KwikSense Smart Digital Gas Transmitter

KwikSense smart digital gas transmitter is a field mountable device suitable for the detection and continuous monitoring of hazardous gases at industrial plant locations.

Apart from providing RS-485 MODBUS-RTU digital output signal, that can be connected to a suitable control system, such as a Uniphos controller, DCS, PLC, etc, it also provides an industry standard 4-20 mA analog output.

KwikSense is available for a large number of gases which include Oxygen, toxic gases, combustible gases & VOC.

SALIENT FEATURES:

- Digital communication on MODBUS over RS 485
- HART Protocol available
- Analog Industry standard 4-20 mA source.
- Swappable Plug-n-Play Smart Sensor Technology
- Auto-recognition of Smart Sensors, Sensor Life Indicator, Over range Indication
- Bright OLED Display for low light conditions
- Non-Intrusive Calibration using Magnetic wand
- 3 Configurable on-board Potential free relays contact
- Fault Diagnosis & Self Testing of Alarm LED’s with relays
- 3 or 4 Wired system

APPLICATION AREAS

- Refineries
- Petrochemical plants
- Pharmaceutical plants
- Power industries
- Pollution monitoring
- Waste water treatment plants
- Chemical plants
- Iron and steel plants
- Duct Monitoring
KwikSense consists of two parts, viz. Digital Transmitter & Smart Gas Sensor Module. The smart gas sensor module contains gas transducer, necessary electronic for signal conditioning & retaining calibration data. This makes it independent of transmitter unit and can work on any Uniphos make digital transmitter. The transmitter recognizes the smart sensor and functions accordingly for the programmed gas.

The Digital transmitter is housed in an explosion proof ("Exd" certified) wall mountable enclosure and is virtually maintenance-free. Its revolutionary design utilizes advanced micro-controller and non-volatile memory devices that allow for enhanced diagnostics and fault analysis. Advanced design features make installation and operation simpler and user friendly.

**Periodic calibration and bump check is recommended to assure dependable performance.** Field interchangeable plug-in sensor module enables users to replace the calibrated gas sensor module at ease & as per their requirements on the site. Sensor module from the transmitter requiring calibration can be sent to the laboratory for calibration.

Gas sensor modules are available for many gases of interest (Please refer Table). These modules include one of the following sensor viz. Electro-chemical, Non dispersive Infrared, Catalytic bead, Photo-ionization, Semiconductor thin film, etc.
**SPECIFICATIONS**

- **Operating voltage:** 12 to 28 VDC (Typically: 24 VDC)
- **Power Consumption:** Less than 3 watt
- **Enclosure:** Flameproof - cast aluminium alloy or SS-316
- **Cable entries:** ½” NPT (2 entries)
- **Size:** Approx. 250 mm X 170 mm X 105 mm (without cable gland & stopper)
- **Weight:** 2.5 kg (Approx.) – cast aluminium alloy
  5.5 kg (Approx.) – SS-316

<table>
<thead>
<tr>
<th>3-wire cable system:</th>
<th>4-wire cable system:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire 1: Supply Voltage</td>
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</tr>
<tr>
<td>Wire 2: signal 4-20 mA</td>
<td>Wire 2: return ground</td>
</tr>
<tr>
<td>Wire 3: return ground</td>
<td>Wire 3: D+ (RS-485)</td>
</tr>
<tr>
<td></td>
<td>Wire 4: D- (RS-485)</td>
</tr>
</tbody>
</table>

Recommended cable specifications: 1.5 Sq mm
3-core copper wire, shielded armored cable R-12 ohm/Km per core and C - 0.15 mF/Km and reactance 0.107 ohms/Km

**Output signal:** Industry standard 4 - 20 mA sourcing
(Cable load driving capacity: 650 ohm maximum)
RS - 485 (MODBUS) on 4 core cable

**Sensor:** Provision for smart-swappable gas sensor;
which are available for Oxygen, combustible
gases, toxic gases and VOC.

**Operating Temperature:** -20°C to 60°C
**Operating Pressure Range:** Ambient +/-10%
**Operating Humidity Range:** 0-95% RH
(non-condensing)

**Standards complied:** EN/IS/IEC: 60079-0
EN/IS/IEC: 60079-1
IEC: 61508

**Ingress protection:** IP66
**Relay:** Potential free (resistive load)
**Mounting:** Toughened glass window provision
**Exd certified cable glands available on request**
**SS-316 Sensor adaptor**

**Body Coating:** Epoxy coating

### ORDERING INFORMATION FOR DIGITAL TRANSMITTER AND SMART SENSOR

#### DIGITAL TRANSMITTER

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Relays</th>
<th>Digital or Analog O/P</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT-500</td>
<td>R</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>R=0 (No relay)</td>
<td>A: Analog 4-20 mA O/P</td>
</tr>
<tr>
<td></td>
<td>R=1 (With Relay)</td>
<td>M: MODBUS &amp; 4-20 mA</td>
</tr>
</tbody>
</table>

**Example:**
- Digital Transmitter with 4-20mA O/P & Relay

- Digital Transmitter with 4-20mA O/P & Relay with SIL2, ATEX& HART

**Model**

**Gas Code**

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Gas Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS-500</td>
<td>XXXX</td>
</tr>
</tbody>
</table>

**Example:**
- Smart Oxygen Sensor SS 500-010A/M

**Note:** Put suffix "M" for MODBUS smart sensor.

### CERTIFICATIONS

- CCOE & CIMFR certified to Exd IIC, T6, IP 66
- ATEX certified by SGS BASEEFA Certificate No: Baseefa 14ATEX 0304X
  - II 2 G Ex db IIC T6 Gb (T_{amb} = -20°C to +40°C)
  - Ex db IIC T5 Gb (T_{amb} = -20°C to +55°C)
  - Ex db IIC T4 Gb (T_{amb} = -20°C to +85°C)
- IECEx Certified Certificate No: IECEx BAS 14.0148X
  - Ex db IIC T6 Gb (T_{amb} = -20°C to +40°C)
  - Ex db IIC T5 Gb (T_{amb} = -20°C to +55°C)
  - Ex db IIC T4 Gb (T_{amb} = -20°C to +85°C)

Due to continuous development, we reserve the right to change specifications without prior notice.
# PRODUCT SPECIFICATION DATA SHEET

## PRODUCT MODEL – UNIPHOS 500 DT
## PRODUCT CODE – 500 DT – 1M
DIGITAL GAS TRANSMITTER WITH RELAY, ANALOG & MODBUS OUTPUT
UNIPHOS SS 500 – 099A
SMART SENSOR FOR HC

### Key Features
- Digital Display of Gas name, Range of gas detection, alarm set-point values and the last calibration date on Power ON.
- Hot Swappable Sensor Technology
- Non-intrusive calibration
- Sensor Life Tracking
- 3 user configurable Relay Contacts
- Bump Test Counter

### GAS RELATED SPECIFICATIONS
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Detected</td>
<td>Hydrocarbon</td>
</tr>
<tr>
<td>Range</td>
<td>0-100% LEL</td>
</tr>
<tr>
<td>Resolution</td>
<td>1% LEL</td>
</tr>
<tr>
<td>Detection Principle</td>
<td>Catalytic Bead Sensor</td>
</tr>
<tr>
<td>Response Time:</td>
<td>Less than 30 seconds</td>
</tr>
<tr>
<td>Gas Sampling</td>
<td>Natural Diffusion</td>
</tr>
<tr>
<td>Accuracy</td>
<td>+/- 2 % FS for 0-50% LEL or better</td>
</tr>
<tr>
<td>Repeatability</td>
<td>+/- 2% for 0-50% LEL or better</td>
</tr>
</tbody>
</table>

### DISPLAY & INDICATOR SPECIFICATIONS
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>Backlit 8x2 Alphanumeric OLED Display</td>
</tr>
<tr>
<td></td>
<td>Single tri-color LED indicates various alarms &amp; system status</td>
</tr>
<tr>
<td>Magnetic Function Keys</td>
<td>For transmitter configuration &amp; sensor parameter settings</td>
</tr>
</tbody>
</table>

### ELECTRONICS & ELECTRICAL SPECIFICATIONS
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics</td>
<td>Microprocessor based instrument</td>
</tr>
<tr>
<td>Power Supply</td>
<td>18V-30V DC Supply from controller / DCS</td>
</tr>
<tr>
<td>Outputs</td>
<td>4-20 mA &amp; RS-485 (MODBUS-RTU Protocol)</td>
</tr>
<tr>
<td>Max. Load Resistance</td>
<td>500 Ω</td>
</tr>
</tbody>
</table>

### PHYSICAL SPECIFICATIONS
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature Range</td>
<td>-20 to 50 Degree Celsius</td>
</tr>
<tr>
<td>Operating Pressure</td>
<td>Ambient +/- 10%</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Cast Aluminum Alloy, Explosion Proof Case, Certified to IP66</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>2.3 Kgs</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>250mm X 170mm X 105mm</td>
</tr>
</tbody>
</table>

**CERTIFICATION**

Electronics enclosed in FLP JB CMRI certified to Ex db IIC T6

PESO certified Ex db IIC T4/T5/T6 Gb
ATEX certified by SGS BASEEFA & IECEX Certified
Ex db IIC T6 Gb (Tamb = -20°C to +40°C)
Ex db IIC T5 Gb (Tamb = -20°C to +55°C)
Ex db IIC T4 Gb (Tamb = -20°C to +85°C)

SIL-2 Certified Reference Standard IEC 61508:2010 by TUV SUD Italia
PRODUCT MODEL – UNIPHOS 500 DT
PRODUCT CODE – 500 DT – 1M
DIGITAL GAS TRANSMITTER WITH RELAY, ANALOG & MODBUS OUTPUT
UNIPHOS SS 500 – 090C
SMART SENSOR FOR HYDROGEN

Key Features
Digital Display of Gas name, Range of gas detection, alarm set-point values and the last calibration date on Power ON.
Hot Swappable Sensor Technology
Non-intrusive calibration
Sensor Life Tracking
3 user configurable Relay Contacts
Bump Test Counter

GAS RELATED SPECIFICATIONS
Gas Detected: Hydrogen
Range: 0-100% LEL
Resolution: 1% LEL
Detection Principle: Catalytic Bead
Response Time: Less than 30 seconds
Gas Sampling: Natural Diffusion
Accuracy: +/- 2% FS for 0-50% LEL or better
Repeatability: +/- 2% for 0-50% LEL or better

DISPLAY & INDICATOR SPECIFICATIONS
Display: Backlit 8x2 Alphanumeric LCD Display
Single tri-color LED indicates various alarms & system status
Magnetic Function Keys: For transmitter configuration & sensor parameter settings

ELECTRONICS & ELECTRICAL SPECIFICATIONS
Electronics: Microprocessor based instrument
Power Supply: 18V-30V DC Supply from controller / DCS
Outputs: 4-20 mA & RS-485 (MODBUS-RTU Protocol)
Max. Load Resistance: 500 Ω

PHYSICAL SPECIFICATIONS
Operating Temperature Range: -20 to 50 Degree Celcius
Operating Pressure: Ambient +/- 10%
Enclosure: Cast Aluminum Alloy, Explosion Proof Case, Certified to IP66
<table>
<thead>
<tr>
<th><strong>Weight</strong></th>
<th>2.3 Kgs</th>
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<td>PESO certified Ex db IIC T4/T5/T6 Gb</td>
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<td><strong>Certificate</strong></td>
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PRODUCT MODEL – UNIPHOS 500 DT
PRODUCT CODE – 500 DT – 1M
DIGITAL GAS TRANSMITTER WITH RELAY, ANALOG & MODBUS OUTPUT
UNIPHOS SS 500 – 030A
SMART SENSOR FOR HYDROGEN SULPHIDE

Key Features
Digital Display of Gas name, Range of gas detection, alarm set-point values and the last calibration date on Power ON.
Hot Swappable Sensor Technology
Non-intrusive calibration
Sensor Life Tracking
3 user configurable Relay Contacts
Bump Test Counter

GAS RELATED SPECIFICATIONS
Gas Detected: Hydrogen Sulphide
Range: 0-100 PPM
Resolution: 1 PPM
Detection Principle: Electrochemical Sensor
Response Time: Less than 30 seconds
Gas Sampling: Natural Diffusion
Accuracy: +/- 3 PPM

DISPLAY & INDICATOR SPECIFICATIONS
Display: Backlit 8x2 Alphanumeric OLED Display
Single tri-color LED indicates various alarms & system status
Magnetic Function Keys: For transmitter configuration & sensor parameter settings

ELECTRONICS & ELECTRICAL SPECIFICATIONS
Electronics: Microprocessor based instrument
Power Supply: 18V-30V DC Supply from controller / DCS
Outputs: 4-20 mA & RS-485 (MODBUS-RTU Protocol)
Max. Load Resistance: 500 Ω

PHYSICAL SPECIFICATIONS
Operating Temperature Range: -20 to 50 Degree Celsius
Operating Pressure: Ambient +/- 10%
Enclosure: Cast Aluminum Alloy, Explosion Proof Case, Certified to IP66
Weight: 2.3 Kgs
| Dimensions | 250mm X 170mm X 105mm |

| CERTIFICATION | Electronics enclosed in FLP JB CMRI certified to Ex db IIC T6  
PESO certified Ex db IIC T4/T5/T6 Gb  
ATEX certified by SGS BASEEFA & IECEX Certified  
Ex db IIC T6 Gb (Tamb = -20°C to +40°C)  
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SIL-2 Certified Reference Standard IEC 61508:2010 by TUV SUD Italia |

| Certificate |  |
**PRODUCT MODEL – UNIPHOS 500 DT**  
**PRODUCT CODE – 500 DT – 1M**  
DIGITAL GAS TRANSMITTER WITH RELAY, ANALOG & MODBUS OUTPUT  
UNIPHOS SS 500 – 099E  
SMART SENSOR FOR HC

**Key Features**
- Digital Display of Gas name, Range of gas detection, alarm set-point values and the last calibration date on Power ON.  
- Hot Swappable Sensor Technology  
- Non-intrusive calibration  
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- Single tri-color LED indicates various alarms & system status  
- Magnetic Function Keys: For transmitter configuration & sensor parameter settings

**ELECTRONICS & ELECTRICAL SPECIFICATIONS**

- Electronics: Microprocessor based instrument  
- Power Supply: 18V-30V DC Supply from controller / DCS  
- Outputs: 4-20 mA & RS-485 (MODBUS-RTU Protocol)  
- Max. Load Resistance: 500 Ω

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