Protos II 4400 (X)

**The new modular premium transmitter for all requirements.
Versatile. Expandable. Ensuring process safety.**

Stainless steel design
for hygienic applications

3-year
warranty!

The new Protos II 4400 (X) premium transmitter is a flexible, 4-wire device for the following process variables: pH, ORP, conductivity and oxygen.

For monitoring and controlling processes even in the most complex applications — also in hazardous areas.

Retrofits Possible, Future-Proof.

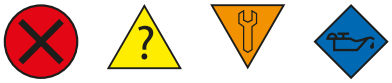
Protos II 4400 (X) features a unique modular design and freely accessible wiring with a clear layout. The option for easy retrofitting and upgrading ensure planning security today and in the future. Different Ethernet and Fieldbus modules enable digital communication and seamless integration into automation systems.

Wide Sensor Selection

Protos II 4400 (X) is the only process analysis system that can be flexibly combined with Memosens and other digital or analog sensors — in multi-channel mode as well. With Memosens technology, up to 4 measuring channels can be implemented in parallel.

Status Messages acc. to NE 107

All status messages for maintenance requests, failure, out of specification, and function check (HOLD) are output as specified in NE 107.



Protos II 4400 (X)
Benchmark for the Most Complex Measuring Tasks.

MEMOSENS

Reliable and Safe Thanks to Memosens Technology

Digital sensors with inductive signal transmission — contactless sensor couplings ensure the reliable analysis of liquid in all environments. Sensors that are pre-calibrated in the laboratory deliver maximum availability and reduced maintenance efforts at the point of measurement. Even for non-specialist employees, sensors can be replaced on site in just a matter of seconds.

- Perfect galvanic isolation
- Fully resistant to moisture, dirt, corrosion, and interference potentials
- Easy to use, even under harsh conditions
- Up to 100 m cable length

Facts and Features

- Stainless steel design with hygienically optimized surface. Ideal for pharmaceutical or food production
- Stainless steel design with corrosion-proof powder coating for harsh industrial areas
- Universal broad-range power supply 24 ... 230 V AC/DC
- Rugged; can also be used outdoors with IP 65 protection and UV resistance
- Panel, wall or post/pipe mounting
- High-contrast graphic LC display
- USB memory card concept for data recording, firmware updates, and Audit Trail
- Freely combinable measuring, control, and communication modules

Powder-coated design for corrosive areas

pH

ORP

Cond

Oxy

Conveniently simple operation: Users are guided through all menus and receive error messages and troubleshooting information on a clearly arranged display. Text can be displayed in a wide range of languages.

High-Resolution Graphic Display

White backlighting ensures optimal legibility even under poor light conditions. The self-explanatory plain text user interface in accordance with NAMUR ensures easy, intuitive handling and a clearly arranged display of sensor data — in multi-channel mode as well.

Expandable Multi-Lingualism

The menu texts are easy to switch among German, English, French, Portuguese, Italian, Spanish, and Asian languages.

Sensor Flexibility

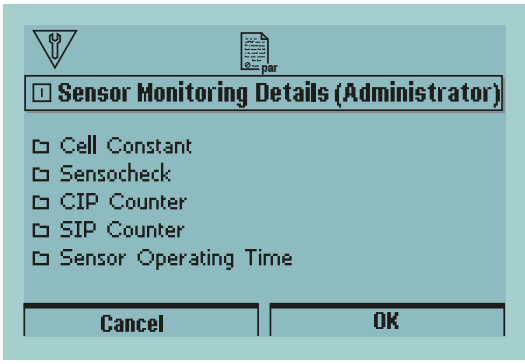
Protos II 4400 (X) can operate Memosens, digital and analog sensors. For the following process variables:

- pH, ORP
- Contacting and inductive conductivity
- Amperometric and optical oxygen

Flexibly combined with one another.

Facts and Features

- 4-wire system with active current outputs (standard in basic unit)
- Application in Zone 1 / Cl 1 Div 2 hazardous locations
- High-resolution graphic display
- Parameter set changeover for greater process control flexibility
- KI recorder for signaling faulty processes
- Softkeys for flexible, intuitive operation
- Flexible combination of sensors and process variables



Protos II 4400 (X)
User-Friendly Functionality.

Comprehensive Variety.

Modular concept: Protos II offers space for a total of three different, freely combinable measuring and communication modules. Later retrofits and modifications are no problem.

Plug & Play

The modules are simply plugged into slots in any sequence and are automatically detected. This enables easy retrofitting and conversion — always adapted to the special requirements of the measuring point.
A wide range of different measuring, controlling and communication modules with various functions are available.

Measuring Modules

Multi

Multiparameter measuring module for Memosens sensors, 1-, 2-, or 4-channel as required. For all parameters; expandable for new sensors.

pH Measurement

Modules for operation with analog or digital sensors as required: for simultaneous measurement of pH value, ORP and temperature. Available in designs for glass, ISFET, and double high-resistance differential sensors (pNa).

Conductivity Measurement

Modules for conductivity measurement with 2-/4-electrode or toroidal sensors; designs for analog and digital sensors. Simultaneous measurement of electrical conductivity, resistivity, concentration, salinity and temperature.

Oxygen Measurement

Modules for measuring oxygen using the amperometric and optical measurement principles. Design for analog and digital sensors. Simultaneous measurement of oxygen partial pressure, saturation and concentration. For standard applications and trace measurements in both aqueous media and gases.

Communication Modules

Ethernet and Fieldbus modules for digital communication and seamless integration into automation systems.

Output Modules

For expanding the outputs available as standard by adding passive 4–20 mA outputs and relay outputs.

PID Controller Modules

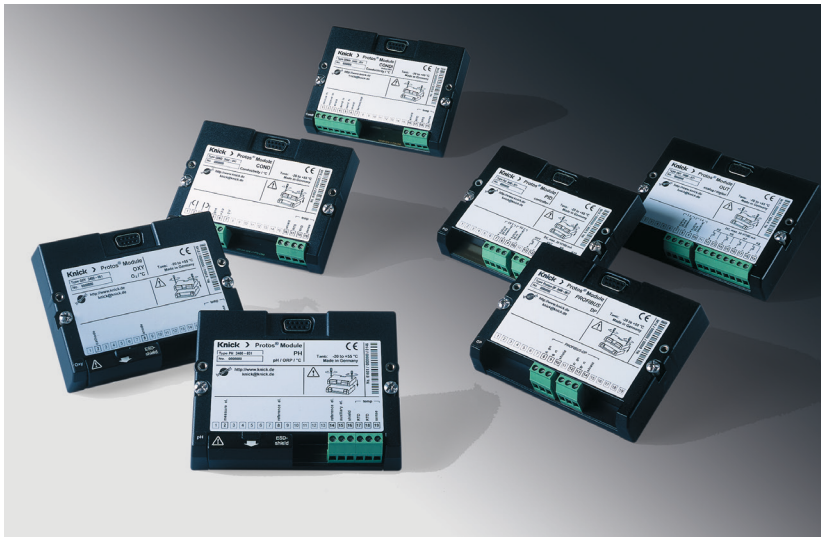
For actuating control valves, straightway valves or metering pumps. With 2 free limit contacts for 3-point control of secondary control processes, for example.

EtherNet/IP

PROFINET

PROFIBUS PROCESS FIELD BUS

Fieldbus Foundation



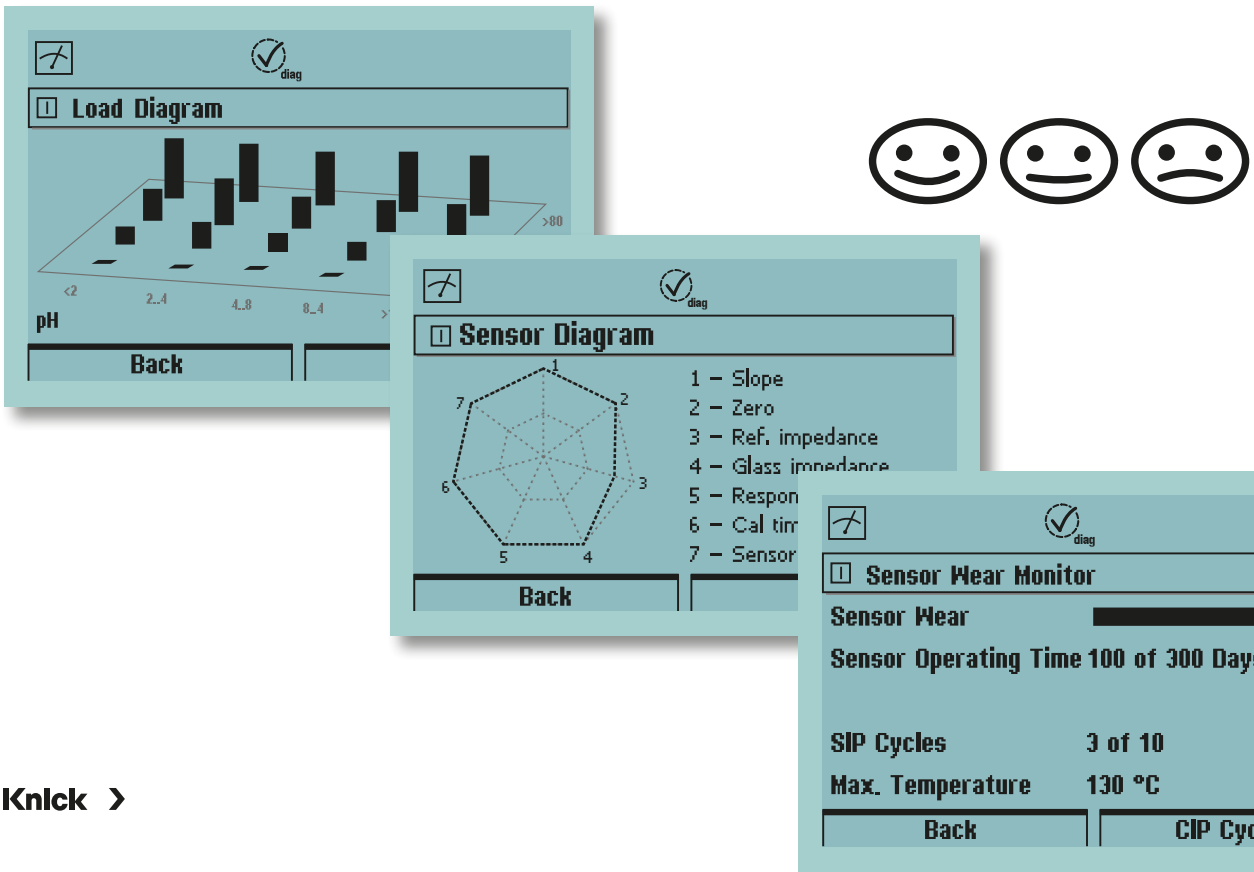
The smart diagnostic functions that Protos II provides for analyzing sensor life cycles mean a significant increase in sensor service life and availability.

Sensor Diagram

Graphical presentation of the current sensor parameters for pH, ORP, and oxygen on the display in a clearly arranged radar chart — for pH measurement with slope, zero point, reference impedance, glass impedance, response time, calibration timer and sensor wear.

Smart Diagnostics Management for Optimal Process Control

- CIP, SIP and autoclave counters and information from the sensor load matrix optimize the maintenance cycle.
- Sensor wear monitor
- Display of the sensor's remaining service life
- Adaptive calibration timer
- Guided calibration procedures
- Sensoface as a sensor state display, can be configured to alarm message



Protos II 4400 (X)
Digital Intelligence.

Reliable Writing and Reading with USB Memory Cards

Data Card

For recording measured values, reading out and further processing recorded measurement data on a computer and saving the configuration data of the device.

Firmware Update Card

Easy on-site update of device firmware in the case of function expansion.

Firmware Repair Card

Easy on-site update of device firmware for troubleshooting in warranty cases.

Audit Trail Card

For seamless data recording in accordance with FDA 21 CFR Part 11. With the electronic signature function, all changes on the device are recorded and saved on the card.

USB

Sensor Control and Sensor Assignment

As soon as a sensor is connected, the sensor data is checked against the configuration data. This includes the sensor type and the information saved in the sensor, such as the TAG ID and group designation.

Different user levels enable areas of competency to be assigned reliably; passcodes ensure access control.

ProgaLog 4000 Software

The computer software tool for offline configuration of Knick transmitters.

Device settings can easily and conveniently be configured in advance — also for multi-channel transmitter systems. Thanks to a clearly arranged display and convenient processing in a variety of languages, Protos II can be configured for the measuring task.

The configuration data can be saved on the data card and only has to be copied to the transmitter on site.

CHEMISTRY

- Control of various chemical processes
- Use in explosive and aggressive environments
- Industrial wastewater

For Example:
Production of Azo Dyes

During the uninterrupted dye synthesis process that is part of azo dye production, all of the key reaction steps depend on precise pH measurement. Even in this highly hydrochloric, corrosive environment, Protos transmitters, Unical probe controllers and wear-resistant Ceramat retractable fittings ensure reliable, automatic pH measurement and long sensor service life. And a significant reduction in maintenance costs as well.

FOOD & BEVERAGE

- Monitoring and control of the entire production process
- Monitoring CIP systems / increasing the concentration of alkaline or acidic solutions
- Monitoring water treatment

For Example:
Monitoring Sugar Production

In sugar production, continuous pH measurement in 2nd carbonatation is a major challenge — with high proportions of solids, temperatures of over 90 °C/194 °F, and extreme buildup from lime, non-sugar particles and sticky syrup. In conjunction with Unical controllers and Ceramat or SensoGate retractable fittings, Protos has set new global standards in the industry, ensuring fully automated measuring point operation during the entire sugar campaign.

Protos II 4400 (X)
For All Applications.

PHARMACEUTICALS / BIOTECHNOLOGY

- Seamless process monitoring in production and upstream and downstream areas
- Process control of pH values and oxygen content in the fermentation operation
- Monitoring CIP systems / increasing the concentration of alkaline or acidic solutions
- Ultrapure water monitoring (WFI) acc. to USP

For Example:
Insulin Production

In the complex insulin production process, the pH value, temperature and oxygen content must be measured simultaneously to precisely control the fermentation process. In the S Sepharose and high performance liquid chromatography (HPLC) phases, the pH value and conductivity must be simultaneously measured. Due to their high reliability and unique flexibility, Protos multi-parameter transmitters are used in this process on a daily basis.

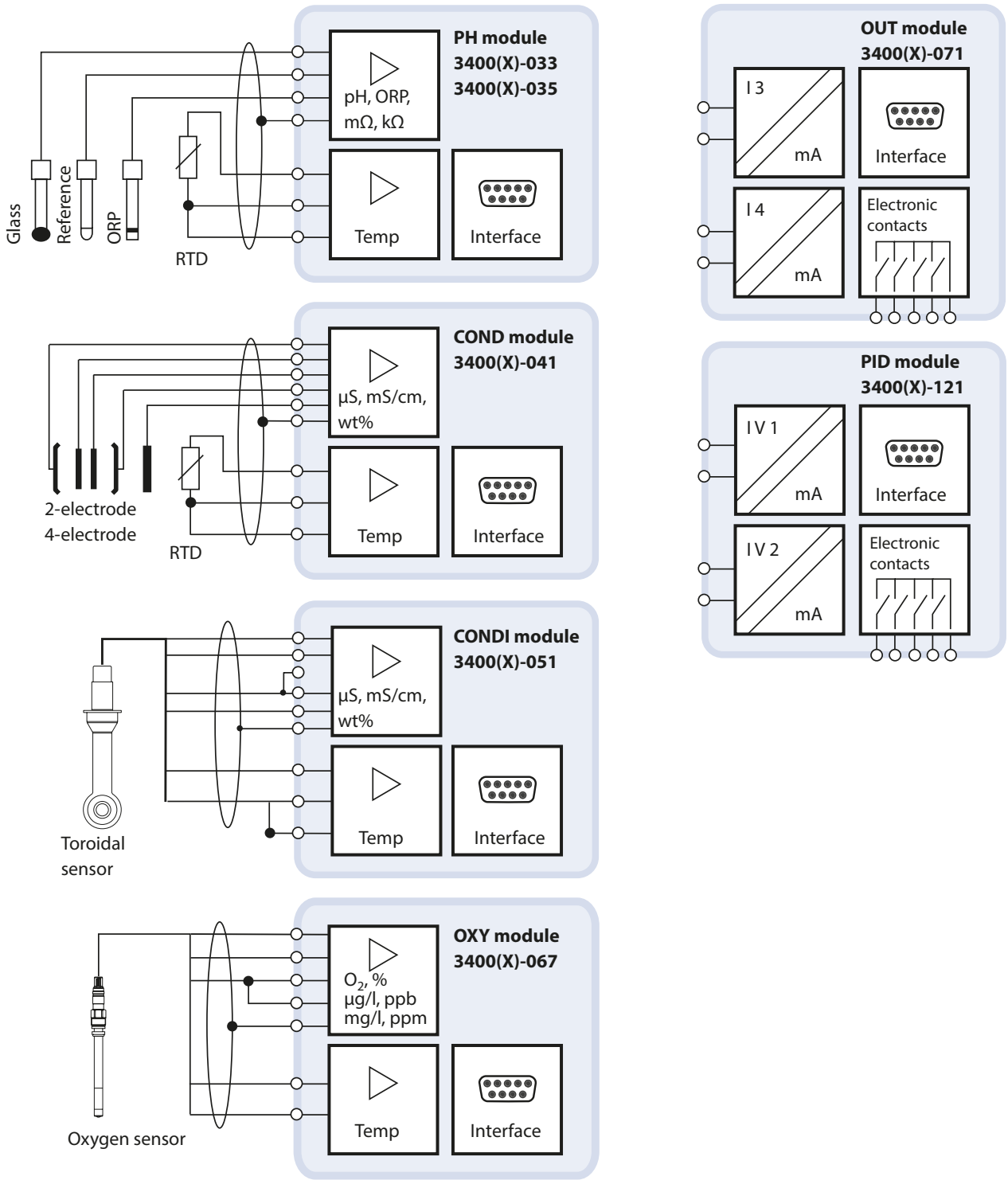
POWER PLANTS

- Reliable water/steam monitoring
- Precise detection of oxygen traces
- Control of alkali feed to minimize corrosion

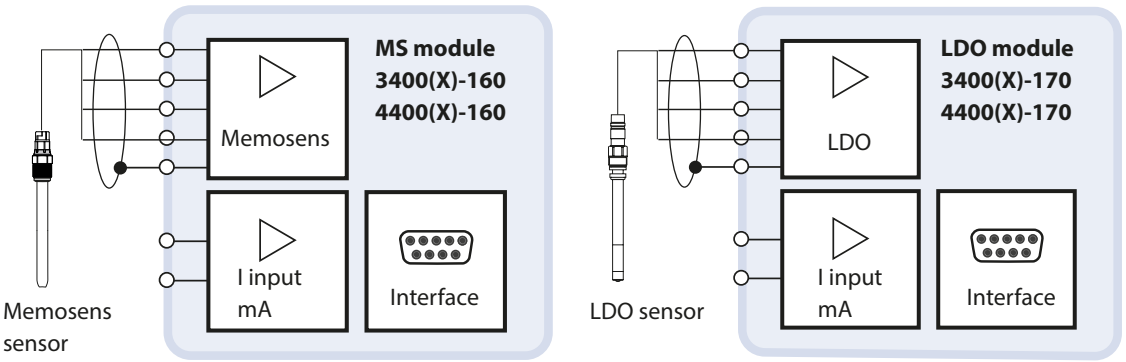
For Example:
Flue Gas Purification

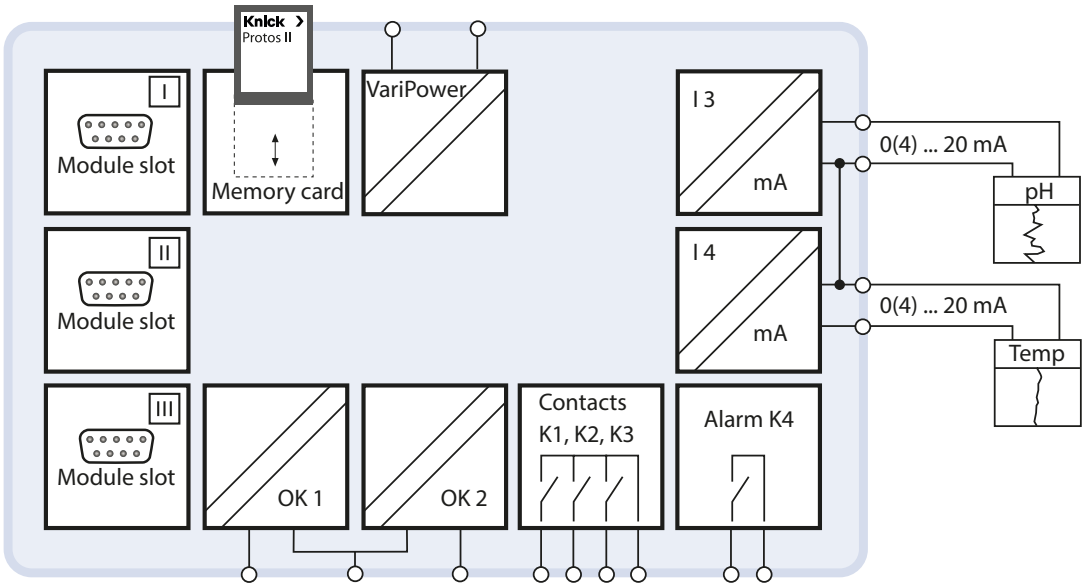
The extreme conditions in a gas scrubber require high-maintenance measuring points, especially for flue gas desulfurization. Alongside incrusting deposits, abrasive sludge is a special challenge for pH measurement in this process. The Protos measuring system also measures under extremely harsh conditions. For the care and extension of its service life, the sensor is automatically extended into the process medium for a short time only, and is then cleaned.

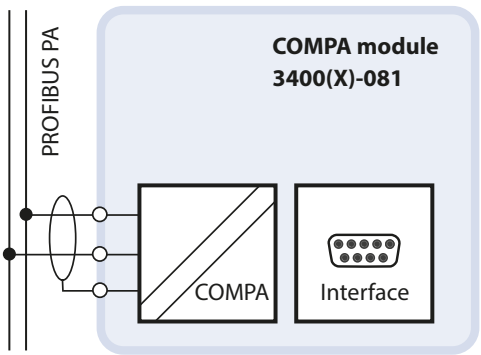
System Overview

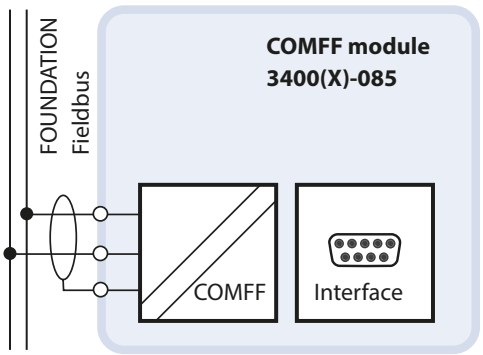


System Overview









Product Range

Protos II 4400	**Order No.**
Protos II 4400 S (basic unit, polished stainless steel), broad-range power supply	4400 S
Protos II 4400 C (basic unit, coated steel), broad-range power supply	4400 C

Measuring Modules	**Order No.**
PH 3400-033 measuring module (double high-resistance)	PH 3400-033
PH 3400-035 measuring module	PH 3400-035
COND 3400-041 measuring module	COND 3400-041
CONDI 3400-051 measuring module	CONDI 3400-051
OXY 3400-067 measuring module	OXY 3400-067
LDO 4400-170 measuring module	LDO 4400-170
MS 4400-160 digital measuring and communication module for Memosens sensors (oxygen measurement activatable via TAN)	MS 4400-160

Communication Modules	**Order No.**
OUT 3400-071 output module	OUT 3400-071
PID 3400-121 controller module	PID 3400-121
COMPA 3400-081 PROFIBUS PA module	COMPA 3400-081
COMFF 3400-085 FOUNDATION Fieldbus module	COMFF 3400-085

Protos II 4400(X)

Product Range

Protos II 4400 X	Order No.
Protos II 4400X S (basic unit, polished stainless steel, broad-range power supply)	4400 XS / VPW
Protos II 4400X S (basic unit, polished stainless steel, 24 V AC/DC)	4400 XS / 24 V
Protos II 4400X C (basic unit, coated steel, broad-range power supply)	4400 XC / VPW
Protos II 4400X C (basic unit, coated steel, 24 V AC/DC)	4400 XC / 24 V

Measuring Modules	Order No.
PH 3400X-033 measuring module (double high-resistance)	PH 3400X-033
PH 3400X-035 measuring module	PH 3400X-035
COND 3400X-041 measuring module	COND 3400X-041
CONDI 3400X-051 measuring module	CONDI 3400X-051
OXY 3400X-067 measuring module	OXY 3400X-067
MS 4400X-160 digital measuring and communication module for Memosens sensors (oxygen measurement activatable via TAN)	MS 4400X-160

Communication Modules	Order No.
OUT 3400X-071 output module	OUT 3400X-071
PID 3400X-121 controller module	PID 3400X-121
COMPA 3400X-081 PROFIBUS PA module	COMPA 3400X-081
COMFF 3400X-085 FOUNDATION Fieldbus module	COMFF 3400X-085

Accessories for Protos 4400 (X)

Mounting Kits		**Order No.**
Pipe-mount kit		ZU 0544
Panel-mount kit		ZU 0545
Protective hood		ZU 0548

Connector Plugs and Cables		**Order No.**
VP8 connector		ZU 0721
M12 socket, 8-pin		ZU 0860
VP8-ST cable (both ends with VP socket)	Length 3 m	ZU 0710
	Length 5 m	ZU 0711
	Length 10 m	ZU 0712
M12 extension cord, 8 pins	Length 10 m	CA/M12-010M12-8

Device-Specific Add-On Functions for Expanding the Transmitter Functionality via TAN	**Order No.**
5 parameter sets	FW4400-102
Measurement recorder	FW4400-103
Logbook	FW4400-104
Firmware update	FW4400-106
Buffer table for pH measurement	FW4400-002
Current characteristic curve	FW4400-006
Ultrapure water: Temperature compensation for conductivity	FW4400-008
Concentration determination for use with conductivity sensors	FW4400-009
Oxygen measurement incl. trace measurement for MS 4400(X)-160	FW4400-015
Inspection Certificate 3.1 (for Protos II 4400 (X) and measuring and communication modules)	ZU0268/Analysis

Protos II 4400 (X)

Accessories for Protos 4400 (X)

Memory Cards for Protos II 4400

ZU 1080– P – N – ☐

Card version	Data Card	D
	Audit Trail Card	A
	Firmware Update Card	U
	Firmware Repair Card	R

Memory cards for Protos II 4400

ZU 1080– P – N – ☐ – ☐☐☐

Card version	Custom Firmware Update Card (in conjunction with FW4400-106)	S	
	Custom Firmware Repair Card	V	
Firmware versions	Device firmware		B * *
	MS 4400-160		C * *
	MS 3400-160		D * *
	COMPA 3400-081		E * *
	COMFF 3400-085		F * *
	LDO 4400-170		G * *
	LDO 3400-170		H * *

Memory Cards for Protos II 4400 X

ZU 1080– P – X – ☐

Card version	Data Card	D
	Audit Trail Card	A
	Firmware Update Card	U
	Firmware Repair Card	R

Memory Cards for Protos II 4400 X

ZU 1080– P – X – ☐ – ☐☐☐

Card version	Custom Firmware Update Card (in conjunction with FW4400-106)	S	
	Custom Firmware Repair Card	V	
Firmware versions	Device firmware		B * *
	MS 4400X-160		C * *
	MS 3400X-160		D * *
	COMPA 3400X-081		E * *
	COMFF 3400X-085		F * *

Protos II 4400 Specifications

Display[1)]	Graphic LC display, white backlighting		
	Resolution	240 x 160 pixels	
	Language	German, English, French, Italian, Spanish, Portuguese	
Keypad	NAMUR keypad, single keys, no double assignment [meas] [menu] [cursor keys] [enter] [softkey 1] [softkey 2] NAMUR LED red and green		
Logbook (FW4400-104)	Recording function call-ups, NAMUR messages upon occurrence and disappearance with date and time		
	Storage capacity	At least 20,000 entries Depends on memory size of memory card	
Measurement recorder (FW4400-103)	4-channel measurement recorder with marking of events (failure, maintenance request, function check, limit values) for a measured value		
	Recording medium	Memory card	
	Recording capacity	At least 20,000 entries Depends on memory size of memory card	
	Recording	Process variables and range freely adjustable	
	Type of recording	Current value, min/max value, average	
Device self-test	Test of RAM, FLASH, EEPROM, display and keypad		
Clock	Real-time clock with date Power reserve	Approx. 1 day	
Data retention in case of power failure	Parameters and factory settings Logbook, statistics, records Measurement recorder or memory card (optional)		> 10 years (EEPROM) > 10 years (Flash)
Module slots	3		
Power supply (terminals 18/19) (BASE module 4400-029)	24 (– 15 %) ... 230 (+ 10 %) V AC/DC; approx. 18 VA/10 W AC: 48 ... 62 Hz		
	Overvoltage category	II	
	Protection class	I	
	Terminals, inside	Single and stranded wires Ferrules	Up to 2.5 mm² 0.25 ... 2.5 mm²
	Tightening torque	Min. 0.5 Nm / max. 0.6 Nm	
	Terminal, outside	Equipotential bonding "PA"	
	Single and stranded wires	> 4 mm²	
Protection against electric shock (terminal 17)	Protective connection acc. to EN 61010-1		

Protos II 4400 (X)

Protos II 4400 Specifications

Input OK 1[2] (terminals 11/13)	Galvanically separated (optocoupler) Vi ≤ 30 V, floating, galvanic isolation up to 60 V		
	Function	Switches the device to HOLD mode (function check)	
	Switching voltage	0 ... 2 V AC/DC inactive (can be inverted)	10 ... 30 V AC/DC active Control current 5 mA
Input OK 2[2] (terminals 12/13)	Galvanically separated (optocoupler) Vi ≤ 30 V, floating, galvanic isolation up to 60 V		
	Function	Switching to second parameter set	
	Switching voltage	0 ... 2 V AC/DC inactive (can be inverted)	10 ... 30 V AC/DC active Control current 5 mA
Current output I1[2] (terminals 7/8)	0/4... 20 mA (22 mA), max. 10 V Galvanic isolation up to 60 V (galvanically connected with output I2)		
	Load monitoring	Error message if load is exceeded	
	Overrange	22 mA in the case of a message	
	Measurement error[3]	< 0.2 % of current value + 0.02 mA	
	Current source	0.00 ... 22.00 mA	
Current output I2[2] (terminals 9/10)	0/4 ... 20 mA (22 mA), max. 10 V Galvanic isolation up to 60 V (galvanically connected with output I1)		
	Load monitoring	Error message if load is exceeded	
	Overrange	22 mA in the case of a message	
	Measurement error[3]	< 0.2 % of current value + 0.02 mA	
	Current source	0.00 ... 22.00 mA	
Relay contacts[2] (terminals 1/2/3/4/5/6)	4 relay contacts K1 ... K4, floating Galvanic isolation up to 60 V		
	K1, K2, K3 are interconnected on one side		
	Load capability	AC: < 30 V / < 3 A, < 90 VA DC: < 30 V / < 3 A, < 90 W	
	Usage	K1 - K3, user-definable as NAMUR maintenance request/HOLD, limit values, parameter set B active, rinse contact, USP output, Sensoface, controller alarm K4 dedicated assignment as alarm contact (NAMUR failure)	

Protos II 4400 Specifications

RoHS conformity	According to EU directive 2011/65/EU		
EMC	EN 61326-1, EN 61326-2-3, NAMUR NE 21		
	Emitted interference	Industrial applications[4] (EN 55011 Group 1 Class A)	
	Interference immunity	Industrial applications	
Lightning protection	to EN 61000-4-5, Installation class 2		
Rated operating conditions	Ambient temperature	-20 ... 55 °C / -4 ... 131 °F	
	Relative humidity	10 ... 95 %	
	Climatic class	3K5 according to EN 60721-3-3	
	Pollution degree	2	
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F		
Housing	Protos II 4400 C:	Steel, coated	
	Protos II 4400 S:	Stainless steel, polished, 1.4305	
	Assembly	Wall mounting Pipe mounting Panel mounting	Sealed against panel
	Dimensions	See dimension drawing	
	Degree of protection	IP 65	
	Cable glands	5x M20 x 1.5 (A/F 24)	
	Clamping ranges	Standard sealing insert: Reduction sealing insert: Multiple sealing insert:	6 ... 13 mm 4 ... 8 mm 5 ... 6.5 mm
	Tightening torque	Connecting thread: 2.3 Nm	Cap nut: 1.5 Nm
	Weight	Approx. 3.2 kg / 7.05 pounds	Plus approx. 160 g / 0.35 pounds per module

1) ***NOTICE!*** Never expose the display to strong direct sunlight.
When the ambient temperature is below 0 °C / 32 °F, the LC display may have limited readability.
This will not adversely affect the device functions.

2) User-definable

3) At rated operating conditions

4) This equipment is not designed for domestic use, and is unable to guarantee adequate protection of the radio reception in such environments.

Protos II 4400 (X)

Protos II 4400 X Specifications

Display[1)]	Graphic LC display, white backlighting		
	Resolution	240 x 160 pixels	
	Language	German, English, French, Italian, Spanish, Portuguese	
Keypad	NAMUR keypad, single keys, no double assignment [meas] [menu] [cursor keys] [enter] [softkey 1] [softkey 2] NAMUR LED red and green		
Logbook (FW4400-104)	Recording function call-ups, NAMUR messages upon occurrence and disappearance with date and time		
	Storage capacity	At least 20,000 entries Depends on memory size of memory card	
Measurement recorder (FW4400-103)	4-channel measurement recorder with marking of events (failure, maintenance request, function check, limit values) for a measured value		
	Recording medium	Memory card	
	Recording capacity	At least 20,000 entries Depends on memory size of memory card	
	Recording	Process variables and range freely adjustable	
	Type of recording	Current value, min/max value, average	
Device self-test	Test of RAM, FLASH, EEPROM, display and keypad		
Clock	Real-time clock with date Power reserve	Approx. 1 day	
Data retention in case of power failure	Parameters and factory settings		> 10 years (EEPROM)
	Logbook, statistics, records		> 10 years (Flash)
	Measurement recorder or memory card (optional)		
Module slots	3		
Explosion protection	See Ex Certificates and EU Declaration of Conformity or www.knick.de		
Power supply (terminals N/L/PE) (BASE module 4400X-025/VPW)	100 (– 15 %) ... 230 (+ 10 %) V AC < 15 VA, 48 ... 62 Hz		
Power supply (terminals L1/L2/PE) (BASE module 4400X-026/24 V)	AC: 24 V (– 15 %, + 10 %) < 15 VA, 48 ... 62 Hz DC: 24 V (– 15 %, + 20 %) < 8 W		
	Overvoltage category	II	
	Protection class	I	
	Terminals, inside	Single and stranded wires Ferrules Tightening torque	Up to 2.5 mm² 0.25 ... 2.5mm² min. 0.5 Nm / max. 0.6 Nm
	Terminal, outside	Equipotential bonding "PA" Single and stranded wires	 > 4 mm²

Protos II 4400 X Specifications

Protection against electric shock (terminal PE)	Protective connection acc. to EN 61010-1	
Input OK 1[2] (terminals 30/31)	Galvanically separated (optocoupler) Ui ≤ 30 V, floating	Galvanic isolation up to 60 V
	Function	Switches the device to HOLD mode (function check)
	Switching voltage	0 ... 2 V AC/DC inactive 10 ... 30 V AC/DC active (can be inverted) Control current 5 mA
Input OK 2[2] (terminals 30/33)	Galvanically separated (optocoupler) Ui ≤ 30 V, floating	Galvanic isolation up to 60 V
	Function	Switching to second parameter set
	Switching voltage	0 ... 2 V AC/DC inactive 10 ... 30 V AC/DC active (can be inverted) Control current 5 mA
Current output I1[2] (terminals 51/52)	0/4... 20 mA (22 mA), max. 10 V Galvanic isolation up to 60 V (galvanically connected with output I2)	
	Load monitoring	Error message if load is exceeded
	Overrange	22 mA in the case of a message
	Measurement error[3]	< 0.2% of current value + 0.02 mA
	Current source	0.00 ... 22.00 mA
Current output I2[2] (terminals 53/54)	0/4 ... 20 mA (22 mA), max. 10 V Galvanic isolation up to 60 V (galvanically connected with output I1)	
	Load monitoring	Error message if load is exceeded
	Overrange	22 mA in the case of a message
	Measurement error[3]	< 0.2% current value + 0.02 mA
	Current source	0.00 ... 22.00 mA
Relay contacts[2] (terminals 61/63/65/60/71/73)	4 relay contacts K1 ... K4, floating Galvanic isolation up to 60 V K1, K2, K3 are interconnected on one side	
	Load capability	DC: < 30 V / < 500 mA < 10 W
	Usage	K1 - K3, user-definable as NAMUR maintenance request/HOLD, limit values, parameter set B active, rinse contact, USP output, Sensoface
		K4 dedicated assignment as alarm contact (NAMUR failure)
RoHS conformity	According to EU directive 2011/65/EU	

Protos II 4400 (X)

Protos II 4400 X Specifications

EMC	EN 61326-1, EN 61326-2-3, NAMUR NE 21		
	Emitted interference	Industrial applications[4] (EN 55011 Group 1 Class A)	
	Interference immunity	Industrial applications	
	Lightning protection	according to EN 61000-4-5	Installation class 2
Rated operating conditions	Ambient temperature	-20 ... 50 °C / -4 ... 122 °F	
	Relative humidity	10 ... 95 %	
	Climatic class	3K5 according to EN 60721-3-3	
	Pollution degree	2	
Transport/Storage temperature	-20 ... 70 °C / -4 ... 158 °F		
Housing	Protos II 4400X C: Protos II 4400X S:	Steel, coated Stainless steel, polished, 1.4305	
	Assembly	Wall mounting Pipe mounting Panel mounting	 Sealed against panel
	Dimensions	See dimension drawing	
	Degree of protection	IP 65	
	Cable glands	5x M20 x 1.5 (A/F 24)	
	Clamping ranges	Standard sealing insert: Reduction sealing insert: Multiple sealing insert Ex:	7 ... 13 mm 4 ... 8 mm 5.85 ... 6.5 mm
	Tightening torque	Connecting thread: Cap nut:	2.3 Nm 1.5 Nm
	Weight	Approx. 3.9 kg / 8.6 pounds	Plus approx. 160 g / 0.35 pounds per module

1) ***NOTICE!*** Never expose the display to strong direct sunlight.
When the ambient temperature is below 0 °C / 32 °F, the LC display may have limited readability.
This will not adversely affect the device functions.

2) User-definable

3) At rated operating conditions

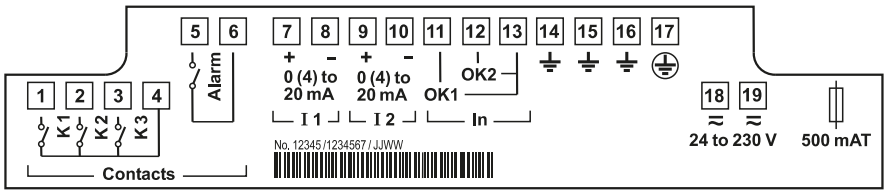
4) This equipment is not designed for domestic use, and is unable to guarantee adequate protection of the radio reception in such environments.

Memory Card Specifications

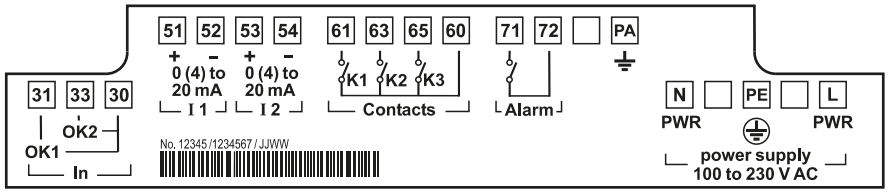
Memory card types 	Data Card (X) Audit Trail Card (X)	Records data Records data with security option	
	FW Update Card (X) FW Repair Card (X)	Firmware update for function expansion Firmware repair in case of malfunction	
	Custom FW Update Card Custom FW Repair Card	Customer-specific FW versions Customer-specific FW versions	
Memory size	32 MB		
	Logbook/Audit Trail Measurement recorder	For exclusive use: approx. 200,000 entries For exclusive use: approx. 400,000 entries	
Connections	Computer ports Connection to device	Micro USB Plug	USB cable, max. 2.90 m
Explosion protection	Operation on computer Operation in device	U_m = 250 V Intrinsically safe Ex ib	
Communication	USB 2.0	High speed	12 Mbits/s
	USB profile	Data Card Audit Trail Card	MSD (mass storage device)
		Update Card Repair Card	HID (human interface device)
Dimensions	L 32 mm x W 12 mm x H 30 mm		

Connection Assignment

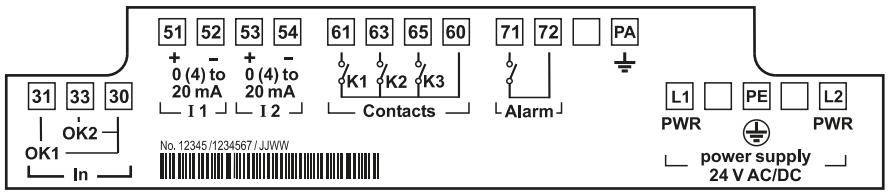
Protos II 4400 20 … 253 V AC



Protos II 4400 X VPW 100 … 253 V AC



Protos II 4400 X 24 V 24 V AC/DC



Mounting Examples

ZU 0544 Pipe-Mount Kit

For mounting on vertical or horizontal posts or pipes.

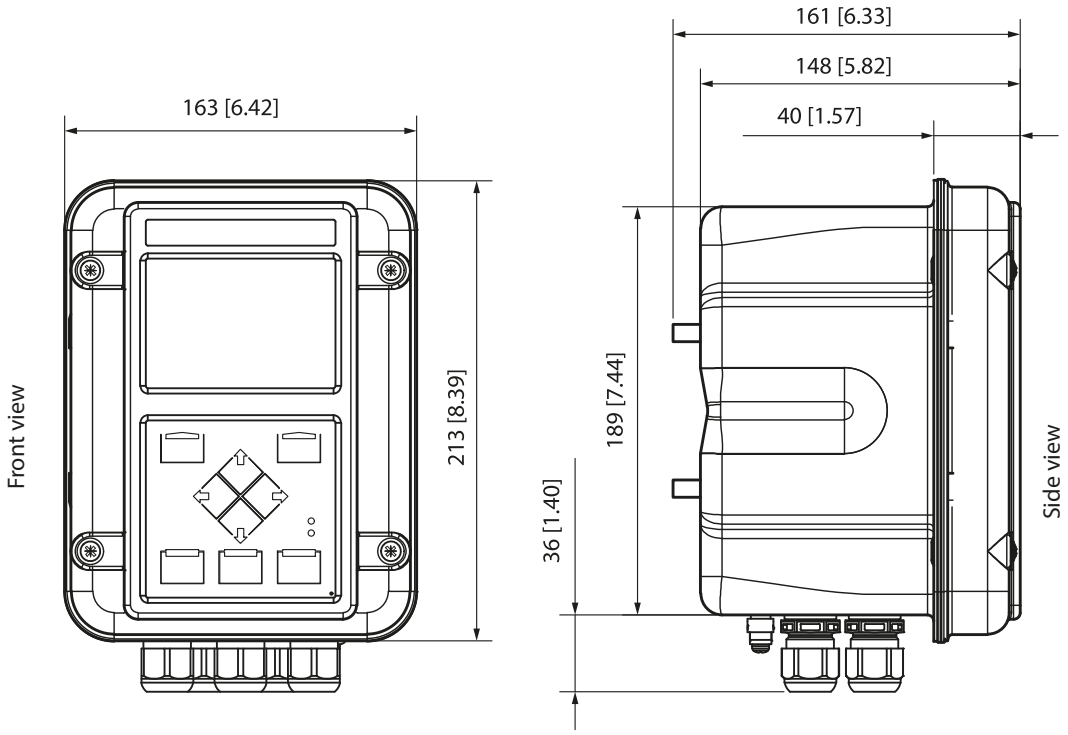
ZU 0548 Protective Hood

Additional protection from direct weather exposure and mechanical damage.

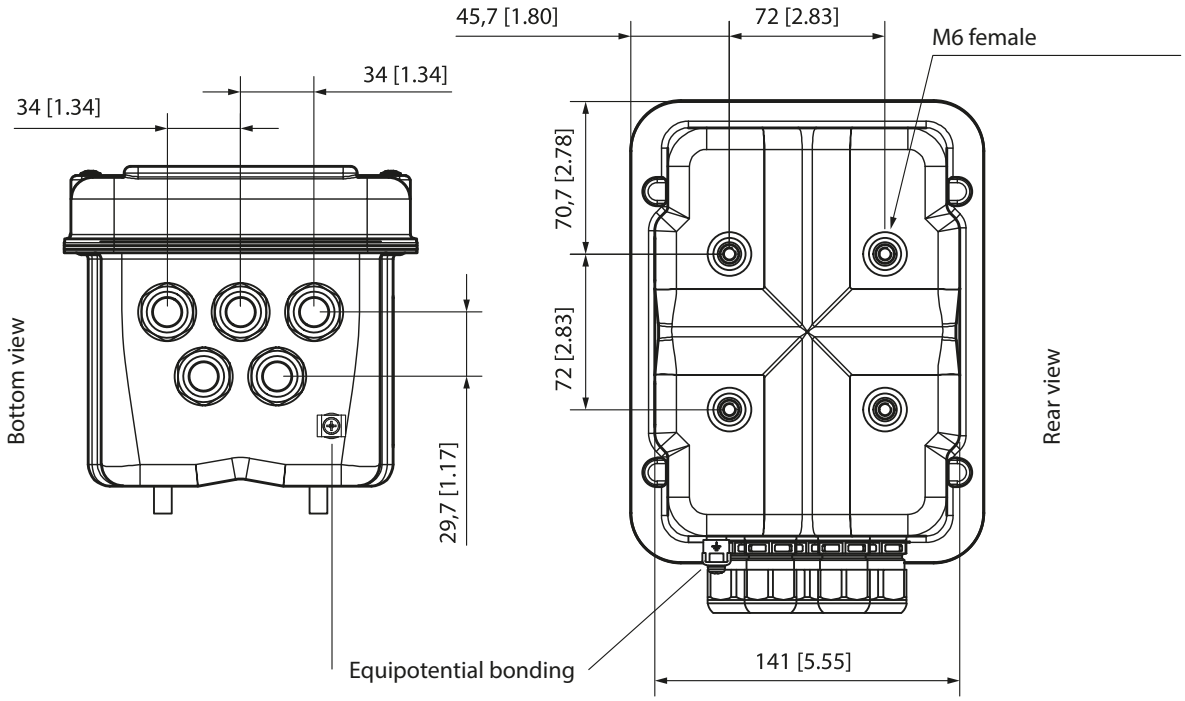
ZU 0545 Panel-Mount Kit

For mounting in panel cutout 144 x 194 mm

Dimension Drawings

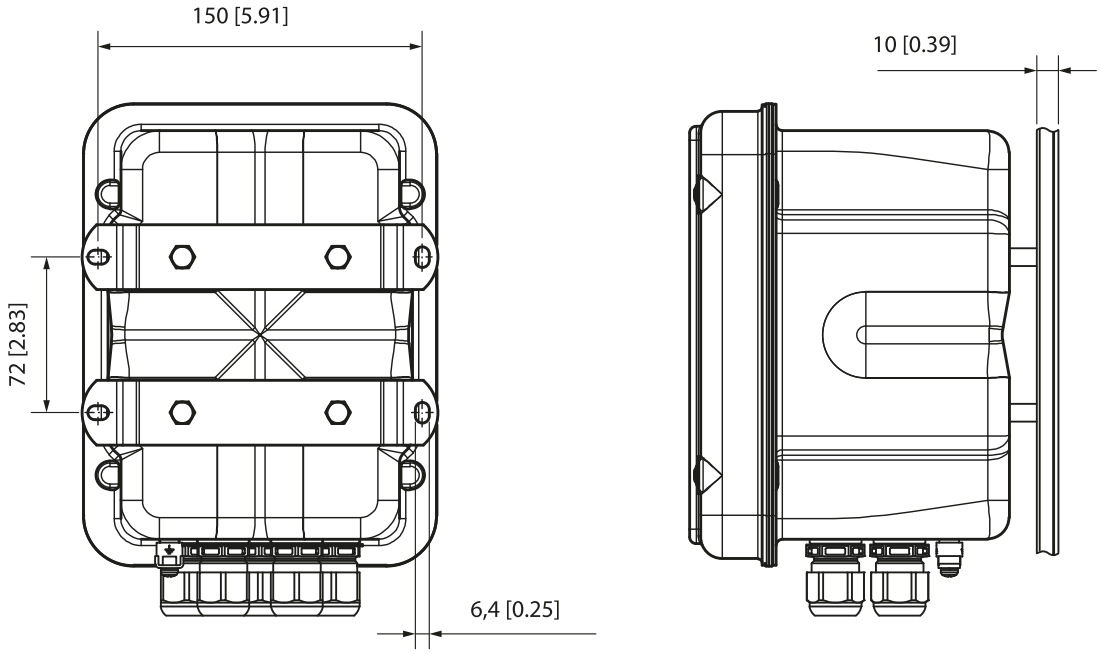


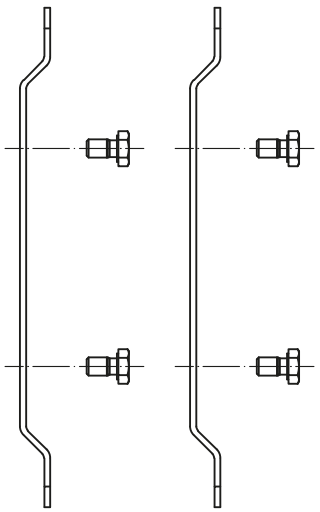
Cable glands M20 x 1.5 (A/F 24)



All dimensions in mm [inches]

Dimension Drawings — Wall Mounting

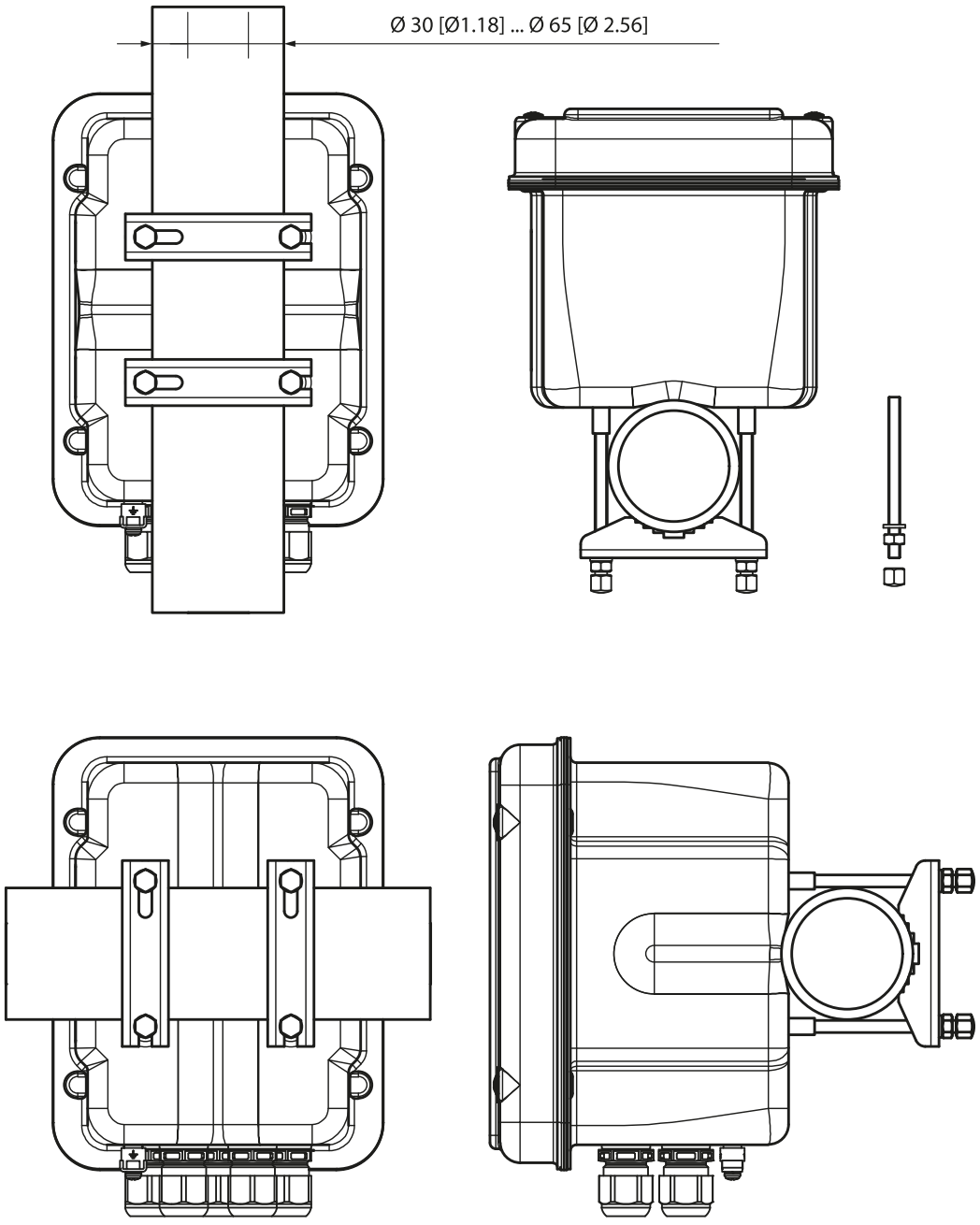




2 x wall mounting brackets (stainless steel A4)
4 x hex bolt M6x10
(A/F 10, stainless steel A4)
(included in the package)

All dimensions in mm [inches]

Dimension Drawings — Pipe Mounting

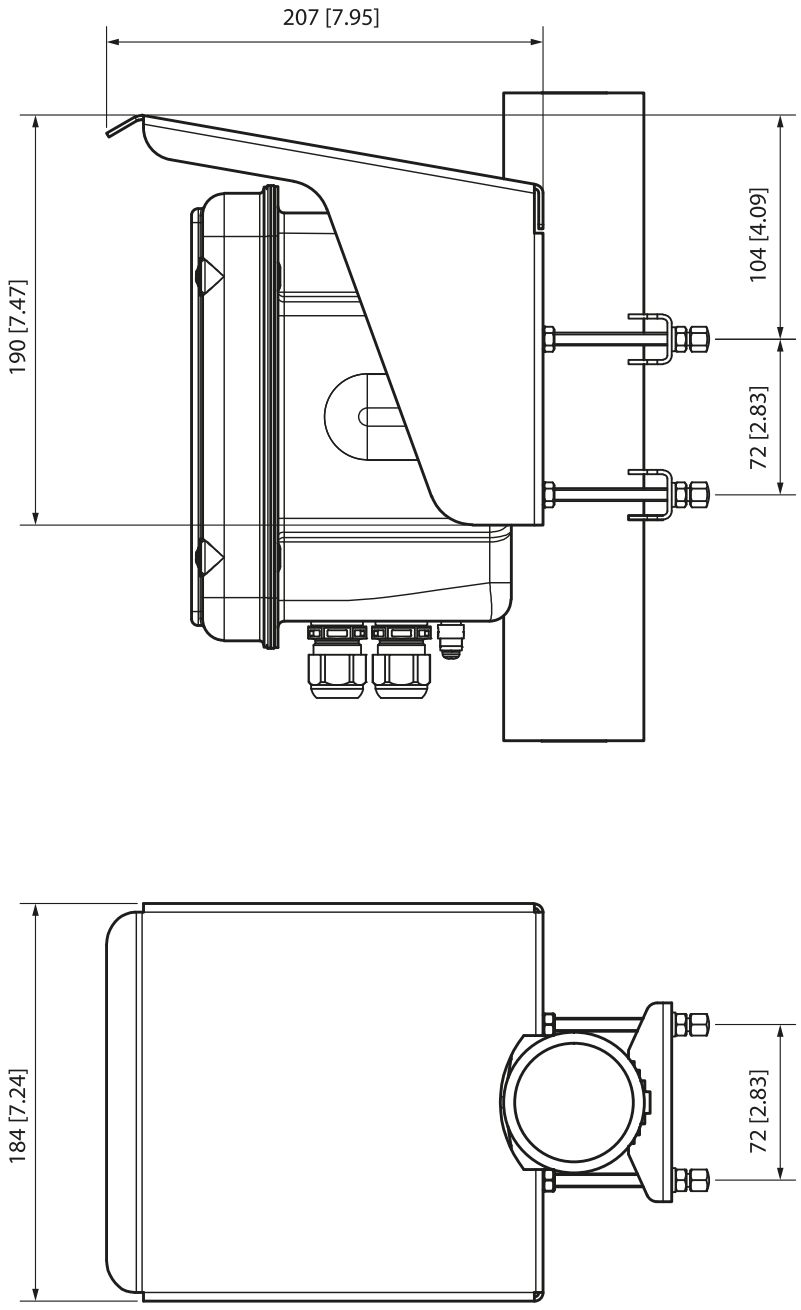


ZU 0544 Pipe-Mount Kit:
2 x pipe clamp (stainless steel A4)
4 x threaded bolt M6 (stainless steel A4)
4 x washer, nut, cap nut (stainless steel A4)

All dimensions in mm [inches]

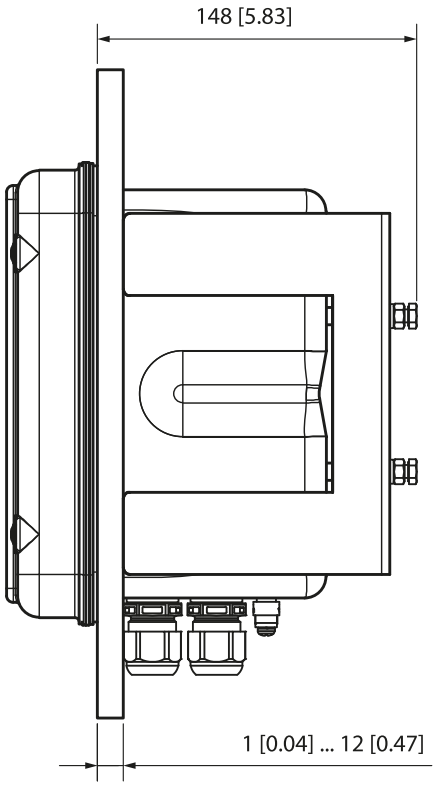
Dimension Drawings — ZU 0548 Protective Hood

1 x protective hood (stainless steel A2)
4 x nut M6 (stainless steel A4)

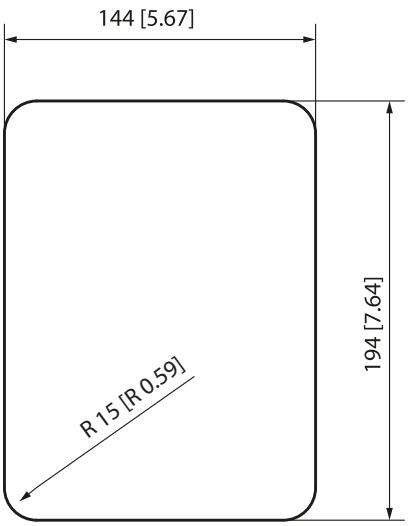


All dimensions in mm [inches]

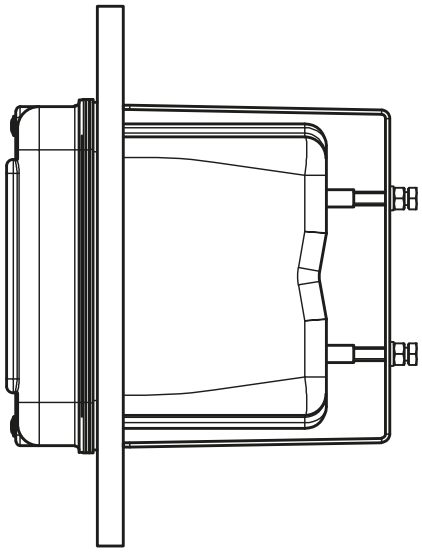
Dimension Drawings — ZU 0545 Panel-Mount Kit



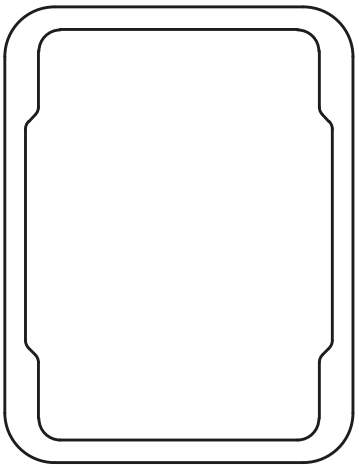
Panel mounting



Control panel cutout



Panel sealing



All dimensions in mm [inches]

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