DSL-230 MkIII

Single Pass Particulate Monitor

Measures 0-1000mg/m^3

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

- In situ measurement directly in exhaust gas flow
- Measurement reading as mg/m^3 (when calibrated against standard reference measurements)
- Modulated green LED source for long lifetime stability and immunity to ambient light
- Rugged 316 stainless steel construction
- Choice of interface options enabling easy integration
- Free utility software for PC based setup, control, and data logging
- Optional Operator Interface with different mounting configurations

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 filtration system.

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 stack to a Receiver, which measures the intensity of the received light. Increased particulate or smoke density 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/m^3.

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 “stand-alone” 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 OI is available in either an IP65 rated wall mounting enclosure (for outdoor use); a panel enclosure (for installation in larger system panels), or as a rack panel (for installation in standard rack cabinets). The OI has a bright 4 digit LED display and a simple 4 button keypad, which allows 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-230 directly from a PC.

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 the TX and RX 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.

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Measures 0-1000mg/m^3

Specification:

Measurement Performance

No.	Parameter	Units	Min	Max	Comment
1	Path Length (flange to flange)	m	0.5	20	Flange-to-flange separation
2	Measuring Range	mg/m^3	0.0	1000.0	User selectable
3	Accuracy	%	-2	+2	Relative to maximum range
4	Resolution	mg/m^3		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		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	50	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 (OI or TRX) 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

20	Ingress Protection: - TX/RX Heads		IP65		For external use
21	Ingress Protection: - OI Wall Mounted - OI Panel Mounted - OI Rack Mounted		IP65 IP64 IP50		Hinged door and terminal compartment shut. From front face of panel when installed. Indoor use only
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				2004/108/EC (Electromagnetic Radiation) 2006/95/EC (Low Voltage)
26	Materials: - TX/RX Heads	316 Stainless Steel (powder coated)			
27	Materials: - Air-Purge Bodies	Powder coated cast aluminium (Stainless steel option available)			
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			
	- OI Rack 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 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

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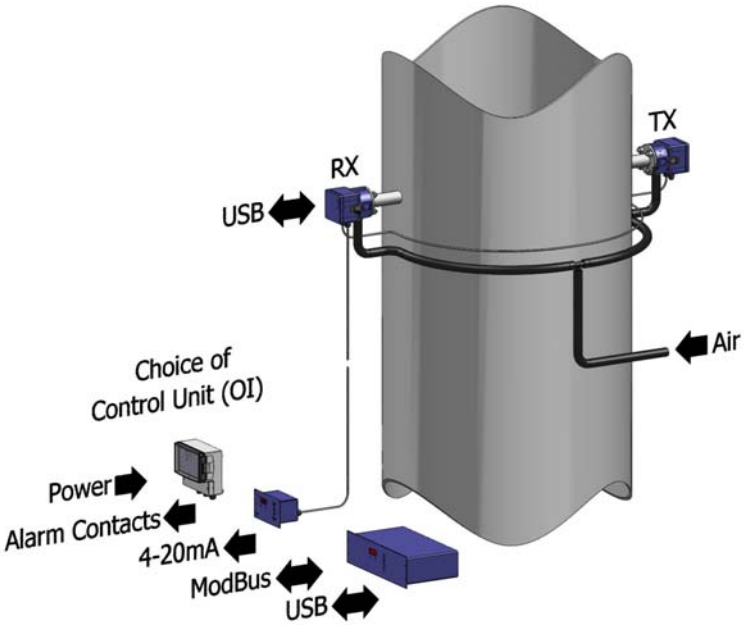
All technical details and specifications are subject to change without notice

29/07/2013 V1.1

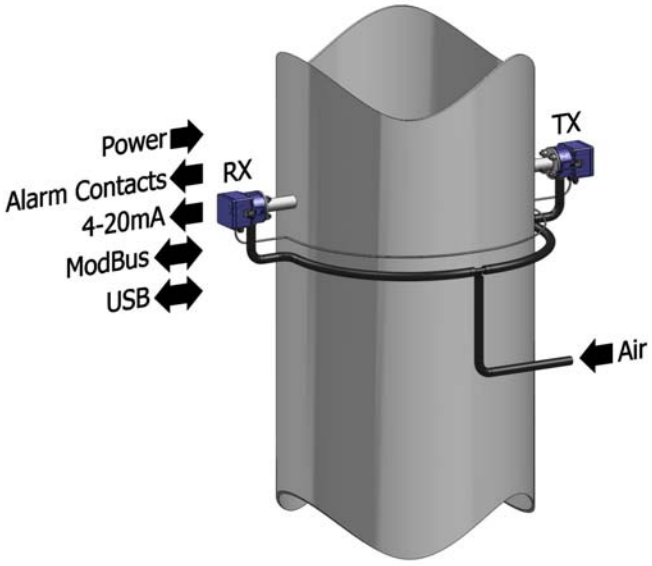
Configuration Options:

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



OR

Stand Alone Configuration



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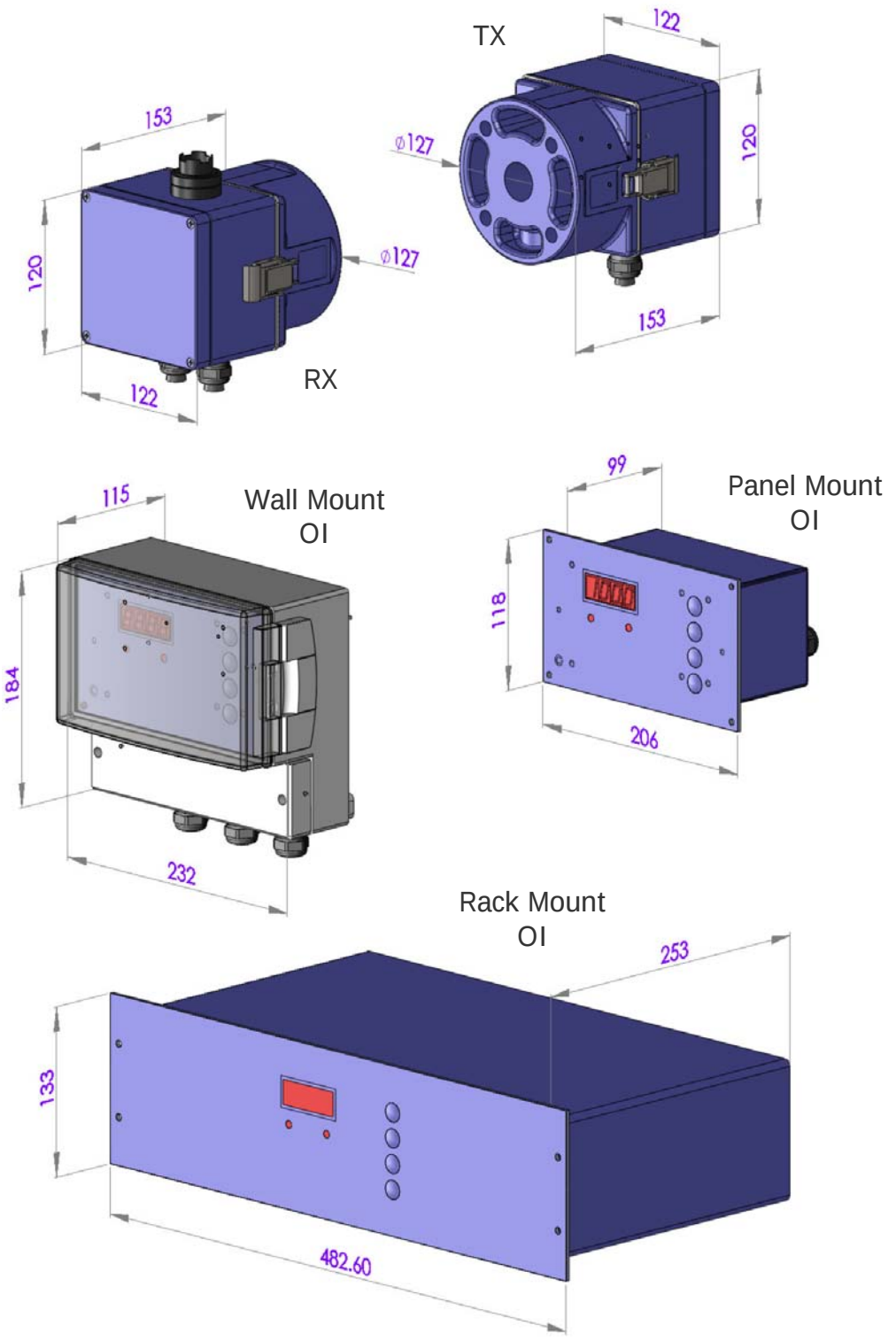
Dimensions (mm):



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Ordering Details:

DSL-230 MkIII X X X X

A = Aluminium air-purge body
S = Stainless steel air-purge body

D = 24 Vdc powered
A = 90-260 Vac 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
(3 - 20m flange to flange separation)

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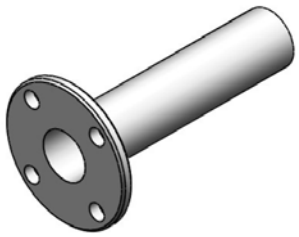
Options & Accessories:

Description	Order Code	Notes
Mounting Flange 	ASY-067	1.5” ANSI 150 flange pattern with 240mm long extension tube (x2).
Fixing Kit	ASY-071	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.
Laser Alignment Tool 	DSL-LAT08	Tool to aid the alignment of the two heads across the stack.
Blower Kit 	BK-40B-110	Blower kit for purge air. 110 Vac; single phase
	BK-40B-240	Blower kit for purge air. 240 Vac; single phase
	BK-40B-415	Blower kit for purge air. 415 Vac; three phase
Compressed Air Kit 	ASY-181	For use with compressed air purge. Includes pressure regulator, in-line filters, and compressed air adaptors for the purge body.
Calibration Head	DSL-CH350A	For use between the RX head and the purge body to perform calibration checking.

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Calibrated Opacity Filters 	ASY-190	Calibration filter, approx 8% opacity
	ASY-133	Calibration filter, approx 20% opacity
	ASY-183	Calibration filter, approx 35% opacity
Interconnecting Cable	CBL-078	Cable for RX to TX and RX to OI. 6-core, screened pair, 20AWG. Belden equivalent 9873. Max length 300m.
Boxed PSU 	PSU-007	Multi AC input, 24Vdc output 25W, IP67 rated enclosure

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

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