



# Gas Detection Systems

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## Product Catalog



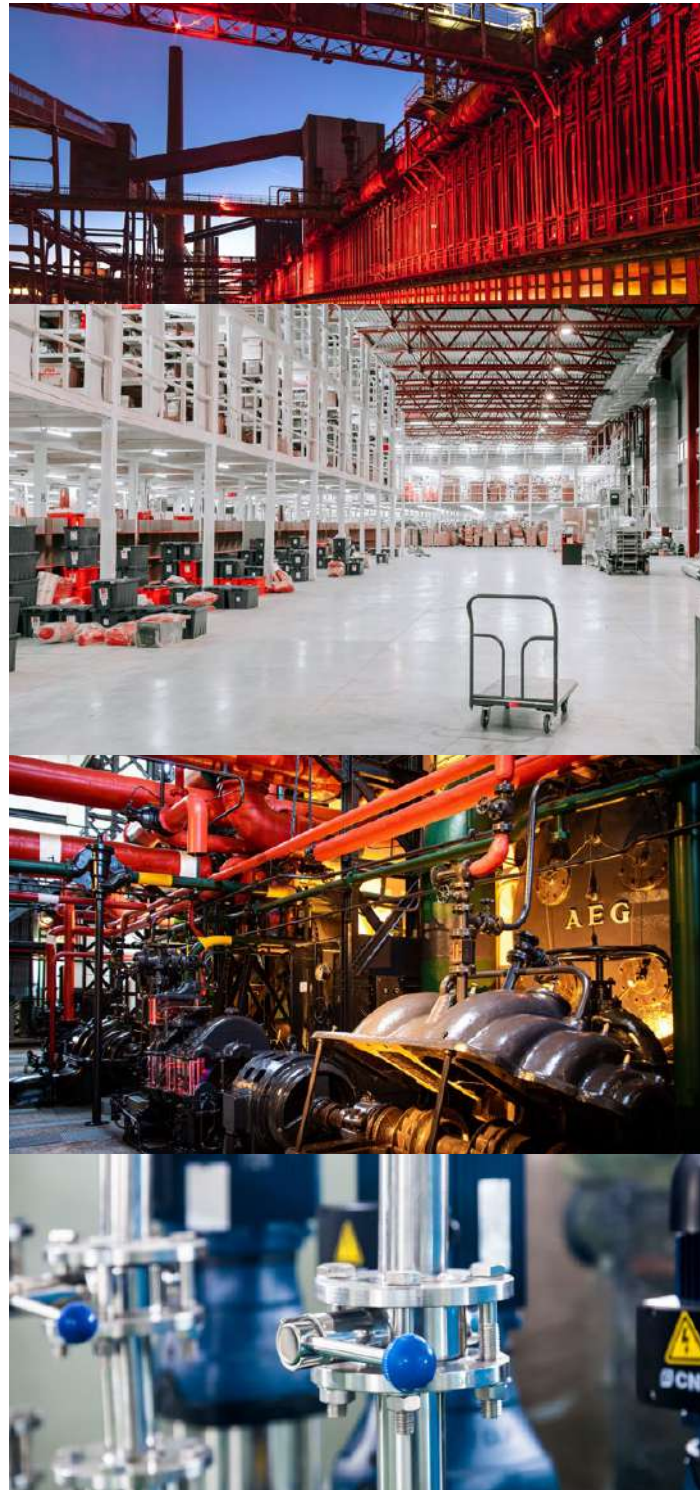


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# Gas Detection Systems



## About us

For 50 years Buckeye Fire Equipment Company has been an international leader in the development and manufacture of reliable fire protection products.

A privately owned and operated company with its headquarters near Charlotte, NC, Buckeye Fire Equipment has earned an excellent reputation for quality, reliability and value within the commercial and industrial fire protection industry.

Continuing the vision of providing customers with high-hazard industrial protection products, Buckeye Detection Systems was formed. As such, we began to produce lines of high quality and resilient gas detection products.

Buckeye Detection Systems products are designed to exceed the specifications of the end user. Our state of the art gas detection systems utilize reliable and proven technology designed to operate in the most extreme conditions.

Buckeye Detection Systems has the perfect solution for your gas detection applications. We are committed to providing reliable products, responsive customer service and knowledgeable technical support that has come to be expected by our customers.

### Our Mission Statement:

Responsibly protect life, property, and our environment through innovation and reliability by providing the highest quality products and services.



## Gas Monitors & Controllers





## BFT-44 Non-Intrusive Single/Dual Sensor Gas Monitor

The state-of-the art BFT-44 sensor gas monitor is an updated version of our proven BFT-48 transmitter. This versatile unit has a bright color display and embedded web page promoting simple intuitive user interface. The webpage is accessed through the standard Ethernet connection and allows the transmission of data over existing network infrastructure.

### FEATURES

- QVGA color TFT display. Displays engineering units and monitored data graphically as bar graph and 30-minute trend.
- Display changes color to indicate alarm status.
- Ethernet: embedded webpage for configuration and HMI, Modbus® TCP master/slave.
- Webpage offers offsite viewing capabilities.
- Redundant Modbus® slave.
- Remote sensor ability.
- Single/Dual modes standard.
- Modbus® TCP, Modbus® RTU,EC, bridge.4-20mA input.
- Magnetic switches allow "one man" sensor calibration in hazardous areas without area declassification with a simple magnetic wand.

### OPTIONS

- Three programmable relays and dedicated fault relay option.
- Two individually programmable RS-485 ports for Modbus master or slave.



BFT-44 in C1D2,  
Black Poly Enclosure

BFT-44  
in XP Aluminum  
Enclosure



### SPECIFICATIONS

#### ANALOG OUTPUTS

BFT-44 models have 3-wire 4-20mA current source output with nominal 24VDC power supply

#### RS-485 Modbus® (Optional)

Relays are Form C 5AMP @ 30VDC and 240VAC RESISTIVE  
RS-485 is 2-wire Modbus® RTU

#### NRTL CSA APPROVALS (File # 219995)

BFC-44 with BT10-0247 is Division 1 and 2 Group A,B,C,D. Suitable for explosion proof installations

#### DISPLAY

320 x 240 pixel Backlit LCD. Displays 30-minute trend, bar-graph and large engineering units.

#### ACCURACY

±1% of full scale

#### AMBIENT TEMPERATURE RANGE

-40 — 60 degrees C

#### TEMPERATURE DRIFT

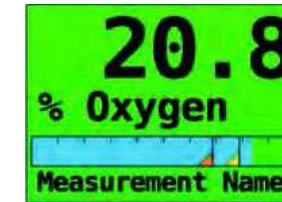
Less than .1% per degree C over ambient temperature range

#### POWER SUPPLY

10 - 30 VDC at 10 Watts max

#### HOUSING

Aluminum Enclosure suitable for Class 1 Division 1 and 2. Black Polycarbonate enclosure suitable for Class 1 Division 2.



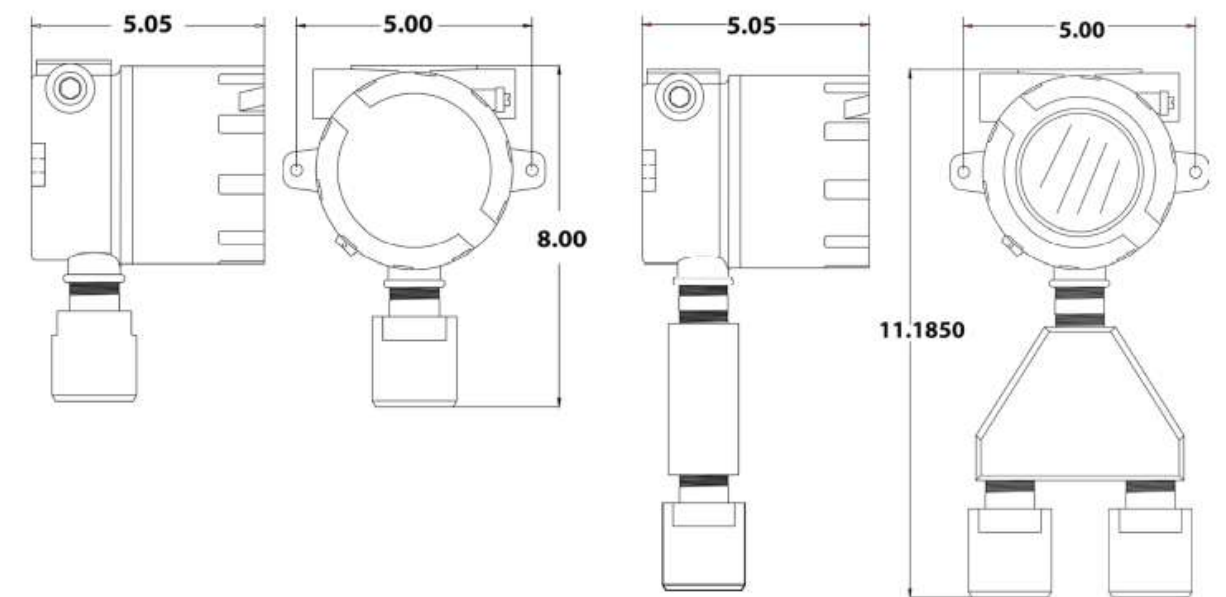
**BAR GRAPH SCREEN**  
Displays channel's current value as bar graph and numerical value. Includes channel ID, and engineering units. Background changes color and flashes on alarm. Flashing color becomes steady after Acknowledge.



**30-MINUTE TREND SCREEN**  
View channel's most recent 30-minute trend. Top data fields include current reading, and engineering units. Background changes color and flashes on alarm. Flashing color becomes steady after Acknowledge.



**DUAL CHANNEL SPLIT SCREEN**  
In 2-channel mode, view both channels, current reading and engineering units simultaneously. Background changes color and flashes on alarm. Flashing color becomes steady after Acknowledge.



ALL DIMENSIONS IN INCHES



## BFC-4 4-Channel Controller

The BFC-4 Four Channel Controller provides simultaneous display and alarm functions for four monitored variables. Easy to configure and user friendly, the BFC-4 can function as a critical alarm controller for toxic gases and combustible gases.



### FEATURES

- Accepts inputs from up to four 4-20mA sensors transmitters for long distance interfacing. Generates 24VDC external device power for transmitters and other devices.
- Three adjustable independent alarm levels per channel. "Relay Acknowledge" feature allows silencing of external audible devices during existing alarm conditions.
- Graphic LCD readout displays monitored data as bar graphs, engineering units, and 30-minute trends. Alarm LEDs flash when new and become steady after acknowledged.
- Two standard programmable SPDT alarm relays are configurable for HORN, HIGH, WARN, or FAULT alarm conditions.
- Modbus® master/slave RS-485 serial port interfaces to Modbus® devices such as PCs, PLCs, DCS, and other Buckeye Fire Equipment controllers.
- Authorization mode allows locking of critical configuration variables.
- Touch and magnetic keypad are standard for non-intrusive operation in potentially hazardous locations.
- Enclosures Include: Non-Metallic, Epoxy Coated Steel, 316 Stainless Steel, NEMA 4X, NEMA 7 Explosion-Proof wall mount packaging options available.
- Certified to CSA C22.2 No. 152 for combustible detection and Class I, Division 2, Groups A,B,C,D.
- Non-volatile memory retains all configuration data indefinitely.
- RS-485 Modbus® master/slave port for up to 128, devices to be multi-dropped on a single data highway for interrogation by another Modbus® Master.
- 6 additional 5-amp SPDT discrete channel alarm relays available (2 are standard).
- 4-20mA outputs, event log, strobe lights and audible annunciators also available.
- 50 Watt 24VDC power supply available.

### SPECIFICATIONS

#### INPUTS

Available inputs include 4-20mA with precision 100 ohm terminating resistor [0-2 Volt inputs may be accepted by removing the socketed terminating resistor] and bridge sensor Inputs with adjustable sensor excitation and balance settings

#### STANDARD ALARM RELAYS (STANDARD)

Two programmable, 5-amp 30VDC or 250VAC resistive Form C

#### ANALOG OUTPUTS (OPTIONAL)

10-bit 4-20mA output. Max load 800 ohms with nominal 24VDC power supply

#### DISCRETE ALARM RELAYS (OPTIONAL)

6 programmable 5-amp 30VDC or 250VAC resistive Form C

#### SERIAL PORT (OPTIONAL)

Master/Slave RS-485 port equipped with Tx/Rx LEDs  
Protocol is Modbus® RTU

#### DISPLAY

128 x 64 pixel graphic LCD with backlight. Displays bar graphs, trends, and engineering units. 6 discrete LEDs indicate alarm status, CAL MODE, keypad activity

#### AMBIENT TEMPERATURE RANGE

-25 to +60 degrees C

#### POWER SUPPLY

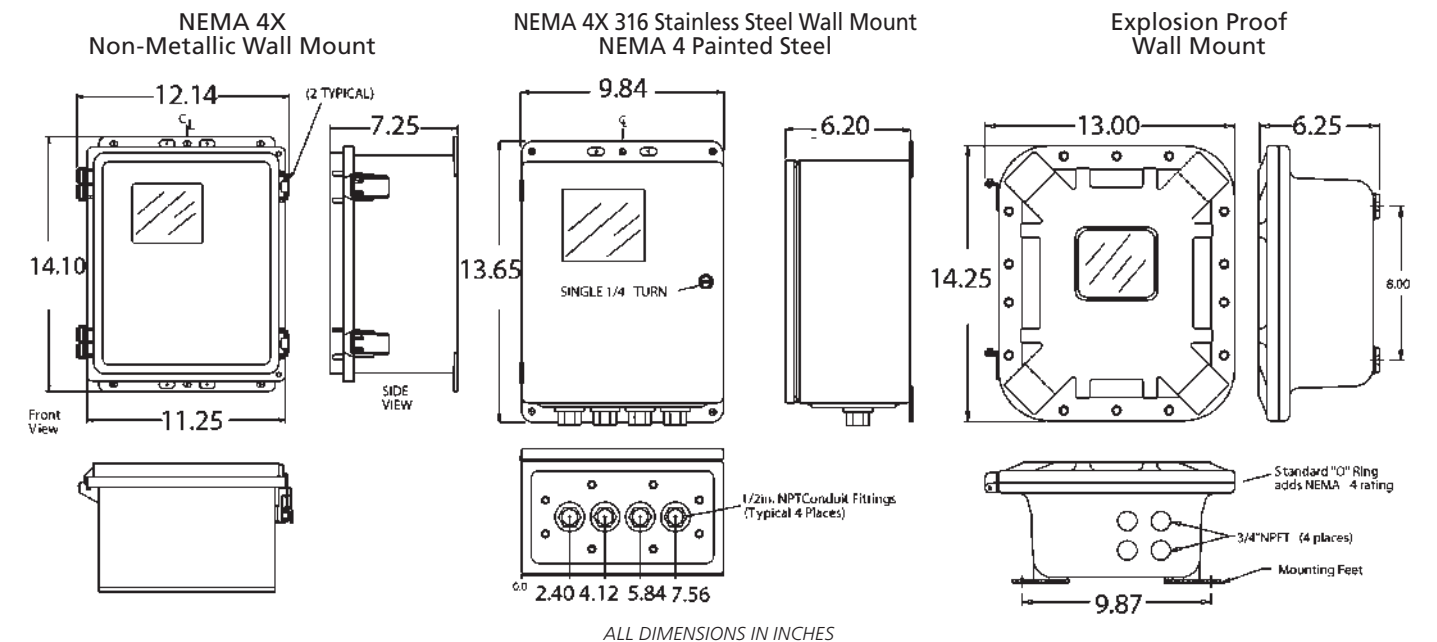
100-240VAC / 10-30VDC are standard primary power supplies

#### APPROVALS

CSA C22.2 No 1010.1, C22.2 No.152 for combustibles, and ISA S82.02  
UL 1604 / C22.2 No 213 (NEMA 4X = Division 2 Groups A,B,C,D  
EN55011 and EN61000 ICE Mark)  
90-12 = NEMA 7 Division 1 Group B,C,D

### MODELS

- BFC-4 Non Metallic
- BFC-4 NEMA 4 painted carbon steel
- BFC-4 NEMA 4X, 316 stainless steel
- BFC-4 bolt on lid NEMA 7 cast aluminum





## BFC-16 16-Channel Controller

The BFC-16 Channel Modbus® Master/ Slave Display and Alarm Controller provides simultaneous display and alarm functions for up to 16 monitored variables. Easy to configure and user friendly, the BFC-16 can function as a critical alarm controller for toxic or combustible gases.



### FEATURES

- Accepts up to 16 inputs from many sensor types and signal ranges. Modbus® master capability allows input data to be retrieved via RS-485.
- Eight channel display mode and option boards allow economical configuration of systems requiring only 8 channels or less.
- Dual Modbus® RS-485 serial ports for simultaneous master / slave operation.
- Three independent alarm levels per channel. "Relay Acknowledge" feature allows silencing of external audible devices during existing alarm conditions.
- Graphic LCD displays monitored data as trends, bar graphs and engineering units. Alarm LEDs flash when new and become steady after acknowledged.
- Standard SPDT common alarm relays for HORN, HIGH, WARN and FAULT.
- Options such as Bridge Sensor Inputs, 4-20mA inputs, 4-20mA outputs, discrete alarm relays are supported via an I2C expansion bus.
- Cal Mode offers push-button zero/span calibration or direct sensor interface applications.
- Authorization Mode allows locking of critical configuration variables.
- Magnetic keypad standard for non-intrusive operation in potentially hazardous locations.
- Enclosures include wall-mount NEMA 4X - Non-Metallic - 316 SS, NEMA 7 and Rack/Panel Mount.

### SPECIFICATIONS

#### 12bit ANALOG INPUTS (OPTIONAL)

12 bit 4-20mA into 100 ohms input impedance; includes +power supply terminals for each channel for routing power to two or three wire transmitters

#### COMMON ALARM RELAYS (STANDARD)

5 amp 30VDC or 250VAC resistive Form C

#### ANALOG OUTPUTS (OPTIONAL)

10 bit 4-20mA output. Max load 800 ohms with nominal 24VDC power supply

#### DISCRETE ALARM RELAYS (OPTIONAL)

Four 5 amp 30VDC or 2 50VAC resistive Form C

#### SERIAL PORT (STANDARD)

Modbus Master and Slave RS-485 ports equipped with Tx / Rx LEDs

#### DISPLAY

128 x 240 pixel graphic LCD with backlight. Displays bar graphs, trends and engineering units. 52 discrete LEDs indicate alarm status for three alarms per 16 channels and common relays

#### AMBIENT TEMPERATURE RANGE

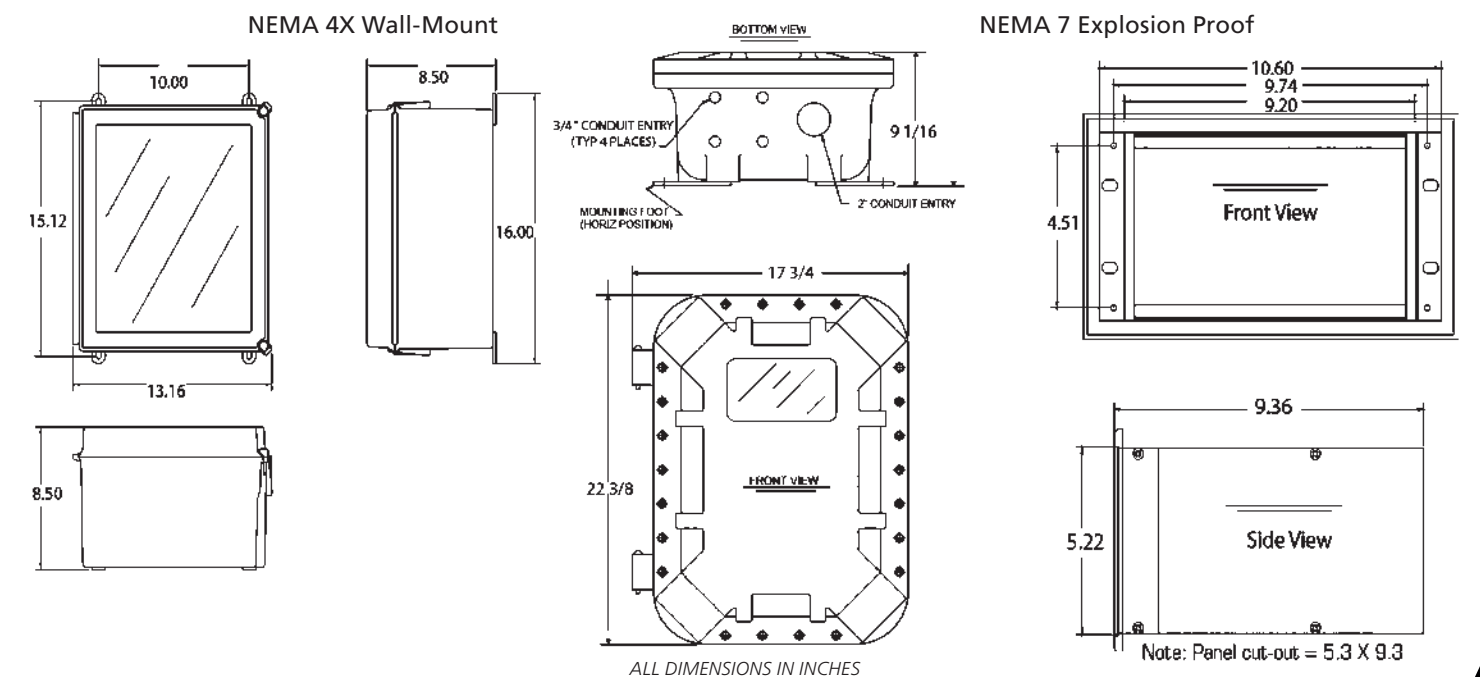
-25 - 60 degrees C

#### POWER SUPPLY

10 - 30VDC 12 Watts max required by BFC-16  
150 Watt optional

#### APPROVALS

CSA C22.2 No 1010.1 and C22.2 No.152 for combustibles and ISA S82.02  
UL 1604 / C22.2 No 213 (NEMA 4X = Division 2 Groups A,B,C,D)  
EN55011 and EN61000 (CE Mark)  
NEMA 7 Division 1 Group B,C,D





## BFC-64 64-Channel Controller

The BFC-64 controller provides simultaneous display and alarm functions for up to 64 input variables. 16-32-48-64 channel display modes, and I/O modules arranged in groups of 16 channels, allow economical configuration of systems. This easy-to-configure, user friendly controller is ideal for centralizing display and alarm functions in critical multi-point monitoring applications.



### FEATURES

- 16-32-48-64 channel display modes accept inputs from many sensor types and signal ranges.
- Ethernet with Modbus®. TCP Master/Slave and web server for configuration and monitoring.
- RS-485 serial ports allow simultaneous Modbus Master/Slave operation. Two standard ports and two optional isolated ports.
- Wireless Modbus interface available.
- Three independent alarm levels per channel. "Relay Acknowledge" feature allows silencing of external audible devices during alarm conditions.
- QVGA Color LCD displays monitored data as trends, bar graphs and engineering units. Readouts change colors to indicate alarms.
- Five standard SPDT 5-amp alarm relays for HORN and FAULT, plus three programmable alarm relays.
- Options such as Bridge Sensor Inputs, 4-20mA inputs, 4-20mA outputs, discrete and programmable alarm relays are supported via an I2C expansion bus.
- Cal Mode offers push-button zero/span calibration for direct sensor interface applications.
- Authorization Mode allows locking of critical config variables.
- Data Logger onto SD card allows recording of minimum, maximum and average values for one year.
- Power supply options 150, 600, and 1200 Watts.
- Magnetic keypad standard for non-intrusive operation in potentially hazardous locations.
- Enclosures include wall mount NEMA 4X - Non-Metallic - 316 SS, NEMA 7 and Rack/Panel Mount.

### SPECIFICATIONS

#### ANALOG INPUTS (OPTIONAL)

12bit 4-20mA Into 150 ohms input impedance; includes +power supply terminals for each channel for routing power to two or three wire transmitters

#### SERIAL PORTS

Modbus Master and Slave RS-465 ports equipped with Tx / Rx LEDs

#### ETHERNET PORT

Modbus TCP Master/Slave port with web server

#### ALARM RELAYS

Five 5 amp 30VDC or 250VAC resistive Form C

#### ANALOG OUTPUTS (OPTIONAL)

10 bit 4-20mA output. Max load 800 ohms with nominal 24VDC power supply

#### DISPLAY

QVGA 320 x 240 pixel graphic LCD with backlight displays bar graphs, trends and engineering units in color Five discrete LEDs indicate alarm status for five standard alarm relays

#### AMBIENT TEMPERATURE RANGE

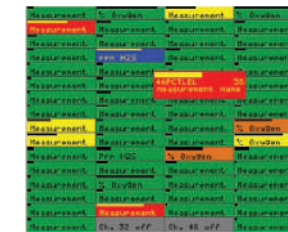
-5 – +60 degrees C

#### POWER SUPPLY

10 – 30VDC (24VDC nominal) 12 Watts max required  
150 Watt optional  
600 Watt optional

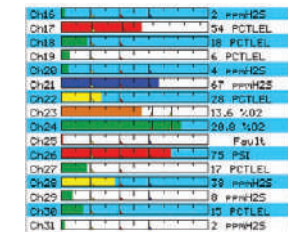
#### APPROVALS

CSA C22.2 No 1010.1 and C22.2 No.152 for combustibles and ISA S82.02  
UL 1604 / C22.2 No 213 (NEMA 4X = Division 2 Groups A,B,C,D)  
EN55011 and EN61000 (CE Mark)  
NEMA 7 Division 1 Group B,C,D



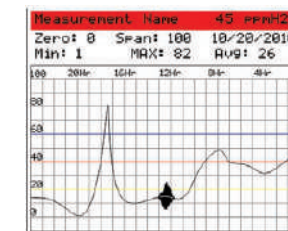
#### MAIN DATA SCREEN

Displays all active channels on the same screen. Channel configurations include 16,32,46, and 64 (shown) active channels. Cells indicate alarm status by color.



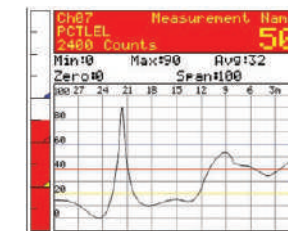
#### BAR GRAPH SCREEN

Displays 16 channels at a time. Side scroll bar controls which group of 16 channels are visible. Bar graphs change colors to indicate alarm status.



#### 24-HOUR TREND SCREEN

Displays 1 channel at a time as most recent 24-hour trend. Top data fields include current reading, max – min – average readings over the 24 hours, range, channel ID and engineering units.



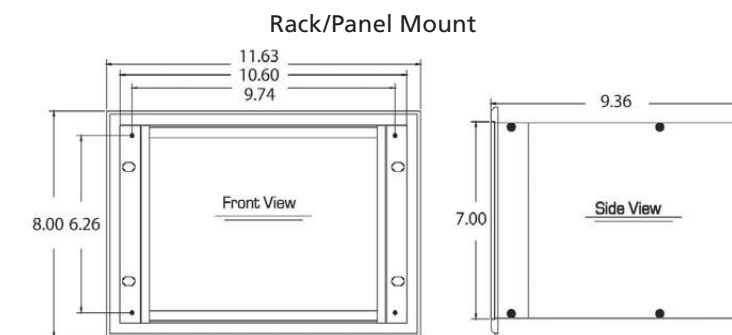
#### COMBINATION SCREEN

Displays 1 channel at a time as most recent 30-minute trend, bar graph and large engineering units. Top data fields include current reading, max – min – average readings over the 30-minutes, range, channel ID, and engineering units. Readings change color and flash on alarms. Flashing color becomes steady after acknowledge.



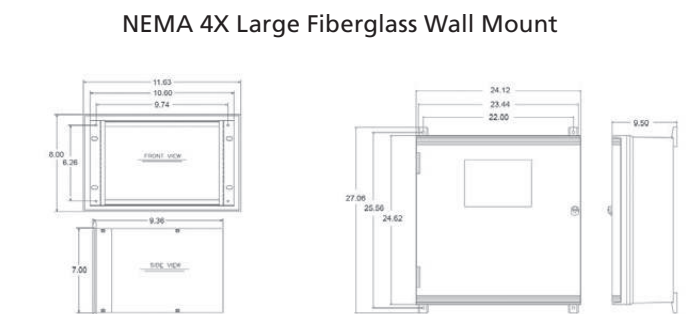
#### ZONE SCREEN

Displays all eight possible active zones. Alarm calls change colors and name field flashes indicating alarms. Allows user direct access to screen that shows which channels belong to each zone.



Note: Panel cut-out = 7.1 x 9.3

ALL DIMENSIONS IN INCHES





## BDS-Net Wireless Gas Monitoring

The Buckeye Detection Systems BDS Net Wireless Monitoring System consists of 1-32 battery-powered BF-Cast Monitors and at least one 32 channel BF-Link Receiver. BF-Link take advantage our NRTL certified and field proven hardware, but with newly designed firmware. A single BF-Link Multi-Interface option module is all that is required to add data logging, second wired and wireless Modbus port, plus a Wi-Fi port with web-server. The Wi-Fi feature is especially exciting since it allows remote HMI functionality via any web enabled device. This means BF-Link allow responders to view real time and historical data on smart phones and tablet devices prior to entering a hazardous area!

The battery powered wireless BF-Cast Monitor descends from our popular BFT-48 wireless transmitter and is compatible with existing BFT-48 systems. BF-Cast enhancements include power On/Off via the magnetic wand, dual gas sensors, easier battery replacement, plus the ability to separate the sensor up to 15 feet using a 4 wire sensor separation kit. The new BDS Net Wireless Monitoring System is designed for easy deployment of both permanent and temporary monitoring sites.

**BF-Cast  
Gas Monitor**



**BF-Link  
Receiver**



NEMA 4X 316  
Stainless Steel  
Enclosure



NEMA 4  
Powder-Coated  
Carbon Steel



NEMA 4X  
Polyester Enclosure



NEMA 7  
Aluminum Enclosure

### FEATURES - BF-Cast Monitor

- Supports single or dual and local or remote "Smart" temperature compensated sensor modules
- Alarms, gas range and other parameters are stored in the Smart Sensor module and may be edited by the user. Changes are periodically broadcast to the BF-Link Receivers to insure identical readings at all locations
- Allows restore of factory settings from Smart Sensor plus backup and subsequent restore of user settings if parameters are accidentally lost
- Password protected with LOW and HIGH security levels
- Easy to change lithium battery
- Three adjustable independent alarm levels per sensor
- Readouts include E-units, bar graphs, 1-hour trends
- "Legacy" setting makes BF-Cast devices compatible with all Buckeye Detection Systems controllers
- Magnetic mount option available
- License free 900MHz or 2.4 GHz FHSS client & server network
- 5 front panel LEDs indicate alarms and communication status
- Suitable for Division 2 hazardous locations
- Available either in rugged cast aluminum or economical and durable UL-94 injection molded enclosure

### FEATURES - BF-Link Receiver

- Displays monitored readings and alarms from 1 to 32 WaveCast Monitors
- Requires little setup since all channel parameters are periodically received from BF-Cast Gas Monitors via the wireless network
- Includes 8 programmable 5-amp relays to control lights, horns, fans etc.
- "Acknowledge" feature allows audible devices to be silenced during alarms
- Graphic LCD displays large E-units and bar graph for each active channels
- Clock / Calendar time and date stamps
- "Event Log" sensor items including Power-Up, Alarms, Calibration, and Com Errors
- 100-240 VAC or 10-30 VDC standard power making it ideal for solar powered installations
- 900 MHz and 2.4 GHz FHSS models
- Touch and magnetic keypads are standard for non-intrusive operation
- Password protected with LOW and HIGH security levels

### MULTI-INTERFACE OPTION

- Wi-Fi access point for web enabled devices to view BF Link embedded webpages including real-time and historical sensor readings, channel parameters, and remote setup capability
- Data logger stores more than 1 year of readings and alarm history
- RS-485 and wireless Modbus Slave port for transmitting WaveNet data to our BFC-16 16-Channel and BFC-64 64-Channel Controllers







## System Setup

A typical BF Net FHSS Client / Server wireless monitoring system consists of one BF-Link Receiver configured as the network's Server, receiving wireless data from up to 32 Single Gas, or 16 Dual Gas, BF-Cast Monitors. Additional BF Links may also receive the same BF-Cast data and act as remote alarm stations and displays, but must be configured as Clients since only one Server is permitted per network. BFCs are powered by an internal lithium battery while BFLs require either 100-240 VAC or 10-30VDC and are very easy to power by solar.

The 10-0410 Multi-Interface Module is a plug-in PCB option, which adds a tremendous amount of functionality and is easily added to BF-Link Receivers. Features added by the 10-0410 include Data Logging of over 1 year of readings and alarms, a WiFi web server sending monitored data to browser enabled smart devices, and RS-485 / FHSS Wireless Modbus slave ports for transferring data to Modbus master devices, such as Buckeye Fire Equipment BF-64 64-Channel Controllers.

## Additional Plug-Ins and other Accessories

Buckeye Detection Systems has an offering of plug-in options for configuring a fit-for-purpose system and easily changing components as requirements vary. Other accessories are also available



BF Relay (BFR)



BWAB AC1D2 Strobe and Horn Assembly with Wireless Relay to use with BF-Net Systems



87300 Series AV Alarm Strobe & Horn combo available in both 24VDC & 120 VAC in General Purpose and for C1D2 Hazardous Applications



BAB-2 AV Alarm Lite Industrial General Purpose Audio Visual Alarm Solution, 24VDC only



30 Watt solar power supply with 55AH battery



### BF-Net Site Survey Tool

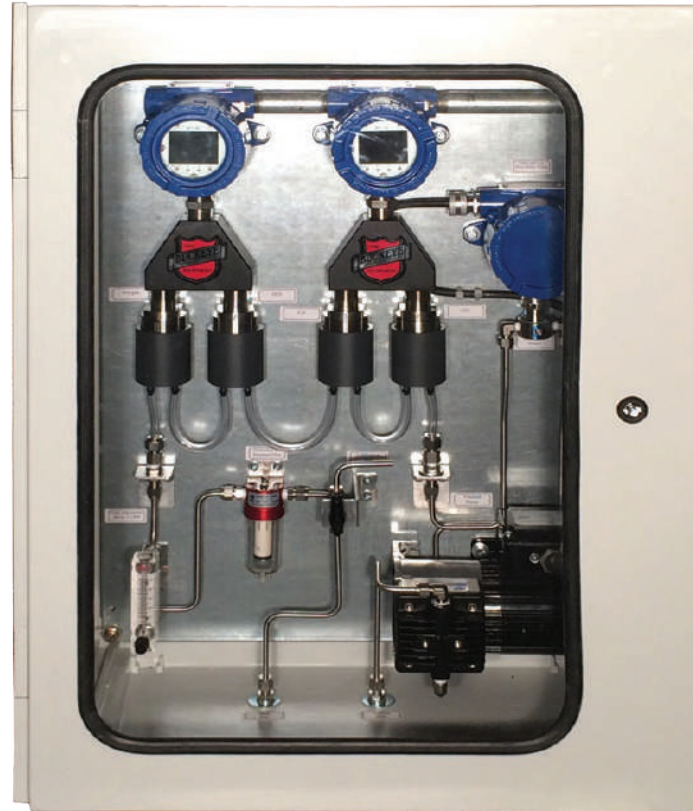
The hand-held BF-Net Site Survey Tool can scan and display the radio strength of the 26 channels used in the 900MHz operating frequency of an area. When setting up a wireless monitoring site, this allows programming the channel with least amount of frequency congestion. It can be set up in a simulation mode to mimic Master or Slave devices. It also provides a means to test wireless links without tripping alarms.



## Custom Solutions and Application Engineering

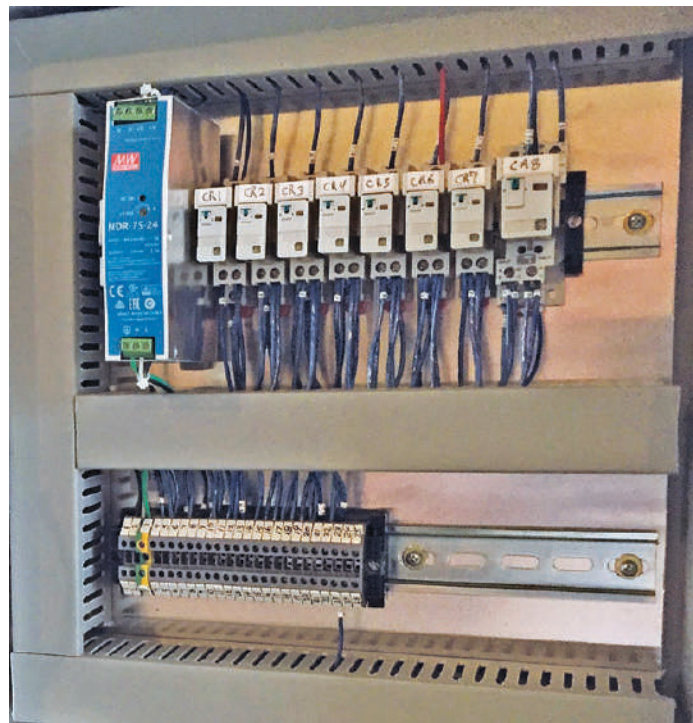
Buckeye provides a wide range of gas detection, flame detection, control, alarm devices and flow panels but some time you need a specific engineered solution tailored to your specific needs. The engineering advisors can help determine the appropriate Buckeye Detection Systems products that meet your needs and combine commercially available products to create a safety system designed for your plants safety.

The custom solutions team performs through interviews to determine what needs exists and come up with a tailored solution.



### Solution that we have provided in the past include:

- Multipoint remote sampling flow panel designed for the waste water market
- Ventilation control panel for the CBD Extraction market
- Solar power solution for remote oil drilling sites
- Satellite monitoring system for oil drilling platforms outside the range of cellular communications.



## Calibration Kits

Calibration gas is a requirement for everyone using gas detection in the workplace. Worker safety is the number one reason for proper and regular calibration and bump testing.

Guarantee your instrument will detect gas accurately and reliably - test it with a known concentration of gas today!

Made with the highest quality cylinders in the industry, which meet and exceed all criteria of its customers and appropriate regulatory authorities.





**Kings Mountain, NC**

## **Buckeye Detection Systems**

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