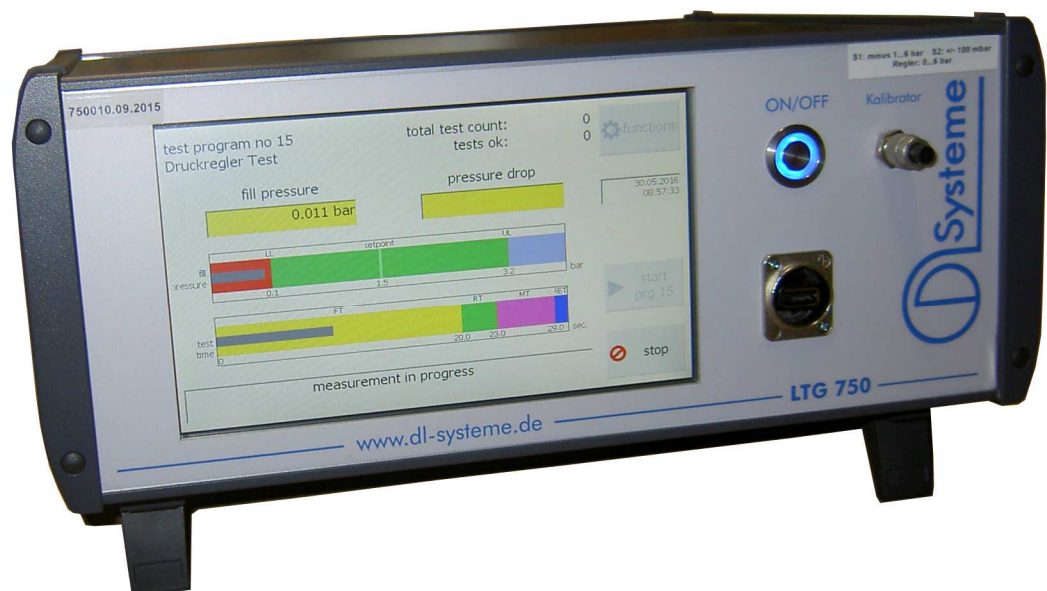


Instructions for use

LTG 750



Leakage tester LTG 750

Instructions for use

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Leakage tester LTG 750

Instructions for use

Switch on

The leakage tester is switched on with the On/Off button. The switch engages in the On position and the diode glows in blue when the 24 V DC operating voltage is available.

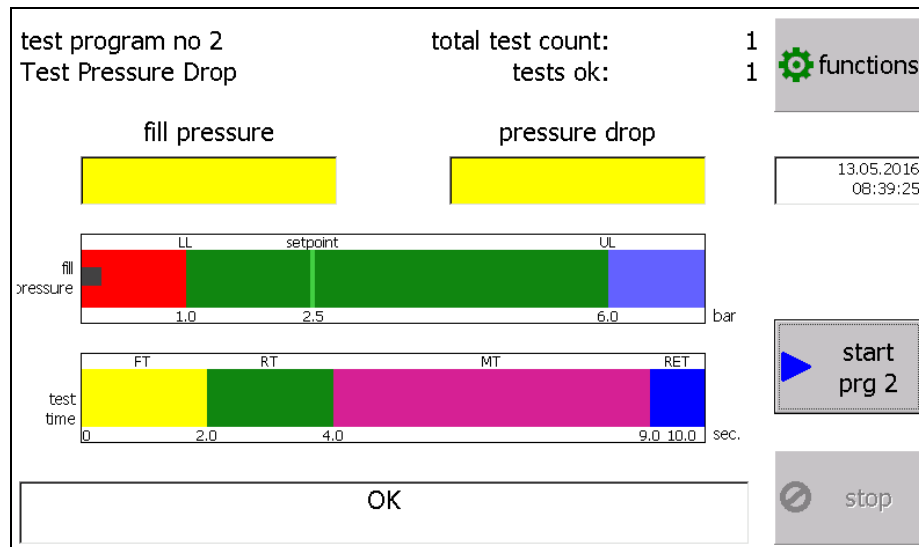
The following is shown on the display one by one upon start:

- at first white display approx. 5s
- Windows interface approx. 15 s
- Logo DL systems approx. 5s
- Operational view

The display

The display is a resistive touch-screen display. Inputs can be made by lightly tapping with the finger or with a plastic stylus on the surface. Although the surface is made of scratch-resistant glass, input helps like a ball pen or other metallic objects are to be avoided. No input is necessary at the display for operating the test sequences.

The operational view



The view is divided in five areas from top to bottom.

- Specifications for testing
- Measured value display and date / time
- Bar graph display of the results of measurement and testing
- Bar graph display of the test sequence
- Message window

Leakage tester LTG 750

Instructions for use

Specifications for testing

The specifications for testing with the selected test programme and the related test number are shown in the upper grey field. In the middle the conducted tests are shown, which have been carried out after selecting the test programme. In addition, also the number of tests which were I.O. (in order). With the button "Function pre-selection" one reaches at first the level of password entry and then goes further to the level for programme selection and for creating a test programme.

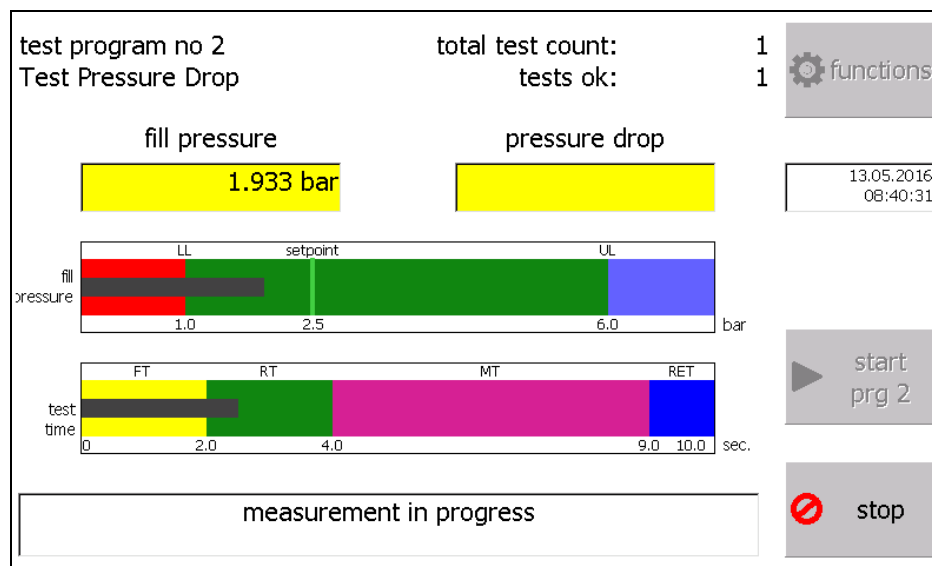
Measured value display

In the two display fields given in yellow, the fill pressure is always shown on the left. The dependency of the test method appears in the right display:

- the pressure drop during the pressure drop method
- the differential pressure in the differential pressure method
- the flow in the flow method

respectively in the defined unit. The fill pressure is always shown. The differential pressure or the flow is shown only when the rest period starts. In case of an error message, the displays continue to be shown till the error message is corrected using the stop or the start button.

Bar diagram of the measurement and test results



In the time from start till measurement, a bar graph display appears in the middle of the view, in which the fill pressure is shown as a grey bar. The green area is the permissible defined area. The light-green marking shows the reference value of the fill pressure.

Leakage tester LTG 750

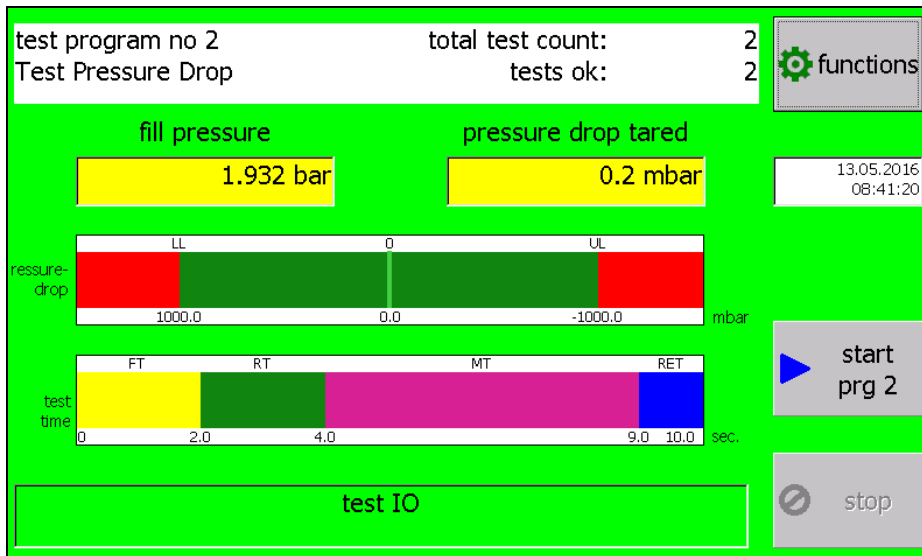
Instructions for use

Bar graph display of the test sequence

In the lower bar "test time", the individual test phases are shown through coloured fields. Their meaning is as follows:

- LDZ Load time turquoise
- FZ Filling time yellow
- RZ Rest period green
- MZ Measurement time magenta
- LZ Ventilation time blue

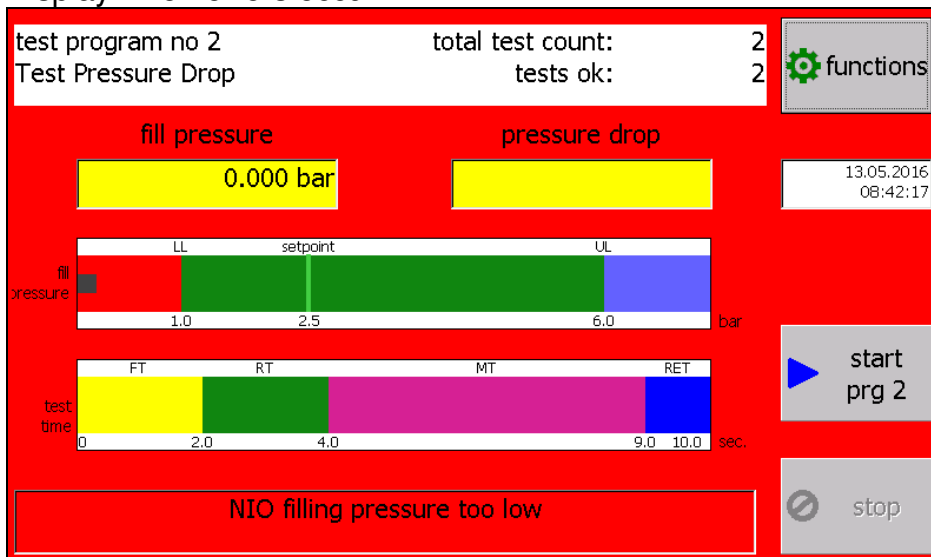
Within the areas, a grey progress bar runs from left to right after the start and shows the current test time.



If the test sequence is in the measurement period, the middle bar changes to a bar graph with display of the permissible area in green, the reference value in light-green and the deviation from reference value as the grey bar graph.

The clear text statement about the test is given in the message window below.

Display when errors occur:



Leakage tester LTG 750

Instructions for use

Message window

The statements for the test as well as the error messages are shown in the lower yellow window.

The colour of the message window changes to green in case of OK message and to red in case of NOK message.

Start of test sequence

The start of the test sequence is done exclusively via the Start button. A test, which is OK, is shown with a screen in green.

Stopping the test sequence

The test sequence can be terminated at any time with the Stop button. A termination, an NOK message and an error message are shown with a screen in red.

Leakage tester LTG 750

Instructions for use

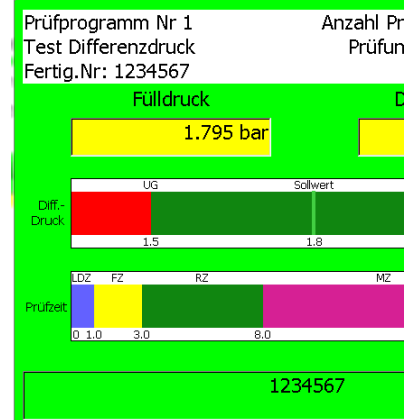
Entering a manufacturing number or a serial number

Entering this number is optional. If the LTG750 does not measure, it can be entered if required using a connected keyboard or a (power-saving) 2D or barcode scanner.

Display without number:



Display for the input:



A maximum of 30 characters can be entered.

The following characters are allowed:

"0123456789abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ-/_.:!/?#+*"

This can be used for a serial number, for it the serial number must be entered before every measurement.

It is entered once before the test of the series as a manufacturing number, lot number or batch number. The number is saved when switching off and becomes available again the next time the system is switched on.

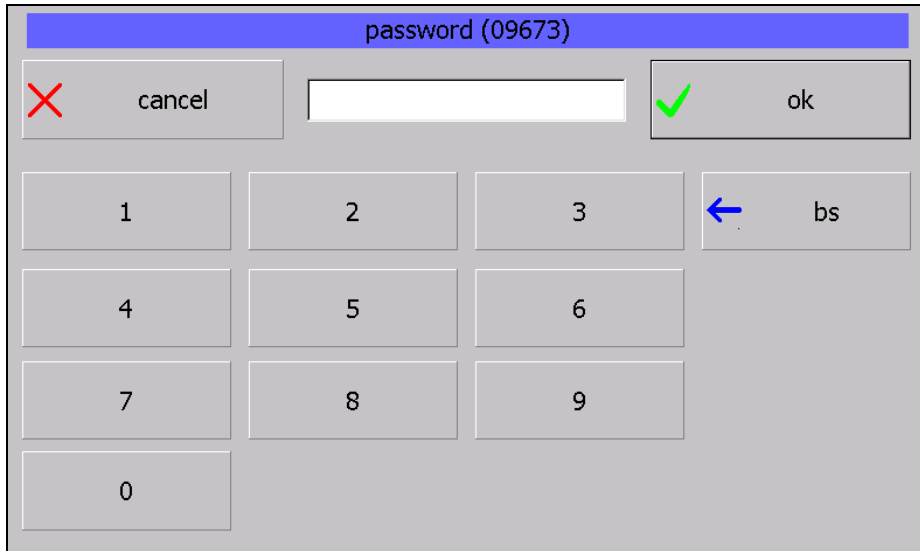
The number then appears in the measurement files (CSV-Files on the USB-Stick and on the network drive) and on the socket interface.

Leakage tester LTG 750

Instructions for use

Select, define test programme and other settings

The button "Setup" is visible at the end or before a test sequence. Tapping this button leads one to the password query.



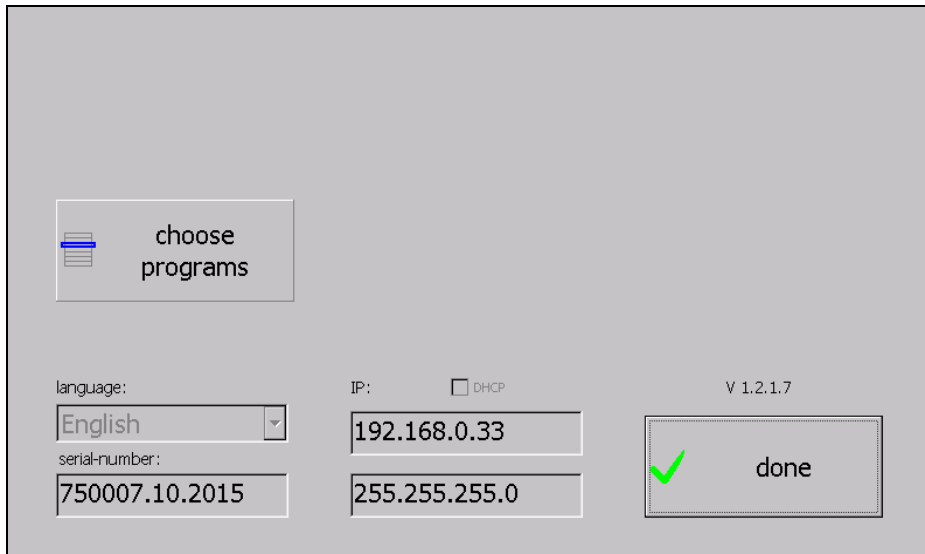
The password is a three-digit number. The password is 770 for the operator.

An input can be deleted character by character with the Delete button (backspace key = BS)

The OK button can also be activated by pressing the return button.

The password hierarchy differentiates between:
Operator and responsible person for the test programmes,
e.g. foreman, setter, service.

Other functions are released and shown using other passwords.



One reaches the function selection after entering the correct password. Functions that are inaccessible are not shown.

Only the button "Select programme" is accessible to the operator.

Following are shown here:

- the button for programme selection
- the selected language
- the serial number of the device
- the IP settings: DHCP, IP address and subnet mask
- Button "Finish" for ending the dialogue

Leakage tester LTG 750

Instructions for use

The persons responsible for the programmes have here an extended selection

By entering the foreman password 550, one gets the following selection.

Following are shown here:

- the button for Edit programmes
- the button for programme selection
- the selected language (can now be selected)
- the serial number of the device
- the IP settings: DHCP, IP address and subnet mask
- Button Expert Page (set date, time, IP settings)
- Button "Finish" for ending the dialogue

Select test programme

After pressing the button "Select test programme", the dialogue given alongside is shown with the activated test programmes.

The programmes can be tapped = selected.

The selected programme is shown on the right side with the test settings. Apply with the button "Finish".

Leakage tester LTG 750

Instructions for use

Redefine or edit test programme

The screenshot shows a software interface for configuring a test program. It features a list of programs on the left, a central panel for setting measurement methods, times, and test parameters, and a right panel for board settings and program activation. At the bottom, there are buttons for saving, importing/exporting, and finishing the configuration.

All the available programmes are shown on the left side. Unlike during selection, where only the active programmes are present.

Upon tapping the programme (if needed, scroll down with the bar directly near the programme list), the programme parameters are shown.

Via the list of name of the currently selected programme.

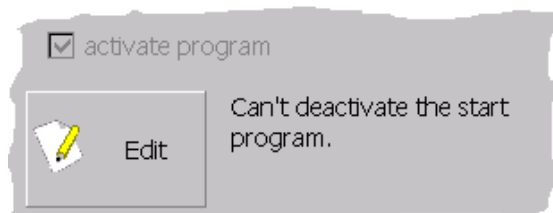
In the middle column, the measurement method, the subsequent programme, the measuring times and the test settings.

In the right column, the settings of outputs for the additional board, if available.

The setting of the standard outputs and the selection, whether the programme should be active (only then it is shown in the programme selection).

If a programme may be used by another one as the subsequent programme, it may not be deactivated.

A message appears and the checkbox is deactivated.



At the same time, one gets a message, in which programmes is the currently selected one referenced.

Buttons on the page:

- Edit: Active only when a field is selected, which permits an input
- Save programme: The changes are stored under the programme name
- Programme Import Export: Activated, if a USB stick having the format exFat is inserted.
- Finish: Exiting the dialogue

Leakage tester LTG 750

Instructions for use

Inputs for a test sequence programme

Activate programme

A test sequence programme can be activated or deactivated. Only the activated test programmes appear in the selection list.

Test specimen

A name or an identification number of the specimen can be entered here. The name appears in the selection list, above in the display and in the test log.

Measurement method

Depending upon the device type, the measurement method: Pressure drop, minimum pressure drop, differential pressure or flow can be selected here. Only the permissible methods are shown.

Next test

A next test programme for a subsequent testing can be selected here. This is carried out only when the current programme has been conducted as OK.

Time values of the test sequence programme

Inputs are made in seconds for: Load time, fill time, rest period, measurement time and ventilation time. The keyboard is changed for the numeric input.

Fill pressure inputs

Subsequently, the inputs are made for min. and max. fill pressure. These are monitored and determine the green area in the graph. The input of fill pressure defines the reference value, the light-green line in the graph as starting point for the bar graphs.

Measurement tolerance

Thereafter, the measurement tolerance is entered depending upon the test method.

Pressure drop: max. pressure drop and maximum pressure increase

Minimum pressure drop maximum pressure drop and maximum pressure increase

Differential pressure: positive and negative differential pressure

The value input is always positive here.

Flow method: max. flow

The measurement tolerance determines the green tolerance field and is monitored.

Leakage tester LTG 750

Instructions for use

Inputs

If a field is selected for input, the button "Edit" becomes activated.
Upon pressing this button, a dialogue appears for entering the parameters. A description, which parameters are to be entered, is given in the upper row.
The display of the dialogue depends upon upon the fact whether it is a numeric or an alphanumeric input.

e.g. programme name:

The dialog box has a yellow title bar labeled "program". It contains a text input field with the text "Test Pressure Drop" and a blue selection bar. To the left of the input field is a button with a red 'X' icon and the text "Abbrechen". To the right is a button with a green checkmark icon and the text "OK". Below the input field is a numeric keypad with buttons for digits 1-0 and a "BS" button with a blue arrow. Below the numeric keypad is an alphanumeric keypad with buttons for letters q-z, a-i, and y-x, c-v, b-n, m, ., -, +. At the bottom left is a button with an upward arrow icon, and at the bottom center is a wide empty text input field.

All other fields (time and pressure values) as follows:

The dialog box has a yellow title bar labeled "filling time FT [s]:". It contains a text input field with the value "2.0" and a blue selection bar. To the left of the input field is a button with a red 'X' icon and the text "cancel". To the right is a button with a green checkmark icon and the text "ok". Below the input field is a numeric keypad with buttons for digits 1-9, 0, and a "." button. To the right of the numeric keypad is a "bs" button with a blue arrow.

Leakage tester LTG 750

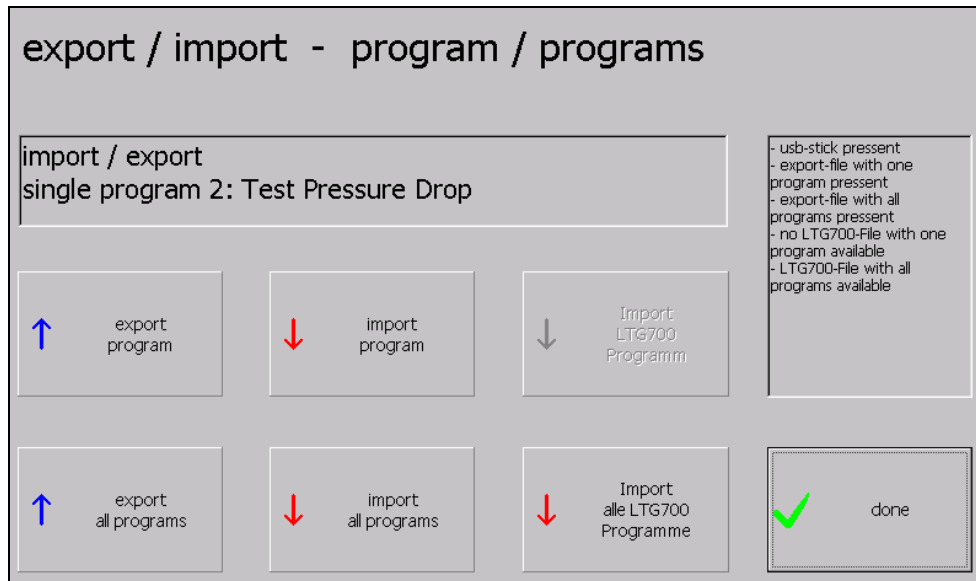
Instructions for use

Import Export programmes

In order to simplify the data transfer to another device, or to save the settings, it is possible to export and import the programmes.

The button is activated only when a USB stick having the exFat format is inserted in the USB slot.

The following dialogue appears upon pressing the button "Import Export Programme".



The buttons have the following functions:

- Export programme: Exports the selected programme (the one from the dialogue Edit programme) to the stick. This programme is also shown in the field above the buttons.
- Export all programmes: All 255 programmes are exported to the stick.
- Import programme: The button is activated only when a programme for importing is present on the stick. This programme on the stick replaces the programme, which is shown in the field via the buttons.
- Import all programmes: The button is activated only when a file with all programmes for importing is present on the stick.

All buttons are deactivated when the stick is removed.

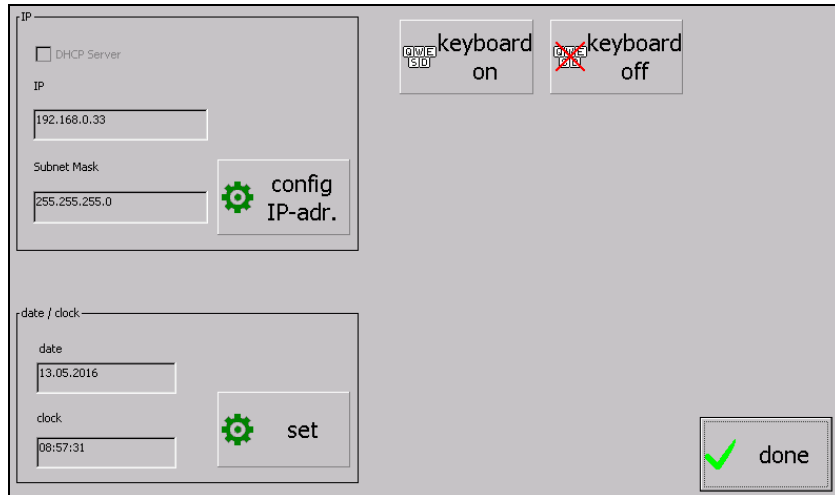
The states that are available and the actions executed appear in the output field on the right.

Leakage tester LTG 750

Instructions for use

The Expert Page

The expert page is needed for setting the date or the time and for setting the IP address.



The buttons have the following functions:

- Set IP address: The control panel is opened for setting the IP address. Exact description is given below
- Set: Dialogue for setting date and time is opened
Description given further below
- Keyboard on: The Windows keyboard is shown
- Keyboard off: The Windows keyboard is no longer shown
- Finish: The dialogue is ended

Leakage tester LTG 750

Instructions for use

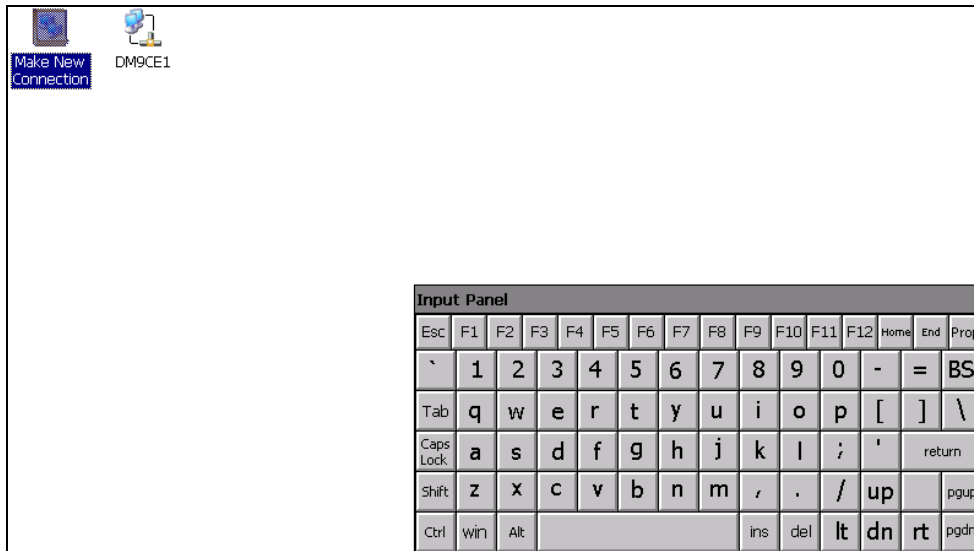
Set IP address

The control panel and the keyboard are opened when the button is pressed.



A double-click must be made here on "Network and Dial-up Connections". Alternatively, select and press "Return" on the keyboard.

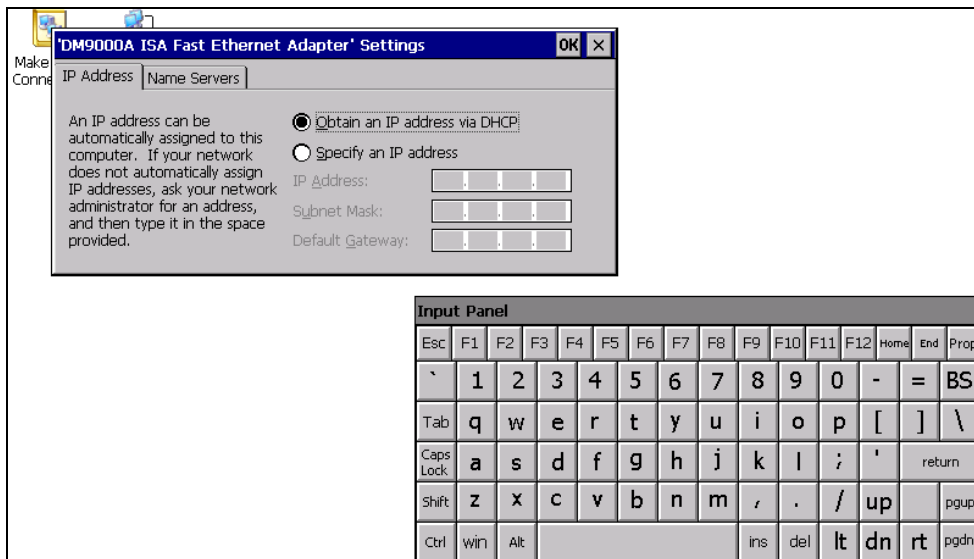
Following view appears:



Select here "DM9CE1" and double-click or press "Return" on the keyboard.

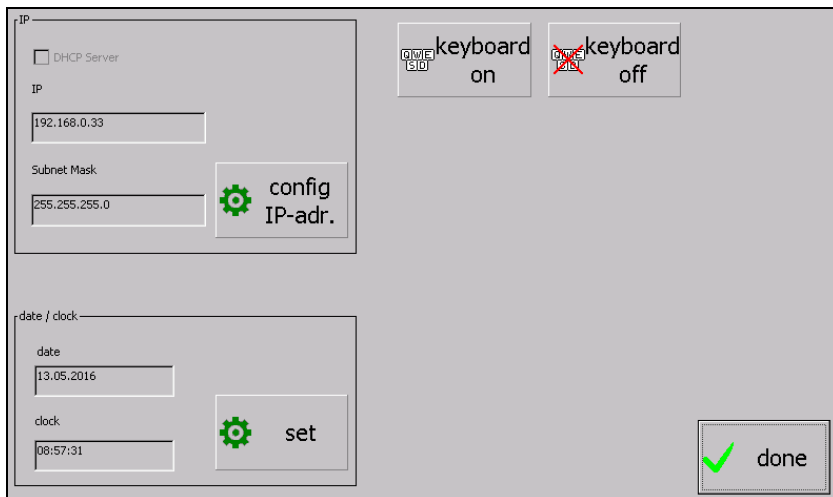
Leakage tester LTG 750

Instructions for use



This dialogue is half-hidden behind the keyboard. One can push it near the keyboard by dragging it at the blue bar above. The settings for the IP address are to be made here. Exit the dialogue after completion with "OK" (near the X). Close all other dialogues with X in the top right corner.

One then reaches the Expert page again. But with the keyboard switched on.



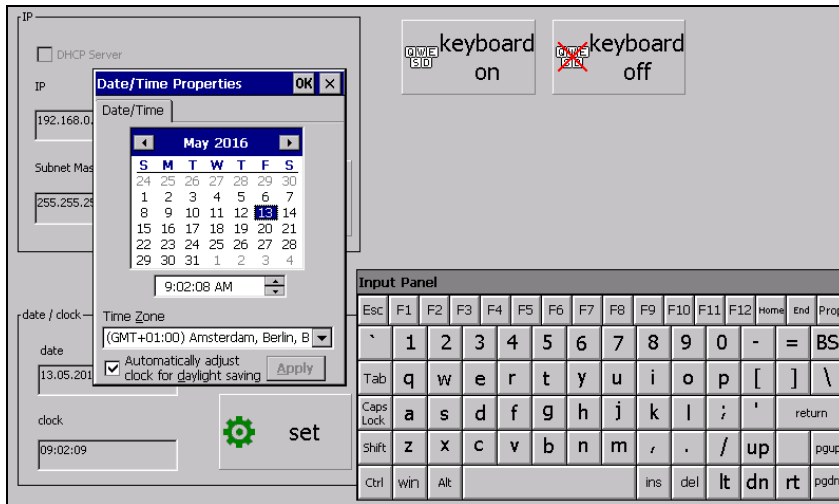
One can/must hide the keyboard again with the button "Keyboard off".

Leakage tester LTG 750

Instructions for use

Set date and time

Upon pressing the button "Set", the dialogue for setting the time and the keyboard are shown. The dialogue is hidden half below the keyboard and must be dragged in the free area with the blue bar in the Clock dialogue. Thereafter, one needs to switch on the keyboard again (button "Keyboard on")



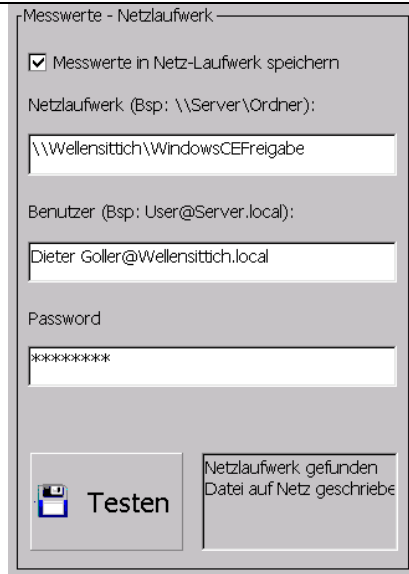
The date, time and, if applicable, the time zone can be set now. Close the dialogue with "OK" near the X and switch off the keyboard again (button "Keyboard off")

Leakage tester LTG 750

Instructions for use

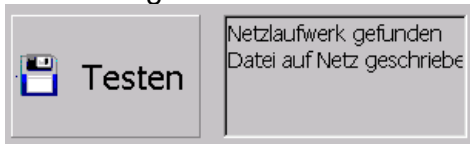
Option: Version 1.4.0.0

Settings for saving the measured values on a network drive/ shared network folder

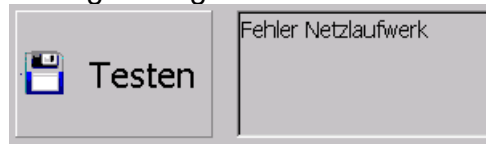
| | |
|---|---|
|  | <p>Using the checkbox, select if it must be saved on a network folder.</p> <p>The key can be used to test the entries. The result is displayed in the window next to it on the right.</p> <p>The data is saved and is available again when it is switched on the next time.</p> |
|---|---|

The test key checks the settings and attempts to create a file "LTG750-Test.txt" in the network drive.

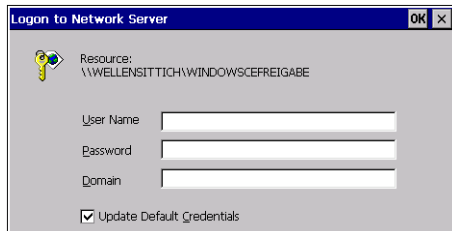
The settings were correct



Wrong settings



In case of problems, please consult your network administrator.



A Log-on window may pop up under some situations and it must be acknowledged 2-3 times with X to the top right without input.

The connection to the network drive is established automatically while saving the measured values.

In case of problems, please consult your network administrator.

Leakage tester LTG 750

Instructions for use

Save measured values USB and Network folder

It is possible to save a data record automatically for every measurement. The data records end up in a daily CSV-File in the annual folder. This happens automatically after every measurement.

The data records in the file look like this:

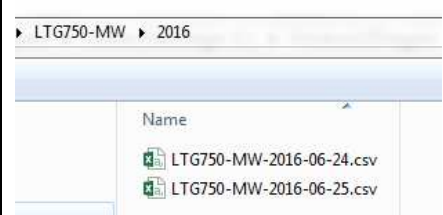
```
Testnumber;Program;TestMethod;TestResult;Message\FNOK;StartDateAndTime;TesttimeInSec;UpperLimit;LowerLimit;test
pressureatthestart;Testpressureattheend ;FilltimeInSec; Idle periodInSec;Ventilation timeInSec;Nameofest specimen;Seriesnumber
2748;1;2;0;25.06.2016 07:39:58;10,0;20,000;20,000;1,800;-0,095;2,0;5,0;2,0;Test Differential pressure;1234+
2748;2;1;2;0;25.06.2016 07:40:09;5,0;1000,000;1000,000;1,800;0,157;2,0;2,0;1,0;Test Pressure drop;1234+
2748;3;1;2;0;25.06.2016 07:40:13;1,0;200,000;200,000;1,798;-0,024;1,1;1,0;1,0;threeioiio;1234+
2748;4;1;2;0;25.06.2016 07:40:18;1,1;20,000;20,000;1,798;-0,081;1,0;1,1;1,0;four;1234+
2748;1;2;0;25.06.2016 07:40:39;10,0;20,000;20,000;1,800;1,965;2,0;5,0;2,0;Test Differential pressure;1234+
2748;2;1;2;0;25.06.2016 07:40:49;5,0;1000,000;1000,000;1,801;0,272;2,0;2,0;1,0;Test Pressure drop;1234+
```

The first line is the heading, after that the measured values follow. One line for each test. The decoding of the numbers is described in the socket interface. The file can also be opened with a double-click with Excel:

| PruefNumm | Programm | PruefMethod | PruefErgebn | Meldung | We | StartDatumUndUhrze | PruefzeitInS | ObererGren | UntererGren | PruefdruckB | PruefdruckB | FuellzeitInS | RuhezeitInS | LueftzeitInS | NameDesPruefings | Seriennummer |
|-----------|----------|-------------|-------------|---------|----|--------------------|--------------|------------|-------------|-------------|-------------|--------------|-------------|--------------|-----------------------|--------------|
| 2748 | 1 | 2 | 2 | 0 | | 25.06.2016 07:39 | 10 | 20 | 20 | 1,8 | -0,095 | 2 | 5 | 2 | 2 Test Differenzdruck | 1234+ |
| 2748 | 2 | 1 | 2 | 0 | | 25.06.2016 07:40 | 5 | 1000 | 1000 | 1,8 | 0,157 | 2 | 2 | 1 | 1 Test Druckabfall | 1234+ |
| 2748 | 3 | 1 | 2 | 0 | | 25.06.2016 07:40 | 1 | 200 | 200 | 1,798 | -0,024 | 1,1 | 1 | 1 | 1 dreliouio | 1234+ |
| 2748 | 4 | 1 | 2 | 0 | | 25.06.2016 07:40 | 1,1 | 20 | 20 | 1,798 | -0,081 | 1 | 1,1 | 1 | 1 vier | 1234+ |
| 2748 | 1 | 2 | 2 | 0 | | 25.06.2016 07:40 | 10 | 20 | 20 | 1,8 | 1,965 | 2 | 5 | 2 | 2 Test Differenzdruck | 1234+ |
| 2748 | 2 | 1 | 2 | 0 | | 25.06.2016 07:40 | 5 | 1000 | 1000 | 1,801 | 0,272 | 2 | 2 | 1 | 1 Test Druckabfall | 1234+ |
| 2748 | 3 | 1 | 2 | 0 | | 25.06.2016 07:40 | 1 | 200 | 200 | 1,799 | -0,11 | 1,1 | 1 | 1 | 1 dreliouio | 1234+ |
| 2748 | 4 | 1 | 2 | 0 | | 25.06.2016 07:40 | 1,1 | 20 | 20 | 1,799 | -0,086 | 1 | 1,1 | 1 | 1 vier | 1234+ |
| 2748 | 1 | 2 | 2 | 0 | | 25.06.2016 07:41 | 10 | 20 | 20 | 1,802 | 2,251 | 2 | 5 | 2 | 2 Test Differenzdruck | 1234+ |

Generally there are 2 options for saving.

The **USB-Stick** (configuration not required, simply insert a USB with the list "LTG750-MW" in the root), after that the data is written for every complete measurement in a file as follows:

| | |
|---|--|
|  | <p>The date is included in the name of the file.</p> <p>The files are written in the list "LTG750-MW" in a sub-folder with the year.</p> |
|---|--|

Functionality: If a USB with the correct list is inserted, the measured values are saved. If it does not get inserted or the list is not available, nothing is saved.

Write on a **Network drive**. For this, the necessary settings must be made on the expert page.


There are same folder structures and the same files as on the USB-Stick. However, here extensions are made because it is susceptible to faults.

Leakage tester LTG 750

Instructions for use

Problems which could occur:

The network drive is not available. The measured values cannot be saved.
The LTG750 discovers a disconnection and shows this after the 4th measured value with a red window along with the date/time display. Even less measured values in the buffer trigger this notification if 2 attempts to access the network drive are unsuccessful.





| | |
|---|---|
|  | <p>Errors which could occur:</p> <ul style="list-style-type: none">LAN Err 1 = Network drive could not be connectedLAN Err 2 = File could not be openedLAN Err 3 = File could not be createdLAN Err 4 = all 5 files could not be accessed for writing <p>The lower figure is the measured values buffered at the moment. Maximum 100 units</p> |
|---|---|

A maximum of 100 last measurements are buffered. After that the old ones are lost.

If the measured values are needed, a working network functionality must be looked out for.

Since a network folder is involved, it is possible that a different user is processing or viewing the file. Then accessing the file is not possible.

The LTG 750 then attempts to create a new file. With the extension -x in the name. X can have the values 1-3. A total of 4 files can be created to enable secure storage.

| | | |
|--|------------------|-----------------|
|  LTG750-MW-2016-06-25.csv | 25.06.2016 14:32 | Microsoft Excel |
|  LTG750-MW-2016-06-25-1.csv | 25.06.2016 16:01 | Microsoft Excel |
|  LTG750-MW-2016-06-25-2.csv | 25.06.2016 16:01 | Microsoft Excel |
|  LTG750-MW-2016-06-25-3.csv | 25.06.2016 16:01 | Microsoft Excel |

If all 4 files cannot be accessed, again up to 100 measured values are collected, as described above. From the 4th measured value, the error message appears again.

If the network connection starts working again within the time till the 100 measured values accumulate, measured values are not lost.

Leakage tester LTG 750

Instructions for use

The Web interface

The LTG750 contains a web server to display the available programs or to process them.

The pre-requisite for an external access is a network connection. The device is accessible using the IP-Address, which is displayed on the function selection level.

For a direct PC – leakage tester connection, a Cat5e cross cable must be used. The cable must be inserted in the Ethernet ports of the device and the PC or it must be connected using a switch/router. The PC or the device must be set on the same network system. The changes in the network settings must be made by the system administrator. Settings for the IP-Address are located on the expert page.

If everything is set correctly, LTG750 can be accessed by entering the IP-Address in a web browser. e.g. 192.168.6.33 or <http://192.168.6.33>



If everything was installed correctly, this display is seen.

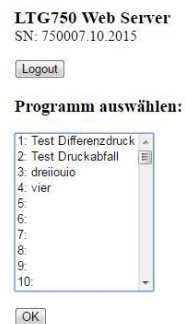
Analogous to the device, here there is an option to enter “770” as PWD for program display, or “550” for program processing.

The entry “770” and send shows the active programs for selection.



A program is selected and OK is pressed. The display of the program appears:

The entry “550” and send shows all 255 programs for selection.



A program is selected and OK is pressed. The display of the program appears for processing:

Leakage tester LTG 750

Instructions for use

LTG750 Web Server
SN: 750007.10.2015

[Logout](#) [Zurück](#)

Programm anzeigen

| | |
|-----------------------------------|---|
| Programmnummer: | 2 |
| Programmname: | Test Druckabfall |
| Messmeth.: | Druckabfall |
| Folgeprog.: | 3 |
| Ladezeit LDZ [s]: | 0.5 |
| Füllzeit FZ [s]: | 2.0 |
| Ruhezeit RZ [s]: | 2.0 |
| Messzeit MZ [s]: | 5.0 |
| Lüftzeit LZ [s]: | 1.0 |
| Max. Fülldruck [bar]: | 6.000 |
| Min. Fülldruck [bar]: | 1.000 |
| Fülldruck [bar]: | 2.500 |
| max. Druckabfall[mbar]: | 1000.000 |
| max. Dr.anstieg[mbar]: | 1000.000 |
| Zusatzplatine nicht vorhanden | <input type="checkbox"/> FZP <input type="checkbox"/> FZV <input type="checkbox"/> 30 <input type="checkbox"/> 29 <input type="checkbox"/> 28 <input type="checkbox"/> 27 <input type="checkbox"/> 26 <input type="checkbox"/> 25 |
| Zusatzplatine nicht vorhanden | <input type="checkbox"/> 24 <input type="checkbox"/> 23 <input type="checkbox"/> 22 <input type="checkbox"/> 21 <input type="checkbox"/> 20 <input type="checkbox"/> 19 <input type="checkbox"/> 18 <input type="checkbox"/> 17 |
| Zusatzplatine nicht vorhanden | <input type="checkbox"/> 16 <input type="checkbox"/> 15 <input type="checkbox"/> 14 <input type="checkbox"/> 13 <input type="checkbox"/> 12 <input type="checkbox"/> 11 <input type="checkbox"/> 10 <input type="checkbox"/> 9 |
| Standard Ausgänge Programmbezogen | <input type="checkbox"/> 8 <input type="checkbox"/> 7 <input type="checkbox"/> 6 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 |

Values cannot be changed here, it is only for display.

With Back you come back to the selection.

With Logout back to the PWD-entry

LTG750 Web Server
SN: 750007.10.2015

[Logout](#) [Zurück](#)

Programm bearbeiten

| | |
|-----------------------------------|---|
| Programmnummer: | 2 |
| Programmname: | Test Druckabfall |
| Programm aktivieren | <input checked="" type="checkbox"/> |
| Messmeth.: | Druckabfall |
| Folgeprog.: | 3 dreilouio |
| Ladezeit LDZ [s]: | 0.5 |
| Füllzeit FZ [s]: | 2.0 |
| Ruhezeit RZ [s]: | 2.0 |
| Messzeit MZ [s]: | 5.0 |
| Lüftzeit LZ [s]: | 1.0 |
| Max. Fülldruck [bar]: | 6.000 |
| Min. Fülldruck [bar]: | 1.000 |
| Fülldruck [bar]: | 2.500 |
| max. Druckabfall[mbar]: | 1000.000 |
| max. Dr.anstieg[mbar]: | 1000.000 |
| Zusatzplatine nicht vorhanden | <input type="checkbox"/> FZP <input type="checkbox"/> FZV <input type="checkbox"/> 30 <input type="checkbox"/> 29 <input type="checkbox"/> 28 <input type="checkbox"/> 27 <input type="checkbox"/> 26 <input type="checkbox"/> 25 |
| Zusatzplatine nicht vorhanden | <input type="checkbox"/> 24 <input type="checkbox"/> 23 <input type="checkbox"/> 22 <input type="checkbox"/> 21 <input type="checkbox"/> 20 <input type="checkbox"/> 19 <input type="checkbox"/> 18 <input type="checkbox"/> 17 |
| Zusatzplatine nicht vorhanden | <input type="checkbox"/> 16 <input type="checkbox"/> 15 <input type="checkbox"/> 14 <input type="checkbox"/> 13 <input type="checkbox"/> 12 <input type="checkbox"/> 11 <input type="checkbox"/> 10 <input type="checkbox"/> 9 |
| Standard Ausgänge Programmbezogen | <input type="checkbox"/> 8 <input type="checkbox"/> 7 <input type="checkbox"/> 6 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 |

[Speichern](#)

The values can be processed and entered here.

You can save in LTG750 with Save.

With Back you come back to the selection.

With Logout back to the PWD-entry

Leakage tester LTG 750

Instructions for use

The socket interface port 1401 and 1402

The measured value output takes place through the Ethernet interface with LAN communication with TCP using the binary or ASCII socket interface.

Here the client sets-up the connection and the server (here LTG750) sends a data record of the last test and subsequently closes the connection. An example for this communication is the WINDOWS service "daytime" on Port 13.

The switch of the digital output stamp / ready can be used as a start signal of the communication set-up.

The output takes place in ASCII or binary code on two ports.

- Port 1401 for ASCII-output
- Port 1402 for binary output

The following default values, measured values and result values are issued (Port 1402)

Socket interface binary:

```
TBinResultDaten = packed record
  BinAnzTotal: longint; // consecutive No., 32 bit
  BinProgNr,          // Testprogram-No. [1..255], 16 bit
  BinMethode,         // Testmethod, 16 bit
  BinResult,          // Test-result, 16 bit
  BinMeldung,         // Message, if result Nok, 16 bit
  BinYY,              // Year 4-digit, 16 bit
  BinMM,              // Month 1..12, 16 bit
  BinDD,              // Day 1..31, 16 bit
  BinHH,              // Hour 0..23, 16 bit
  BinNN,              // Minute 0..59, 16 bit
  BinSS: word;        // Second 0..59, 16 bit
  BinDtMessn,         // Testtime in 1/1000 Sec, 32 bit
  BinSensorMax,       // upper limit in 1/1000 of the display unit, 32 bit with preference
  BinSensorMin,       // lower limit in 1/1000 of the display unit, 32 bit with preference
  BinFuellWert,       // test pressure at the test start in 1/1000 of the display unit, 32 bit with
preference
  BinPruefWert: longint; // test value at the test end in 1/1000 of the display unit, 32 bit with
preference
  BinPruefFlng: array[0.. MaxTest specimenLen] of ansichar; // MaxTest specimenLen=40
// Name of the test specimen, 1-Byte character string, zero terminated
  BinSerienNr:        array[0..MaxSeriesNoLen] of ansichar; // MaxSeriesNoLen=40
// optional Series-No. from Barcode-Scanner,
// 1-Byte character string, zero terminated
end;                  // total-length= 85 Bytes, if BinSeriesNo. not available or
//                      126 Bytes, if BinSerienNo is available
```

For the socket interface ASCII the same values are applicable

Leakage tester LTG 750

Instructions for use

Description of the parameters:

Test method:

- 1 = Pressure drop
- 2 = Differential pressure
- 3 = Flow rate
- 10 = Min. Pressure drop
- 11 = Dynamic pressure

Test result:

- 1 = Cancellation by the user
- 2 = again, follow-up test required
- 3 = NOK - Not passed the test -> see message for the reason
- 4 = OK - Test ok

Message:

- 1 = max. Filling pressure exceeded
- 2 = min. Filling pressure falling short
- 3 = min. Filling pressure falling short after test
- 4 = cancellation, pressure drop too high
- 5 = Error in the differential pressure sensor, current signal outside the permitted range
- 6 = cancellation, differential pressure too high
- 7 = cancellation, flow rate too less
- 8 = cancellation, flow rate too high
- 9 = test aborted by operator
- 10 = cancellation, pressure drop too less
- 11 = max. Filling pressure exceeded after test
- 20 = pressure sensor at the upper limit
- 21 = pressure sensor at the lower limit
- 40 = cancellation, pressure rise too high
- 41 = cancellation, NOK differential pressure sensor at the lower limit
- 42 = cancellation, NOK differential pressure sensor at the upper limit
- 50 = Error in the differential pressure sensor,
current signal outside the permitted range lower limit
- 60 = cancellation, differential pressure too less
- 70 = flow sensor at the upper limit
- 71 = flow sensor at the lower limit
- 80 = Dynamic pressure too low
- 81 = Dynamic pressure too high
- 82 = Dynamic pressure sensor at the upper limit
- 83 = Dynamic pressure sensor at the lower limit

Leakage tester LTG 750 Instructions for use

The socket interface can be tested with Telnet.
For this run “cmd.exe” in Windows.
After that in the input prompt enter “telnet IP-Address Port-No.”.

This makes sense only for Port 1401 (ASCII).

Example: telnet 192.168.6.33 1401 [Enter]

```
C:\Windows\system32\cmd.exe
C:\Users>telnet 192.168.6.33 1401
```

Return (response of an OK-test):

```
C:\Windows\system32\cmd.exe
2751;4;1;2;0;25.06.2016 18:28:50;1.1;20.000;20.000;1.789;0.005;vier:1234567
Verbindung zu Host verloren.
C:\Users>
```

A test of the binary connection does not make sense here because the return is not ASCII and it is not possible to interpret anything from it.

Example: telnet 192.168.6.33 1402 [Enter]

Return:

```
C:\Windows\system32\cmd.exe
C:\Users>telnet 192.168.6.33 1402
Verbindung zu Host verloren.
C:\Users>_
```

Leakage tester LTG 750

Instructions for use

The socket interface Port 23

The leakage tester can be controlled externally from software version 1.4.0.0 onwards with the Telnet protocol through network integration. The following control commands must be implemented, entered in clear text and concluded with Return.

| | |
|---------------------------------|---|
| start | starts the test program |
| stop | aborts the test program in progress |
| prog xy | selects a test program with the number xy |
| get prog x program | specifies the test parameter set with x for the number of the test back |
| set prog x;ppp parameter set | with x for the number of the test program and ppp as the test |
| status | calls up the message of the test program |
| get sn | calls up the set manufacturing number or serial number |
| set sn xy | sets the manufacturing number or serial number, maximum 30 characters Permitted characters: "0123456789abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ-/_.:!/?#+*" |
| get values | retrieves the last measurement result |
| exit | terminates the connection |
| bye | terminates the connection |

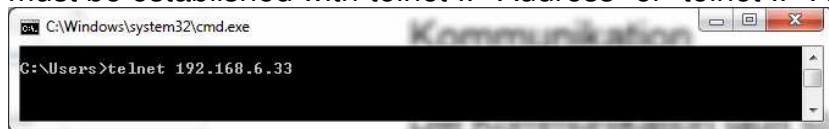
The device responds to a command with the responses, with ok or with error.

Leakage tester LTG 750

Instructions for use

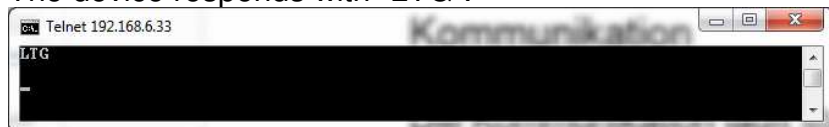
Communication

The communication takes place normally through the Telnet-Port 23. First, a connection must be established with “telnet IP-Address” or “telnet IP-Address 23”



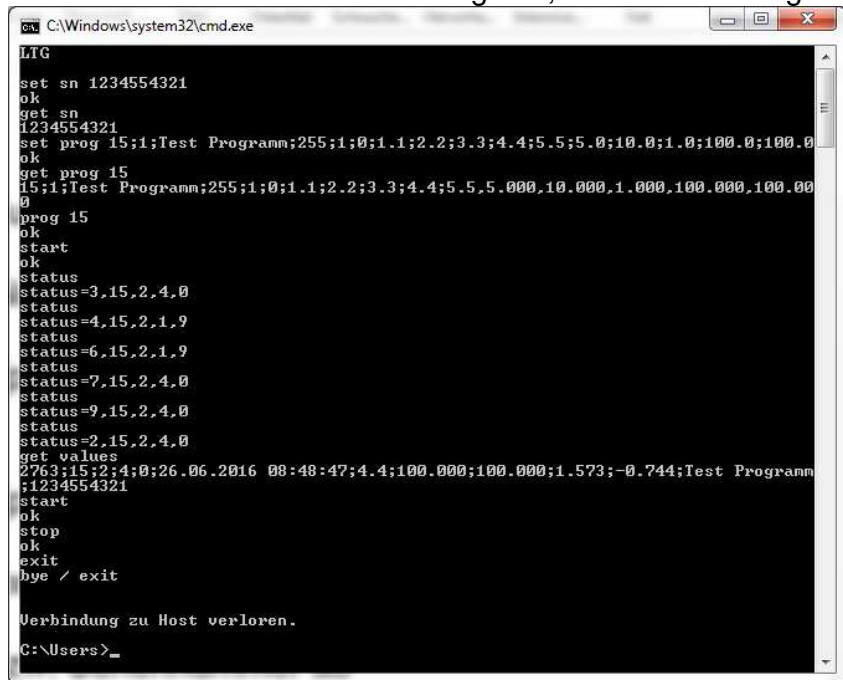
```
C:\Windows\system32\cmd.exe
C:\Users>telnet 192.168.6.33
```

The device responds with “LTG”.



```
Telnet 192.168.6.33
LTG
-
```

After that the commands can be given, see the following example:



```
C:\Windows\system32\cmd.exe
LTG
set sn 1234554321
ok
get sn
1234554321
set prog 15;1;Test Programm;255;1;0;1.1;2.2;3.3;4.4;5.5;5.0;10.0;1.0;100.0;100.0
ok
get prog 15
15;1;Test Programm;255;1;0;1.1;2.2;3.3;4.4;5.5.5.000.10.000.1.000.100.000.100.00
0
prog 15
ok
start
ok
status
status=3,15,2,4,0
status
status=4,15,2,1,9
status
status=6,15,2,1,9
status
status=7,15,2,4,0
status
status=9,15,2,4,0
status
status=2,15,2,4,0
get values
2763;15;2;4;0;26.06.2016 08:48:47;4.4;100.000;100.000;1.573;-0.744;Test Programm
;1234554321
start
ok
stop
ok
exit
bye / exit

Verbindung zu Host verloren.
C:\Users>_
```

With a continuous status request, the current status of the test process can be determined.

Leakage tester LTG 750

Instructions for use

The 5 numbers of the status message have the following meaning:

1. : shows the current test step.
 - 2 = Ready for start
 - 3 = Loading time
 - 4 = Fill time
 - 6 = Idle period
 - 7 = Test time
 - 9 = Ventilation time
2. Test program number from 1 to 255
3. Test method, as specified in "Description of the parameters"
4. Test result, as specified in "Description of the parameters"
5. Message, as specified in "Description of the parameters"

Leakage tester LTG 750

Instructions for use

Installation of a SW-Update on LTG750

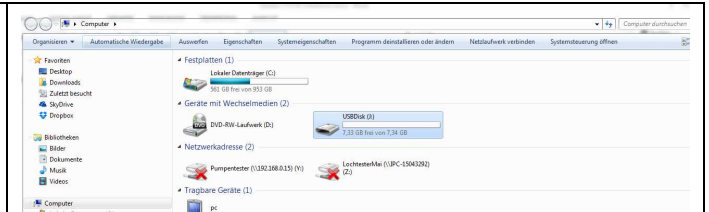
Prepare USB-Sticks

The USB-Stick must have an “exFAT” file system; otherwise it is not recognized by LTG750.

This can be checked as follows:

Insert the USB in the PC.

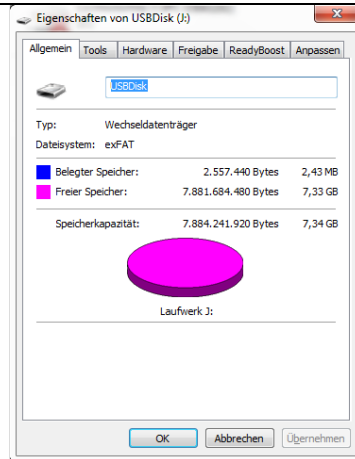
Open explorer/file manager



Click on the USB (here USBDisc (J:)) with the right mouse button and select properties.

ExFAT must be displayed here under file system.

Close the window by clicking on X at the top right.



If a different file system is shown here, the USB must be formatted.

CAUTION: In that case, all the data on the USB is lost. If required, take a backup beforehand.

Formatting the USB:

In Explorer/file manager click on the USB with the right mouse button and select “Format...”.

Select file system “exFAT”, leave the rest.

Click on “Start” and wait till the USB is formatted.

This may very well go on for several minutes.



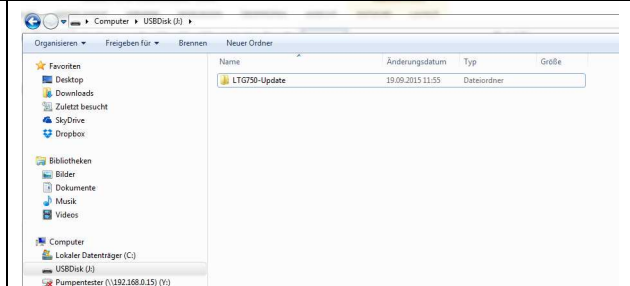
Leakage tester LTG 750

Instructions for use

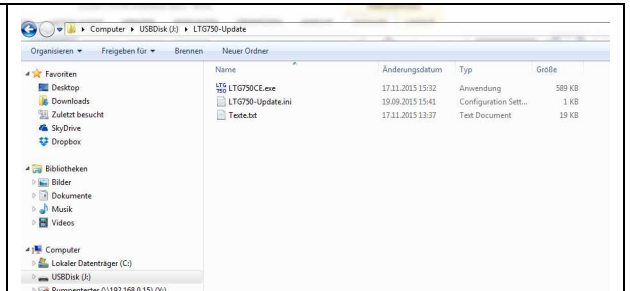
Update the USB

Copy the Update list on the USB.

It may not be renamed and the files for Update must be located in the folder "LTG750-Update" on the USB.

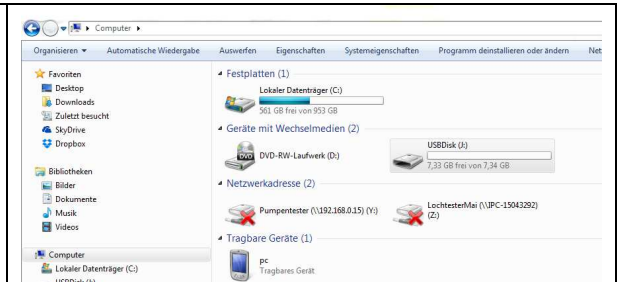


The contents of the folder may look like this:

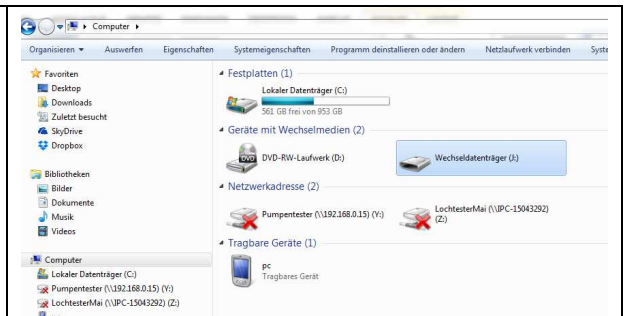


Plug and remove the USB properly. This is necessary so that all the data is written correctly and is complete.

Switch to the computer view where the top row Computer can be clicked with the left mouse button:



Click on the USB with the right mouse button and click on "Eject" in the menu with the left mouse button. After that, the view should look as follows:



Now the USB can be removed without any problem.

Leakage tester LTG 750

Instructions for use

Installation of updates on LTG750

1. Switch off LTG750
2. Insert the USB with the update in the USB port in LTG750
3. Switch on LTG750
4. The boot process is executed
5. The update is recognised and the following question is asked:



6. Click Yes
7. The update is installed, this can take a second and the new program is started automatically.
8. Take the USB out so that when the system is started again, an update is not requested again.
9. Finish

If the prompt does not appear, something is wrong with the USB.

The reasons for it could be as follows:

- Wrong Format (not exFAT)
- No update folder with the required files on the stick
- Folder name on the USB is wrong

Version query in LTG750

The version can be checked as follows:

| | |
|--|--|
| Press the button "Setup" (top right) | |
| Enter 770 or 550 and press the button "OK" | |
| After that the version appears above the "Finish" button. Here in the example Version 1.2.1.3 | |
| By pressing the button "Finish" switch back to the main view | |

Leakage tester LTG 750
Instructions for use

EC Declaration of conformity
As defined in the EC Guideline 2004/108/EG

It is hereby declared that the designated product:

Digital Meter LTG 750 (Electronic)

Device description:

Evaluation electronics for leakage check, set up in a table-top housing,
Supply voltage 24 VDC. Mains supply cable max. 2.5 metres

with the serial number:

conforms to the EC Guideline "**Electromagnetic Compatibility**" 2004/108/EG.

low voltage directive RL 2006/95 EG / RL 201435 EU

For evaluating the product with respect to electromagnetic compatibility, the following standards were referred:

DIN EN-61000-6-4:2011-09 / DIN EN-61000-6-1:2007-10

A prerequisite for adhering to this declaration is the proper use of the product, its proper connection to the low voltage network as well as the exclusive use of the external and internal components approved by the DL-Systeme für Messtechnik GmbH. This especially applies to measurement cables, power supply cables, sensors, control units, etc. The final manufacturer is responsible for the further intended use as well as for the adherence to the valid standards and guidelines.

This declaration is submitted responsible for the manufacturer:

DL-Systeme GmbH
Steinbeisstraße 32
73614 Schorndorf
Tel. 07181/77950

by: Dietmar Lehle

Schorndorf,.....
Date

.....
Dietmar Lehle

Leakage tester LTG 750
Instructions for use

Pin assignment LTG 750

| | |
|----|------------------|
| a0 | + 24 VDC |
| a9 | STOP INP |
| a8 | START INP |
| a7 | OK OUT |
| a6 | NOK OUT |
| a5 | STAMP OUT |
| a4 | |
| a3 | |
| a2 | |
| a1 | GND |

| | |
|----|--------------------|
| b0 | + 24 VDC |
| b9 | PGM 128 INP |
| b8 | PGM 64 INP |
| b7 | PGM 32 INP |
| b6 | PGM 16 INP |
| b5 | PGM 8 INP |
| b4 | PGM 4 INP |
| b3 | PGM 2 INP |
| b2 | PGM 1 INP |
| b1 | GND |

General:

The programme pre-selection 1...255 is done in binary format. For instance, to select PGM 17, the pins b6 + b2 are to be bridged with 24 V (PIN b0).

Plug connector DIN 41622 in the measuring equipment rack

Name

20-pin

Leakage tester LTG 750

Instructions for use

Power supply

The Leak tester LTG 750 is equipped with a more-range power supply.
Required Voltage 110 V AC 16Hz - 240 V AC 60Hz.

Option: 24 VDC

Current consumption depending on equipment 0,7 – 1,3 Amp.

Air supply

The supply pressure must be 3,7 – 7 bar relative.

It is required filtered dry air. Filter unit 25my nominal.

Option: In the high-pressure version the supply pressure must be adjusted accordingly.