DSL-230 MkIII

Single Pass Particulate Monitor
Measures 0-1000mg/m³

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

The DSL-230 is an optical instrument designed to measure the concentration of dust or particulate matter in an exhaust gas passing through a duct, stack, or flue; typically the exhaust gas from an industrial combustion process or air filtrationsystem.

The DSL-230 uses the standard single pass transmission measurement technique, with Transmitter/Receiver arrangement. A light beam emitted from the Transmitter passes across the duct, stack or flue to a Receiver, which measures the intensity of the received light. Increased particulate or dust in the stack gas attenuates the transmitted light and causes the intensity of the received light to fall. When calibrated against standard reference measurements, this reduction in intensity can be used to calculate the particulate concentration and present a reading in mg/m³.

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 for at the Receiver. The Receiver has on board temperature measurement to provide stability over temperature range.

The DSL-230 is available with or without an Operator Interface (control unit), so for the most cost effective monitoring solution the DSL-230 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- 230 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 RX.

The DSL-230 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

- **Free utility software for PC based setup, control, and data logging**
- **Optional Operator Interface with different mounting configurations**
- **Rugged 316L stainless steel construction**
- **Measurement reading as mg/m3 (when calibrated against standard reference measurements)**
- **Modulated green LED source for long lifetime stability and immunity to ambient light**

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/m³	0.0	1000	Selectable (at 1m path length)
3	**Accuracy**	%	-2	+2	Relative to full scale (at 1m path length)
4	**Resolution**	mg/m³		0.1	Display resolution
5	**Damping**	s	1	60	Selectable
6	**Drift with Temperature**	%	-2	+2	For a 20°C in the operating temperature
7	**Operating Wavelength**	nm	510	540	Green LED

Power & Air Requirements

8	**Voltage**	Vdc	+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 Flow**	L/min	150	200	To each air-purge body.
13	**Air Supply Fitting**	1" BSP threaded aperture in each air-purge body			

Cable and Wire

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

Interface Options

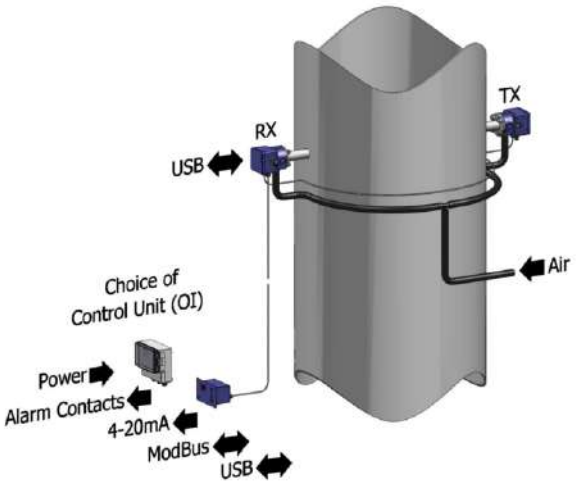
17	**Serial Comms**				ModBus RTU via RS485 (RX) Internal USB (OI), external USB (RX)
18	**Analogue Output (one)**	mA	4	20	Isolated and scalable
19	**Digital Relay Contacts (two)**	A	0	3	@30Vdc (signal level and data valid)

Physical

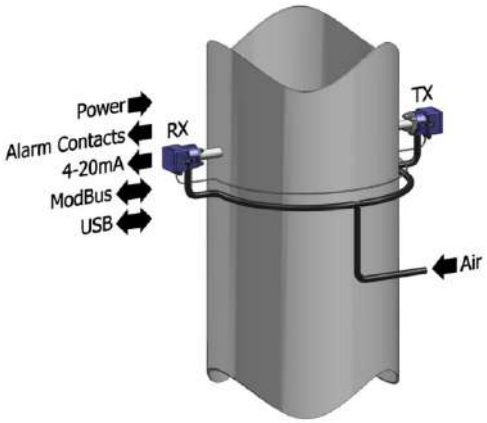
Item	Parameter	Units	Min	Max	Comment
20	**Ingress Protection:** – TX/RX Heads		IP65		For external use
21	– OI Wall Mounted – OI Panel Mounted		IP65 IP64		Hinged door and terminal compartment shut. From front face of panel when installed.
22	**Ambient Operating Temperature**	°C	-20	+55	Air temperature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

Configuration Options

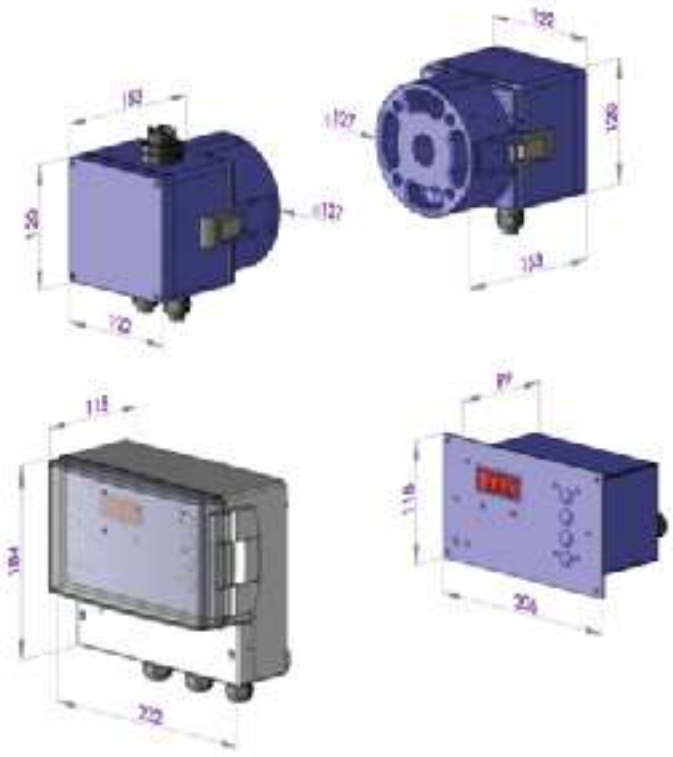
Configured with an OI: Wall or Panel Mounting



Stand Alone Configuration



Dimensions (mm)



Ordering Details

DSL-230-XXXX-MKIII

- A = Aluminium air-purge body (standard applications)
- S = Stainless steel air-purge body (demanding applications)
- O = Optical Protection Shutter

- D = 24 Vdc powered
- A = 100-240 Vac powered

- N = No OI
- W = Wall mounted OI
- P = Panel mounted OI

- S = Short path length version (0.5m - 3m)
- L = Long path length version (2m - 20m)

Options & Accessories

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

Description	Order Code	Notes
Laser Alignment Tool 	DSL-LAT08	Tool to aid the alignment of the two heads across the stack.
Blower Kit 	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
Compressed Air Kit 	DSL-CAK-2	For use with compressed air purge. Includes pressure regulator, in-line filters, and compressed air adaptors for the purge body.

Description	Order Code	Notes
Calibration Head 	DSL-CH350BA	For use between the RX head and the purge body to perform calibration checking with aluminium type air purge bodies. (Calibration head only, no filters included).
	DSL-CH350BS	For use between the RX head and thepurge body to perform calibration checking with stainless steel type air purge bodies. (Calibration head only, no filters included).
Calibrated Opacity Filters  (other values available on request)	ASY-190	Calibration filter, approx. 8% opacity
	ASY-133	Calibration filter, approx. 20% opacity
	ASY-183	Calibration filter, approx. 35% opacity

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

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