SeaHawk 10K Quick Start Guide

Thank you for purchasing a SeaHawk 10K distance-read leak detection controller. This guide highlights basic device installation and configuration. Additional support information, including the User Guide, is available on our website - www.rletech.com. Before you install a 10K, check the website to ensure you are using the most recent version of our documentation.

If you need further assistance, please contact RLE Technologies at support@rletech.com.

v2.7
Compatible with firmware v3.0 and above
(12/2016)

Supplies for Installation

Included with the SeaHawk 10K
15 foot (4.57m) leader cable
End-of-line terminator (EOL)

Available from RLE, sold separately
Isolated RLE power supply, DC (PSWA-DC-24) or AC (WA-AC-24-ST)
SeaHawk sensing cable, up to 10,000 feet (3048m)

Mount the Device

The SeaHawk 10K can be mounted inside a panel or on a DIN rail. The device has two adjustable orange clips on the bottom. Push the clips out to expose two screw holes that allow The 10K to be mounted in a panel; push the clips in to mount the 10K on a DIN rail.

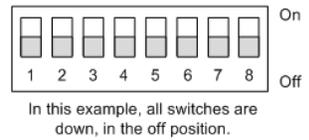## Establish Physical Connections & Test the Device

The SeaHawk 10K's circuit boards are labeled. This helps you determine which wires feed into each terminal block. Before you apply power to the SeaHawk 10K, wire all necessary connections and set the DIP Switches.

The 10K requires an isolated power supply. A power supply is not included, but isolated DC (PSWA-DC-24) and AC (WA-AC-24-ST) power supplies are available from RLE.

1. Connect the power lead to TB3 or TB4. For AC power connections, wire EGND1 to Earth ground.
2. Insert the four stripped wires of the leader cable into the appropriate slots in TB2 - from left to right: white, black, green, and red.
3. Connect sensing cable to the other end of the leader cable, and be sure an end-of-line terminator is connected to the end of the sensing cable.
4. Secure your connection for the relay output to TB1.
5. Adjust the DIP switches to the appropriate settings.
6. Apply power to the SeaHawk 10K.
7. Test the system - simulate leaks at the beginning, middle, and end of the sensing cable to ensure the SeaHawk 10K accurately calculates the distance to leaks.

DIP Switches

The SeaHawk 10K has two sets of DIP switches. Push the numbered switch up to turn it on; push the switch down to turn it off. SW1 is used to configure a variety of settings on the Seahawk 10K. SW2 is used to configure communications.

In this example, all switches are down, in the off position.

DIP Switch 1, switches 1 through 8			
Set the baud rate for the EIA-485 Port			
	1 = Off	2 = Off	Modbus 9600 baud
	1 = On	2 = Off	Modbus 1200 baud
	1 = Off	2 = On	Modbus 38400 baud
	1 = On	2 = On	N2 9600 Baud
Unused			
	3 = Off		Unused, leave in the off position.
Set the Re-alarm Interval - After a leak or cable problem has been detected, the alarm will be re-sent at a designated interval until the alarm condition has been resolved.			
	4 = Off		Re-alarm interval - disabled. No re-alarm will occur.
	4 = On		Re-alarm interval - 4 hours
Latching Alarm Status			
	5 = Off		Unlatched alarms - alarm resets itself once a detected leak or cable problem has been resolved
	5 = On		Latched alarms - alarm must be reset by manually pushing the blue Test/Rest/ Alarm Silence button, even if the leak or cable problem is no longer present
Distance Measurements			
	6 = Off		Cable length displayed in feet
	6 = On		Cable length displayed in meters
Sensing Cable Resistance - If you have questions regarding your cable's resistance, please reference the cable's data sheet.			
	7 = Off		2.8 Ohms per foot - Use with RLE's orange sensing cable
	7 = On		4.0 Ohms per foot - Use with most other sensing cables
Enable or Disable the Audible Alarm - The audible alarm is disabled by default.			
	8 = Off		Audible alarm off
	8 = On		Audible alarm on

DIP Switch 2 is used to set communications options. If you are communicating via Modbus, use SW2 to set the address of the Modbus device. This should be a number between 1 and 254. Adjust the individual switches until their sum equals the Modbus address. Switch values are as follows:

Example: Communications address 34

Example: Communications address 226
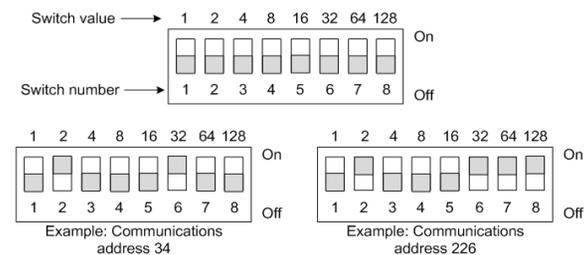
Front Panel Indicators

The front panel of the SeaHawk 10K contains a 4-character LED and series of colored LEDs that are used together to convey device status and information regarding detected leaks and cable faults. A blue button is used to cycle the 4-character LED, silence the audible alarm, and reset the alarm.

Indicator	Symbol	Description
4-character LED	`SH10`	System is running in its normal operating state.
	`675` (e.g.)	A leak, fault, or contamination has been detected. A numerical distance displays on the LED. A green LED lights next to **Ft** or **m**, and either the LED next to the water drop glows red to indicate a leak, or the LED next to the wrench glows yellow to indicate cable contamination. If the distance is measured in meters, a tenths place decimal value will appear in measurements from 0.0 - 999.9. All meter values over 1000 will display as whole meter measurements.
	`cbr`	Cable break/fault detected. Yellow LED flashes next to wrench symbol.
LED	💧	Red LED - leak is detected - distance is displayed on 4-character LED
	🔧	Yellow LED - Cable fault - 4-charactecd LED displays `cbr` Yellow LED - Cable contamination - 4-character LED displays distance
	⏻	Green LED - Power on
	Ft	Green LED - Measurements are made in feet
	m	Green LED - Measurements are made in meters
	μA	Green LED - Microamps of current on cable - amperage displayed on 4-character LED
Test/Reset/ Alarm Silence Button	Blue Push Button	In normal operating conditions, the button functions include: • Press once: Displays cable current in ohms/foot and the green LED lights next to the microamp symbol • Press twice: Displays the length of installed cable components and the green LED lights next to the appropriate **Ft** or **m** symbol • Press three times: Return to the default display (SH10) • Press and hold: Self-test is initiated and the character display reads `cal 8060`, which indicates the value of the test resistor. If an alarm sounds, briefly press the button to turn off the audible alarm. The Status LED remains red, and the 4-character LED continues to show the alarm condition. In an alarm condition, whether the audible alarm is sounding or not, press and hold this button for 3 seconds to clear the alarm.

Modbus Registers

The SeaHawk 10K uses its EIA-485 port to communicate via Modbus. The SeaHawk 10K is configured to act as a slave device on a common network and is a slave only device – it will never initiate a communications sequence.

Read Input Registers

04 Input Registers (3x)	Description
30001	b0=Leak alarm, b1=cable break, b2=contamination, b3=summary
30002	Leak distance
30003	0=meters, 1=feet
30004	Leakage current on cable (μA)
30005	Installed Cable Length (ft/dm)
30006	Cable resistance, leg 1 (ohms)
30007	Cable resistance, leg 2 (ohms)
30008	Resistance per foot (milliohms)
30009	Firmware version number
38001	Leak Distance - Meters (float)
38003	Cable Length - Meters (float)

Read Output Registers

03 Holding Registers (4x)	Description
40001	Leakage threshold (writeable) Default 120 μA; range: 25μA-175μA
40002	Contamination threshold (writeable) Default 50 μA; range: 25μA-175μA
40003	Re-alarm interval (read only, set with DIP SW1) Default: 0 (disabled); 0=disabled, 4 hours
40004	Latching alarms (read only, set with DIP SW1) Default: 0 (disabled); 0=disabled, 1=enabled
40005	Silence audible alarm Default: 0 (disabled); 0=disabled, 1=enabled
40006	Reset alarm Default: 0 (no reset); 0=do not reset, 1=reset alarm

03 Holding Registers (4x)	Description
40007	Sample size (writeable) Default: 12; range 4-25; 0 sets to default
40008	Resistance per foot in mΩ Set to 2000-3500 or 3500-4240
40009	AC rejection mode (needed only if the 10K is AC-powered) Default: 1 (50Hz); 0 = 60Hz, 1 = 50Hz
40010 - 40015	Not used - reads 0
40016	Leak alarm delay (writeable) Default: 10 seconds; range: 5-999 seconds
40017	Contamination alarm delay (writeable) Default 120 seconds; range 5-999 seconds