



DSL-240 MkIII

Single Pass Dust Monitor
Measures 0-1000mg/m³ using DDP

Ideal for monitoring dust levels in the exhaust gas of industrial combustion or air filtration processes.

The DSL-240 is an optical instrument designed to measure the concentration of dust or particulate matter suspended in the exhaust gas passing through a duct, stack, or flue; typically the exhaust gas from an industrial combustion process or air filtration system.

The DSL-240 uses the innovative Dynamic Detection Principle (DDP) which measures fluctuations in the intensity of a light beam crossing the stack using a Transmitter and Receiver configuration. Increased particulate density in the stack causes the amplitude of these fluctuations to increase. When calibrated against standard reference measurements, the amplitude of this signal relates directly to the particulate concentration in the stack, and this can be presented as a reading in mg/m³.

Unlike the standard transmission technique, DDP has immunity to gradual reductions in the absolute intensity of the light signal and therefore, has the advantage that it is significantly less susceptible to drift with time, temperature or dirtying optics, than traditional opacity monitors using the standard transmission technique.

The light source in the Transmitter is high intensity, high reliability green LED which offers 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 Transmitter has on board temperature measuring to provide stability over temperature.

The DSL-240 is available with or without an Operator Interface (control unit), so for the most cost effective monitoring solution the DSL-240 can operate as a “standalone” instrument consisting of the Transmitter head (TX) and Receiver head (RX), with all electrical connections (including outputs such as the alarm relays, 4-20mA and ModBus) being made inside the RX head. As a stand-alone instrument the DSL-240 is set-up and controlled using the supplied utility software, installed on a PC or laptop, and connected via the USB connector on the RX. When supplied with an Operator Interface (OI) all power supply and output connections are made in the OI rather than the TX.

The DSL-240 has no moving parts, is of rugged design and has an excellent reliability record. Regular maintenance simply involves cleaning the TX and RX lenses, which are easily accessible due to our latched head design.

Both heads are supplied with an air purge body which, when connected to a high volume source of clean air, keeps the contaminated stack gas away from the lens surfaces. An Aluminium air purge body is available for use on standard installations and a more advanced Stainless Steel air purge body is available for more demanding installations. Alternatively, an air purge body with a built-in Optical Protection Shutter is available, which closes a steel shutter when the clean air source is interrupted, helping to protect the sensitive optics from the contaminated stack gas.

Benefits

- Innovative Dynamic Detection Principle (DDP) measurement technique
- Immune to gradual reduction in absolute intensity of light signal so less susceptible to drift
- Measurement reading as mg/m³ (when calibrated against standard reference measurements)
- Internal electronic calibration check facility
- Free utility software for PC based setup, control, and data logging

Specification

Measurement Performance

Item	Parameter	Units	Min	Max	Comment
1	Path Length (flange to flange)	m	0.5	20	Flange-to-flange separation
2	Measurement Range	mg/m ³	0.0	1000	Selectable (at 1m path length)
3	Accuracy	%	-2	+2	Relative to full scale (at 1m path length)
4	Resolution	mg/m ³		0.1	Display resolution
5	Flue gas flow rate	m/s	1.0		
6	Damping	s	1	60	Selectable
7	Drift with Temperature	%	-0.5	+0.5	Over operating range
8	Operating Wavelength	nm	510	540	Green LED

Power & Air Requirements

9	Voltage	Vdc	+24		Optional 90-260Vac PSU available
10	Voltage Tolerance	%	-10	+10	
11	Nominal Current Consumption	mA		400	
12	Power Up Current Consumption	mA		400	
13	Air Supply Volume Flow	L/min	150	200	To each air-purge body.
14	Air Supply Fitting	1" BSP threaded aperture in each air-purge body			

Cable and Wire

15	Cable type - TX/RX Interconnection	cores	6		Screened multi-core, such as Belden 9873
16	Cable type - OI/RX Interconnection	cores	4		Screened multi-core, such as Belden 9873
17	Wire Size at Terminal Connections	AWG	20	14	

Interface Options

18	Serial Comms				ModBus RTU via RS485 (RX) Internal USB (OI), external USB (RX)
19	Analogue Output (one)	mA	4	20	Isolated and scalable
20	Digital Relay Contacts (two)	A	0	3	@30Vdc (signal level and data valid)

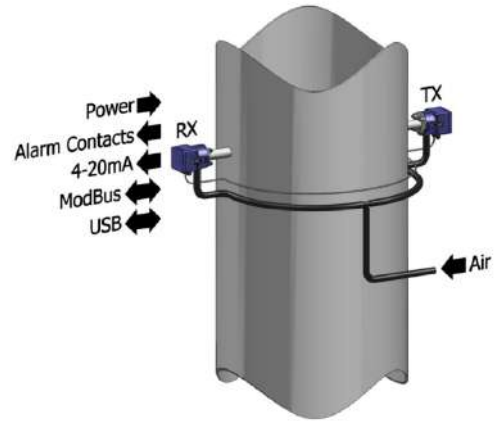
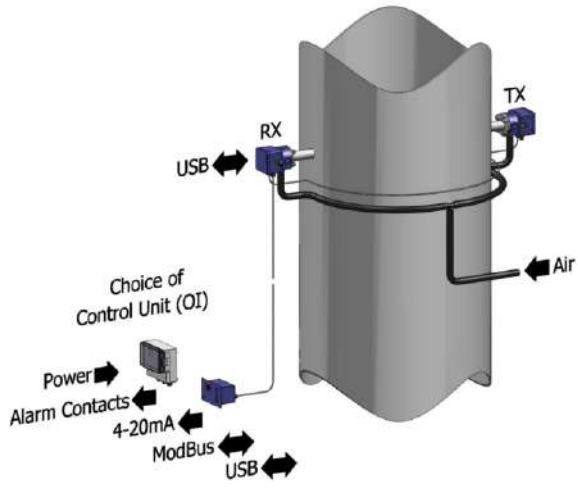
Physical

Item	Parameter	Units	Min	Max	Comment
21	Ingress Protection: - TX/RX Heads		IP65		For external use
22	Ingress Protection: - OI Wall Mounted - OI Panel Mounted		IP65 IP64		Hinged door and terminal compartment shut. From front face of panel when installed.
23	Ambient Operating Temperature	°C	-20	+55	Air temperature around the heads.
24	Operating Humidity	%		100	Air humidity around the heads.
25	Gas Temperature	°C		+600	Heat insulating gaskets included. (Higher temperatures on request)
26	Regulatory Compliance	2014/30/EU (Electromagnetic Radiation) 2014/35/EU (Low Voltage)			
27	Materials: - TX/RX Heads	AISI/SAE 316L stainless steel			
28	Materials: - Air-Purge Bodies	Powder coated cast aluminium or stainless steel for demanding installations			
29	Materials: - OI Wall Mounted	UL rated polycarbonate enclosure; aluminium front panel with PU laminate overlay and with nylon cable glands			
	- OI Panel Mounted	Powder coated steel back-box; aluminium front panel with PU laminate overlay and with nylon cable glands			
30	Weight	kg		2.5	TX or RX head plus Aluminium Air-Purge body
31	Weight: - OI Wall Mounted	kg		1.3	
	- OI Panel Mounted			1.3	
32	Warranty	months	24		Return to base warranty. Extensions available

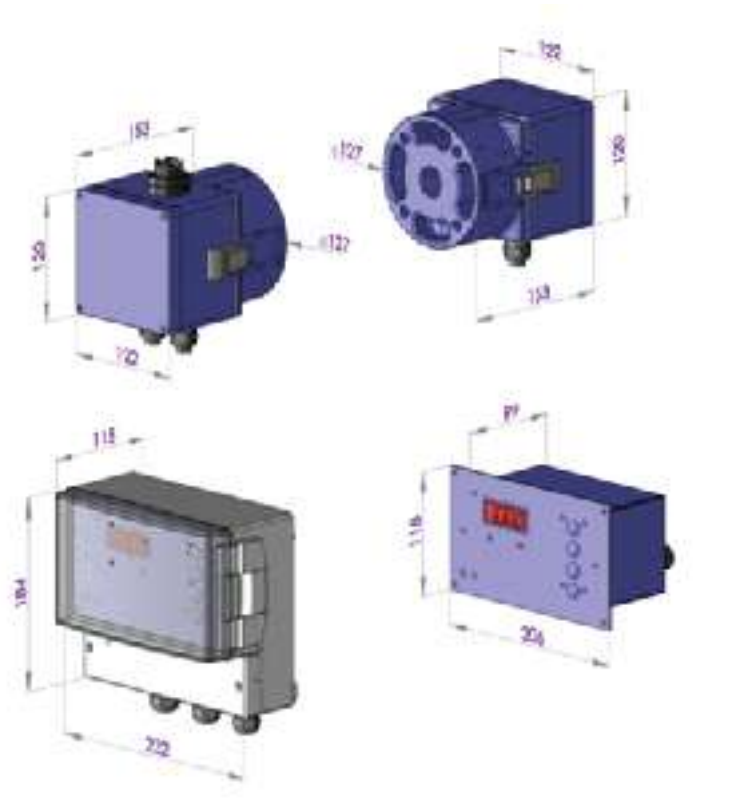
Configuration Options

Configured with an OI: Wall or Panel Mounting

Stand Alone Configuration

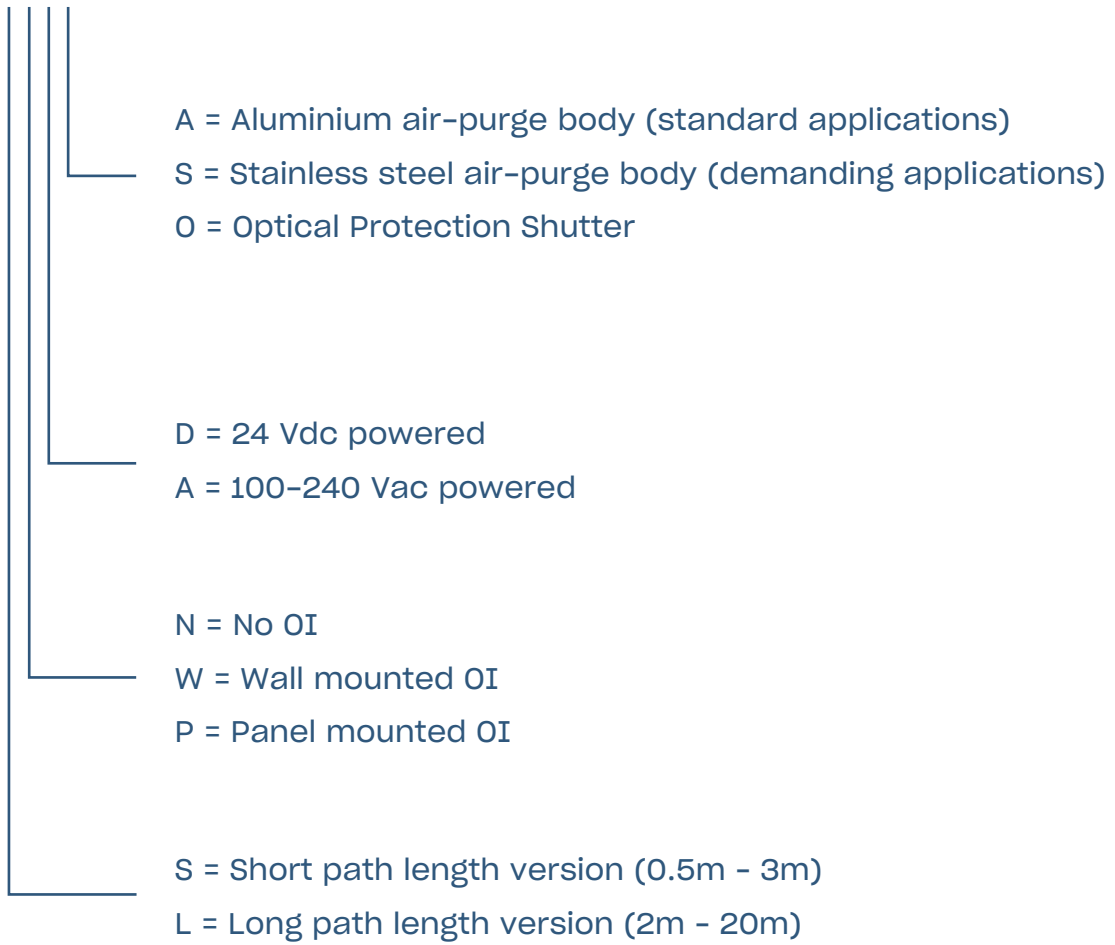


Dimensions (mm)








Ordering Details

DSL-240-XXXX-MKIII



Options & Accessories

Description	Order Code	Notes
<p>Mounting Flange</p> 	ASY-067	1.5" ANSI 150 flange pattern with 240mm long extension tube (x2).
<p>Fixing Kit for use with Aluminium Air Purge Body or Optical Protection Shutter</p>	ASY-071	Contains M14 x 100mm studding, flat washers, spring washers and M14 nuts.
<p>Fixing Kit for use with Stainless Steel Air Purge Body</p>	ASY-245	Contains M14 x 100mm studding, flat washers, spring washers and M14 nuts.
<p>Weather Cover</p> 	ASY-080	Hinged stainless steel weather / heat cover for protecting externally mounted heads.
<p>Screened Cable</p>	CBL-099	7-core, screened LSZH cable.
<p>Boxed PSU</p>	DSL-PSU-25	Multi AC input, 24Vdc output 25W, IP67 rated enclosure

Description	Order Code	Notes
<p>Laser Alignment Tool</p> 	DSL-LAT08	Tool to aid the alignment of the two heads across the stack.
<p>Blower Kit</p> 	DSL-BK40B-110	Blower kit for purge air. 110 Vac; single phase
	DSL-BK40B-230	Blower kit for purge air. 230 Vac; single phase
	DSL-BK40B-415	Blower kit for purge air. 415 Vac; three phase
<p>Compressed Air Kit</p> 	DSL-CAK-2	<p>For use with compressed air purge.</p> <p>Includes pressure regulator, in-line filters, and compressed air adaptors for the purge body.</p>

Note that the actual part may differ from the above representative pictures.

