INTELLIGENT MESSEN!
MEASURE WITH INTELLIGENCE!

English

OPERATION MANUAL

ecom® DP3

Version
ecom-DP3

Status Januar 2023

Index

1. Application and components

By works at gas pipes please respect the legal safety instructions!

The **ecom-DP3** easies tightness tests. Besides gas pressure measurements, tightness checks as well as leakage volume determination according to DVGW-TRGI 2018 can be performed. The following components belong to the **ecom-DP3** set:

Standard

ecom-DP3
Pressure measurement instrument with automatic check programmes

Connection hose
2,8 m long, with quick-fittings

Y-Piece
with quick-fittings

Conic test stopples
1/2“ - 3/4“ and
3/4" – 1 1/4",
with quick-fittings

High-pressure test stopples
3/8“ auf 1/2“ und
3/8“ auf 3/4“
with quick-fittings

One-pipe counter cap
for gas meters G4/G6
with quick-fitting

Hose connector
with quick-fitting

Ball valve
with quick-fitting

Connecting piece with safety valve
with quick-fitting

Plug
with quick-fitting

Software „DP3Report“
to create inspection reports

Optionen / Zubehör

Gasspürgerät ecom-LSG
for identification of leakages at gas pipes
(Item no.: 102145)

2 x Capillary hose
for 4-Pa-Test

External room temperature sensor
with connection cable
(Item no.: 102156)

One-pipe counter cap
for gas meters G10/G16
with quick-fitting
(Item no.: 102705)

Test stopple conic
12 – 22 mm
with quick-fitting
(Item no.: 102706)

Test stopple cylindrical
diameter 14,5 mm
with quick-fitting
(Item no.: 102708)

Test stopple cylindrical
diameter 24 mm
with quick-fitting
(Item no.: 102710)

Test stopple cylindrical
diameter 41 mm
with quick-fitting
(Item no.: 102712)

External pressure sensor (0 – 20 bar)
with connection cable
(Item no.: 102158)

External pressure sensor (0 – 40 bar)
with connection cable
(Item no.: 103932)

2 x Silicone hose
for small pressure measurement

External pipe temperature sensor
with connection cable
(Item no.: 12019)

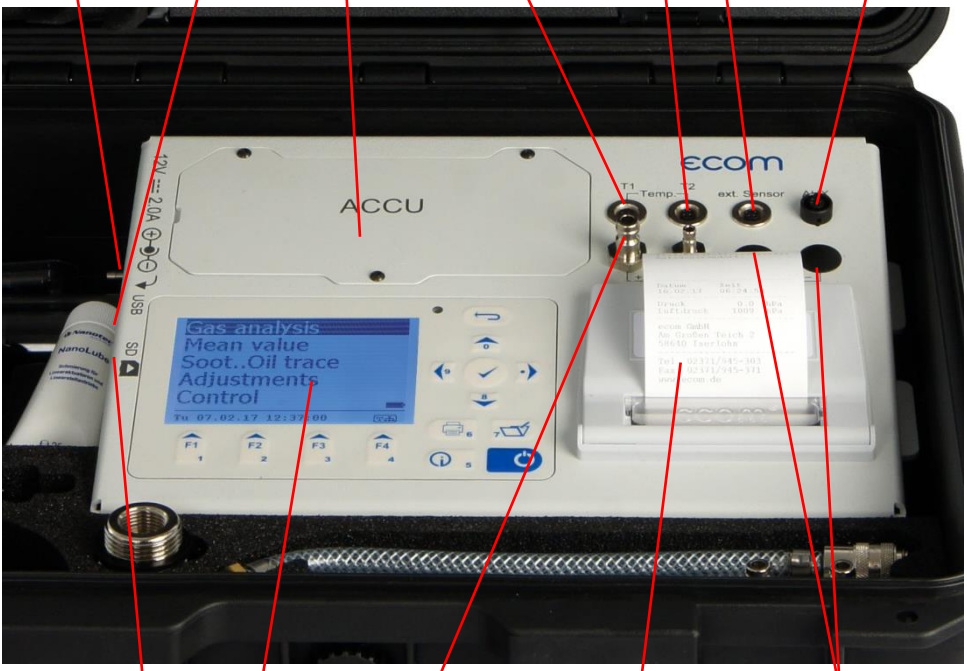
Test stopple conic
35 – 65 mm
with quick-fitting
(Item no.: 102707)

Test stopple cylindrical
diameter 19 mm
with quick-fitting
(Item no.: 102709)

Test stopple cylindrical
diameter 35 mm
with quick-fitting
(Item no.: 102711)

Test stopple cylindrical
diameter 52mm
with quick-fitting
(Item no.: 102713)

2. Design ecom-DP3



Keyboard

In the input mode, the keys are used for numerical inputs

ESC key (quit/ exit menu)

Enter key (confirm selection)

Cursor keys (Up/Down/Right/ Left/Scroll)

Values recording

Function keys (function shown on display)

Info key (access to control menu)

ON / OFF key

Print key (access to printing menu)

3. Connection of components

Please connect the components as shown on below plan.

ecom-DP3

Connection hose
for connection on „ P high 1 + “
at the ecom-DP3

Y-piece
for the connection of 2 line sections (f.e. with one-pipe counter cap)

High-pressure test stopples
for connection at screw connections

Conic test stopples
for connection at line ends

Hose connector
for connection at measuring nipple of the plant

One-pipe counter cap
for the connection in place of the gas meter

Plug
to check the tightness of the ecom-DP3

Ball valve
for connection of external devices for pressure build-up

Connecting piece with safety valve
for connection of external devices for pressure build-up

Never connect external devices for the pressure build-up without connecting piece with safety valve!

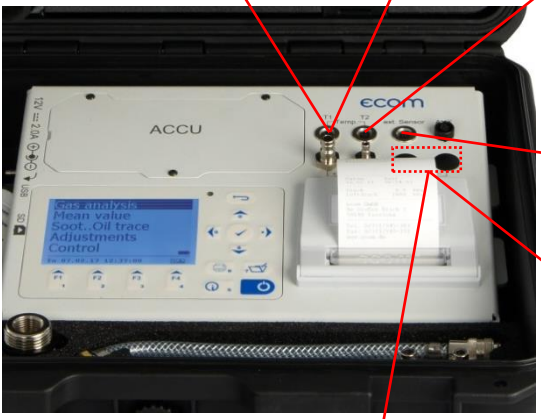
Option

External room temperatur sensor
to measure the room temperature during the test (connection „T1“)

External pipe temperature sensor
to measure the pipe temperature during the test (connection „T1“)

External pipe temperature sensor
to measure the pipe temperature during the test (connection „T2“)

ecom-DP3



External pressure sensor
(0 – 20 bar or 0 – 40 bar)
for checking heating and drinking water plants (connection „ext. Sensor“)

2 x Capillary hose
to measure the difference pressure with the 4-Pa-Test (connection „P low 2“)

2 x Silicone hose
for small pressure and flow measurements with f.e. pitot probe (connection „P low 2“)

4. Data processing

4.1. Data storage

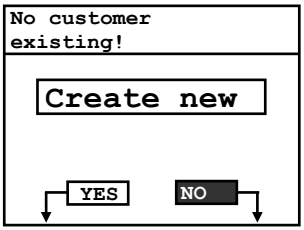
The measurements made with the equipment can be assigned to a customer. For each customer a file with file name is created on the memory card (e.g.: DP3_0001.DAT). Into this file all measurements belonging to the customer are written.
The files can be transferred to the PC using a card reader. With the software **"DP3Report"** a protocol for each check can be made. The following conditions must be fulfilled for using a multi media card:

- min. card volume 32 MB - max.32 GB (UHC)
- card formatted on 16 bit FAT or FAT32
- SD cards from SanDisk recommended
- PC with card reader

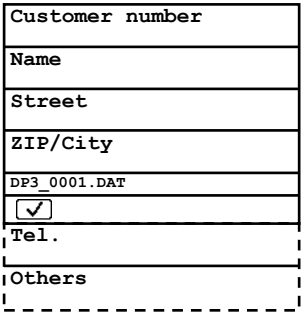
Never pull out cards during data record - data loss and damaging of the data carrier possible!

4.2. Edit customer

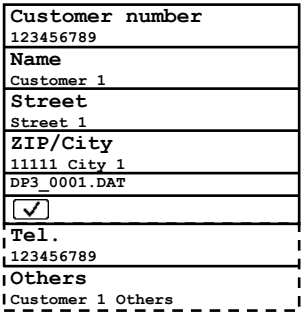
If the instrument gets switched on and a SD or MM Card with no customer data is inserted the inquiry follows whether you would like to edit a customer. If the measurement is to be assigned to a customer, press the key **<F1>** (**<F4>** = no: Measurement is made without allocation). Proceed as follows:



-select line to be filled out with the cursor keys **<up/down>** and confirm with **<Enter>**
-select keyboard **<F3>** (4 keyboard are available)
-select a character with the cursor keys **<up/down/right/left>** (selected character is black deposited)
-take over the character with **<Enter>** (the last character can be deleted with **<F2>**)
-repeat the procedure, until the desired designation is complete
-if a character is to be corrected, proceeded as follows:
  -interrupt the character selection with **<F4>**



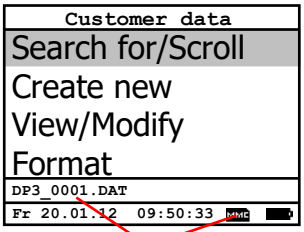
-select the character to be corrected with the cursor keys **<right/left>**
-activate the character selection with **<F4>** and correct the character
-return to line selection with **<F1>** and choose the next line



If all necessary lines are filled out, a file is created with **<F1>**. With **<ESC>** you can leave to select a control program.

4.3. Select customer

With the help of the software **„DP3Report“** customer data can be stored for the use at the DP3 on SD or MM Card. If the instrument gets switched on and a SD or MM Card with customer data is inserted a customer for allocation can be selected with **"Search for/Scroll" / <Enter>**:



Customer is selected

Scroll:
Select **„Scroll“**, if you want to find the customer with the help of the cursor keys **<up/down>**. Further functions are:

<F1> = to the first customer
<F2> = 10 customers forward
<F3> = 10 customers backward

Search for:
Select **„Search for“**, if you want to find the customer by the input of at least 3 connected characters. Edit 3 characters as described in the chapter before and start the search with **<Enter>**. All agreements with the character sequence are picked out. The selection can be paged through with **<F3>** (with **<F1>** to the beginning of the selection).

If the desired customer is found, select with **<Enter>**. With **„View/Modify“** the customer data can be viewed and modified.

Format:
This function is usually needed by initial adjustment of the instrument at our factory (preparation of SD or MM Card for data recording).
Caution: All stored values will be cancelled! Please switch instrument after formatting off and on again!

5. Control programs

Respect the „Technical Rules for Gas installations“!

After switching on of the instrument the following pre-programmed control programs are available:

Natural gas:
-Stress test acc. to TRGI 2018
-Tightness check acc. to TRGI 2018
-Usability check on systems with a line volume up to 100 liters acc. to TRGI 2018

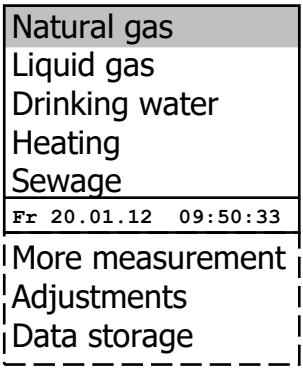
Liquid gas:
-Tightness check
-Pressure test

Drinking water:
-Drinking water plant (wet) acc. to DIN EN 806-4:
  -Function test
  -Pressure test
  -Extended test
-Drinking water plant (dry) acc. to DIN EN 806-4:
  -Tightness test
  -Stress test

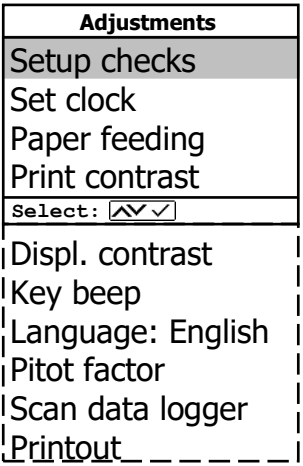
Heating:
-Heating installation acc. to DIN 18380

Sewage:
-Sewage installation acc. to DIN 1610

More measurements:
-Pressure check (arbitrary pressure)



5.1. Setup control programs

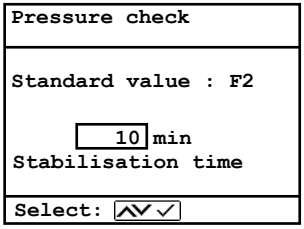


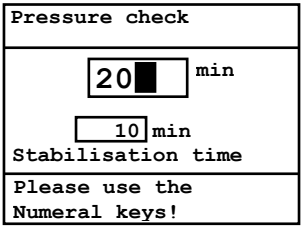
In menu **„Adjustments“ / „Setup checks“** the parameters for the control programs can be adjusted. Scroll with the cursor keys **<up/down>** to the menu **„Adjustments“**. Activate the menu with **<Enter>**. Scroll with the cursor keys **<up/down>** to the menu point **„Setup checks“** and activate with **<Enter>**. The following parameters can be adjusted:

Pressure check (arbitrary pressure):
-Stabilisation time (0 - 10 min, default: 0 min)
-Measurement time (0 - 6000 min, default: 0 min)
Stress test acc. to TRGI 2018:
-Stabilisation time (1 - 10 min, default: 1 min)
-Measurement time (10 - 120 min, default: 10 min)
-Test pressure (900 - 1500 hPa, default: 1000 hPa)
Tightness check acc. to TRGI 2018:
-Stabilisation time installation lower 100 Liter (1 - 20 min, default: 10 min)
-Measurement time installation lower 100 Liter (9 - 120 min, default: 10 min)
-Stabilisation time installation 100 bis 200 Liter (20 - 40 min, default: 30 min)
-Measurement time installation 100 bis 200 Liter (19 - 120 min, default: 20 min)
-Stabilisation time installation higher 200 Liter (50 - 70 min, default: 60 min)
-Measurement time installation higher 200 Liter (29 - 120 min, default: 30 min)
-Test pressure (15 - 500 hPa, default: 150 hPa)
Usability check on systems with a line volume up to 100 liters acc. to TRGI 2018:
-Stabilisation time (5 - 240 min, default: 10 min)
-Measurement time (2 - 30 min, default: 5 min)
-Reference pressure (10 - 100 hPa, default: 23 hPa)
Function test drinking water plant (wet) acc. to DIN EN 806-4:
-Stabilisation time (0 - 120 min, default: 30 min)
-Measurement time (1 - 120 min, default: 15 min)
-Test pressure (0.01 – 20.00 bar, default: 6.00 bar)
Pressure test drinking water plant (wet) acc. to DIN EN 806-4:
-Stabilisation time (0 - 120 min, default: 0 min)
-Measurement time (1 - 120 min, default: 30 min)
-Test pressure (0.01 – 20.00 bar, default: 11.00 bar)
Extended test drinking water plant (wet) acc. to DIN EN 806-4:
-Stabilisation time (0 - 120 min, default: 0 min)
-Measurement time (1 - 240 min, default: 120 min)
-Test pressure (0.01 – 20.00 bar, default: 5.50 bar)

Tightness test drinking water plant (dry) acc. to DIN EN 806-4:
-Stabilisation time (0 - 120 min, default: 0 min)
-Measurement time (1 - 240 min, default: 120 min)
-Test pressure (1 - 2000 hPa, default: 150 hPa)
Stress test drinking water plant (dry) acc. to DIN EN 806-4:
-Stabilisation time (0 - 120 min, default: 0 min)
-Measurement time (1 - 120 min, default: 10 min)
-Test pressure (0.01 – 5.00 bar, default: 1.00 bar)
Heating plant acc. to DIN 18380:
-Stabilisation time (0 - 120 min, default: 0 min)
-Measurement time (1 - 240 min, default: 120 min)
-Test pressure (0.01 – 20.00 bar, default: 10.00 bar)
Sewage plant acc. to DIN 1610:
-Stabilisation time (0 - 100 min, default: 0 min)
-Measurement time (1 - 120 min, default: 30 min)
-Test pressure (1 - 2000 hPa, default: 200 hPa)
Tightness check liquid gas:
-Stabilisation time (0 - 60 min, default: 10 min)
-Measurement time (0 - 60 min, default: 10 min)
Test pressure (0 - 1000 hPa, default: 100 hPa)
Pressure test liquid gas:
-Stabilisation time (0 - 60 min, default: 10 min)
-Measurement time (0 - 60 min, default: 20 min)
-Test pressure (0 - 1500 hPa, default: 1000 hPa)
Pressure test 0 – 40 bar liquid gas:
-Stabilisation time (0 - 120 min, default: 10 min)
-Measurement time (1 - 240 min, default: 10 min)
-Test pressure (0 - 40 bar, default: 10 bar)

Each parameter can be adjusted the same way:
1. Select the parameter with cursor keys **<up/down>**
2. Press **<Enter>** to activate
3. Use numerical keys to input the value
To adjust the standard value press <F2>





5.2. Natural gas

5.2.1. Stress test

The stress test acc. to DVGW – TRGI Process Instructions G 600 at gas pipes (operation pressure up to 100 hPa) is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Natural gas"** to the menu point **„Stress test“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Lock the gas pipe with a suitable adapter (test stopple, high pressure stopple or one-pipe counter cap).

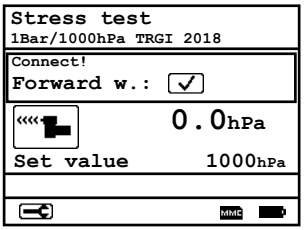
4. Connect the components as described in chapter 3.

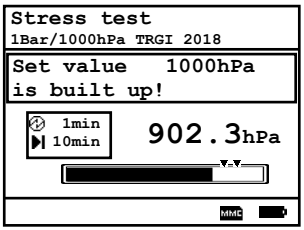
5. Start the control program with **<Enter>** (the pump of the instrument is building up the adjusted pressure).

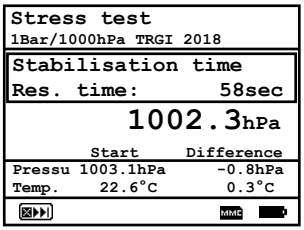
6. Wait for stabilisation time (if the pressure remains in the range „test pressure - 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

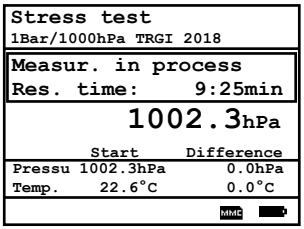
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

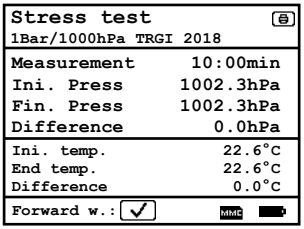
8. If the menu **„Stress test“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is switched on) or a new measurement can be started with **<F1>**.

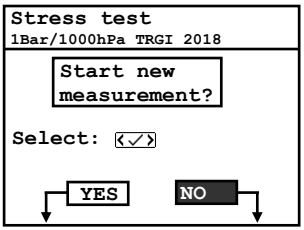












5.2.2. Tightness check

The tightness check acc. to DVGW – TRGI Process Instructions G 600 at gas pipes (operation pressure up to 100 hPa) is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Natural gas"** to the menu point **„Tightness check“**. Activate the menu point with **<Enter>**.

2. Adjust the gas pipe volume with **<F2>** (lower 100L, 100L..200L or higher 200L).

3. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

4. Lock the gas pipe with a suitable adapter (test stopple, high pressure stopple or one-pipe counter cap).

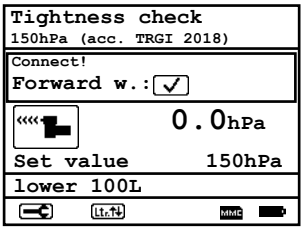
5. Connect the components as described in chapter 3.

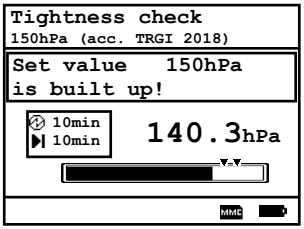
6. Start the control program with **<Enter>** (the pump of the instrument is building up the adjusted pressure).

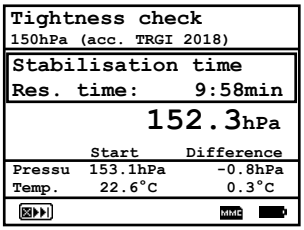
7. Wait for stabilisation time (if the pressure remains in the range „test pressure - 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

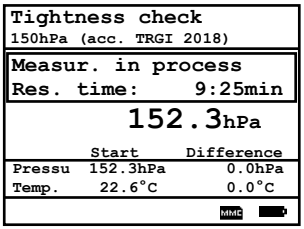
8. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

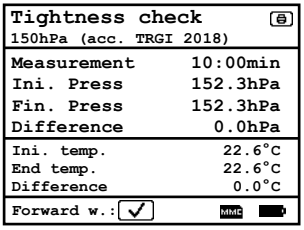
9. If the menu **„Tightness check“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.

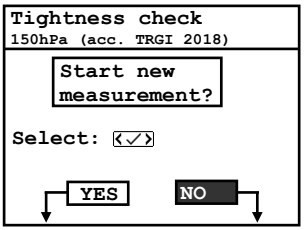












5.2.3. Usability check

The usability check on systems with a line volume up to 100 liters acc. to DVGW – TRGI 2018 Process Instructions G 600 is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

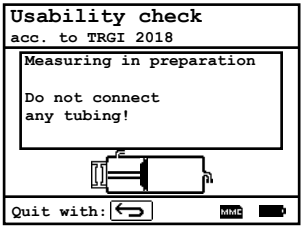
1. Scroll with the cursor keys **<up/down>** in the menu **"Natural gas"** to the menu point **„Usability check“**. Activate the menu point with **<Enter>**.

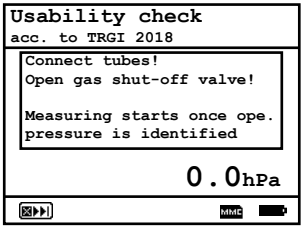
2. The measurement becomes prepared. The piston is brought into its initial position.

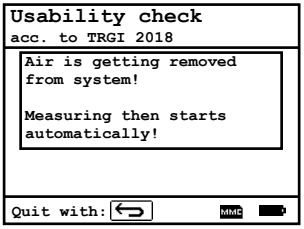
3. Connect the components as described in chapter 3.

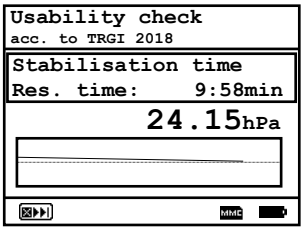
4. Open gas shut-off valve of the installation. As soon as the operating pressure of the plant is recognized, the system is aired out and the instrument starts automatically the stabilisation time. If necessary the stabilisation time can be terminated with **<F1>**.

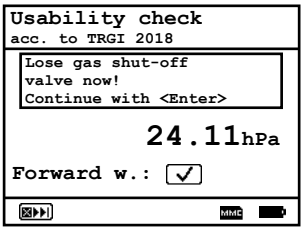
5. Close gas shut-off valve after stabilisation time. The measurement of the leak rate begins with **<Enter>**.

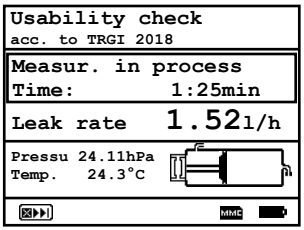




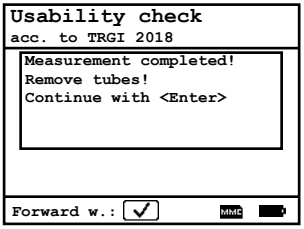




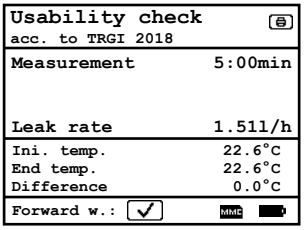




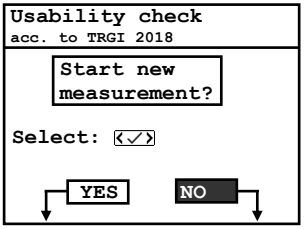
6. After measuring time the installation must be brought back into its original condition (remove hoses and open gas shut-off valve).



7. After the pressure in the instrument reduced itself (or after pressing **<Enter>**), the result is displayed and can be printed with **<Print>**.



8. If the menu **„Usability check“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.



5.3. Liquid gas

5.3.1. Tightness check

The tightness check acc. to TRF at liquid gas pipes is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Liquid gas"** to the menu point **„Tightness check“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Lock the gas pipe with a suitable adapter (test stopple, high pressure stopple or one-pipe counter cap).

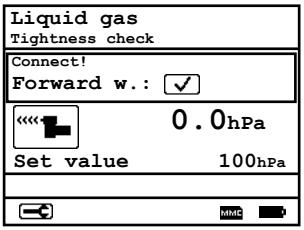
4. Connect the components as described in chapter 3.

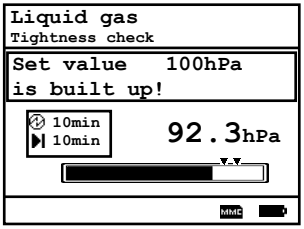
5. Start the control program with **<Enter>** (the pump of the instrument is building up the adjusted pressure).

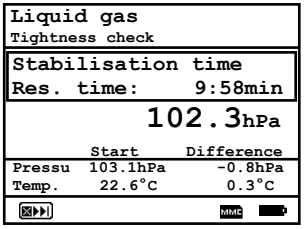
6. Wait for stabilisation time (if the pressure remains in the range „test pressure - 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

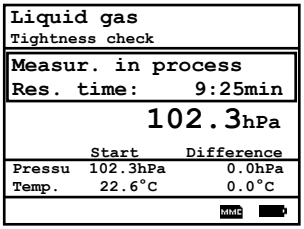
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

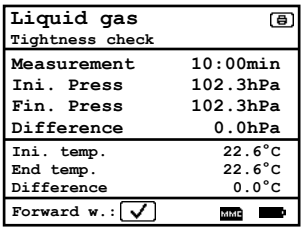
8. If the menu **„Tightness check“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.

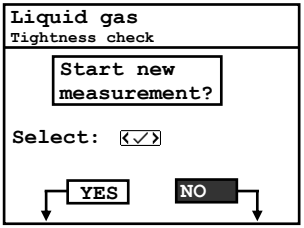












5.3.2. Pressure test

The pressure test acc. to TRF at liquid gas pipes is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Liquid gas"** to the menu point **„Pressure test“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Lock the gas pipe with a suitable adapter (test stopple, high pressure stopple or one-pipe counter cap).

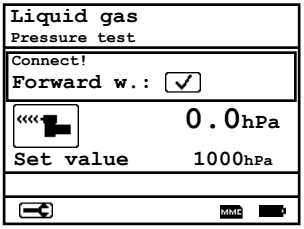
4. Connect the components as described in chapter 3.

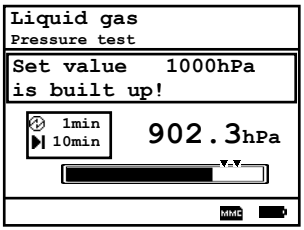
5. Start the control program with **<Enter>** (the pump of the instrument is building up the adjusted pressure).

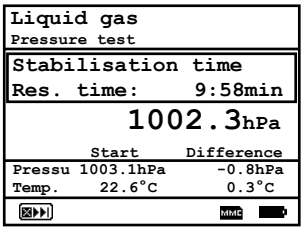
6. Wait for stabilisation time (if the pressure remains in the range „test pressure - 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

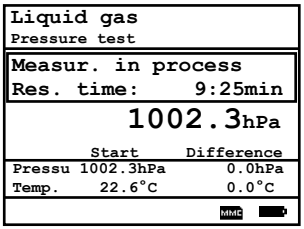
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

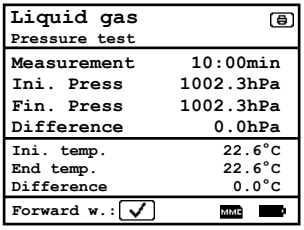
8. If the menu **„Pressure test“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.

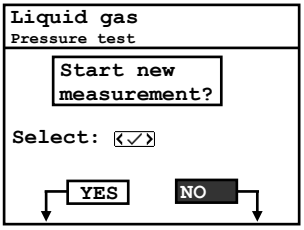












5.3.3. Pressure test 0 – 40 bar

The pressure test 0 - 40 bar at liquid gas pipes is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Liquid gas"** to the menu point **„Pressure test 0 – 40 bar“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Connect the external pressure sensor to the liquid gas pipe.

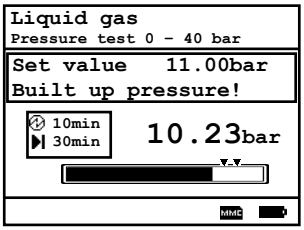
4. Connect the external pressure sensor as described in chapter 3.

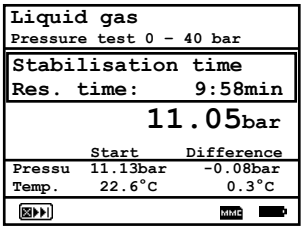
5. Start the control program with **<Enter>** (the pump of the instrument is building up the adjusted pressure).

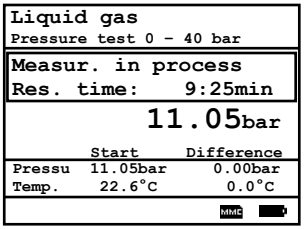
6. Wait for stabilisation time (if the pressure remains in the range „test pressure - 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

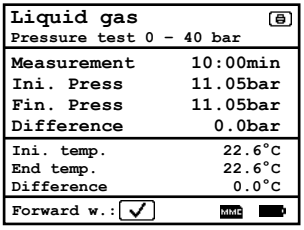
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

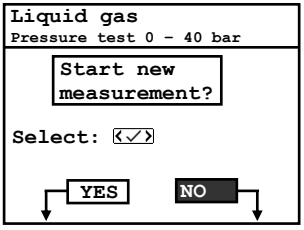
8. If the menu **„Pressure test 0 – 40 bar“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.











5.4. Drinking water (option)

5.4.1. Drinking water plant (wet)

5.4.1.1. Function test

The function test acc. to DIN EN 806-4 at drinking water pipes is registered as a control program in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Drinking water / Drinking water plant wet"** to the menu point **„Function test wet“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Connect the external pressure sensor to the drinking water pipe.

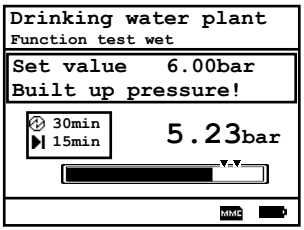
4. Connect the external pressure sensor as described in chapter 3.

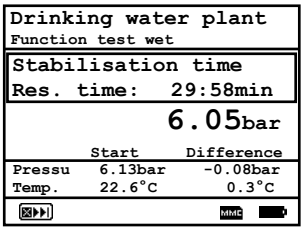
5. Start the control program with **<Enter>** and built up the adjusted pressure.

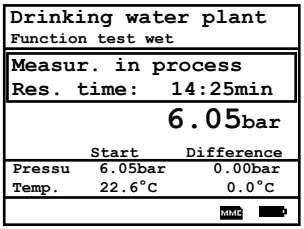
6. Wait for stabilisation time (if the pressure remains in the range „test pressure +/- 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

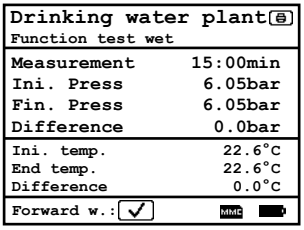
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

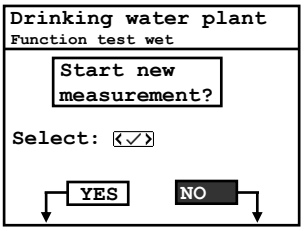
8. If the menu **„Function test wet“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.











The pressure test acc. to DIN EN 806-4 at drinking water pipes is registered as a control program in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Drinking water / Drinking water plant wet"** to the menu point **„Pressure test wet“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Connect the external pressure sensor to the drinking water pipe.

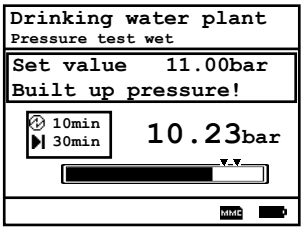
4. Connect the external pressure sensor as described in chapter 3.

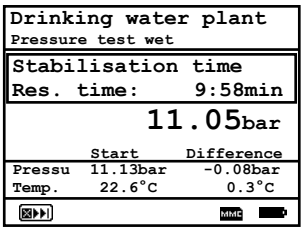
5. Start the control program with **<Enter>** and and built up the adjusted pressure.

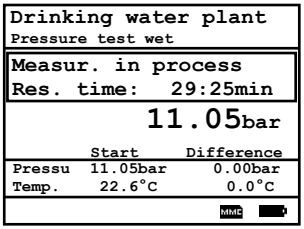
6. Wait for stabilisation time (if the pressure remains in the range „test pressure +/- 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

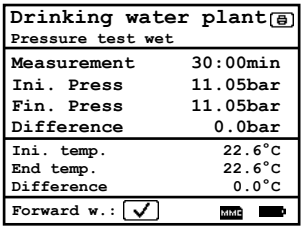
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

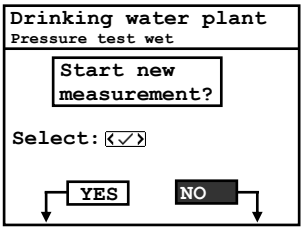
8. If the menu **„Pressure test wet“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.











5.4.1.3. Extended test

The extebded test acc. to DIN EN 806-4 at drinking water pipes is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Drinking water / Drinking water plant wet"** to the menu point **„Extended test wet“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Connect the external pressure sensor to the drinking water pipe.

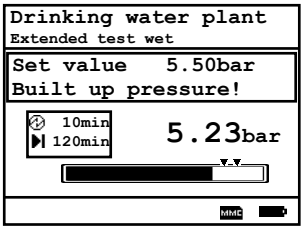
4. Connect the external pressure sensor as described in chapter 3.

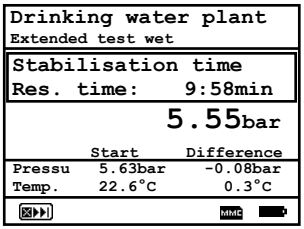
5. Start the control program with **<Enter>** and built up the adjusted pressure.

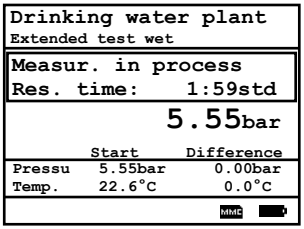
6. Wait for stabilisation time (if the pressure remains in the range „test pressure +/- 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

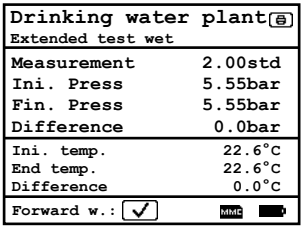
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

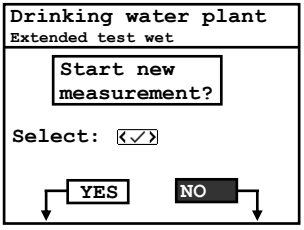
8. If the menu **„Extended test wet“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.











5.4.2. Drinking water plant (dry)

5.4.2.1. Tightness check

The tightness check acc. to DIN EN 806-4 at drinking water pipes is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Drinking water / Drinking water plant dry"** to the menu point **„Tightness check dry“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Lock the gas pipe with a suitable adapter (test stopple, high pressure stopple or one-pipe counter cap).

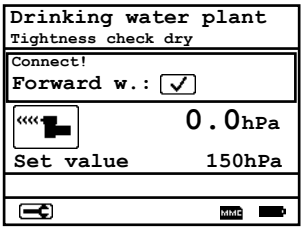
4. Connect the components as described in chapter 3.

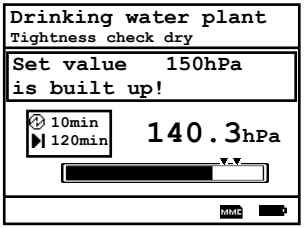
5. Start the control program with **<Enter>** (the pump of the instrument is building up the adjusted pressure).

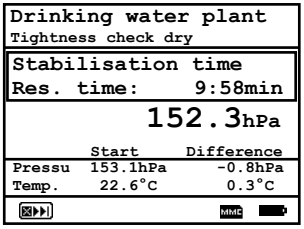
6. Wait for stabilisation time (if the pressure remains in the range „test pressure +/- 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

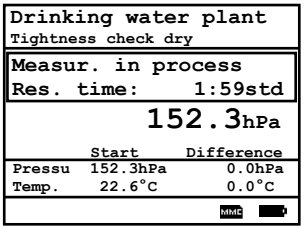
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

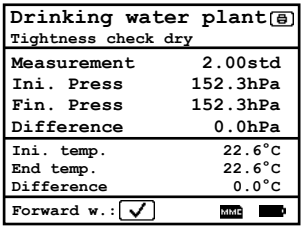
8. If the menu **„Tightness check dry“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.

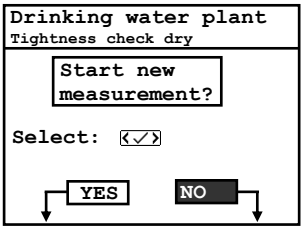












The stress test acc. to DIN EN 806-4 at drinking water pipes is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"Drinking water / Drinking water plant dry"** to the menu point **„Stress test dry“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Connect the external pressure sensor to the drinking water pipe.

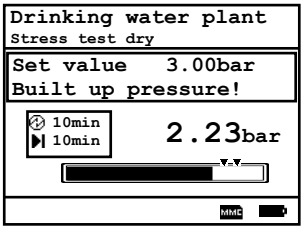
4. Connect the external pressure sensor as described in chapter 3.

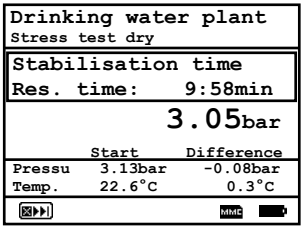
5. Start the control program with **<Enter>** and built up the adjusted pressure.

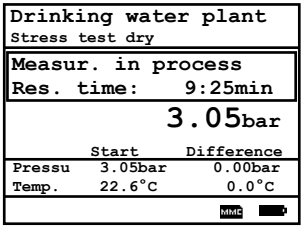
6. Wait for stabilisation time (if the pressure remains in the range „test pressure +/- 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

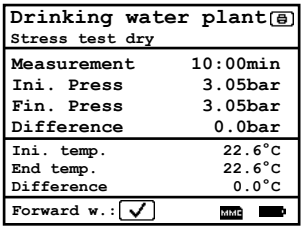
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

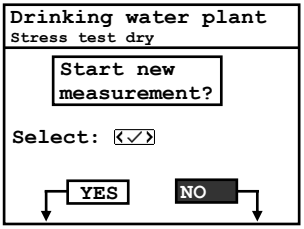
8. If the menu **„Stress test dry“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.











5.5. Heating (option)

The test of heating installations acc. to DIN 18380 is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** to the menu point **„Heating“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

3. Connect the external pressure sensor to the drinking water pipe.

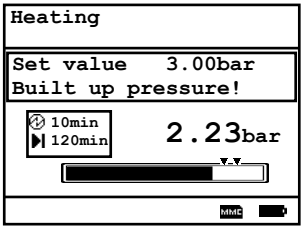
4. Connect the external pressure sensor as described in chapter 3.

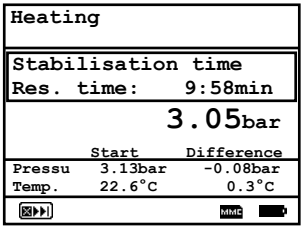
5. Start the control program with **<Enter>** and built up the adjusted pressure.

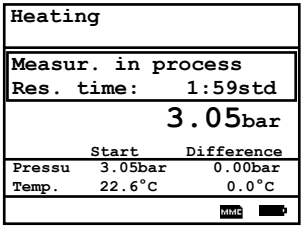
6. Wait for stabilisation time (if the pressure remains in the range „test pressure +/- 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

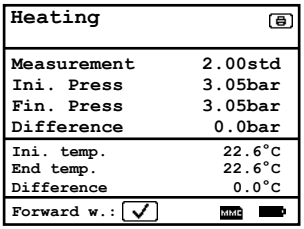
7. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

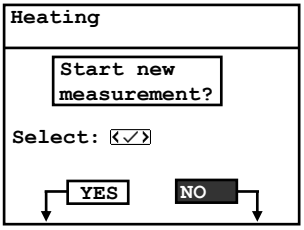
8. If the menu **„Heating“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.











5.6. Sewage (option)

The test of sewage installations acc. to DIN 1610 is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** to the menu point **„Sewage“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**).

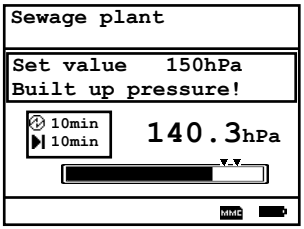
3. Connect the testing balloons as described.

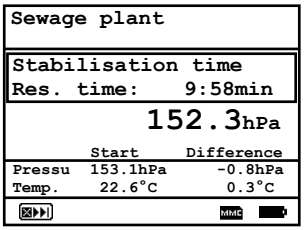
4. Start the control program with **<Enter>** and built up the adjusted pressure.

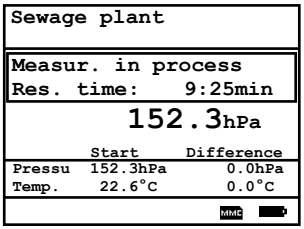
5. Wait for stabilisation time (if the pressure remains in the range „test pressure +/- 10%" during stabilisation time, so the measurement time will start). If necessary the stabilisation time can be terminated with **<F1>**.

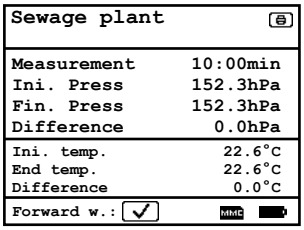
6. Once the measurement time is over, the result is displayed and can be printed with **<Print>**.

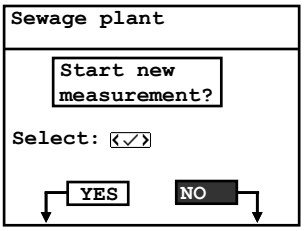
7. If the menu **„Sewage“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.









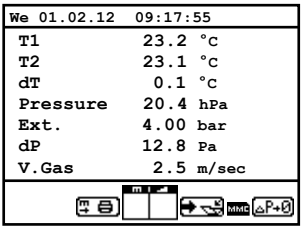


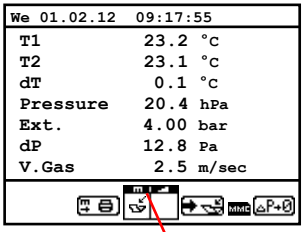
6. More measurements

6.1. Single measurement

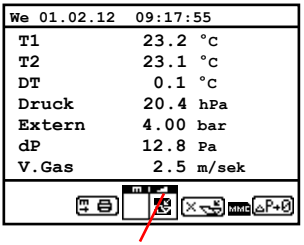
Beside the control programs the ecom-DP3 can be used also to measure pressures, temperatures and flow rates. Under **„More measurements / Single measurment“** all measured values are displayed on a view. The measurement of the flow rate is made with a pitot tube (connection P low 2).
If the measured values should be printed, press the key **<record>** (disk symbol) to transfer the values in the intermediate memory. The values can be printed with the help of the **<print>** key (printer symbol). If a printout of the values should be made simultaneously to the intermediate recording, so press **<F2>** (the intermediate memory will be printed).

After selection of a customer, a data logging of all measured values can be started (and also stopped) with **<F3>**. The interval time for the data logging can be adjusted under **„Adjustments / Scan data logger“**. With the help of the software **„DP3Report“** the data can be converted into a format readable for Microsoft Excel.





Measurement stored in intermediate memory

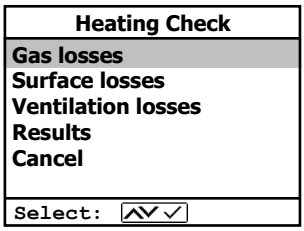


Data logger is started

6.2. Heating Check (option)

The heating check is a simple, expressive process to evaluate a complete heating plant (heat production, distribution and transfer) from the energetic point of view. Hereby the single plant components get inspected by the heating engineer in a combination of measurements and visual assessment and valued in regards of their energetic quality acc. to a negative point system of maximum 100 points. The higher the score, the farer the current plant is away from the desirable energetic stand and the higher the energy saving potential would be if modernisation measures are conducted.

In combination with the special probes required hereto, the **ecom-DP3** is able to perform the measurement of the heating check parameters: ventilation losses and surface losses. Out of the main menu point **"More measurements"**, select the sub-menu **"Heating Check"** and confirm with **<Enter>**.

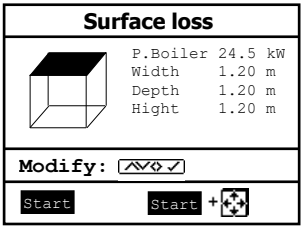


With the menu point "**Gas losses"** gas loss values can be converted to negative point system. The gas loss value can be edit with the numerical keyboard. After input the result is calculated with **<Enter>** and stored in **„Results"**.

The **surface losses measurement** is performed by a temperature sensor specific for surfaces. The temperature difference between boiler surface and room temperature (air temperature sensor) is determined and the percentual loss is calculated. Once the menu point is called up, the boiler performance must be inputed. To easy the measurement width, depth and height of the boiler can also be entered (dimensions will be memorized for surface calculation). Please proceed as follows:

Temperature sensor for surfaces

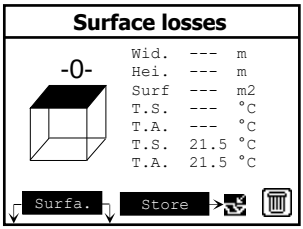
- activate respective input window with **<Enter>**
- inputs values using the keys numerical function
- confirm input with **<Enter>** or:
- adjust values using the cursor keys **<Right/Left>**

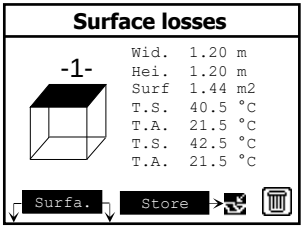


If no boiler dimensions are inputed, press **<F1>** (Start) to activate the measurement recording. Here the dimensions for all surfaces must be inputed.

Press **<F3>** (Start + ->) to start the real measurement. Proceed as follows:

- select surface (boiler side) to be measured with **<F1>** or **<F2>**
- position surface sensor
- record temperature difference with **<Memory>** - up to 10 values can be recorded per surface out of which a mean value will be calculated automatically
- if need be, cancel measurements with **<F4>**
- repeat this procedure for each surface





Once all surface temperatures have been determined, quit the menu with <**ESC**>. The surface losses get automatically calculated. The value conversion in negative points is available in the menu point **„Results“**.

The **ventilation loss** measurement is performed by a flow probe 30 sec. after burner switch-off. This measurement can be performed at the earliest 5 min. after instrument´s switch-on as the pressure sensor requires this period of time for stabilisation. Once the menu is called up, the values for air pressure, external temperature, boiler performance and exhaust gas pipe diameter must be inputed . Hereto proceed as follows:

- open respective window with **<Enter>**
- input figures using numerical function of keys
- confirm input with **<Enter>**

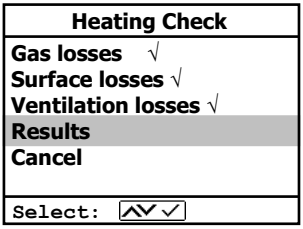
  or:
- adjust values using the cursor keys **<Right/Left>**

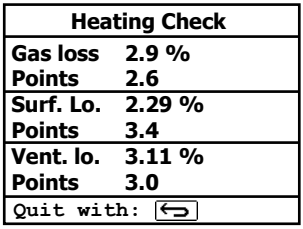
Flow probe

Press **<F1>** (Start) prior to going thru the following steps to start the measurement:

- release tubing of the flow probe
- wait for zeroing of pressure sensor
- re-connect tubing of the flow probe
- position flow probe into exhaust gas pipe (observe mark for flow direction)
- switch off burner and simultaneously press **<F1>**
  or:
- press **<F2>** to activate timer (5 sec.) and switch off burner by beep
- after approx. 30 sec. the measurement value converted in negative points is available

An overview of the measurements is available under **„Results“**. Press **<Print>** to print them out.





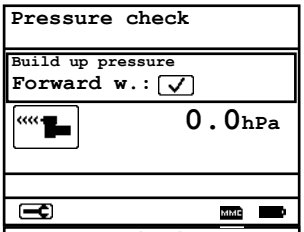
6.3. 4Pa measurement (option)

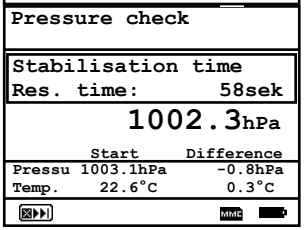
The simultaneous operation of room-dependent firing place and air evacuation system can lead to dangerous low pressure conditions. With the **ecom-DP3** it is possible to check the low pressure limit value of 4 Pa and to document in a diagramme the time course of the low pressure value. Once the menu point is called up, the measurement is to be performed as follows:

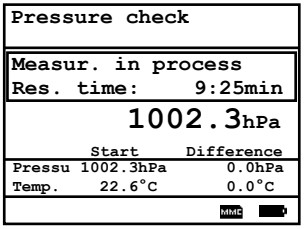
- connect capillary hose for room where burner is installed to **„-“**
- connect capillary hose for reference place (staircase or outside air to **„+“**
- operate firing and evacuation systems with maximal performance
- open window resp. connection door to burner room and check the correct evacuation of the exhaust gases
- zero pressure sensor with **<F4>**
- position capillary hose for reference location
- start record pressure value course with **<F1>** (Start) (an acoustical signal is issued every 30 sec. which can be deactivated / re-activated by pressing **<F2>**)
- record pressure by opened window resp. connection door
- close window resp. connection door after approx. 30 sec. and check low pressure
- after approx. 30 sec. open window resp. connection door and check zero point
- close window resp. connection door after approx. 30 sec. and check low pressure
- after approx. 30 sec. re-open window or connection door and check zero point
- after approx. 30 sec. close window resp. connection door and check low pressure

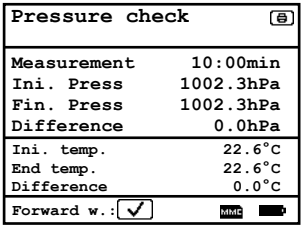
Once the measurement time is completed, the diagramme can be viewed on the display (use **<F3>** to emphasize illustration 1x, 2x, 4x, 8x times or A for automatic). Start a printout if needed with **<Print>**.

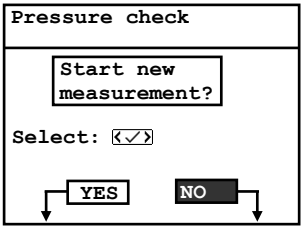
6.4. Pressure check











The pressure check (long term measurement up to 1500 hPa or 20 bar with external pressure sensor) is registered as a control pragram in the **ecom-DP3**. Proceed as follows:

1. Scroll with the cursor keys **<up/down>** in the menu **"More measurements"** to the menu point **„Pressure check“**. Activate the menu point with **<Enter>**.

2. Check if necessary the values of stabilisation time, measurement time and test pressure with **<F1>** (back with **<ESC>**). If the measurement time is set to 0, thecontrol program runs until it is interrupted.

3. Lock the gas pipe with a suitable adapter (test stopple, high pressure stopple or one-pipe counter cap) or connect the external pressure sensor.

4. Connect the components as described in chapter 3.

5. Start the control program with **<Enter>** and built up the adjusted pressure.

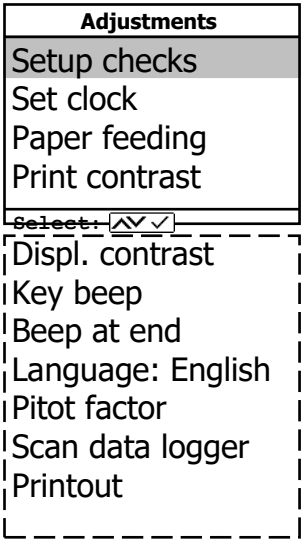
6. If the internal sensor (up to 1500 hPa) is used, the needed pressure can be built up with the internal pump (switch on and off with **<F3>**).

7. Wait for stabilisation time. If necessary the stabilisation time can be terminated with **<F1>**.

8. Once the measurement time is over (or with **<Enter>** if measurement time = 0), the result is displayed and can be printed with **<Print>**.

9. If the menu **„Pressure check“** is selected again, so the result can be called up with **<F4>** (as long as the **ecom-DP3** is on) or a new measurement can be started with **<F1>**.

7. Adjustments



Additionally to those **ecom-DP3** functions described previously, various adjustments can be made in the instrument. From the main menu, select the sub-menu **"Adjustments"** and confirm with **<Enter>**.
A selection of modifiable parameters, adjustable according to the application, is displayed. Place the cursor on the desired line and press **<Enter>** to call up or modify the adjustment. The modifiable parameters are:

Setup checks
(press **<Enter>** to access input menu):
-Input of parameters for the check programs

Clock set (press **<Enter>** to access setting menu):
-Correction of internal clock with cursor keys

Paper feed (press **<Enter>** to activate paper feeding):
-Paper feed line by line

Print contrast (press **<Enter>** to access setting menu):
-Print contrast adjustment with cursor keys

Display contrast (press **<Enter>** to access setting menu):
-Display contrast adjustment with cursor keys

Key beep (**<F1>** for YES / **<F4>** for NO):
-Acoustical signal by key pressing

Beep at end (0, 1, 2, 3, 4 or 5 seconds)
(selection after pressing **<Enter>**):
-Acoustical signal at the end of a measurement lasting at least 2 minutes

Language: English (change with **<Enter>**):
-Info about selected language (3 languages selectable)

Pitot factor (selection after pressing **<Enter>**):
-Input of Pitot factor for flow rate calculation (standard = 0.93)

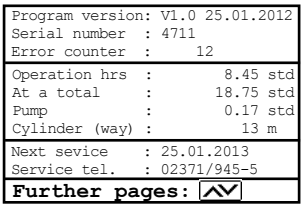
Scan data logger (min 1 second / max. 59:59 minutes):
(press **<Enter>** to access menu):
-Input the interval time for data logging (1 sec = 0.01 min).

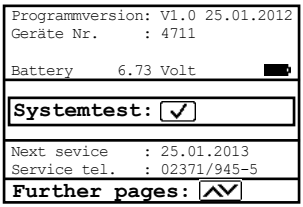
Printout (selection after pressing **<Enter>**):
-Text input for printout on measurement protocol (8 x 24 characters)
-Input the text of line 1 as follows:
1. Activate character selection list with **<F4>**.
2. Select keyboard type with **<F3>** (4 different keyboards available).
3. Use the cursor keys to select the desired character
   (selected character is outlined by black background).
4. Confirm selection while pressing **<Enter>**.
5. Repeat procedure until desired text is complete.
6. Once input for line 1 is completed, deactivate the characters selection mode with **<F4>** and move to the second line with the cursor key **<Down>**.
7. Once all lines have been processed as desired, exit the menu with **<ESC>**.

8. Control (system test)

In menu „Control“ (access with **<Info>** key) informations are displayed on 2 pages (use cursor keys to scroll):

-software version
-serial number
-error amount
-operation hours since last service
-total operation hours
-operation hours pump
-distance of the piston
-date of the next recommended service
-phone number of the next service center





-accu voltage (charging status);
is displayed as a symbol in all menus:

Full charge Half charge Empty

System test (check of instrument tightness):

1. introduce system test with **<Enter>**
2. lock connection „P high 1 +“ with plug
3. start test with **<Enter>** (pressure is built up)
4. wait for result (approx. 2 min)
5. remove plug and leave with **<Enter>**

If the system is leaky,please contact your ecom partner.

9. Technical Data ecom-DP3

Power supply:	-battery: Lithium-Ions 6 V 4,6 Ah -charger 230 V / 50 Hz~
Indication:	-grafic display; backlit -resolution 240 x 160 Punkte -window approx. 79 x 53 mm
Pressure range:	-0 - 1500 hPa -0 - 20 bar (option / external sensor) -0 - 10 hPa (option / Pa sensor)
Resolution:	-0,1 hPa -0,01 bar (option / external sensor) -0,1 Pa (option / Pa sensor)
Leak rate:	-0 - 8 l/h
Resolution:	-0,1 l/h
Temperature:	-2 x 0 -100 °C (option / external temperature sensor)
Resolution:	-0,1 °C (option / external temperature sensor)
Dimensions (LxWxH):	-approx. 380 x 430 x 170 mm
Weight:	-complete with accessories approx. 9 kg
Ambient temperature:	-0 to 50 °C

Subject to technical changes
V1.4 01.2023

10. Maintenance tips

To secure the accuracy of your measuring instrument we recommend the annual check by an authorized ecom partner. In the case of strong demand (e.g. permanent several hours of measurement per day, rough conditions etc.) shorter intervals between checks should be selected - please contact your ecom partner. All ecom partners are listed under www.ecom.de.

Change printer paper roll

-Release the printer cover (press lock downwards).
-If necessary, extract the paper rest out of the printer. Hereto select **"Adjustments"/"Paper feed"/<Enter>**.
-Remove the plastics tube of the previous roll.
-Insert the paper end in the slot under the transport roll (paper roll inner side facing you while inserting the paper).
-Convey approx. 3 cm paper thru the printer (**"Adjustments"/"Paper feeding"/<Enter>**).
-Lay the paper roll in the corresponding hollow.
-Insert the paper thru the slot of the printer compartment cover and close the latest.

Unlocking printer cover

EG-Konformitätserklärung | EC Declaration of Conformity

Hiermit erklärt der Hersteller
The manufacturer

ecom GmbH
Am Großen Teich 2
D-58640 Iserlohn, Germany

in alleiniger Verantwortung für die Ausstellung dieser Erklärung, dass die nachfolgend aufgeführten Produkte:
hereby declares under its sole responsibility, that the products

Druckmessgeräte / pressure measurement devices

Type: ecom-UNO
ecom-DP
ecom-DP Engine
ecom-DP3

allen einschlägigen Bestimmungen der folgenden EU-Richtlinien entsprechen:
comply with the following European Directives:

2014/30/EU	**EMV-Richtlinie / *EMC Directive***
2011/65/EU	**RoHS**

Folgende Normen wurden angewendet:
The following standard/s were used:

EN 61000-6-2:2005/AC:2005	EMV – Störfestigkeit für Industriebereiche *EMC – Immunity for industrial environments*
EN 61000-6-3:2007/A1:2011	EMV – Störaussendung für Wohnbereich, Geschäfts- und Gewerbebereiche sowie Kleinbetriebe *EMC - Emission standard for residential, commercial and lightindustrial environments*
EN IEC 63000:2018	Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe *Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

Iserlohn, 25.07.2022

Matthias Platte (Geschäftsführer / *Managing Director*)

Declaration of Conformity

The manufacturer

ecom GmbH
Am Großen Teich 2
D-58640 Iserlohn, Germany

hereby declares under its sole responsibility, that the products

Pressure measurement devices

Type: ecom-UNO

ecom-DP

ecom-DP Engine

ecom-DP3

are in conformity with the relevant statutory requirements of the following enactments:

Electromagnetic Compatibility Regulations 2016
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (RoHS)

The following designated standards were used:

EN 61000-6-2:2005/AC:2005	EMC – Immunity for industrial environments
EN 61000-6-3:2007/A1:2011	EMC - Emission standard for residential, commercial and light industrial environments
EN IEC 63000:2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Iserlohn, 12.10.2022

Matthias Platte (Geschäftsführer / *Managing Director*)

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