Density Meters

DM40 / DM45 DeltaRange / DM50

METTLER TOLEDO

Table of Contents

1 Introduction

Simple and compact

The METTLER TOLEDO DM40/DM45 DeltaRange/DM50 Density Meters are modern, compact instruments suitable for use in a vast diversity of application areas. They can be used, for example, in quality control as well as in research and development and meet the most demanding requirements.

These compact density meters perfectly combine simple, easy-to-understand operation with a high level of measuring accuracy and outstanding reliability. With their plug & play capability, they automatically detect external devices and sensors.

The density meters can be operated as standalone instruments or run from a computer using the LabX PC software. Straightforward user guidance on the large color touchscreen enables intuitive operation. User-definable shortcuts allow all functions to be activated directly from the home screen with a single click.

Touchscreen control of the instrument and the method function parameters are described in the Operating Instructions. The Installation Instructions explain all the necessary steps for setting up your instrument. You are then guided through the first density measuring process with the aid of a practical example.
If you have any additional questions, METTLER TOLEDO is always available to assist you.

2 Safety measures

These instruments have been tested for the applications documented in the appropriate operating instructions. However, that does not absolve you of the responsibility to check for yourself the suitability of the products supplied by us for the procedures and purposes for which you intend to use them. You should therefore observe the following safety measures.

Measures for your personal protection

Risk of electric shock

- Ensure that you plug the supplied power cable into a socket that is grounded! In the absence of grounding, a technical fault could be lethal.
- Only use the power supply which was supplied with the device.

Risk of explosion

- Never work in an environment subject to explosion hazards! The housing of the instrument is not gas tight (explosion hazard due to spark formation, corrosion caused by the ingress of gases).
- Test highly combustible, poisonous or corrosive substances under an extractor hood and follow the normal laboratory rules and precautions.

Risk of corrosion

- When using chemicals and solvents, comply with the manufacturer's instructions and the general lab safety rules!

Measures for operating safety

Caution

- Do not clean the measuring cell with conc. caustic soda (sodium hydroxide, NaOH) or hydrofluoric acid (HF)! Both substances will chemically corrode the measuring cell.
- Exclude the following environmental influences:

  - Direct sunlight

  - Air humidity above 80%

  - Ambient temperatures below 5 °C and above 35 °C

  - Powerful electrical or magnetic fields capable of affecting the power supply due to large load changes

  - Strong vibrations

i Only have the instrument serviced by an authorized METTLER TOLEDO Service agent!

3 Standard Equipment

All parts are specified with their ordering code and quantity in cases where more than one part is included.

	Description	Order number
	Density Meter: - DM40 - DM45 DeltaRange - DM50	**51337000** **51337001** **51337002**
	External power supply (100 – 240 Volt)	**51192015**
	Power cable (country-specific)	**-**
	In use cover	**51337079**
	Combination ring/open-ended wrench	**51192087**
	Allen wrench	**51192088**
	Disposable syringe (10 mL) (5 pcs.)	**51338100**
	DM tube / syringe adaptor (1 pc.)	**51337154**
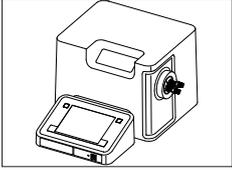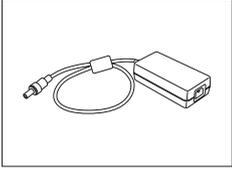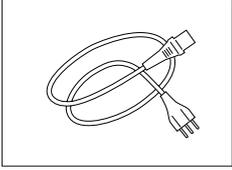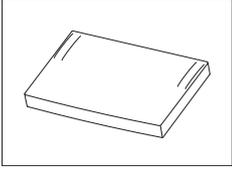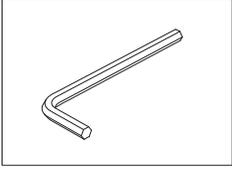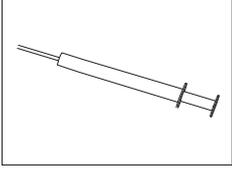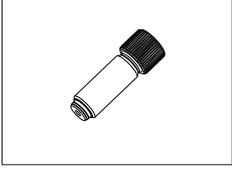
	Waste tube: - M8 / 600 mm	**51337223**
	Tubing: - M8 / M8 / L280 mm - M8 / M8 / L400 mm	**51337224** **51337226**
	Combined density / refractive index standard water (9 mL)	**51338010**
	DM40/45 DeltaRange/50 CD containing operating and installation instructions	**51710776**
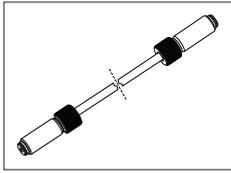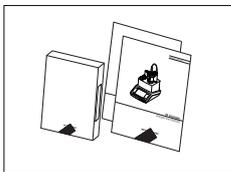
3.1 Optional Accessories

Software
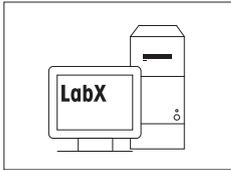
	• LabX (PC software for the instrument) • Device licenses for the instrument	**LabX**

External measuring cells

Density modules:
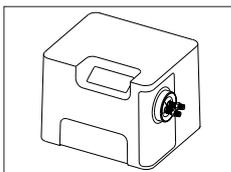
	- DX40 - DX45 DeltaRange - DX50	**51337005** **51337006** **51337007**

Refractive index modules:
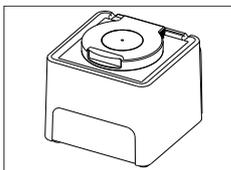
	- RX40 - RX50 - RX fixing device (for securing the refractive index module vertically)	**51337008** **51337009** **51337025**

• RM / RX flow cell with connecting set, incl.	**51337024**
- Tubing, M8 / M8 / L400	**51337226**
- Tubing, M8 / M8 / L550	**51337227**
- Tubing, M8 / L400	**51337223**
- O-ring for flow cell	**51192068**
- Protection plate	**51337189**

Automation
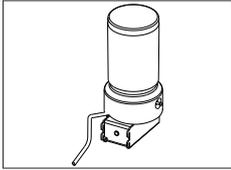
DryPal (drying pump) complete with	**51337029**
- desiccator	**51337180**
- silicon tube, D6/d3 L500	**51337228**
- silica gel	**51337241**
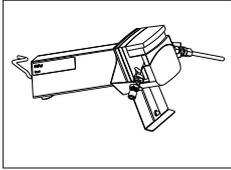
FillPal (sampling pumps):	
- FillPal Food	**51337027**
- FillPal Chem	**51337028**
- Tubing set FillPal Food complete	**51337219**
- Tubing set FillPal Chem complete	**51337218**
- Shielded sampling tube, L = 25 cm	**51337236**
- Tubing, M8 / M8 / L400	**51337226**
- Tubing, M8 / M8 / L550	**51337227**

- **SC1/SC30 automation units:**

- SC1 (sample and cleaning unit)	**51326000**
- SC1H (heated version of SC1)	**51326400**
- SC30 (sample and cleaning unit for 30 samples)	**51327000**
- SC30H (heated version of SC30)	**51327500**

- **InMotion™ Autosampler**

- Bundle: Flex Base with 100 mL rack	**30094290**
- Flex Base	**30094291**
- Flex Rack Kit 25 mL beaker (50 samples)	**30094124**
- Flex Rack Kit 80 mL beaker (27 samples)	**30094125**
- Flex Rack Kit 100 mL beaker (18 samples)	**30094126**
- Pro Base	**30094292**
- Pro Rack Kit 25 mL beaker (182 samples)	**30094129**
- Pro Rack Kit 80 mL beaker (69 samples)	**30094130**
- Pro Rack Kit 100 mL beaker (34 samples)	**30094131**
- Max Base	**30094293**
- Max Rack Kit 25 mL beaker (303 samples)	**30094134**
- Max Rack Kit 80 mL beaker (113 samples)	**30094135**
- Max Rack Kit 100 mL beaker (55 samples)	**30094136**

External instruments

- **SevenCompact S220 pH/Ion**   **30019028**

- **pH connecting kit** complete with	**51337023**
- Tubing, M8/M8 L400	**51337226**
- Tubing, M8/M8 L550	**51337227**
- Cable for pH electrode	**59902392**
- USB/RS adaptor for SevenEasy™ / SevenCompact™ pH meter	**51105851**
- RS-232C cable	**51190589**
- pH electrode	**59902917**
- External flow cell	**51337190**
- Holding plate for pH / Conductivity flow cell	**51337197**

- **SevenCompact S230 Conductivity**   **30019033**

- **Conductivity connecting kit** complete with — **51337022**
  - Tubing, M8/M8 L400 — **51337226**
  - Tubing, M8/M8 L550 — **51337227**
  - USB-RS adaptor for SevenEasy™ / SevenCompact Conductivity™ — **51105852**
  - RS-232C cable — **51190589**
  - Conductivity sensor — **51302885**
  - External flow cell — **51337190**
  - Holding plate for pH / Conductivity flow cell — **51337197**

Colorimeter

- **Color connecting kit Lovibond** complete with — **51337021**
  - Flow cell — **51337295**
  - USB-RS adaptor for Lovibond colorimeter — **51105853**

> ⓘ The Lovibond Type PFX8XX, 9XX or PFXi8XX, 9XX colorimeter is obtainable from Tintometer AG.

- **Color connecting kit Konica Minolta** complete with — **30025477**
  - Flow cell — **51337295**
  - USB A-B cable — **51191926**

> ⓘ The colorimeter Type CM-5 or CR-5 and the needed transmittance specimen holder is obtainable from Konica Minolta.

Auxiliary Instruments

- Adapter Auxiliary Instruments (USB-RS232 convertor) — **51105856**

Sensors

- **LevelSens** (fluid level sensor for waste bottle, incl. attachment strap and 2 m cable) — **51109863**
  - Extension cable 1 m for LevelSens (optional) — **51108308**

- **WasteSens** (fluid level sensor for waste bottle) inc. — **51337026**
  - WasteSens holder — **51337157**

- **AtmoSens** (atmosheric pressure sensor) — **51337186**

- **ErgoSens** (motion sensor) — **11132601**

Peripherals

- **ScanStraight** (built-in barcode reader) complete — **51337185**

- **Barcode reader** (hand-held) — **21901297**
  - USB cable for barcode reader — **21901309**

- **LogStraight** (fingerprint reader) — **51192107**

- **Printer (USB-P25)** inc. cable — **11124301**
  - paper rolls (2 pcs.) — 12120799
  - ink ribbon (black) — 12120798
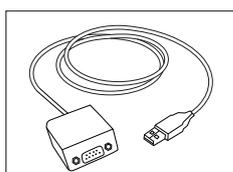
USB data export box — **51105855**

Miscellaneous accessories

- Packing complete DM/DX   **51337284**

- DM/DX transport lock set   **51337164**

- Cell adaptor (PTFE)   **51337158**

- Mounting tool cell adapter (used for mounting the cell adapter)   **51337293**

- Protective sleeve (blue)   **51337078**

- Coupling piece for M8 screws (set of 2)   **51337179**

- Tubing, M8/M8 L280   **51337224**
- Tubing, M8/M8 L400   **51337226**
- Tubing, M8/M8 L550   **51337227**
- Tubing, M8/M8 L800   **51322234**

4 Layout of the Density Meters

4.1 Front View
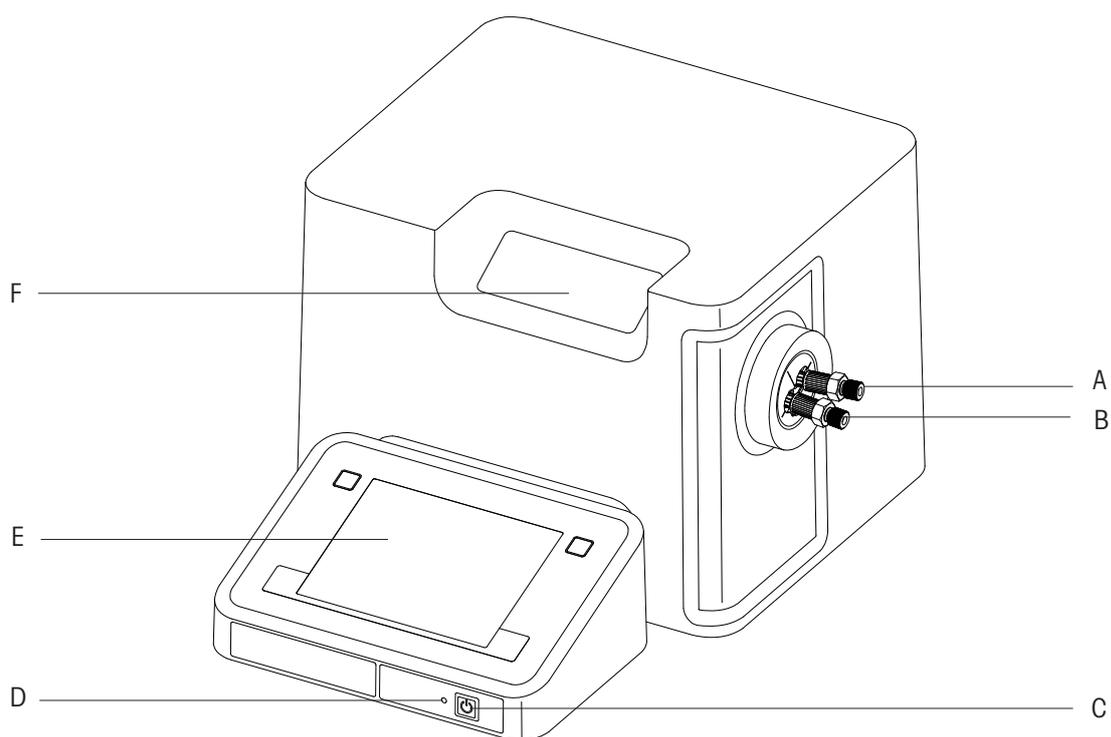
A: Connection for outlet tube
B: Connection for inlet tube
C: On/Off button
D: Indicator lamp
E: Touchscreen
F: Internal cell and viewing window

4.2 Rear View
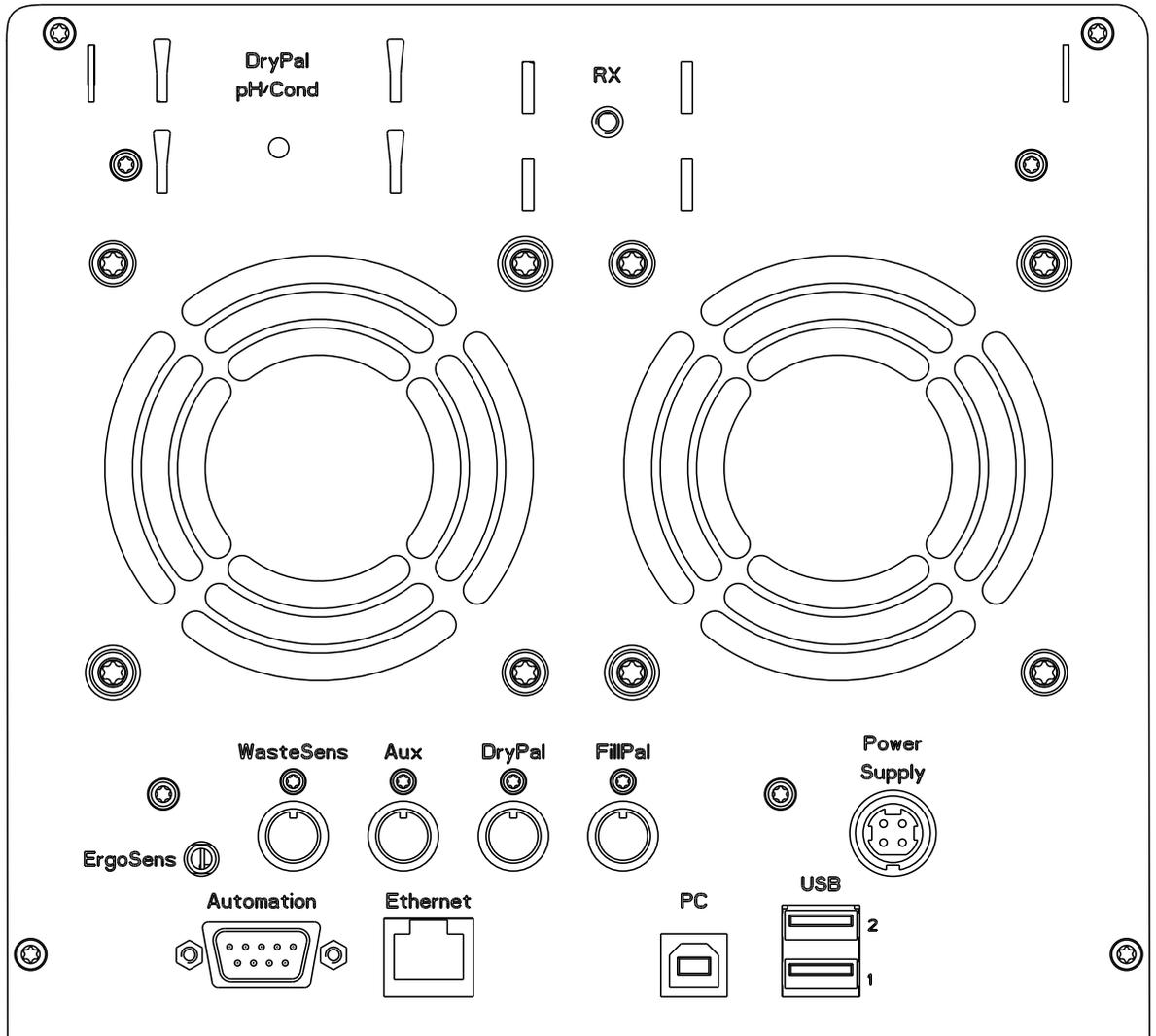
Connection	Description
DryPal pH/Cond	Socket for: • DryPal (drying pump) • External flow cell: pH or conductivity
RX	Socket for fixing plate for stabilizing the external RX refractometer cell
ErgoSens	Connection for infrared motion sensor
WasteSens	Connection for fluid level sensor (WasteSens / LevelSens)
Aux	Service connection
DryPal	Connection for drying pump
FillPal	Connection for sampling pump
Power Supply	Power supply connection
Automation	Connection for automation unit SC1 or SC30
Ethernet	Network interface for LabX PC software, network export, network printer
PC	USB interface for LabX PC software

Connection	Description
USB 1/USB 2	For connection of various USB devices: • Density Module/Refractiv Index Module • InMotion™ Autosamplers • External instruments • Fingerprint reader • Barcode reader • USB-P25 printer • AtmoSens • USB memory stick

5 Getting Started

The following sections describe how to connect the instrument, set it up and adjust it, and how to carry out the first measurement.

5.1 Removing Transport Lock and Connecting

Removing transport lock

After unpacking the device, the eight screws (a) on the underside of the unit must be removed before the instrument is connected electrically. To remove the screws, use the combination ring/open-ended wrench supplied.
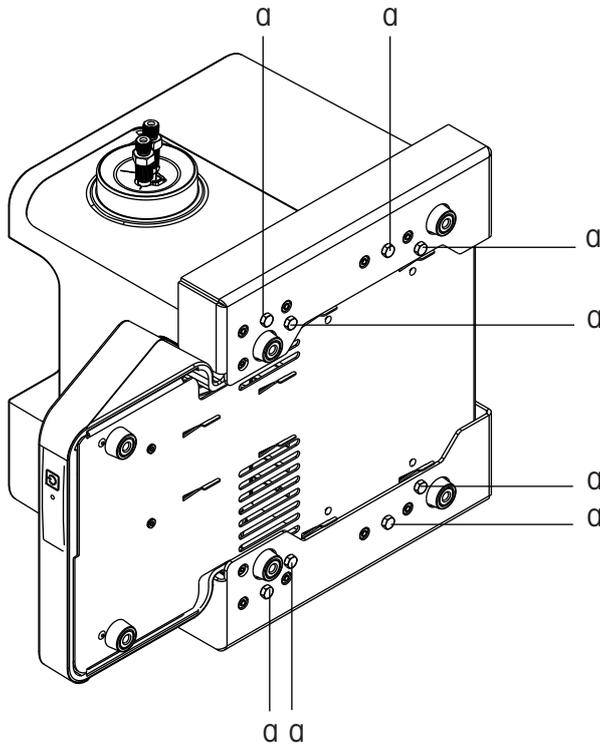
| i | When shipping or transporting the instrument over long distances, you should refit the transport screws and the original packaging. |

Connecting the power cable

Plug the power cable into the connection labeled "Power Supply" on the rear panel of the device. Switch on the instrument so that it can adjust to operating temperature.

i	• Connect the instrument only to a grounded power outlet socket.
	• Make sure it matches the instrument's power supply rating.
	• The power outlet socket must be easily accessible.

5.2 Connecting Hardware

Connect your additional devices (e.g. printer, sensors, external measuring cells or automation units) to the appropriate sockets on the rear panel of the density meters (see also "Layout of Density Meter: Rear view (page 13)").

| i | • For detailed information on the installation of such devices and the attachment of tubes to the automation units and rinsing/waste reservoirs, please refer to the instruction manuals for the devices concerned. |
| | • When connecting PnP-compatible devices, the PnP parameters are automatically transferred to the instrument setup. |

5.3 Defining Setup Settings

This section briefly describes which hardware settings you should customize:

- **Connecting an SC1/SC30:**
  Navigation: `Home > Setup > Hardware > Automation > SC1 or SC30`
  If you are connecting an SC1 or SC30 automation unit, in the setup you must specify the solvents that are connected to the connections "Rinse 1" and "Rinse 2" on the SC1/SC30.

- **Connecting an InMotion autosampler**
  Navigation: `Home > Setup > Hardware > Automation > InMotion`
  If you are connecting an InMotion autosampler, in the setup you must define on which port the sampling pump is connected. Optionally also on which port the stirrer and/or PowerShower pump is connected.

- **Connecting a colorimeter**:
  Navigation: `Home > Setup > Hardware > External instruments > Parameters`
  In addition to the device-specific information boxes, there are editable fields for entering the four wavelengths for the colorimeter.

- **Connecting fingerprint reader**:
  Navigation: `Home > Setup > Hardware > Peripherals > Fingerprint reader`
  If you are using a fingerprint reader, the parameter "Activate fingerprint reader" must be set.

- **Connecting ErgoSens/WasteSens**:
  Navigation: `Home > Setup > Hardware > Sensors`
  If you are using these sensors, the parameters "Activate ErgoSens"/"Activate WasteSens" must be set.

- **Connecting barcode reader**:
  Navigation: `Home > Setup > Hardware > Peripherals > Barcode reader > Parameters`
  The format of the barcode must be defined as set out in the Operating Instructions.

- **Connecting auxiliary instruments**:
  Navigation: `Home > Setup > Hardware > Auxiliary instruments`
  The auxiliary instruments must be defined as set out in the Operating Instructions.

5.4 Global Settings

- **Entering device identification**:
  `Home > Setup > Global settings > System > Identification`
  In the **Instrument identification** dialog box you can enter your own user-defined ID code in the text box for the parameter "Instrument ID".

- **Setting date and time**:
  Navigation: `Home > Setup > Global settings > System > Date/Time`

- **Defining physical properties**:
  Navigation: `Home > Setup > Global settings > Physical properties`
  - Select the desired unit for the parameter "Temperature unit".
  - If you are not using an atmospheric pressure sensor (AtmoSens), enter the standard atmospheric pressure for your location (elevation above sea level) according to the table below.
  Note: If an AtmoSens is connected, the current atmospheric pressure is displayed and used.

Density in relation to pressure

Height above sea level		Atmospheric pressure	Height above sea level		Atmospheric pressure
[m]	[feet]	[hPa]	[m]	[feet]	[hPa]
0	0	1013*	1300	4265	867
100	328	1001	1400	4593	856
200	656	990	1500	4921	846
300	984	978	1600	5249	835
400	1312	966	1700	5577	825
500	1640	955	1800	5906	815
600	1969	943	1900	6234	805
700	2297	932	2000	6562	795
800	2625	921	2100	6890	785
900	2953	910	2200	7218	776
1000	3281	899	2300	7546	766
1100	3609	888	2400	7874	756
1200	3937	877	2500	8202	747

*⁾Factory setting

5.5 Care and Maintenance

Attaching an external measuring cell:

Navigation: `Home > Setup > Mainten. & Service > Add external cell`

Perform the action "Add external cell". In the **Cell** dialog box, the cell type must be selected (`Home > Setup > Hardware > Cell`).

5.6 Cleaning the Measuring Cell

Before you adjust the device, the measuring cell must be cleaned. To do so, first rinse the cell with water and then with acetone. When doing so, proceed as follows:

Manual operation

1 Attach the syringe adaptor to the lower measuring cell connection (inlet) (**note**: adaptor must be firmly seated).

2 Make sure that the outlet tube feeds into a waste reservoir.

3 Clean the cell thoroughly several times using a syringe – first using a suitable cleaning agent (e.g. water) and then with a mildly volatile solvent (e.g. acetone).
   Note: If the cell is heavily soiled, other solvents such as Deconex (0.3%) must be used as well.

4 After the measuring cell has been cleaned it must be dried. For that purpose you should connect the outlet tube to the DryPal drying tube.

5 In the **Automation** dialog, select the parameters "Action = Dry" and "Dry mode = Automatic" (Navigation: `Home > Manual > Automation`).

6 Touch **Start**.

   ⇨ The drying process will start.
      Note: The drying pump switches off automatically when the cell is dry. The drying process should be completed in approx. 3 minutes.

Automatic operation

When using the instrument with a FillPal/SC1/SC30, the actions "Dry" and "Rinse" of the manual operation "Automation" can be used.
For details, refer to the Operating Instructions, "Manual operations > Automation > Action: Dry/Action: Rinse"

See also

- Rear View (page 13)

5.7 Adjusting the Measuring Cell

5.7.1 Creating an Adjustment Method

Navigation: `Home > Methods/Products > Methods`

This section describes how to create an adjustment method.

[i] You must define a suitable method for adjustment. In the **Adjustments and Tests** setup there is the adjustment set "Air&Water20.00C". You can use that adjustment set for your first adjustment.

1 Touch the **New** button in the **Methods** dialog box.

⇨ The **Method templates** dialog box opens.

2 In the dialog box, touch the method template "ADJUSTMENT".

⇨ The **Configuration** dialog box appears.

3 Touch **OK**.

4 Touch the method function "Title".

5 In the "Method ID" parameter box, enter an ID.

6 Touch **OK**.

⇨ The parameters do not have to be changed for the subsequent method functions; the preset parameters can be accepted.

7 Save the method.

5.7.2 Performing Adjustment

▸ Make sure that the measuring cell is clean and completely dry.

▸ Switch on the device and wait for it to reach operating temperature, which will take at least 15 minutes in the case of the DM40 and 30 minutes with the DM45 or DM50.
Note: Immediately after switching on, this adjustment is not correct for very long as the volume of the measuring cell's glass vessel changes slightly during the warming-up phase. Therefore, you should check regularly at the start of a series of measurements, e.g. by measuring the density of water, whether the instrument is still measuring accurately. If you identify a systematic deviation, you should perform the adjustment again. The DM40 should be completely stable after approx. 2 hours. With the 5-digit instruments (DM45 and DM50), it can take up to 48 hours.

1 Open the new adjustment method you defined at `Home > Methods/Products > Methods`.

2 Touch **Start**.

⇨ The **Start analysis** dialog box opens.

3 In the dialog box, touch **Start**.

⇨ The cell is adjusted according to the settings previously entered.

Manual method:
When the prompt "Add sample" appears, slowly inject water into the measuring cell with the aid of the syringe and then confirm by pressing **OK**.
Operation with FillPal:
When the prompt "Immerse aspiration tube in sample" appears, place the aspiration tube in the sample beaker and press **OK** to confirm.
Operation with SC1/SC30:
place the sample vial in the automation unit before starting adjustment.
Operation with InMotion Autosampler:
place a beaker with water in the rack before starting adjustment.

i
- In order to obtain a meaningful reading, the sample should run a minimum of approx. 15 cm out of the measuring cell.
- If you have a printer connected, a summary of the adjustment data is printed out at the end of the adjustment process.

See also

- Cleaning the Measuring Cell (page 17)

5.8 Testing the Measuring Cell

The purpose of this test is to check that the device is fully functional. To be able to perform the test, you have to create a test method.

This section describes how to create a test method and carry out the test.

5.8.1 Creating a Test Method

Navigation: `Home > Methods/Products > Methods`

1 Touch the **New** button in the **Methods** dialog box.
   ⇨ The **Method templates** dialog box opens.
2 In the dialog box, touch the method template "TEST".
   Note: The remaining procedure is analogous to that described in the section Creating an adjustment method (page 18).
3 Touch the method function "Test".
4 Set the parameter "Tolerance d" as follows:
   ⇨ **DM40**
   Tolerance: 0.0002 g/cm^3
   ⇨ **DM45/50**
   Tolerance: 0.00004 g/cm^3
5 Save the method.

5.8.2 Performing the Test

– Start the test method previously created.
   ⇨ A message will inform you whether the test succeeded or failed. If the test fails, you will be given suggestions for possible causes.

See also

- Cleaning the Measuring Cell (page 17)
- Performing Adjustment (page 18)

5.9 Performing a Density Measurement

For the first measurement sequence, a simple measurement using water can be carried out.

5.9.1 Creating a Measurement Method

This section describes how to create a measurement method.

1 Touch the **New** button in the **Methods** dialog box (**Navigation**: `Home > Methods/Products > Methods`).
   ⇨ The **Method templates** dialog box opens.
2 Touch the method template "MEASURE" in the **Method templates** dialog box.
   Note: The remaining procedure is analogous to that described in the section "Creating an adjustment method (page 18)".

5.9.2 Performing the Measurement

Carry out the first measurement using water at 20 °C by starting the method previously created.

See also

- Cleaning the Measuring Cell (page 17)

6 Technical Specifications

Density Meters DM40 / DM45 DeltaRange / DM50

Technical specifications of measuring cell

Measuring cell		DM40	DM45 Delta Range	DM50
Density	Measuring range [g/cm^3]	0 – 3	0 – 3	0 – 3
	Limits of error [g/cm^3]	0.0001	0.00002 (d: 0.7 - 1) 0.00005 (d: 0 - 3)	0.00002 (d: 0 - 1) 0.00003 (d: 1 - 2) 0.00004 (d: 2 - 3)
	Repeatability (SD) [g/cm^3]	0.00005	0.000005	0.000005
	Resolution [g/cm^3]	0.0001	0.00001	0.00001
Temperature (Peltier)	Range [°C]	0 - 91	0 - 91	0 - 91
	Limits of error [°C]	0.05 (10 – 30) 0.1 (0 - 91)	0.02 (15 – 20) 0.05 (0 - 91)	0.02 (10 – 30) 0.05 (0 - 91)
Permanently stored **concentration table**				
Alcohol	Range [% v/v]	0 - 100	0 - 100	0 - 100
	Limits of error [% v/v]	0.1	0.02	0.02
	Repeatability (SD) [% v/v]	0.1	0.01	0.01
Brix	Range [% w/w]	0 - 83 [1]	0 - 83 [1]	0 - 83 [1]
	Limits of error [% w/w]	0.03	0.02	0.006
	Repeatability (SD) [% w/w]	0.03	0.015	0.003
Viscosity correction		Yes	Yes	Yes
Pressure range in the cell [2]		up to 10 bar max.		
Required sample volume		at least 1.2 mL (manual injection with syringe) at least 2 mL (complete cycle with attached automation unit)		
Typical measuring times (inc. thermostatic control)		approx. 1 to 4 minutes (manual) approx. 2 to 10 minutes (complete cycle with attached automation unit)		
Parts in contact with sample		Borosilicate glass, PTFE, FEP, PP (syringe adaptor)		

[1] Up to 100% by extrapolation

[2] measuring cell only

Technical specifications of hardware

Power supply	Input voltage	100–240 VAC ±10%
	Input frequency	50–60 Hz
	Primary connection socket	3 pin, IEC C14
	Power consumption	120 VA
	Connected load	24 VDC, 5 A
	Secondary connection plug	4 pin, DC plug
CPU	Processor	Marvel PXA270 312 MHz
	SDRAM	64 MB
	Flash memory	256 MB (industrial SD card)

Dimensions	Width	272 mm (ex. cell connection)
	Depth	385 mm
	Height	215 mm
	Weight	13.53 kg
Materials	Housing	PP HCT540
	Cover sheet	PET
	Protective cover	Barex 201
	Chassis	Stainless steel
	Inlet/outlet tube	FLEXILON® PFA
Ambient conditions	Ambient temperature	5 °C - 35 °C
	Relative humidity	Max. 80% (non-condensing) at 31 °C, with linear reduction to 50% at 35 °C
	Use	In interior spaces
	Overvoltage category	II
	Pollution degree	2
	Max. installation height	2000 m (above sea level)
Connections		
ErgoSens	Socket (input for infrared sensor)	3.5 mm
WasteSens	Socket	5-pin mini-DIN
	Voltage	24 V DC ±5% (max. 1000 mA)
Aux	Socket	5-pin mini-DIN
	Voltage	24 V DC ±5% (max. 1000 mA)
DryPal	Socket	5-pin mini-DIN
	Voltage	24 V DC ±5% (max. 1000 mA)
FillPal	Socket	5-pin mini-DIN
	Voltage	24 V DC ±5% (max. 1000 mA)
Automation	Socket	9-pin male D-sub
	Configuration	Full-duplex
	Baud rate	4800
	Handshake	X-On / X-Off
	Galvanic isolation	No
	ESD stability	Min. 1000 V
	Short-circuit protection	Yes
Ethernet	Socket	RJ45
	Speed	10/100 MBit/s
PC	PC connection via USB	USB full speed
USB1 / USB2	USB host	USB full speed
	Max. power load	400 mA
Display	Technology	Color TFT
	Size	5.7"
	Resolution	640 x 480 pixels
	Backlighting	LED
	Brightness control	Per software 50–100%
Input	Technology	Full-coverage touchscreen

7   Maintenance and Service

Cleaning

Clean the casing of the instrument using a cloth moistened with alcohol.

The measuring cell is cleaned using the method function "Clean" (for details refer to "Cleaning the measuring cell (page 17)").

8 Disposal

In compliance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE), this instrument must not be disposed of together with domestic waste. This also applies to countries outside the EU, per their specific requirements. Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this instrument.

Should this instrument be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

9 Critical Errors

Error code	Error
E007	Fan 1 stopped
E030	Fan 2 stopped
E028	Temperature sensor malfunction
E029	Thermomodule malfunction
E031	Hardware error
E033	Memory error
E064	Maximum temperature exceeded
E075	Electric current too high
E076	Voltage too high

10   Declaration of System Validation

Density Meters (DM40 / DM45 DeltaRange / DM50)

We hereby give notice that this product / system and its software and accessories were developed, tested and successfully certified on the basis of the product life-cycle policies of Mettler-Toledo AG, Analytical. These policies are based on ISO Standard 9001:2000. Life-cycle checkpoint details were reviewed and approved by the Project Steering Group (PSG). The products / systems were tested in respect of functionality and specification prior to shipment. In order to support GLP and validation requirements, we will make the following documents available to authorized persons for inspection:

- Performance specifications
- Market and technical requirements
- Quality plan
- Project management system
- Plan and Test results
- Review reports

Mettler-Toledo AG, Analytical will retain possession of all documents and their reproductions and may wish to conclude a nondisclosure agreement with those requesting access to these documents.

Schwerzenbach,	Chris Radloff	Christian Walter
December 2011	General Manager	Manager Business Area
	Business Unit Analytical	AnaChem

11 Declaration of Conformity

EC - DECLARATION OF CONFORMITY
EG-Konformitätserklärung

KD-Nr.: 51337289   **Doku-Nr.: 20090025**

The undersigned, representing the following manufacturer
Die Unterzeichnenden vertreten das folgende Unternehmen

CE

Mettler-Toledo AG (MTANA)
Sonnenbergstrasse 74
CH-8603 Schwerzenbach, Switzerland

herewith declares that the product
hiermit deklarieren wir, dass das Produkt

Density Meter/Refractometer
LiquiPhysics Excellence (LiquiPhysics Excellence - Series)
For additional types, see page type code
For optional equipment, see page accessories

certified model: --
Modell für Eichprüfung

is in conformity with the provisions of the following EC directives (incl. all applicable amendments)
mit den folgenden EG-Richtlinien (Inkl. Änderungen) übereinstimmt

2006/95/EC   Low voltage (LVD)
2004/108/EC   Electromagnetic compatibility (EMC)

and that the standards have been applied.
und die Normen zur Anwendung gelangten.

Last two digits of the year in which the CE marking was affixed: **09**
Die letzten zwei Zahlen des Jahres der Erst-CE-kennzeichnung des Produkts mit dem CE Zeichen.

CH-8603 Schwerzenbach
21.12.2009

Chris Radloff   Christian Walter
General Manager   Manager Strategic Business Unit Anachem

References of standards for this declaration of conformity, or parts thereof:
Harmonized standards of Europe and Switzerland:

Safety standards:

IEC/EN61010-1:2001, IEC/EN61010-2-010:2003

EMC standards:

EN61326-1:2006 (class B)
EN61326-1:2006 (Minimal requirements)

Metrological standards:

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IP standards:

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Standards for Canada, USA and Australia:

CAN/CSA C22.2 No. 61010-1-04 & -2-010
UL Std. No. 61010-1 (2nd Edition)

FCC, Part 15, class A (Declaration)
AS/NZS CISPR 11, AS/NZS 61000.4.3

released: 9.12.2004 / ATL   Seite 1 von 3   printed: Dez. 2009

EC - DECLARATION OF CONFORMITY
EG-Konformitätserklärung

KD-Nr.: 51337289   **Doku-Nr.: 20090025**

Type code
Typenschlüssel

other types of same construction:
andere Typen/Modelle mit der gleichen Konstruktion:

LiquiPhysics Excellence, DM50 + RX50	Tested type
LiquiPhysics Excellence, RM50 + DX45 DeltaRange	Tested type
LiquiPhysics Excellence	Series name
aaa	Model name (DM, RM, DX, RX)
bbbbbbbbbbbbb	Accuracy
ccccc	Level (Accessories, firmware)

Where a in the model designation can be any letter A
to Z. Where b and c in the model designation can be
any number 0 to 9 or any letter A to Z denoting
SELV/ELVEL secondary circuits or minor mechanical
differences.

$C \in$

Remarks
Bemerkungen:

EC - DECLARATION OF CONFORMITY

EG-Konformitätserklärung

KD-Nr.: 51337289   **Doku-Nr.: 20090025**

Accessories
Zubehör und Optionen

$C\,\epsilon$

DryPal
FillPal
WasteSens
ErgoSens
AtmoSens

To protect your product's future:

METTLER TOLEDO Service assures the quality, measuring accuracy and preservation of value of this product for years to come.

Please request full details about our attractive terms of service.

www.density.com

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