

# CLIMATE DRONE

## UAV WITH METHANE SENSOR PACKAGE

### DRONECHEM-SERIES

Models ~ DroneCHEM-LX & DroneCHEM-FX

Model ~ DroneCHEM-Methane (CLIMATE DRONE METHANE-Dual Detector System)

#### FEATURES:

- OPTICAL LASER METHANE DETECTION - **DRONECHEM-LX**
  - DETECTS METHANE AT DISTANCE
- AIR SENSOR - METHANE DETECTION - **DRONECHEM-FX**
  - DETECTS METHANE AT CLOSE PROXIMITY
- SENSOR PACKAGE  
**DRONECHEM-METHANE**
  - TWO DETECTORS:
    - **DRONECHEM-LX**
    - **DRONECHEM-FX**
- REAL-TIME DIRECT WIRELESS DATA DOWNLOAD TO GROUND STATION, LAPTOP, OR OTHER DATA ACQUISITION SYSTEM
- DATA GPS LINKED VIA UAV
- INTEGRATED SOFTWARE
- DISPLAY ON GROUND STATION: GRAPH & MAP
- SMALL & LIGHTWEIGHT
- SENSORS & SENSOR PACKAGE - QUICK CONNECT TO UAV



**DRONECHEM-METHANE  
CLIMATE DRONE  
WITH DUAL SENSOR PACKAGE**



#### CLIMATE DRONE METHANE SENSORS:

**DRONECHEM-LX  
METHANE LASER SENSOR**



**DRONECHEM-FX  
METHANE AIR SENSOR**

#### APPLICATION:

##### DUAL DETECTOR SYSTEM

The UAV based **DroneCHEM-METHANE** two detector package is perfect for flying pipelines, oil fields and other facilities that run the risk of methane leaks into the atmosphere. It is recommended to fly both sensors at the same time. The real-time download of data and GPS location from methane package to ground station, laptop, or other data acquisition system is wireless.

Use the **DroneCHEM-LX** for an overview of any methane activity. The **DroneCHEM-FX** provides close up source quantitative leak detection: pinpoint location and measurement of leak.

##### OPTION: FLY EITHER DroneCHEM-LX OR THE DroneCHEM-FX SEPARATELY

The **DroneCHEM-LX**; a laser detector for determining any methane leaks from a distance.

The **DroneCHEM-FX**; a flow through air sensor pinpointing specific location and measurement of methane leaks.



**TECHNICAL ASSOCIATES**

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#### Advanced Drone Platform

##### 6 Propellers - Long Endurance Batteries

##### Typical Features

- Flight Time : 70 minutes
- Payload: 11 lb (5kg)
- Flight Range: 9.3 miles (15km)
- Operating Range: 9.32 mi (15 km)
- Empty Weight: 11.8 lbs (5.38 kg)
- Weight with Batteries: 22.7 lbs (10.3kg)
  - Without Payload
- Dimensions: 49.4" W (1255 mm )x 19" H ((485mm)
- Ground Clearance: 12" (395 mm)
- Speed: 35 mph (56 km/h)

- Wind Tolerance: 20 mph (32 km/h)
- GPS
  - GPS Accuracy:  $\pm 2.0$  cm
  - Optional: Real-Time Kinematic Station (RTK)
- CREE LED Strobe Light: Up to 3 mi (4.8 km) - Optional
- Foldable Airframe: <30 seconds
- Custom Travel Case. Optional embedded Airtag for locating lost case.
- Optional: Mission planning software
- Optional: System Assist Package
- Optional: Flight Simulator Training Software

#### DESCRIPTION:

UAV methane sensor flight packages: DroneCHEM-Methane, DroneCHEM-LX or DroneCHEM-FX provide real-time wireless download to ground station, laptop, or other data acquisition systems.

The DroneCHEM-Methane combines both the laser sensor (DroneCHEM-LX ) and the flow through air sensor (DroneCHEM-FX) in one flight package. This dual detector system provides a full service: detecting a methane leak and specific source location of a leak.

The DroneCHEM-LX is an optical laser detection, light-weight unit for methane and can be up to 82 feet away, depending on plume size and methane ppm.

The DroneCHEM-FX is a flow-through air sensor for detection of methane. This light-weight UAV based unit can fly along pipelines or in areas of potential methane leaks pinpointing specific location of leaks.

Each detection method keeps workers out of harm's way. Detection is GPS tagged.

The use of an OPTIONAL Real-Time Kinematic Station (RTK) provides GPS Accuracy with  $\pm 2.0$  cm.



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#### SPECIFICATIONS:

##### DRONECHEM-LX

|                                   |   |
|-----------------------------------|---|
| <b>Detector:</b>                  | Optical Laser   |
| <b>Gas Measured:</b>              | Methane (CH <sub>4</sub> ) and methane containing gases (natural or similar)          |
| <b>Sensitivity:</b>               | 1 to 50,000 ppm   |
| <b>Detection Distance:</b>        | 82 feet (25 meters) (Sensitivity decreases with distance increases)                   |
| <b>Laser Wave-Length:</b>         | 1.65 $\mu$ m  |
| <b>Laser Power – Measurement:</b> | 10 mW Class 1, Wavelength: 1653 nm  |
| <b>Laser Power – Guide Light:</b> | 5 mW Class 2, Wavelength: 532 nm  |
| <b>Laser Safety Class:</b>        | Guide light (Red Laser): Class 2<br>Measurement light (infrared laser light): Class 1 |

##### Laser Beam Diameter at Altitude:

| Altitude            | Diameter                |
|---------------------|-------------------------|
| 32 feet (10 meters) | 3 inches (0.08 meters)  |
| 65 feet (20 meters) | 7 inches (0.18 meters)  |
| 98 feet (30 meters) | 10 inches (0.27 meters) |

|                                 |   |
|---------------------------------|---|
| <b>Flight Speed:</b>            | Best results – 8 knots; Max: 30 knots   |
| <b>Accuracy:</b>                | ±10%  |
| <b>Electronics:</b>             | Integrated software for ground station, laptop, or other data acquisition system                      |
| <b>Display:</b>                 | Real-time wireless download to ground station, laptop, or tablet.                                     |
| <b>Environmental Temp:</b>      | 1.4° F to 122 ° F (-17° C to 50 ° C)  |
| <b>Humidity:</b>                | 30%– 90%  |
| <b>Detection Speed:</b>         | 0.5 seconds   |
| <b>Detector System Power:</b>   | UAV Power   |
| <b>Case:</b>                    | Detector & Electronics housed in fitted, rugged, enameled aluminum housing with quick release to UAV. |
| <b>Weight &amp; Dimensions:</b> |   |
| <b>Dimensions:</b>              | 7.25" L x 2.75" W x 1.5" H (18.5 L cm x 7 W cm x 4 H cm)  |
| <b>Weight:</b>                  | 1 lb. (0.45 kg)   |



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#### SPECIFICATIONS:

##### DRONECHEM-FX

|                                     |   |
|-------------------------------------|---|
| <b>Detector:</b>                    | Fan Driven Flow-Through Air Sensor  |
| <b>Gas Measured:</b>                | Methane (CH <sub>4</sub> ) and methane containing gases (natural or similar)                                  |
| <b>Sensitivity:</b>                 | 0 to 10,000 ppm   |
| <b>Flight Speed:</b>                | Best results – 8 knots; Max: 30 knots   |
| <b>Accuracy:</b>                    | ±10%  |
| <b>Electronics:</b>                 | Integrated software for ground station, laptop, or other data acquisition system.                             |
| <b>Display:</b>                     | Real-time wireless data download to ground station, laptop or tablet.<br>Minimum, Maximum, & Average readings |
| <b>Environmental Temp:</b>          | 32° F to 104 ° F (0° C to 40 ° C)   |
| <b>Humidity:</b>                    | 10%– 95%  |
| <b>Detection Speed:</b>             | 60 seconds for highest accuracy   |
| <b>Detector System Power:</b>       | From UAV power  |
| <b>Weight &amp; Dimensions:</b>     |   |
| <b>Dimensions with Sensor Head:</b> | 7 .6" L x 4.75" W x 2.1" H (19 L cm x 12 W cm x 5.4 H cm)   |
| <b>Weight:</b>                      | 1 lb. (0.45 kg)   |
| <b>Carrying Case:</b>               | Fitted Case with quick release to UAV   |

| DRONECHEM-FX                         |     |
|--------------------------------------|-----|
| Interchangeable sensor head          | Yes |
| Digital LCD Display                  | Yes |
| Min, Max, Average readings on screen | Yes |
| Field Replaceable Battery            | Yes |
| Remote Sensor Capability             | Yes |
| Wireless Data Download               | Yes |
| Temp and HR Sensor - Optional        | Yes |

|                                  |     |
|----------------------------------|-----|
| External Control Outputs         | Yes |
| Audible Alarm                    | Yes |
| High and Low Alarms              | Yes |
| 0-5 VDC Analog output            | Yes |
| Zero Calibration capability      | Yes |
| Span Calibration capability      | Yes |
| Internal Data Logging Capability | Yes |
| PC connection and cables         | Yes |



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#### CARRYING CASES:

DRONE-CARRYING CASE



LX CARRYING CASE



FX CARRYING CASE



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