dDrive

English	User Manual **Dosing Unit**
Deutsch	Benutzerhandbuch
Español	Manual de usuario
Français	Guide de l'utilisateur
Italiano	Manuale per l'utente
Polski	Podręcznik użytkownika
Português	Manual do usuário
简体中文	用户手册
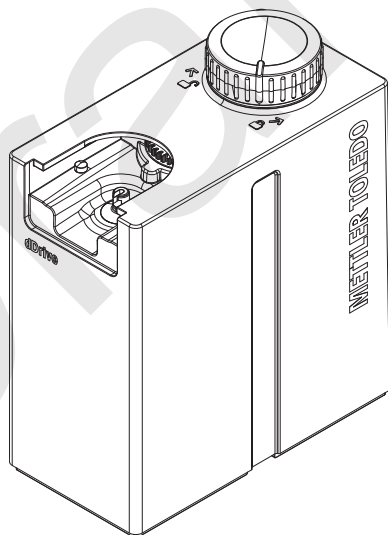
METTLER TOLEDO

User Manual **Dosing Unit**	English
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1 Introduction

Thank you for choosing a METTLER TOLEDO dDrive. The dDrive is designed to be used as an accessory.

This document provides you with the information you need to get started with your METTLER TOLEDO dDrive.

- This User Manual contains the information you need to set up the accessory, put it into operation and maintain it.
- Keep the User Manual for future reference.
- Include the User Manual if you transfer the accessory to other parties.
- The Reference Manual of the main instrument contains additional information on the interface between the accessory and the main instrument.

Only use the accessory according to this User Manual and the Reference Manual of the main instrument. If you do not use the accessory according to both documents or if it is modified, the safety of the main instrument may be impaired and Mettler-Toledo GmbH assumes no liability.

User Manual and Reference Manual are available online. See [Download manuals ▶ Page 6].

For third party licenses and open source attribution files, see the following link:

▶ www.mt.com/licenses

If you have any additional questions, contact your authorized METTLER TOLEDO service representative or dealer.

▶ www.mt.com/contact

See also

▤ Download manuals ▶ Page 6

1.1 Explanation of conventions and symbols

Refers to an external document.

Elements of instructions

Instructions always contain action steps and can contain prerequisites, intermediate results and results. If an instruction contains more than one action step, the action steps are numbered.

- Prerequisites that must be fulfilled before the individual action steps can be executed.
1 Action step 1
    ➡ Intermediate result
2 Action step 2
➡ Result

1.2 Compliance information

National approval documents, e.g., the FCC Supplier Declaration of Conformity, are available online and/or included in the packaging.

▶ http://www.mt.com/ComplianceSearch

Application-relevant standards and norms are listed on the internet.

Contact METTLER TOLEDO for questions about the country-specific compliance of your instrument.

▶ www.mt.com/contact

European Union

The instrument complies with the directives and standards listed on the EU Declaration of Conformity.

United States of America

This equipment has been tested and found to comply with the limits for a **Class A** digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Canada

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

2 Safety information

2.1 Definition of signal words and warning symbols

Safety notes contain important information on safety issues. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results. Safety notes are marked with the following signal words and warning symbols:

Signal words

CAUTION   A hazardous situation with low risk, resulting in minor or moderate injury if not avoided.

NOTICE   A hazardous situation with low risk, resulting in damage to the instrument, other material damage, malfunctions and erroneous results, or loss of data.

Warning symbols

General hazard: read the User Manual for information about the hazards and the resulting measures.

2.2 Product specific safety notes

Intended use

The dDrive is intented to be used by trained staff. The dDrive is compatible with all main instruments that list it as an accessory in their Reference Manual.

Together with a compatible burette, the dDrive is designed to aspirate and dispense liquids. The liquids must have the following properties:

- Viscosity: <10 mPa*s at ambient temperature
- No particles
- No degasing when underpressure is applied
- The liquids are compatible with the materials they come into contact with.

Any other type of use and operation beyond the limits of use stated by Mettler-Toledo GmbH without consent from Mettler-Toledo GmbH is considered as not intended.

Responsibilities of the instrument owner

The instrument owner is the person holding the legal title to the accessory and who uses the accessory and the main instrument or authorizes any person to use them, or the person who is deemed by law to be the operator of the accessory and the main instrument. The instrument owner is responsible for the safety of all users of the accessory and third parties.

Mettler-Toledo GmbH assumes that the instrument owner trains users to safely use the accessory and the main instrument in their workplace and deal with potential hazards. Mettler-Toledo GmbH assumes that the instrument owner provides the necessary protective gear.

Safety notes

NOTICE

Leakage at the valve head due to overpressure

If overpressure in the burette exceeds 4 bar, the content leaks out along the valve head.

1 Only use liquids with a viscosity <10 mPa*s.
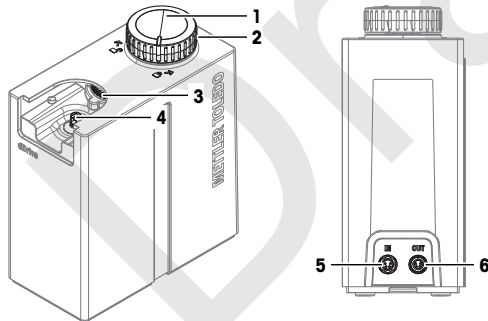2 Install a blind plug in any port that is not connected to a tube.

NOTICE

Damage to the accessory or the main instrument due to the use of unsuitable parts

Using unsuitable parts with the accessory can damage the accessory or the main instrument or cause them to malfunction.

– Only use parts from METTLER TOLEDO that are intended to be used with your accessory.

3 Design and function

3.1 Overview dDrive

| No.	Name	Function
1	Knob	• Locks the burette
2	Signal LED	• Green: dDrive connected to the main instrument and ready for use
		• LED off: dDrive not connected to the main instrument
3	Piston rod	• Connects to the piston of the burette to the motor in the dDrive
4	Gear	• Turns the burette to control which port is open.
5	IN	• Actor Bus IN socket to connect the main instrument or another dDrive
6	OUT	• Actor Bus OUT socket to connect another dDrive

3.2 Overview of functions

A dDrive with a DispenSix six-port burette functions as liquid handler.

The piston in the burette is connected to the piston rod of the dDrive. The piston rod and therefore the piston are moved by the spindle motor in the dDrive. The spindle motor has a resolution of 120000 steps. This allows for accurate and aspiration and dosing of liquids.

The gear on the dDrive rotates the burette and therefore controls which port is open for aspiration or dispensing.

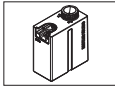The main instrument controls the actions of the dDrive.
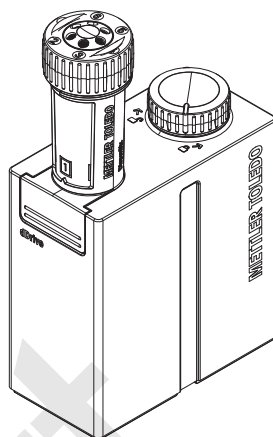
Read the User Manual of the burette for more information on the function of the burette.

Read the Reference Manual of the main instrument for more information on the programming of the aspiration and dispensing.

4 Installation

4.1 Scope of delivery

Part		Order number
	dDrive	-
	Cable M8A/F, RJ12/M cable 60 cm	30634408
	User Manual	–
	Declaration of conformity	–
	Test report	–

4.2 Download manuals

1 Go to the website www.mt.com/library.
2 Select the **Technical Documentation** tab.
3 Find the product type on the housing of the main instrument and enter it into the search field.

4   Start the search.

5   Select the manual from the result list.

6   Select the link.

    ➡ The manual is either opened or downloaded depending on the browser settings.

7   Check which firmware version is installed on your main instrument.

8   If the manual is not written for the installed firmware version, contact your authorized METTLER TOLEDO service representative or dealer.

▶ www.mt.com/contact

4.3 Unpack the dDrive

1   Unpack the dDrive.

2   Store the protective packaging for later transport over long distances.

3   Check that you have received all parts listed in the scope of delivery.

4   Inspect the parts visually for flaws or damage.

5   If parts are missing or damaged, report it to your authorized METTLER TOLEDO service representative or dealer.

▶ www.mt.com/contact

4.4 Position the dDrive

The dDrive has been developed for indoor operation in a well-ventilated area.

The following site requirements apply:

• Ambient conditions within the limits specified in the technical data

• No powerful vibrations

• No direct sunlight

• No corrosive gas atmosphere

• No explosive atmosphere

• No powerful electric or magnetic fields

Procedure

1   Place the dDrive on a level surface.

2   Wait for at least three hours before you connect the dDrive to the main instrument if the temperature during transport or storage was more than 20 °C lower than the temperature in the laboratory.

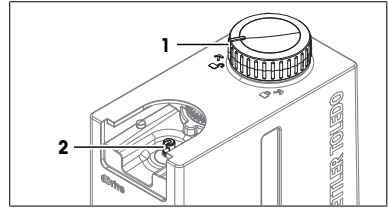3   Install the cables in such a way that they cannot be damaged or interfere with operation.

Read the Reference Manual of the main instrument for more information about how to connect the dDrive to the main instrument.
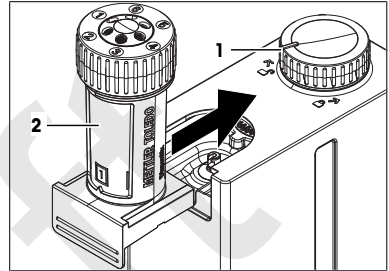
See [Download manuals ▶ Page 6].

4.5 Install the burette

- The dDrive is connected to the main instrument.
- The piston rod (2) is in its lower position.
- The knob points to the open lock (1).

1 Slide the burette (2) onto the dDrive.
2 Turn the knob (1) clockwise to the closed lock.

4.6 Remove the burette

- The dDrive is connected to the main instrument.
- The piston rod of the dDrive is in its lower position.
- The burette and the connected tubes are empty.
1 Disconnect the tubes.
2 Turn the knob (2) counterclockwise to the open lock.
3 Slide the burette (1) off the dDrive.
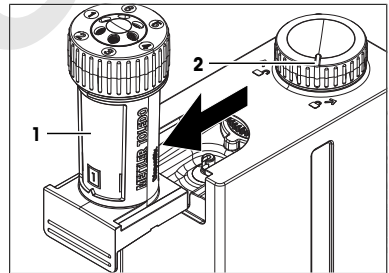
5 Operation

Read the Reference Manual of the main instrument for more information about how to control the dDrive.

See [Download manuals ▶ Page 6].

6 Maintenance

In this chapter, you find descriptions of the maintenance tasks you can perform yourself. Any other maintenance tasks need to be performed by a service technician that has been qualified by METTLER TOLEDO.

If you experience problems with your accessory, contact your authorized METTLER TOLEDO dealer or service representative.

METTLER TOLEDO recommends that a preventive maintenance and calibration certification is done at least once a year through your authorized METTLER TOLEDO dealer or service representative.

► www.mt.com/contact

6.1 Maintenance schedule

Follow this maintenance schedule, unless otherwise required by the standard operating procedures of your company.

Every day

Task	Link
Check the dDrive and the burette visually for leakage	–

6.2 Clean the dDrive

> **NOTICE**
>
> **Damage to the dDrive due to inappropriate cleaning methods**
>
> Inappropriate cleaning agents can damage the housing or other parts of the dDrive. If liquids enter the housing, they can damage the dDrive.
>
> 1 Make sure the cleaning agent is compatible with the material of the part you want to clean.
>
> 2 Make sure that no liquid enters the interior of the dDrive.

METTLER TOLEDO recommends the following cleaning agents:

- Isopropanol
- Ethanol
- Water with a mild detergent

If you have questions about the compatibility of cleaning agents, contact your authorized METTLER TOLEDO service representative or dealer.

► www.mt.com/contact

Procedure

– Wipe the housing with a cloth moistened with the cleaning agent.

6.3 Prepare the dDrive for storage or shipping

1 Remove the burette.

2 Disconnect the dDrive from the main instrument.

3 Clean the dDrive.

4 To store the dDrive, keep it in a dry and clean place.

5 To ship the dDrive, use the original packaging.

6.4 Dispose of the dDrive

In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in 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 device. Should this device be passed on to other parties, the content of this regulation must also be related.

7 Technical data

Characteristic		Value
Power input	Power consumption	24 V DC ±10 %, 0.5 A
	Input rating	24 V DC ±10 %, 3 A
	Connector type	M8, 4 pin, male
Power output	Output rating	24 V DC ±10 %, 2.5 A
	Connector type	M8, 4 pin, female
Dimensions	Width	81.2 mm
	Depth	167 mm
	Height	190.5 mm
Weight		approx. 1.75 kg
Materials	Housing	PBT (polybutylenterephthalat)
	Piston rod	Polyetheretherketone (PEEK KetaSpire KT-820 SL30)
Ambient conditions	Ambient temperature	+5 °C…+40 °C
	Relative humidity	Non-condensing, max. 80 % for temperatures up to 31 °C, decreasing linearly to 50 % at 40 °C
	Altitude	Up to 5000 m above sea level
	Use	In interior spaces
	Overvoltage category	II
	Pollution degree	2
Storage conditions	Temperature	-20…+70 °C
	Relative humidity	0…95 %
Performance	Resolution	120000 steps (0.42 uL)
	Dead volume	~ 45 uL
	Volume range dispensing	0.010…50 mL
	Volume range aspirating	0.010…50 mL
	Dispensing accuracy	according to ISO 8655-3
	Dispensing precision	
	Aspiration accuracy	
	Aspiration precision	

8 Accessories

All parts and accessories are specified with their order number, and quantity where more than one part is included.

If you have any questions, contact your authorized METTLER TOLEDO service representative or dealer.

▶ www.mt.com/contact

	DispenSix set	**30673118**

Cable M8A/F, RJ12/M
60 cm

30634408

Cable M8A/F, M8A/M
60 cm

30634420

Sehen Sie dazu auch

- 📄 Bedienungsanleitungen herunterladen ▶ Seite 13

1.1 Bedienungsanleitungen herunterladen

1 Gehen Sie auf die Website www.mt.com/library.
2 Wählen Sie die Registerkarte **Technische Unterlagen**.
3 Suchen Sie den Produkttyp auf dem Gehäuse des Hauptinstruments und geben Sie ihn in das Suchfeld ein.
4 Suche starten.
5 Wählen Sie die Bedienungsanleitung aus der Ergebnisliste aus.
6 Wählen Sie den zugehörigen Link.
   ➡ Die Bedienungsanleitung wird entsprechend den Browsereinstellungen geöffnet oder heruntergeladen.
7 Überprüfen Sie, welche Firmware-Version auf Ihrem Hauptgerät installiert ist.
8 Wenn die Bedienungsanleitung nicht für die installierte Firmwareversion geschrieben wurde, wenden Sie sich an Ihren autorisierten METTLER TOLEDO-Händler oder Servicepartner.

▶ www.mt.com/contact

Sehen Sie dazu auch

- 📄 Bedienungsanleitungen herunterladen ▶ Seite 13

Sehen Sie dazu auch

- 📄 Bedienungsanleitungen herunterladen ▶ Seite 13

1 Vea también a este respecto

📄 Descargar los manuales ▸ página 15

1.1 Descargar los manuales

1 Visite la página web www.mt.com/library.

2 Seleccione la pestaña **Documentación técnica**.

3 Busque el tipo de producto en la carcasa del instrumento principal e introdúzcalo en el campo de búsqueda.

4 Inicie la búsqueda.

5 Seleccione el manual en la lista de resultados.

6 Seleccione el enlace.

➡ El manual se abrirá o se descargará dependiendo de la configuración del navegador.

7 Compruebe qué versión de firmware está instalada en su principal instrumento.

8 Si el manual no se corresponde con la versión de firmware instalada, póngase en contacto con su distribuidor o servicio técnico autorizado de METTLER TOLEDO.

▶ www.mt.com/contact

Vea también a este respecto

📄 Descargar los manuales ▸ página 15

Vea también a este respecto

📄 Descargar los manuales ▸ página 15

es

1 **Voir aussi à ce sujet**

📄 Télécharger les manuels ▶ page 17

1.1 Informations concernant la conformité

1.2 Canada

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage.

2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

2 Télécharger les manuels

2.1 1 Accédez au site Web www.mt.com/library.

2 Sélectionnez l'onglet **Documentation Technique**.

2.2 3 Trouvez le type de produit sur le boîtier de l'instrument principal et saisissez-le dans le champ de recherche.

3 4 Lancez la recherche.

3.1 5 Sélectionnez le manuel dans la liste des résultats.

6 Sélectionnez le lien.

3.2 ➡ Le manuel est ouvert ou téléchargé en fonction des paramètres du navigateur.

4 7 Vérifiez la version du progiciel installée sur votre instrument principal.

8 Si le manuel n'a pas été rédigé pour la version de progiciel installée, contactez votre revendeur ou représentant METTLER TOLEDO agréé.

4.1

4.2 ▶ www.mt.com/contact

4.3 **Voir aussi à ce sujet**

4.4 📄 Télécharger les manuels ▶ page 17

4.5 **Voir aussi à ce sujet**

📄 Télécharger les manuels ▶ page 17

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1.1 Scaricare i manuali

1 Visitare il sito www.mt.com/library.

2 Selezionare la scheda **Documentazione tecnica**.

3 Individuare il tipo di prodotto sullo chassis dello strumento principale e immetterlo nel campo di ricerca.

4 Avviare la ricerca.

5 Selezionare il manuale dall'elenco dei risultati.

6 Selezionare il link.

➡ Il manuale viene aperto o scaricato a seconda delle impostazioni del browser.

7 Verificare la versione firmware installata sullo strumento principale.

8 Se il manuale non è disponibile per la versione firmware installata, contattare l'esperto della manutenzione o il rivenditore autorizzato METTLER TOLEDO.

▶ www.mt.com/contact

1.1   Pobierz instrukcje

1   Przejdź do strony www.mt.com/library.

2   Wybierz zakładkę **Dokumentacja techniczna**.

3   Znajdź typ produktu na obudowie urządzenia głównego i wprowadź go w pole wyszukiwania.

4   Rozpocznij wyszukiwanie.

5   Wybierz instrukcję z listy wyników.

6   Wybierz łącze.

     ➡   W zależności od ustawień przeglądarki instrukcję można otworzyć lub pobrać.

7   Sprawdź, która wersja oprogramowania układowego jest zainstalowana na urządzeniu głównym.

8   Jeśli instrukcja nie jest napisana dla zainstalowanej wersji oprogramowania układowego, skontaktuj się z autoryzowanym serwisem lub sprzedawcą METTLER TOLEDO.

     ▶ www.mt.com/contact

     📄   Pobierz instrukcje ▶ strona 21

     📄   Pobierz instrukcje ▶ strona 21

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A este respeito, consulte também

 📄 Faça o download dos manuais ▸ página 23

1.1 Faça o download dos manuais

1 Acesse o site www.mt.com/library.

2 Selecione a guia **Documentação Técnica**.

3 Veja o tipo de produto na carcaça do instrumento principal e insira-o no campo de pesquisa.

4 Inicie a busca.

5 Selecione o manual na lista de resultados.

6 Selecione o link.

 ➡ O manual será aberto ou baixado, dependendo das configurações do navegador.

7 Verifique qual versão de firmware está instalada no seu instrumento principal.

8 Se o manual não for o da versão de firmware instalada, entre em contato com seu revendedor ou representante técnico autorizado da METTLER TOLEDO.

                    ▸ www.mt.com/contact

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 📄 Faça o download dos manuais ▸ página 23

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 📄 Faça o download dos manuais ▸ página 23

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1 可参阅

  📄 下载手册 ▸ 第25页

1.1 下载手册

1.2 1 前往网站www.mt.com/library。

   2 选择**技术文件**选项。

2 3 在主机外壳上找到产品型号并将其输入搜索栏。

2.1 4 开始搜索。

   5 从结果列表中选择手册。

2.2 6 点击链接。

3   ➡ 根据浏览器设置的不同，点击后将会打开或下载手册。

   7 检查主仪器所安装的固件版本。

3.1 8 如果手册中未包含您所安装固件版本的相关内容，请与您的授权METTLER TOLEDO服务代表或经销

3.2   商联系。

   ▶ www.mt.com/contact

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4.1

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4.3 可参阅

4.4 📄 下载手册 ▸ 第25页

4.5 可参阅

4.6 📄 下载手册 ▸ 第25页

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简体中文

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.

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