

# Protos 3400(X)

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Safety information  
and short description

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**ENG**

## **Warranty**

Defects occurring within 3 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.

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Instruction manuals and parameter sets for copy are provided as download at:

**[www.knick.de](http://www.knick.de)**

# Safety information

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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

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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**

Protos is a flexible measuring system for continuous measurements in the field of liquid analysis. Thanks to its modular design, the Protos 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 Protos version with hygienic, polished stainless steel enclosure allows application in the field of biotechnology, food processing, and in the pharmaceutical industry.

The Protos 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 .

# Module FRONT, Module BASE 3400-0&

Extract from general technical specifications

>>> see "Certificates" for IECEx, ATEX, FM & CSA

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 <18 VA/<10 W
Overvoltage category	II
Protection class	I
Pollution degree	2 (EN 61010-1)
Wire cross-section	2.5 mm <sup>2</sup>
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 61326-1 EN 61326-2-3
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 48 ... 62 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 <sup>2</sup> (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

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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<sup>2</sup> (AWG 14).

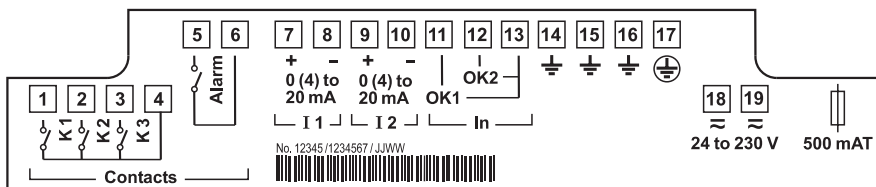
# Connection of power supply

**Warning! Beware of dangerous contact voltages!**

## BASE module 3400-029, terminal plate

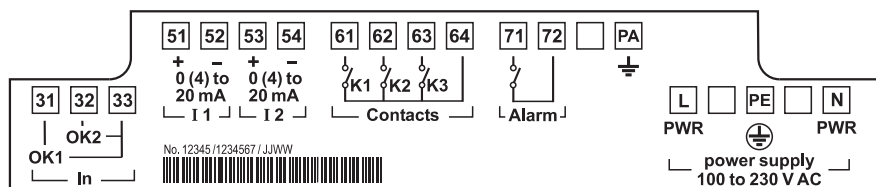
### Connection of power supply

With the VariPower broad-range power supply unit, the Protos 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 3400X-025/VPW

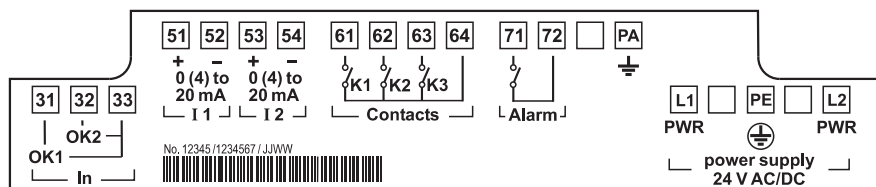
100 (-15 %) ... 230 (+10 %) V AC (EEx em IIC)



## BASE module 3400X-026/24V

24 V AC (-15 %, + 10 %)

24 V DC (-15 %, +20 %)



# Short description: FRONT module

Protos 3400

Modular hardware and software system for liquid analysis.

## 4 captive screws

for opening the Protos

**(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 recommended 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

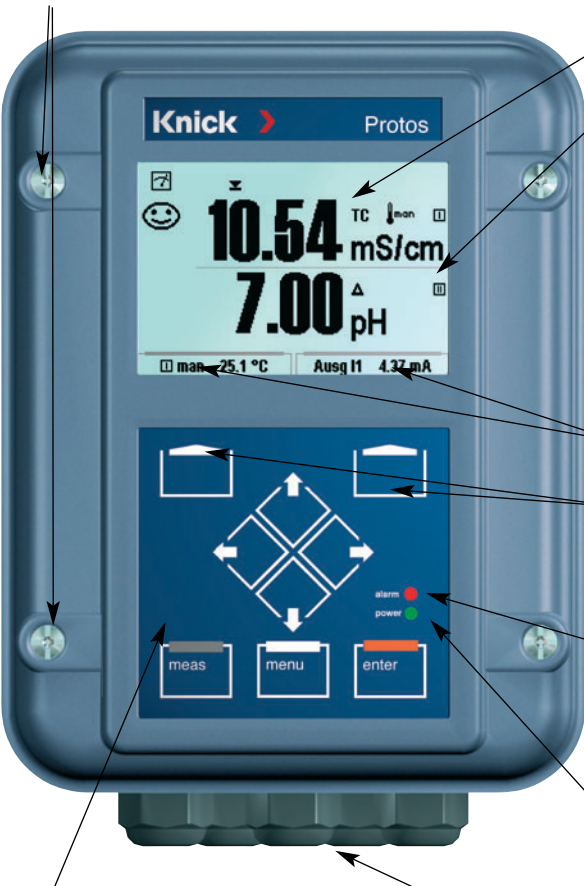
with context-sensitive functions.

## 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

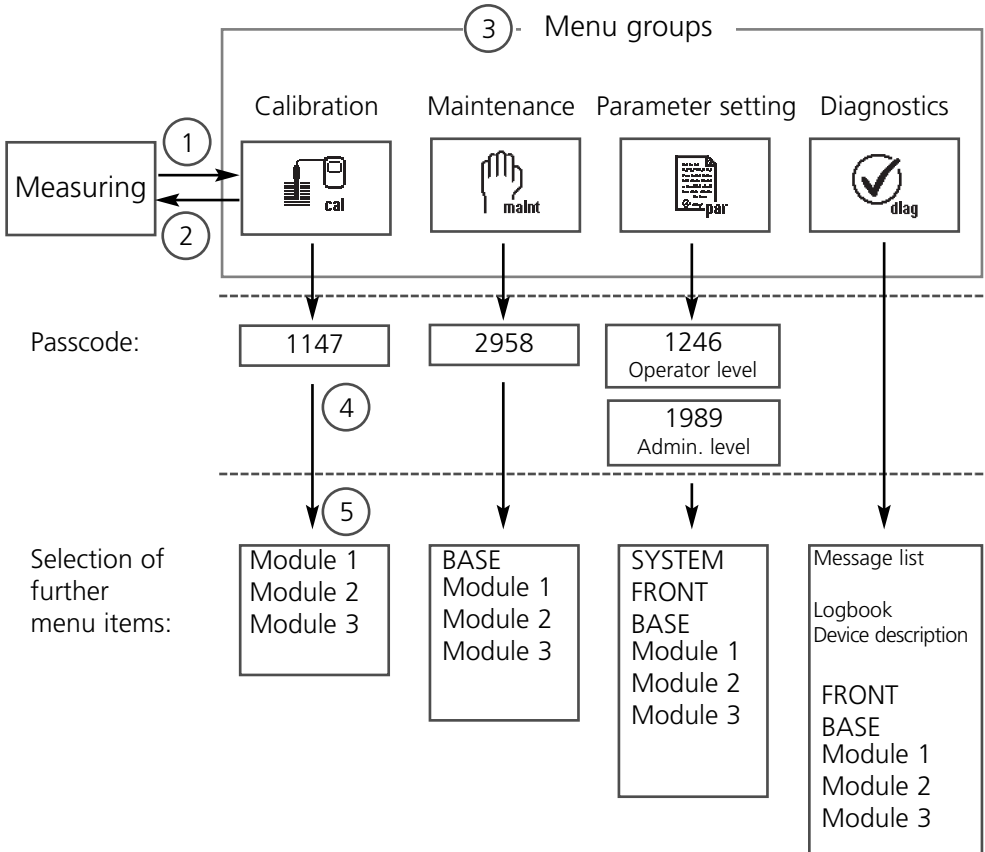
M20 x 1.5

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

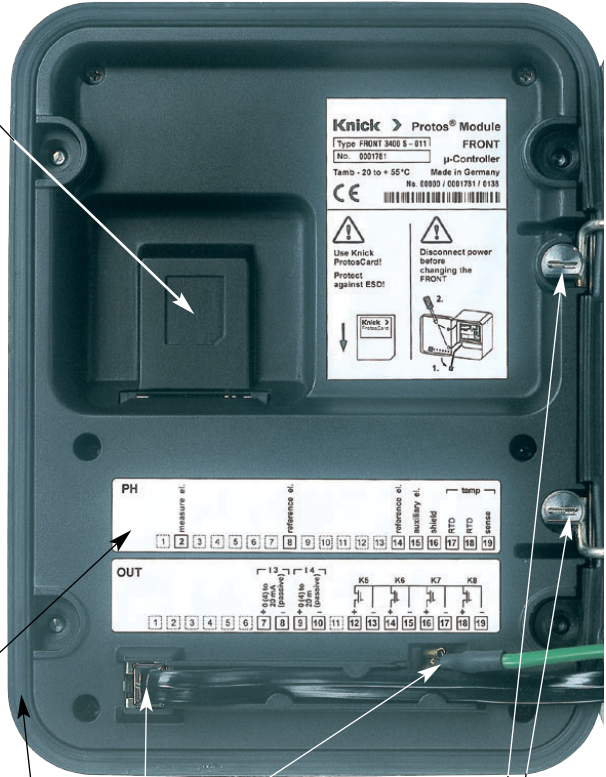
# Short description: FRONT module

Protos 3400

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 Protos and switched by remote control. Parameter sets can be transmitted from one Protos to the other (same hard- and software configuration required).
- **Function expansions**  
are possible with additional software modules 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 assignments. This label should be stuck 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!



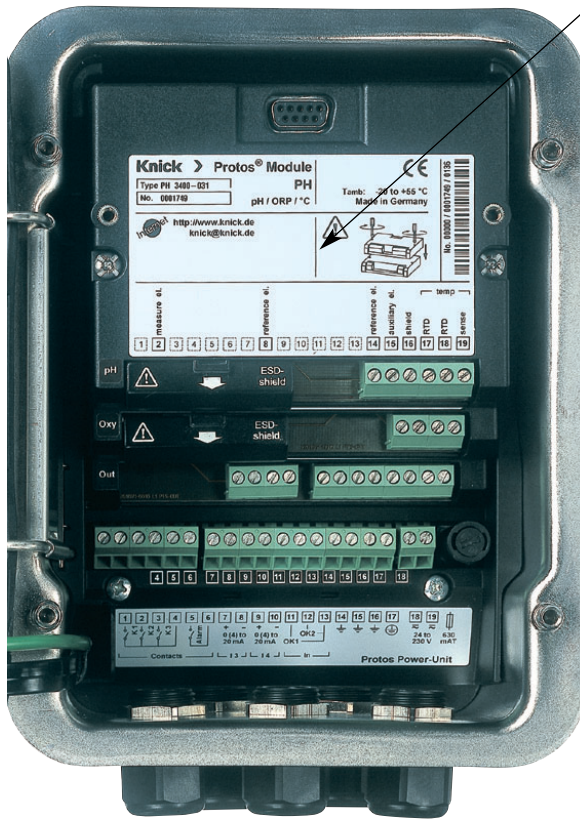
ENG-10

Protos 3400(X)

# Short description: BASE module

Protos 3400

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 properly 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

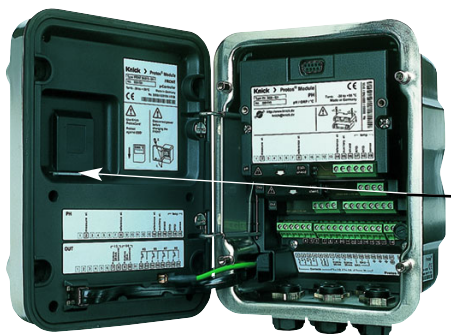
## Inserting the SmartMedia card

### 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 Protos

- 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


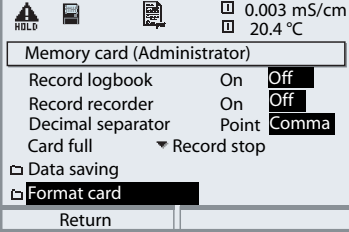
- software update (SW 3400-106)
- Memory card (additional functions SW 3400-101 ... 1xx)

## 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. PROTOS 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 Protos memory card prior to first use.

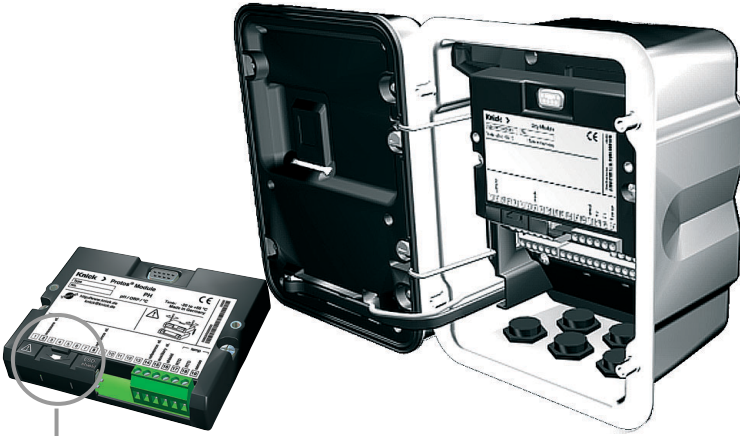
Menu	Display	Formatting a SmartMedia card
		<h3>Formatting</h3> <ul style="list-style-type: none"><li>• Insert SmartMedia card</li><li>• Open menu selection</li><li>• Parameter setting, Administrator level</li><li>• Enter passcode</li><li>• System control: Memory card (The "Memory card" function is only available with the SmartMedia Card inserted!)</li><li>• Format card</li></ul>

# Insert module

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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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**Knick**  
**Elektronische Messgeräte GmbH & Co. KG**

Beuckestraße 22  
14136 Berlin

Phone: +49 (0)30 - 801 91 - 0

Fax: +49 (0)30 - 801 91 - 200

Internet: <http://www.knick.de>

[knick@knick.de](mailto:knick@knick.de)



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