



**TELEDYNE
MONITOR LABS**
A Teledyne Technologies Company

Model 560P Process Control Monitor

Ideal Opacity, Optical Density and Dust Concentration Monitor



Breakthrough Patented Technology

The 560P utilizes a special gallium-nitride, electronically modulated intensity-controlled solid state LED with a proven life of over 70,000 hours yielding years of trouble-free operation. With our patented technology, the 560P has no moving parts reducing the critical maintenance time required of on-site personnel and yielding the lowest life cycle cost versus incandescent and gas laser based monitors.

Labor Saving On-Stack Controls

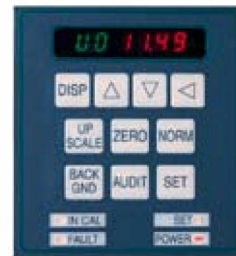
All of the hardware and software needed for system set-up, control and maintenance are packaged within a single optical housing. Via a membrane-sealed, EMI protected ten-key keypad and digital display, the user can perform clear-stack zeroing, I/O configuration, alarm set-point initiation, linearity checks, input dust load correlation data and access the full set of diagnostic parameters that makes the need for a volt/ampmeter or laptop unnecessary. Password security is also enabled.

Rugged Construction

The optical head and retroreflector are built of heavy gauge aluminum parts and finished with acid-resistant enamel paint. All exposed hardware is stainless steel. The optical bench is anodized aluminum with precision pins and screw fixtures. All optical boards feature flush mount components that are on stand-offs and interface via D connectors. The rugged design and extremely low heat generation allows operation over a wide range of ambient temperatures. It is built to withstand the typical hostile environment associated with outdoor industrial applications, including substantial shock and vibration.

Flexible 6-Point I/O Capability

The optical head features a six-point input/output board that includes two analog outputs and two dry contact outputs. All I/O is galvanically isolated. The analog channels can be programmed to carry 4-20ma signals for opacity, optical density or dust concentration. Two relay outputs can be used to notify operators of malfunctions, alarm exceedences and purge fail.



Simple Upgrade

The 560P has been designed with ASTM D6216 and PS-1 grade optics, to permit a customer to later upgrade the unit to a full EPA compliance opacity monitor. This upgrade permits users to assess their reporting requirements in dynamically changing regulatory markets and complete an upgrade without the need to purchase an entirely new instrument. By having the ability to upgrade a 560P, a user may also be prepared to comply with future opacity and particulate matter standards.



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SPECIFICATIONS (STANDARD SYSTEM)	
PHYSICAL DIMENSIONS	
Optical Head (w/o Purge Shutter)	17"(43.2cm)(L) X 9-1/4"(23.5cm)(W) X 15"(38.1cm)(H)
Optical Head (with Purge Shutter)	22"(55.9cm)(L) X 9-1/4"(23.5cm)(W) X 15"(38.1cm)(H)
Retro Assembly (w/o Purge Shutter)	10"(25.4cm)(L) X 7"(17.8cm)(Diameter)
Retro Assembly (with Purge Shutter)	15"(38.1cm)(L) X 7"(17.8cm)(Diameter)
Single Purge Blower Assembly	22-1/4"(56.5cm)(L) X 20"(508mm)(W) X 33" (83.8cm)(H)
PHYSICAL WEIGHTS	
Optical Head (w/o Purge Shutter)	27 lbs. (12.3kg)
Retro Assembly (w/o Purge Shutter)	6 lbs. (2.7kg)
Single Purge Blower Assembly	65 lbs. (29.5kg)
OPTICAL CHARACTERISTICS	
Optical Measurement Technique	Double Pass Extinction
Angle of View and Angle of Projection	Less than 4 degrees
Spectral Response	Peak: 500 to 600 nm; Mean: 500 to 600 nm; 94% of Energy; 500 to 600 nm
SYSTEM MEASUREMENT CHARACTERISTICS**	
Response Time (To 95% of change)	Less than 10 seconds
Calibration Error (Mean Error + Confidence Coefficient)	2.0% Opacity Maximum
Stability Over Operating Temperature Range	±2.0% Opacity Maximum per 40°F change in temperature
Stability Over Operating Mains Voltage Range	±1.0% Opacity Maximum
POWER REQUIREMENTS	
Optical Head	85-245 VAC, 47-63Hz, Single Phase, 30 VA Maximum
Single Purge Blower System***	115VAC/230VAC, 60/50 Hz, Single Phase, 414 VA Maximum
Dual Purge Blower System***	Two circuits, each with same requirements as Single Purge Blower
AMBIENT OPERATING CONDITIONS	
Optical Head	Temp Range: -4 to +140°F (-20 to +60°C) (startup) -25 to +140°F (-32 to +60°C) (operating); RHum 0-100% condensing
MEASUREMENT MEDIUM CONDITIONS	
Static Pressure Range***	Single Purge Blower:-15.0 to +5.0 inches H2O Gauge Dual Purge Blowers:-15.0 to +15.0 inches H2O Gauge
Humidity	must be noncondensing for valid measurement
Maximum Temperature***	+500°F (260°C) (without High Temperature Option); +1500°F (816°C) (with Options)
OPTICAL HEAD HUMAN/MACHINE INTERFACE (HMI) CHARACTERISTICS	
Display Type	Six 7 Segment LED's
Indicating LED's	Fault, Set, In Cal, Power
User Input Controls	10-key keypad
WIRING REQUIREMENTS, OPTICAL HEAD TO CUSTOMER EQUIPMENT	
Cable Type 1	4/TSP, 24 AWG, PVC Insl., .33" Dia
Cable Type 2	4/C, 20 AWG, PVC Insl., .168 Dia units (For Relays)
SIX POINT I/O BOARD CHARACTERISTICS - ANALOG OUTPUTS	
Number	2
Isolation Type	Optical & capacitive barriers; channel to channel, channel to circuit common & earth
Minimum Isolation Voltage	500Vpeak*, 500VDC*
Output Type	4-20mA with live 4mA zero, or 0-20mA w/o live zero
Maximum Load Resistance	900 ohms
Maximum Offset	±0.05% of full scale
Total Output Error	±0.30% of full scale
SIX POINT I/O BOARD CHARACTERISTICS - RELAY OUTPUTS	
Number	2 Single Pole Single Throw, Normally Open or Normally Closed
Minimum Isolation	500Vrms*
Maximum Contact Voltage	250VAC*
Maximum Contact Current	1Amp AC, 1Amp DC

*I/O wiring with respect to earth / **Measurement based on single pass response, with Path Length Correction Factor 1.00
 ***Specification applies only to systems with purge blowers