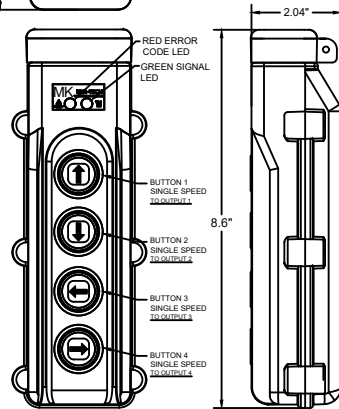
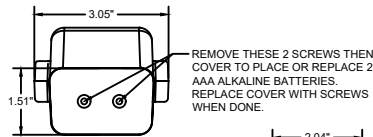


TRANSMITTER ERROR CODE CHART

| ERROR CODE | PROBABLE CAUSE |
|------------|----------------------------|
| 1 | TRANSMITTER LOW BATTERY |
| 2 | FAULTY OR MISSING OUTPUT 1 |
| 3 | FAULTY OR MISSING OUTPUT 2 |
| 4 | FAULTY OR MISSING OUTPUT 3 |
| 5 | FAULTY OR MISSING OUTPUT 4 |

ERROR CODE NUMBER IS THE NUMBER OF RED LED BLINKS BETWEEN EVERY PAUSE.



P/N: 3A5504A
TRANSMITTER, MK4

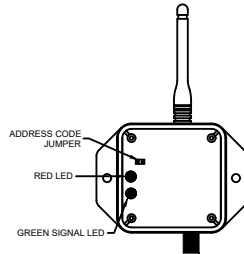


FIG. 1: RECEIVER WITH COVER REMOVED

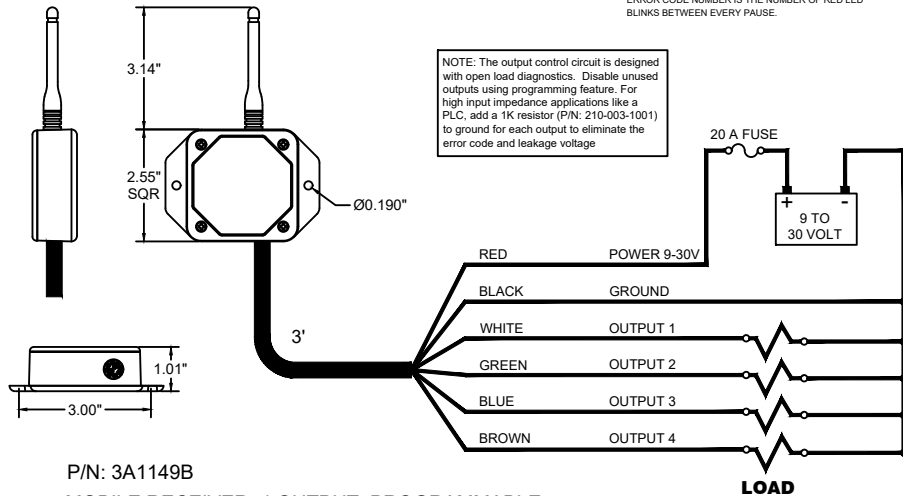
RECEIVER ERROR CODE CHART

| ERROR CODE | PROBABLE CAUSE |
|------------|----------------------------|
| 1 | NO RF COMMUNICATION LINK |
| 2 | FAULTY OR MISSING OUTPUT 1 |
| 3 | FAULTY OR MISSING OUTPUT 2 |
| 4 | FAULTY OR MISSING OUTPUT 3 |
| 5 | FAULTY OR MISSING OUTPUT 4 |

ERROR CODE NUMBER IS THE NUMBER OF RED LED BLINKS BETWEEN EVERY PAUSE.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by Kia-Tech will void the user's authority to operate the equipment.

NOTE: The output control circuit is designed with open load diagnostics. Disable unused outputs using programming feature. For high input impedance applications like a PLC, add a 1k resistor (P/N: 210-003-1001) to ground for each output to eliminate the error code and leakage voltage



P/N: 3A1149B
MOBILE RECEIVER, 4 OUTPUT, PROGRAMMABLE

OPERATION

- Press any button to begin operation. This will turn on the transmitter and turn on the selected output at the same time. The transmitter remains on for an additional 2 minutes after a button is released and then turns off automatically along with any outputs that are on.
- There are red and green LEDs both on the keypad of the transmitter and inside the receiver case. The green LED will blink 2 times per second when the transmitter and receiver are communicating. It will blink 1 time per second if there is no communication (i.e. - no power to the receiver)
- The transmitter's red LED blinks 1 time per second if the batteries are low and need to be replaced. The transmitter's red LED will also blink to indicate system errors. For example, 2 blinks and a pause means that RELAY 1 has a problem (possibly a relay fault). Three blinks and a pause means that RELAY 2 has a problem and so on. See error code chart for a list of all error codes.

SYNCHRONIZING TRANSMITTER AND RECEIVER

Each transmitter and receiver pair is synchronized together at the factory. If a new transmitter is needed, synchronizing is required. Refer to Figure 1 and use the following procedure:

- Make sure both the transmitter and receiver are off. Remove the receiver's cover
- With the transmitter off, press and hold BUTTON 1 for more than 20 seconds.
- The transmitter's LEDs will blink at this point. Release the button.
- Turn on the receiver. Wait until the green LED has stopped blinking and the red LED starts to blink. Then refer to Fig. 1 and place a jumper across the address code jumper inside the receiver for at least 4 seconds. The green LED will go steady inside the receiver.
- When ID is taught, the green LED will blink in the receiver and on the transmitter. Remove the jumper across the address code jumper in the receiver.
- Teach complete. Replace the transmitter and receiver cover.

OUTPUT CONFIGURATION PROGRAMMING:

Use procedure below to program receiver 3A1149B to behave as desired. One of the following transmitters must be used to program the receiver: 3A1146A, 3A1147A, 3A4752A, 3A4753A, 3A4754A, 3A4755A, 3A4759A, 3A475AA, 3A475BA, OR 3A475CA.

- Turn the receiver off. Turn the transmitter on (press and hold POWER until both LEDs turn on, then release)
- Press and hold 1, 4, and 5/8 and release. Red LED should be blinking on the transmitter
- Turn the receiver on. **To prevent injury or accident, please be aware that any loads connected to the receiver may be cycled on and off during the programming process and should be disconnected first. The preferred method is to program the outputs before installation.**
- Are any outputs to be latched (push on/push off)? If yes, continue. If no, skip to step 6
- One at a time, press and hold each button 1-4 corresponding to output 1-4 that is to be latched, until the green LED goes on, then off
- Press POWER briefly. The receiver red LED should blink 2 times, indicating acceptance
- Are any outputs to be disabled (no output and no error code)? If yes, continue, if no, skip to step 9
- One at a time, press and hold each button 1-4 corresponding to output 1-4 that is to be disabled, until the green LED goes on, then off
- Press POWER briefly. The receiver red LED should blink 2 times, indicating acceptance
- Is it desired to use the pump or e-stop functionality (see descriptions below)? If yes, continue, if no, skip to step 15
- To engage the pump functionality, press button 1 until the green LED goes on, then off. Alternatively, to engage the e-stop functionality, press button 2 until the green LED goes on, then off
- Press POWER briefly. The receiver red LED should blink 2 times, indicating acceptance
- If e-stop functionality was chosen, skip to step 16. If pump functionality was chosen, continue
- One at a time, press and hold each button 1-3 corresponding to output 1-3 that is to be associated with the pump output, until the green LED goes on, then off
- Press POWER briefly. The receiver red LED should blink 2 times, indicating acceptance
- Turn receiver off, then on again. Programming complete

NOTES

- When using Pump or E-Stop functionality, do not disable output 4
- Pump functionality: output 4 will turn on with any outputs that have been associated with it
- E-stop functionality: output 4 will be on as long as the transmitter is on. If the transmitter is turned off, POWER is pressed, or it goes out of range, output 4 will go off along with all latched outputs. Turn the transmitter back on and re-engage outputs to continue
- If 2 blinks after each sequence is not seen as described above, the programming was not accepted for that section. Start from the beginning and go slowly. Keep a distance of 2-3 feet from the receiver when programming

CLONING TRANSMITTERS

WARNING! - ONLY ONE TRANSMITTER CAN BE ON AT A TIME, THEY CANNOT BE USED SIMULTANEOUSLY - use with CAUTION!

Occasionally, it is desirable to have more than one transmitter work with a single receiver. This is accomplished by a process called cloning. Cloning allows an additional transmitter (B) to have the same ID code as the original transmitter (A). If this feature is desired, use the following procedure:

- Make sure both transmitters and the receiver are off.
- On Transmitter A, press and hold BUTTON 1 for more than 20 seconds until both LEDs start blinking then release the buttons.
- On Transmitter B, press and hold BUTTON 2 for more than 20 seconds until both LEDs start blinking then release the button.
- Wait for few seconds until the green LED starts to blink on transmitter A and transmitter B turns off.
- Synchronize one of the transmitters to the receiver using SYNCHRONIZING TRANSMITTER AND RECEIVER instructions above.

If the cloning feature has been invoked and is no longer desired, the ID code of one of the transmitters needs to be changed. This will unclone the transmitters. If this is desired, use the following Change ID procedure:

- Make sure the receiver and transmitter are OFF.
- On the transmitter, hold buttons 1 and 2 for 30 seconds. The LEDs will start to toggle.
- Press any button again to select a new ID.
- Uncloning complete.
- Follow the SYNCHRONIZING TRANSMITTER AND RECEIVER procedure above to link the uncloned transmitter to a new receiver.

SELECTING A SET OF HOP CHANNELS

There are 15 sets of 8 channels which are randomly selected from 24 channels. The user can choose a specific set if desired.

This can be useful if multiple systems are used in close proximity. Then it can be ensured that each system has different channels it communicates on. To select a specific set, use the following procedure:

- Make sure the receiver and transmitter are OFF.
 - On the transmitter, hold buttons 1 and 2 for 20 seconds. The red LED will blink and the green LED will be steady ON, release buttons. Note: If buttons are held for 30 seconds transmitter will go into Change ID mode.
 - The Red LED blinking one time between each pause means the first set of hops has been selected, by pressing button 1 the next set is selected and the Red LED will blink a number of times equal to the set of hops that has been selected.
 - To save the selected hopping set, press button 2.
- Follow the SYNCHRONIZING TRANSMITTER AND RECEIVER procedure above to link the transmitter to the receiver using the selected hopping set.

SPECIFICATIONS

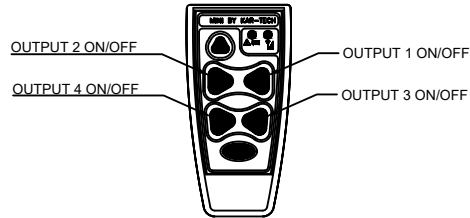
- RF: 900MHz FHSS 10mW
- Temperature: Receiver: -40 to +85°C, Transmitter: -20 to 60°C
- Output Rating: 5A max. each sourcing, 20A system max
- Power transmitter: two AAA Alkaline batteries
- Battery life: 30-40 hours continuous

| CAD DRAWING DO NOT REVISE MANUALLY | | | | | | IMPLIED TOLERANCE | |
|------------------------------------|-------|----------|---------|----------|--------------|-------------------|------------|
| SCALE | DRAWN | DATE | CHECKED | APPROVED | DRAWING NO. | XX | ± .1 |
| FULL | BF | 10-01-21 | | | 3A-550-4-A-3 | XX | ± .06 |
| | | | | | | XX | ± .015 |
| | | | | | | XX | ± 1/8 |
| | | | | | | ANGULAR | ± 0.5 deg. |
| MK4 MOBILE CONTROL SYSTEM | | | | | | | |
| COMPANY/DEPT | | | | | | | |

OUTPUT PROGRAMMING EXAMPLES

(3A1146A SHOWN)

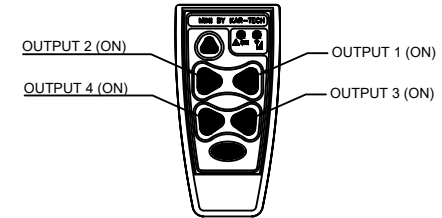
FOUR LATCHED OUTPUTS



PROGRAMMING PROCEDURE FOR ABOVE CONFIGURATION:

1. Turn the receiver off. Turn the transmitter on (press and hold POWER until both LEDs turn on, then release)
2. Press and hold 1, 4, and 5 and release. Red LED should be blinking on the transmitter
3. Turn the receiver on. **To prevent injury or accident, please be aware that any loads connected to the receiver may be cycled on and off during the programming process and should be disconnected first.**
4. Press button 1 to make output 1 latched. Repeat for buttons 2, 3, and 4.
5. Press POWER briefly to exit latched output programming.
6. Press POWER briefly to exit disabled output programming.
7. Press POWER briefly to exit PUMP/E-STOP output programming.
8. Turn receiver off, then back on.
9. Programming complete. Outputs 1, 2, 3, and 4 are latched. PUMP and E-STOP are not used.

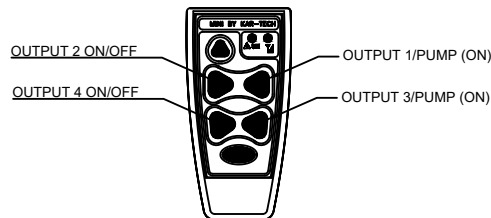
FOUR MOMENTARY OUTPUTS w/E-STOP



PROGRAMMING PROCEDURE FOR ABOVE CONFIGURATION:

1. Turn the receiver off. Turn the transmitter on (press and hold POWER until both LEDs turn on, then release)
2. Press and hold 1, 4, and 5 and release. Red LED should be blinking on the transmitter
3. Turn the receiver on. **To prevent injury or accident, please be aware that any loads connected to the receiver may be cycled on and off during the programming process and should be disconnected first.**
4. Press POWER briefly to exit latched output programming.
5. Press POWER briefly to exit disabled output programming.
6. Press button 2 to enable E-STOP.
7. Press POWER briefly to exit PUMP/E-STOP output programming.
8. Turn receiver off, then back on.
9. Programming complete. Outputs 1, 2, 3, and 4 are momentary. PUMP output is not used. E-STOP is enabled.

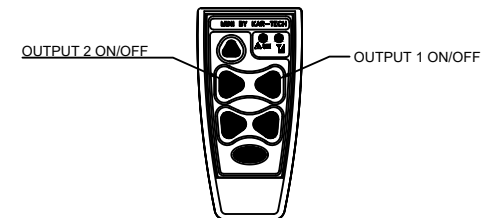
TWO LATCHED OUTPUTS, TWO MOMENTARY OUTPUTS w/ PUMP



PROGRAMMING PROCEDURE FOR ABOVE CONFIGURATION:

1. Turn the receiver off. Turn the transmitter on (press and hold POWER until both LEDs turn on, then release)
2. Press and hold 1, 4, and 5 and release. Red LED should be blinking on the transmitter
3. Turn the receiver on. **To prevent injury or accident, please be aware that any loads connected to the receiver may be cycled on and off during the programming process and should be disconnected first.**
4. Press button 2 to make output 2 latched. Repeat for button 4.
5. Press POWER briefly to exit latched output programming.
6. Press POWER briefly to exit disabled output programming.
7. Press button 1 to enable PUMP output.
8. Press POWER briefly to move on to PUMP output selection.
9. Press button 1 to associate output 1 with the PUMP output. Repeat for button 3.
10. Press POWER briefly to exit PUMP/E-STOP output programming.
11. Turn receiver off, then back on.
12. Programming complete. Outputs 2 and 4 are latched. Outputs 1 and 3 are momentary, and activate the PUMP output. E-STOP is not used.

TWO LATCHED OUTPUTS, TWO DISABLED OUTPUTS, E-STOP



PROGRAMMING PROCEDURE FOR ABOVE CONFIGURATION:

1. Turn the receiver off. Turn the transmitter on (press and hold POWER until both LEDs turn on, then release)
2. Press and hold 1, 4, and 5 and release. Red LED should be blinking on the transmitter
3. Turn the receiver on. **To prevent injury or accident, please be aware that any loads connected to the receiver may be cycled on and off during the programming process and should be disconnected first.**
4. Press button 1 to make output 1 latched. Repeat for button 2.
5. Press POWER briefly to exit latched output programming.
6. Press button 3 to disable output 3. Repeat for button 4.
7. Press POWER briefly to exit disabled output programming.
8. Press button 2 to enable E-STOP.
9. Press POWER briefly to exit PUMP/E-STOP output programming.
10. Turn receiver off, then back on.
11. Programming complete. Outputs 1 and 2 are latched. Outputs 3 and 4 are disabled. PUMP output is not used. E-STOP is enabled.