SeaHawk LD5000

SeaHawk

Architect and Engineer Specifications

1. GENERAL SPECIFICATION

1.1 The contractor shall provide a RLE Technologies SeaHawk LD5000 Distance Read Water Leak Detection System (hereinafter referred to as the "SeaHawk LD5000 System") as described in subsequent sections of this specification to perform the functions of water leak detection, occupant notification, and event annunciation.

1.2 The contractor shall supply the complete SeaHawk LD5000 System with components that shall include but not be limited to: a SeaHawk LD5000 Distance Read Controller, SeaHawk Premium Water Leak Detection Cable and optional installation accessories.

1.3 The SeaHawk LD5000 System components listed above shall be manufactured by RLE Technologies, 208 Commerce Street, Fort Collins, CO 80524, U.S.A. Tel (970) 484-6510, Fax (970) 484-6650, URL: www.rletech.com

1.4 The manufacturer shall warrant the SeaHawk LD5000 System against defects in materials and workmanship for a period of twelve (12) months from the date of shipment. This warranty shall be limited to parts and labor to repair or replace the system if it is found to be defective. To ensure warranty coverage, all installation and other instructions must be followed properly. All installation and setup work must be performed by qualified personnel who are knowledgeable of the equipment and aware of appropriate safety, wiring, and other applicable practices.

1.5 The contractor shall submit copies of all applicable drawings, specifications, datasheets and user guides.

1.6 All materials and equipment used for this project shall be new and unused.

2. CODES/STANDARDS COMPLIANCE

2.1 The SeaHawk LD5000 System shall have the following listings and approvals for international standards specifying general safety requirements for electrical equipment intended for professional, industrial process, and educational use:

2.1.1 CE Certified; EMC – EN61326 Class A

2.1.2 UL STD 61010A-1; EN STD 61010-1; CAN/CSA C22.2 STD NO. 1010-02

2.1.3 CL2P/CMP per UL STD E162948 (SeaHawk Premium Water Leak Detection Cable)

3. SYSTEM DESCRIPTION

3.1 The SeaHawk LD5000 System shall consist of the SeaHawk LD5000 Distance Read Controller and the requisite length of SeaHawk Premium Water Leak Detection Cable. The LD5000 Controller shall be capable of detecting the presence of water or other conductive liquids along the length of Water Leak Detection Cable connected to it. When the SeaHawk Premium Water Leak Detection Cable contacts water or another conductive liquid, the SeaHawk LD5000 Distance Read Controller shall generate audible and visual annunciation and provide, by means of an integral LCD display, the distance to the point of detection.

4. COMPONENT DESCRIPTION

4.1 SEAHAWK LD5000 DISTANCE READ CONTROLLER

4.1.1 The SeaHawk LD5000 Distance Read Controller shall be constructed as a stand alone unit suitable for vertical surface wall mounting, or with the optional kit, vertical flush wall mounting. The LD5000 Controller shall be housed in a metal NEMA 1 enclosure and have a backlit, contrast-adjustable, 4 line x 20 character LCD display with character height of 0.60" (15.2 mm) to provide status and alarm data. The LCD shall also enable operator access to the password protected menu system.

4.1.2 The overall size of the LD5000 Controller shall be 12"W x 18"H x 4"D with weight equal to 5 lbs. (2.33kg).

4.1.3 The LD5000 Controller shall be suitable for universal voltage input and shall operate on 85-264 VAC, 50/60 Hz, single-phase power supply.

4.1.4 The LD5000 Controller 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

10,000 feet. The LD5000 Controller shall be suitable for storage at temperatures between -4°F and 158°F (-20°C and 70°C).

4.1.5 The LD5000 Controller shall be provided with a 15 foot (4.57m) long leader cable to facilitate remote mounting.

4.1.6 The SeaHawk LD5000 Distance Read Controller shall be capable of monitoring up to 5,000 feet (1,520 m) of RLE Technologies SeaHawk Premium Water Leak Detection Cable and shall have a leak response time of less than 30 seconds and a typical sensing accuracy of 2 ft. + 0.25% of total cable length.

4.1.7 The SeaHawk LD5000 Distance Read Controller shall include 2 Form C Leak Relays and 2 Form C Cable Break Relays with contacts rated at 1A at 24VDC, 0.5A resistive at 120VAC. The relays shall be configurable as latched or non-latched and supervised or non-supervised.

4.1.8 The LD5000 Controller shall continuously monitor the SeaHawk Premium Water Leak Detection Cable for contact with water and other conductive liquids. In case a leak is detected, the LD5000 Controller shall sound an audible alarm, illuminate a status LED in red, display the distance to the leak, activate a leak relay output and create an entry in the event history log.

4.1.9 The LD5000 Controller shall continuously supervise the electrical integrity of the SeaHawk Premium Water Leak Detection Cable. In case of a cable fault, the LD5000 Controller shall sound an audible alarm, cause a cable break indication, activate a cable break relay output and create an entry in an event history log.

4.1.10 The SeaHawk LD5000 Distance Read Controller shall be capable of Modbus communications via the RS-485 serial port. The LD5000 Controller shall also include a RS-232 serial configuration port to interface with a PC allowing access to all functions and diagnostics within the system. Baud rates shall be user selectable. All configuration menus shall be password protected.

4.1.11 The SeaHawk LD5000 Distance Read Controller shall have the following indicators, switches and/or buttons:

A.) One green/red bi-color power/status LED that illuminates green when the power is on and red when the system is in alarm.

B.) One audible alarm with an 85 DBA sound output at 2 feet (0.6 m) which shall sound for cable fault and leak detected conditions and shall be silenced by the depression of any front panel button, or via the RS-232 or Modbus (RS-485) interface. The audible alarm shall be programmable to re-sound after a time period of 0 to 999 minutes.

C.) Six directional push buttons which allow operation and navigation of the menu system.

4.1.12 The LD5000 Controller shall allow leak detection sensitivity and cable contamination setting adjustments. It shall be possible to manually and automatically calibrate the SeaHawk Premium Water Leak Detection Cable. A password shall be required to perform any such system calibration.

4.1.13 The LD5000 Controller shall maintain a trend log listing the cable current level every day recorded at configurable (1-1440 minutes) intervals, for the last 288 days. An event log shall also provide a record of the last 512 events.

4.1.14 The LD5000 Controller shall use a real-time clock for time and date stamping of trend and event log entries. The date and time shall be set through the LCD control panel, RS-232 or RS-485 serial ports.

4.1.15 The LD5000 Controller shall allow single person mapping of the SeaHawk Premium Water Leak Detection Cable and shall provide a log of the mapped points. Visual and audible confirmation of points taken shall be provided.

4.1.16 The LD5000 Controller shall provide a 4-20mA loop powered analog output, which shall provide a signal proportional to the distance of the point of the leak and will be used to interface with external monitoring systems.

4.2 SEAHAWK PREMIUM WATER LEAK DETECTION CABLE

4.2.1 The SeaHawk Premium Water Leak Detection 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. The Water Leak Detection Cable shall be fast drying

and highly flexible allowing for small bend radii. Braided mesh type cables and cables containing conductive polymers in their construction are not acceptable.

4.2.2 The SeaHawk Premium Water Leak Detection 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 10,000 feet. The Water Leak Detection 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.

4.2.3 The diameter of the SeaHawk Premium Water Leak Detection Cable shall not exceed 0.25" (6.35 mm). The Water Leak Detection Cable shall have a sheer strength greater than 180 lbs. (81.65kg), a cut through resistance greater than 40 lbs. (18.14kg) with a 0.005" blade and an abrasion resistance greater than 60 cycles per UL 719.

4.2.4 To interconnect sections of the SeaHawk Premium Water Leak Detection Cable, the contractor shall use RLE Technologies SeaHawk Non-Sensing Cable. The SeaHawk Premium Water Leak Detection Cable and SeaHawk Non-Sensing Cable shall be available in standard lengths of 10, 25, 50 and 100 feet (3.05, 7.62, 15.24 and 30.48 meters, respectively) with pre-tested and pre-installed mating end connectors.

4.2.5 Water Leak Detection Cable Installation

A.) The SeaHawk Premium Water Leak Detection Cable shall be installed after all piping, air conditioning, raised flooring, and other mechanical work has been completed. The cable path shall remain clear of water, oil, solder, flux, dirt or other materials that may contaminate the Water Leak Detection Cable.

B.) The Water Leak Detection Cable shall be secured to the floor using the manufacturer's recommended method of affixing J-Clips at approximately 3 foot (0.9m) intervals along the cable length. The self-adhesive J-Clips shall be available for purchase from RLE Technologies as an installation accessory in quantities of 10, 15 or 50 pieces.

C.) The SeaHawk Premium Water Leak Detection Cable shall be installed beneath the raised floor, around the perimeter of all rooms at a maximum distance of 3 feet (0.9 m) from the outside wall. In addition, the Water Leak Detection Cable shall be laid in a serpentine pattern on 4 - 8 foot (1.2 – 2.4 m) minimum centers to protect interior areas and detect water from sources within the room such as air conditioning units, floor drains, and chillers. The Water Leak Detection Cable shall be installed under the center of floor tiles to facilitate access to, and visual location of leaks.

D.) The SeaHawk Premium Water Leak Detection Cable shall be routed at a minimum distance of 6 feet (1.8m) beyond the perimeter of all air conditioning units. When installed around the perimeter of air conditioning units, J-Clips shall be placed every 18 inches (500 mm).

4.3 INSTALLATION ACCESSORIES

4.3.1 SeaHawk Non-Sensing Cable shall be available for purchase from RLE Technologies for use as a bridge between sections of SeaHawk Water Leak Detection Cable where water leak detection is not needed and to extend the control panel's leader cable to an area where water leak detection is needed. The SeaHawk Non-Sensing Cable shall be plenum rated to CL3P per UL and 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 10,000 feet. The SeaHawk Non-Sensing Cable shall be suitable for storage at temperatures between -22°F and 185°F (-30°C and 85°C) and have a sheer strength greater than 180 lbs. (81.65kg), a cut through resistance greater than 40 lbs. (18.14kg) with a 0.005" (0.127mm) blade and an abrasion resistance greater than 60 cycles per UL 719.

4.3.2 J-Clips shall be the manufacturer's recommended cable installation method to secure the SeaHawk Premium Water Leak Detection Cable and SeaHawk Non-Sensing Cable to the floor. The self-adhesive J-Clips shall be available for purchase from RLE Technologies as an installation accessory in quantities of 10, 15 or 50 pieces.

4.3.3 A Leak Detection Reference Map shall be available for purchase from RLE Technologies to identify the actual location of any water leaks detected by the SeaHawk LD5000 Water Leak Detection System.

A.) This map shall be prepared from "as built" drawings after complete system installation. The Leak Detection Reference Map shall identify room layout, cable routing and distance makers in feet or meters to include equipment, walls, floor drains, and cable direction changes.

B.) The map shall be wall mounted next to the SeaHawk LD5000 Distance Read Controller to assist the user in quickly locating the point of alarm.

5. SYSTEM COMMISSIONING AND MAINTENANCE

5.1 Upon completion of the system installation, the installer shall perform the following tests in the presence of the owner and shall provide the owner with a copy of the results:

5.1.1 Leak Detection Test

A.) A clean wet cloth or paper towel shall be placed anywhere along cable length and the following observations shall be made:

i.) The status LED shall change from green to red, the audible alarm shall sound and the leak relays shall activate.

ii.) The LCD display shall be backlit with the distance to the leak displayed.

iii.) The leak shall be registered in the event log and shall be visible via the RS-232 port, the Modbus (RS-485) port, or the LCD display.

B.) The System shall then be silenced, reset and restored to normal operation.

5.1.2 Cable Supervision Test

A.) The end-of-line terminator shall be removed from the end of the cable length and the following observations shall be made:

i.) The status LED shall change from green to red, the audible alarm shall sound and the fault relays shall activate.

ii.) The LED display shall be backlit and "Cable Break" displayed.

iii.) The trouble shall be registered in the event log and shall be visible via the RS-232 port, the Modbus (RS-485) port, or the LCD display.

B.) The System shall then be silenced, reset and restored to normal operation.

5.2 The RLE Technologies Leak Detection System shall be maintained as recommended in the RLE Technologies' SeaHawk LD5000 User Guide.