OxyTrend

Electrochemical Oxygen Analyser for extractive applications in safe area and in hazardous area, ATEX classified (Zone 1 / 21).

OxyTrend

Simple and cost-effective Electrochemical Analyser for extractive applications

OxyTrend is an easy to use device, configurable for Trace, Percent or Purity applications.

The wide display allows the user to have clear indication of reading and the microprocessor allows all the digital functions.

The menu is operated by thought-the-glass optical buttons. These buttons allows complete functionality in hazardous areas

OxyTrend is designed for indoor and outdoor installations. Electronics is housed in a aluminum enclosure while the sensor housing is in SS 316 and it can be flow-through type or with optional KF-40 connection.

The high performance electrochemical cell is insensitive to the presence of many background gases and hydrocarbons, making this instrument suitable for a variety of applications.

OxyTrend comes with 18 field settable ranges for Trace or Percent, plus it gives the possibility to set a freely configurable range starting from 1 ppm FS and up to 100% FS.

The unit can be configured for 2-wire loop applications or with 5-wire when RS485 ModBus RTU is used.

Oxygen Analyser

for O2 measurement in ppm and % range

Key Applications and Features

Electrochemical Analyser OxyTrend

Key Applications

- Trace O2 in pure gases
- Natural Gas & Biogas
- Glove box purge and leak detection
- Annealing furnaces
- Air separators
- Nitrogen & Hydrogen generators
- Pure gaseous hydrocarbons streams
- Chemical & Petrochemical
- Steel & Metal processing
- Reducing processes
- Welding gases
- Inerting control
- Semiconductor wafer machines
- Heat treatments

Features

- Two-wire, loop powered 4-20 mA transmitter
- Four or five-wire connection in case of use of the RS485 serial interface or 4-20 mA + RS485 respectively
- ModBus RTU Master or Slave selectable by menu
- Connectable with the ADEV 8RO4DI external module by RS485 to have 8 relays output and 4 digital inputs
- Unique hardware for all wiring connection types
- Optical through-the-glass buttons allowing menu operation without opening the housing
- Graphical LCD Display with visualization in Auto-Range and possibility to switch to trend visualization
- Use friendly menu and intuitive interface
- High Accuracy Galvanic Sensors
- Microprocessor-based technology and inner routine of electronic zero autocalibration
- User selectable range
- The version for hazardous area application is Ex-Proof and doesn't require any Zener barrier in non-hazardous location
- Low Maintenance
- Sensor lifetime indication
- NAMUR error indication

Multi Language Menu

Sensor Technology

ADEV Oxygen Sensors provide high levels of accuracy, reliability and linearity throughout theirs measurement ranges. The Oxygen sensor is based on the galvanic electrochemical fuel cell principle and is manufactured under a strict quality procedure.

The sensors are self contained and minimal maintenance is required – no need to clean electrodes or add electrolyte. The precision sensors offer excellent performance, accuracy and stability while maximizing the expected life.

Depending on the type of sensor, they are capable of measuring Oxygen from 0.01 parts-per-million up to 100.0%.

Technical Specification

Electrochemical Analyser OxyTrend

Performance Specification

Range	1 ppm ÷ 100% FS (user settable)
Accuracy	± 1% of FS [note 1]
Repeatability	± 1% of FS [note 1]
Linearity	± 1% of FS [note 1]
Resolution	0.005 ppm on 0-10 ppm range 0.01 ppm or percent on other ranges
Compensation	Integrated (temperature)
Sample Flowrate	General purpose: 500-1000 cc/min. ATEX: recommended 500 cc/min.
Pressure	Vent to atmosphere
Atmospheric pressure effect	± 0.1% of reading per mbar
Cell life	17 ÷ 24 months at 25°C, 1 atm.
Response Time	90% of final FS reading: < 10 sec.
Recovery time (only for cells for ppm)	If a cell is exposed for 60 sec. in Air, 1 hour of N_2 purging it is necessary to go back again < 10 ppm O_2
Display	Backlit graphic LCD display with visualization in auto-range

European Compliance

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- ATEX Directive 2014/34/EU

CE

ATEX

ATEX certification for Zone 1 / Zone 21 with protection mode:

II 2 G D

Ex db IIC T6 Gb
Ex tb IIIC T70°C Db
IP65

ATEX Certificate Number **CESI 20 ATEX 010 X**

Operative Specification

Output	Loop 4-20 mA (two-wires) RS485 ModBus RTU (four-wires) Loop 4-20 mA + RS485 (five-wires)
Relays and Digital Inputs	8 relays + 4 digital inputs (only combined with ADEV 8RO4DI external module)
Operative Temperature	-5°C ÷ +50°C
Protection	IP65
Relative Humidity	90% max.
Power Requirements	16,5 ÷ 30 VDC; max current: 23 mA
Max. Load Resistance (R_L)	Depends on applied voltage [note 2]
Wiring Connections	N°2 threaded holes 1/2" NPT-F
Pneumatic Connections	Standard: 1/8" NPT-F Optional: 1/8" or 1/4" or 6 mm compression tube fittings in AISI 316 Available KF40 connection (only safe area)
Weight	about 0,8 kg

Notes

[Note 1]
At constant conditions

[Note 2]
Max. R_L can be calculated with the following ratio:

$$R_L \text{ max} = [(VDC - 16,5) / 23] * 1000$$

Where VDC is the applied Voltage. Example:
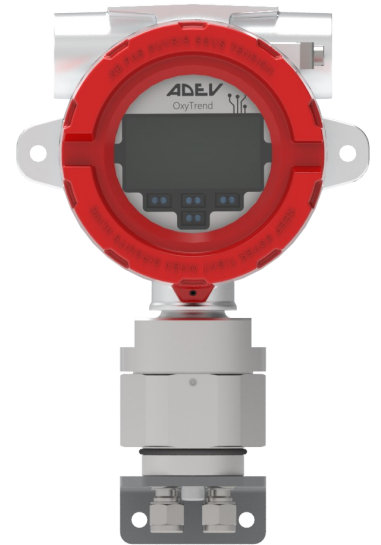
R_L max @ 20V = ~ 152 Ω
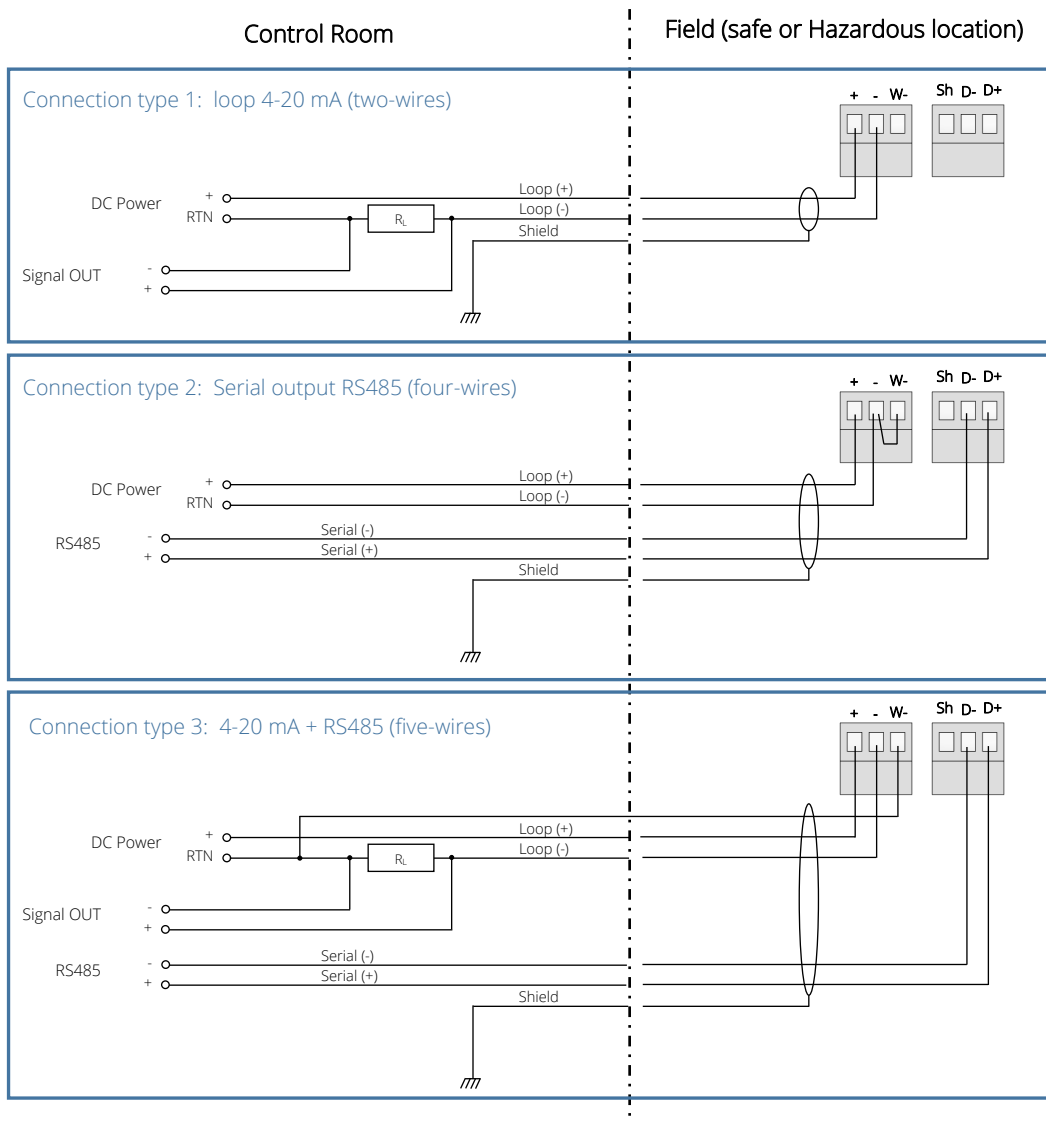R_L max @ 24V = ~ 325 Ω
R_L max @ 30V = ~ 587 Ω

[Note 3]
Standard O-ring in NBR. If required by the stream gas composition, the O-ring can be Viton, EPDM, HNBR, FFKM, VMQ.

Wide Possibility of Connection

Unique hardware, three possible connections

Control Room | **Field (safe or Hazardous location)**

Connection type 1: loop 4-20 mA (two-wires)

DC Power — + — Loop (+)
RTN — R_L — Loop (-)
Signal OUT — - / + — Shield

Terminals: + - W-   Sh D- D+

Connection type 2: Serial output RS485 (four-wires)

DC Power — + — Loop (+)
RTN — Loop (-)
RS485 — - — Serial (-)
+ — Serial (+)
Shield

Terminals: + - W-   Sh D- D+

Connection type 3: 4-20 mA + RS485 (five-wires)

DC Power — + — Loop (+)
RTN — R_L — Loop (-)
Signal OUT — - / +
RS485 — - — Serial (-)
+ — Serial (+)
Shield

Terminals: + - W-   Sh D- D+

- ✓ Ex-Proof Design for Hazardous area
- ✓ No need of Zener Barrier
- ✓ Optical Buttons
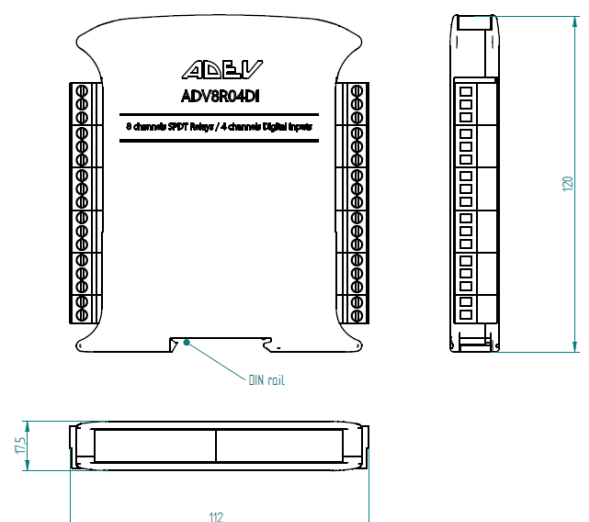- ✓ Connectable to external ADEV relays module

8 Relays Outputs + 4 Digital Inputs Module

OxyTrend can be optionally connected to the external ADEV 8RO4DI external DIN module by RS485, to have 8 relays output for alarm, diagnostics and range indication and 4 digital inputs for remote range selection.
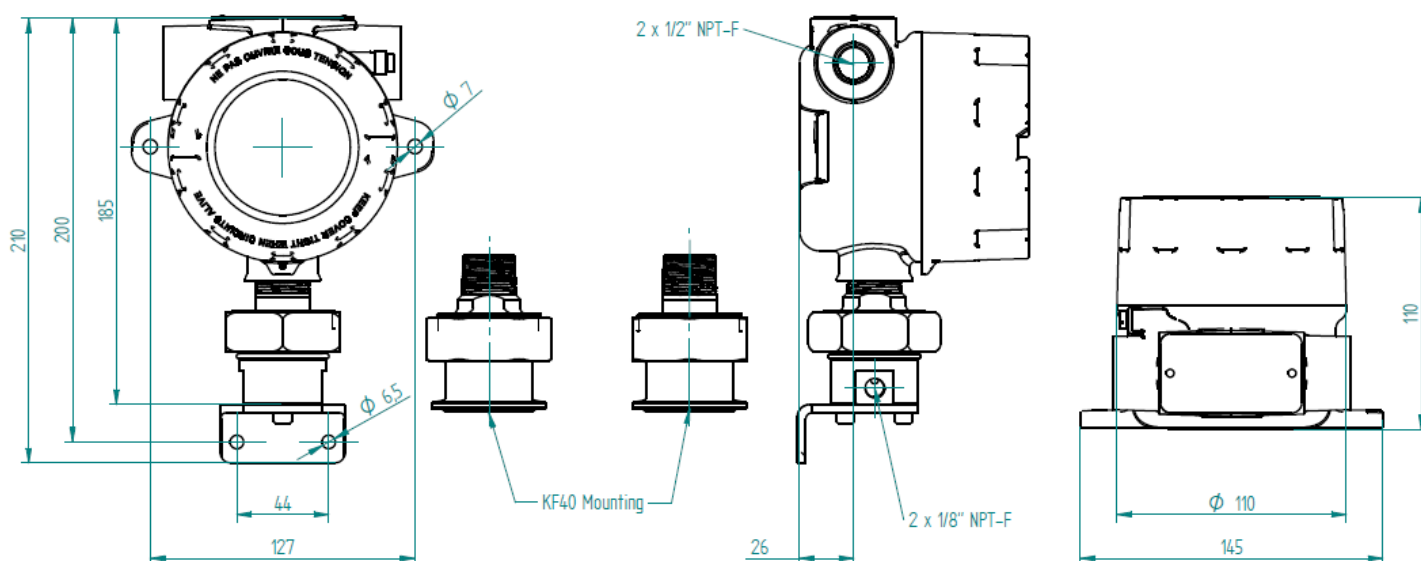
Technical Specification

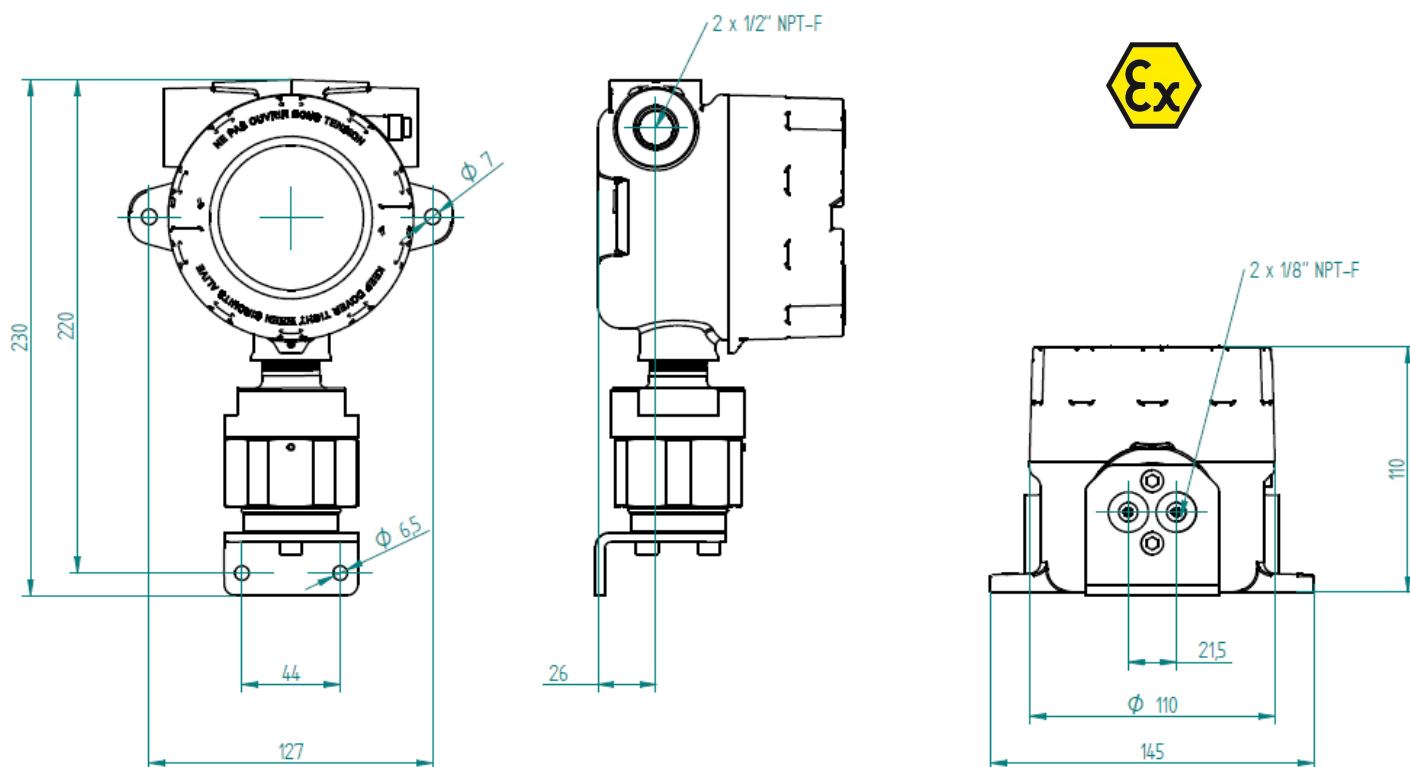|	
Relays	N°8 relays SPDT, 230 VAC, 2A (max 4A)
Digital Inputs	N°4 PNP type, 5…30VDC
Power Supply	9…30 VDC ; 11…25 VAC
Operative Temp.	-20°C…+70°C
Humidity	0….90% non condensing
Serial Interface	RS485 2-wire (Protocol ModBus-RTU)
Line Impedance	120 ohm
Connections	Removable screw terminals
Conductor	Max. section 2,5 mmq
Protection	IP20
Weight	150 gr.

ADV8RO4DI
8 channels SPDT Relays / 4 channels Digital Inputs
DIN rail
120
17,5
112

ADEV

Dimensional Layout

OxyTrend General Purpose

2 x 1/2" NPT–F

Φ 7

Φ 6,5

KF40 Mounting

2 x 1/8" NPT–F

210
200
185
44
127
26
Φ 110
145
110

OxyTrend Ex-Proof

2 x 1/2" NPT–F

Φ 7

Φ 6,5

2 x 1/8" NPT–F

230
220
44
127
26
21,5
Φ 110
145
110

Ex

Quotes expressed in mm

9 Different Sensors

Electrochemical Analyser OxyTrend

TYPE	CODE	APPLICATION
Trace (PPM)	A59014	0-10 ppm low range, used in most industrial applications
Trace (PPM)	A59013	0-10 ppm low range, used when acid gases are present (CO_2 > 0.1%, etc.)
Trace (PPM)	A59002	Optimized for extra low traces, 0-1 ppm low range
Trace (PPM)	A59003	Optimized for extra low traces, 0-1 ppm low range when acid gases are present (CO_2 > 0.1%, etc.)
Percent	A59021	General purpose O2 Measurement. LDL 1000 ppm, used mainly for long life percent applications
Percent	A59022	General purpose O2 Measurement. LDL 1000 ppm, used when acid gases are present (CO_2 > 0.1%, etc.)
Hybrid	A59023	For measuring 20 ppm to 25% with regular exposure to ambient air
Purity	A59025	Designed for measuring elevated O2 (21.0% - 100%)
Trace (PPM)	A59031	0-1 ppm extra low range, optimized for Natural gas applications (stream with H2S up to 500 ppm)

State-of-the-Art Performance

The rugged OxyTrend is controlled by a micro-processor that enables the user to select the range, trim outputs and perform calibration.

Improved user interface includes user selectable and programmable ranges, sensor diagnostics including a sensor lifetime feature and sensor raw signal, low reading/sensor failure signal and temperature compensation.

Programming is easily done using the through-the-glass optical buttons that allow complete functionality in hazardous area without opening the housing.

ADEV has a wide experience in process and can provide the **OxyTrend** combined with a sample and condition system designed for the specific application requirements.

Contact ADEV for details

Ordering

Oxygen Analyser	OxyTrend	...	...
Version			
General purpose IP65		G	
Explosion Proof (ATEX)		X	
Gas Connection			
1/8" NPT-F (standard)			A
1/8" Tube fittings in SS316			B
1/4" Tube fittings in SS316			C
6 mm Tube fittings in SS316			D
KF40 connection			E
Special			9

Included Accessories

- P.N. A46016: Pen to operate on optical buttons
- P.N. A48180: mounting bracket for general purpose version
- P.N. A48176: mounting bracket for ATEX version

Optional Accessories

- P.N. A50045: External module ADEV 8RO4DI
- P.N. A37518: plug 1/2" NPT for housing
- P.N. A37522: General purpose cable gland 1/2" NPT
- Various types of ATEX Cable glands
- P.N. A36110: O-ring clamp (for KF-40 mounting)
- P.N. A23159: Clamp (for KF-40 mounting)

KF40 mounting

Contacts

![ADEV logo]

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