

Transmitter O₂ 4220X

Technical Data

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O₂ 4220X

Inputs O ₂ 4220X: EEx ia IIC	1 input for METTLER TOLEDO O ₂ sensors 1 input for Pt 100 / Pt 1000 / NTC 22 kΩ,																																													
Measuring Range	<table border="0"> <tr> <td>saturation</td> <td>0,0 ... 600,0 % Air 0,0 ... 120,0 % O₂</td> </tr> <tr> <td>concentration</td> <td>0,0 µg/l ... 90,00 mg/l 0,0 ppb ... 90,0 ppm</td> </tr> <tr> <td>partial pressure</td> <td>0 ... 1200 mbar</td> </tr> <tr> <td>air pressure</td> <td>700 ... 1100 mbar</td> </tr> <tr> <td>temperature Pt</td> <td>-50,0 ... +250,0 °C</td> </tr> <tr> <td>temperature NTC</td> <td>-20,0 ... +130,0 °C</td> </tr> </table>	saturation	0,0 ... 600,0 % Air 0,0 ... 120,0 % O ₂	concentration	0,0 µg/l ... 90,00 mg/l 0,0 ppb ... 90,0 ppm	partial pressure	0 ... 1200 mbar	air pressure	700 ... 1100 mbar	temperature Pt	-50,0 ... +250,0 °C	temperature NTC	-20,0 ... +130,0 °C																																	
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Salinity Correction	0,0 ... 45,0 kg																																													
Display	<p>graphic LCD, 240 x 64 points</p> <table border="0"> <tr> <td>main display</td> <td>character height approx. 20 mm</td> </tr> <tr> <td>additional display</td> <td>character height approx. 6 mm</td> </tr> <tr> <td>parameter display</td> <td>7 lines, character height approx. 4 mm</td> </tr> </table>	main display	character height approx. 20 mm	additional display	character height approx. 6 mm	parameter display	7 lines, character height approx. 4 mm																																							
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2-Channel Measurement Recorder*) (Option 448)	<p>graphical representation of two measured values on the display, user defined for: % Air, % O₂, concentration, pO₂, °C, pressure, output 1, output 2, impedance,</p> <p>span and time feed user defined, recording selectable: snapshot; min, max, or average value, 500 measurements with time and date</p>																																													
Languages*)	German, English, French, Italian, Spanish with Option 477: Swedish instead of Spanish																																													
Measuring Input	<p>measuring current 0 ... 600 nA, resolution 10 pA polarization voltage -675 mV</p>																																													
Measurement Error	measuring current < 0,5 % of measured values ± 0,02 nA																																													
Calibration	<p>operating modes*)</p> <ul style="list-style-type: none"> • automatic calibration in air-saturated water • automatic calibration in air • manual entry of saturation • manual entry of sensor data 																																													

*) adjustable

O₂ 4220X

Temperature Input	Pt 100 / Pt 1000 / NTC 22 k Ω , temperature sensor (tolerance adjustment)
Measuring Range	Pt100 / Pt1000 -50 ... +250 °C NTC 22 k Ω -20 ... +130 °C
Measuring Error	Pt100 / Pt1000 < 0,2 % of measured value, \pm 0,3 K NTC (0 ... +100 °C) < 0,2 % of measured value, \pm 0,3 K NTC (-20 ... +130 °C) < 0,2 % of measured value, \pm 0,5 K
Temperature Compensation	non-linear, matching by METTLER TOLEDO O ₂ sensors Operating modes: <ul style="list-style-type: none">• automatic with NTC 22 kΩ• manual

Output 1* (Current Loop)	4 to 20 mA (22 mA), floating, power supply required user defined for % Air, % O ₂ , mg/l, μ g/l, pO ₂ , °C output current user defined: linear, trilinear or function
Beginning/End of Scale*)	anywhere within range
Spans*)	saturation 10,0 ... 600,0 %, 2,0 ... 120,0 % O ₂ concentration \geq 20,0 μ g/l, min. 10 % of end of scale partial pressure 20 ... 1200 mbar temperature 10,0 ... 300,0 °C
Output Current Error	< 0,3 % of measured value \pm 20 μ A
Current Source Mode	4,00 mA to 22,00 mA
Input Ratings	O ₂ 4220X (EEx ib IIC): 14 to 30 V; I _{max} = 100 mA; P _{max} = 0,8 W

Output 2 (passive)* (Option 487)	O(4) to 20 mA (22 mA), floating, power supply required user defined for : % Air, % O ₂ , mg/l, μ g/l, pO ₂ , °C output current user defined: linear, trilinear or function or as analog controller output (Option 353)
Beginning/End of scale*)	anywhere within range
Spans*)	saturation 10,0 ... 600,0 %, 2,0 ... 120,0 % O ₂ concentration \geq 20,0 μ g/l, min. 10 % of end of scale partial pressure 20 ... 1200 mbar temperature 10,0 ... 300,0 °C
Output Current Error	< 0,3 % of measured value \pm 20 μ A
Current Source Mode	0,00 mA to 22,00 mA
Input Ratings	O ₂ 4220X (EEx ib IIC): 1 to 30 V; I _{max} = 100 mA; P _{max} = 0,8 W
Defined as Switching Output Ratings	switching controller, limit value or alarm output O ₂ 4220X (EEx ib IIC): DC U _{max} = 30 V; I _{max} = 100 mA; P _{max} = 0,8 W, voltage drop: < 1 V

HART® Communication (Option 467)	digital communication via FSK ¹⁾ modulation of loop current (only output 1), point to point connection of multidrop (bus)*
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*) adjustable

1) frequency shift keying

O₂ 4220X

PI Controller (Option 483)	continuous controller via output 2 (Option 487) user-defined for % Air und % O ₂
Clock	real-time clock with date, self-contained date format user-defined
Records	for quality management documentation to ISO 9000
Logbook (Option 354)	recording of function activations, appearance and disappearance of warning and failure messages, with date and time storage capacity 200 entries available
Unit Self-Test	test of RAM, EPROM, EEPROM, display and keypad
Calibration Record	all relevant data of the last calibration for documentation to GMP
Data Retention in Case of Power Failure	parameters and calibration data > 10 years (EEPROM) logbook, statistics, cal record > 1 year (lithium battery) clock, reserve power > 1 Jahr (lithium battery) no battery replacement required (according NAMUR ³⁾ NE 32)
Explosion Protection	ATEX II 2 (1) G EEx ib [ia] IIC T6
RFI Suppression	to EN 50 081-1 and EN 50 081-2
Immunity to ESD	to EN 50 082-1 and EN 50 082-2 and in accordance with NAMUR ³⁾ -NE 21 EMC recommendation for process and laboratory control equipment
Environmental Temperature	operation ²⁾ -20 to +50 °C transport und storage -20 to +70 °C
Enclosure	case with separate terminal compartment, suitable for outdoor mounting material: acrylonitrile butadiene styrene (ABS), front: polyester IP 65 protection
Cable Glands	5 pcs M20 x 1.5
Dimensions	refer to dimension drawing
Weight	approx. 1,5 kg

*) user-defined

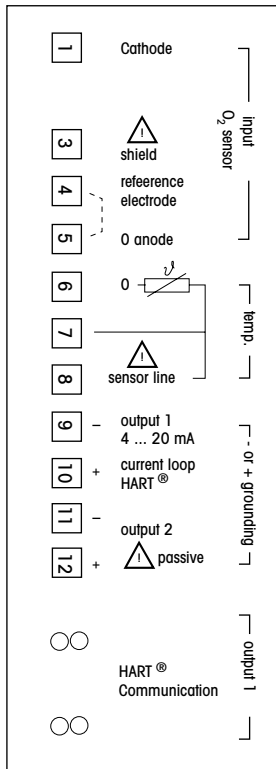
1) frequency shift keying

2) at ambient temperature below 0 °C the readability of the display may be reduced,
however the unit functions are not impaired

3) German committee for measurement and control standards in the chemical industry

Terminal Assignments

O₂ 4220X



Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB

EC-TYPE-EXAMINATION CERTIFICATE
(Translation)

(1) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - Directive 94/9/EC

(2) EC-type-examination Certificate Number:
PTB 03 ATEX 2190

(3) Equipment: O₂-Transmitter type 4220X Opt. ...

(4) Manufacturer: Mettler Toledo AG

(5) Address: 8535 Hohenkammer 15, CH-89602 Ulm/ab

(6) The equipment and any acceptable version thereof are specified in the schedule to this certificate and the documents therein referred to.

(7) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 03-20250.

(8) Compliance with the Essential Health and Safety Requirements has been proved by compliance with:
EN 60014:1987 + A1 + A2 **EN 60335-1:2004**

(9) If the sign "E" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(10) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(11) The marking of the equipment shall include the following:
II 2 (1) G Ex e II (a) IIC T8

Zertifizierungsstelle Explosionschutz
By order: *[Signature]*
Dr.-Ing. U. Johannsmeyer
Regierungsdirktor

Braunschweig, January 24, 2001

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EC-type-examination Certificate without signature and official stamp shall not be valid. The certificate may be issued only without alteration, addition or deletion and subject to approval by the Physikalisch-Technische Bundesanstalt in case of dispute, the German Federal Patent Office.

Physikalisch-Technische Bundesanstalt | Bundesallee 55 | 31131 Braunschweig

Certificates

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB

SCHEDULE

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2190**

(15) **Description of equipment**

The O₂-transmitter type 4220X Opt. ... is used preferably for detecting and processing residual-terminal quantities and is equipped with an input for the partial pressure measurement of oxygen and an input for the measurement of temperatures.

The application occurs within the hazardous area.

The maximum permissible ambient temperature is 50 °C.

Electrical data

Loop measuring circuit (PL 5, 7a) type of protection Intrinsic Safety IEx ia IIC only for connection to a certified intrinsically safe circuit
maximum values
U₀ = 30 V
I₀ = 100 mA
P₀ = 0,6 W
C₀ = 22 nF
L₀ negligibly low

Output circuit 2 (PL 11, 12) type of protection Intrinsic Safety EEx ia IIC only for connection to a certified intrinsically safe circuit
maximum values
U₀ = 30 V
I₀ = 180 mA
P₀ = 0,8 W
C₀ = 46 nF
L₀ negligibly low

O₂-measuring circuit (PL 1, 1.4, 5) type of protection Intrinsic Safety GEx ia IIC
maximum values
U₀ = 12 V
I₀ = 1,82 mA
P₀ = 2 mW
R = 3,3 kΩ
linear characteristic
C₀ = 620 nF
L₀ = 1 nH

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EC-type-examination Certificate without signature and official stamp shall not be valid. The certificate may be issued only without alteration, addition or deletion and subject to approval by the Physikalisch-Technische Bundesanstalt in case of dispute, the German Federal Patent Office.

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Braunschweig und Berlin

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SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2190

C₀ = 28 nF
L₀ negligibly low

Temperature measuring circuit (PL 6, 7, 8) type of protection Intrinsic Safety GEx ia IIC
maximum values
U₀ = 12 V
I₀ = 3 mA
P₀ = 4 mW
R = 1,6 kΩ
linear characteristic
C₀ = 475 nF
L₀ = 1,8 nH
C₀ = 30 nF
L₀ negligibly low

PA for connection to the equipotential bonding system

The loop measuring circuit is safely electrically isolated from the other intrinsically safe circuits up to a voltage of 80 V.

The output circuit 2 is safely electrically isolated from the O₂ and from the temperature measuring circuit up to a voltage of 80 V.

The O₂-measuring circuit and the temperature measuring circuit are electrically interconnected.

(16) Test report PTB Ex 03-20250

(17) Special conditions for safe use
none

(18) Essential health and safety requirements met by the standards mentioned above

Zertifizierungsstelle Explosionschutz
By order: *[Signature]*
Dr.-Ing. U. Johannsmeyer
Regierungsdirktor

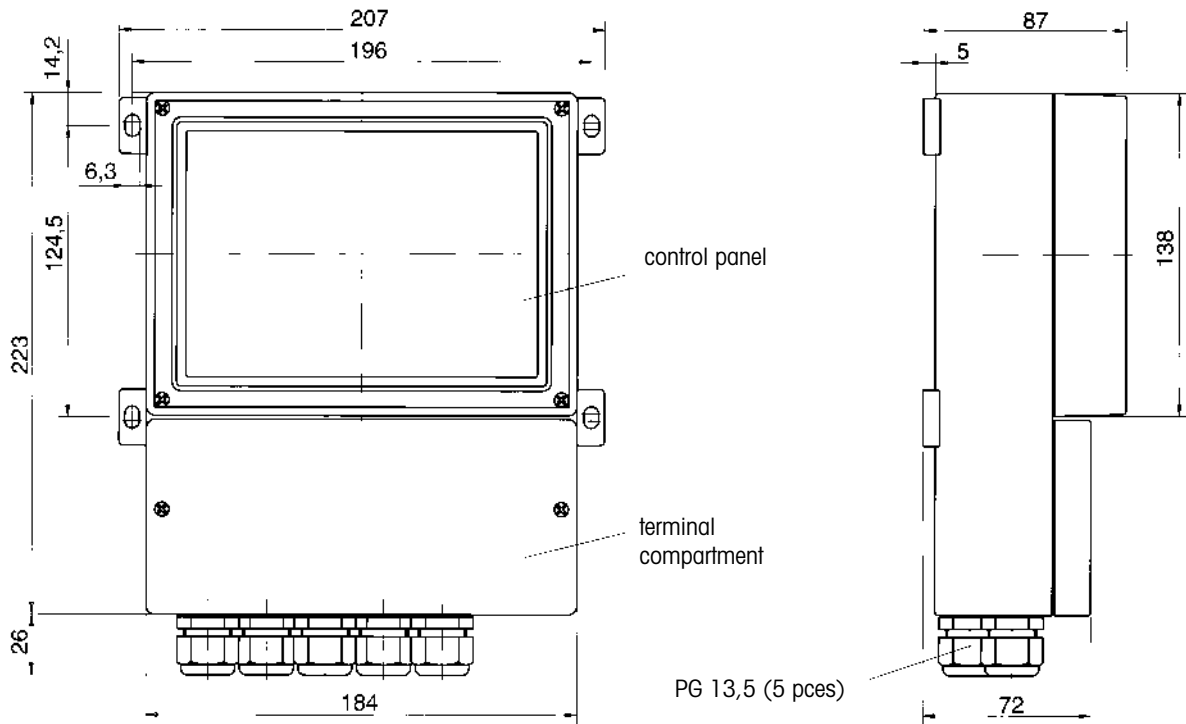
Braunschweig, January 24, 2001

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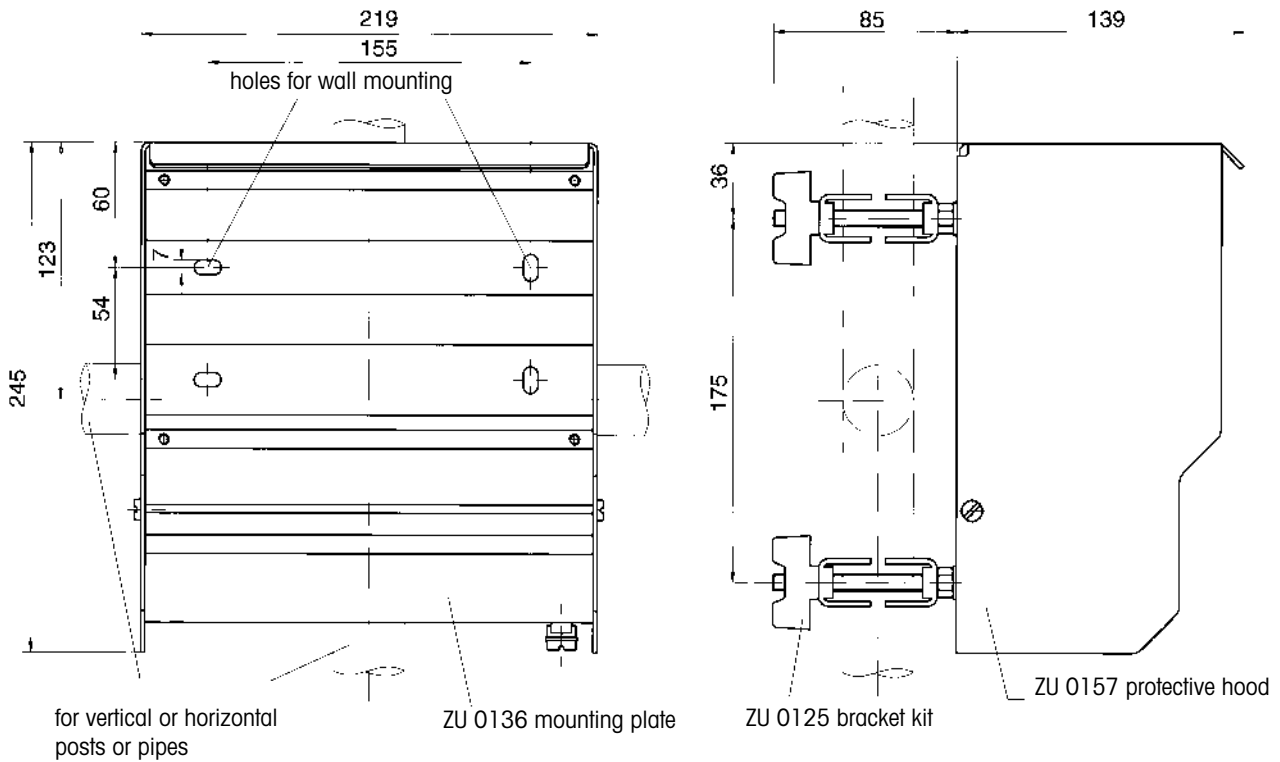
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Dimension Drawings

O₂ 4220X

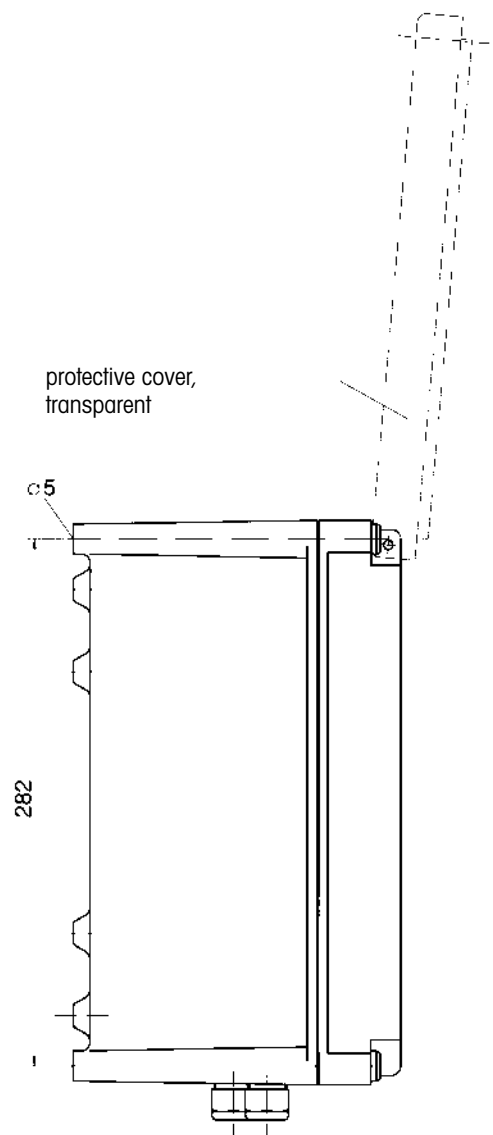
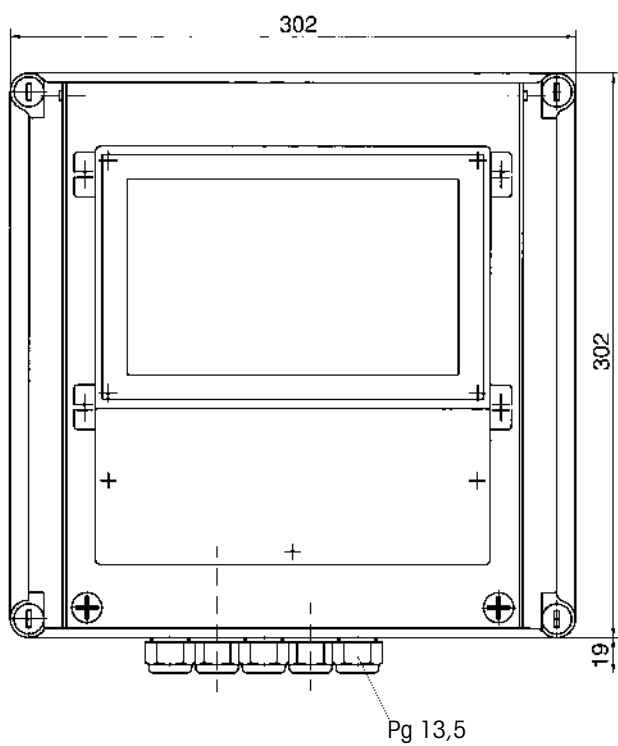
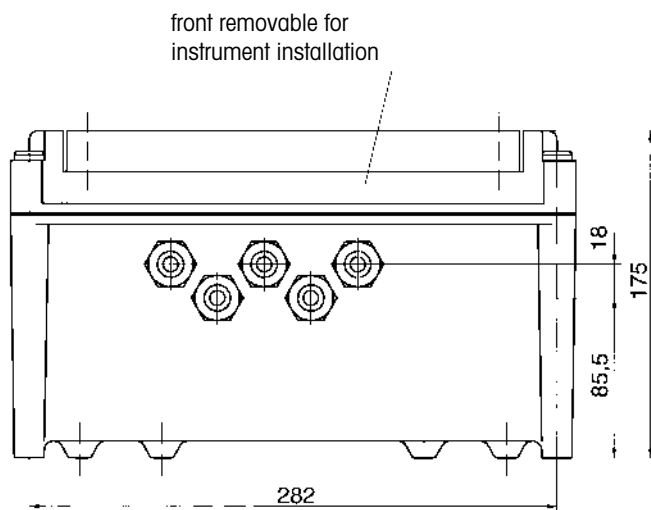


ZU 0157 protective hood, ZU 0136 mounting plate and ZU 0125 bracket kit



Note: All dimensions in millimeters

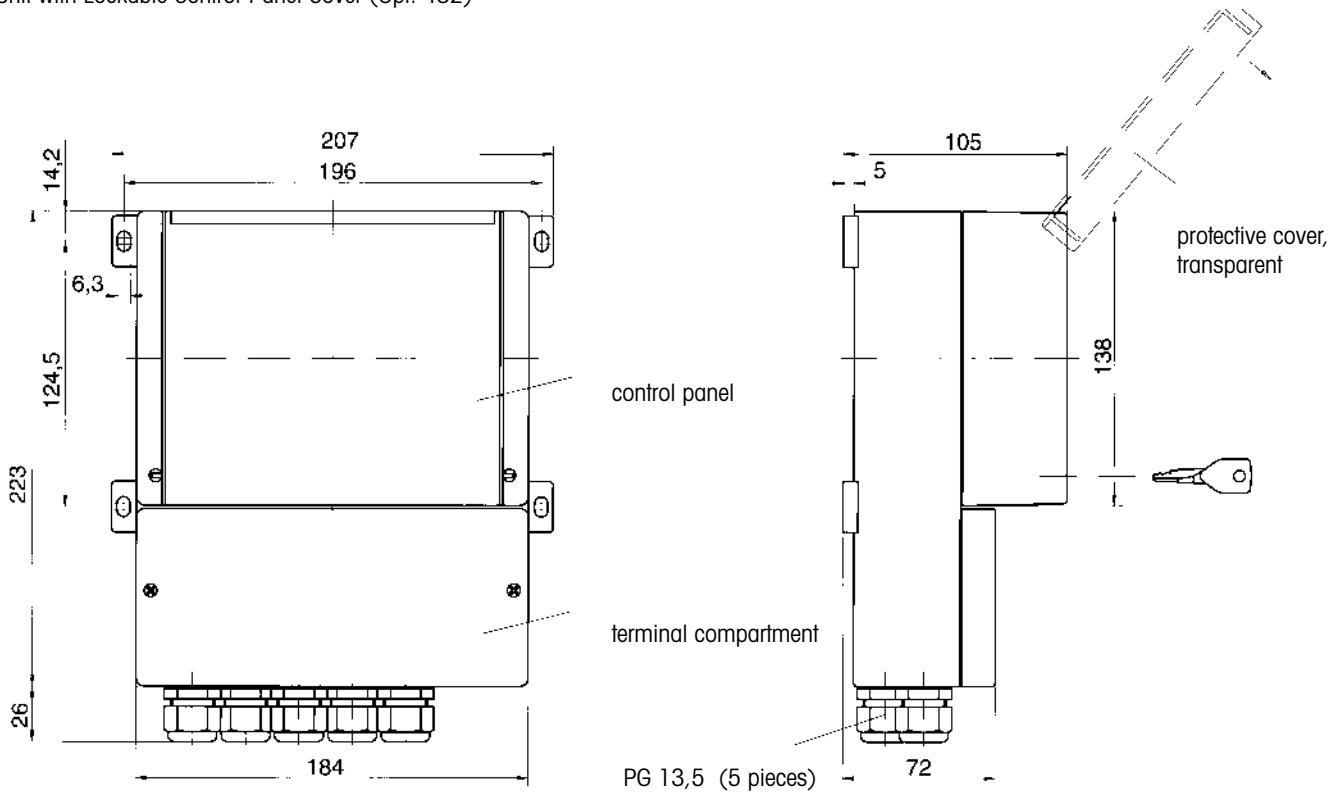
ZU 0158 Protective Case



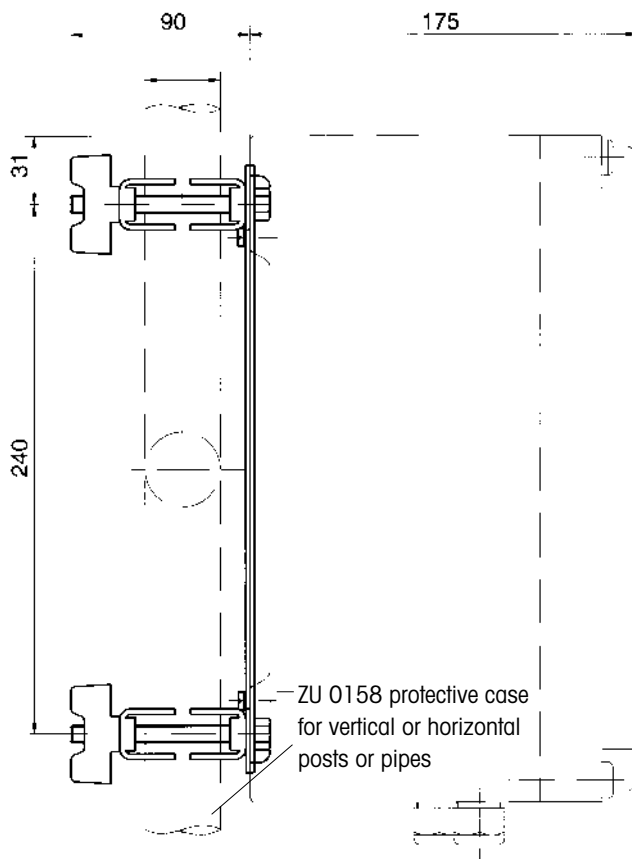
Note: All dimensions in millimeters

O₂ 4220X

Unit with Lockable Control-Panel Cover (Opt. 432)



ZU 0158 protective case with ZU 0220 bracket kit for protective case



Management System
certified according to
ISO 9001 / ISO 14001



<http://www.mtpro.com>

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