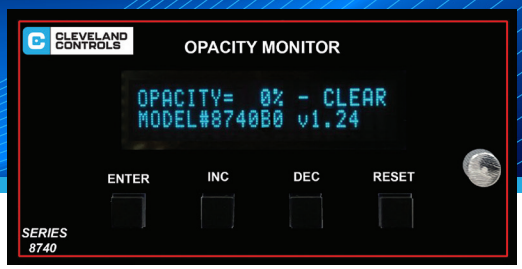
SERIES A-08740-B0

UNIVERSAL OPACITY MONITOR



½ DIN

RELIABLE, CONTINUOUS INDICATION OF CONFINED PARTICULATES SUCH AS DUST OR SMOKE

STANDARD FEATURES

- LED Light Source and Receiver
- Easy to align and install
- Modbus communications
- 4-20 mA dc output signal
- Adjustable alarm trip point and time delay
- Per cent opacity calibration
- NYC DEP approved

APPLICATION

The basic Series A-08720-B0 Opacity Monitor includes an electronics unit with two breeching components: an LED light source unit and a receiver. Buttons marked Enter, Inc, Dec, and Reset are located on the front face below the display. These buttons permit interaction with the electronics. The standard vacuum fluorescent display shows all operation and alarm messages. For units equipped with auxiliary functions (described below), the additional necessary messages are also displayed. The opacity monitor stack units are easy to install because the wide-beam LED light source and narrow-view receiver do not require precise alignment. The opacity monitor is easy to calibrate and requires no routine maintenance other than occasionally cleaning the sight glass.

OPERATION

The LED light source directs a beam through the measured particulate, and the light sensor receives the beam, detects changes in opacity, and sends a proportional signal to the electronics unit.

The electronics produces a digital readout of percent opacity and a 4-20 mA dc output signal suitable for recording, display, or indication. SPDT contacts are provided for remote alarm or control functions. A contact closure is provided for a remote alarm available separately, Model L- 05500-00.

The operator can select manual or automatic alarm reset. Modbus communications for interface with a SCADA system or other controls is standard. A standard serial printer port is provided.

The electronics unit is available in ½ DIN surface-mount and flush-mount formats. It can be installed in any dry, convenient area within 250 feet of the light source and receiver units.

AUXILIARY FUNCTIONS

The Burner Cutoff Auxiliary Function is a delayed de-energization timer that shuts the burner down if an alarm condition (opacity exceeding 20%) persists for 120 seconds. The timer can be manually reset only after reduction of opacity: it cannot be reset when opacity is above 20%. (This feature meets the requirements of the NYC air pollution control code for alarm and burner control functions).

For units equipped with the burner cutoff function, the vacuum fluorescent display shows Clear, Smoke, Alarm, and Burner Off messages in addition to the messages displayed on the basic model. In addition, an audible alarm with adjustable trip point and delay is mounted adjacent to the display.

The Overfire Air Timer Auxiliary Function is a delayed de-energization timer that provides relay contacts for the control of smoke-reduction air in coal-fired installations. Whenever opacity exceeds the alarm trip point, the relay is energized. It remains energized as long as the alarm condition persists. After the alarm condition is corrected, the relay remains energized for an adjustable period up to five minutes.

For units equipped with the overfire air timer function, the vacuum fluorescent display shows Clear, Smoke, Alarm, and Overfire Air messages in addition to the messages displayed on the base model.

Stack units, left to right:
P/N 32112 LED Light Source
P/N 32111 Receiver

P/N 31726 Purge Air Blower Kit is an accessory for positive pressure flue gas systems. Sight glass lenses at the ends of the traverse pipe can become cloudy due to water from the flue gas condensing on the lenses when the flue gas pressure exceeds ambient air pressure. Cloudiness results in false opacity alarms. The lenses can be purged with instrument air (not plant air) if sufficient volume is available, but usually it is not. The best solution is a blower to provide ambient air at low pressure (not compressed) to prevent condensation on the lenses. The Purge Air Blower Kit provides a single blower which is wired to run whenever the burner is running. It can be connected to fittings near the lenses. It operates with 120/230 V ac. The complete kit includes the blower with air inlet filter, four fittings, and two 6-ft lengths of 1-inch liquid-tight flexible conduit for tubing connections to the traverse pipe near the light source and receiver lens. Order separately.

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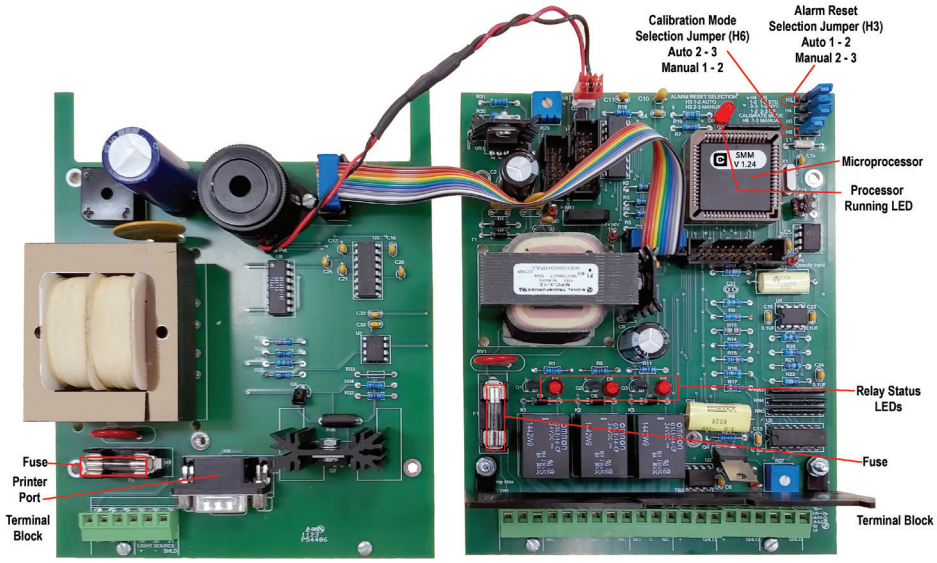
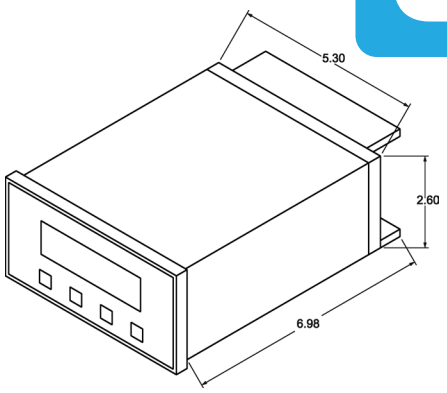
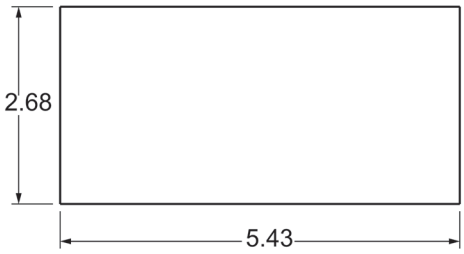
Series -A-8740-B0-Opacity-Monitor_Flyer_2023

CLEVELAND CONTROLS™





CUTOUT



SPECIFICATIONS

Power requirements: 120 V ac ± 10%, 50/60 Hz

Ambient temperature ranges: 32–130 °F (0-54 °C) for electronics unit. 32–160 °F (0-70 °C) for light source and receiver units

Fuse: One, @ 1 Amp.

Measurement range: 0 to 100% opacity.

Retransmit output range: 4-20 mA dc, 750 Ω maximum load. Directly proportional to measurement range, where 4 mA = 0% and 20 mA = 100%. Output is grounded (not isolated.)

Resolution: Digital meter reads 0-100% opacity with 1% resolution.

Response time: 1 second for 90% of actual change in opacity.

Accuracy: ± 5% opacity under all specified operating conditions.

LED light source to receiver distance: minimum 4 ft. (1.20 m), to maximum 15 ft. (4.57 m).

LED light source lamp life: 1 year minimum.

Spectral response of photocell: 350–1100 nM.

Cable length: 250 ft. (76 m) maximum.

Alarm timer: adjustable 0-300 second delay.

Alarm trip point: adjustable 0-99% opacity.

Alarm reset: automatic; field-convertible to manual.

Alarm contacts: isolated SPDT, 10 Amp, 120 V ac resistive, fail safe.

Purge Delay timer: adjustable 1-600 second delay.

NYC Burner Cutoff (optional): fixed 20% trip point and fixed 2-minute (120-second) delay.

NYC Burner Cutoff contacts: isolated SPDT, 10 Amp, 120 V ac resistive, fail safe.

Overfire air timer (optional): maintains contact closure after smoke abatement for a period adjustable from 1-300 seconds.

Overfire air contacts: isolated SPDT, 10 amp, 120 V ac resistive, fail safe.

Housing for enclosed models: NEMA 1.

Relative Humidity: 0-90%, non-condensing.

Modbus Communication: RTU. 9600 or 19200 Baud rate. N/8/1 (no parity, 8 data bits, 1 stop bit).

Printer port:
RS232 serial port, DB9-M connector, 9600 baud, N81 (no parity, 8 data bits, 1 stop bit).
Output adjustable, generated every 0-60 minutes, where 0 = disabled.
Output format: 5 sequence #, blank space, 3 digit opacity, "%" symbol, carriage return, line feed.
Example: 01234 011% c/r l/f

Shipping Weight: 12 lbs., approx.

Approvals: NYC DEP. UL & CUL pending.

SPECIFICATIONS ARE SUBJECT TO CHANGE.

HOW TO ORDER

The standard base unit includes LED light source and receiver units. Standard features include: adjustable alarm trip point and delay, field-selectable auto/ manual alarm reset, a contact closure for a remote alarm, retransmitted 4-20 mA dc output, a serial printer port (printer not included), and Modbus communication. Model A-08740-B0 Universal Opacity Monitor replaces obsolete Model A-08711.

A-08740-B0 -A-B

(B0 = Current Model designation)

A: AUXILIARY FUNCTIONS

0. None.

1. Burner Cutoff Timer with audible alarm on front of electronics and "Burner Off" LED. **NYC DEP approved**.

2. Overfire Air Timer with "Overfire Air" LED (for stoker applications).

B: HOUSING

0. Open-mounted (for OEM applications).

1. Surface-mount (for wall-mounting). NEMA 1.

2. Semi-flush mount (for panel-mounting). NEMA 1.

Please note: An **adapter plate**, 11" x 13.5", is available for panel-mounted retrofit units.

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