

Small deviations in dissolved oxygen measurements and related system inefficiencies can drive up process costs. Eutech's α DO 2000 series process controller is engineered for 24/7 reliability and process optimization.

Available in two versions, Galvanic and Amperometric, the α DO 2000 controller is suitable for a broad range of applications from biological wastewater treatment to yeast fermentation.



α DO 2000 Controller

Galvanic System • Amperometric System

SOLUTIONS FOR WATER ANALYSIS

EUTECH
INSTRUMENTS
Technology Made Easy ...

Dissolved Oxygen Control

User-Friendly

- Minimum Maintenance Required
- Menu-Driven Programme for Easy Set-Up, Customisation and Installation

More Control

- Precise Control with Three Different Control Mode Options
- Allows for Manual Control of Relays to Override Automatic Settings During One-Off Operations
- Prevents Tampering with 3 Levels of Password Protection Security

More Flexible

- Available in Galvanic or Amperometric Versions
- Wall, Panel or Pipe Mountable
- Suited for Outdoor Use with IP66 (NEMA 4X) Ingress Protection and Large Back-Lit UV-Protected Screen



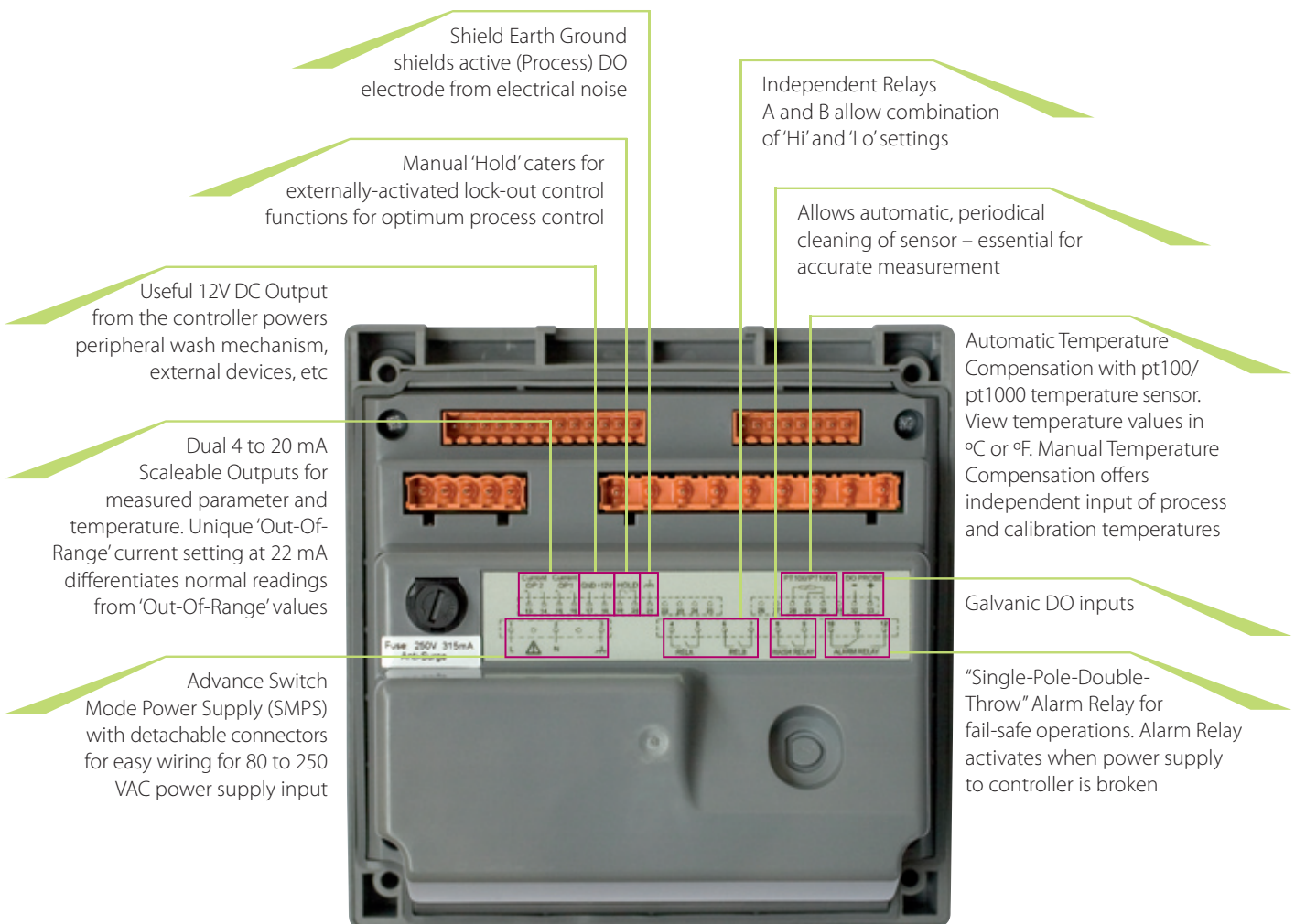
Galvanic System Dissolved Oxygen Controller

• Eutech α DO 2000 W

The Galvanic Cell

A galvanic cell uses a pair of dissimilar metals, such as lead and silver or zinc and silver that self-polarize. Oxygen permeated through the membrane is converted into a voltage that is proportional to the amount of dissolved oxygen (via a sacrificial anode). The galvanic cell is always ready and requires no warm up time.

Incorporating the superior galvanic dissolved oxygen probe, the α DO 2000 W requires no warm-up time, and provides quick, accurate readings within short response period.



Main Features

- Limit, Proportional and Proportional Integral Control Mode Options
- Menu-Driven Setup Programme
- Back-Lit LCD Display
- Ingress Protection of IP66 (NEMA 4X)
- 3 Levels of Password Protection
- 4 Programmable Relays with Time-Delay Capabilities

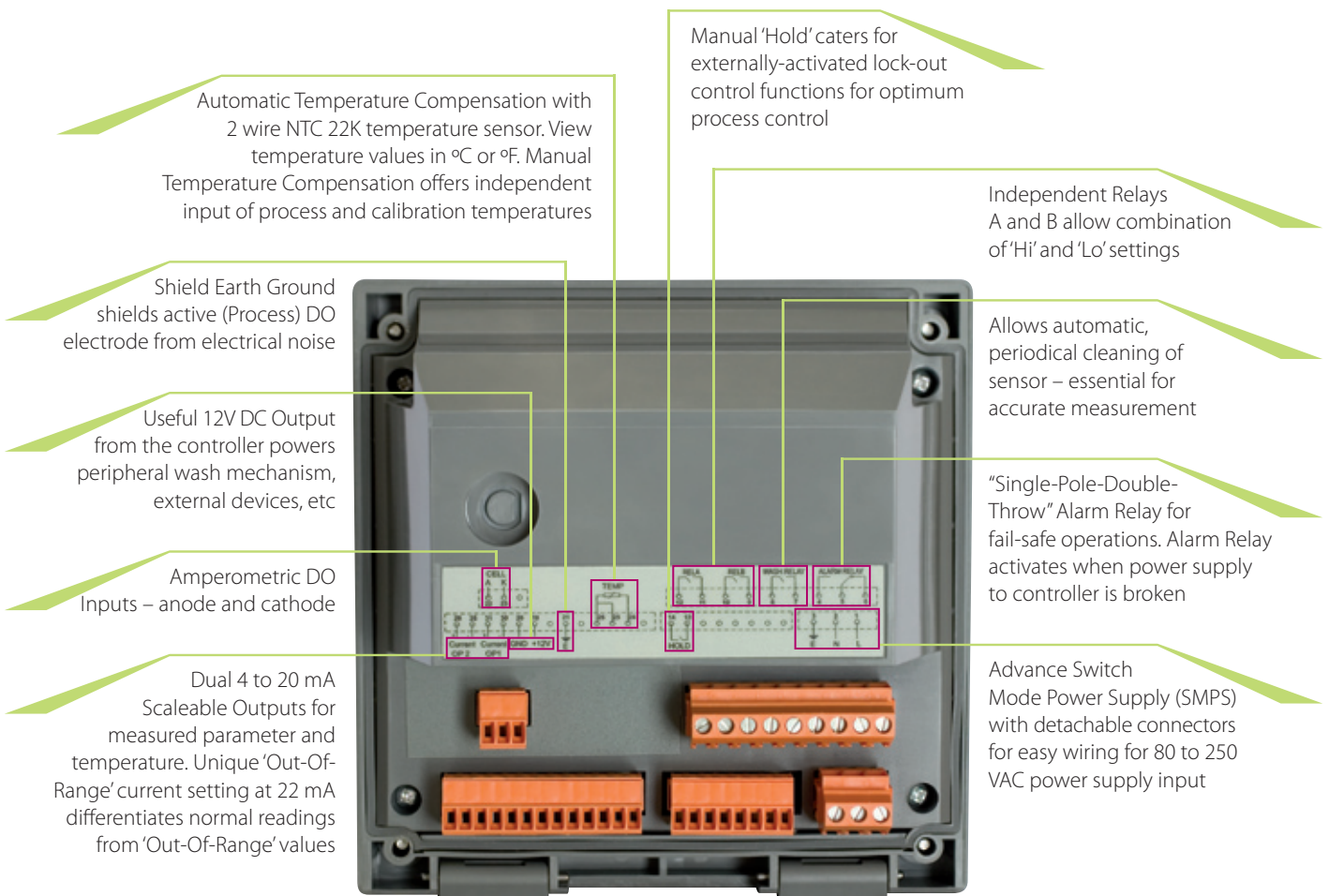
Amperometric System Dissolved Oxygen Controllers

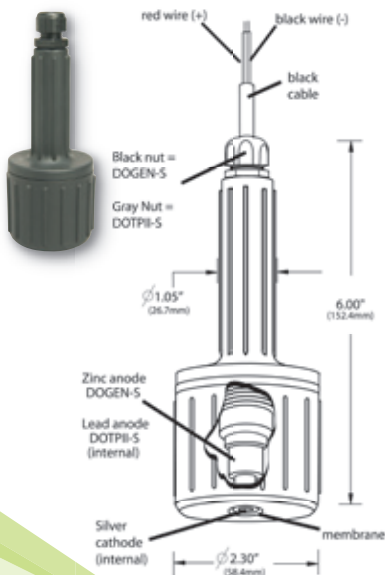
- Eutech α DO 2000 WPG • Eutech α DO 2000 PPG

The Amperometric Cell

An amperometric cell is built around a noble metal cathode (such as gold, platinum or palladium) and a silver/silver chloride anode, which requires polarization using an external voltage. Oxygen permeated through the membrane is reduced at the cathode. This generates a current directly proportional to the oxygen reduced. Probes employing the polarographic system are commonly used in bioprocesses today because of their bio-compatible electrode materials.

The Eutech amperometric α DO 2000 gives fast, reliable results with minimal required flow rate and short polarization time. Available in wall-, pipe- and panel-mount versions.



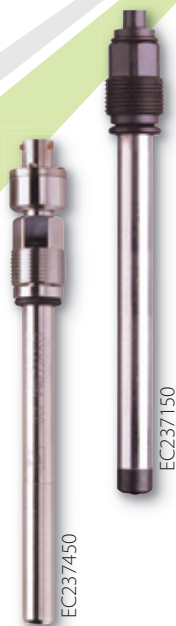


Eutech Galvanic Type Dissolved Oxygen Electrodes

Rugged and long-lasting, the galvanic electrode incorporates a Pt 100 sensor for continuous automatic temperature compensation and prevents zero drift by recreating H₂O within the electrode. This prevents change of pH to the electrolyte and allows it to recycle within the probe. The result: galvanic sensors have long lifespans and require low maintenance costs.

| Galvanic Dissolved Oxygen Electrodes | ECDOGEN | ECDOTPII |
|--------------------------------------|--|----------------|
| Dissolved Oxygen Range | 0.50 to 20 ppm | 0.03 to 20 ppm |
| Type | Galvanic | |
| Flow Rate | 50 mm/s (Dependent on temperature and O ₂ level) | |
| Temperature Sensor | Pt 100 | |
| Pressure Rating | 6 bar | |
| Material | Delrin housing | |
| Membrane | HDPE | |
| Cable | Integral 5 m water-resistant, tinned ends | |
| Dimensions | Length (excludes cable) : 152.4 mm ; Diameter (external) : 58.4 mm | |
| Weight | 670 g | |

Eutech Dissolved Oxygen Electrodes



Eutech Amperometric Type Dissolved Oxygen Electrodes

Eutech's amperometric dissolved oxygen electrodes contain special membranes that are ingeniously designed to require almost no maintenance. These unique membranes stay stable even under harsh ambient conditions and high pressure. This enable the sensors to capture accurate DO readings within short response time at required flow as low as 0.02 m/s.

| Amperometric Dissolved Oxygen Electrodes | EC237450 | EC237150 |
|--|--|--|
| | | Cathode replacement in 2 simple steps! |
| Dissolved Oxygen Range | 0.01 ppm - Saturation | 0.04 ppm - Saturation |
| Required Flow Rate | 0.02 m/sec | |
| Temperature Sensor | 22 kohm NTC | |
| Pressure Rating | 4 bar | |
| Shaft Material | Stainless steel | |
| Membrane | FDA membrane | Non replaceable |
| Cable | Optional detachable cable (Sold separately) | 5 m integral cable |
| Dimensions | 12 mm shaft diameter | |
| Application | <ul style="list-style-type: none"> • Fermentation • Biotechnology • Pharmaceutical • Chemical Industry | <ul style="list-style-type: none"> • Water/wastewater • Pools • Fish farms • Composting plants |

Ordering Information

| Order Code | Part No. | Description |
|------------|-----------|--|
| ECDOGEN | 01X247501 | 0.50 to 20 ppm Galvanic Dissolved Oxygen Probe |
| ECDOTPII | 01X247502 | 0.03 to 20 ppm Galvanic Dissolved Oxygen Probe |
| EC237150 | 93X416401 | Amperometric Dissolved Oxygen Probe (General Purposes) |
| EC237450 | 93X416402 | Amperometric Dissolved Oxygen Probe (Exclude Cable) (Fermentation) |
| EC237306 | 01X420401 | Cathode Replacement Assembly (For EC237450) |
| EC237140 | 01X416501 | 3 FDA Membrane Bodies, Electrolyte, Pipette, Spare O-Ring & Polishing Strip (For EC237450) |
| EC237118 | 01X416601 | 50 ml Electrolyte (For EC237450) |
| EC237137 | 15X416701 | Autoclavation Connector Cap (For EC237450) |
| EC355089 | 30X416801 | 5 m Cable (For EC237450) |
| EC355136 | 30X416802 | 10 m Cable (For EC237450) |



Please contact your authorised distributor or dealer for the prices of extension measuring cables and other accessories such as T-joints, electrode assembly, and calibration solutions.

αalpha DO 2000 Specification Table

| Warranty | Eutech Instruments provides one year of warranty against manufacturing defects for its controllers, and six months for its electrodes.



Eutech reserves the right to make changes, improvements and modifications to products shown.

| Dissolved Oxygen Controller | | αalpha DO 2000 W (Galvanic) | αalpha DO 2000 WPG & PPG (Amperometric) |
|---|---|--|--|
| | |  |  |
| Dissolved Oxygen | Measuring Range | 0.00 to 25.00 mg/L or 0.0 to 300.0 % Saturation | 0.00 to 20.00 mg/L or ppm ; 0.0 to 200.0 % |
| | Resolution | 0.01 mg/L or ppm or 0.1 % | |
| | Relative Accuracy | ± 1.5 % of Full scale reading | ± 1 % of Full scale reading |
| Temperature | Measuring Range | -10.0 °C to +125.0 °C / +14.0 °F to +257.0 °F | |
| | Resolution | 0.1 °C/°F | |
| | Relative Accuracy | ±0.5 °C/±1.0 °F | |
| | Sensor | Pt 100/Pt 1000 (jumper selectable) ; 2 or 3 wire | NTC 22 kΩ Thermistor |
| Compensation | Temperature Compensation | Automatic or manual | |
| | Salinity Compensation | 0.0 to 50.0 ppt (Manual setting and automatic correction) | |
| | Pressure Compensation | 0.740 to 3.000 Bar ; 555 to 2250 mmHg ; 10.73 to 43.51 PSI (Manual setting and automatic correction) | |
| Set-Point and Control Function | Function Switchable | Off ; limit control ; P/PI control (Pulse length/pulse frequency) | |
| | Integral Action Time (IAT) | 0.0 to 999.9 Minutes | |
| | Adjustable Period with Pulse Length Controller | 0.5 to 20 Seconds | |
| | Adjustable Period with Pulse Frequency Controller | 60 to 120 Pulses/min | |
| | Pickup/Dropout Delay | 0 to 1999 Seconds | |
| | Wash Cycle | 0.1 to 199.9 Hours | |
| | Wash Duration | 1 to 1999 Seconds | |
| | Switching DO Hysteresis | 0 to 10 % Full scale | 0.1 to 1.0 mg/L or 1.0 to 10.0 % |
| | Contact Outputs, Controller | 1 SPDT, 3 SPST Relays | |
| | Switching Voltage/Current/Power | Max. 250 VAC/Max. 3 A/Max. 600 VA | |
| Alarm Functions | Function (Switchable) | Latching or pulse | |
| | Pickup Delay | 0 to 1999 Seconds | |
| | Switching Voltage/Current/Power | Max. 250 VAC/Max. 3 A/Max. 600 VA | |
| Display | LCD | UV coat, backlit 14 segments display with symbols for status information | |
| | Backlight | On/off selectable with four levels of brightness control | |
| Electromagnetic Compliance (EMC) Specifications | Emissions | According to EN 61326 | |
| | Susceptibility | According to EN 61326 | |
| Environmental Conditions | Ambient Temperature Operating Range | 0 °C to +50 °C | |
| | Relative Humidity | 80 % up to 31 °C decreasing linearly to 50 % at 40 °C | |
| Electrical Data and Connections | Power Requirements | 80 to 250 VAC/DC 50/60 Hz approx. 10 VA | |
| | Signal Output | Two 0/4 to 20 mA outputs for DO values and temperature, galvanically isolated | |
| | Load | Max. 600 Ω | |
| | DO Input | Screw terminals | |
| | Connection Terminal | 5-Pin, 8-Pin, 9-Pin and 13-Pin terminal, detachable blocks | Wall Mount: 2X3-Pin, 8-Pin, 9-Pin and 13-Pin terminal blocks Panel Mount: 3-Pin, 9-Pin and 19-Pin terminal blocks |
| | Mains Fuse (Panel Mount) | 315 mA Anti surge, 250 V | 250 mA Anti surge |
| Mechanical Specifications | Dimensions (L x H x W) | 144 x 144 x 111.5 mm | Wall Mount: 144 x 144 x 110 mm Panel Mount: 175 x 96 x 96 mm |
| | Weight | 745 g (Unit)/1100 g (Packed) | Wall Mount: 745 g (Unit)/1100 g (Packed) Panel Mount: 700 g (Unit)/850 g (Packed) |
| | Material | Wall Mount: PBT | Wall Mount: PBT ; Panel Mount: ABS |
| | Insulation | Wall Mount: IP66 (NEMA 4X) ; Panel Mount: IP54 (Front panel)/IP40 (Housing) | |

Ordering Information

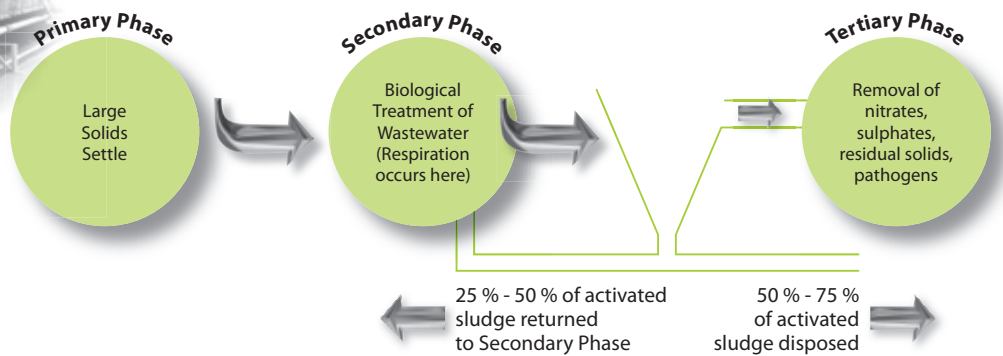
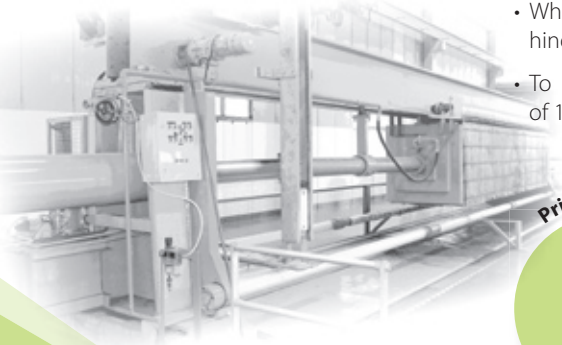
| Order Code | Part No. | Description |
|----------------|-----------|--|
| ECDOCTP2000W | 01X275348 | αalpha Dissolved Oxygen 2000 W Galvanic Controller/Transmitter, Wall Mount Version |
| ECDOCTP2000WPG | 01X275366 | αalpha Dissolved Oxygen 2000 PG Amperometric Controller/Transmitter, Wall Mount Version |
| ECDOCTP2000PPG | 01X275368 | αalpha Dissolved Oxygen 2000 PG Amperometric Controller/Transmitter, Panel Mount Version |
| 01X278701 | 01X278701 | Panel Mount Kit for αalpha 2000 (For Wall Mount Version Only) |

Please contact your authorised distributor or dealer for the prices of extension measuring cables and other accessories such as T-joints, electrode assembly, and calibration solutions.



Biological Wastewater Treatment

- Carbonaceous bacteria introduced to wastewater uses oxygen to break down organic carbons, producing energy to fuel bacteria growth and metabolic activities.
- The growth rate and activities of the carbonaceous bacteria doubles with every 10 °C increase in temperature between the range of 0 °C to 30 °C, while the solubility of oxygen reduces as temperature increases.
- When oxygen levels are too low:
 - Bacteria may not multiply sufficiently due to lack of energy
 - Filamentous bulking may also occur, giving rise to settlement problems
- When the level of dissolved oxygen is too high, growth of superfluous organisms is encouraged, hindering the treatment process.
- To maintain maximum cost efficiency, dissolved oxygen is normally kept within a narrow range of 1.5 ppm – 2 ppm.

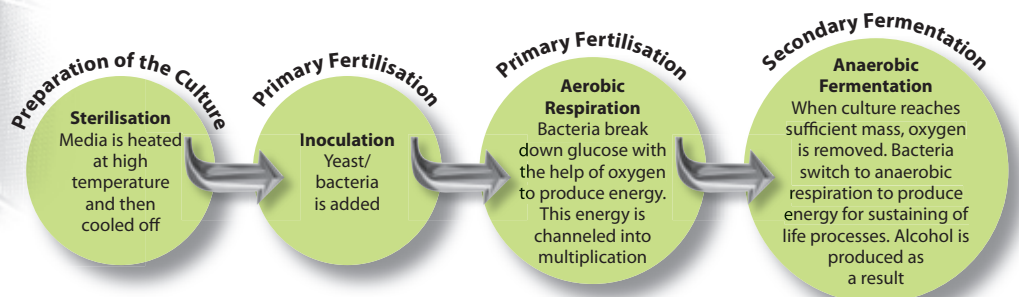


Applications



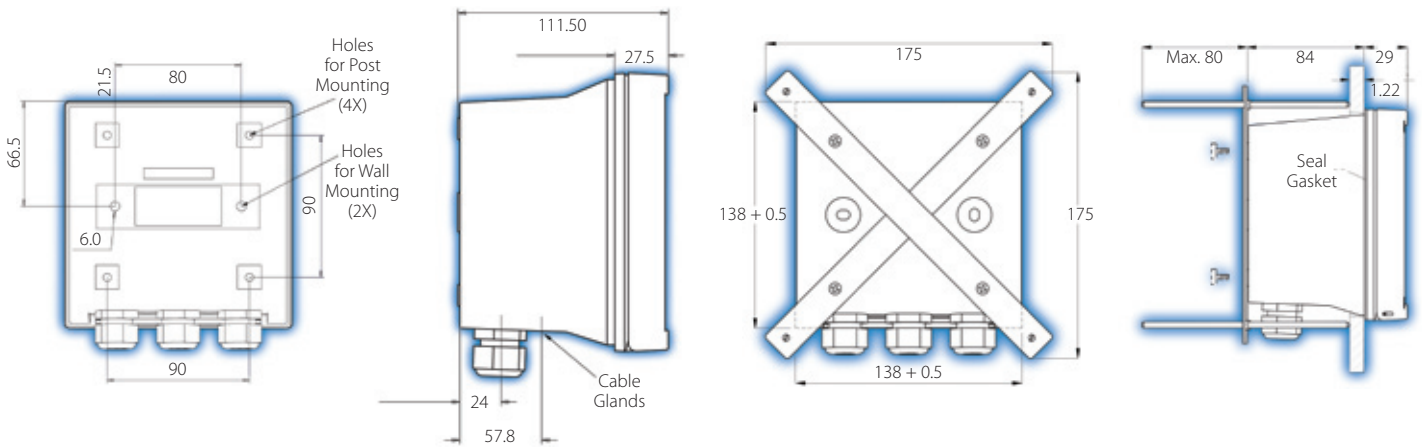
Fermentation

- The process of fermentation can be broken up into 2 main stages: Aerobic Fermentation, which takes place in the presence of oxygen, and Anaerobic Fermentation, which takes place in the absence of oxygen.
- During aerobic fermentation, yeast or bacteria can multiply up to 100 – 200 folds. Control of dissolved oxygen is crucial at this stage as it determines the successful growth of the culture.
- Adequate oxygen must be injected to ensure sufficient bacteria growth. In excess, too much dissolved oxygen can lead to a reduction in alcohol-producing activities during anaerobic respiration and over-production of compounds that produces undesirable tastes in beer- or wine-making.
- Temperature control also influences the product's taste by causing an alteration to the ester, producing too much alcohol and acetaldehyde, as well as an increase in amino acid uptake.
- Fermentation is a crucial process in many industries, such as alcoholic beverages production, pharmaceutical and chemical production, and pasteurization.

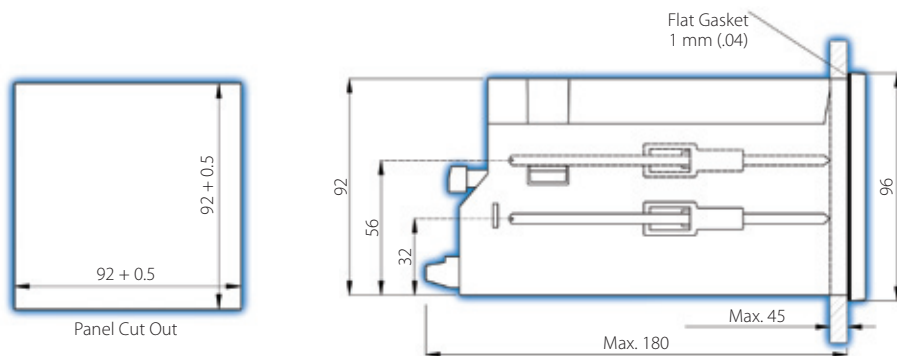




Wall Mount Drawings (All measurements in mm)



Panel Mount Drawings (All measurements in mm)



Eutech's products are certified to comply with global standards for electromagnetic emission and interference. A leader in the field of electrochemical instrumentations, Eutech offers a comprehensive range of laboratory and continuous online process instruments for the monitoring and control of:

| pH | Conductivity | Total Dissolved Solids (TDS) | Turbidity |
 | Temperature | Ion Concentration | Redox Potential (ORP) |
 | Dissolved Oxygen (DO)

| **World-Wide Sales and Service Support** | Eutech provides world-wide sales and service support for all its products through its network of international distributors. Contact us at marketing@eutechinst.com for details of your nearest distributor.



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Galvanic & Amperometric



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