



SEAHAWK 10K

ARCHITECT AND ENGINEER
SPECIFICATIONS

RLE TECHNOLOGIES
REV. 1.2

1. GENERAL SPECIFICATION

- 1.1 The contractor shall provide an RLE Technologies SeaHawk 10K distance-read leak detection module to perform the functions of leak detection, event annunciation, and integration into other alarm management systems. The system shall include, but not be limited to: a SeaHawk 10K distance-read module, SeaHawk sensing cable –patent # 6144209 (no substitutions permitted), an LC-KIT (leader cable and end-of line terminator), a framed reference map, and optional installation accessories.**
- 1.2 The SeaHawk 10K module and components listed above shall be manufactured by RLE Technologies, 104 Racquette Drive, Fort Collins, CO 80524, U.S.A., Tel (970) 484-6510, Fax (970) 484-6650, URL: www.rletech.com**

2. CODES/STANDARDS COMPLIANCE

- 2.1 The SeaHawk 10K module shall have the following listings and approvals:**
 - 2.1.1 CE; EMC – EN61326 1997 Class A
 - 2.1.2 ETL Listed; UL 61010A-1; EN 61010-1; CAN/CSA C22.2 NO. 61010-1
 - 2.1.3 CL2P/CMP per UL (for SeaHawk sensing cable); ANSI/NFPA 262

3. COMPONENT DESCRIPTION

3.1 SEAHAWK 10K DISTANCE-READ MODULE

- 3.1.1 The SeaHawk 10K shall be capable of monitoring up to 10,000 feet (3048m) of RLE Technologies SeaHawk sensing cable and shall have a leak response time of less than 30 seconds, a typical sensing repeatability of ± 2 feet (.61m) \pm 0.25% of total cable length, and a detection accuracy of ± 2 feet (0.61m) \pm 0.5% of the cable length.
- 3.1.2 The SeaHawk 10K shall have the following indicators, switches and/or buttons:
 - A.) Six LEDs:
 - i.) One red LED that illuminates when a leak is detected.
 - ii.) One yellow LED that illuminates when a cable fault or contamination is detected.
 - iii.) One green LED that illuminates when the power is on.
 - iv.) One green LED that illuminates to indicate the module's measurements are made in feet.
 - v.) One green LED that illuminates to indicate the module's measurements are made in meters.
 - vi.) One green LED that illuminates to indicate an amperage reading is being displayed on the 4-character LED.
 - B.) One 4-character LED that indicates:
 - i.) The normal operating state of the module.
 - ii.) The distance, in feet or meters, to the leak, fault, or cable contamination location on the SeaHawk sensing cable.
 - iii.) A cable break.
 - iv.) The current on the cable, measured in ohms per foot.
 - v.) The total length of cable components being monitored by the module.
 - vi.) The initiation of the module's self-test mode.

- C.) One Test/Reset/Alarm Silence push button which shall be used to display the cable current in ohms per foot, display the total length of cable components being monitored by the module, initiate the module's self-test mode, silence the audible alarm, clear any alarms, and return the 4-character LED to its default display.
- D.) Two eight-position DIP switches:
 - i.) DIP switch one (SW1) configures the baud rate, EIA-485 communications, re-alarm interval, alarms as latched or unlatched, cable length display, cable resistance, and enables or disables the audible alarm.
 - ii.) DIP switch two (SW2) is used to configure Modbus and BACnet MS/TP communications.
- 3.1.3 The SeaHawk 10K shall be constructed as a stand alone unit suitable for panel or DIN rail mounting. The overall size of the SeaHawk 10K shall be 2.8"W x 4.3"H x 2.4"D (71mmW x 109mmH x 61mmD), and the SeaHawk 10K shall weigh less than or equal to 5.3 oz. (153g).
- 3.1.4 The SeaHawk 10K shall operate on a 12-24VAC/VDC isolated power supply with a dedicated circuit breaker.
- 3.1.5 The SeaHawk 10K shall be suitable for operating at ambient temperatures between 32°F and 122°F (0°C and 50°C), relative humidity between 5% and 95%, non-condensing and a maximum altitude of 15,000 feet (4572m). The SeaHawk 10K shall be suitable for storage at temperatures between -4°F and 158°F (-20°C and 70°C).
- 3.1.6 The SeaHawk 10K shall include one Form C Summary Alarm Relay with contacts rated at 5A resistive at 30VDC, 8A resistive at 250VAC. The relay shall be configurable as latched or non-latched.
- 3.1.7 The SeaHawk 10K shall be configured via two sets of DIP switches.
- 3.1.8 The SeaHawk 10K shall be capable of Modbus, BACnet MS/TP, and Johnson Controls Metasys (N2) communications via the EIA-485 serial port. Baud rates shall be user selectable.
- 3.1.9 The SeaHawk 10K shall be capable of sending alarms via Modbus or BACnet MS/TP.
- 3.1.10 The SeaHawk 10K shall continuously supervise the electrical and mechanical integrity of the SeaHawk sensing cable.
- 3.1.11 The SeaHawk 10K shall be capable of connecting with other SeaHawk 10K modules via the EIA-485 interface, in a daisy chain network of up to 255 modules, depending on the configuration of the Modbus or BACnet MS/TP master controller. Power supply connections may also be connected in a daisy chain, up to the allowed power rating of the power supply.

3.2 SEAHAWK SENSING CABLE

- 3.2.1 Depending on your application, the following sensing cable specifications will apply:
 - A.) The SeaHawk conductive fluid sensing cable shall detect the presence of water and other conductive liquids and shall be constructed of two sensing wires and two insulated wires with an abrasion resistant, non-conductive polymer core. Each individual sensing wire shall be covered with a non-conductive polymer mesh to help prevent false alarms from contaminants. The SeaHawk conductive fluid sensing cable shall be fast drying and highly flexible allowing for small bend radii. The SeaHawk conductive fluid sensing cable shall be available in 10 feet (3.05m), 25 feet (7.62m), 50 feet (15.24m), 100 feet (30.48m), and custom lengths with mating connectors (male/female) pre-installed.

The SeaHawk conductive fluid sensing cable shall be suitable for operating at ambient temperatures between 32°F and 167°F (0°C and 75°C), relative humidity between 5% and 95%, non-condensing and a maximum altitude of 15,000 feet (4572m). The conductive fluid sensing cable shall be suitable for storage at temperatures between -22°F and 185°F (-30°C and 85°C) and shall be plenum rated to CL2P per UL (ANSI/NFPA262). The SeaHawk conductive fluid sensing cable shall have a sheer strength of > 180 lbs.

(81.65kg) and a cut through resistance of > 40 lbs (18.14kg) with a .005in (0.127mm) blade.

- B.) The SeaHawk chemical sensing cable shall detect the presence of liquid chemicals and other conductive liquids and shall be constructed of two sensing wires and two insulated wires with an abrasion resistant, non-conductive polymer core. Each individual sensing wire shall be covered with a non-conductive polymer mesh to help prevent false alarms from contaminants. The SeaHawk chemical sensing cable shall be fast drying and highly flexible allowing for small bend radii. The SeaHawk chemical sensing cable shall be available in 10 feet (3.05m), 25 feet (7.62m), 50 feet (15.24m), 100 feet (30.48m), and custom lengths with mating connectors (male/female) pre-installed.

The SeaHawk chemical sensing cable shall be suitable for operating at ambient temperatures between -40°F and 185°F (-40°C and 85°C), relative humidity between 5% and 95%, non-condensing and a maximum altitude of 15,000 feet (4572m). The sensing cable shall be suitable for storage at temperatures between -40°F and 185°F (-40°C and 85°C) and shall be plenum rated to CL2P per UL (ANSI/NFPA262). The SeaHawk chemical sensing cable shall have a sheer strength of > 160 lbs. (72.6kg) and a cut through resistance of > 50 lbs (22.7kg) with a .005in (0.13mm) blade.

- C.) The SeaHawk hydrocarbon sensing cable shall detect the presence of liquid hydrocarbons and shall be constructed of two sensing wires enclosed in a chemically reactive layer and covered with a woven, abrasion-resistant fabric. The SeaHawk hydrocarbon sensing cable shall be available in 10 feet (3.05m), 25 feet (7.62m), 50 feet (15.24m), 100 feet (30.48m), and custom lengths with mating connectors (male/female) pre-installed.

The SeaHawk hydrocarbon sensing cable shall be suitable for operating at ambient temperatures between -4°F and 140°F (-20°C and 60°C). The SeaHawk hydrocarbon sensing cable shall have a pull force limit not to exceeded 100 lb. (45.4kg) and a bend radius of 0.75 in (19.05mm), minimum. The SeaHawk hydrocarbon sensing cable shall have a cable diameter of 0.28 in (7.0mm) with a nominal increase once cable is fully saturated with a hydrocarbon, a connector diameter of 0.45 in (11.4mm), a cable weight of .005 lbs per one foot length (0.023kg per 0.305m) , and have limited reusability, depending on the length and type of hydrocarbon contact.

3.3 INSTALLATION ACCESSORIES

- 3.3.1 The LC-KIT, which includes a 15 foot (4.57m) leader cable and an end-of-line terminator (used on the last length of cable or spot detector connected to the system), is required for the SeaHawk 10K.
- 3.3.2 SeaHawk non-sensing cable (NSC) shall be used to bridge between sections of SeaHawk sensing cable where leak detection is not needed. NSC shall be available in 10 feet (3.05m), 25 feet (7.62m), 50 feet (15.24m), 100 feet (30.48m), and custom lengths with mating connectors (male/female) pre-installed.
- 3.3.3 When installing a hydrocarbon leak detection system in a hazardous area, a zener safety barrier shall be installed between the SeaHawk 10K and the SeaHawk hydrocarbon sensing cable.
- 3.3.4 The SD-Z spot detector can be integrated into the system for use in areas where only a spot detector may be needed. The overall size of the SD-Z shall be 1.55"W x 2.0"H x 1.0"D (39.37mmW x 50.8mmH x 25.4mmD). Preinstalled male and female connectors on the SD-Z allow for integration between lengths of SC and/or NSC cable. The SD-Z shall appear as a 50 foot (15.24m) simulated length of sensing cable. A leak detected by the SD-Z shall appear as a leak located at the midpoint, or at a point 25 feet (7.62m) along the simulated 50 foot (15.24m) section of SeaHawk sensing cable.
- 3.3.5 An X-Connector (X-CON) shall be used to branch the SeaHawk sensing cable in multiple directions. The X-CON shall be constructed with a single cable input, a single cable output and two additional branch lines. Multiple X-CONs can be used within a single system and the accuracy of the system shall not be affected. The cable output and both branch lines will add

the equivalent of 50 feet (15.24m) each, or 150 feet (45.7m) total, to the system to add distinct separation of the outputs. The overall size of the X-CON shall be 2.0"W x 0.9"H x 3.0"D (50.8mm x 22.86mm x 76.2mm).

- 3.3.6 J-clips (JC) shall be used to secure cables every 4 feet (1.22m) and on any corners or bends of the SeaHawk sensing cable and/or SeaHawk non-sensing cable. The overall size of the J-clips shall be appropriate for whichever style of sensing cable is used in the application, and shall measure either 1"W x 1.1"H x 0.5"D (25mmW x 28mmH x 13mmD) for conductive fluid sensing cable, 1.375"W x 0.5"H x 0.375"D (35mmW x 13mmH x 10mmD) for chemical sensing cable, and 1.0"W x 1.0"H x 0.5"D (25mmW x 25mmH x 13mmD) for hydrocarbon sensing cable. J-clips shall be available in quantities of 10, 25, 50, and 200.
- 3.3.7 A weighted cable connector (WCCS-50) shall be used to simulate 50 feet (15.24m) of SeaHawk sensing cable and provide distinct separation between areas of coverage. The overall size of the WCCS-50 shall be 2.5" x 1.0" (63.5mm x 25.4mm).
- 3.3.8 A leak detection reference map (FM1114) shall be available for purchase from RLE Technologies to identify the actual location of any water leaks detected by the SeaHawk 10K. This map shall be prepared from "as built" drawings created after complete system installation. The leak detection reference map shall identify room layout, cable routing and distance markers in feet or meters. The overall size of the FM1114 shall be 11" x 14" (27.9cm x 35.5cm)

4. SYSTEM COMMISSIONING AND MAINTENANCE

- 4.1 The RLE Technologies leak detection system shall be installed and maintained as recommended in the RLE Technologies SeaHawk 10K User Guide.**



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