



# CONSPEC®

INNOVATION THAT DIGGS DEEPER.

## OPTIO IS



## Optio IS Diesel Discriminator

For over 50 years, Conspec has pioneered the design, development, and manufacturing of environmental and atmospheric monitoring, process control and safety technology relied upon by underground coal, metals and industrial minerals mines around the world.

Conspec's NEW Optio IS Diesel Discriminator is a multi-gas monitor specifically designed to filter out nuisance Carbon Monoxide Sensor alarms that may occur in a mining environment due to passing diesel equipment, particularly from the cross-sensitivity of NO and NO<sub>2</sub> that is normally picked up by a typical Carbon Monoxide Sensor. The result provides real-time Carbon Monoxide, Nitric Oxide and Nitrogen Dioxide readings as measured by the sensors, and a Corrected Carbon Monoxide Reading to provide the actual Carbon Monoxide measurement at the point of monitoring.

Originally developed as a joint project between Conspec ISO 9001:2015 certified product development team and Carnegie Mellon University, this newest generation Optio IS Diesel Discriminator takes advantage of the additional capabilities of modern processing technology to use a floating point engine for more accurate mathematical calculations for the corrected Carbon Monoxide Reading from the real-time sensor readings,

thus allowing the responses to more closely represent the actual values calculated by the original patented algorithm than could be calculated using earlier processing technologies.

In addition, because of the improvements in processor speed, this Corrected Carbon Monoxide reading is simultaneously compared with its own previous states and averaged ambient sensor readings to serve as a proof-of-work verification, to both ensure its current accuracy and to further improve the accuracy of the algorithm over time, thus resulting in even less false Carbon Monoxide alarms than in previous generations of diesel discriminators.

Because the Optio IS Diesel Discriminator is built on Conspec's Optio IS platform, up to three additional sensors can be installed at the desired location, whether for monitoring of other gases or atmospheric conditions, such as air velocity, wet and dry bulb temperature, humidity and barometric pressure, among others, thus greatly reducing up front costs by eliminating the need for multiple devices at the chosen monitoring location.

IECEX and ATEX IS Certified and proudly built by Conspec's ISO 9001:2015, IEC 80079 and ATEX Directive 94/9/EC certified manufacturing facility in Charleroi, PA, Conspec's Optio IS Diesel Discriminator is the new Gold Standard in Carbon Monoxide Monitoring for the protection of personnel, property and profits in underground coal, metals and industrial metals mines.



**OPTIO IS**  
Reliability when every second matters.

### SENSORS

- Built in sensors:
  - CO, NO<sub>2</sub>, NO
  - Corrected CO Reading
- Up to three additional installed sensors per monitor
  - Plug-and-Play Electrochemical sensors:
    - CO, O<sub>2</sub>, NO<sub>2</sub>, NO, H<sub>2</sub>S, and more
  - NDIR sensors:
    - CO<sub>2</sub>, CH<sub>4</sub>
  - Other sensors:
    - Particulate Matter, Air Velocity, Weather Station, etc.
- Factory preconfigured and calibrated

### ALARMS

- 4 Custom Alarm Levels with hysteresis and hold-to-alarm times
- Sensor Fail-High and Fail-Low alarms
- Ability to associate relay outputs with alarm levels from a single sensor, or multiple sensors using logical "AND/OR"

### I/O CAPABILITIES (NON-IS)

- 6 Relay Outputs (250 VAC, 220 VDC, 2A)
- 6 Multi Function Ports - DI/DO/AI (0-5V, 0-3.6V)
- 2 4-20mA outputs

### I/O CAPABILITIES (IS)

- Horn/Strobe Configurable Control

### INPUT POWER OPTIONS (NON-IS)

- 6-30 VDC
- 100 - 240VAC 50/60Hz
- DC Battery Pack (wireless operation)

### INPUT POWER OPTIONS (IS)

- 6-18 VDC (ETL-US, C-ETL, IECEX, ATEX)
- Battery Power (wireless operation)

### COMMUNICATION INTERFACES (IS)

- Conspec Trunk, Conspec Wireless 900MHz/800MHz (pending) Band
- Com Distance up to 6km (3.75miles)

### COMMUNICATION INTERFACES (NON-IS)

- Conspec Trunk, RS-485, RS-232, Conspec Wireless 900MHz/800MHz (pending) Band, Wi-Fi, Ethernet, POE, LTE, Leaky Feeder (VHF, UHF)

### COMMUNICATION PROTOCOLS

- MODBUS RTU, MODBUS TCP, Conspec Legacy ACCESSOR

### CONFIGURATION

- Using IR remote with local LCD menu
- Via MODBUS/Conspec Legacy Accessor Register Map using Conspec OASIS software/Conspec Senturion SCADA

### MENU & DISPLAY

- Intuitive menu using graphical LCD
- Password protected (user or admin)
- Quick info screen shows device settings
- Real-time readings of multiple sensors
- Dimmable RGB backlight
- Backlight color indicates monitor status

### USER INTERFACE

- IR remote control
- Conspec OASIS Windows configuration software

### DIMENSIONS

- 8"x12"x4" @ 8lbs
- 11"x12"x4" @ 8lbs with horn/strobe

### POWER CONSUMPTION

- 2mA @ 15VDC (no sensors and 10% Backlight)
- 3mA @ 15VDC (3 EC Sensors and 10% Backlight)
- 3mA @15VDC (1 NDIR CH<sub>4</sub> Sensor and 10% Backlight)
- 9mA @15VDC (1 NDIR CO<sub>2</sub> Sensor and 10% Backlight)
- 12mA @ 15VDC (2 EC, 1Pres/Hum/WB, 1 CH<sub>4</sub>, 1 CO<sub>2</sub> and 10% Backlight)
- 33mA @15VDC (1 Pellistor CH<sub>4</sub> Sensor and 10% Backlight)

### TEMPERATURE & HUMIDITY RANGE

- -20°C to +40°C, 0-95% RH non-condensing
- Condensation recovery algorithm for NDIR CH<sub>4</sub> sensors

### WARRANTY

- One year standard warranty

### APPROVALS

- ETL-US: Class I, Division 1, Group D / Class I, Zone 0, Group IIA {AEx ia IIA Ga}/ Class II, Division 1, Group E-G / Class II, Zone 20, Group E-G (Pending)
- C-ETL: Class I, Division 1, Group D / Class I, Zone 0, Group IIA {Ex ia IIA} //Class II, Division 1, Group E-G / Class II, Zone 20, Group E-G (Pending)
- ATEX: I MI Ex ia I Ma/ Ex ia IIA Ga/ Ex ia IIIC Da (Pending)
- IECEX: Ex ia I Ma/ Ex ia IIA Ga/ Ex ia IIIC Da (Pending)
- T4 / T135°C & T ambient: -20°C to +40°C
- SIL-1 (pending)