



# SPECTRA™ BC30 IR and BC30 UV Flame Sensor

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



## 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



## 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

- MIL-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

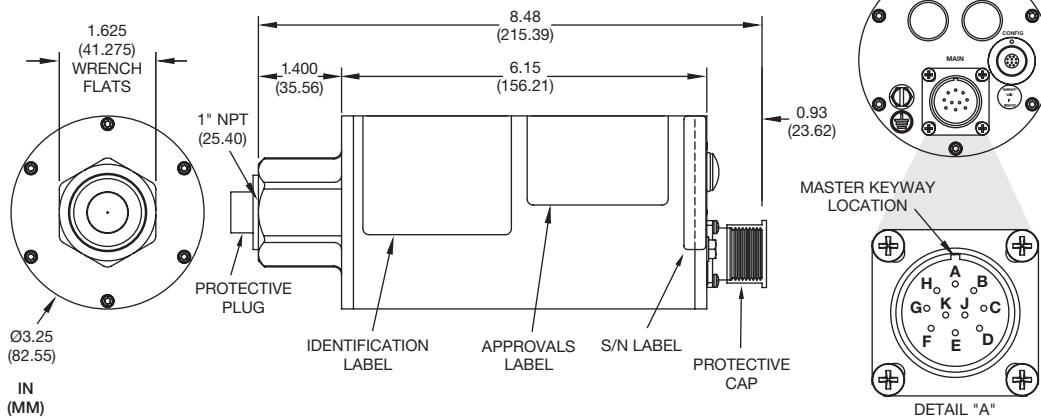
- Factory Mutual approved for industrial burner applications, according to:
  - 7610 standard, combustion safeguards and flame sensing
  - 3611 standard, Class 1 Div. 2

#### 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



For customer support call:

#### POWER INSTRUMENTS

255 North Union Street  
Rochester, NY 14605  
Tel: 585.263.7700  
Fax: 585.454.7805  
power.sales@ametek.com

#### HEADQUARTERS

AMETEK Power Instruments  
50 Fordham Road  
Wilmington, MA 01887  
Tel: 978.988.4903  
Fax: 978.988.4990  
www.ametekpower.com  
power.sales@ametek.com

#### EUROPEAN HEADQUARTERS

Unit 20, Ridgeway  
Donibristle Industrial Estate  
Dalgety Bay, Dunfermline, KY119JN  
Scotland U.K.  
Tel: 44.1383.825630  
Fax: 44.1383.825715  
power.sales@ametek.com

#### ASIA PACIFIC HEADQUARTERS

10 Ang Mo Kio Street 65  
#05-12 Techpoint  
Singapore 569059  
Tel: 65.484.2388  
Fax: 65.481.6588



ISO 9001 Certified