M 700(X)

Safety information
and short description

ENG

METTLER TOLEDO

Warranty
Defects occurring within 1 years from delivery date shall be remedied free of charge at our plant (carriage and insurance paid by sender).
Sensors, fittings, and accessories: 1 year.

Safety information

Information on installation

Be sure to read and observe the following instructions!
The device has been designed in accordance with the state of the art and complying with the applicable safety regulations.
When operating the device, certain conditions may nevertheless lead to danger for the operator or damage to the device.

Caution!
Before commissioning it must be proved that the device may be connected with other equipment. Commissioning may only be carried out by trained experts!
Whenever it is likely that protection has been impaired, the device shall be made inoperative and secured against unintended operation. The protection is likely to be impaired if, for example:
• the device shows visible damage
• the device fails to perform the intended measurements
• after prolonged storage at temperatures above 70 °C
• after severe transport stresses
Before recommissioning the device, a professional routine test in accordance with EN 61010-1 must be performed. This test should be carried out by the manufacturer.

Before opening the device, be sure to observe the following:
• Switch off power supply before replacing the front door (FRONT module).
• Switch off power supply before replacing or inserting a module.
• Protect the signal inputs of the modules and the SmartMedia card against electrostatic discharge.
• Only operate signal outputs and inputs within the specified limits.
  Provide the relay outputs with protective wiring.

Warning!
Do not touch the terminal compartment, there may be dangerous contact voltages!

Safety information

Display. Use of SmartMedia card. Intended use.

Caution!
Never expose the display to direct sun light! Only operate the display within the temperature range of 0 °C up to 50 °C max.

Important note concerning SmartMedia card
The SmartMedia card may be inserted or replaced with the power supply switched on.
Warning!
Do not touch the terminal compartment, there may be dangerous contact voltages!

Intended use
M 700(X) is a flexible measuring system for continuous measurements in the field of liquid analysis. Thanks to its modular design, the M 700(X) can easily be adapted to your measuring task. Flexible use of plug-in modules allows combined measurements as well as later expansions or modifications.

The measured variables depend on the measuring modules installed. Communication modules are available for further processing of the output signals.

The rugged enclosure (IP 65) can be wall or pipe mounted or fixed into a control panel.

The M 700(X)S version with hygienic, polished stainless steel enclosure allows application in the field of biotechnology, food processing, and in the pharmaceutical industry.

The M 700(X)C version with coated steel enclosure – extremely corrosion resistant – has been developed for application in the chemical industry, environmental engineering, water and waste-water treatment, and for application in power plants.

FRONT module, BASE module M 700-011

Extract from general technical specifications

Display*	LC graphic display, white backlighting
Resolution	240 x 160 pixels
Languages	German, English, French, Italian, Spanish, Swedish
Keypad	NAMUR keypad, individual keys, no double assignments [meas] [menu] [◀] [▶] [▲] [▼] [enter] [softkey 1] [softkey 2], NAMUR LEDs red and green.
Power supply	24 (–15 %) to 230 (+15 %) V AC/DC appr. 10 VA/10 W
Overvoltage category	II
Protection class	I
Pollution degree	2 (EN 61010-1)
Wire cross-section	2.5 mm^2
Protection against electrical shock	Protective separation of all extra-low-voltage circuits against mains as per EN 61010-1
EMC	NAMUR NE 21 and EN 61326 VDE 0843 Part 20 /01.98 EN 61326/A1 VDE 0843 Part 20/A1 /05.99
Emitted interference	Class B
Immunity to interference	Industry
Lightning protection	EN 61000-4-5, Installation Class 2
Nominal operating conditions	Ambient temperature –20 to +55 °C Relative humidity 10 ... 95 % not condensing Power supply 24 (–15 %) to 230 (+15%) V AC/DC Frequency AC 45 ... 65 Hz
Transport/ Storage temperature	–20 to +70 °C
Ingress protection	IP 65 / NEMA 4 X
Terminals	Single wires and flexible leads up to 2.5 mm^2 (AWG 14)

* Caution!
Never expose the display to direct sun light! Only operate the display within the temperature range of 0 °C up to 50 °C max.

Connection of power supply

Contact assignment of BASE module

Information on installation

Caution!
- Installation may only be carried out by trained experts in accordance with this instruction manual and as per applicable local and national codes.
- Be sure to observe the technical specifications and input ratings.
- Be sure not to notch the conductor when stripping the insulation.
- All parameters must be set by a system administrator prior to commissioning.
  The terminals are suitable for single wires and flexible leads up to 2.5 mm^2 (AWG 14).

Connection of power supply

Warning! Beware of dangerous contact voltages!

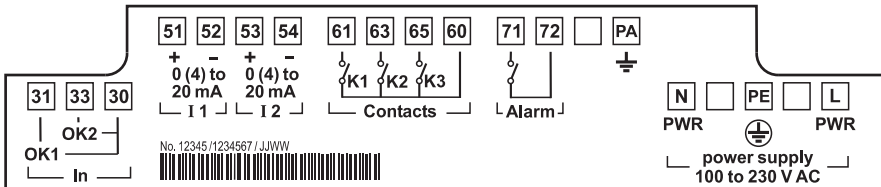**BASE module M 700-011,terminal plate**
Connection of power supply

With the VariPower broad-range power supply unit, the M 700 can be operated with a power supply of 24 (-15 %) to 230 (+15 %) V AC/DC making it suitable for all public mains supplies in the world.
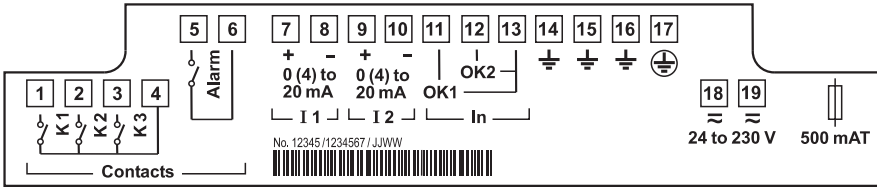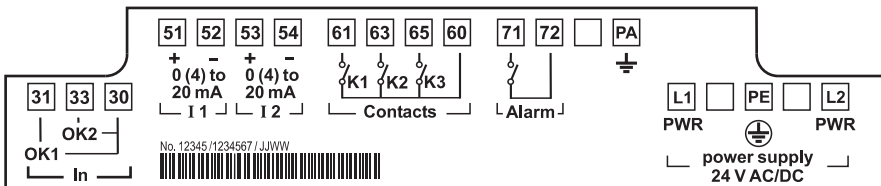

BASE module M 700X-025/VPW
100 (-15 %) ... 230 (+10 %) V AC (EEx em IIC)

BASE module M 700X-026/24V
24 V AC (-15 %, + 10 %)
24 V DC (-15 %, +20 %)

Short description: FRONT module

M 700(X)
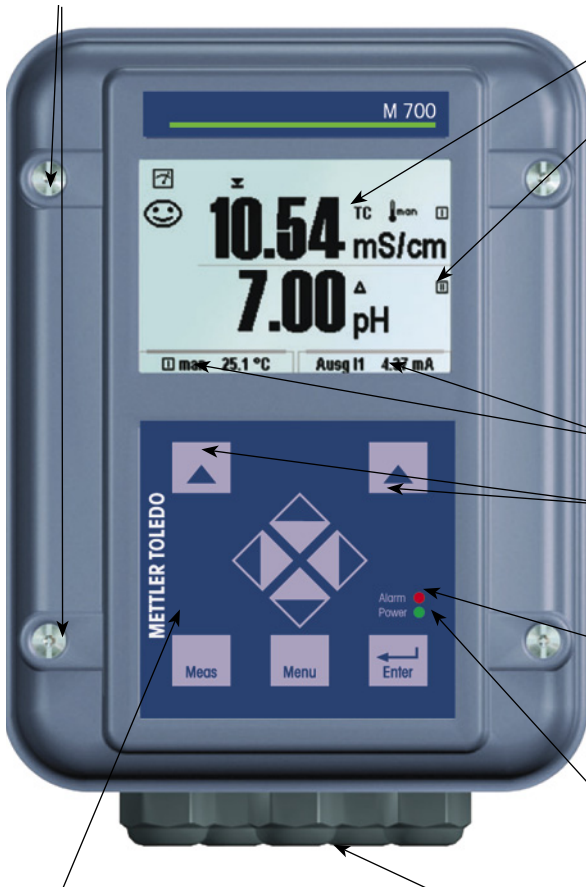Modular hardware and software system for liquid analysis.

4 captive scews
for opening the M 700(X)
*(**Caution!** Make sure that the gasket between*
FRONT and BASE is properly seated and clean!)

Transflective LC graphic display
(240 x 160 pixels) white backlighting,
high resolution and high contrast.

Measurement display

User interface
with plaintext menus as recom-
mended by NAMUR.
Menu texts can be switched to:
German, English, French, Italian,
Swedish, and Spanish.
Intuitively acquirable menu logic,
based on Windows standards.

Secondary displays

2 softkeys
with context-sensitive functions.

Red LED
signals failure (On) or maintenance
request/function check (flashing)
corresponding to NE 44.

Green LED
Voltage supply okay

Control panel
3 function keys
(menu, meas, enter)
and 4 arrow keys for menu selection
and data entries

5 self-sealing cable glands
M20 x 1.5
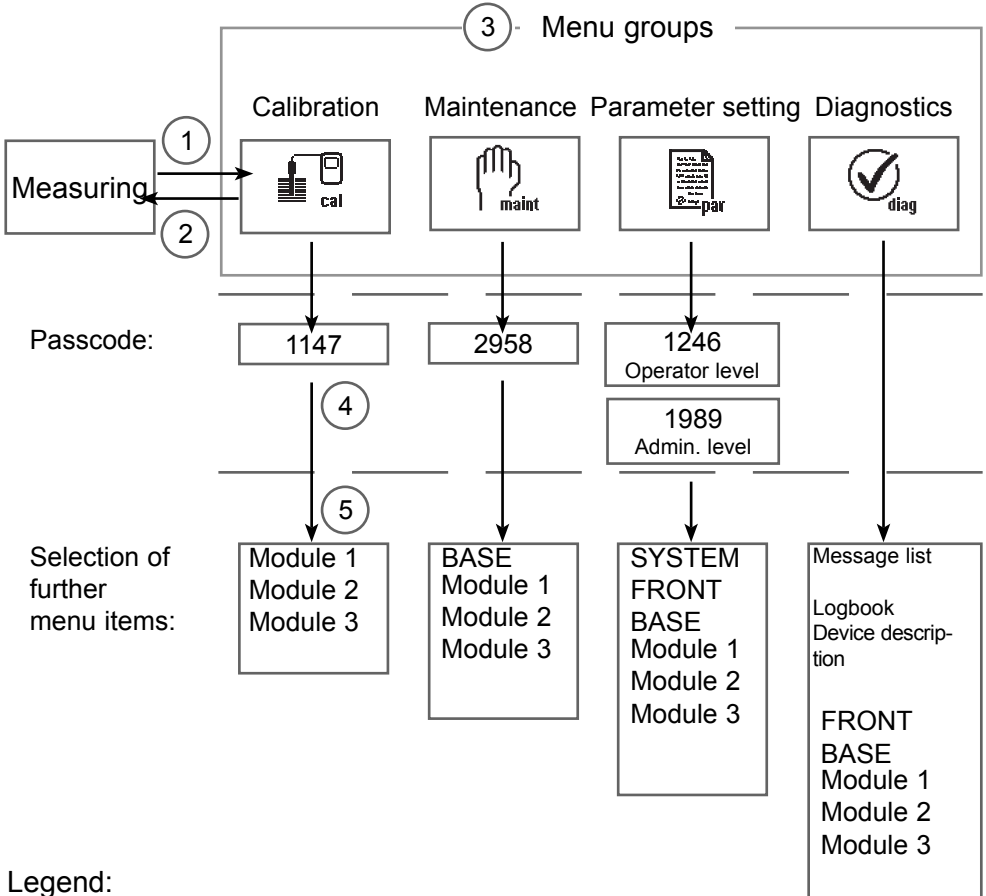*for entry of voltage supply and signal lines*

Short description: Menu structure

Basic functions: Calibration, maintenance, parameter setting, diagnostics

Legend:
(1) Pressing the **menu** key accesses menu selection
(2) Pressing the **meas** key returns to measurement
(3) Menu groups are selected using the arrow keys
(4) Press **enter** to confirm, enter passcode
(5) Further menu items are displayed
(6) Selected functions of the Diagnostics menu can be
    recalled via softkey even when in measuring mode

Short description: FRONT module

M 700
View into the open device (FRONT module)

Slot for SmartMedia card
• *Data recording*
  The SmartMedia card expands the
  measurement recorder capacity to
  > 50000 records.

• *Exchange of parameter sets*
 *5 parameter sets can be stored*
  on the SmartMedia card,

  2 of them can be loaded to the
  M 700(X) and switched
  by remote control.
  Parameter sets can be transmitted
  from one M 700(X) to the other
  (same hard- and software
  configuration required).

• *Function expansions*
  are possible with additional
  softwaremodules which are
  released using transaction numbers
  (TAN)

• *Software updates*
  (also at different devices)

Terminal plates
of "hidden" modules

Each module comes with an adhesive
label containing the contact assign-
ments. This label should be sticked to
the inner side of the front (as shown).
Then, the terminal assignments remain
visible even if further modules are
inserted.
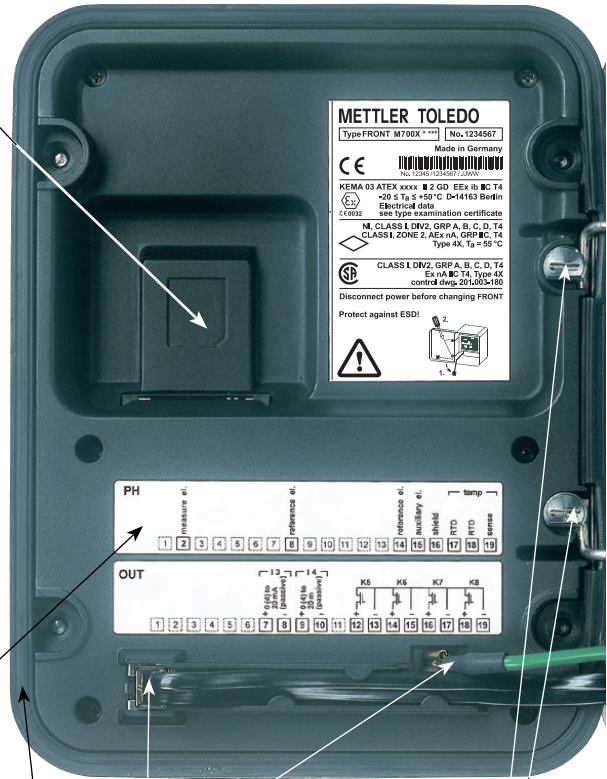
Replacing the front module
Pull off power cord and ground wire.
To separate the FRONT module from
the BASE module, turn the retaining
screws of the pivot hinge by 90°.

The circumferential sealing
guarantees IP 65 protection and allows spray
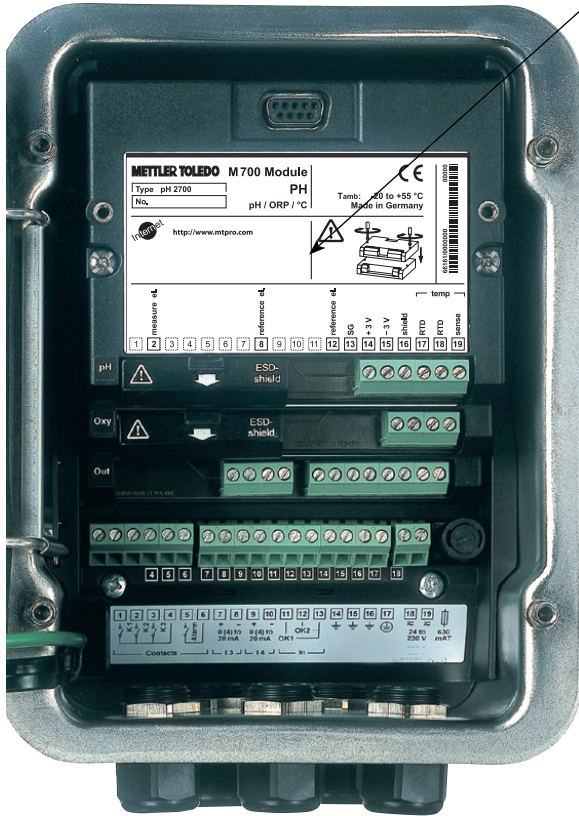*cleaning / disinfection.*
Caution! *Keep clean!*

Short description: BASE module

M 700
View into the open device (BASE module, 3 function modules installed)

Module equipment
Module identification: Plug & Play
Up to 3 modules can be combined
as desired.
Several input and communication modules
are available.

BASE module
2 current outputs (free assignment of
process variable) and 4 relay contacts,
2 digital inputs.
VariPower broad-range power supply,
20 ... 265 V AC/DC, suitable for all
public mains supplies in the world.

Important note concerning SmartMedia card
The SmartMedia card may be inserted or replaced with the power supply
switched on. When closing the device, make sure that the sealing is pro-
perly seated and clean.
Warning!
Do not touch the terminal compartment, there may be
dangerous contact voltages!

Inserting the SMARTMEDIA card

To release an additional function via TAN, see
Parameter setting / Administrator level / System control / Release of options
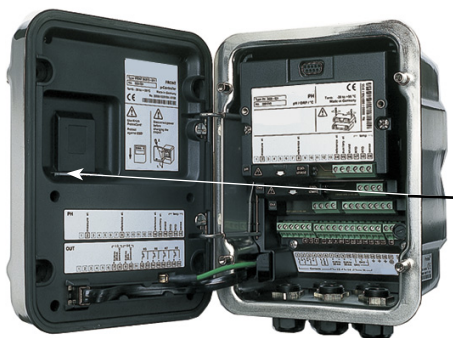
Inserting the SmartMedia card

Please note when inserting the SmartMedia card:
The SmartMedia card may be inserted or replaced with the power supply switched on. Protect against electrostatic discharge! When closing the device, make sure that the sealing is properly seated and clean.
Warning!
**Do not touch the terminal compartment, there may be dangerous contact voltages!**

Opening the M 700(X)
- Loosen the 4 front screws
- Open the FRONT module at its right side (pivot hinge inside at the left)
- The slit for inserting the SmartMedia card is located at the inner side of the FRONT module

To insert the SmartMedia card:
- Remove SmartMedia card without touching the contact surface from its package
- insert card in the slit at the inner side of the FRONT module
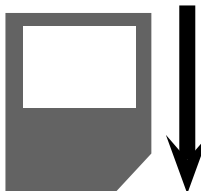
Inserting the SmartMedia card:

The label must be facing you.

Removing the SmartMedia card
- "Close memory card" (Maintenance menu) To avoid data loss, please call up the Maintenance menu.
  "Close memory card" to terminate software access to the SmartMedia card.
  Now the card can be taken out.

SMARTMEDIA card: Usage

Use as memory card in combination with additional functions.
Additional functions must be ordered separately (release via TAN).

Types of SmartMedia cards
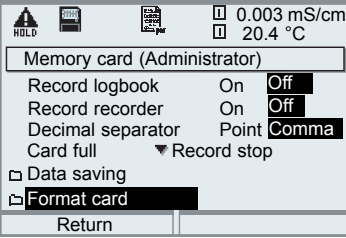The SmartMedia cards are delivered from the manufacturer as
• software update (SW 700-106)
• Memory card (additional functions SW 700-102 ... 1xx)

Using commercially available SmartMedia cards
Commercially available SmartMedia cards can be used as memory card
(Software updates are supplied by the manufacturer and are device-specific). The following types of cards are supported: 8 MB, 16 MB, 32 MB,
64 MB and 128 MB storage capacity. Externally produced files, such as
from a digital camera, are tolerated. Long file names can be read.
M 700(X) generates file names in the 8.3 format (8 characters file name,
3 characters program-specific file name extension).

### Formatting a commercial SmartMedia card
Some devices (e.g. digital cameras, scanners) cause a formatting of the
SmartMedia card which does not correspond to the SSFDC specification
or the SmartMedia Interface Library (SMIL). The manufacturer therefore recommends to format a commercial SmartMedia card as M 700(X)
memory card prior to first use.

Menu	Display	Formatting a SmartMedia card
	0.003 mS/cm 20.4 °C Memory card (Administrator) Record logbook On Off Record recorder On Off Decimal separator Point Comma Card full ▼ Record stop 🗀 Data saving 🗀 Format card Return	**Formatting** • Insert SmartMedia card • Open menu selection • Parameter setting, Administrator level • Enter passcode • System control: Memory card (The "Memory card" function is only available with the SmartMedia Card inserted!) • Format card

Insert module

Note: Be sure to connect the shielding properly!

Insert module
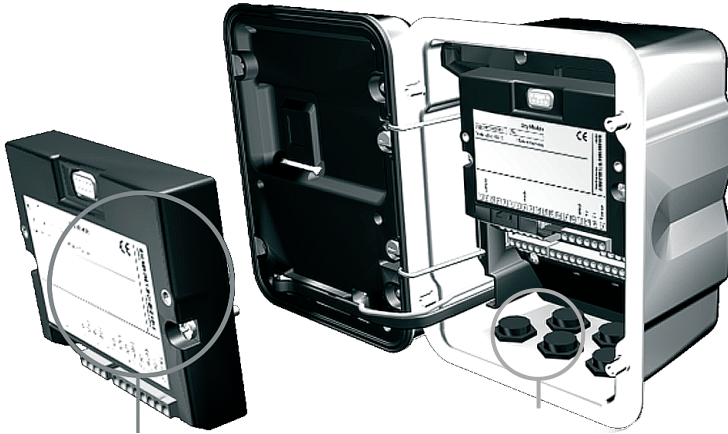
The terminals of some of the modules are covered by an ESD shield.
To connect the sensor cable, just pull it back.

Make sure that the cable glands are tightly closed to protect against humidity.

1. Switch off power supply
2. Open the device (loosen the 4 screws at the front)
3. Place module in slot (D-SUB connector)
4. Tighten fastening screws of the module
5. Open ESD shielding cap (if provided)
6. Connect sensor cable.
   To avoid interferences, the cable shielding must be completely covered by the ESD shielding cap.
7. Close ESD shielding cap (if provided)
8. Close device, tighten screws at the front
9. Switch on power supply
10. Set parameters (see module description)

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