

RLE Leak Detection™

by Parameter

LD5200

ARCHITECT AND
ENGINEER SPECIFICATIONS

PARAMETER
REV 1.0 110096

1. GENERAL SPECIFICATION

- 1.1** The contractor shall provide RLE Technologies' SeaHawk LD5200 Distance Read Water Leak Detection System to perform the functions of water leak detection, event annunciation, and integration into other alarm management systems. The system shall include, but not be limited to: a SeaHawk LD5200 Distance Read Controller, SeaHawk Water Leak Detection Cable (patent # 6144209; no substitutions permitted) or Chemical Leak Detection Cable (patent pending; 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 LD5200 System 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 LD5200 System 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 Water Leak Detection Cable); ANSI/NFPA 262

3. COMPONENT DESCRIPTION

3.1 SEAHAWK LD5200 DISTANCE READ CONTROLLER

- 3.1.1 The LD5200 shall be capable of monitoring up to 10,000 feet (3,048m) of RLE Technologies SeaHawk Water Leak Detection Cable, or up to 7,000 feet (2,134m) of RLE Technologies SeaHawk Aqueous Chemical Leak Detection 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 LD5200 shall have the following indicators, switches and/or buttons:
- A.) One 480 pixels W x 272 pixels H color LCD, LED backlit, resistive touch panel display, mounted on the front of the LD5200. The touch panel display shall announce alarm conditions, display the status of the LD5200 system, and provide menus and softkeys for use in controlling and configuring the LD5200. Certain menus shall be password protected to prevent inadvertent changes to the LD5200's operation.
- B.) One audible alarm with an 85 db sound output at 2 feet (0.61m) which shall sound for cable fault and leak detected conditions, and shall be silenced by pressing a softkey on the front panel display, or via the Web interface. The audible alarm shall be programmable to re-sound after a time period of 0 to 999 minutes.
- 3.1.3 The LD5200 shall be constructed as a stand alone unit suitable for vertical surface wall mounting and shall be housed in a metal Type 1 enclosure.
- 3.1.4 The overall size of the LD5200 shall be 12.5"W x 10.0"H x 3.25"D (318mmW x 254mmH x 83mmD), and its weight shall be less than or equal to 8.2 lb (3.7kg).
- 3.1.5 The LD5200 shall be suitable for universal voltage input and shall operate on 100/120/230-240VAC @500mA max, 50/60 Hz, single-phase power supply (field selectable).
- 3.1.6 The LD5200 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 LD5200 shall be suitable for storage at temperatures between -4°F and 158°F (-20°C and 70°C).

- 3.1.7 The LD5200 shall include two (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.
- 3.1.8 The LD5200 shall include one (1) Form C Maintenance Relay, which may be used to send a signal to a remote Building Management System (BMS) when periodic maintenance is due. The maintenance interval shall be programmable via the touch panel display or the Web interface.
- 3.1.9 The LD5200 shall provide a 4-20mA loop powered analog output, which shall provide a signal proportional to the distance to the detected leak.
- 3.1.10 The LD5200 shall provide three independent EIA-485 serial ports and shall be capable of Modbus/RTU Master and Slave communications, BACnet MS/TP Slave communications, and N2 Slave communications via the EIA-485 serial ports. Baud rates shall be user selectable between 9600, 19,200, and 38,400 baud.
- 3.1.11 The LD5200 shall be capable of simultaneously monitoring up to 127 slave devices over Modbus/RTU.
- 3.1.12 The LD5200 Controller shall also include an EIA-232 serial port to interface with a PC allowing access to all functions and diagnostics within the system. The EIA-232 serial port shall be 9600 baud, no parity, 8 data bits, 1 stop bit.
- 3.1.13 The LD5200 shall be capable of Ethernet communications over a 10/100BASE-T network via the RJ45 Network port. Communications protocols supported over the Ethernet connection shall include SNMP, SMTP (email), Modbus TCP/IP, BACnet IP, and web-based (HTML) access.
- 3.1.14 The LD5200 shall be configured either via a web-based (HTML) configuration and setup menu accessible from an Ethernet connection, via the touch panel display, or via a terminal-based menu accessible via EIA-232. All configuration menus shall be password protected.
- 3.1.15 The LD5200 shall be capable of sending alarms via SNMP traps, SMTP (email; up to four designated recipients), Modbus, and BACnet.
- 3.1.16 The LD5200 shall support SNMP V1, V2, and V3 (optional – US only).
- 3.1.17 The LD5200 shall continuously supervise the electrical and mechanical integrity of the SeaHawk Water Leak Detection Cable.
- 3.1.18 The LD5200 shall allow leak detection sensitivity and cable contamination setting adjustments. It shall be possible to manually and automatically calibrate the LD5200 without the manufacturer's intervention. An optional password will safeguard any unauthorized system calibration.
- 3.1.19 The LD5200 shall monitor up to 32 user configurable virtual zones defined by the cable length at the beginning of the virtual zone. A unique description of each virtual zone will be user configurable. An additional eight zones can be used to display the actual distance to leaks detected by other leak detection systems (LD5200, LD5100, LD5000, LD2100, LD2000, LD1500, SeaHawk 10K) that are integrated via Modbus RTU (EIA-485) or Modbus TCP/IP (RJ-45) into the LD5200 system.
- 3.1.20 The LD5200 shall maintain a trend log listing the cable current level every day recorded at configurable intervals (1 minute to 1440 minutes (1 day)), for the last 365 intervals. An event log shall also provide a record of the last 1024 events. Logged events shall include, but not be limited to, Alarms, Cable Faults, and System Restarts.
- 3.1.21 The LD5200 shall maintain the trend log and event log in nonvolatile memory, so that the logs will survive events such as power failures and hard resets. The LD5200 Controller shall keep the logs in first-in-first-out (FIFO) order. The trend log and event log may be uploaded to a computer via the Web interface.

- 3.1.22 The LD5200 shall be capable of downloading and uploading configuration files, uploading log files, and downloading images and firmware upgrades, via the Web interface or TFTP.
- 3.1.23 The LD5200 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 front panel display or the Web interface. The LD5200 shall utilize Network Time Protocol (NTP) to synchronize its internal clock to an external time source.
- 3.1.24 The LD5200 shall allow single person mapping of the SeaHawk Water Leak Detection Cable and Spot Detectors and shall provide a log of the mapped points. Visible and audible confirmation of points taken shall be provided.
- 3.1.25 The LD5200 shall be capable of holding up to 10 images of floor plans and overlaying maps of cable layouts on the images. In the event of a leak or cable fault alarm, the LD5200 shall be capable of displaying the location of the leak on the floor plan image on the Web interface.

3.2 SEAHAWK WATER LEAK DETECTION CABLE

- 3.2.1 The SeaHawk 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. Each individual sensing wire shall be covered with a non-conductive polymer mesh to help prevent false alarms from contaminants. The SeaHawk Water Leak Detection Cable shall be fast drying and highly flexible allowing for small bend radii. The SeaHawk Leak Detection 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.
- 3.2.2 The SeaHawk 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 15,000 feet (4572m). The SeaHawk 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 (ANSI/NFPA262). The SeaHawk Water Leak Detection 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.
- 3.2.3 In the previous paragraphs and in the following section
- ” The SeaHawk Chemical Leak Detection Cable shall detect the presence of water and other conductive liquids, including acids, bases, and salts, and shall be impervious to corrosion or chemical attack by those conductive liquids.

3.3 INSTALLATION ACCESSORIES

- 3.3.1 The LC-KIT includes a 15 feet (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 LD5200.
- 3.3.2 SeaHawk Non-Sensing Cable (NSC) shall be used to bridge between sections of SeaHawk Water Leak Detection Cable where water leak detection is not needed. The SeaHawk NSC shall be plenum rated to CL3P per UL. 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 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) length of SC 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 Water Leak Detection Cable.

- 3.3.4 An X-Connector (X-CON) shall be used to branch the SeaHawk Leak Detection 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) to the system to distinctly separate 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).
- 3.3.5 J-Clips (JC) shall be used to secure cables every 4 feet (1.22m) and on any corners or bends of the SeaHawk Water Leak Detection Cable and/or SeaHawk Non-Sensing Cable. The overall size of the J-clips shall be 1"W x 1.1"H x 0.5"D (25mmW x 28mmH x 12mmD). J-clips designed for use with SeaHawk Chemical Sensing Cable may have different dimensions. J-clips shall be available in quantities of 10, 25, 50, and 200
- 3.3.6 A Weighted Cable Connector (WCCS-50) shall be used to simulate 50 feet (15.24m) of SeaHawk Water Leak Detection 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)
- 3.3.7 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 LD5200 Water Leak Detection System. 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 LD 5200 User Guide.**



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