BUCKEYE DETECTION SYSTEMS

PRODUCT CATALOG

Your New Partner In Detection Systems

Buckeye Fire Equipment, a world leader in the fire protection industry, has assembled over 50 years of experience in gas and flame detection, system applications, sales, and service. Our goal is to provide a synergistic product that seamlessly coexists within the fire protection industry. Our continuing goal is to provide customers with reliable, low maintenance, cost effective, and versatile gas and flame detection products.

Buckeye systems are designed to meet the specifications of the end user while maintaining ease of operation. Whether using a traditional wired or wireless detection system or a combination of both, Buckeye Detection Systems has the perfect solution for all of your hazard detection concerns.

Buckeye Detection Systems is committed to continuing our tradition of reliable products, responsive customer service, and knowledgeable technical support that has come to be expected from our customers.

Most importantly, let Buckeye Detection Systems help safeguard you from the potential gas and flame detection hazards that arise each day.

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Common Applications for Buckeye Gas Detection Wired and Wireless Systems Detection Systems

Oil & Gas Upstream
– Wired and wireless CO2, CO, Flame, Flammable Gases, H2S, SO2

Oil & Gas Mid-Stream
– CO, Flame, Flammable Gases, H2S, NH3, O2

Oil & Gas Downstream
–CO, Flame, Flammable Gases, H2, H2S, HF, NH3, O2, SO2

Petrochemical
– Cl2, CO, Flame, Flammable Gases, HCl, H2S, NH3, SO2

Terminals
– CO, Flame, Flammable Gases, H2S, O2

Water and Waste Water Treatment Facilities
– Cl2, CO, Flammable Gases (Methane), H2S,NH3, O2, O3, SO2

Food Processing / Cold Storage
– Cl2, CO, CO2, H2, H2S, NH3, O2

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– CO, CO2, Flammable Gases (Methane)

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Aircraft Hangars and Maintenance Facilities
– CO, Flame, Flammable Gases

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Post Office / Shipping Facilities
– CO, Flame, Flammable Gases, NO2, SO2 , Methane

Gas Detection Monitors

Color Enhanced Alarm Conditions

No Alarm= Green

Alarm 1 = Yellow

Alarm 2 = Red

BFT-44 Gas Detection Monitor
Single/Dual Sensor Capable Transmitter

The new state of the art BFT-44 transmitter further builds upon the success of the earlier BFT-48 transmitter. This versatile unit has a vivid color display which changes color to match alarms states. The unit also has an embedded web page enabling an intuitive remote user interface. The web page is accessed through a standard Ethernet connection and allows the transmission of data over existing network infra-structure to our BFC-64 controller, smart phones, PC's, and tablets.

FEATURES

- QVGA color Thin Film Transistor Display (TFTD) displays engineering units and monitored data as a 30 minute trend bar graph.
- The 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® RTU, EC, LEL, 4 – 20 mA inputs.
- Non-intrusive magnetic switches allow calibration and local interface without hazardous area declassification.

OPTIONS

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

SPECIFICATIONS

Analog Outputs
BFT-44 Catalytic Bead / IR units have 3-4 wire 4 – 20 mA current source output with nominal 24VDC power supply.

Relays / RS-485 Modbus® (Optional)
Relays are form C 5 AMP @ 30VDC and 240VAC Resistive. RS-485 is 2-wire Modbus® RTU.

CSA Approvals
BFT-44 is Division 1 and 2 Groups A, B, C and D. Suitable for explosion proof installations.

Display
320 x 240 pixel backlit LCD displays 30 minute trend, bar graph and engineering units.

Accuracy
±1% of full scale

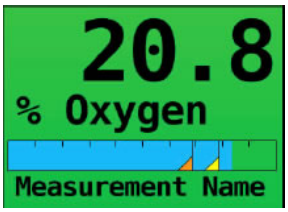
Ambient Temperature Range
-40˚ - 60˚ C (-40˚ - 140˚ F)

Temperature Drift
Less than 0.1% per degree C over ambient temperature range.

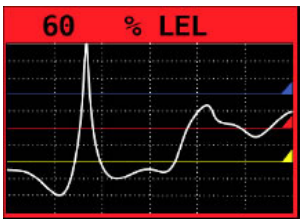
Power Supply
10 – 30VDC at 10 Watts max.

Housing
Instrument enclosure suitable for Class 1, Division 1 and 2, Group A,B,C,D

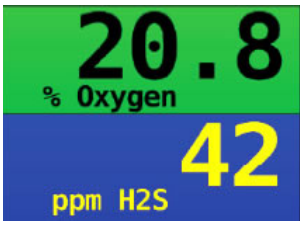
SCREENS



Bar Graph Screen
Bar Graph Screen displays channel's current value as bar graph and numerical data. Includes channel ID and engineering units. Background changes color and flashes on alarm. Flashing color becomes steady after acknowledgement.



30-Minute Trend Screen
30 Minute Trend Screen allows viewing of channel's most recent 30 minute trend data. Top data fields include current reading and engineering units. Background changes color and flashes on alarm. Flashing color becomes steady after acknowledgement.



Dual Channel Split Screen
Transmitter in Dual Channel Split Screen mode allows viewing of both channel's current reading and engineering units simultaneously. Background changes color and flashes on alarm. Flashing color becomes steady after acknowledgement.

OPTIONS

- 5 amp relays (4) with dual RS-485 Modbus® (Master/Slave)
- Series 4 sensor board (Arctic heater standard)
- Smart sensor head stainless steel, (CSA / XP)
- Sensor head calibration adapter.
- Sensor head splash guard with remote calibration port.
- BFT-44 display / CPU front panel assembly.
- Input / output board.
- Analog board.
- Remote mount sensor junction box.
- Explosion proof enclosure.
- Single / Dual sensor configurations available.
- "Y" fitting adapter available for Dual sensor configurations.

BFT-48 Single/Dual Sensor Capable Transmitter

The industry proven BFT-48 transmitter accepts Catalytic Bead / IR and electrochemical sensor inputs. Units available with both 2 wire and 3-4 wire 4 – 20 mA outputs. The "Dual Sensor" capabilities may drastically reduce installation costs by supporting two sensors and transmission of both 4 – 20 mA outputs to any of our controllers or existing client alarm panels and PLC's.

FEATURES

- Front LED's and LCD clearly indicate alarm status. Display options for each sensor include engineering units, bar graph and 30 minute trends.
- Accepts catalytic bead / IR and electrochemical sensor inputs.
- 10 – 30v DC powered units are configurable as 3 wire single gas or 4 wire dual gas transmitters with 4 – 20 mA outputs for each sensor.
- "Smart sensor" interface stores sensor type, gas range, alarm set points, calibration and other transmitter variables.
- Non-intrusive magnetic switches allow calibration and local interface without area declassification.

ADDITIONAL FEATURES

- User programmable "In Cal" output signal, inhibits alarms and notifies receivers during calibrations. Programmable "Power Up" and "Post Cal" time delay allows sensor stabilization, mitigating false alarms during warm up and calibration completion.
- A Real time clock and calendar logs all alarm, calibration and power up events.
- Standard fault supervision circuitry continuously monitors for failures and transmits low mA output to signal fault conditions.
- Security mode allows locking of critical parameters.
- Available options include alarm relays, RS-485 Modbus®, isolated 4 – 20 mA, Division 2 quick connectable sets, magnetic mount and pole mounts.

INPUTS BY MODEL

BFT-48EC : 2 wire transmitter accepts one electrochemical sensor with 4 - 20mA output.

BFT-48-AL1: 3-4 wire dual channel model accepts both electrochemical and Catalytic Bead/ IR sensor inputs. " Also available in stainless steel" (BFT-48-SS1)

SPECIFICATIONS

Analog Outputs
BFT-48 has standard 2 wire 4 – 20 mA current sink output (not available with catalytic bead / IR sensors). BFT-48 Catalytic Bead / IR units have 3-4 wire 4 – 20 mA current source output with nominal 24VDC power supply, 2 wire max loop Resistance is 500 ohms and 3 wire max loop Resistance is 750 ohms.

Relays / RS-485 Modbus® (Optional)
Relays are form C 5 AMP @ 30VDC and 240VAC Resistive. RS-485 is 2-wire Modbus® RTU.

NRTL CSA Approvals
BFT-48 with standard sensor head is Division 1 and 2 Groups A, B, C and D Exia. Suitable for explosion proof installations.

ATEX Certified

IMPORTANT: Intrinsically safe installations require BFT10-0263 Intrinsically Safe barrier.

Display
64 x 128 pixel back-lit LCD displays 30 minute trend, bar graph and engineering units. Back-light is active in 3 wire high power mode.

Accuracy
±5% of full scale ±1 count

Ambient Temperature Range
-40˚ - 60˚ C (-40˚ - 140˚ F)

Temperature Drift
Less than 0.1% per degree C over ambient temperature range.

Power Supply
10 – 30VDC at less than 0.75 Watts in 2 wire 4 – 20 mA.
10 – 30VDC at less than 3.0 Watts in 3 wire 4 – 20 mA with relays.

Housing
Instrument enclosure suitable for Class 1, Division 1 and 2, Group A,B,C,D

OPTIONS

•Alarm relays (3) with RS-485 Modbus®.

•Alarm relays (3) with dual RS-485 Modbus®.

•Dual isolated 4 – 20 mA outputs.

•Smart sensor head stainless steel (Intrinsically Safe).

•Smart sensor head stainless steel (Explosion Proof)

•ATEX Sensor head.

•Heated Display option available (Consult with Factory)

•Smart Electrochemical sensor PCB(Less sensor)

•Smart Series 4 Electrochemical sensor PCB(Less sensor)

•Smart Series 7 Electrochemical sensor PCB(Less sensor)

•Smart Infrared sensor PCB (Less sensor)

•Smart LEL sensor PCB (Less sensor)

•Smart PID sensor PID (Less Sensor)

•“Y” fitting for dual sensor heads
(For local mounting quantity of two sensors)

•Magnetic mounting kit.

•Stainless steel duct mount.

•PVC duct mount.

•Single sensor configuration shown with single smart sensor head.

•Dual sensor configuration shown with dual smart sensor heads.

•Sensor head “Y” fitting adapter

Controllers

BFC-4 Controller with Serial Interface

The BFC-4 Quad Channel Controller provides simultaneous display and alarm functions for up to four transmitters or sensors. Easy to configure and user friendly, the BFC-4 can function as a critical alarm controller for toxic combustible gases , flame detection as well as other customizable values. Available with 900 MHz or 2.4GHz wireless send / receive capabilities.

FEATURES

- Accepts inputs from up to four 4 – 20 mA sensors or transmitters as well as Buckeye Detection Systems wireless transmitters. 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 alarm conditions.
- Graphic LCD readout displays monitored data as bar graphs, engineering units and 30 minute trends. Alarm LED’s flash with new alarms and become steady after acknowledgement.
- Two standard programmable SPDT alarm relays are configurable for Horn, High, Warn or Fault conditions.

ADDITIONAL FEATURES

- Modbus® master / slave RS-485 serial port interfaces to Modbus® devices such as other Buckeye Detection Systems controllers, PLC’s, DCS and PC’s.
- Cal Mode offers push button zero / span calibration functionality for direct sensor input applications.
- Authorization mode allows locking of critical configuration settings.
- Touch and magnetic keypad are standard for non-intrusive operation in potentially hazardous locations.
- Enclosures include: Non-metallic, Epoxy Coated Steel, 316 S.S., NEMA 4X, and NEMA 7 explosion proof wall mount options.
- Certified to CSA C22.2.No. 152 for combustible detection and Class I, Division 2, Groups A, B, C and 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 high way for interrogation by another Modbus® master.
- Six additional 5 amp SPDT discrete channel alarm relays available. (Two are standard)
- 4 – 20 mA outputs, event log, strobe lights and audible annunciators are also available.
- 50 and 120 Watt 24VDC power supplies are available.

SPECIFICATIONS

Inputs
Available inputs include 4 – 20 mA with precision 100 ohm terminating resistor (0 – 2 volt inputs may be accepted by removing the socketed terminating resistor) and catalytic bead / IR sensor inputs with adjustable sensor excitation and balance settings. Accepts Buckeye Detection Systems 900 MHz or 2.4GHz wireless transmitter inputs.

Standard Alarm Relays
Two programmable 5 amp 30VDC or 250VAC resistive form C.

Analog Outputs (Optional)
10 bit 4 – 20 mA output. Max load 800 ohms with nominal 24VDC power supply.

Discrete Alarm Relays (Optional)
Six programmable 5 amp 30 30VDC or 250VAC resistive Form C.

Serial Port (Optional)
Master / Slave RS-485 port equipped with Tx / Rx LED's.
Protocol is Modbus® RTU.

Display
128 x 64 pixel graphic LCD with backlight. Displays bar graphs, trends and engineering units. Six discrete LED's indicate alarm status, Cal Mode and keypad activity.

Ambient Temperature Range
-25˚ - 60˚ C (-13˚ - 140˚ F)

Power Supply
100 – 240VAC / 10 – 30VDC are standard primary power supplies.

Approvals
CSA 22.2 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 and D.
EN55011 and EN61000 (CE Mark)
BFC90-12 = NEMA 7 Division 1 Group B, C and D.

Models
BFC-4PY in Non Metallic enclosure
BFC-4PCS in NEMA 4X painted carbon steel enclosure
BFC-4SS in NEMA 4X, 316 S.S. Steel enclosure
BFC-4XP in bolt on lid NEMA 7 cast aluminum enclosure

BFC-16 Channel Alarm Controller

The BFC-16 Channel Controller provides simultaneous display and alarm functions for up to 16 transmitters or sensors. Easy to configure and user friendly, the BFC-16 can function as a critical alarm controller for toxic gases, combustible gases and flame detection as well as other customizable values.

FEATURES

- Accepts inputs from up to sixteen 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 8 channels or less and is easily expandable for future system growth.
- 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 alarm conditions.
- Graphic LCD readout displays monitored data as bar graphs, engineering units and 30 minute trends. Alarm LED’s flash with new alarms and become steady after acknowledgement.

ADDITIONAL FEATURES

- Standard programmable SPDT alarm relays are configurable for Horn, High, Warn or Fault conditions.
- Options such as direct catalytic bead / IR sensor inputs, 4 – 20 mA inputs, 4 – 20 mA outputs, discrete alarm relays are supported via an I2C expansion bus.
- Cal Mode offers push button zero / span calibration functionality for direct sensor input applications.
- Authorization mode allows locking of critical configuration settings.
- Magnetic keypad standard for non-intrusive operation in potentially hazardous locations.
- Enclosures include: Wall mount NEMA-4X, Non-Metallic, 316 S.S., NEMA 7 and Rack / Panel mount.

SPECIFICATIONS

Analog Inputs (Optional)
12 bit 4 – 20 mA into 100 ohms input impedance; includes postive power supply terminals for each channel for routing power to two or three wire transmitters.

Common Alarm Relays (Standard)
Four 5 amp 30VDC or 250VAC resistive form C.

Analog Outputs (Optional)
10 bit 4 – 20 mA output. Max load 800 ohms with nominal 24VDC power supply.

Discrete Alarm Relays (Optional)
Four 5 amp 30VDC or 250VAC resistive Form C.

Serial Port (Standard)
Modbus® Master and Slave RS-485 port equipped with Tx / Rx LED’s. Protocol is Modbus® RTU.

Power Supply
10 – 30VDC 12 Watts max required by BFC-16.
BFC10-0172 option 150 Watt power supply.

Display
128 x 240 pixel graphic LCD with back-light. Displays bar graphs, trends and engineering units. 52 discrete LED’s indicate alarm status for three alarms per 16 channels and common relays.

Ambient Temperature Range
-25˚ - 60˚ C (-13˚ - 140˚ F)

Approvals
CSA 22.2 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 and D.
EN55011 and EN61000 (CE Mark)
Models BFC-71XP and BFC71-02 = NEMA 7 Division 1 Group B, C and D.

Models
BFC-16N4 NEMA 4X wall mount.
BFC-16XP NEMA 7 wall mount explosion proof.
BFC-16PM panel mount rack (Includes bezel / rack and hardware)
BFC-16SS NEMA 4X 316 S.S. wall mount.

BFC-64 16 – 64 Channel Controller Interface

The BFC-64 Channel Controller provides simultaneous display and alarm functions for up to 64 transmitters or sensors. 16, 32, 48 and 64 channel display modes with I/O modules arranged in groups of 16 channels allow economical configuration and expansion of systems. This easy to configure, user friendly controller is ideal for centralizing display and alarm functions in critical multipoint 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 convenience.
- RS-485 serial ports allow simultaneous Modbus® Master / Slave operation. Two standard ports and two isolated ports.
- Wireless Modbus® interface available.
- Three independent alarm levels per channel. "Sparing Relay Acknowledge" feature allows silencing of external audible devices during alarm conditions.

ADDITIONAL FEATURES

- 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 catalytic bead / IR sensor inputs, 4 – 20 mA inputs, 4 – 20 mA outputs, discrete and programmable alarm relays are supported via an I2C expansion bus.
- Cal Mode offers push button zero / span calibration functionality for direct sensor input applications.
- Authorization mode allows locking of critical configuration settings.
- Data logger onto SD card allows recording of minimum and maximum values for one year.
- Power supply options for 150, 600 or 1200 Watts.
- Magnetic keypad standard for non-intrusive operation in potentially hazardous locations.
- Enclosures include wall mount NEMA 4X, Non-Metallic, 316 S.S. NEMA 7 and Rack / Panel mount.

MODELS

BFC-64PM ½ width 19" rack / panel mount
BFC-64RM/1 Full width 19" rack / panel mount (1, BFC-64, 64 channels).
BFC-64RM/2 Full width 19" rack mount (2, BFC-64's, 128 channels).
BFC-64N4 NEMA 4X large fiberglass wall mount
BFC-64SS NEMA 4X SS wall mount.
BFC-64XP NEMA 7 explosion proof wall mount.
BFC-64CP NEMA 4X compact fiberglass wall mount.

SPECIFICATIONS

Analog Inputs (Optional)
12 bit 4 – 20 mA into 150 ohms input impedance; includes postive power supply terminals for each channel for routing power to two or three wire transmitters.

Serial Ports
Modbus® Master and Slave RS-485 port equipped with Tx / Rx LED's.
Protocol is Modbus® RTU.

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 – 20 mA output. Max load 800 ohms with nominal 24VDC power supply.

Display
QVGA 320 x 240 pixel graphic LCD with back-light. Displays bar graphs, trends and engineering units in color. 5 discrete LED's indicate alarm status for five standard alarm relays.

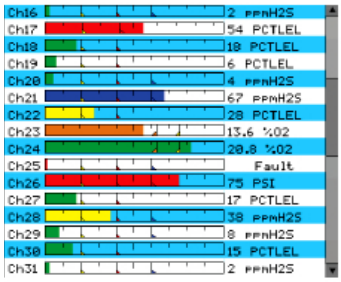
Ambient Temperature Range
-25˚ - 60˚ C (-13˚ - 140˚ F)

Power Supply
10 – 30VDC (24VDC nominal) 12 Watts max required by BFC-72.
BFC10-0172 optional 150 Watt power supply.
BFC10-0367 optional 600 Watt power supply.

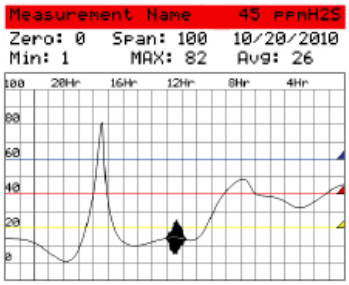
Approvals
CSA 22.2 No. 1010.1 and C22.2 No. 152 for combustibles and ISA S82.02.
UL 1604 / C22.2 No. 213 (NEMA-4X = Division 2 Groups A, B, C and D)
EN55011 and EN61000 (CE Mark)
Models BFC-72XP and BFC72-06 = NEMA 7 Division 1 Group B, C and D.

SCREENS

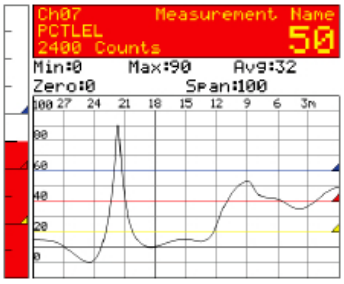
Main Data Screen
Displays all active channels on the same screen. Channel configurations include 16, 32, 48 and 64 (shown) active channels. Cells indicate alarm status by color.



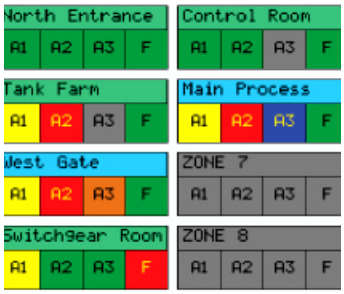
Bar Graph Screen
Displays 16 channels at a time. Side scroll bar controls which group of 16 channels are visible. Bar graphs change colors to indicate alarm status.



24 Hour Trend Screen
Displays 1 channel at a time as most recent 24 hour trend. Top data fields include current reading, “Max., Min., Avg.,” 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., Avg.,” readings over 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 cells change colors and the “Name” field flashes indicating alarms. Intuitive software allows user direct access to screens displaying which channels belong to each zone.

BDSNet Wireless Monitoring

BDSNET Wireless Monitoring

The Buckeye Detection Systems BDSNET wireless monitoring system consists of 1 – 32 battery powered wireless monitors and at least one 32 channel wireless receiver. Our wireless receivers take advantage of our NRTL certified and field proven BFC-4 controller hardware, along with a newly designed firmware. A single Multi-Interface option module is all that is required to add data logging, a second wired and wireless Modbus® port, plus a Wi-Fi port with web server. The unique Wi-Fi feature allows remote HMI functionality via a web enabled device. Buckeye wireless receivers allow responders to view "live data" as well as historical data on smart phones or tablets prior to entering a hazardous area!

The battery powered wireless monitor is based upon our proven BFT-48 wireless transmitter and is compatible with existing BFT-48 systems. BDSNET enhancements include power On / Off via the magnetic wand, dual gas sensor capability, easier battery replacement, plus the ability to separate the sensor up to 15 feet from the transmitter using a 4 wire sensor separation kit.

The new BDSNET wireless monitoring system is designed for rapid and easy deployment for both temporary and permanent monitoring applications.

FEATURES BDSNET Monitors

- Supports single/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 BDSNET wireless receivers to ensure identical readings at all locations.
- Allows restore of factory settings from the Smart Sensor plus back up and subsequent restore of user settings if parameters are accidentally corrupted or lost.
- Password protected with Low and High security levels.
- Easy to change Lithium battery.
- Three adjustable independent alarm levels per sensor.
- Readouts include Engineering Units, bar graphs and 1 hour trends.
- "Legacy" setting makes BDSNET devices compatible with all Buckeye Detection Systems controllers.
- Magnetic mount option available.
- "License free" 900 MHz or 2.4 GHz FHSS client and server network.
- 5 front panel LED's 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 enclosures.

Multi-Interface option

- Provides Wi-Fi access point for web enabled devices to view BDSNET Receiver embedded web pages including real time and historical sensor readings, channel parameters and remote set up capability.
- Data logger stores more than 1 year of readings and alarm history.
- RS-485 and wireless Modbus® slave port for transmitting data to our BFC-16 and BFC-64 channel controllers.

FEATURES BDSNET Receiver

- Displays monitored readings and alarms from 1 to 32 BDSNET monitors.
- Limited setup required as channel parameters are periodically received from the BDSNET sensors 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 Engineering Units and bar graph for each active channel.
- Event log captures time and date stamps for multiple sensor events including: powerup, alarms , calibration and communications errors.
- Ideal for use with solar power requirements (100 – 240VAC or 10 – 30VDC).
- Both 900 MHz and 2.4 GHz FHSS wireless options available.
- Touch and magnetic keypads are standard for non-intrusive calibration.
- Password protected with Low and High security levels.

Specifications

Analog Inputs (Optional)
12 bit 4 – 20 mA into 150 ohms input impedance; includes postive power supply terminals for each channel for routing power to two or three wire transmitters.

Serial Ports
Modbus® Master and Slave RS-485 port equipped with Tx / Rx LED's.
Protocol is Modbus® RTU.

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 – 20 mA output. Max load 800 ohms with nominal 24VDC power supply.

Display
QVGA 320 x 240 pixel graphic LCD with back-light. Displays bar graphs, trends and engineering units in color. 5 discrete LED's indicate alarm status for five standard alarm relays.

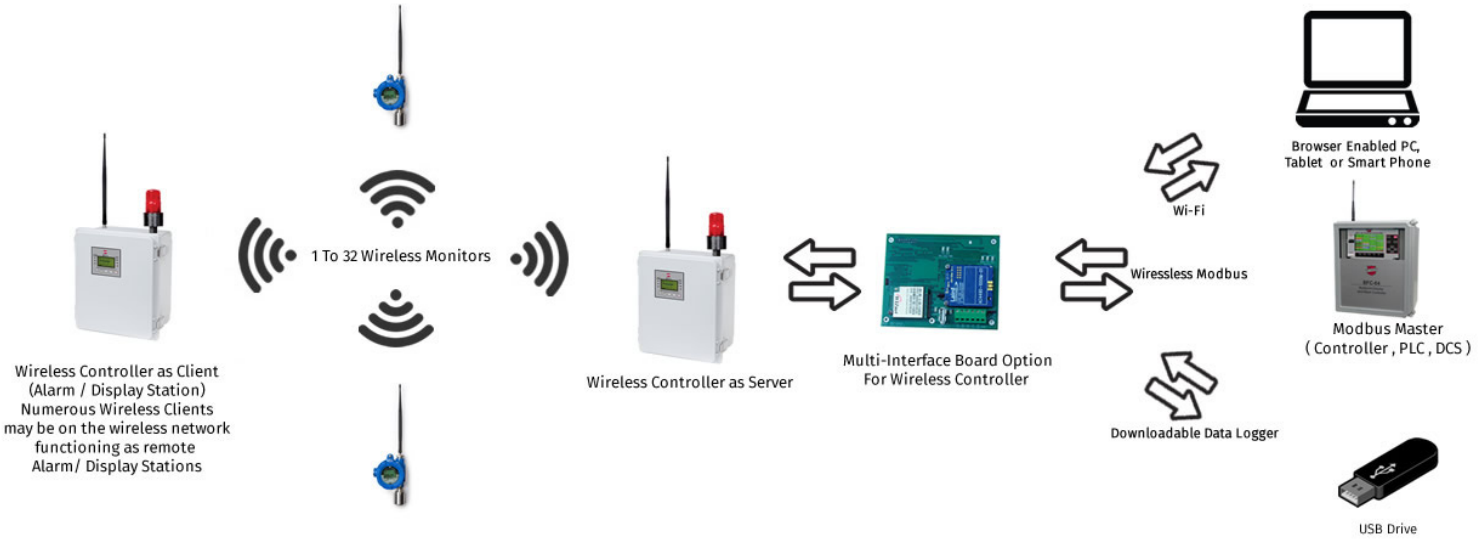
Ambient Temperature Range
-25˚ - 60˚ C (-13˚ - 140˚ F)

Power Supply
10 – 30VDC (24VDC nominal) 12 Watts max required by BFC-72.
BFC10-0172 optional 150 Watt power supply.
BFC10-0367 optional 600 Watt power supply.

Approvals
CSA 22.2 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 and D)
EN55011 and EN61000 (CE Mark)
Models BFC-72XP and BFC72-06 = NEMA 7 Division 1 Group B, C and D.

BDSNET Wireless Networking Topology

The BDSNet wireless network is designed with maximum performance and east of setup. The wireless equipment is easy to deploy since all BDS wireless equipment utilizes both 900MHz and 2.4GHz frequency ranges. Advantages are provided by the powerful BDSNet transmitters, as the wireless equipment can maintain solid connections to all components of the wireless network, despite obstructions that are common to typical installations. Once the wireless signal is received at the Wireless Controller (Server) there are multiple connection options available such as Wi-Fi, Wireless Modbus, and USB data logging.



BDSNET Wireless Monitoring Performance

- 2.4GHz frequency range: 2400 - 2483.5 MHz with 42 hops.
- 2.4GHz conducted transmit power is 125mW / 21dBm.
- 2.4GHz indoor/urban range: Up to 1500 feet with 7dBi collinear antenna.
- 2.4GHz outdoor RF LOS range: Up to two miles with high-gain antenna.
- 2.4GHz receiver sensitivity: -98dBm.
- 900MHz frequency range: 902 - 928 MHz with 50 hops.
- 900MHz conducted transmit power (selectable): 10mW-1W/0-30dBm.
- 900MHz indoor/urban range: Up to 3000 feet with 2dBi dipole antenna.
- 900MHz outdoor RF LOS range: Up to five miles with high-gain antenna.
- 900MHz receiver sensitivity : -100dBm enclosures.

BDSNET System Setup

A typical BDSNET FHSS Client / Server wireless monitoring system consists of one BDSNET Receiver configured as the network's Server, receiving wireless data from up to 32 Single Gas or 16 Dual gas BDSNET wireless transmitters. Additional BDSNET Receivers may also receive the same BDSNET transmitter's data and act as remote alarm stations and displays, but must be configured as a Client since only one Server is permitted per network. BDSNET wireless transmitters are powered by an internal lithium battery while BDSNET receivers require either 100 – 240VAC or 10 – 30VDC and are very suitable for solar power.

The Multi-Interface module is a plug-in PCB option which adds a tremendous amount of functionality and is easily added to BDSNET Receivers. Features added by the Data Logging of >1 year of readings and alarms, a Wi-Fi 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 Detection Systems BFC-64 sixty four channel controllers.

Accessories

Sensor Separation Kit

The BWS10-0411 Sensor Separation Kit allows the Buckeye wireless smart sensors to be mounted up to 15 feet away from the wireless controller. The wireless controllers may be configured as single or dual sensor monitoring stations so either one or two Sensor Separation kits may be connected to each wireless controller. When combined with the BFT10-0247 Stainless Steel sensor head, the sensor separation kit is suitable for Division 2 hazardous locations.

BDSNET Relayer / Alarm Bar

The BDSNET "Relayer" is simply a BFT-48 wireless transmitter without sensing capabilities. This wireless transmitter then receives alarm status data from other wireless BDSNET transmitters for activating up to five configurable 5 amp SPDT relays.

Relays may be configured to activate based upon 3 distinct alarm levels, Communication Error/Fault and low battery conditions. Add our Quick Connector option and cabling to make it easy to wire BDSNet Relayers to 2 / 4 Alarm Bar light stack annunciators.

Order the appropriate 900 MHz or 2.4GHz BDSNET Relayer for your system. Suitable for Division 2 hazardous locations. Available options include single of dual Division 2 rated local strobe lights. Quick Connector Option allows easy connection to alarm bars for both general purpose and hazardous locations.

Additional Plug-Ins and other Accessories

Buckeye Detection Systems has an offering of plug-in options for configuring “Rig Safety Systems.” Our Rig Safety Systems are flexible and allow maximum efficiency when changing or mixing various components as installation requirements can vary. Please call us for any of your “Rig Safety” or other system needs.

30 Watt solar power supply with 55AH battery (Div 2 enclosure shown)

110 Decibel Horn Suitable for Division 2 Hazardous Areas

Sun Shield for Improved LCD Readout Visibility

Multicolor Strobe (Wireless Relayer) Multi-function (Not Shown: Clear or Purple Option Strobes or Green Solid)

Four Light 10-30VDC Alarm Bar for Division 2 Hazardous Locations

Stand, Wireless Monitor

Three Light 10-30VDC Alarm Bar for General Purpose Locations (Shown with three strobes)

Tripod

Two Light 10-30VDC Alarm Bar for Division 2 Hazardous Locations

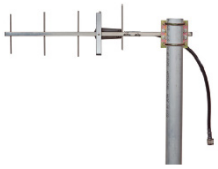
Straight Rubber antenna 900MHz and 2.4GHz Antenna lightning Protector

Two Light 10-30VDC Alarm Bar for General Purpose Locations

Additional Plug-Ins and other Accessories

Antenna Base Station
2.4GHz, Collinear

Power Supply, DIN Rail,
24VDC 50 Watt



Yagi Antenna 900MHz

RP-TNC Low Coax
Antenna Cable (Contact
Factory for options)

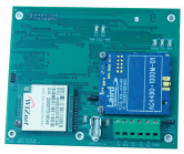
Yagi Antenna 2.4GHz

Antenna, 2 dBi Dipole,
Division 1

Antenna Base Station
900MHz, Collinear

(Wireless Monitor)
Replacement Antenna,
2 dBi Lithium Battery

Quick Connect Cable Sets



Wireless relayer
Multi-function board

Additional Plug-In and other accessories

WIRELESS MONITOR

- **BWSAL90**-Single/Dual Single or Dual channel 900 MHz monitor (rubber dipole antenna included) suitable for Div 2 installation

- **BWSAL24**-Single/Dual Single or dual channel 2.4 GHz monitor (rubber collinear antenna included) suitable for div 2 installation

- **BWSPY90**-Single/Dual Single or Dual channel 900 MHz monitor (rubber dipole antenna included); UL-94 injection molded enclosure (dual requires at least one Sensor Separation kit)

- **BWSPY24**-Single/Dual Single or Dual channel 2.4 GHz monitor (rubber dipole antenna included); UL-94 injection molded enclosure (dual requires at least one Sensor Separation kit)

WIRELESS MONITOR OPTIONS/ACCESSORIES

- Series 4 EC smart sensor board (artic heater standard)
- Series 4 low powered IR smart sensor board BFT10-0247 Smart sensor head stainless steel (CSA IS / XP)
- Smart sensor head stainless steel without sinter BFC XP sensor separation kit with 15ft com cable (includes BFT10-0247)
- Sensor head calibration adaptor
- Sensor head splash guard with remote calibration port
- Magnetic mounting kit for instrument enclosure (2 magnets)

WIRELESS MONITOR / RELAYER SPARE PARTS

- Replacement BFC battery with pull tab
- Explosion-Proof Enclosure
- Replacement board for BWS10-0411 sensor separation kit
- Replacement 15 ft. Data cable for BWS10-0411 separation kit
- Replacement BFC display/radio board (less radio)
- Replacement BFC PS/ battery board (less battery)
- 900 MHz antenna fitting RP-TNC suitable for Div 2 areas
- 2.4 GHz antenna fitting RP-TNC suitable for Div 2 areas

WIRELESS RELAYER

- Suitable for Div 2 installation; 32 Channel 900MHz or 2.4 GHz wireless
- Relayer/Repeater; five configurable 5amp SPDT relays
- UL-94 injection molded enclosure 32 channel 900MHz or 2.4GHz wireless Relayer/Repeater; five configurable 5amp SPDT relays

WIRELESS RELAYER OPTIONS/ACCESSORIES

- Magnetic mounting kit for instrument enclosure (2 magnets)
- Four light 10-30VDC alarm bar for general purpose or Div 2 Hazardous locations Hazardous locations
- Two light 10-30VDC alarm bar for general purpose or Div 2 Hazardous locations
- 110 decibel horn suitable for Div 2 hazardous areas
- Red strobe light suitable for Div 2 hazardous areas
- Amber strobe light suitable for Div 2 hazardous areas
- Blue strobe light suitable for Div 2 hazardous areas
- Alarm Bar Cable; 15 meter
- Alarm Bar Cable; 8 meter
- Alarm Bar Cable; 3 meter

BDSNET MISCELLANEOUS ITEMS

- Antenna, 900 MHz dipole, rubber, Div 2
- Antenna, 900 MHz, dipole, explosion-proof, Div 1
- Antenna, 900 MHz, Yagi, Stainless Steel
- Antenna, 900 MHz collinear, 8 dBi Fiberglass Omni Base Station
- Replacement BFC/BWS 900 MHz radio module
- Replacement BFC/BWS 2.4 GHz radio module
- Antenna, 2.4 GHz collinear, rubber, Div 2
- Antenna, 2.4 GHz, dipole, explosion-proof, Div 1
- Antenna, 2.4 GHz Yagi, 12DBi, tilt mount
- Antenna, 2.4 GHz collinear, 9 dBi Fiberglass Omni Base Station
- Replacement BFC/BWS 900 MHz radio module
- Replacement BFC/BWS 2.4 GHz radio module
- Replacement Wireless 900 MHz board kit (includes antenna and cable)
- Replacement Wireless 2.4 GHz board kit (includes antenna and cable)
- Antenna 900MHz spring base 2dBi dipole omni
- Antenna 2.4GHz spring base 4dBi dipole omni

Site Survey Tool

The hand-held BDSNet “Site Survey Tool” (SST) is designed with modes of operation for simulating Buckeye Wireless Systems products including Buckeye wireless transmitters, and Buckeye wireless receivers as well as our wireless relaying capability. Buckeye wireless relaying units and SST devices are supplied with either a 900MHz or 2.4GHz integrated radio module depending upon the BDSNet frequency that is desired.

A single SST is very useful for commissioning and troubleshooting Buckeye Wireless Systems that are already installed at a site. However, it is highly recommended that two SST’s be used to survey sites and approve device locations prior to installation. One SST may be set as a SERVER in Rx (receive) mode while another is set as a CLIENT in Tx (transmit) mode. The SERVER SST simulates a Buckeye wireless relayer or wireless transmitter locations while the CLIENT simulates wireless controller locations. SST diagnostic features include Rx/Tx counters and RSSI (Received Signal Strength Indication) trending to determine signal strength and link integrity for the proposed wireless network.

SST’s are powered either by a replaceable non-chargeable 9V Lithium battery or externally by a 1 amp 12VDC wall wart or automotive power point (cigarette lighter).The sturdy RP-TNC antenna connector supports a standard local rubber antenna or optional coax cabling to a remote stationary antenna. It is very important to evaluate sites using the same antennas intended for the installation. If longer distances require Yagi directional antennas then these should also be used during a site survey.

Features

- Back-lit graphic LCD readout.
- Scans airwaves for “In-Range” BDSNet networks upon demand and at power-up.
- RSSI values are trended over time and indicated in dBm for each reception.
- Rx Client mode allows “Snooping” without affecting installed BDSNet Networks.
- Rx/Tx counters allow calculation of missed data packets over time.
- Rx mode timer indicates elapsed time between received messages for each channel.
- Tx mode offers special channel 33 for testing the wireless link to receivers without tripping alarms.
- Programmable back-light and power off timers to conserve battery.

Gas Calibration Kits

Recommended Sensor Cal Kits

Each Calibration Kit includes: 58L span gas, 58L Zero air, regulator, 3' Teflon™ tubing, and carrying case.

Part Number	Kit Description
BCAL-NH3-025K	Ammonia NH3 Calibration Kit 0-25 PPM
BCAL-NH3-050K	Ammonia NH3 Calibration Kit 0-50 PPM
BCAL-NH3-0100K	Ammonia NH3 Calibration Kit 0-100 PPM
BCAL-NH3-0250K	Ammonia NH3 Calibration Kit 0-250 PPM
BCAL-CO2-0001K	Carbon Dioxide CO2 Calibration Kit 0-1%
BCAL-CO2-0003K	Carbon Dioxide CO2 Calibration Kit 0-3%
BCAL-CO2-0005K	Carbon Dioxide CO2 Calibration Kit 0-5%
BCAL-CO-0025K	Carbon Monoxide CO 0-25 PPM Calibration Kit
BCAL-CO-0050K	Carbon Monoxide CO 0-50 PPM Calibration Kit
BCAL-CO-0100K	Carbon Monoxide CO 0-100 PPM Calibration Kit
BCAL-CO-0250K	Carbon Monoxide CO 0-250 PPM Calibration Kit
BCAL-Cl2-0003K	Chlorine Cl2 0-3 PPM Calibration Kit
BCAL-CL2-0005K	Chlorine Cl2 0-5 PPM Calibration Kit
BCAL-ClO2-0001K	Chlorine Dioxide ClO2 0-1 PPM Calibration Kit
BCAL-ClO2-0003K	Chlorine Dioxide ClO2 0-3 PPM Calibration Kit
BCAL-H2-0050k	Hydrogen H2 0-50% LEL Calibration Kit
BCAL-HCN-0005K	Hydrogen Cyanide HCN 0-5 PPM Calibration Kit
BCAL-HCN-0025K	Hydrogen Cyanide HCN 0-25 PPM Calibration Kit
BCAL-HF-0003K	Hydrogen Fluoride HF 0-5 PPM Calibration Kit
BCAL-HF-0010K	Hydrogen Fluoride HF 0-10 PPM Calibration Kit
BCAL-HF-0100K	Hydrogen Fluoride HF 0-100 PPM Calibration Kit
BCAL-H2S-0010K	Hydrogen Sulfide H2S 0-10 PPM Calibration Kit
BCAL-H2S-0025K	Hydrogen Sulfide H2S 0-25 PPM Calibration Kit
BCAL-H2S-0050K	Hydrogen Sulfide H2S 0-100 PPM Calibration Kit
BCAL-CH4-0050k	Methane CH4 0-50% LEL Calibration Kit
BCAL-NO-0010K	Nitric Oxide NO 0-10 PPM Calibration Kit
BCAL-NO-0025K	Nitric Oxide NO 0- 50 PPM Calibration Kit
BCAL-NO2-0005K	Nitrogen Dioxide NO2 0-5 PPM Calibration Kit
BCAL-NO2-0010K	Nitrogen Dioxide NO2 0-10 PPM Calibration Kit
BCAL-O2-0016K	Oxygen O2 0-16% Calibration Kit
BCAL-O2-0005K	Oxygen O2 0-10% Calibration Kit
BCAL-O3-0002K	Ozone O3 0-2 PPM Calibration Kit
BCAL-C3H8-0050K	Propane C3H8 0-50% LEL Calibration Kit
BCAL-SO2-0002K	Sulfur Dioxide SO2 0-2 PPM Calibration Kit
BCAL-SO2-0005K	Sulfur Dioxide SO2 0-5 PPM Calibration Kit

Open Path Gas Detection

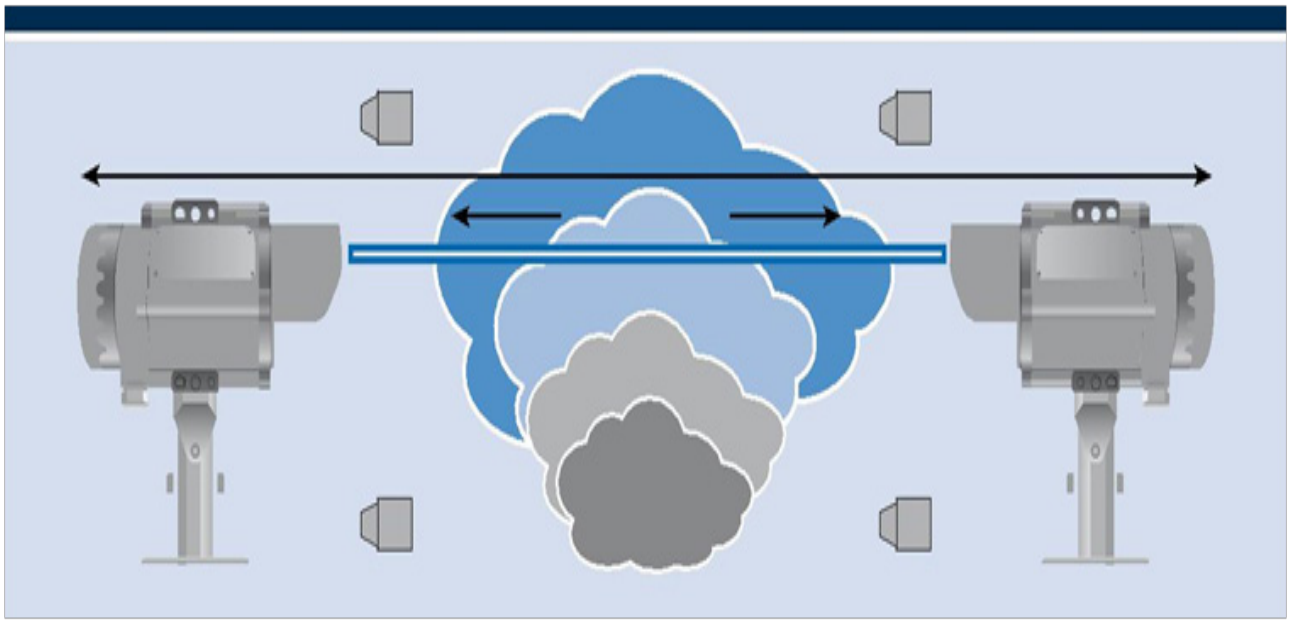
OPEN PATH GAS DETECTION

Why Open Path?

Open path detectors complement the use of individual point detectors, take executive action and offer many significant benefits including:

- Wider area coverage
- Most likely method to pick up any leak
- Very high speed of response
- No unrevealed failure modes
- Beam block warning
- Detector location is less critical
- Size of gas hazard indicated
- Potential Size of gas hazard

Gas leak can be picked up by Open Path Detectors that point detectors miss!



This scenario shows how the matrix of point type detectors can miss a leak or eventually only see diluted gas levels whereas Open-Path will, in this case, measure 20% LEL x 7m = 1.4 LEL.m - well above 1 LEL.m alarm level

Introducing BOP-Q900 Open Path Gas Detector

(SafEye Quasar 900)

IMMUNITY TO FALSE ALARMS

Quasar 900 is totally immune to interference from sunlight or any other sources of radiation such as flare stacks, arc welding or lightning.

PERFORMANCE IN ALL WEATHERS

The Quasars 900's high power xenon lamp will compensate for changing weather conditions, including rain, fog, mist, snow and makes it immune to influences from solar radiation, arc-welding, stack flares or vibration from machinery.

The optical lenses are thermostatically heated to prevent the formation of ice and build-up of snow on the optics even under severe weather conditions. It also eliminates build-up of condensation on the lenses.

Quasar is rated for operation over a very wide temperature range from -67° F to + 149ºF (-55ºC to + 65ºC) - a truly worldwide product

FAILSAFE

No unrevealed failures. In normal operation, the output signal is 4 to 20 mA, depending on the measured gas concentration.

Sub-4mA signals includes indications for beam blockage (2mA), a fault (1mA). In addition, a continuous self-test of the Quasar 900 will issue a pre-warning signal (3mA) where the detector is still operational but requires some attention – for example when the transmitter or receiver is misaligned or if there is a deposit build-up on the optics. *Maintenance without downtime!*

BUILT-IN DATA LOGGER

An internal data-logger keeps a detailed record of the previous 100 events.

GAS LIBRARY

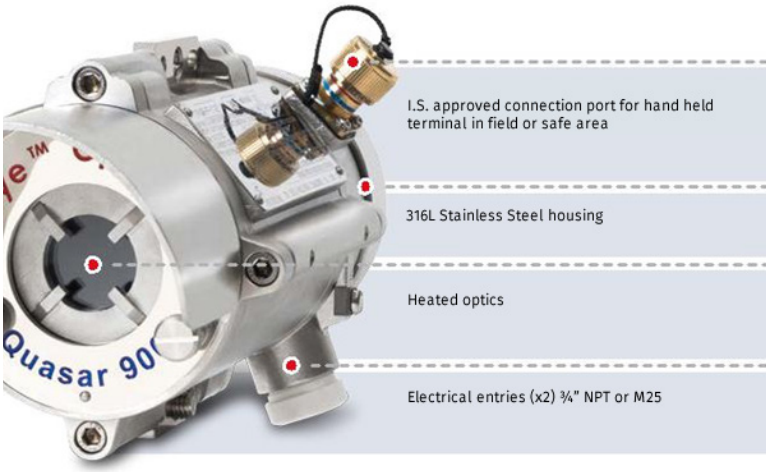
The detectors are calibrated to three gases. Each detector is supplied with methane, propane and ethylene calibration as standard which are field selectable by the user.

No need for any manual adjustment or standard test gas, due to the built-in calibration of the Quasar 900.

- FM3260• Marine Approval
- MED 'Wheelmark' approval (DNV)

RELIABILITY

Quasar 900 is approved to SIL2 (IEC61508), equipped with heated optics and tolerates a very wide temperature range to provide reliable detection



SIMPLE TO ALIGN AND COMMISSION

One person can easily align and commission the system without the need for special training or skills. After an initial coarse adjustment by eye, a telescope is fitted allowing fine adjustment to optimize the adjustment for maximum signal strength.

Installation Options
BOP-Q900 Quasar offers options for your installation:

• 0-20mA analog output with HART capability

• RS485 Modbus, where up to 256 detectors can be linked.

Worldwide Approvals

• **Hazardous area (Zone 1)**
FM/FMC, ATEX, IECEx, GOST R Inmetro

• **Performance (3rd party):**
FM 6325 approved by FM EN60079-29-4 tested by FM

• **Reliability:**
SIL2 (TUV)

HART

HART capabilities within the BOP-Q900 can provide digital communications between the field and the safe area. This can provide real time information on the status of an individual detector as well as configuration and historical data of each device, without the need for extra cable cores.

A key feature of HART is that digital signals are transmitted on the same two wires as the 0-20mA current signal.

Useful and useable information available via HART includes:

- Display set-up
- Reconfigure set-up – such as gas calibration, heater control, address
- Display detector status and definition
- Perform detector diagnostics
- Troubleshooting
- View Event Log

Introducing BOP-Q950 & Q960 Open Path Gas Detectors

(SafEye Quasar 950 & 960)

FEATURES & BENEFITS

- Long Range Gas Detection up to 263ft (80m)
- Detection of toxic gases
  - 950 Series detects H2S
  - 960 Series detects NH3
- High Sensitivity and fast response
- Heated optics to improve performance in ice, condensation and snow conditions
- Continuous operation in extreme and harsh environmental conditions
- Solar blind and immune to industrial environments
- Withstands extreme vibration conditions
- Multiple output options for maximum flexibility and compatibility
  - 0-20mA
  - HART Protocol for maintenance and asset management
  - RS-485, Modbus Compatible
- Simple, one person installation, alignment, and calibration

Programmable configuration via the handheld unit
- Fast connection to I.S. approved handheld diagnostic/calibration unit
- 3mA “maintenance call”
- 3 Year Warranty
- ATEX & IECEx Ex II 2 GD
  (pending) Ex d e ib [ib Gb] IIB+H2 T4 Gb
  Ex tb IIIC T135°C Db IP66
- Safety Integrity Level SIL2 (TUV) - pending

The latest SafEye Quasar Open Path UV detection technology includes the 950 and the 960 series.

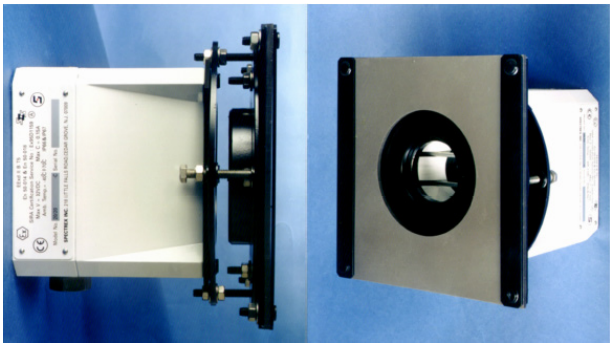
The Quasar 950 models detect toxic Hydrogen Sulfide gas and the Quasar 960 models detect toxic Ammonia gas, both with path lengths of up to 263ft (80m).
The Quasar 950 and 960 models can be tailored to protect your personnel and high-risk installation. Reliability is key and is assured with SIL2 (pending).

All Quasar 950/960 detectors incorporate heated windows to minimize any effects from condensation, icing, snow and are totally immune to interference from sunlight or any other sources of radiation such as flare stacks, arc welding or lightning. A range of outputs are available including 0-20mA, HART, Modbus RS485 to suit all control systems.

APPLICATIONS

- Offshore platforms & FPSO
  Petrochemical plants
- Chemical processing plants
- Gas filling and distribution terminals
- Gas transport and pipelines
- Perimeter monitoring

Introducing BOP-S300



High Sensitivity

- Alarm up to 0.5 LEL.m
- 5 times more sensitive than the normal Open Path equipment

Fast Response

- Fast response time of 2 seconds.
- 5 to 10 times faster than the commonly used Open Path detector and 20-50 times faster than the Point Detector.

(BOP-S300)

FEATURES & BENEFITS

High reliability, simple installation, alignment and maintenance, equipment impervious to poisoning.

Proven Technology

Used in air ducts on FPSO rigs and offshore rigs for British Petroleum (BP), Shell and ABB Lummus for turbines, air intakes, etc.

Harsh Environment

Specially designed to perform under extreme conditions such as high-speed airflows, high temperatures (up to 158˚F (70˚C)), humidity and corrosive gases, where point detectors may not be effective.

Standard Interface Options

Standard Interface OptionsStandard 4-20 mA outputs or RS-485 output to allow networking (up to 64 detectors) to a central monitoring/PC system.

BOP-S300 Duct Open Path Detectors were specially designed and are widely used to monitor and alarm against ingress of hazardous gas concentrations into air intakes of turbine engines and HVAC air ducts. Formation and migration of gas clouds and their possible penetration into safe places, control rooms, turbine engines, etc. is a substantial risk that needs to be addressed. Users, designers and safety and operational engineers are increasingly required to provide for adequate and fast detection and alarm to protect these hazards.

For duct applications, over a small path across an air inlet, the system is designed to respond with a very high sensitivity, full scale of 1 LEL.m for 2-6.6 ft. (0.6-2 m) wide inlet and full scale of 2.5 LEL.mfor 6.6-23 ft. (2-7 m) wide inlet. The BOP-S300 Duct system, due to its special optics design, provides for a misalignment tolerance of 2° in all directions and is protected against false gas reading and alarms which are caused by partial obscuration and blocking, misalignment, vibration, flexing or tilts.

Each unit is calibrated in a temperature cycle run at the entire operating temperature range. The temperature compensating mechanism allows correct operation in changing and extreme temperatures while maintaining the system's accuracy. Its internal microprocessor will automatically compensate for low signals with its internal Automatic Gain Control (AGC).The BOP-S300 Duct system can be factory with offshore production and processing and onshore installations.

BOP-S300 Duct Open Path Gas Detectors

The following optional accessories designed for the BOP-S300 system are available.
Duct Mounting The duct mount interfaces between the detector and the duct surface.
The duct mount enables the detector's alignment up to 3˚ in all directions.

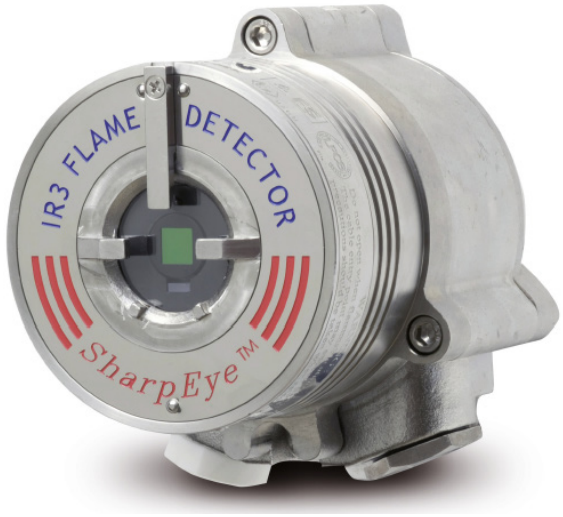
Commissioning / Alignment Kit for standard and duct type units is required for commissioning and future maintenance checks. Only one kit is required per site. The kit includes an Alignment Telescope, a Magnetic Mode Selector and a Function Check Filter for system testing along with socket keys for access to units.

Typical Applications

The Offshore Oil & Gas Rigs and FPSO; Onshore Oil & Gas Terminals;
Storage Farms and Filling Stations; Petrochemical and Chemical Industries;
Power Utilities and Turbines areas; Automotive, Painting, Printing, Pharmaceutical Industries and many more...

Specific applications include:
- HVAC ducts (Heating Ventilation Air Conditioning) in accommodations areas
- Air ducts in process areas
- Stacks and exhaust towers
- Compressors and generator enclosures
- Curing ovens and drying equipment, printing equipment
- Engine & Turbine air intake and exhaust
- Air intake to safety enclosures
- Paint-booths and paint production and drying processes
- Air ventilation shafts 7).

Flame Detection



BFD4040I

Triple IR (IR3) Flame Detector

Superior performance, reliability
and immunity to false alarms

SharpEye™

The new 40/40I, is a multi-spectrum flame detector based on three IR bands (IR3) that detects fuel and gas fires at long distances with an incredible immunity to false alarms. The 40/40I IR3 can detect a 1 ft2 (0.1m2) gasoline pan fire at 215 ft (65m) in less than 5 seconds.

The 40/40I is the most durable and weather resistant flame detector currently on the market. Its new features include a heated window, to eliminate condensation and icing; HART capabilities for digital communications; lower power requirements; and a compact, lighter design.

The 40/40 Series warranty period is 5 years and is SIL2 (TUV) approved to IEC 61508.

TYPICAL APPLICATIONS

- Offshore Oil & Gas Operations
- Power Generation Facilities
- Onshore Oil & Gas Operations
- Pharmaceutical Production
- Pipeline Operations
- Printing Production
- Chemical Production
- Warehousing
- Petrochemical Plants
- Automotive
- Storage Tank Farms
- Explosives and Munitions
- Aircraft hangars
- Waste Disposal Facilities

FEATURES & BENEFITS

- Multi spectrum design for long distance detection and high false alarm immunity.
- Sensitivity selection to ensure no zone crossover detection.
- Automatic and Manual Built-In-Test (BIT) for assured, continued reliable operation.
- Heated window for operation in harsh weather conditions
- (Snow, ice, condensation).
- Multiple output options for maximum flexibility and compatibility:

  -Relays (3) for Alarm, Fault and Auxiliary
  -0-20mA (stepped)
  -HART Protocol for maintenance and asset management
  -RS-485, Modbus Compatible

- High Reliability MTBF minimum: 150,000 hours.
- Approved to Safety Integrity Level 2 (SIL2 – TUV).
- 5-Year Warranty.
- User Programmable via HART or RS-485.

  - Approved for hazardous locations:
  - Zones 1 & 2 with IIC gas group vapors present.
  - Zones 21 & 22 with IIIC dust type present.

- Ex approved to:
  - ATEX & IECEx.
  - FM/FMC/CSA.
- 3rd party performance tested
  - EN54-10 (VdS).
  - FM3260.
- Marine Approval:
  - MED 'Wheelmark' approval (DNV)

BFD2020MPI

2020 Mini IR3 (Indoor)

IR3 Flame Dectector for " INDOOR" applications

FEATURES & BENEFITS

- Long distance Flame Detection (up to 140ft / 43m)
- Large Field of View (100° horizontal / 90° vertical)
- Highest immunity to false alarms
- Output options (two models):
  – Alarm and Fault relay outputs (4 wire)or Stepped mA output (3 wire source)• RS-485 Modbus Compatible
- Automatic and Manual Built-In-Test (BIT)
- 3 Year Warranty

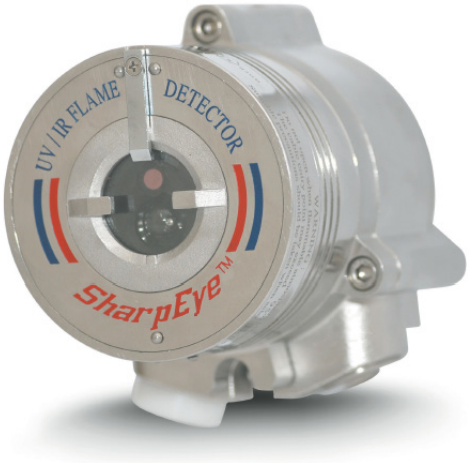
TYPICAL APPLICATIONS

- Airport terminals
- Train stations and terminals
- Storage areas
- Archives
- Malls
- Hospitals
- Car parking towers and garages
- Public buildings
- Banks
- Historical Sites
- Offices

SharpEye™

The 20/20MPI is a low cost, high performance, compact Triple IR (IR3) Flame Detector in a lightweight polycarbonate housing. It retains all the benefits of IR3 technology and maintains long distance detection (up to 140ft / 43m) along with the highest immunity to false alarms.

The IR3 detector, with its lightweight housing and low power consumption, is especially suited to indoor applications, such as airport terminals, train stations, storage areas, public buildings and many more.



BFD4040L4-L4B

UV-IR Flame Detector Series

Maximum choice of features in a high performance package

SharpEye™

Model 40/40L4 & L4B (with Built-In-Test option) provides a combination of UV and IR sensors, where the IR sensor operates at a wavelength of 4.5 µm, and can detect hydrocarbon-based fuel and gas fires.

The UV/IR flame detector senses radiant energy in the short wave section of both the ultraviolet and infrared portions of the electro-magnetic spectrum. The signals from both sensors are analyzed for frequency, intensity and duration. Simultaneous detection of radiant energy in both the UV and IR sensors triggers an alarm signal.

The UV sensor incorporates a special logic circuit that helps prevent false alarms caused by solar radiation.

40/40L4 & L4B warranty is 5 years and is SIL2 (TUV) approved to IEC 61508.

FEATURES & BENEFITS

- UV/IR Dual-Sensor
- Solar blind
- Automatic Built-In-Test (BIT) and Manual to assure continued reliable operation (in 40/40L4B only)
- Heated window for operation in harsh weather conditions (snow, ice, condensation)
- Multiple output options for maximum flexibility and compatibility
  - Relays (3) for Alarm, Fault and Auxiliary
  - 0-20mA (stepped)
  - HART Protocol for maintenance and asset management
  - RS-485, Modbus Compatible
- High Reliability - MTBF - minimum 150,000 hours
- Approved to Safety Integrity Level 2 (SIL2 – TUV) Model 40/40L4B only
- 5-Year Warranty
- User Programmable via HART or RS-485
- Hazardous area zones:
  - Zones 1 & 2 with IIC gas group vapors present
  - Zones 21 & 22 with IIIC dust type present
- Ex approved to:
  - ATEX & IECEx
  - FM/FMC/CSA
- 3rd party Performance Approved
  - EN54-10 (VdS)
  - FM3260
- Marine Approval
  - MED ‘Wheelmark’ approval (DNV)

TYPICAL APPLICATIONS

- Offshore Oil & Gas installations
- Onshore Oil & Gas installations and pipelines
- Chemical plants
- Petrochemicals plants
- Storage Tank farms
- Aircraft hangars
- Power Generation facilities
- Pharmaceutical Industry
- Printing Industry
- Warehouses
- Automotive Industry
- Waste Disposal facilities
- Aerospace Industry
- Paint, Polymer and Glue processes

BFD4040M

Multi IR Flame Detector

Superior performance, reliability
and immunity to false alarms

SharpEye™

The new 40/40M Multi IR Flame Detector is specifically designed for detection of hydrocarbon and hydrogen flames. It detects hydrocarbon-based fuel and gas fires at long distances with the highest immunity to false alarms. The 40/40M can detect a gasoline pan fire at 215 ft (65m) or a hydrogen flame at 125 ft (38m) in less than 5 seconds.

The 40/40M is the most durable and weather resistant flame detector currently on the market. Its new features include a heated window, to eliminate condensation and icing; HART capabilities, for digital communications; lower power requirements, and a compact, lighter design.

The 40/40M Series warranty is 5 years and is SIL2 (TUV) approved to IEC 61508.

FEATURES & BENEFITS

- Multi spectrum design for long distance detection of hydrocarbons and hydrogen flames
- High false alarm immunity
- Sensitivity selection to ensure no zone crossover detection
- Automatic and Manual Built-In-Test (BIT) to assure continued reliable operation
- Heated window for operation in harsh weather conditions (snow, ice, condensation)
- Multiple output options for maximum flexibility and compatibility
  - Relays (3) for Alarm, Fault and Auxiliary
  - 0-20mA (stepped)
  - HART Protocol for maintenance and asset management
  - RS-485, Modbus Compatible
- High Reliability - MTBF - minimum 150,000 hours
- Approved to Safety Integrity Level 2 (SIL2 – TUV)
- 5-Year Warranty
- User Programmable via HART or RS-485
- Hazardous area zones:
  - Zones 1 & 2 with IIC gas group vapors present
  - Zones 21 & 22 with IIIC dust type present
- Ex approved to:
  - ATEX & IECEx
  - FM/FMC/CSA
- 3rd party performance tested
  - EN54-10 (VdS)
  - FM3260

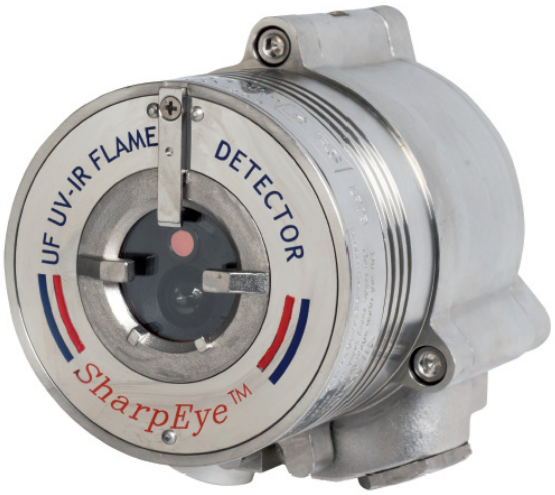
TYPICAL APPLICATIONS

- Offshore Oil & Gas installations
- Onshore Oil & Gas installations and pipelines
- Chemical plants
- Petrochemicals plants
- Storage Tank farms
- Aircraft hangars
- Power Generation facilities
- Pharmaceutical Industry
- Printing Industry
- Automotive
- Explosives & Munitions
- Waste Disposal facilities
- Hydrogen Fuel Cell Industry
- Hydrogen Vehicle Parking & Refueling
- Battery Charging areas
- Refinery Hydrogenation
- Space Industry hydroxyl propellant
- Static fuel Cell systems
- Warehouses

BFD4040UFL

ULTRA FAST UV-IR

Combined Explosion and High Sensitivity Flame Detector



SharpEye™

The new SharpEye UV-IR High-Speed Optical Flame detector 40/40UFL is designed to meet two major requirements:
- High-Speed Response (20 msec)
- High Reliability (immunity to false alarm)

This detector is based on our well known military detector used in Armored Vehicle Explosion Suppression System combined with the industrial UV-IR detector 40/40LB.

The 40/40UFL can detect hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic fires.

The UV/IR flame detector senses radiant energy in the short wave section of both the ultraviolet and infrared portions of the electromagnetic spectrum.

The signals from both sensors are analyzed for frequency, intensity and duration. Simultaneous detection of radiant energy in both the UV and IR sensors triggers an alarm signal.

The UV sensor incorporates a special logic circuit that helps prevent false alarms caused by solar radiation.

FEATURES & BENEFITS

- UV/IR Dual-Sensor
- High-Speed Response - 20 msec to flash fire
- Solar blind
- Automatic Built-In-Test (BIT) to assure continued reliable operation
- Heated window for operation in harsh weather conditions (snow, ice, condensation)
- Multiple output options for maximum flexibility and compatibility
  - Relays (3) for Alarm, Fault and Auxiliary
  - Analogue output for fast detection
  - 0-20mA (stepped)
  - HART Protocol for maintenance and asset management
  - RS-485, Modbus Compatible
- High reliability - MTBF - minimum 150,000 hours
- Approved to Safety Integrity Level 2 (SIL2 – TUV)
- 5-Year warranty
- User programmable via HART or RS-485
- Hazardous area zones:
  - Zones 1 & 2 with IIC gas group vapors present
  - Zones 21 & 22 with IIIC dust type present
- Ex approved to:
  - ATEX & IECEx
  - FM/FMC/CSA
- 3rd party performance
  - EN54-10 (VdS)
  - FM3260• Marine Approval
  - MED 'Wheelmark' approval (DNV)

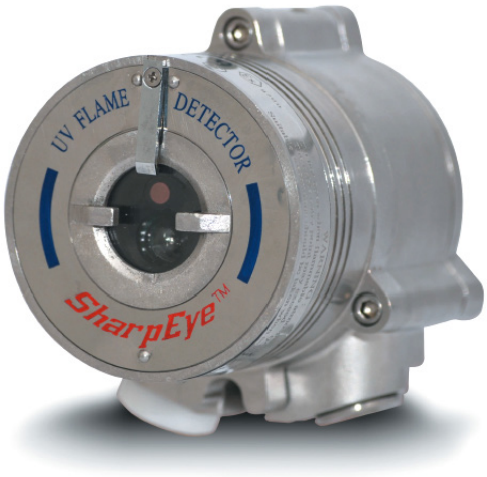
TYPICAL APPLICATIONS

- Offshore Oil & Gas installations
- Onshore Oil & Gas installations and pipelines
- Chemical plants
- Petrochemicals plants
- Storage Tank farms
- Aircraft hangars
- Power Generation facilities
- Pharmaceutical Industry
- Printing Industry
- Warehouses
- Automotive Industry
- Waste Disposal facilities
- Aerospace Industry
- Paint, Polymer and Glue processes

BFD4040U-UB

UV Flame Detector

A low cost solution in a durable, high spec package



SharpEye™

The new 40/40 UV Flame Detector detects hydrocarbon-based fuel and gas fires, invisible hydrogen flames, and fires from hydrides, ammonia, silane and other organics.

The 40/40U-UB is the most durable and weather resistant UV flame detector currently on the market. Its new features include a heated window, to eliminate condensation and icing; HART capabilities, for digital communications; lower power requirements; and a compact, lighter design.

The 40/40UB warranty is 5 years and is SIL2 (TUV) approved to IEC 61508.

The model 40/40UB includes a Built-in-Test (BIT) feature, whereas the 40/40U model does not.

Note: This type of detector should not be exposed to UV radiation sources such as welding, sparks, and electric arcs as it will cause false alarms.

FEATURES & BENEFITS

- UV spectrum design
- Automatic and Manual Built-In-Test (BIT) to assure continued reliable operation (in 40/40UB only)
- Heated window for operation in harsh weather conditions (snow, ice, condensation)
- Multiple output options for maximum flexibility and compatibility
  - Relays (3) for Alarm, Fault and Auxiliary
  - 0-20mA (stepped)
  - HART Protocol for maintenance and asset management
  - RS-485, Modbus Compatible
- High Reliability - MTBF - minimum 150,000 hours
- Approved to Safety Integrity Level 2 (SIL2 – TUV) model 40/40UB only
- 5-Year Warranty
- User Programmable via HART or RS-485
- Hazardous area zones:
  - Zones 1 & 2 with IIC gas group vapors present
  - Zones 21 & 22 with IIIC dust type present
- Ex approved to:
  - ATEX & IECEx
  - FM/FMC/CSA
- 3rd party Performance Tested
  - EN54-10 (VdS)

TYPICAL APPLICATIONS

- Chemical plants
- Petrochemicals plants
- Power Generation facilities
- Pharmaceutical Industry
- Printing Industry
- Warehouses
- Automotive Industry
- Aerospace
- Explosives & Munitions
- Waste Disposal facilities
- Paint and solvent processes

Warehouse Distribution Centers

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