Technical Information
Liquiline Mobile CML18

Multiparameter mobile device

Application

Liquiline Mobile CML18 is a multiparameter mobile device for connecting digital sensors with Memosens technology and optional operation by smartphone or other mobile devices via Bluetooth.

The device is designed for reliable operation in the field or laboratory and is particularly suitable for the following industries:
- Life sciences
- Chemical industry
- Water and wastewater
- Food and beverages
- Power stations
- Other industrial applications of liquid analysis

Your benefits

Easy operation:
Use your own tablets and smartphones for operation and commissioning.

Enjoy all the benefits of Memosens technology:
Memosens sensors offer you the most secure method of data transmission, maximum measured value availability and easy, straightforward handling.

Trust your measured values:
As the same technology is used, complete consistency between process and sample measurements is guaranteed.

Simplify your daily tasks:
Real plug & play with pre-calibrated Memosens sensors allows you to switch quickly between parameters.

Use the data logger function:
Save over 10,000 measured values with a time and date stamp.

Simply take it with you to any measuring point:
The versatile device can be used wherever it is needed - from the laboratory to the process. Small and handy, it fits into any shirt pocket.

Endress+Hauser

People for Process Automation

Function and system design

**Product description**
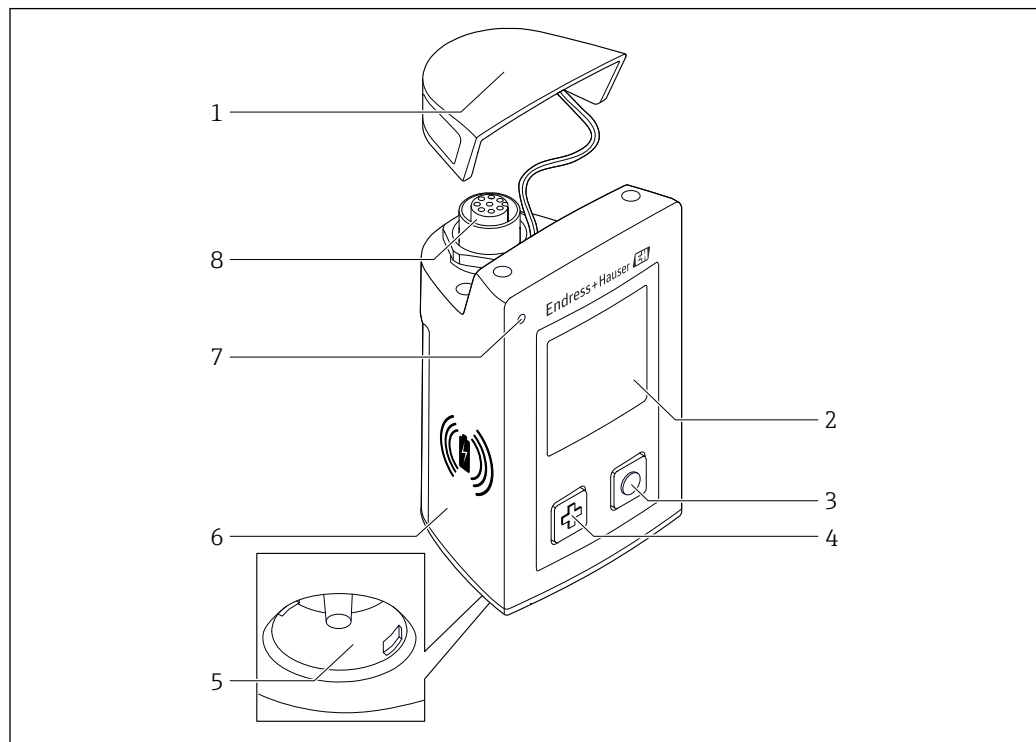
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🖼 *1 CML18*

1 Protection cap
2 Display screen with automatic screen rotation
3 "Select" button
4 "Next" button
5 Memosens connection
6 Area for wireless charging
7 Status LED
8 M12 connection

| Measuring system | The measuring system consists at least of a Liquiline Mobile CML18 transmitter and a Memosens sensor. |

Connection options:
- M12 connection
  - Connection of a Memosens sensor via the M12 Memosens cable (optionally available)
  - Connection of the Liquiline Mobile CML18 to a PC for data transmission or to charge the device via the M12-USB cable (optionally available)
- Bluetooth interface to connect the Liquiline Mobile CML18 to a compatible end device (not supplied) for data analysis, data transmission and device configuration via the SmartBlue app
- Memosens connection directly on the device for a Memosens sensor

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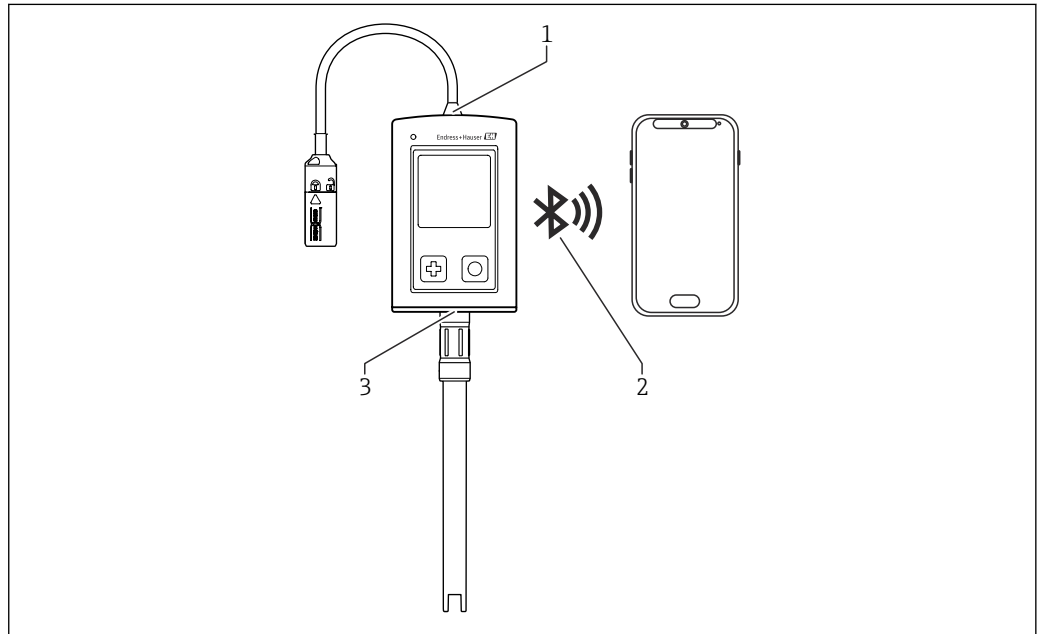
🖼 *2   Cable, sensor and smartphone not supplied*

1   M12 connection
2   Bluetooth interface
3   Memosens connection

ℹ️ The simultaneous connection of 2 sensors is not supported. Measurement is interrupted during data transmission, software updates or device configuration.

Communication and operation

Operation and settings via:
- Internal operating menu with keys
- SmartBlue App via Bluetooth® LE wireless technology → 🔖 9

Dependability

| Reliability | **Memosens** MEMOSENS |

Memosens makes your measuring point safer and more reliable:
- Non-contact, digital signal transmission enables optimum galvanic isolation
- No contact corrosion
- Completely watertight

- Sensor can be calibrated in a lab, thus increasing the availability of the measuring point in the process
- Intrinsically safe electronics mean operation in hazardous areas is not a problem.
- Predictive maintenance thanks to recording of sensor data, e.g.:
  - Total hours of operation
  - Hours of operation with very high or very low measured values
  - Hours of operation at high temperatures
  - Number of steam sterilizations
  - Sensor condition

Input

Input power	Wireless charging	5 W
	M12 connection	5 V; 0.6 A

Measured variables	- pH - ORP - pH/ORP - Oxygen - Conductivity - Temperature
Measuring range	→ Documentation of the connected sensor
Type of input	Memosens connection for sensors with Memosens technology M12 connection for digital measuring cable CYK10, CYK20 for sensors with Memosens technology Memosens sensors CLS50D and CLS54D A complete list of supported sensors can be found on the product page of the device: www.endress.com/CML18

Output

Output signal	Memosens M12 (maximum 80 mA)

Power supply

Supply voltage	Inductive charging: use Qi-certified devices (min. 5 W output power)
Battery rated capacity	1 000 mAh (min. 950 mAh)
Battery life	Max. 48 h
Overvoltage protection	IEC 61 000-4-4 with 0.6 kV IEC 61 000-4-5 with 2.0 kV
Sensor connection	Sensors with Memosens technology
Cable specification	Digital measuring cable CYK10-Axx2+x Digital measuring cable CYK20-AAxxC1

Environment

Ambient temperature range	Charging: 0 to +45 ℃ (32 to 113 ℉)
	Operation: –10 to +60 ℃ (14 to 140 ℉)

ℹ️ The maximum ambient temperature depends on the process temperature and the installation position.

Storage temperature	–20 to +45 ℃ (–4 to 113 ℉)

ℹ️ Elevated storage temperatures reduce the battery capacity.

Humidity	0 to 95 %

Degree of protection	IP66

Electrical safety	EN 61010-1

Pollution degree	

Complete device:	Pollution level 4
Internal:	Pollution level 2

Radio standards — The device meets the radio standards of the following countries/regions:

- Europe
- USA
- China
- Canada
- Japan
- South Korea
- Brazil
- Mexico
- Singapore
- Argentina
- Thailand
- Australia
- Indonesia

Mechanical construction

Dimensions

86 (3.38)

48 (1.89)

54 (2.13)
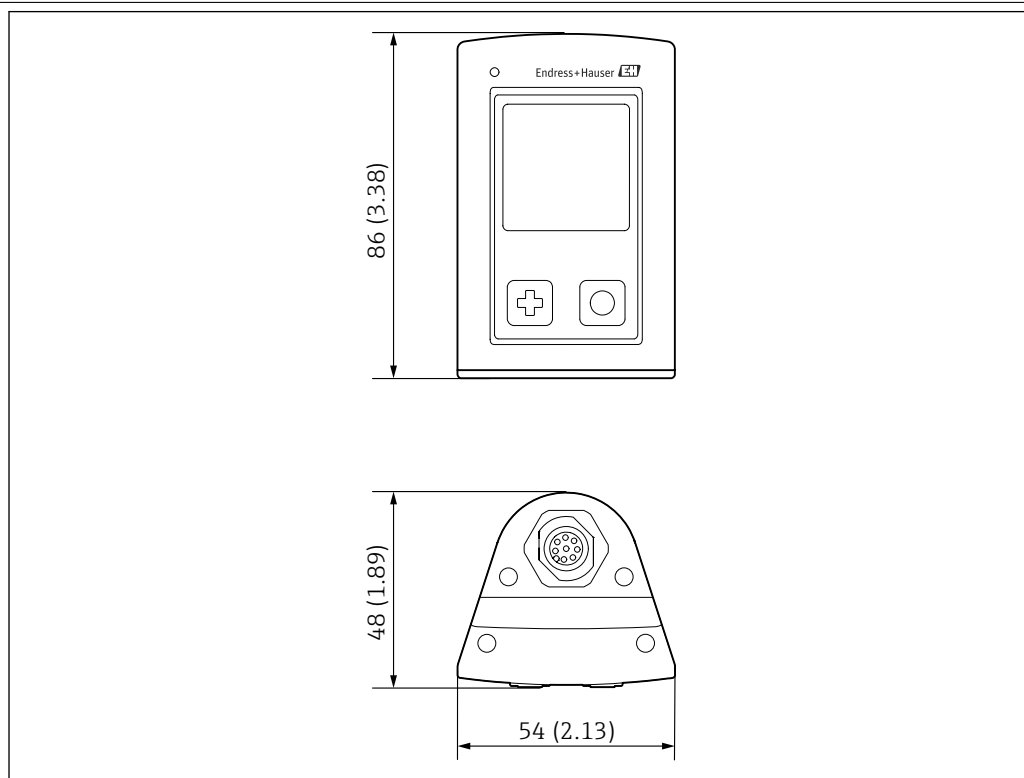
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⊞ 3   *Dimensions: mm (in)*

Materials

Components	Material
Housing	PBT
Display window, light guide	PMMA
Buttons, cap	TPE
M12 connection	CuZn, nickel-plated

Materials not in contact with the medium

Information according to REACH Regulation (EC) 1907/2006 Art. 33/1:

The device battery contains the SVHC 1.3 propane sulton ; ethylene glycol dimethyl ether (CAS number [1] 110-71-4) with more than 0.1% (w/w). The product does not present a hazard if it is used as designated.

Impact loads

The product is designed for mechanical impact loads of 1 J (IK06) as per the requirements of EN61010-1.

Weight

Liquiline Mobile CML18	155 g (5.5 oz)

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1)   CAS = Chemical Abstracts Service, international identification standard for chemical substances
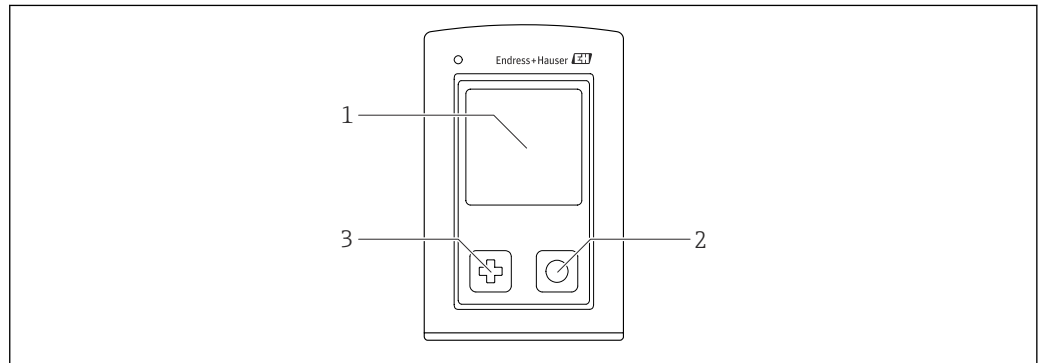
Operation options

Overview of operation options

Operation and settings via:
- Internal operating menu with keys
- SmartBlue App via Bluetooth® LE wireless technology → 🖴 9

Display and operating elements

🖼 4 *Overview of display and operating elements*

1   Display
2   "Select" button
3   "Next" button

Button functions

Button	Device switched off	On measuring screen	In the menu
⊕	Switching on	Scroll through measuring screens	Scroll down
⊙	Switching on	Save current measured values (Grab Sample)	Confirm/select
⊕ (long hold)	-	Open the menu	Switch to previous menu level/measuring screen
⊕ + ⊙ (pressed for longer than 7 seconds)	Forced hardware reset	Forced hardware reset	Forced hardware reset

Structure and function of the operating menu

Power-off	
Power-off	▶❙

Application							
Data logger	▷	Data logger	▶❙				
		Log interval	▶❙				
		Cond. unit	▶❙				
		Erase data	▷	Erase continuous logs	▷	Abort	▶❙
						Erase	▶❙
				Erase grab values	▷	Abort	▶❙
						Erase	▶❙

Diagnostics				
Diagnostics list	▶			
Data logger entries	▶			
Display test	▶			
Device info	▷	Manufacturer	▶	
		Software version	▶	
		Serial number	▶	
		Designation	▶	
		Extended order code	▶	

System				
Display language	▶			
Bluetooth	▶			
Display brightness	▶			
Signal sounds	▶			
M12 Printout	▶			
Power management	▷	Power save w. charger	▶	
		Power save w/o charger	▶	
		Power-off w. charger	▶	
		Power-off w/o charger	▶	
Regulatory information	▶			

Guidance [1]		
2 point calibration	▶	

1)   Available only with pH or ISFET sensor

Display structure
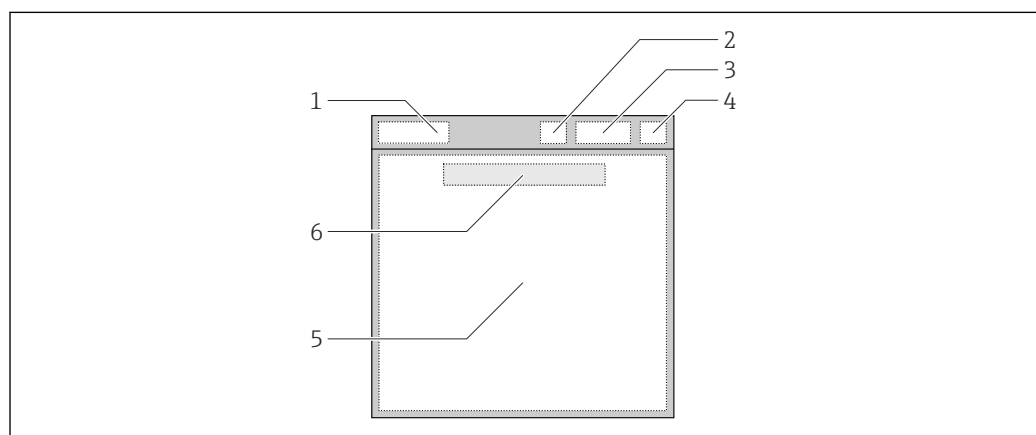
⊡ *5   Schematic representation of the display structure*

1   Menu path/title of measuring screen
2   Bluetooth status
3   Battery level, charging information
4   NAMUR indicator
5   Measuring screen
6   Date and time (displayed in main menu and if no sensor is connected)

Status according to NAMUR NE107 categories:

NAMUR indicator	Status
OK	The device and sensor are working reliably.
F	Failure of device or sensor. F status signal as per NAMUR NE107
M	Device or sensor requires maintenance. M status signal as per NAMUR NE107
C	Device or sensor undergoing function check. C status signal as per NAMUR NE107
S	Device or sensor being operated out of specification. S status as per NAMUR NE107

Structure of the measurement window

The measurement window has 3 measuring screens, which the user can scroll through:

Measuring screen (1 of 3)	Measuring screen (2 of 3)	Measuring screen (3 of 3)
Main value	Main and secondary measured value	All measured values of the sensor input

LED status indicator

The status LED is used for the quick visualization of the sensor status.

LED behavior	Status
Solid green	Sensor working correctly
Solid red	No sensor connected
Flashes red	Sensor error

Operation via SmartBlue app

The SmartBlue App is available for download from the Google Play Store for Android devices and from the Apple App Store for iOS devices.

Download the SmartBlue App.

▸ Use the QR codes to download the app.
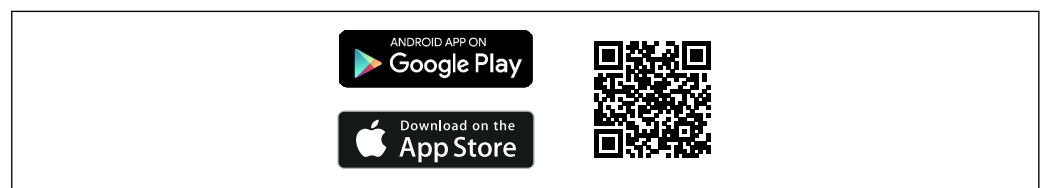
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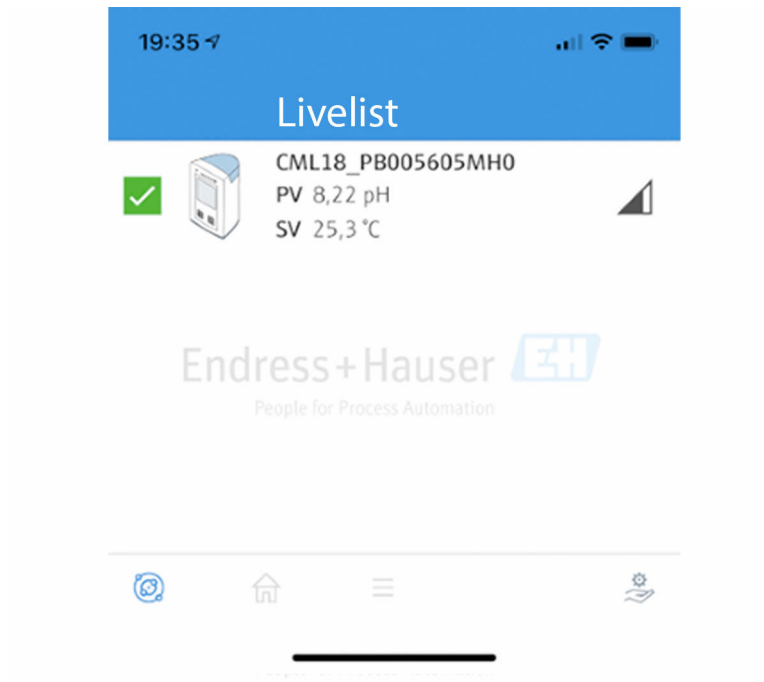⊠ *6   Download links*

System requirements
- iOS devices: iPhone 4S or higher from iOS9.0; iPad2 or higher from iOS9.0; iPod Touch 5th generation or higher from iOS9.0
- Devices with Android: from Android 4.4 KitKat and Bluetooth® 4.0
- Internet access

▸ Open the SmartBlue App.

7   SmartBlue App icon

ⓘ   Bluetooth must be enabled on both devices.

Enable Bluetooth

8   SmartBlue App Livelist

The Livelist displays all of the devices that are within range.

▸   Tap the device to select it.

ⓘ   To be able to use the device with the SmartBlue App, the Bluetooth connection must be confirmed by entering a user name and password.

1.   User name >> **admin**
2.   Initial password >> **device serial number**

Change the user name and password after logging in for the first time.

The current measured values are displayed in the Home view. The device information (device tag, serial number, firmware version, order code) is also displayed.
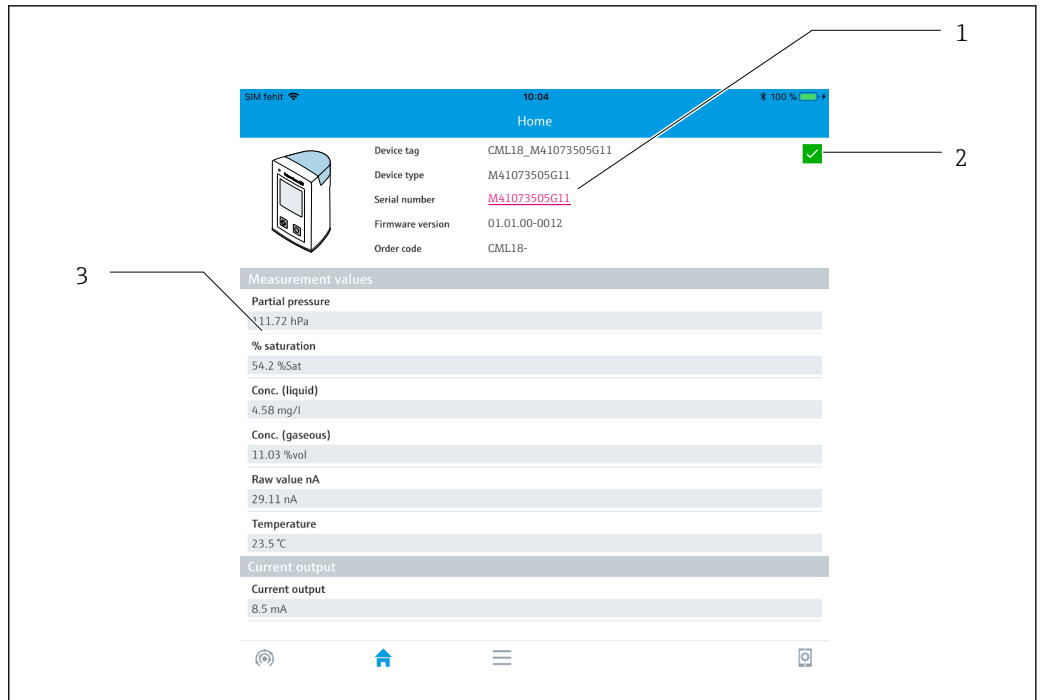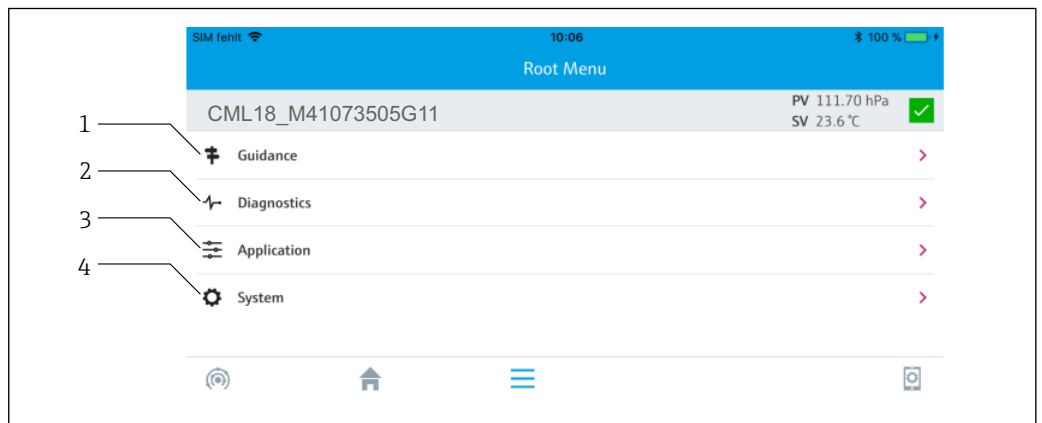
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🖼 *9 Home view of SmartBlue App with current measured values*

1 CML18 system and device information
2 Shortcut to diagnostic list
3 Overview of measured values of connected sensor

Operation is via 4 main menus:

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🖼 *10 Main menus of the SmartBlue App*

1 Guidance
2 Diagnostics
3 Application
4 System

Menu	Function
Guidance	Contains functions involving a self-contained sequence of activities, e.g. for calibration (= "Wizard", guided operation).
Diagnostics	Contains information regarding operation, diagnostics and troubleshooting, as well as the configuration of the diagnostic behavior.
Application	Sensor data for specific optimization and for detailed process adjustment. Adjustment of measuring point to the application.
System	These menus contain parameters for configuring the overall system.

Certificates and approvals

C€ mark	The product meets the requirements defined in the legal provisions of the applicable EU directives. The product complies with the applicable harmonized European standards. The manufacturer confirms successful testing of the product by affixing to it the C€ mark.

Radio approvals

United States radio approval

FCC ID: **2AKGY-BT41PMMA01**

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, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device has been designed and complies with the safety requirements for portable RF exposure in accordance with FCC rule part §2.1093 and KDB 447498 D01.

Canada radio approval

ID: **22173-BT41PMMA01**

This device complies with ISED's license-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with the safety requirements for RF exposure in accordance with RSS-102 Issue 5 for portable use conditions.

Cet appareil est conforme aux RSS exemptés de licence d'ISED. Le fonctionnement est soumis aux deux conditions suivantes:

(1) Cet appareil ne doit pas causer d'interférences; et

(2) Cet appareil doit accepter toute interférence, y compris Interférences pouvant provoquer un fonctionnement indésirable de l'appareil

Cet appareil est conforme aux exigences de sécurité relatives à l'exposition RF conformément à la norme RSS-102 Édition 5 pour les conditions d'utilisation portables.
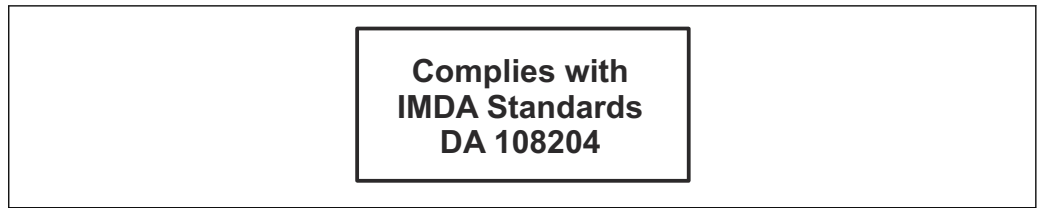
Japan radio approval

A0044180

Japanese Radio Law and Japanese Telecommunications Business Law Compliance. This device is granted pursuant to the Japanese Radio Law (電波法). This device should not be modified (otherwise the granted designation number will become invalid).

Thailand radio approval

CML18 complies with the Thai radio requirements.

Singapore radio approval

Complies with
IMDA Standards
DA 108204

A0044087

Brazil radio approval

ANATEL
11739-20-11036

A0044179

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

Argentina radio approval

CNC COMISIÓN NACIONAL DE COMUNICACIONES

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CNC ID: C-25799

China radio approval
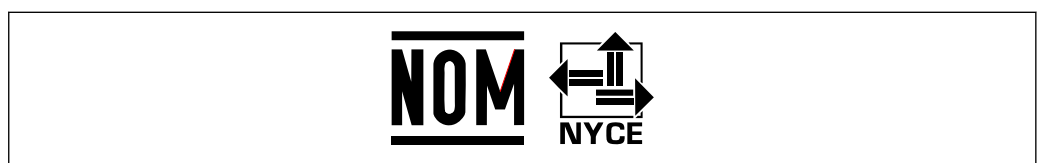
CMIIT ID: 2020DJ11424

South Korea radio approval

A0039065

R-R-E1H-CML18

Mexico radio approval

NOM NYCE

A0034100

Número IFETEL: RCPENCM20-2345

La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.
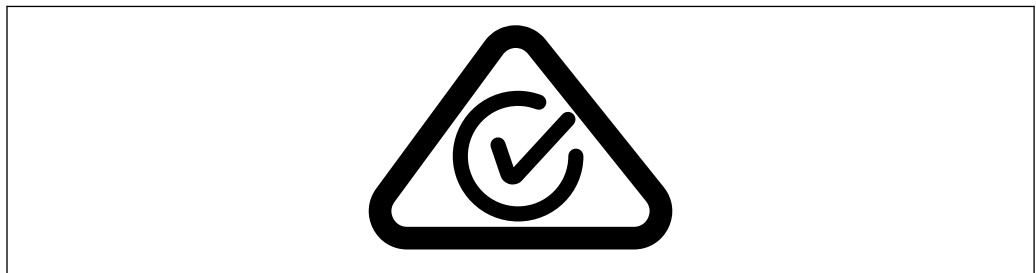
Indonesia radio approval

Radio Approval no.: 71583/SDPPI/2020

ID: 4962

Australia radio approval

Ordering information

Product page	www.endress.com/CML18

Product Configurator	On the product page there is a **Configure** button to the right of the product image.

1. Click this button.
   ↳ The Configurator opens in a separate window.
2. Select all the options to configure the device in line with your requirements.
   ↳ In this way, you receive a valid and complete order code for the device.
3. Export the order code as a PDF or Excel file. To do so, click the appropriate button on the right above the selection window.

For many products you also have the option of downloading CAD or 2D drawings of the selected product version. Click the **CAD** tab for this and select the desired file type using picklists.

Scope of delivery

The scope of delivery comprises:
- 1 Liquiline Mobile CML18
- 1 set of Operating Instructions in German
- 1 set of Operating Instructions in English

ℹ️ Inductive charger and power unit are available separately.

▶ If you have any queries:
   Please contact your supplier or local sales center.

Accessories

The latest list of accessories and all compatible Memosens sensors is provided on the product page:

www.endress.com/CML18

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www.addresses.endress.com

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