

Model OPECL Eclipse Open Path Gas Detection System

DESCRIPTION

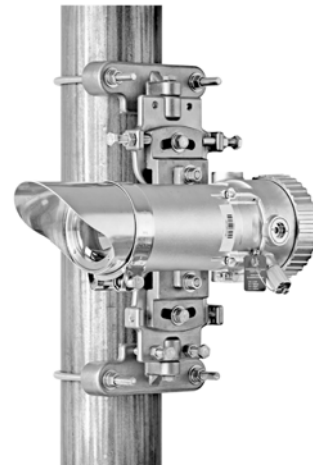
The Model OPECL Gas Detection System delivers reliable, open-path infrared combustible gas detection for protection of oil/gas and other industrial facilities. With a sensing path between 5 and 120 meters, the OPECL system offers industry leading features including stainless steel construction, primary and back-up xenon flashlamps, HART and MODBUS communication protocols, ease of installation and alignment, and a standard 3 year warranty. The OPECL system is especially useful for perimeter monitoring and applications where combustible gas/vapor leaks can happen over a widely dispersed area. The system is optimized for low maintenance, no false alarms, and low cost, and is housed in flameproof enclosures approved for use in Class I, Div. 1 and Zone 1 hazardous areas. The OPECL system utilizes onboard heaters in both modules to melt snow and ice, enabling unattended and uninterrupted operation in inclement weather.

THEORY OF OPERATION

The OPECL system is based upon the spectrophotometric principle that a photon beam will interact with hydrocarbon molecules present in the atmosphere. As the light photons interact with and are absorbed by the hydrocarbon molecules, they are removed from the beam. The OPECL system measures this reduction in photons and converts it to an analog output signal that represents the hydrocarbon concentration. The OPECL uses high quality optical components to ensure proper system sensitivity and performance, and a modulated xenon source to mitigate against solar interference, both direct and reflected.

SPECIFICATIONS

INPUT VOLTAGE (Both Modules)—
24 Vdc nominal. Operating range is 18 to 30 Vdc.
Ripple cannot exceed 0.5 volts P-P.



POWER CONSUMPTION (Per Module)—

Transmitter

5.0 watts nominal @ 24 Vdc, 6.9 watts @ 30 Vdc.
5.8 watts peak @ 24 Vdc, 7.5 watts peak @ 30 Vdc.

Receiver Without Relays

6.0 watts nominal @ 24 Vdc, 7.6 watts nominal @ 30 Vdc.

Receiver With Relays

6.4 watts nominal @ 24 Vdc, 8.0 watts nominal @ 30 Vdc.

TRANSMITTER LAMPS

Two xenon flashlamps, field-replaceable module.

WARM-UP TIME—

1 minute for transmitter. 30 seconds for receiver from power-up when correctly aligned.

CURRENT OUTPUT—

Linear 4 to 20 mA (isolated/non-isolated) rated at 600 ohms maximum loop resistance @ 24 Vdc operating voltage.

VISUAL STATUS INDICATOR—

Tri-color LED:

Red = Alarm or calibration (receiver only)

Green = Power on / OK

Amber = Fault / warm-up

ALARM RELAY SETPOINT RANGE—

Low Alarm: 0.25 to 3 LFL-meters (default = 1)

High Alarm: 1 to 3 LFL-meters (default = 2)

DETECTION RANGE—

5 to 120 meters

CALIBRATION—

Calibrated for methane at the factory.

RESPONSE TIME—

T90: <5 seconds

TEMPERATURE RANGE—

Operating: -40°C to +60°C (-40°F to +140°F)

Storage: -55°C to +85°C (-67°F to +185°F)

HUMIDITY—

5 to 99% relative humidity; designed for outdoor applications.

MEASUREMENT RANGE—

0-5 LFL-meters

INTERFERENCE RESISTANCE—

Immune to sun and flare radiation, up to $750 \text{ W/m}^2 \geq 3^\circ$ to optical axis and common contaminants.

SELF-DIAGNOSTIC TEST—

Fail-Safe operation ensured by performing all critical tests once per second.

MODULE HOUSING MATERIAL—

CF8M stainless steel (castable 316 equivalent)

CONDUIT ENTRY OPTIONS—

Two entries, 3/4 inch NPT or 25 mm

HART COMMUNICATION PORT—

Intrinsically safe port on receiver to connect HART devices.

OPTICS PROTECTION—

Stainless steel brow protects against windblown dirt and rain. Heated optics minimize ice and dew formation.

WIRING—

Field wiring screw terminals are UL/CSA rated for up to 14 AWG wire, and are DIN/VDE rated for 2.5 mm² wire. Screw terminal required torque range is 3.5–4.4 lb.-in. (0.4–0.5 N-m). Receiver can be wired using 3 or 4 wires. Transmitter requires two wires (power only).

INGRESS PROTECTION—

Type 4X, IP67

CERTIFICATION—

CSA: Class I, Div. 1, Groups B, C & D (T4).
Class I, Div. 2, Groups A, B, C & D (T4)

CENELEC: **CE** 0539  II 2 G

DEMKO 03 ATEX 135898X

EEx de [ib] IIC, T5

(Transmitter / Receiver without relays)

— or —

EEx d [ib] IIC, T5

DIMENSIONS—

Module: Length: 11.5 inches (29 cm)
Diameter: 3.5 inches (9 cm) nominal
4.5 inches (11 cm) max

Mounting Plate: Height: 11.5 inches (29 cm)
Width: 6 inches (15 cm)

Designed to affix to a 4 inch nominal diameter pipe.

SHIPPING WEIGHT—

Transmitter: 35 pounds (16 kg)

Receiver: 35 pounds (16 kg)

WARRANTY—

3 year limited warranty from date of manufacture.

ORDERING INFORMATION

When ordering, please specify:

Model OPECL Eclipse Open Path Gas Detector

Range: Standard (5 to 60 meters)
Long (60 to 120 meters)

Conduit Entry:

– 3/4 inch NPT

– M25

Output Type:

– 4 to 20 mA with HART and RS-485 MODBUS

Relay Output Option:

– Alarm and Fault Relay Board

Accessories:

– Telescope Alignment Tool

– Standard Range Aperture Kit

– Test Film

– HART Hand-held Communicator

Detector Electronics Corporation

6901 West 110th Street • Minneapolis, Minnesota 55438 • Operator (952) 941-5665 or (800) 765-FIRE
Customer Service (952) 946-6491 • Fax (952) 829-8750 • www.det-tronics.com • E-mail: detronics@detronics.com