LCI-80x

Messaging System

User Guide

Phone: +1 (206) 634-1308
Email: LCI@mtnw-usa.com

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Disclaimer
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1 Introduction

Rugged Controls designs and manufactures rugged winch control, wireline monitoring and instrumentation used in demanding oil & gas, commercial and oceanographic applications ranging from polar to tropical. Our products are used to control and monitor speed, payout, and tension in winch systems used for equipment deployment, barge positioning, fixed-place mooring, drawbridge controls, and wherever accurate and reliable line control is required.

This document describes the LCI-80x messaging system.

The intended audience of this document are users of the LCI-80x.

2 Messaging System Description

The messaging system allows users to configure custom messages for display on the LCI-80x during various alerts, warnings, alarms and events triggered from a device (ie. PLC) communicating with the LCI-80x over MODBUS TCP or RTU. This system is available when the LCI-80x is in slave (local) mode only. See table 1 for MODBUS addresses associated with the messaging system.

The system allows for 32 (40 character) user programmable messages to be displayed on a dedicated screen. An adjacent set of MODBUS registers (32 bits) are used as control words to activate each message. A second set of adjacent MODBUS registers (32 bits) are used to pair relay 1 control with message activation, while a third set of adjacent MODBUS registers (32 bits) are used to pair relay 2 control with message activation.

Configure the messaging system with the following steps:

1. Write all messages (1 to 32)
2. Write control words to configure relay 1 activation with associated message (see table 2)
3. Write control words to configure relay 2 activation with associated message (see table 2)

Configuration data is saved into non-volatile memory and loaded upon startup. This data can be written at any time during operation. The contents of the message activation words are volatile and will default to all zero (all "off") during power up of the display.

The dedicated screen for displaying messages shows all messages in a single, full-screen width column where each active message is shown left-justified on a single numbered row. Row numbers increment as each active message is found.
As the number of rows grows beyond what is visible, scrolling controls are included to aide navigation. This screen is one of several diagnostic screens, see the LCI-80x User Manual for more information on the diagnostics screens.

Messages are triggered by writing addresses with control words (active high bits) as shown in table 3. If relay 1 and/or 2 is associated with a message, the relay(s) will trigger when the message is activated by the control words. The relay will remain triggered until forced off with the "ALM" function button or the message is deactivated by the control words.

The five function keys are also part of the messaging system. The 3 right-most keys are configurable and any can be configured to display the messaging screen. If a key is configured to display the messaging screen it will flash slowly if any messages are active.

Table 1 – MODBUS Map

Address	Function
0x9000	Activate Messages 1 - 16
0x9001	Activate Messages 17 - 32
0x9002	Trigger Relay 1 with Message 1 - 16 Active State
0x9003	Trigger Relay 1 with Message 17 – 32 Active State
0x9004	Trigger Relay 2 with Message 1 – 16 Active State
0x9005	Trigger Relay 2 with Message 17 – 32 Active State
0x9006	Reserved
0x9007	Reserved
0x9008 to 0x901B	Message 1 – 40 ASCII Characters*
0x901C to 0x902F	Message 2 – 40 ASCII Characters*
…	…
0x9274 to 0x9287	Message 32 – 40 ASCII Characters*

*See table 4 for allowed characters

Table 2 - Relay Control Bits

	Message 1	Message 2	…	Message 16	
Trigger Relay 1	1	0	…	0	Address: 0x9002
Trigger Relay 2	0	1	…	0	Address: 0x9004

	Message 17	Message 18	…	Message 32	
Trigger Relay 1	1	0	…	0	Address: 0x9003
Trigger Relay 2	0	1	…	0	Address: 0x9005

Table 3 – Message Activation Control Bits

	Message 1	Message 2	…	Message 16	
Active	1	0	…	0	Address: 0x9000

	Message 17	Message 18	…	Message 32	
Active	1	0	…	0	Address: 0x9001

Table 4 – Allowed ASCII Characters

Alpha-Numeric	Punctuation	Math
A-Z, a-z, 0-9, Space	! " ' , . : ; ?	# $ % _ ( ) * + - /

3 Menu System Configuration

Message contents, relay association and message activation are all configured via MODBUS as described in the requirements section. A programmable function key for navigating to the message display screen is the only aspect of the messaging system that is configured from the LCI-80x menu system.

3.1 Menu System – Function Keys Configuration

The messaging system adds an additional function – Message Screen. Configuring a key with this function will provide a simple way to navigate to the messaging screen. The key will also flash slowly if any messages are active.

	3.1.1 FUNC KEYS CFG		
›	1	KEY	3
	2	FUNC	MSG SCREEN