



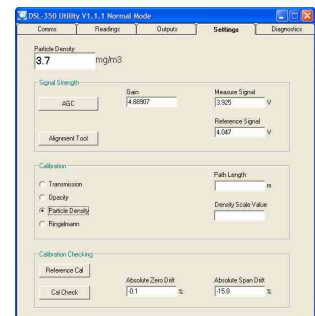
Ideal for monitoring smoke and particulate concentrations in the exhaust gas of industrial combustion or air filtration processes.

Applications

- Boilers
- Diesel Engines
- Wood Burners
- Incinerators
- Crematoria
- Electrostatic Precipitators
- Filter Bag Houses
- Combustion Furnaces

Benefits

- Low cost, low maintenance (no moving parts & easy optics access)
- Simple installation, commissioning, and operation
- Optional manual calibration checking
- Alarm level contact, 4-20mA loop, ModBus comms, and USB header
- Free utility software for PC based setup, control, and data logging
- Stand-alone version available (no control unit - just measuring heads)
- Choice of control unit enclosures (external IP65, panel, or rack)
- Choice of 24VDC or 90-260VAC ; optional stainless steel heads



The DSL-320 is an optical instrument designed to measure the visible opacity (0-100%) of exhaust gas in a duct, stack, or flue - typically the exhaust gas from an industrial combustion process or air filtration system.

The DSL-320 uses the double pass transmission measurement technique (a folded beam transceiver arrangement) in which a light beam emitted from the transceiver passes across the stack to a reflector, which then returns the light to the transceiver where the intensity of the received light is measured. Increased particulate or smoke density in the stack gas attenuates the transmitted light and causes the intensity of the received light to fall. This reduction in intensity is measured and presented as opacity.

The double pass measurement technique allows for manual calibration checking using the optional calibration head and zero/span inserts. Used in conjunction with the supplied utility software, zero and span drift values can be calculated, recorded, and corrected for.

The light source in the transmitter is a high intensity, high reliability green LED which provides long life and stable intensity. The transmitted light beam is pulsed to give complete immunity to ambient light levels. The intensity of the transmitted light is monitored at source so that any variations in the emitted light level are compensated in the received signal. The transceiver has on board temperature measuring to provide stability over temperature.

The DSL-320 is available with or without an Operator Interface (control unit), so for the most cost effective monitoring solution the DSL-320 can operate as a "stand-alone" head pair consisting of just the transceiver head (TRX) and reflector head, with all electrical connections (including outputs such as the alarm relays, 4-20mA, and ModBus) being made inside the TRX head. As a stand-alone instrument the DSL-320 is set-up and controlled using the supplied utility software, installed on a PC or laptop, and connected via the USB connector on the TRX.

When supplied with an Operator Interface (OI) all power supply and output connections are made in the OI rather than the TRX. The OI is available in either an IP65 rated wall mounting enclosure (for outdoor use), as a small panel (for installation in larger system panels), or as a rack panel (for installation in standard rack cabinets). The OI itself has a bright 4 digit LED display and a simple 4 button keypad which allow full command and control of the instrument. Alternatively, the free utility software can be connected to the OI and used to command and control the DSL-320 directly from a PC.

The DSL-320 has no moving parts, is of rugged design, and has an excellent reliability record. Regular maintenance simply involves cleaning the TRX and Reflector lenses, which are easily accessible due to our latched head design. Both the TRX and Reflector are supplied with an air purge body which when connected to a high volume source of clean air (a blower is recommended) will resist particle deposition on the lenses and further lengthen service intervals.



DYNOPTIC

DSL-320

Double Pass Opacity Monitor

Measures 0-100% Opacity
with optional calibration check function

Specification:

Measurement Performance

| No. | Parameter | Units | Min | Max | Comment |
|-----|--------------------------------|-------|-----|-------|--------------------------------------|
| 1 | Path Length (flange to flange) | m | 0.5 | 12 | Flange-to-flange separation |
| 2 | Measuring Range | % | 0.0 | 100.0 | User selectable |
| 3 | Accuracy | % | -2 | +2 | |
| 4 | Resolution | % | | 0.1 | Display resolution |
| 5 | Damping | s | 1 | 60 | Selectable |
| 6 | Drift with Temperature | % | -2 | +2 | Over any 20°C in the operating range |
| 7 | Operating Wavelength | nm | 510 | 540 | Green LED |

Power & Air Requirements

| | | | | | |
|----|------------------------------|-------------------|-----|-----|---|
| 8 | Voltage | VDC | +24 | +24 | Optional 90-260VAC PSU available |
| 9 | Voltage Tolerance | % | -10 | +10 | |
| 10 | Nominal Current Consumption | mA | | 400 | |
| 11 | Power Up Current Consumption | mA | | 400 | |
| 12 | Air Supply Volume | m ³ /h | 5 | 60 | Optimum: 40m ³ /h |
| 13 | Air Supply Pressure | mbar | | 500 | Must exceed maximum stack pressure |
| 14 | Air Supply Fitting | | | | 1" BSP threaded aperture in each Air-Purge Head |

Cable and Wire

| | | | | | |
|----|-------------------------------------|-------|----|----|--|
| 15 | | | | | |
| 16 | Cable type – OI/TRX Interconnection | cores | 4 | | Screened multi-core, such as Belden 9874 |
| 17 | Wire Size at Terminal Connections | AWG | 28 | 14 | |

Interface Options

| | | | | | |
|----|------------------|----|-----|------|---|
| 18 | Serial Comms | | | | 1. ModBus RTU (on terminals in OI or TRX) 2. Internal USB (OI), external USB (TRX) 3. ProfiBus, DeviceNet, Ethernet etc. on request |
| 19 | Analogue Outputs | mA | 4.0 | 20.0 | Isolated and scalable |
| 20 | Relay Contacts | A | 0 | 3 | @30VDC (level alarm and service alarm) |

Physical

| | | | | | |
|----|--|--------|----------------------|------|---|
| 21 | Ingress Protection - Heads | | IP65 | | For external use |
| 22 | Ingress Protection – OI Wall Mounting – OI Panel Mounting – OI Rack Mounting | | IP65 IP64 IP50 | | Hinged door and terminal compartment shut From front face of panel when installed |
| 23 | Operating Humidity | % | 5 | 100 | |
| 24 | Ambient Operating Temperature | °C | -20 | +50 | Air temperature around the equipment |
| 25 | Gas Temperature | °C | | +600 | Optional insulators required above 300°C |
| 26 | Regulatory Compliance | | | | 89/336/EEC (Electromagnetic Radiation) 73/23/EEC (Low Voltage) |
| 27 | Materials – TRX/Reflector Heads | | | | Anodised and powder coated cast aluminium air-purge bodies, with polycarbonate measurement head, and stainless steel latches |
| 28 | Materials – OI Wall Mounting – OI Panel Mounting – OI Rack Mounting | | | | Aluminium front panel with PU laminate overlay, and PC enclosure with nylon cable glands Aluminium front panel with PU laminate overlay, and powder coated steel back-box with nylon cable glands Aluminium front panel with PU laminate overlay, and powder coated steel back-box with nylon cable glands |
| 29 | Warranty | months | 24 | | Return to base warranty |



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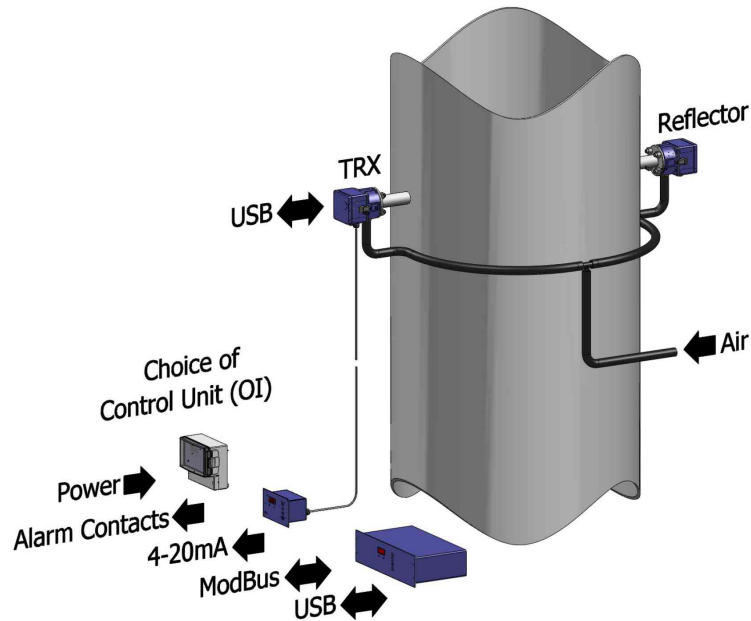


DSL-320

Double Pass Opacity Monitor
Measures 0-100% Opacity
with optional calibration check function

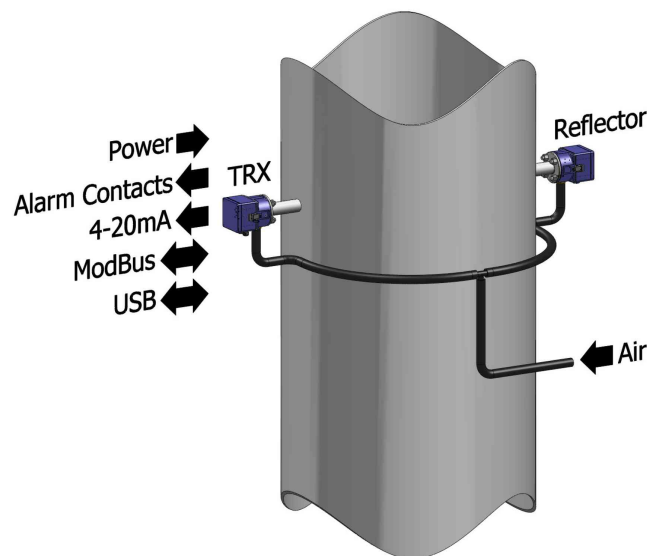
Configuration Options:

Configured with an
OI: Wall, Panel, or
Rack Mounting



OR

Stand Alone
Configuration



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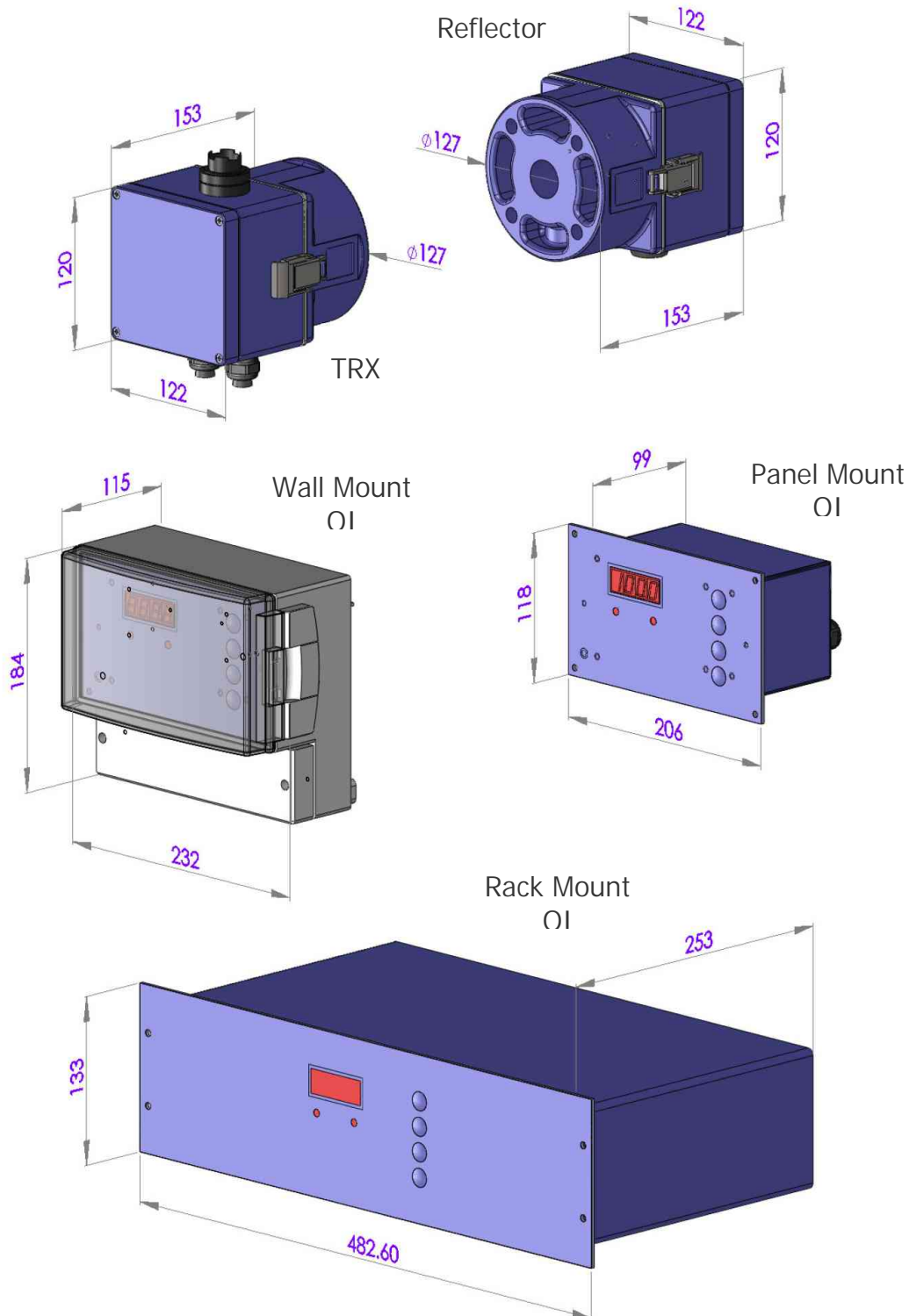


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Dimensions:



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Ordering Details:

DSL-320 X X X X

A = Aluminium air-purge heads

S = Stainless steel air-purge heads

D = 24VDC powered

A = 90-260VAC powered

N = No OI

W = Wall mounted OI

P = Panel mounted OI

R = Rack mounted OI

S = Short path length version (0.5 - 5m flange to flange separation)

L = Long path length version (0.5 - 12m flange to flange separation)



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