TDLS™ 8000
Tunable Diode Laser Spectrometer
The best just got better

Yokogawa’s new TDLS8000 houses all of the industry’s leading features in one robust device.

- SIL2 TruePeak combined with smart laser technology
- Intuitive touchscreen HMI
- HART and Modbus TCP communications standard
- 8-stage auto-gain adapts to difficult applications
- Fully field repairable with 50 days of data and spectra storage
- Compact design for one-man installation without sacrificing ruggedness
- Area classification Zone2/Div2 or Zone1/Div1

**System Configuration**
- Standard System configuration
  - HART communication available
- System configuration with HMI
- Multi Analyzer configuration with Remote HMI
  - Up to 4 units connection available

**High Reliability**
- Reference Cell
  - Internal reference cell in the laser module ensures peak locking during trace measurement.
- Auto gain
  - Auto-gain enables wide signal ranges against dynamic variation of transmission.

Transmission is lowered by dust, moisture, or vapor

**TruePeak**
TruePeak Spectra (10% O₂ in different background gases)

The TruePeak we can measure the area of the absorbance peak. This eliminates effects from changing background gases, allowing for simple pressure and temperature compensation.

**Intuitive touchscreen HMI**
- Touchscreen 7.5 inch color LCD on HMI
  - Makes it simple to operate.
  - Gives all the information including trend graph and eliminate PC to maintenance.
  - Can be remotely installed.

**SIL2 certified**
- IEC61508 SIL designed & approved, SIL2 capability for single analyzer use, SIL3 capability for dual analyzer use.

**Fired Heater Combustion, Safety, and Lifecycle Management**
Yokogawa TDLS8000 O₂ and CO + CH₄ measurements provide reliable information to achieve;
- Combustion Efficiency Improvement
- Safety Improvement
- Longer Life time of the coils and coil hangers
- Higher throughput of the process heating

**Limiting O₂ Concentration for safety and process monitoring & control**
Yokogawa TDLS8000 O₂ analyzer achieves;
- No Sampling system Operation
- Fast Response Analysis
- No Interference Analysis
- Less Maintenance Operation
### Specifications

**STANDARD SPECIFICATIONS**

**Measurement object**
O₂, CO, CO or CH₄, CO₂, H₂O, NH₃, HCl, H₂S, Cl₂, Br₂, and other gases in combustion or process gas measurement.

**Measurement system**
Tunable diode laser spectroscopy

**Measured components and ranges**

<table>
<thead>
<tr>
<th>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>H₂O (ppm) in non-HC</td>
<td>0 – 30 ppm</td>
<td>0 – 30,000 ppm</td>
</tr>
<tr>
<td>CO (%)</td>
<td>0 – 2%</td>
<td>0 – 50%</td>
</tr>
<tr>
<td>CO (%) + CO₂ (%)</td>
<td>0 – 1%</td>
<td>0 – 100%</td>
</tr>
<tr>
<td>NH₃ + H₂O</td>
<td>0 – 30 ppm</td>
<td>0 – 5,000 ppm</td>
</tr>
<tr>
<td>H₂S</td>
<td>0 – 5%</td>
<td>0 – 50%</td>
</tr>
<tr>
<td>CO₂ (%)</td>
<td>0 – 1%</td>
<td>0 – 5%</td>
</tr>
<tr>
<td>CO₂ Extend. Range</td>
<td>0 – 10%</td>
<td>0 – 100%</td>
</tr>
<tr>
<td>H₂O (%)</td>
<td>0 – 1%</td>
<td>0 – 100%</td>
</tr>
<tr>
<td>HCl</td>
<td>0 – 50 ppm</td>
<td>0 – 5,000 ppm</td>
</tr>
</tbody>
</table>

**Optical path length**
Optical distance between the laser unit and the sensor control unit

**Power Supply**
24 V DC ±10%

**Valve control output**
2 points, contact rating 24 V DC, 1 A

**Digital input**
2 points, 2 to 10 mA DC

**Self-diagnosis**
Sensor unit temperature, Detector signal level, Memory read/write function, Peak lock condition

**Calibration**
Calibration method: Zero/Span calibration

**Validation**
Validation method: Manual, Auto

**Power supply**
24 V DC ±10%

**Warm-up time**
5 min.

**PERFORMANCE**

**Measured gas**

<table>
<thead>
<tr>
<th>Gas</th>
<th>Measured</th>
<th>Repeatability</th>
<th>Linearity</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₂</td>
<td>+/- 1% F.S.</td>
<td>+/- 1% F.S.</td>
<td></td>
</tr>
<tr>
<td>CO (ppm)</td>
<td>+/- 2% F.S.</td>
<td>+/- 2% F.S.</td>
<td></td>
</tr>
<tr>
<td>CO or CH₄</td>
<td>+/- 1% F.S.</td>
<td>+/- 1% F.S.</td>
<td></td>
</tr>
<tr>
<td>NH₃</td>
<td>+/- 2% F.S.</td>
<td>+/- 2% F.S.</td>
<td></td>
</tr>
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<td>+/- 2% F.S.</td>
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<td>+/- 2% F.S.</td>
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<td>+/- 1% F.S.</td>
<td>+/- 1% F.S.</td>
<td></td>
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<td>HCl</td>
<td>+/- 1% F.S.</td>
<td>+/- 1% F.S.</td>
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</tbody>
</table>

**Display**
Touchscreen 7.5 inch TFT color LCD panel, 640 x 480 (VGA)

**Communication**
Ethernet; RJ-45 connector, Communication speed: 100 Mbps

**Protection degree of enclosure**
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

**Power Supply**
24 V DC ±10%

**Hazardous area classifications**
Division 2, Zone 2; Non-Incendive/Type n;

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