SPECTRA™ BC30 IR and BC30 UV Flame Sensor

FOR SINGLE AND MULTI BURNER APPLICATIONS: INCINERATORS, PROCESS HEATERS, KILNS, AND PACKAGE BOILERS

POWER &INDUSTRIAL

FLAME SENSOR

The SPECTRA BC30 Flame Sensor features IR and UV sensors with built-in background flame discrimination, making it suitable for a wide variety of fuels. Compatible with coal, gas and oil burners, the flame sensors help increase burner efficiency, reduce NOx emissions and improve safety. In addition to flame ON/OFF, the flame sensor provides real time status of flame strength and flame frequency for better control of burner operation. The reliable unit includes failsafe relay contacts and visual indicators for system health and flame On/Off status. The 4-20mA analog output and Serial Modbus communication provide real-time flame signal information for direct connection to burner management systems.

FLAME DISCRIMINATION
Flame discrimination is needed to prevent false readings from other burners or surrounding metal parts. The SPECTRA BC30 has built in flame discrimination to filter out the background components so you can accurately determine the flame characteristics and prevent 'false-on' indications. The characterized flame output is provided through the analog 4-20mA and Modbus communications.

AMFLAME SOFTWARE
The AMFLAME software provides quick configuration of the gain and set points for fine tuning the sensor to your specific application. The software is PC or PDA compatible and features a real time display of the flame characteristics to help identify the correct settings.

INSTALLATION
The SPECTRA BC30 Flame Sensor is easily mounted using a standard 1 inch NPT internal thread. With the built-in flame discrimination, there is no need to install external signal processors. Using the RS-485 serial Modbus output, several flame sensors can be connected together for one common input to a burner management system.

FEATURES AND BENEFITS

- Fuel Versatility — performance with gas, oil, and coal

- Wavelength Sensitivity — UV, VIS and IR

- Built-In Background Flame Discrimination — fine tune settings to match characteristics of your application

- Software Configurable Gain and Threshold — enables user to set signal level and flame ON/OFF threshold

- Flame Status — fail-safe dedicated relay and LED indicate flame ON/OFF condition

- Flame Monitoring — 4-20 mA flame signal output and Modbus communications for remote monitoring

- Continuous Electronic Self-Checking — dedicated relay and LED indicate system functionality

- FM Approval — sensor meets FM requirements for Flame Standard and Class I Div. 2 electrical safety

- Quick Installation — mounts with standard NPT pipe fittings, no need for external signal processors

AMETEK®

POWER INSTRUMENTS

Experience the Power™

SPECIFICATIONS

INPUTS

- IR (best suited for coal and oil)
- UV (best suited for gas)
- 4° field of view
- Built in flame discrimination
- Non-discrimination mode response time <30 mSec
- Discrimination mode configurable response time: <2 to <4 seconds in 0.5 sec increments

OUTPUTS

Relay Contacts

- (2) dry relay contacts
- Flame ON/OFF and health status
- Form A, failsafe (close on flame ON, close on health status OK)
- Contacts rating: 2 AMPS @120 VAC or 30 VDC

Analog Output

- Analog 4-20mA output signal proportional to flame intensity

Visual Indicators

- Flame ON green LED
- Health status green LED

Power

- 24 VDC, 100mA max

Communications

- RS-232 for local software configuration
- RS-485 Modbus output
  - Computed flame intensity (0-100%)
  - Temperature in C°
  - System status (flame ON/OFF, 4-20mA loop failure, temperature high)
  - Sensor raw data
  - Modbus RTU, slave mode

Mounting

- 1 inch NPT internal thread

WIRING CONNECTIONS

Main Port

- MII-C-D38999 Series 1 connector Wiring as shown below:

  PIN A Flame ON/OFF contact

  PIN B 4-20 mA return (-)

  PIN C 4-20 mA signal (+)

  PIN D Case ground

  PIN E +24 VDC power

  PIN F System health contact common

  PIN G System health contact

  PIN H Flame ON/OFF contact common

  PIN J RS485+

  PIN K RS485-

Configuration Port

- Used for connection to RS-232 Com port on PC or PDA

AM Flame Software

- Used for configuring flame sensor gain and set points
- Provides real time graphical display of flame characteristics
- Used for complete network of sensors

ENVIRONMENTAL

Operating Temperature

- -40° to 167°F (-40° to 75°C) continuous

Humidity

- 0-95% non-condensing

Enclosure Rating

- NEMA 4X

Materials

- Anodized aluminum housing
- MIL-C-D38999 series 1 main connector
- NEMA 4X polycarbonate LED lenses
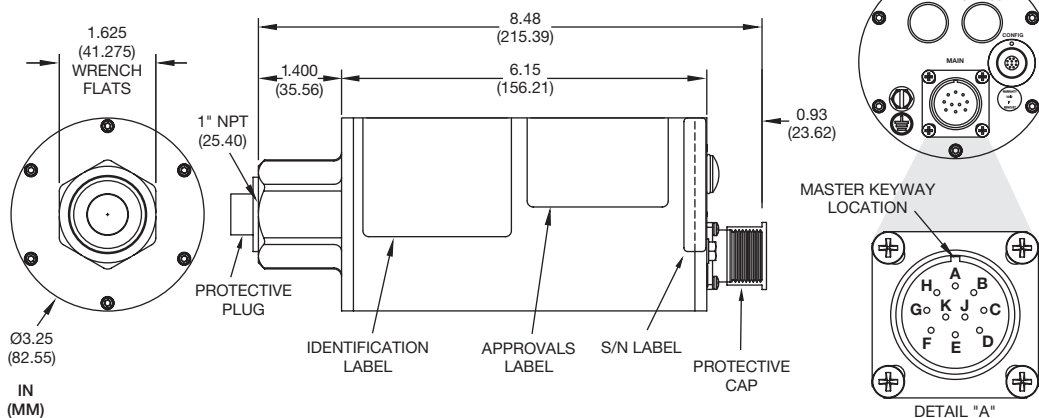- Fused silica lens

Certifications

- Factory Mutual approved for industrial burner applications, according to:
- 7610 standard, combustion safeguards and flame sensing
- 3611 standard, Class 1 Div. 2

Electrical Equipment groups A, B, C, and D

- CE approved

ACCESSORIES

- Main Port Cable (15 ft. and 25 ft.)
- Configuration cable and software (10ft) with DB9 female connector

IN (MM)

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ISO 9001 Certified