

OPAC20/20 Purchase Specifications

Definition

- Purchase specification describes a double pass opacity monitoring system that uses a green LED (light emitting diode) light source. The opacity system must meet the FEDERAL REGISTER, 40 CFR, Pt. 60, App. B, Performance Specification 1, for opacity monitors. Phoenix Instruments, Inc. model OPAC20/20 compliance opacity monitor or equivalent.

Comments to Specifications

- Vendor shall state "exception" or "no exception" to each paragraph of this specification. Where exception is taken, vendor shall state the amount or reason for the exception.

System must at a minimum include the following:

- Double pass measurement technique. Window cleaning will be accomplished by quick disconnect latch, swing away housing. Alignment pins shall be provided to assure no change in alignment.
- No moving parts such as low or high speed choppers, or calibration solenoids shall be incorporated into the light-source housing. Calibration must be non-continuous and not of the rotating calibration wheel or fiber optic type.
- Weather cover with filtered air purge system, integral fail safe shutters, and air flow switch for purge air supply malfunction.
- Dedicated audit and zero reflector jig with system serial number. Zero jig must use locator pins to assure repeatability and must adjust and lock to match clear stack zero.
- Green LED (light emitting diode) light source with electronic, solid state modulation above 2KHz. Incandescent lamp and laser sources are not allowed.
- Optically isolated RS-422 digital communications between stack mounted equipment and remote control unit.
- Non-interfering direct thru the lens alignment system with no moving parts on both the light-source and retro-reflector.
- Electronic alignment detector that will alarm on the remote control unit when system misalignment effects the opacity readings.
- Remote Control Unit (RCU) with dual line display. Viewable, printable log files for; system faults, PLCF (path length correction factor) changes, daily calibrations, and start up times. Must have RS-232 and current loop outputs. Software must have user selectable lockout password.

- System must have no potentiometer or other mechanical signal adjustment on any electronics.

Opacity System Components

Transceiver and Retro-reflector

- Double pass measurement technique with Solid State LED light source with greater than 2000 Hz modulation frequency is required. Moving parts such as calibration solenoids or rotating choppers are not allowed in the light-source housing.
- Window cleaning will be accomplished by quick disconnect latch, swing away housing.
- Alignment verification, must be direct sight TTL (through-the-lens) system, on both the light-source and retro-reflector with no moving parts and have electronic alignment detector with remote control unit warning . Alignment must provide 3 point adjustment.
- Remote Control Unit can be placed up to 4000 feet (1220 meters) from stack sensor. Signal from sensors to the remote control unit must be RS-422 optically isolated digital link.
- Stack mounted parts shall install on a 4" or 6" inch 150 # pipe flange. All stack mounted components must be contained within the weather enclosures.
- All system stack functions shall be performed from the light-source weather enclosure electronically with no manual mechanical or signal adjustments . The functions that are performed electronically must include; clear stack set, calibration set, system linearization, and service warning to remote control unit.
- Light-source weather enclosure must have a back lit LCD readout of opacity that is path length corrected using the remote control units PLCF setting. The opacity readout must operate during all system modes of operation; normal operation, calibration, service, or audit.
- Daily calibration must be non-continuous and not of the rotating calibration wheel or fiber optic type. Calibrations should be not interfere with stack readings and occur hourly. Remote control unit should be able to display realtime stack readings during calibration.

Remote Control Unit

- Microprocessor controlled with user viewable and programable software. Software must be accessible through the front panel, require no external computer, and have a user selectable password.
- Remote control unit must be able to log system faults, PLCF (path length correction factor) changes, daily calibrations, and start up times.
- Outputs must be two 4-20 ma and two RS-232 outputs. Both type of outputs must be able to output data in instantaneous and averaged formats, calibrations, calibration drift, PLCF, and window dirt.
- Numeric Digital Display, two lines of 6 digit LED capable of being seen in high ambient light from 25 feet. Selectable Range 0-100% Opacity in .1 % increments. LED display must give alphanumeric warnings and faults.
- Non-volatile RAM and must contain a primary and secondary backup memory with auto-loading capability.
- Signal from control unit to sensors must be RS-422 optically isolated digital link.
- Software must provide as a minimum: Stack exit Path-Length-Correction Factor (PLCF), manual on demand zero/span calibration, calibration time and date set-up, time/ date /year set-up, time stamp all logs and digital data, set up of all user parameters.
- Control unit must be able to accept external input to initiate calibration cycle.
- Front panel LED readout must display opacity, calibration, alarms and faults.
- Alarm levels with time delay, eight solid state spdt alarm contact relays, all field selectable

Power and Environmental specifications

- Ambient temperature: - 30 to +140 F
- Media temperature: maximum 1500 F
- Stack pressure: - 10 up to + 10 inches H₂O
- Moisture: dry to saturated (non condensing)

Electrical requirements:

- Stack mounted weather enclosures: 115 vac / 30 amps (220v / 50hz available)
- Remote control unit: 115 vac / 5 amps (220v / 50 Hz available)
- Stack to control unit wiring required: two shielded twisted pair only.

Manufacturing:

- System should be manufactured in the U.S.A.

Warranty

- Unit shall be warranted for twelve months after installation or 18 months from date of shipment, whichever comes first.
- LED light-source shall be warranted for five years.