

INTELLIGENT MESSEN!
MEASURE WITH INTELLIGENCE!

ecom[®]



Operating Instructions

ecom[®] DP3

Index	Page
1. Application and components	3
2. Design ecom-DP3	5
3. Connection of components	7
4. Data processing	
4.1. Data storage	8
4.2. Edit customer	8
4.3. Select customer	9
5. Control programs	
5.1. Setup control programs	11
5.2. Natural gas	
5.2.1. Stress test	14
5.2.2. Tightness check	15
5.2.3. Usability check	16
5.3. Liquid gas	
5.3.1. Tightness check	18
5.3.2. Pressure test	19
5.3.3. Pressure test 0 – 40 bar	20
5.4. Drinking water (option)	
5.4.1. Drinking water plant (wet)	
5.4.1.1. Function test	21
5.4.1.2. Pressure test	22
5.4.1.3. Extended test	23
5.4.2. Drinking water plant (dry)	
5.4.2.1. Tightness check	24
5.4.2.2. Stress test	25
5.5. Heating (option)	26
5.6. Sewage (option)	27
6. More measurements	
6.1. Single measurement	28
6.2. Heating Check (option)	29
6.3. 4Pa measurement (option)	32
6.4. Pressure check	33
7. Adjustments	34
8. Control (system test)	36
9. Technical Data ecom-DP3	37
10. Maintenance tips	38

1. Application and components



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

The **ecom-DP3** eases tightness tests. Besides gas pressure measurements, tightness checks as well as leakage volume determination according to DVGW-TRGI 2008 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 pressure sensor (0 – 20 bar)
with connection cable
(Item no.: 102158)



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



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



2 x Silicone hose
for small pressure measurement



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



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



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



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



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



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



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



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

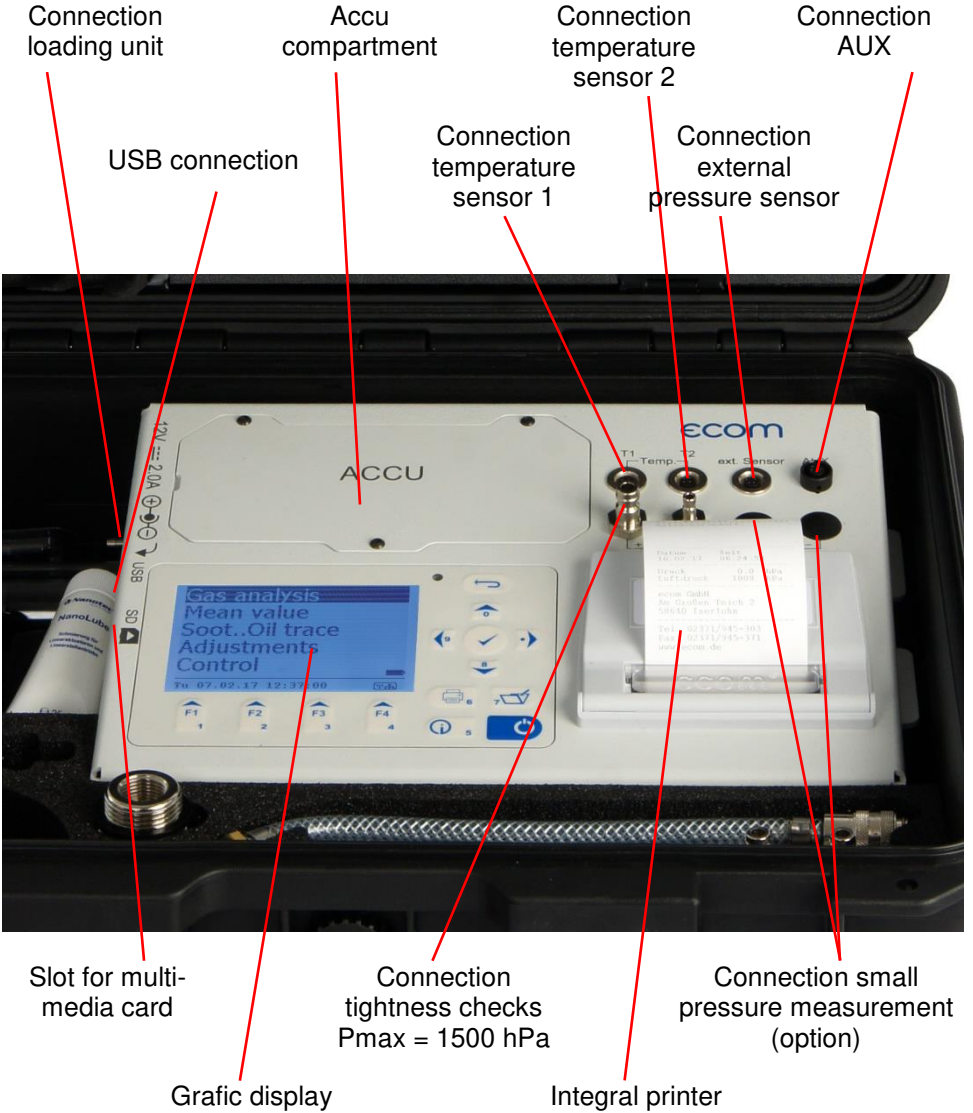


Test stopple cylindrical
diameter 41 mm
with quick-fitting
(Item no.: 102712)



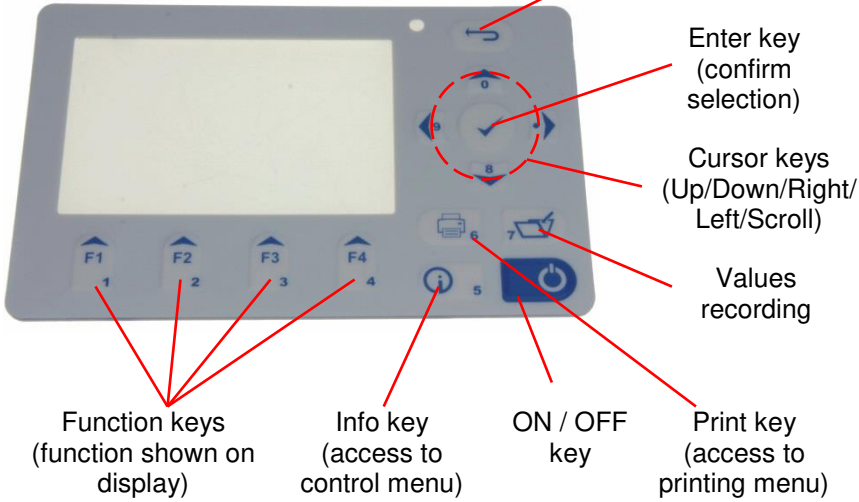
Test stopple cylindrical
diameter 52mm
with quick-fitting
(Item no.: 102713)

2. Design ecom-DP3



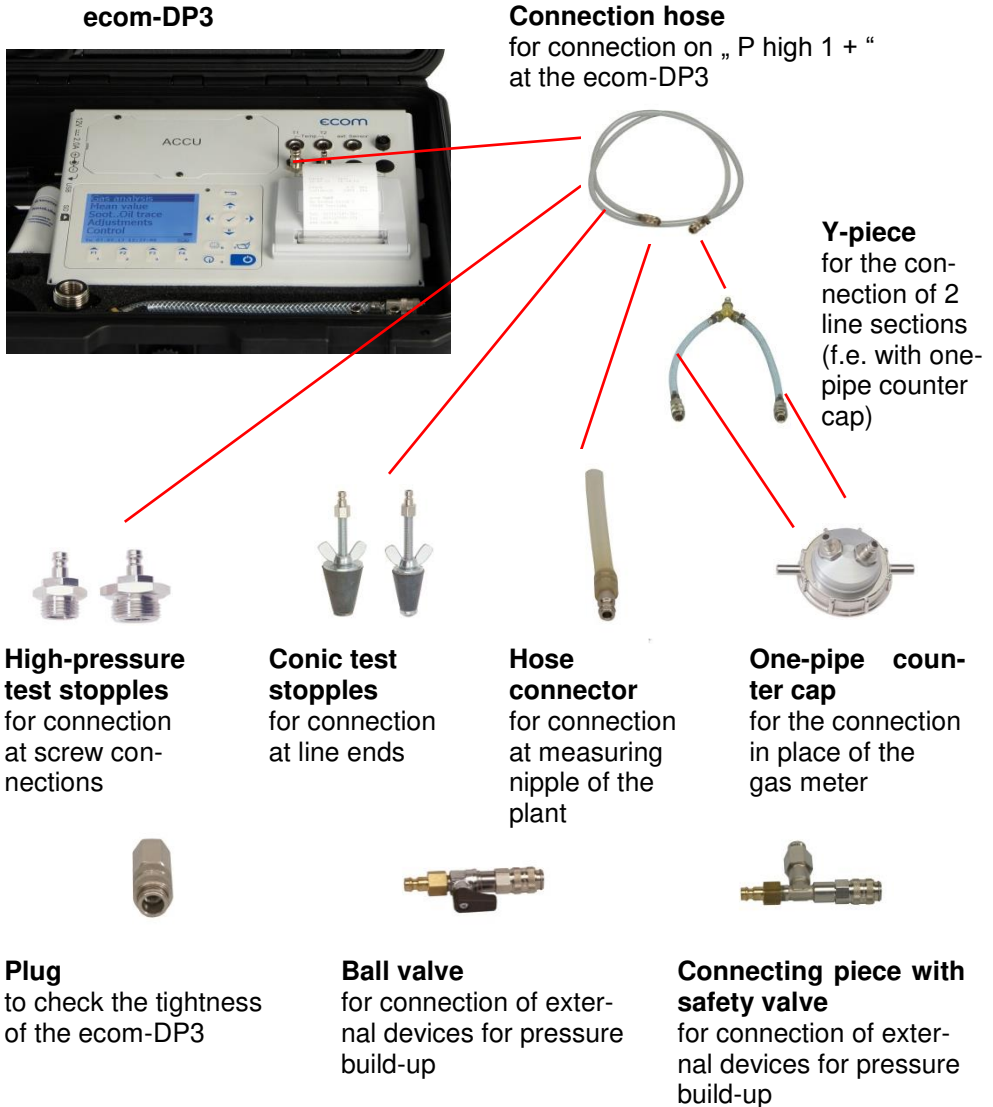
Keyboard

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



3. Connection of components

Please connect the components as shown on below plan.



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

Option

External room temperature sensor

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



ecom-DP3

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“)



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>

No customer existing!
Create new
<input type="checkbox"/> YES <input type="checkbox"/> NO

Customer number
Name
Street
ZIP/City
DP3_0001.DAT
<input checked="" type="checkbox"/>
Tel.
Others

- 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.

Customer number
123456789
Name
Customer 1
Street
Street 1
ZIP/City
11111 City 1
DP3_0001.DAT
<input checked="" type="checkbox"/>
Tel.
123456789
Others
Customer 1 Others

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 data
Search for/Scroll
Create new
View/Modify
Format
DP3_0001.DAT
Fr 20.01.12 09:50:33 MMG

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 2008
- Tightness check acc. to TRGI 2008
- Usability check acc. to TRGI 2008

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)

In menu „Adjustments“ / „Setup checks“ the parameters for the control programs can be adjusted:

5.1. Setup control programs

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)

Natural gas
Liquid gas
Drinking water
Heating
Sewage
Fr 20.01.12 09:50:33
More measurement
Adjustments
Data storage

Adjustments
Setup checks
Set clock
Paper feeding
Print contrast
Select: <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Displ. contrast
Key beep
Language: English
Pitot factor
Scan data logger
Printout

Stress test acc. to TRGI 2008:

- 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 2008:

- 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 acc. to TRGI 2008:

- 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>

Pressure check
Standard value : F2
<input type="text" value="10"/> min Stabilisation time
Select: <input type="checkbox"/> <input checked="" type="checkbox"/>

Pressure check
<input type="text" value="20"/> min
<input type="text" value="10"/> min Stabilisation time
Please use the Numeral keys!

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 program 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>**.

Stress test	
1Bar/1000hPa TRGI 2008	
Connect!	
Forward w.: <input checked="" type="checkbox"/>	
←←←←	0.0hPa
Set value	1000hPa
←	MMC

Stress test	
1Bar/1000hPa TRGI 2008	
Set value 1000hPa	
is built up!	
⌚ 1min	902.3hPa
▶ 10min	
[Progress bar]	
←	MMC

Stress test	
1Bar/1000hPa TRGI 2008	
Stabilisation time	
Res. time: 58sec	
1002.3hPa	
Start	Difference
Pressu 1003.1hPa	-0.8hPa
Temp. 22.6°C	0.3°C
⌚▶	MMC

Stress test	
1Bar/1000hPa TRGI 2008	
Measur. in process	
Res. time: 9:25min	
1002.3hPa	
Start	Difference
Pressu 1002.3hPa	0.0hPa
Temp. 22.6°C	0.0°C
←	MMC

Stress test	
1Bar/1000hPa TRGI 2008	
Measurement	10:00min
Ini. Press	1002.3hPa
Fin. Press	1002.3hPa
Difference	0.0hPa
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.:	<input checked="" type="checkbox"/>
←	MMC

Stress test	
1Bar/1000hPa TRGI 2008	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
YES	NO

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 program 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>**.

Tightness check	
150hPa (acc. TRGI 2008)	
Connect!	
Forward w.: <input checked="" type="checkbox"/>	
←←←	0.0hPa
Set value	150hPa
lower 100L	
←	MEM

Tightness check	
150hPa (acc. TRGI 2008)	
Set value 150hPa	
is built up!	
10min	140.3hPa
10min	
MEM	

Tightness check	
150hPa (acc. TRGI 2008)	
Stabilisation time	
Res. time: 9:58min	
152.3hPa	
Start	Difference
Pressu 153.1hPa	-0.8hPa
Temp. 22.6°C	0.3°C
MEM	

Tightness check	
150hPa (acc. TRGI 2008)	
Measur. in process	
Res. time: 9:25min	
152.3hPa	
Start	Difference
Pressu 152.3hPa	0.0hPa
Temp. 22.6°C	0.0°C
MEM	

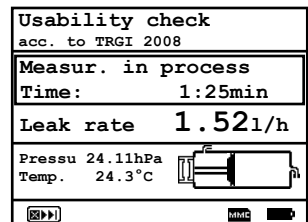
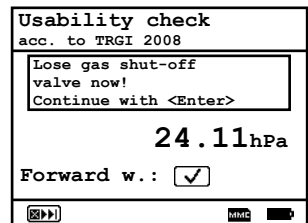
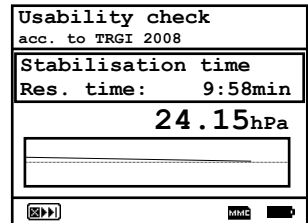
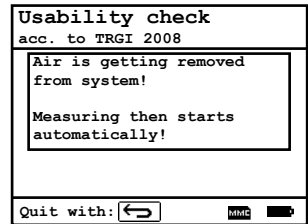
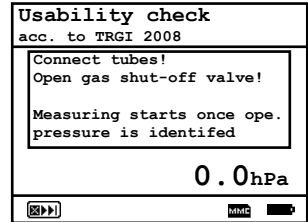
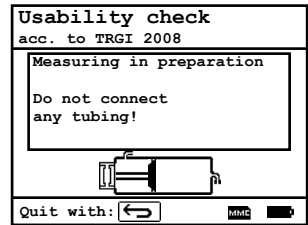
Tightness check	
150hPa (acc. TRGI 2008)	
Measurement	10:00min
Ini. Press	152.3hPa
Fin. Press	152.3hPa
Difference	0.0hPa
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.: <input checked="" type="checkbox"/>	
MEM	

Tightness check	
150hPa (acc. TRGI 2008)	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
YES	NO


5.2.3. Usability check

The usability check acc. to DVGW – TRGI Process Instructions G 600 at gas pipes (operation pressure up to 100 hPa) is registered as a control program 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).

Usability check acc. to TRGI 2008	
Measurement completed! Remove tubes! Continue with <Enter>	
Forward w. : <input checked="" type="checkbox"/>	

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

Usability check 	
acc. to TRGI 2008	
Measurement	5:00min
Leak rate	1.511/h
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w. : <input checked="" type="checkbox"/>	

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>.

Usability check	
acc. to TRGI 2008	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
<input type="checkbox"/> YES	<input type="checkbox"/> NO

5.3. Liquid gas

5.3.1. Tightness check

The tightness check acc. to TRF at liquid gas 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 "**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>**.

Liquid gas	
Tightness check	
Connect! Forward w.: <input checked="" type="checkbox"/>	
←←←←	0.0hPa
Set value	100hPa
←	
mmC	

Liquid gas	
Tightness check	
Set value 100hPa is built up!	
⊙ 10min ▶ 10min	92.3hPa
▼▼▼	
mmC	

Liquid gas	
Tightness check	
Stabilisation time	
Res. time: 9:58min	
102.3hPa	
Start	Difference
Pressu 103.1hPa	-0.8hPa
Temp. 22.6°C	0.3°C
⊞▶	
mmC	

Liquid gas	
Tightness check	
Measur. in process	
Res. time: 9:25min	
102.3hPa	
Start	Difference
Pressu 102.3hPa	0.0hPa
Temp. 22.6°C	0.0°C
mmC	

Liquid gas	
Tightness check	
Measurement	10:00min
Ini. Press	102.3hPa
Fin. Press	102.3hPa
Difference	0.0hPa
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.: <input checked="" type="checkbox"/>	
mmC	

Liquid gas	
Tightness check	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
YES	NO

5.3.2. Pressure test

The pressure test acc. to TRF at liquid gas 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 **"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>**.

Liquid gas
Pressure test
Connect!
Forward w.: <input checked="" type="checkbox"/>
0.0hPa
Set value 1000hPa
←

Liquid gas
Pressure test
Set value 1000hPa
is built up!
1min
10min
902.3hPa
→

Liquid gas
Pressure test
Stabilisation time
Res. time: 9:58min
1002.3hPa
Start Difference
Pressu 1003.1hPa -0.8hPa
Temp. 22.6°C 0.3°C
→

Liquid gas
Pressure test
Measur. in process
Res. time: 9:25min
1002.3hPa
Start Difference
Pressu 1002.3hPa 0.0hPa
Temp. 22.6°C 0.0°C
→

Liquid gas
Pressure test
Measurement 10:00min
Ini. Press 1002.3hPa
Fin. Press 1002.3hPa
Difference 0.0hPa
Ini. temp. 22.6°C
End temp. 22.6°C
Difference 0.0°C
Forward w.: <input checked="" type="checkbox"/>
→

Liquid gas
Pressure test
Start new measurement?
Select: <input checked="" type="checkbox"/>
YES NO

5.3.3. Pressure test 0 – 40 bar

The pressure test 0 - 40 bar at liquid gas 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 "**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>**.

Liquid gas	
Pressure test 0 – 40 bar	
Set value	11.00bar
Built up pressure!	
<input type="checkbox"/> 10min <input checked="" type="checkbox"/> 30min	10.23bar
	
MMc 	

Liquid gas	
Pressure test 0 – 40 bar	
Stabilisation time	
Res. time:	9:58min
11.05bar	
	Start Difference
Pressu	11.13bar -0.08bar
Temp.	22.6°C 0.3°C
MMc 	

Liquid gas	
Pressure test 0 – 40 bar	
Measur. in process	
Res. time:	9:25min
11.05bar	
	Start Difference
Pressu	11.05bar 0.00bar
Temp.	22.6°C 0.0°C
MMc 	

Liquid gas	
Pressure test 0 – 40 bar	
Measurement	10:00min
Ini. Press	11.05bar
Fin. Press	11.05bar
Difference	0.0bar
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.:	<input checked="" type="checkbox"/>
MMc 	

Liquid gas	
Pressure test 0 – 40 bar	
Start new measurement?	
Select:	<input checked="" type="checkbox"/>
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	

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 build 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>**.

Drinking water plant Funkcion test wet	
Set value	6.00bar
Built up pressure!	
30min 15min	5.23bar
[Progress bar]	
MMC [Battery]	

Drinking water plant Funkcion test wet	
Stabilisation time	
Res. time: 29:58min	
6.05bar	
Start	Difference
Pressu	6.13bar -0.08bar
Temp.	22.6°C 0.3°C
[Buttons] MMC [Battery]	

Drinking water plant Funkcion test wet	
Measur. in process	
Res. time: 14:25min	
6.05bar	
Start	Difference
Pressu	6.05bar 0.00bar
Temp.	22.6°C 0.0°C
MMC [Battery]	

Drinking water plant [F4] Funkcion test wet	
Measurement	15:00min
Ini. Press	6.05bar
Fin. Press	6.05bar
Difference	0.0bar
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.:	<input checked="" type="checkbox"/>
MMC [Battery]	

Drinking water plant Funkcion test wet	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
YES	NO

5.4.1.2. Pressure test

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>.

Drinking water plant	
Pressure test wet	
Set value	11.00bar
Built up pressure!	
<input type="radio"/> 10min <input checked="" type="radio"/> 30min	10.23bar
<input type="text" value="v.v."/>	
MMMC	

Drinking water plant	
Pressure test wet	
Stabilisation time	
Res. time:	9:58min
11.05bar	
	Start Difference
Pressu	11.13bar -0.08bar
Temp.	22.6°C 0.3°C
MMMC	

Drinking water plant	
Pressure test wet	
Measur. in process	
Res. time:	29:25min
11.05bar	
	Start Difference
Pressu	11.05bar 0.00bar
Temp.	22.6°C 0.0°C
MMMC	

Drinking water plant	
Pressure test wet	
Measurement	30:00min
Ini. Press	11.05bar
Fin. Press	11.05bar
Difference	0.0bar
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.:	<input checked="" type="checkbox"/>
MMMC	

Drinking water plant	
Pressure test wet	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
<input type="button" value="YES"/>	<input type="button" value="NO"/>

5.4.1.3. Extended test

The extended 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 „**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>.

Drinking water plant	
Extended test wet	
Set value	5.50bar
Built up pressure!	
<input type="checkbox"/> 10min <input checked="" type="checkbox"/> 120min	5.23bar
<div style="border: 1px solid black; width: 100px; height: 10px; margin: 0 auto;"></div>	
MMc	

Drinking water plant	
Extended test wet	
Stabilisation time	
Res. time:	9:58min
5.55bar	
	Start Difference
Pressu	5.63bar -0.08bar
Temp.	22.6°C 0.3°C
<input type="checkbox"/> <input type="checkbox"/> MMc	

Drinking water plant	
Extended test wet	
Measur. in process	
Res. time:	1:59std
5.55bar	
	Start Difference
Pressu	5.55bar 0.00bar
Temp.	22.6°C 0.0°C
MMc	

Drinking water plant	
Extended test wet	
Measurement	2.00std
Ini. Press	5.55bar
Fin. Press	5.55bar
Difference	0.0bar
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.:	<input checked="" type="checkbox"/>
MMc	

Drinking water plant	
Extended test wet	
<div style="border: 1px solid black; padding: 5px; display: inline-block;">Start new measurement?</div>	
Select:	<input checked="" type="checkbox"/>
<div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">YES</div> <div style="border: 1px solid black; padding: 2px 10px;">NO</div> </div>	

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 program 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>**.

Drinking water plant	
Tightness check dry	
Connect!	
Forward w.: <input checked="" type="checkbox"/>	
0.0hPa	
Set value	150hPa

Drinking water plant	
Tightness check dry	
Set value 150hPa	
is built up!	
10min	140.3hPa
120min	

Drinking water plant	
Tightness check dry	
Stabilisation time	
Res. time: 9:58min	
152.3hPa	
Start Difference	
Pressu 153.1hPa	-0.8hPa
Temp. 22.6°C	0.3°C

Drinking water plant	
Tightness check dry	
Measur. in process	
Res. time: 1:59std	
152.3hPa	
Start Difference	
Pressu 152.3hPa	0.0hPa
Temp. 22.6°C	0.0°C

Drinking water plant	
Tightness check dry	
Measurement	2.00std
Ini. Press	152.3hPa
Fin. Press	152.3hPa
Difference	0.0hPa
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.: <input checked="" type="checkbox"/>	

Drinking water plant	
Tightness check dry	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
YES	NO

5.4.2.2. Stress test

The stress 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 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>.

Drinking water plant Sress test dry	
Set value	3.00bar
Built up pressure!	
<input type="checkbox"/> 10min <input checked="" type="checkbox"/> 10min	2.23bar
<input type="text" value=""/>	
MMC	

Drinking water plant Sress test dry	
Stabilisation time	
Res. time:	9:58min
3.05bar	
	Start Difference
Pressu	3.13bar -0.08bar
Temp.	22.6°C 0.3°C
<input type="checkbox"/> <input checked="" type="checkbox"/> MMC	

Drinking water plant Sress test dry	
Measur. in process	
Res. time:	9:25min
3.05bar	
	Start Difference
Pressu	3.05bar 0.00bar
Temp.	22.6°C 0.0°C
MMC	

Drinking water plant <input checked="" type="checkbox"/>	
Sress test dry	
Measurement	10:00min
Ini. Press	3.05bar
Fin. Press	3.05bar
Difference	0.0bar
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.:	<input checked="" type="checkbox"/>
MMC	

Drinking water plant Sress test dry	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

5.5. Heating (option)

The test of heating installations acc. to DIN 18380 is registered as a control program 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>.

Heating	
Set value	3.00bar
Built up pressure!	
10min 120min	2.23bar
<input type="text"/>	
MMC <input type="checkbox"/>	

Heating	
Stabilisation time	
Res. time:	9:58min
3.05bar	
	Start Difference
Pressu	3.13bar -0.08bar
Temp.	22.6°C 0.3°C
<input type="text"/>	
MMC <input type="checkbox"/>	

Heating	
Measur. in process	
Res. time:	1:59std
3.05bar	
	Start Difference
Pressu	3.05bar 0.00bar
Temp.	22.6°C 0.0°C
<input type="text"/>	
MMC <input type="checkbox"/>	

Heating Ⓜ	
Measurement	2.00std
Ini. Press	3.05bar
Fin. Press	3.05bar
Difference	0.0bar
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.:	<input checked="" type="checkbox"/>
MMC <input type="checkbox"/>	

Heating	
Start new measurement?	
Select:	<input checked="" type="checkbox"/>
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	

5.6. Sewage (option)

The test of sewage installations acc. to DIN 1610 is registered as a control program 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>**.

Sewage	
Set value	150hPa
Built up pressure!	
<input checked="" type="checkbox"/> 10min	140.3hPa
<input checked="" type="checkbox"/> 10min	
v.v.	
MMc	

Sewage	
Stabilisation time	
Res. time:	9:58min
152.3hPa	
	Start Difference
Pressu	153.1hPa -0.8hPa
Temp.	22.6°C 0.3°C
<input checked="" type="checkbox"/>	MMc

Sewage	
Measur. in process	
Res. time:	9:25min
152.3hPa	
	Start Difference
Pressu	152.3hPa 0.0hPa
Temp.	22.6°C 0.0°C
<input checked="" type="checkbox"/>	MMc

Sewage (E)	
Measurement	10:00min
Ini. Press	152.3hPa
Fin. Press	152.3hPa
Difference	0.0hPa
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.:	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	MMc

Sewage	
Start new measurement?	
Select:	<input checked="" type="checkbox"/>
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

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 measurement**“ 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.

We 01.02.12 09:17:55	
T1	23.2 °C
T2	23.1 °C
dT	0.1 °C
Pressure	20.4 hPa
Ext.	4.00 bar
dP	12.8 Pa
V. Gas	2.5 m/sec

We 01.02.12 09:17:55	
T1	23.2 °C
T2	23.1 °C
dT	0.1 °C
Pressure	20.4 hPa
Ext.	4.00 bar
dP	12.8 Pa
V. Gas	2.5 m/sec

Measurement stored in intermediate memory

We 01.02.12 09:17:55	
T1	23.2 °C
T2	23.1 °C
DT	0.1 °C
Druck	20.4 hPa
Extern	4.00 bar
dP	12.8 Pa
V. Gas	2.5 m/sek

Data logger is started

6.2. Heating Check (Option)

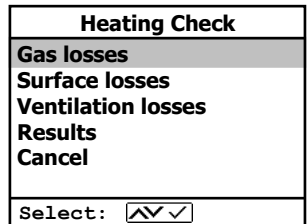
The heating check is a simple, expressive process to evaluate a complete heating plant (heat production, distribution and transfer) from the energetic point of view. Hereby the single plant components get inspected by the heating engineer in a combination of measurements and visual assessment and valued 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 here-to, 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>**.

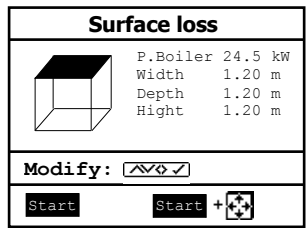
With the menu point "**Gas losses**" gas loss values can be converted to negative point system. The gas loss value can be edit with the numerical keyboard. After input the result is calculated with **<Enter>** and stored in „**Results**“.

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 inputted. 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:

- 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>**



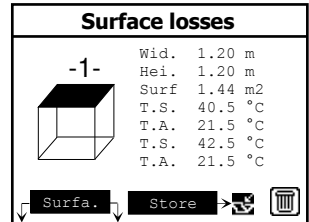
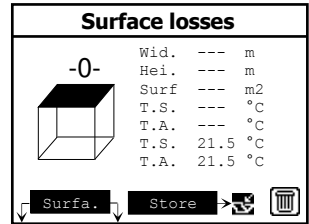
Temperature sensor for surfaces



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.

Heating Check	
Gas losses	✓
Surface losses	✓
Ventilation losses	✓
Results	
Cancel	
Select:	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

Heating Check	
Gas loss	2.9 %
Points	2.6
Surf. Lo.	2.29 %
Points	3.4
Vent. lo.	3.11 %
Points	3.0
Quit with:	<input type="button" value="←"/>

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 program 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, the control 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>**.

Pressure check 1,5Bar/1500hPa long tes	
Build up pressure Forward w.: <input checked="" type="checkbox"/>	
◀◀◀	0.0hPa
◀	MMC
Pressure check 1,5Bar/1500hPa long tes	
Stabilisation time Res. time: 58sek	
1002.3hPa	
Start	Difference
Pressu 1003.1hPa	-0.8hPa
Temp. 22.6°C	0.3°C
▶▶	MMC
Pressure check 1,5Bar/1500hPa long tes	
Measur. in process Res. time: 9:25min	
1002.3hPa	
Start	Difference
Pressu 1002.3hPa	0.0hPa
Temp. 22.6°C	0.0°C
	MMC
Pressure check (E) 1,5Bar/1500hPa long tes	
Measurement	10:00min
Ini. Press	1002.3hPa
Fin. Press	1002.3hPa
Difference	0.0hPa
Ini. temp.	22.6°C
End temp.	22.6°C
Difference	0.0°C
Forward w.: <input checked="" type="checkbox"/>	MMC
Pressure check 1,5Bar/1500hPa long tes	
Start new measurement?	
Select: <input checked="" type="checkbox"/>	
YES	NO

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:

Adjustments
Setup checks
Set clock
Paper feeding
Print contrast
Select: <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Displ. contrast
Key beep
Language: English
Pitot factor
Scan data logger
Printout

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

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

Program version:	V1.0 25.01.2012
Serial number	: 4711
Error counter	: 12
Operation hrs	: 8.45 std
At a total	: 18.75 std
Pump	: 0.17 std
Cylinder (way)	: 13 m
Next sevice	: 25.01.2013
Service tel.	: 02371/945-5
Further pages: 	

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

Full charge Half charge Empty

Programmversion:	V1.0 25.01.2012
Geräte Nr.	: 4711
Battery	6.73 Volt 
Systemtest: <input checked="" type="checkbox"/>	
Next sevice	: 25.01.2013
Service tel.	: 02371/945-5
Further pages: 	

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

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**

Subject to technical changes
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