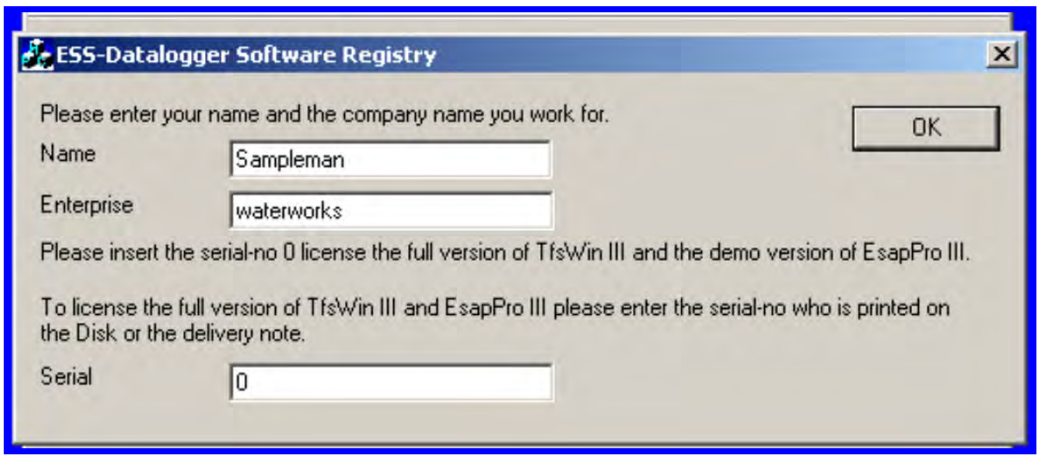
Choose an installation language, here English.

After confirmation with OK, all other applications should be closed.

As default the program is suggesting the path C:\Programme\Union\EsapPro III. This suggestion can be confirmed or changed. If there exits an earlier version of an EsapPro III installation, it is absolutely necessary to remove the earlier version with the de-installation/uninstall program before the new installation is started. (see de-installation).

The installation program creates desktop- and quick launch icons, if these options are selected.

After the summary of the installation options a registration of the program is requested.



If TfsWin III is used without EsapPro III, the preset **„0“** should be confirmed. When EsapPro III was acquired, the serial number, mentioned on the delivery note, must be entered instead of zero. Now EsapPro III is licensed.

With an unlicensed EsapPro III, it is possible to test all functions only with test data.

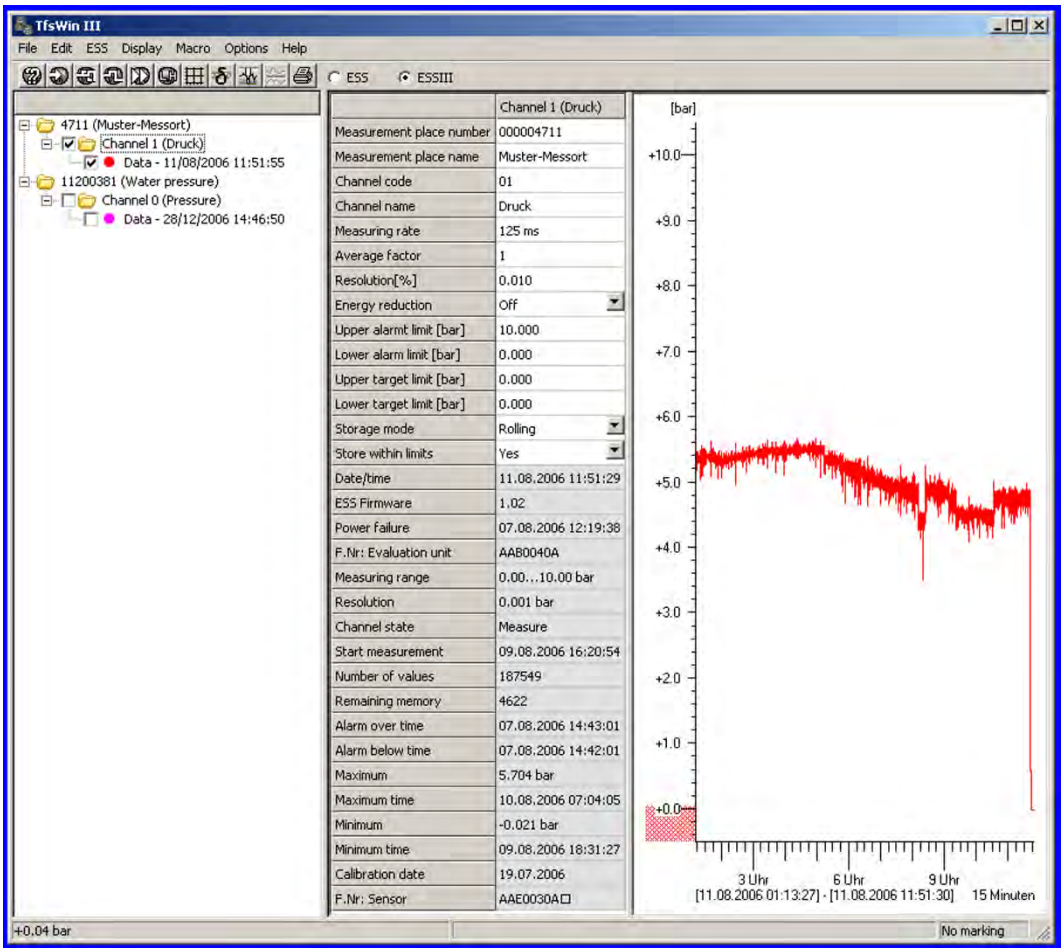
Choose the language of TfsWin III.

7.2 Installation of the IrDA-interface cable

The IrDA-interface cable exists with serial connection (9-pin D-Sub-connector female) and with USB connection. With the serial version no further installation is needed, with the USB-version the USB-drivers will be installed.

7.3 Functions of TfsWin III

After the start of TfsWin III, the display area is divided into three parts. On the left the measurement data and parameters are presented in a tree structure. In the middle the parameters of the selected ESS3 are presented. The parameters in white fields are changeable, parameters in grey fields are produced by the ESS3 and are only displayed. On the right the measurement curve appears.



Tree: The tree is divided into three sections.
In the upper section the measurement place number and the measurement name are displayed. One section below, all channels of the corresponding measurement place appear. Often this is an ESS3 with one channel, ESS3 with multiple channels display all channels. When the channel is selected the parameters are displayed in the middle section and can be changed. Multiple selections are possible.

In the third section, below the channels, the measurement data is displayed. With repeated readings, date and time appear below the other. Several measurement data may be selected. When more data sets are selected the display of the parameters is deactivated automatically. This also applies to measurement data.

Parameters: The parameters control the measuring profile of the ESS3. After the first start of TfsWin III only measurement place name, measurement place number, measuring rate and date/time are displayed. The visibility of other parameters can be toggled in the menu „Options/display configuration“.

Diagram: In the diagram the measuring values are displayed related to the time. When there are different readings of measurement places/channels, in the tree diagram an allocation with colours is arranged for curves and scales. Creating a rectangle with the pressed left mouse button and subsequently clicking it with the right mouse button enlarges the diagram as often as needed. A click with the right mouse button in the free field reduces the diagram again.

7.4 Menus

The most important commands can be executed with buttons. All menus will be described systematically.

7.4.1 File

In the file menu the measurement data will be managed.

Print
The current diagram, with all displayed information will be printed.

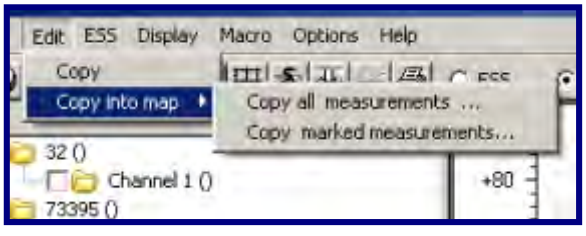
Delete / delete all readings
Here all measurement places with all measurements and parameters will be finally deleted.

Delete / delete marked readings
Only the marked measurements or parameters will be deleted. Different mes. data and parameters cannot be marked and deleted. For that purpose multiple deleting is necessary.

Exit
The program is closed. Several parameters and measurements will remain.

7.4.2 Edit

Here, measurement data is copied.



Copy
Data with a blue background is copied to the Windows clipboard. From there it may be imported into other programs (e.g. Excel) with the function „paste from clipboard“.

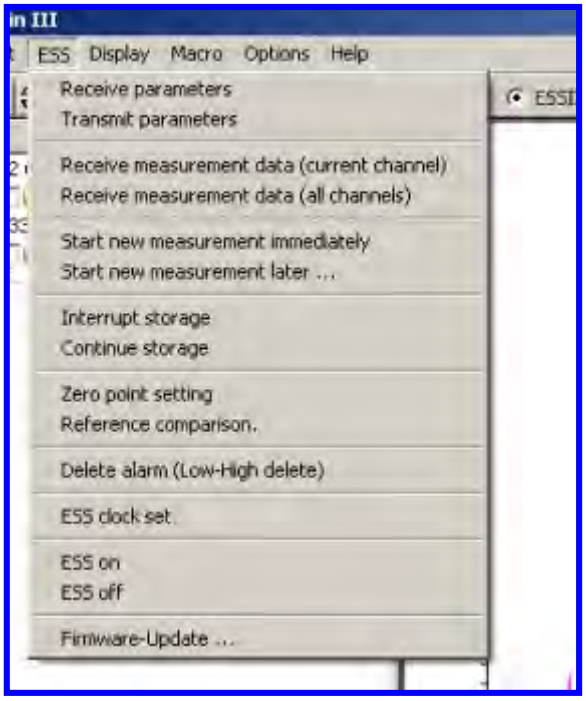
Copy into map / copy all readings

With this function all measurement data is copied to a selected map. E.g. the data can be archived or imported in EsapPro III, which is not installed on the same computer, by means of an external memory device (e.g. memory stick) .

Copy into map / copy marked readings.
Here, only marked measurements are copied

7.4.3 ESS

The menu ESS controls the communication with the ESS3. The interface cable must be connected to the ESS3.



Receive parameters
All parameter data are transferred from ESS3 to the PC. Not all parameters are displayed in the field. The parameters can now be changed (changeable parameters are displayed with white background) and then transmitted with „Transmit parameters“.

Transmit parameters
Transmits all parameters from PC to the ESS3. Parameters that were changed in TfsWin III, appear with red background to indicate that the parameters from TfsWin III and ESS3 are not consistent. After transfering the red background turns to white. ESS3 and TfsWin III now contain the same parameters.

Receive measurement data (all channels)

Here, measurement data and parameters of all channels are transferred to the PC and saved. In the tree the new measurement is displayed and saved.

Receive measurement data (current channel)
With this command one specific channel is read from an ESS3 with more channels. The channel is selected in the tree.

Start new measurement immediately
All measurement data in the ESS will be finally deleted. The memory is completely free for a new measurement. It starts immediately.

Start new measurement later
The measurement data are finally deleted. A new measurement starts at a later time. This can be set in the following dialogue.

Interrupt storage
The storage is interrupted. This causes a gap in the diagram.

Continue storage
Measurement data are stored again from this time on.

Zero point setting
Here, the zero point is set. The ESS3 must be free of pressure. This does not work with a temperature channel!

Reference comparison
With this command the measurement is adjusted with a reference value. That corresponds with an Offset shift of the measuring range. The zero point is shifted equally.

Delete alarms
Violated alarm limits are being reset. A triangle upwards or downwards indicates the limit violation.

ESS clock set
The builtin clock of the ESS3 synchronizes with the PC clock.

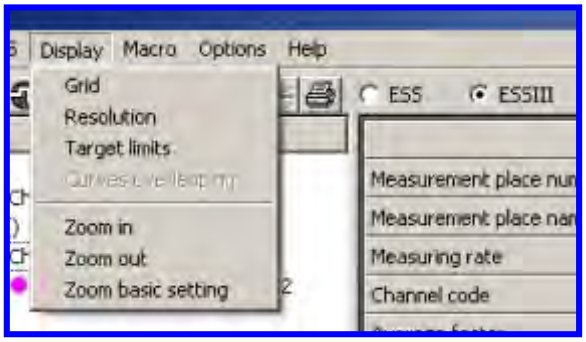
ESS on
An ESS3 in off-position (PWSV) is switched on with this instruction.

ESS off
The ESS3 is switched in a power saving position. Measuring is stopped, the display indicates „PWSV“. For measuring again the ESS3 has to be switched on.

Firmware-update
The firmware is updateable by the menu. The new Firmware file ESS3XYY.PRG resides in the directory `...\EsapPro III\TfsWin III\Firmware`. XYY indicates the version number. Only update to a higher version number is possible.

7.4.4 Display

The menu **"Display"** organizes the display of the diagrams.



Grid
Here a grid for the time- and the value-axis is toggled on and off.

Resolution
The selected resolution has a blue background. The blue range indicates the measurement-noise.

Target limits
In the green range of the target limits no measurement data are stored, when the parameter „Store within limits" is set to no. The average value between upper and lower value is displayed.

Curves overlapping
Different curves may be displayed overlapping in separated coordinate systems. Every coordinate system will be zoomed separately at the value-axis.

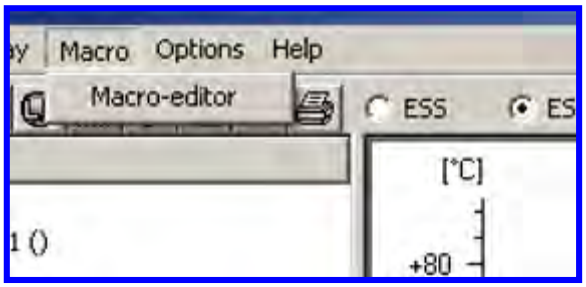
Zoom in
The graphic is enlarged by 10%. The selected part can be moved with the horizontal and vertical scroll bar. The enlargement can be repeated. (Zooming with the mouse gives faster results – see chapter 7.3.)

Zoom out
The function reduces the curve in the same pattern as with the enlargement.

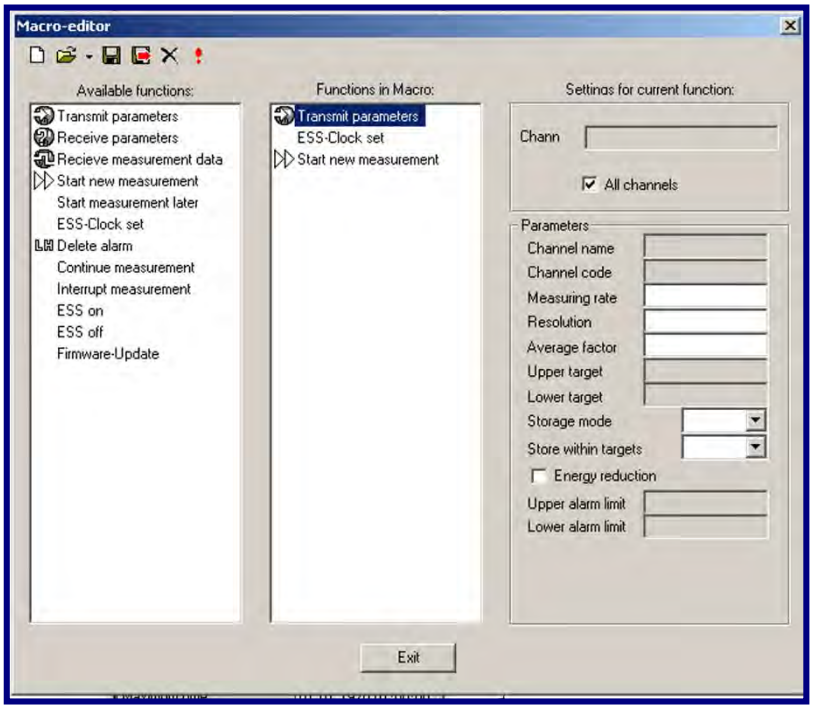
Zoom basic setting
The original time- and value- range of the measurement are displayed.

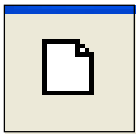
7.4.5 Macro

Command sequences may be programmed in macros. They can be combined to one function.

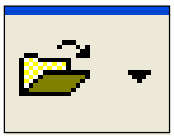


In the macro editor, with the mouse, commands may be dragged from the left to the right column. The macro can be saved. It can be started from outside TfsWin III. This means that commands can be executed (e.g. receive measurement data) without starting TfsWin.

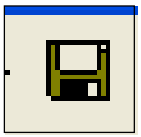


 New

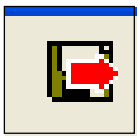
A new macro is opened and can be programmed.

 Open

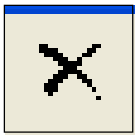
An existing macro is opened.

 Save

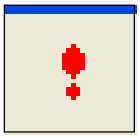
a macro is saved with the existing file name.

 Save as

A macro is saved with a new name.

 Delete

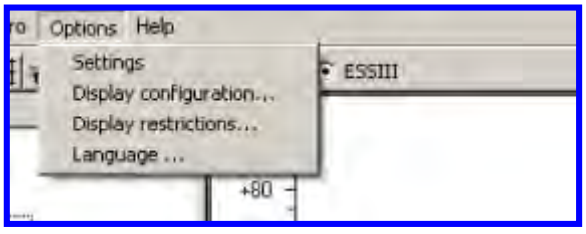
The macro is deleted.

 Start

A macro is executed.

7.4.6 Options

In options the basic configuration of TfsWin III is changed.



Settings
Data path: Here the path is set, were the read data will be saved.

Firmware path: Only when firmware files for ESS3 are available in this path, they may be recognised by TfsWin III.

Macro path: Macros will be saved in this path.

ESS connected to: Here the COM-interface is indicated, to which the IrDA-interface cable is connected. The USB-driver assigns a virtual COM-interface to the USB-interface, which is registered here. When a communication is realised, the program searches the correct interface and registers it here.

ESS-Type: The type of the ESS3 is pre-set. ESS3 from production year 2006. ESS from earlier production series 1995 and 2005 are indicated with type: ESS II (Fabrication number 68 000 to 86 000).

Display configuration
The display of the parameters is here specified. At start only four parameters are displayed. By double clicking a parameter it will be added or removed.

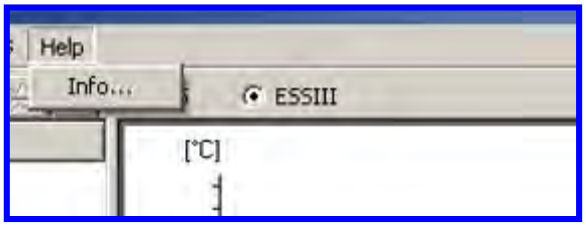
Display restrictions
The number of parameters and curves that can be displayed at the same time is here specified. Overlapping curves are from the same measurement place and channel. They are caused by repeated readings and are displayed in the same diagram.

Language
Here the language is selected.

7.4.7 Help

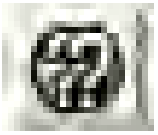
In the menu help the version number of the program is indicated. It consists of the main number and the individual components.

The menu will be extended in the future. At the moment it is inactive.



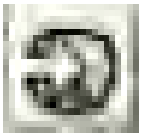
7.5 Function buttons

Important menus are assigned to function buttons. The same functions can be reached with the menu.



Receive parameters (all).

Parameters of all channels are received. This may be from 1, 2 or 3 channels.



Transmit parameters

Only parameters of the current channel are transmitted. When parameters of different channels are displayed, this function becomes inactive and light grey.

Receive measurement data (all)

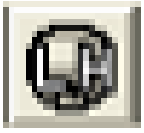
The measurement data and parameters of all channels are received and saved. This may be 1, 2 or 3 data sets.

Receive measurement data

Measurement data and parameters of the current channel are received and saved.

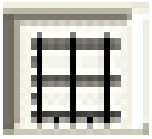
Start measurement

The measurement data will be deleted. A new measurement is started.



Delete alarms (delete Low-High)

A violated alarm limit is indicated with a triangle upwards or downwards. The alarm is reset.

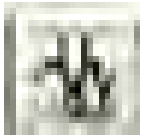


Switch grid display

The grid network can be toggled on or off.

Display resolution

Here, the resolution of the measurement values is made visible. Around every measurement value is a blue range, representing the resolution.



Display target limits

The active target limits are displayed in green.

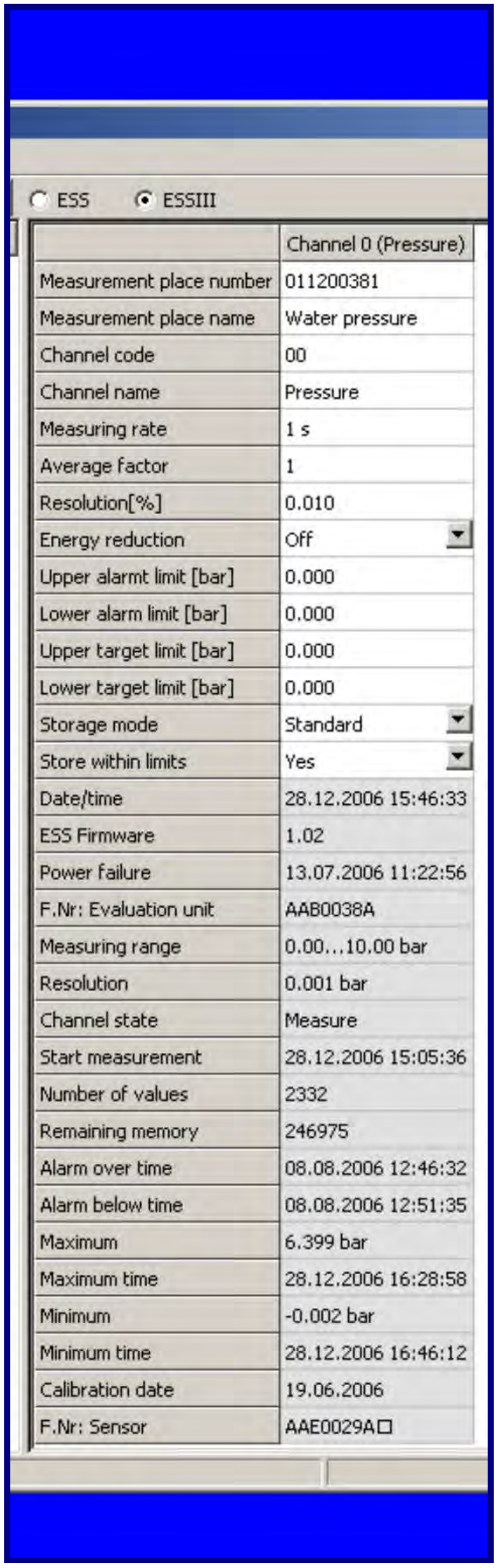
Curves overlapping

Different readings are drawn with different value-scales. All readings are displayed overlapping, with the scales.

Print

Measurements are printed. The displayed zoom range is maintained.

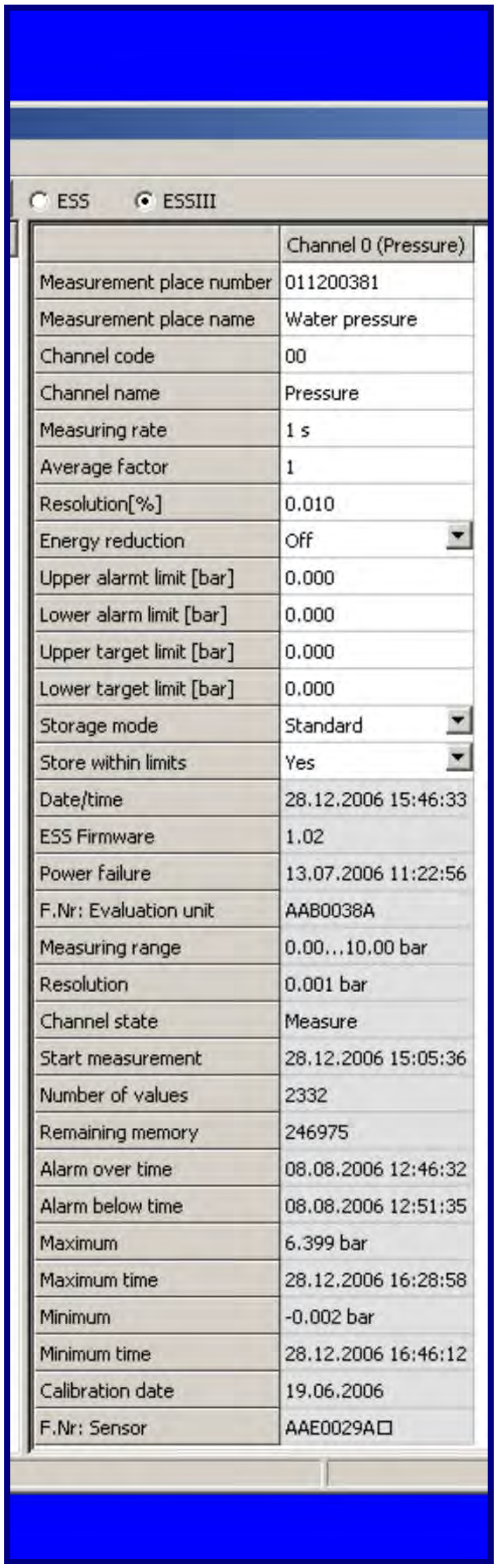
7.6 Parameter list



The parameter can either be programmed in TFS Win III or being read from the ESS3. Every column presents a channel. Parameter data (in white fields) may be changed, Status data (grey background) not.

Measurement place number: The measurement place number defines the measurement place and may have 9 figures.
Measurement place name: The measurement place name may consist of 30 alphanumeric characters.

From here parameters are presented, that can be assigned to every channel.
Channel code: every channel has a two digits number for clear identification.
Channel name: Every channel has a name that refers to the application.
Measuring rate: The measuring rate indicates the time between two measuring. In the example every second is measured.
Average factor: The number indicates the measuring values that will be averaged. The example is not averaged.
Resolution [%]: That is the smallest meas. value difference that must be stored.
Energy reduction: is not yet implemented.
Upper alarm limit (lower) [bar]: When the upper/lower alarm limit is exceeded, a warning is indicated – triangle upwards/downwards.
Upper target limit (lower) [bar]: Within the target limits is not stored – when the parameter „**Store within limits**“ is set to „No“.
Storage mode: Standard: At full memory the new data are lost. Rolling: The oldest data are deleted and the newest are stored.



From here status data are presented that are equal for all channels:

Date/time: Date and time are indicated.
ESS Firmware: The version number of the firmware is indicated.
Power failure: The date that the battery reached the low voltage level.
F.Nr: Evaluation unit: Indication of the production number of the evaluation unit.

From here channel dependent status data are presented, coming from the sensor:

Measuring range: Measuring range of the sensor.
Resolution: The smallest mes. value difference is indicated. It may be changed with the parameter resolution.
Channel state: Measuring: Data are measured and stored. Stop: Only measuring takes place, no storage.
Start measurement: A new measurement is started at this time. The old measuring values are finally deleted.
Number of values: Number of stored values.
Remaining memory: The remaining memory indicates the number of free memory places.
Alarm over (below) time: First time the upper/lower alarm limit was violated.
Maximum (minimum): Maximal (minimal) measuring value since the last reset with the buttons.
Maximum (minimum) time: Time, when the maximum (minimum) was reached.
Calibration date: Date of the last calibration of the sensor.
F.Nr: Sensor: Sequential production-number of the sensor.

8 Maintenance

Maintenance of the ESS3 is limited to monitoring the batteries, tightness of the housing and cleaning the front plate. The components that are important for the IR-transmission are situated directly behind the front plate.

8.1 Battery block

The battery block consists of lithium cells with a safety circuit. They are moulded in a silicon mass. The resistor limits the short circuit current of the batteries. The capacity of the batteries is 7,2 Ah. The used batteries must be disposed. They can be returned to the manufacturer free of charge.

8.2 Inserting the batteries

Attention: Only original battery blocks with Ex-sign, certified by the manufacturer, may be built in explosion protected ESS3.

The explosion protected battery block is situated behind the electronic unit. To exchange the battery block the black arrestor ring must be unscrewed. Front plate, electronic unit and battery block can be removed.

The battery is changeable without loss of data. The clock stops for the time without power and should be corrected.

The instrument is assembled again. Special attention should be paid to the situation of the O-ring between front plate and the housing. A damaged O-ring must be replaced!

The lifetime of the battery is roughly estimated according to the table below.

Measuring rate	Battery lifetime XC	
	1-Channel ESS3	3-Channel ESS3
125 ms	20 days	12 days
1 second	4 months	2,5 months
10 seconds	3 years	2 years
1 minute	7 years	6 years
10 minutes	8 years	8 years

Table 1: ESS3-Battery lifetime (battery type XC ordernr. 01402199999)

Measuring rate	Battery lifetime XAA	
	1-Channel ESS3	3-Channel ESS3
125 ms	6 days	3.5 days
1 second	1.2 months	0.7 months
10 seconds	10 months	7 months
1 minute	2 years	1.7 years
10 minutes	2.3 years	2.3 years

Table 2: ESS3-Battery lifetime (battery type XAA ordernr. 01402199996)

The lifetime of the battery is also effected by the ambient temperature, the number of communications, using the buttons for menu operation and so on.

8.3 Waterproofness of the housing

ESS3 with absolut pressure sensors are completely watertight (IP68). ESS3 with relative gauge pressure sensors comply with IP67 (short time immersion), because of the ventilation aperture.

8.4 IR-transmission

Sending and receiving takes place via the IR-Sensors behind the front plate. The front plate must allways be clean.

8.5 Change sensors

Pressure and temperature sensors may be exchanged. Every ESS3 consists of an evaluation electronic unit and a calibrated sensor in a housing with measuring electronic unit. The connections can be plugged in. The stainless steel housing of the sensor is coated with a special sealant and screwed into the aluminium housing. This guarantees a tight connection and the possibility to re-open it.

The sensor is delivered together with the measuring electronic unit in the sensor housing. The unit is calibrated and is ready for mesurement. Changing back to the old sensor is easy.

The sensors should not frequently be exchanged. Exchange should be limited to changing measuring range or repair.

Attention:

Only sensors with the Ex-sign on the type plate may be built in an explosion proof ESS3, otherwise the protection of the entire ESS3 is lost.

8.5.1 ESS3 with axial sensor port

Sensors for type A1, R1 and R2 are not different. Only the shape of the housings of the evaluation units is different.

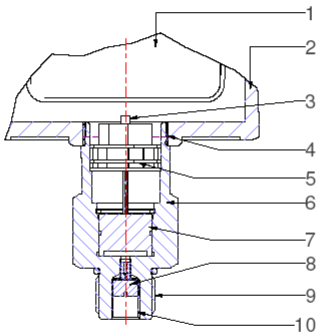


Figure 7: ESS3 A1

1	Li Battery	2	ESS3 housing
3	Sensor connection	4	Sensor male thread
5	Sensor seal	6	Sensor housing
7	Sensor	8	Protection filter
9	½“ male thread	10	1/8“ female thread

8.5.2 ESS3 with radial sensor port

The installation of sensors for radial and axial housings is identical.

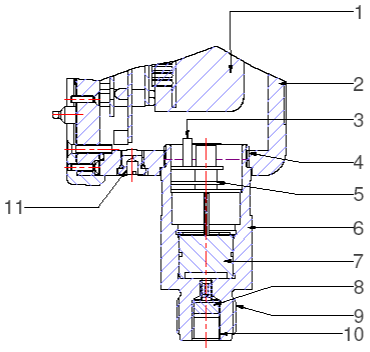


Figure 8: ESS3 R1

1	Li Battery	2	ESS3 housing
3	Sensor connection	4	Sensor male thread
5	Sensor seal	6	Sensor housing
7	Sensor	8	Protection filter
9	G½“ male thread	10	G1/8“ female thread
11	Ventilation opening		

9 Trouble shooting

A number of typical errors are described, that result either from incorrect operation or a fault in the instrument.

9.1 Display is weak or blind

Battery exchange is overdue. The display shows the battery symbol and „PWSV“. The battery voltage is too low to operate the ESS3 .The battery must be replaced. Order nr. 01402199999

9.2 Moisture on the display

The front plate seal is leaking. The sealing ring may be damaged. Once moisture has entered the unit it must be sent in for inspection.

If an ESS3 with relative gauge sensor was immersed into water, the pressure equalizing filter must be changed. Lime or salt could prevent pressure equalizing.

9.3 Transmission was interrupted

Natural light contains IR rays that may interfere the communication of the infrared link. During the communication with the PC the ESS3 may not be exposed to direct sun light.

10 Measuring sensors

This chapter is written for users, who want to learn to know the exact structure of the system.

The ESS3 is delivered with following measuring sensors:

- Relative pressure
- Overpressure
- Barometric pressure
- Temperature

Every measuring sensor is selected for the desired measuring range and is adapted to the electronics. The measuring range can be changed by installing another calibrated sensor.

10.1 Barometric sensor

The pressure sensors are overpressure protected up to minimal 1,3- times the measuring range. Higher overpressure protection on request.

10.2 Overpressure protection

The pressure sensors are overpressure protected up to minimal 1,3- times the measuring range. Higher overpressure protection on request.

10.3 Pressure monitoring in water pipe networks

The housing for water can be connected to under floor hydrants with bayonet adapter. For „Würtemberger Schachthydranten“ a special adapter is available.

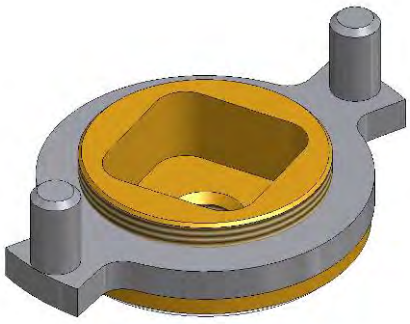


Figure 9 Bayonet adapter

With a regular hydrant key (side length of the outside square up to 51,5 mm) the bayonet adapter can be mounted. The ESS is screwed in a G½“ thread and sealed with an O-Ring. No special tools are needed.

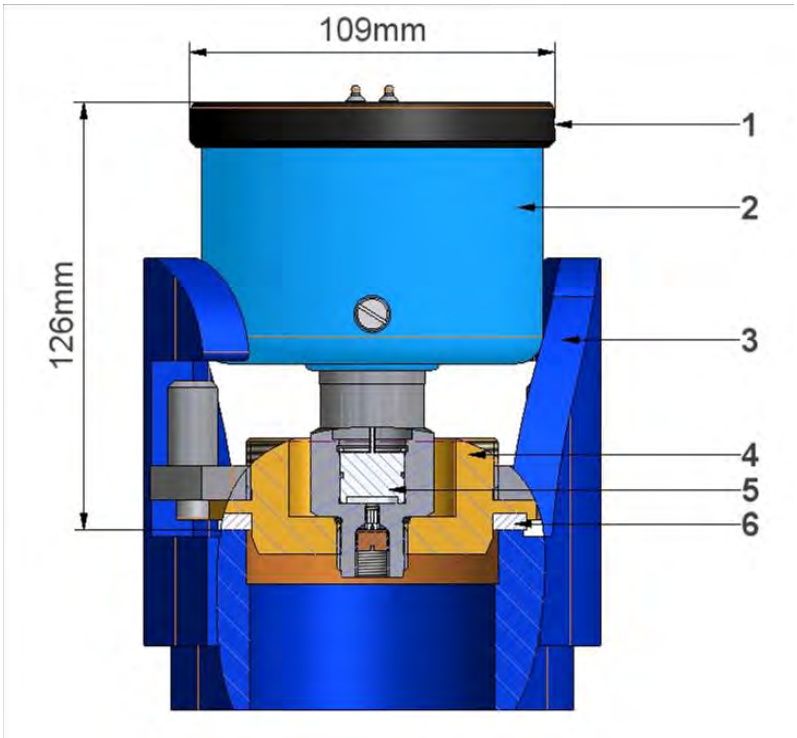


Figure 10: ESS3 water housing with bayonet adapter

1	Arrestor ring	2	Aluminium housing
3	Under floor hydrant	4	Adapter plate bronze
5	Sensor	6	Hydrant seal

The bayonet adapter is made of stainless steel and bronze. Even a long time under water does not harm.

10.4 Accessories, equipment, spare parts

Following the spare parts and useful accessories are described and displayed.

10.5 Transport cases

ESS3 A1 and R1 may be transported in aluminium transport cases. These cases are sturdy and can hold six ESS3 R1 or A1 with bayonet adapter.

For a single ESS3 there is a smaller transport case available, which also has a compartment for the bayonet adapter.

11 Spares

	Battery block ex proof XC 7.2 Ah Order nr: 01402199999 Weight: ca. 200 gram
Description: Battery block XC	

	Battery block ex proof XAA 2.1 Ah Order nr: 01402199996 Weight: ca. 200 gram Shipping without hazardous goods logistics
Description: Battery block XAA	

12 EU Declaration of conformity

EU – Konformitätserklärung
EU – declaration of conformity

Der Hersteller / The manufacturer

Union Instruments GmbH
Zeppelinstrasse 42
76185 Karlsruhe

erklärt hiermit, dass folgend bezeichnete Produkte / hereby declares, that following named products:

Mess-System für physikalische Größen, ESS Mess-System bestehend aus ESS III Gerät, Batterietyp XC + Sensormodul

Measuring system physical dimension consisting of: ESS measuring system of ESS III equipment, Battery type XC + Sensormodul

konform sind mit den Anforderungen, die in EU – Richtlinien festgelegt sind / are compliant with the requirements as defined in the EU directives:

2014/30/EU Elektromagnetische Verträglichkeit

2014/30/EU Electromagnetic compatibility

2014/34/EU Richtlinie für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

2014/34/EU Directive on equipment and protective systems intended for use in potentially explosive atmospheres

Angewandte harmonisierte Normen / Used harmonized standards:

EN 50270:2006	Elektromagnetische Verträglichkeit - Elektrische Geräte für die Detektion und Messung von brennbaren Gasen, toxischen Gasen oder Sauerstoff Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen Es wurden HF Störaussendung, HF Störfestigkeit und ESD Störfestigkeit getestet. Only clauses radiated RF Emission, radiated RF Immunity, magnetic fields and ESD have been tested.
EN 60079-0:2012	Explosionsgefährdete Bereiche - Teil 0: Betriebsmittel - Allgemeine Anforderungen Explosive atmospheres - Part 0: Equipment - General requirements
EN 60079-11:2012	Explosionsgefährdete Bereiche - Teil 11: Geräteschutz durch Eigensicherheit "i" Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

EG-Baumusterprüfbescheinigung / EC-Type Certification Certificate:
EX6 06 03 31532 002, Mess System für physikalische Größen ESS Mess-System bestehend aus ESS III Gerät, Batterietyp XC + Sensormodul, TÜV Product Service GmbH, Riedlerstraße 65, 80339 München, Germany, Nr.: 0123

Notifizierte Stelle für QS – Überwachung / notified body for QA-Assesment: TÜV Product Service GmbH, Riedlerstraße 65, 80339 München, Germany, Nr.: 0123

Bei einer nicht autorisierten Änderung des Gerätes verliert diese Erklärung ihre Gültigkeit. / Any unauthorized modification of the device results in invalidity of this declaration.

Karlsruhe, den 27.01.2016

Peter Kienke, Geschäftsführer / general manager

CE_ESSIII_DE_EN_V1.08-2016.docx

Seite 1 von 1
page 1 of 1

13 EU-Design test certificate

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Product Service

EG-Baumusterprüfbescheinigung

Nr. EX5 06 03 31532 002

Zertifikatsinhaber: **Union-Apparatebau GmbH**
Zeppelinstr. 42
76185 Karlsruhe
DEUTSCHLAND

Produkt: **Elektrische Geräte allgemein**

Modell(e): **Mess-System für physikalische Grössen**
ESS Mess-System bestehend aus ESS III Gerät, Batterietyp XC + Sensormodul

Kenndaten:
Gerätegruppe II, Kategorie 2G
Zündschutzart EEx ib IIC T4
Batterieversorgung 7,4 V, 7,2 Ah
IP54

Kennzeichnung: Ex II 2 G
Besondere Bedingung für Betrieb:
Tastkopf darf zu Servicezwecken nur an den externen PC angeschlossen werden, wenn keine Ex-Atmosphäre vorliegt.

Diese EG-Baumusterprüfbescheinigung bestätigt die Übereinstimmung des umseitig bezeichneten Produktes mit den einschlägigen Vorschriften gemäß Anhang III der Richtlinie des Rates Nr. 94/9/EG für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen (ATEX). Prüfgrundlage ist ausschließlich das zur Prüfung und Zertifizierung vorgestellte Prüfmuster sowie dessen technische Dokumentation. Umseitige Hinweise sind zu beachten.

Prüfbericht Nr.: 70117860

Datum, 2006-03-31

TÜV SÜD Product Service GmbH ist benannte Stelle gemäß der Richtlinie des Rates Nr. 94/9/EG für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen mit der Kennnummer 0123.

Seite 1 von 1

TÜV Product Service GmbH TÜV SÜD Gruppe Zertifizierstelle Ridlerstrasse 65 80339 München Germany

EINGEGANGEN
- 2. Juni 2008
Erl.....

Product Service

Mehr Sicherheit.
Mehr Wert.

TÜV SÜD Product Service GmbH • Gottlieb-Daimler-Straße 7 • 70794 Filderstadt • Deutschland

Union Instruments GmbH
Herrn Bernhard Benz
Zeppelinstr. 42
76185 Karlsruhe

Ihre Zeichen/Nachricht vom	Unsere Zeichen/Name	Tel.-Durchwahl/E-Mail	Fax-Durchwahl	Datum	Seite
	MMY-pf Andreas Pfeil	0711 7005-421 andreas.pfeil@tuev-sued.de	089 5155-1688	01.07.2008	1 von 1

Änderung Ihrer Firmenbezeichnung

Sehr geehrter Herr Benz,

durch die Änderung Ihrer Firmenbezeichnung von
Union Apparatebau GmbH zu **Union Instruments GmbH**
wird die Gültigkeit der bei uns geführten Zertifikate **nicht** beeinträchtigt.

Dies bezieht sich auf folgende bei uns z.Z. gelisteten Zertifikate:
EX3 08 05 31532 005 ; EX5 07 04 31532 004 ; EX5 06 03 51532 002 und
EX5 03 05 31532 003

Für Rückfragen stehen wir Ihnen gerne zur Verfügung.

Mit freundlichen Grüßen

TÜV SÜD Product Service GmbH

FILDERSTADT TÜV SÜD PRODUCT SERVICE

i.A. Dipl.-Phys. Andreas Pfeil
Branchenkompetenzzentrum Maschinen und Industrieprodukte

tps_brief_allgemein_deutsch_(word).dot 01.03.2006

Handelsregister München
HRB 85742
Id.-Nr.: DE 129484267
Bankverbindung:
HypoVereinsbank München
Kto. 48 852 211 • BLZ 700 202 70

Aufsichtsratsvorsitzender:
Dr.-Ing. Manfred Bayerlein
Geschäftsführer:
Joachim Birnthaler

Telefon: +49 711 7005-0
Telefax: +49 711 7005-587

www.tuev-sued.de
TÜV®

TÜV SÜD Product Service GmbH

Niederlassung Stuttgart
Gottlieb-Daimler-Straße 7
70794 Filderstadt
Deutschland

About UNION Instruments

UNION Instruments GmbH, founded in 1919, is a specialized supplier of measuring instruments in the areas of calorimetry and gas composition. Its user and customer base includes biogas producers, the chemical industry, and energy and water suppliers. The company has its headquarters in Karlsruhe and a subsidiary in Lübeck. With 30 international distributors, UNION Instruments operates worldwide. The company's core businesses include development and production as well as maintenance, service, and support.

Our service performance

Support

The **UNION-hotline** helps to solve all inquiries and urgent issues fast and easy. Device specific concerns can be solved worldwide within minutes by direct communication via TEAMVIEWER.

Original spare parts

Original spare parts for the majority of UNION's products are on stock directly at site and ready for dispatch within a few hours.

Software

For read-out of measurement and calibration data a device-specific software is available for our clients. In addition to the graphic display of measurement data its export in several database formats is possible.

Training

UNION offers individual in-house training or on-site seminars for installation, use and maintenance of our devices even at the customer's premises. Training is individually adapted to the client's requirements.

Repair service

A global service for inspection, maintenance and repair of our devices and systems is provided directly by UNION and via its distributors.

Certification

Since 20 years we have implemented the ISO9001 system.
UNION's products are certified to ATEX and UL/CSA directives accordingly. Industrial safety **"Safety with System"** is part of UNION's company policy.

Engineering

In the last decades UNION compiled a very high level to the state of the art that covers many market segments. So a wide range of possible solution approaches is on-hand.

Calibration

As part of maintenance and service UNION provides the validation and re-calibration of measuring devices in conformity with certified custody transfer instruments and / or traceable perpendicular.

01608199990 V2.00 07.15

www.union-instruments.com

UNION Instruments GmbH ■ Zeppelinstraße 42, 76185 Karlsruhe, Germany
Phone: +49 (0) 721-68 03 81 0 ■ Fax: +49 (0) 721-68 03 81 33
E-Mail: info@union-instruments.com