Opren™ Analyzers

Probe type Tunable Diode Laser Spectrometer
TDLS8100/TDLS8200
Easy install, the best just got better

Yokogawa’s new probe type TDLS greatly reduces installation costs.

Easy installation

- Standard System configuration
  - LCD display for process parameters and system status
  - HART communication available

- System configuration with HMI
  - Up to 4 units connection available
  - TDLS8000 mixed system available

- Easy replacement of existing analyzer
- Easy replacement from gas sampling system

High Reliability

- Long-term stable measurement
  - Optical, hydrodynamics, thermal and vibration designed Probe to stabilize laser optical axis and optical path length for a long time
  - Access on one side only
    - One flange only: no alignment required

Fired Heater Combustion, Safety, and Lifecycle Management

Yokogawa TDLS8200 simultaneously measures multi-gas like O₂, CO, and CH₄, providing FAST, quick and reliable information to achieve:

- Combustion Efficiency Improvement
- Safety Improvement
- Longer Life time of the coils and coil hangers
- Higher throughput thru optimizing heating

Limiting O₂ Concentration for safety and process monitoring & control

Yokogawa TDLS8100 O₂ analyzer achieves:

- No Sampling system required so less maintenance
- Fast Response Analysis
- No Interference Analysis (TruePeak measurement technology)
- Internal reference cell for peak locking during trace measurement

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Specifications

### TDLS8100/STANDARD SPECIFICATIONS

**Measurement object**
- TDLS8100: O₂, CO, CO or CH₄, NH₃, HCl
- TDLS8200: O₂+CO, O₂+CO or CH₄

**Measurement system**
- Tunable diode laser spectroscopy

**Measurement**

<table>
<thead>
<tr>
<th>Measured component</th>
<th>Min. range</th>
<th>Max. range</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₂</td>
<td>0-1%</td>
<td>0-25%</td>
</tr>
<tr>
<td>CO (ppm)</td>
<td>0-200 ppm</td>
<td>0-10,000 ppm</td>
</tr>
<tr>
<td>CO or CH₄</td>
<td>0-200 ppm</td>
<td>0-10,000 ppm</td>
</tr>
<tr>
<td>NH₃</td>
<td>0-30 ppm</td>
<td>0-5,000 ppm</td>
</tr>
<tr>
<td>HCl</td>
<td>0-30 ppm</td>
<td>0-5,000 ppm</td>
</tr>
</tbody>
</table>

**Probe length**
- 0.7 m, 1.0 m, 1.5 m, 2.0 m

**Analog output**
- 2 points (TDLS8100), 5 points (TDLS8200), 4 to 20 mA DC
- Output types: Gas concentration, Transmission, Process gas temperature, Process gas pressure

**Digital communication**
- HART, Ethernet

**Digital output**
- 2 points, contact rating 24 V DC, 1 A
  - DO: Function: Activate during Warning / Calibration / Validation / Warm up / Maintenance conditions
  - Fault: Function: Activate during Fault condition or when the system power is off

**Power supply**
- 24 V DC ±10%

**Protection degree**
- IP65, NEMA Type 4X

**Process gas condition**
- Process gas temperature: Max 600°C
- Process gas pressure: 90 to 500 kPa abs.
- Process gas flow velocity: 1 to 30 m/sec

**Installation condition**
- Ambient operating temperature: -20 to +55°C
- Storage temperature: -30 to +70°C
- Humidity: 0 to 95%RH at 40°C (non-condensing)

**Functional safety**
- IEC61508 SIL2 (SC3)
  - *preparation for TDLS8200

**Hazardous area classifications**
- Division 1, Zone 1: Explosionproof
  - FM (US, Canada), ATEX, IECEx, NEPSI, Korea
  - *preparation for TDLS8200

**Performance**

<table>
<thead>
<tr>
<th>Measured component</th>
<th>Repeatability</th>
<th>Linearity</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₂</td>
<td>±1% reading or ±0.01% O₂, whichever is greater</td>
<td>±1% F.S.</td>
</tr>
<tr>
<td>CO (ppm)</td>
<td>±2% reading or ±1 ppm CO, whichever is greater</td>
<td>±1% F.S.</td>
</tr>
<tr>
<td>CO or CH₄</td>
<td>±2% reading or ±1 ppm CO, whichever is greater</td>
<td>±2% F.S.</td>
</tr>
<tr>
<td>NH₃</td>
<td>±2% reading or ±2.5 ppm NH₃, whichever is greater</td>
<td>±2% F.S.</td>
</tr>
<tr>
<td>HCl</td>
<td>±1% reading or ±2.5 ppm HCl, whichever is greater</td>
<td>±2% F.S.</td>
</tr>
</tbody>
</table>

Measurement conditions: 25°C, 0.1 MPa abs., optical path length 1 m

**YH8000**

| Display               | Touchscreen 7.5 inch TFT color LCD panel, 640 x 480 (VGA) |
| Communication         | Ethernet: RJ-45 connector, Communication speed: 100 Mbps |
| Protection degree     | IP65, NEMA Type 4X |
| Weight                | Approx. 4 kg |
| Mounting              | Analyzer mount (Front, left-side, right-side) with tilt function, Pipe mount or Panel mount |
| Cable Entries         | 1/2NPT or M20 x 1.5 mm, two holes |
| Installation conditions | Ambient operating temperature: -20 to +55°C |
|                       | Storage temperature: -30 to +70°C |
| Power Supply          | 24 V DC ±10% |
| Hazardous area classifications | Division 2, Zone2: Non-Incendive/Type n; FM (US, Canada), ATEX, IECEx, Korea, NEPSI, EAC |

**Trademarks**

Yokogawa achieves operational excellence by providing products, services, and solutions based on the OpreX comprehensive brand that cover everything from business management to operations.

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