

# ELKHART BRASS

Fire Fighting Equipment

## **Industrial RF (Radio Frequency) Control** **For use with Model 8394053 SPIT-FIRE® Monitor** **Setup Instructions**



98382000 REV. B

## PRODUCT SAFETY



### **Important:**

**Before installing and operating this equipment, read and study this manual thoroughly. Proper installation is essential to safe operation. In addition, the following points should be adhered to in order to ensure the safety of equipment and personnel:**

- All personnel who may be expected to operate this equipment must be thoroughly trained in its safe and proper use.
- Before flowing water from this device, check that all personnel (fire service and civilian) are clear of the stream path. Also confirm stream direction will not cause avoidable property damage.
- Become thoroughly familiar with the hydraulic characteristics of this equipment, and the pumping system used to supply it. To produce effective fire streams, operating personnel must be properly trained.
- Whenever possible, this equipment should be operated from a remote location to avoid exposing personnel to dangerous fire conditions.
- Always open and close valves supplying this equipment slowly, so that the piping fills with water slowly, thus preventing the possible occurrence of water hammer.
- After each use, and on a scheduled basis, inspect equipment per instructions in the maintenance section.
- Disconnect power prior to servicing controls.
- Any modifications to the electrical enclosure will destroy the NEMA 4 rating and void warranty coverage of the enclosure and all components within.
- All equipment must be installed in accordance with local codes (NFPA 70 or EN/IEC 60079-14) as appropriate and in areas where equipment classification is suitable.



**WARNING: Do not attempt to disconnect or work on any electrical equipment in this system unless power is removed or the area is known to be non-hazardous.**

## SYSTEM INFORMATION:

SERIAL NUMBER: \_\_\_\_\_

DETAILS:

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## I EQUIPMENT OVERVIEW

### Electrically Operated RF (Radio Frequency) Transmitter and Receiver Features:

- **Hetronic GL-K Transmitter** - rated for Class I Division 1 for use in hazardous locations. IP 65 rated.
- **Hetronic Ergo-F Transmitter** – rated for Class I Division 1 for use in hazardous locations. IP 65 rated.
- **Hetronic RX-K Receiver** – installed in enclosure rated for Class I Division 1 for use in hazardous locations.
- **Allen Bradley 1400 PLC Programmable Logic Controller (PLC)** – system configuration and monitor network system interface installed in enclosure rated for Class I Division 1 for use in hazardous locations.
- **Control Voltage** – 24 Volt DC
- **Conduit Knockouts, Hubs, & Interconnect Wiring** – Supplied by others



**WARNING:** While working inside the panel be aware that all devices may have live electricity and care should be taken as not to damage the equipment or cause bodily harm.

## II RF SYSTEM CONNECTED TO AN INDUSTRIAL MONITOR SYSTEM

### Networked Configuration:

The RF system consists of a transmitter (“belly pack or handheld”) and a receiver. The transmitter is the remote device that is free to move about the industrial monitor system. The receiver is a stationary panel that needs to be installed and connected to 24 VDC power and a managed switch located in the Operator Control Panel (OCP) within the system network through a CAT 5e/6e cable to the receiver PLC. The 24 VDC will supply power to the receiver panel. The way the system works is on each transmitter is a selector switch with 2 to 9 positions on it, depending on what was purchased. This will reflect the number of monitors that can be controlled in the system from that transmitter. Each one of those switches needs to be matched to an IP address that will be associated with a particular monitor in the network. This is configured and stored in the PLC in the receiver panel. Depending on the configuration multiple transmitters can control the same monitors but only one transmitter can control the monitor at any given time. If multiple transmitters try to control the same monitor within a 10 second time frame both will be disabled until the units are released.

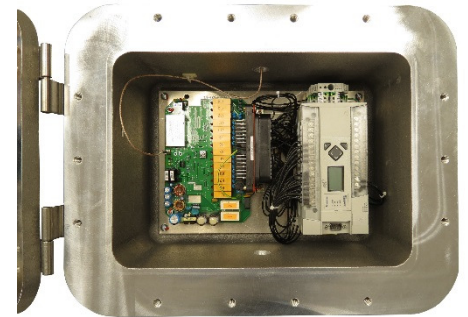
Note that for each transmitter a receiver panel is needed to communicate the functions correctly. Also all receiver panels need to be within the operational range of the transmitter that has been purchased. The transmitters cannot be interchanged between receiver panels. Their frequencies are set by the manufacturer. It should also be noted that the OCP or HMI, if in a system, will override the transmitter for operation of a monitor.

### Hardwired Configuration:

Hardwired configurations differ from networked configurations by having the receiver directly wired to an OCP or MMCP. The system operates by the RF receiver obtaining commands from the RF transmitter. These commands are then transferred to terminal blocks within the RF receiver box. The terminal blocks are then wired directly to the appropriate OCP or MMCP and the panel forwards the command to the appropriate monitor. The receiver will need to be connected to 24VDC from the OCP, just like the networked receiver. The hardwired receiver will also need wired to straight, fog, left, right, up, down, water on, and water off functions in the OCP or MMCP.

### III SYSTEM CONFIGURATION AND FUNCTIONALITY OVERVIEW

1. Receiver Hookup and Operation: The receiver box requires 24 VDC wired to the 51 terminal and 0 VDC wired to the 52 terminal. The 24 VDC should come from an OCP (Operator Control Panel). The Ethernet connection needs to be connected from the receiver PLCs' Ethernet port, using a CAT5e or CAT6e cable, to the same OCP, from where the 24 VDC came from, and a port on the front of the managed switch. If this is not completed the system will not operate. The way the system operates is by the receiver obtaining commands from the transmitter. Once this signal is received it is then communicated to the PLC in the receiver. The receiver PLC then interprets which monitor was selected from the transmitter and issues the commands to the associated monitor PLC through the network. This will then operate the monitor accordingly. If the monitor is not functioning as desired make sure that the IP addresses between the monitor PLC, located in the OCP, and the receiver IP address are of the same configuration. Setting the receiver IP addresses will be discussed in the setup portion of this manual. For more information on changing the monitor IP address value refer to the OCP setup manual (98553000).



Internal - Receiver Panel (Networked)



Receiver Panel

2. Antenna: Mounting of the antenna for the receiver box should be accomplished by following the procedure supplied by the manufacture of the receiver and transmitter.



Antenna

3. Transmitter Operation: There are two types of transmitters; belly pack and handheld. Each transmitter will include two 3.6V NiMH rechargeable batteries and one charging station. The "belly pack", has the following operations that can control the monitor. Those being nozzle straight/fog, monitor up/down, monitor left/right, water valve open/close, auxiliary on/off, and oscillate on. Momentarily press the right or left function to disengage oscillation. A selector switch is used to change back and forth between programmed monitors when applicable. On the left side of the transmitter is the E-Stop button. This button has been physically disabled; with the use of shrink tubing. The reason for this is when fully depressed it will deactivate the transmitter box and disable the RF system. Pressing the E-Stop will not cause the monitor to stop any function currently being completed. This would not be a desirable condition under an emergency fire situation. On the right side of the transmitter is the power on switch and the transmitter enable button. In order for the transmitter to function the following is required:



Transmitter – Belly Pack (Configuration may vary)

- 3.1. The battery must have a charge and be installed in the transmitter, "belly pack".
- 3.2. The Power On switch must be in the **I** (ON) position on the transmitter (rotate clockwise). A short signal will sound followed by a self-test routine.
- 3.3. Wait for the second busser signal (approximately 3 seconds) to confirm that the self-test was successful.

- 3.4. The green LED on the controller will flash, indicating that the transmitter is working and ready to use.
- 3.5. The E-Stop button must be pulled all the way out on the transmitter. (Shipped Disabled Position)
- 3.6. The green enable button must be pressed and released to enable the transmitter.
- 3.7. The transmitter must be in range of the receiver.
- 3.8. There are two indicator LED's on the belly pack. The red LED gives an indication for the batter status. If the LED is on, the battery has a charge. If the LED is off, the battery needs charged. The green LED flashes quickly when the E-Stop button is fully depressed. When the button in not fully depressed, the green LED flashes slower. This is not an indication that the transmitter and receiver are communicating.

4. The handheld has the following operations that can control the monitor. Those being nozzle straight/fog, monitor up/down, monitor left/right, water valve open/close, auxiliary on/off, and oscillate on. Momentarily press right or left button to disengage oscillation sequence. A selector switch is located on the top left on the handheld for selection between monitors 1 and 2. On the top of the transmitter is the E-Stop button. When the E-Stop is fully depressed, this will deactivate the transmitter, disable the RF system, and turn the transmitter off. Pressing the E-Stop will not cause the monitor to stop any function currently being completed. On the right side of the transmitter is the green “Power On/ Enable” button. In order for the transmitter to function, the following is required:



Transmitter – Handheld

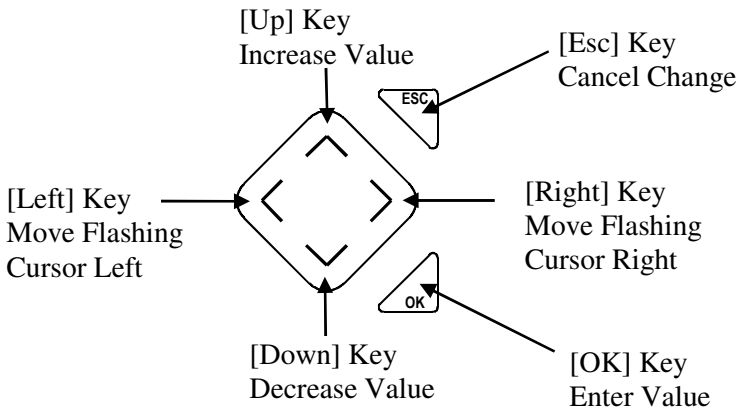
- 4.1. The battery must have a charge and be installed in the transmitter. Battery status can be seen in the lower right corner of the LCD screen.
- 4.2. The green “Power On/ Enable” button must be pressed. A short self-test routine will be performed and communication will be established with the receiver. An LED will illuminate Red and Green on the front of the transmitter during this process.
- 4.3. Wait for the LED to change to flashing Green, (approximately 3 seconds) to confirm the self-test was successful and that the battery has sufficient charge.
- 4.4. The green “Power On/ Enable” button must be pressed a second time for the transmitter to begin transmitting signals to the receiver.
- 4.5. The transmitter must be in range of the receiver.

It is generally advised to install a freshly charged battery into the transmitter immediately prior to use. This will insure maximum performance life when the transmitter is in use. Alternatively, a local protocol can be established to insure that a charged battery is in place as needed.

**NOTE: IF THE TRANSMITTER IS OUT OF RANGE OF THE RECEIVER, THERE IS NO INDICATION ON THE TRANSMITTER OF THIS STATE. THE RECEIVER WILL HOWEVER, DISABLE ITSELF AND THE TRANSMITTER WILL NEED TO BE BROUGHT BACK INTO RANGE AND RE-ENABLED, BY PRESSING THE GREEN BUTTON ON THE RIGHT SIDE OF THE TRANSMITTER BEFORE IT WILL OPERATE A MONITOR AGAIN.**

## IV RECEIVER PLC

### Keypad for MicroLogix 1400



- Before going through the setup instructions check that the connections between all boxes have been completed.
- No data can be changed in display 1.
- The rest of the displays are for setting up the RF system.
- Data can be changed at the cursor location by using the [UP] key to increase the value or [DOWN] key to decrease the value.
- Use the [Right] or [Left] arrow to move the cursor accordingly.
- To enter the data and move to the next screen press the [OK] key. The data that is displayed will be entered.
- To cancel any data changes press the [ESC] key. Press [ESC] key again and the program will go back to the first screen.
- Refer to Section V for more detailed information on all displays.

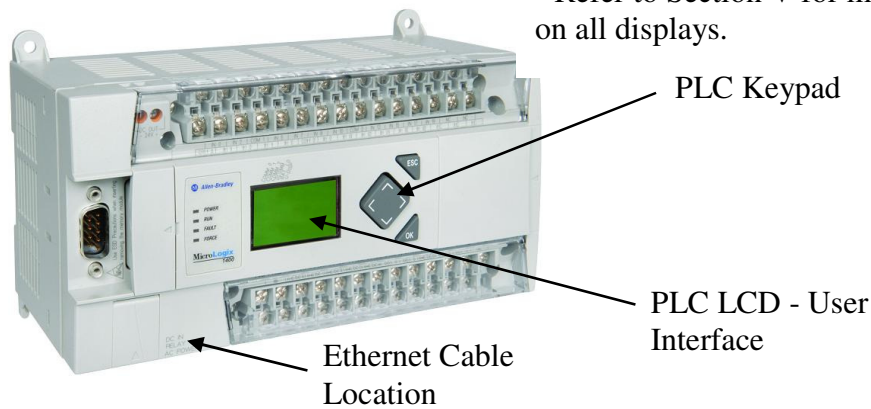


Fig 1 - Allen Bradley MicroLogix 1400 PLC Controller

## V SETUP INSTRUCTIONS

1. Open the receiver panel and locate the user interface/LCD Screen.

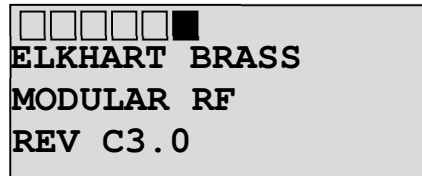


Fig. 1.1 – LCD Screen - Default Screen at Power Up

2. Press [OK] and the next screen will appear (Fig. 2.1). Input the number of monitors that will be controlled by the transmitter unit (Belly Pack max of nine, handheld max of two). To change the value use the diamond shaped buttons [UP] to increase or [DOWN] to decrease. Press [OK] to enter the change, which will also move the program on to the next screen.

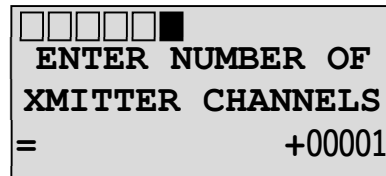


Fig. 2.1 – Monitor system number

3. The next screen will ask for the local address that will be operated by the number 1 on the selector switch. Enter the last two digits of the IP address, which is the local address for this monitor. Use the arrow keys, described in Section III, Fig. 1, to navigate through the numeric positions and press the [OK] to enter the value.

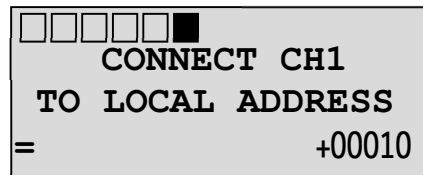


Fig. 3.1 – Selecting the monitor that channel 1 will control

Repeat this step for the remaining channels. After entering all local addresses for each channel, the main screen will be displayed. Check all channels for correct functionality to the correct monitor. If all monitors function correctly clean both ground-joint surfaces of body and cover before closing to avoid explosion. Dirt or foreign material must not accumulate on flat ground joint surfaces. Surfaces must seat fully against each other to provide a proper explosion proof seal. Close the receiver panel and tighten all cover bolts to 35-40 ft.-lbs. Refer to Crouse-Hinds document IF1676 for more information.

 **IMPORTANT: All PLCs must have a unique IP address in order for the network to function correctly. It is recommended documenting all used IP addresses for future reference and to help avoid confusion.**



## VI SPECIFICATIONS

### General Specs

- Input Power 24 VDC
- Electrical Load 0.5 AMPS MAX
- Operation Time 20 hrs. continuous operation
- Typical operating range 100m. (328 ft.) approximate
- Frequency Varies by destination requirements
- Temperature Range -11°F to +158°F (-25°C to +70°C) Receiver & Belly pack  
-4°F to +158°F (-20°C to +70°C) Handheld
- Weight 60 LBS (Receiver)  
6 LBS (Belly Pack)  
2 LBS (Handheld)

## VII MAINTENANCE

### Monthly Inspection and Maintenance

1. Check all terminal blocks and connections for being properly taut to 4.5 – 7.1 in-lbs (0.508 – 0.802 Nm).
2. Check all contact blocks and operators for functionality. If there are loose connections tighten them. If a contact block is not functioning properly, replace it.
3. Check for proper operation of overall system. Please refer to the Troubleshooting section if you are experiencing problems.

## VIII TROUBLESHOOTING

<b>RF SYSTEM</b>	
<b>Symptom</b>	<b>Solution</b>
Receiver nor PLC has power	<ul style="list-style-type: none"> <li>• Check for 24VDC at the receiver box terminal strip (51 = +24VDC)(52 = 0VDC)</li> <li>• Check that the OCP (Operator Control Panel) is turned on</li> <li>• Check the OCP 24VDC power supply</li> <li>• Check that all wiring connections have been made correctly and are secured</li> </ul>
Transmitter not controlling any Monitor	<ul style="list-style-type: none"> <li>• Verify that all OCPs have power</li> <li>• Verify that the transmitter Red battery power LED is on (Belly Pack)</li> <li>• Verify that the transmitter Green battery power LED is on (Handheld)</li> <li>• Verify that the transmitter Green status LED is flashing</li> <li>• Verify that the green button has been pressed after the green status LED is flashing</li> <li>• Verify that all network connections are in place</li> </ul>

	<ul style="list-style-type: none"> <li>• Verify that there is a CAT5 or CAT6 cable from the receiver PLC to the OCP managed switch</li> <li>• Cycle through the receiver PLC and verify that the correct settings have been entered and saved</li> <li>• Ethernet cable is positioned in a port on the front of the managed switch and not the top</li> </ul>
Transmitter Red power on LED is not on (Belly Pack)	<ul style="list-style-type: none"> <li>• Check that a battery is installed in the transmitter and has a charge to it</li> <li>• Verify that the Power On switch is in fact in the On position</li> </ul>
Transmitter Green LED is flashing slowly	<ul style="list-style-type: none"> <li>• Verify that the E-Stop button is not pressed</li> <li>• Verify that the antenna is mounted correctly.</li> <li>• Verify that the transmitter is in range of the receiver</li> <li>• The Enable button has been pressed</li> </ul>
Transmitter LED is flashing Red and will not start flashing green (Handheld)	<ul style="list-style-type: none"> <li>• Check that a battery is installed in the transmitter and is charged.</li> <li>• Verify that the Power ON has in fact been pressed</li> </ul>
LCD screen Flashing IP CONFLICT MAC ADDR = #####	<ul style="list-style-type: none"> <li>• Follow the Set Up instructions and check for a duplicate IP address in the network.</li> </ul>
Transmitter does not control all the monitors in the system	<ul style="list-style-type: none"> <li>• Verify the IP addressing for all the monitors is correct in the RF PLC</li> <li>• Verify that the transmitter is in range of the receiver antenna</li> </ul>

**Any problems that cannot be fixed/solved with this troubleshooting guide should be taken to your Elkhart Brass Representative to get further information.**



**WARNING: Do not attempt to disconnect or work on any electrical equipment in this system unless power is removed or the area is known to be non-hazardous.**

