

KRAMBLE INDUSTRIES INC.

8-Channel Controller S7 2.4GHz

Installation and Operating Instructions

The 8-Channel Controller is designed to provide the ultimate in convenience and safety to perform tasks remotely. It is a 12VDC radio frequency (RF) controlled device that allows operation of a gate, chute, solenoid, etc. with a common ground from a handheld transmitter operated remotely. The Transmitter, which operates at 2.4 GHz, transmits encoded information to the Receiver, which then decodes the information and performs the desired function. The Transmitter and Receiver are designed to operate within 4000' but actual range is dependent on operating environment.

Features:

- Simple design with quality engineering
- Eight double-action channels for a total of 16 single-ended outputs
- Automotive output drivers capable of continuous 5A output with built-in overcurrent and overtemperature protection
- Useful for resistive, inductive, and capacitive loads
- Protected against reverse-battery connection
- Low voltage operation for cold cranking situations
- Momentary or Latched operation selectable on the handheld transmitter
- 2xAA-type transmitter battery
- Multiple transmitters can operate a single receiver
- Multiple receivers can be operated by a single transmitter

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Specifications

Transmitter

Power:	2xAA batteries
RF Frequency:	2.4GHz
Modulation:	O-QPSK
Indication:	Multicolour LED
Case Size:	7.2" x 3.7" x 1.3"
Range:	4000+ feet (depending on environment)
Antenna:	Internal
Functions:	17 (Control of 16 outputs + Stop)

Receiver

Power In:	12VDC
Power Output:	12VDC @ 5 amps (each output)
Standby:	30mA
Power Input Wiring:	3' 20-gauge wire
Output Wiring:	3' 20-gauge wire
Case Size:	6.1" x 2.7" x 2.4"
Antenna:	Internal

FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

ISED

This device complies with ISED license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR de ISDE applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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Installation Instructions

Connecting Power to the Receiver

Using sufficiently heavy gauge wire, (not included), connect +12V and Ground wires to the Power Input wires as marked. The polarity must be as follows: +12V on the BLACK wire, and GROUND on the GREEN wire. Power may be supplied from the fused side of the ACCessories on the ignition switch so that the Receiver is only powered while the vehicle ignition key is on or alternatively, connected using an inline fuse (10 Amp recommended) directly to battery power.

Connecting the Outputs

The 8-Channel Controller is designed to operate 12VDC systems that have a common ground connection. Connect the channel output wires to the desired electrical drivers. The sixteen output wires are factory marked with numbers and are connected to the output drivers as follows:

- Channel 1: Wires 1, 2
- Channel 2: Wires 3, 4
- Channel 3: Wires 5, 6
- Channel 4: Wires 7, 8
- Channel 5: Wires 9, 10
- Channel 6: Wires 11, 12
- Channel 7: Wires 13, 14
- Channel 8: Wires 15, 16

Each channel can be used to operate a bidirectional device such as a double-action solenoid valve, or can be used as separate single-device drivers. In latched mode, however, only one output per channel can be active at a time.

If a bidirectional driver connected to a channel operates in the wrong direction when activated, simply swap the channel output wires.

Clamp diodes for inductive loads are built into the 8-Channel Controller. External clamp diodes are unnecessary.

NOTE: If there is a second external control on a driver, it is recommended that diodes be installed to protect the equipment.

General Operation

Receiver

The 8-Channel Controller is an always-on device. Anytime it is powered, it will be ready to receive signals from any matched handheld transmitter. Switching the operating mode of each channel between Momentary and Latched can be performed on the handheld transmitter (see Transmitter below).

Each 12-volt output is limited to 5 amps of load current via the current sensing built into the output drivers. If this load current is exceeded for too long, the receiver will automatically shut that output off and keep it off for 60 seconds to allow the driver to cool. After that 60 second period, that output can be used again.

The receiver is matched to a transmitter by “learning” the transmitter’s unique security code so that the receiver will accept commands from that transmitter. The security code is provided to prevent unwanted operation of the Receiver by other devices. A newly-purchased system already has its transmitter matched to the receiver. It is also possible to un-pair all matches transmitters if desired.

To match an additional transmitter to a receiver, open the receiver unit and locate the pushbutton switch marked “LEARN”. Press that button and release it when the yellow near to it lights up. Press any button on the transmitter to send a signal and the receiver will read the transmitter’s security code and store it in memory. The LEARN light will flash three times to indicate that the transmitter has been successfully learned, and the receiver will return to normal operating mode. Up to eight transmitters can be learned by a receiver. If eight transmitters have already been learned by a receiver and it is instructed to learn another transmitter, the oldest-learned transmitter’s security code will be overwritten and forgotten.

To un-pair all matched transmitters, open the receiver unit and press and hold the pushbutton switch marked “LEARN” until the nearby yellow LED begins to rapidly flash. Release the button, and the light will flash more slowly for three seconds, then turn off to indicate that the un-pair operation has succeeded. If the LEARN button is pressed while the LEARN light is slowly flashing, the un-pair operation is aborted and the receiver retains the stored transmitter security codes.

Transmitter

To use the handheld transmitter, first place it in standby mode by sliding the bottom slide switch to right. When this switch is set to Off, the transmitter will not draw power from the batteries and pressing the buttons will have no effect.

The handheld transmitter has buttons marked with up and down arrows for each channel. The up arrow button controls the first output wire of that channel, and the down arrow button

controls the second wire. For example, the up arrow on channel 3 operates wire #5, and the down arrow for channel 3 operates wire #6.

By default all 8 channels are set to Momentary mode, meaning that the channel will only drive its output while the user is holding the button on the transmitter. In Latched mode pressing a channel button will activate an output, and the output will remain active after the button is released. To deactivate the output, press the Stop button in the centre of the transmitter.

To switch a channel between Momentary and Latched modes, simultaneously press and hold the Stop button and one of that channel's buttons until the indicator LED stops flashing yellow. The transmitter will indicate that the channel has been set to Latched mode by flashing the indicator LED blue twice, then light blue twice. It will indicate that the channel has been set to Momentary mode by only flashing the indicator LED blue twice.

When operating a channel in momentary mode, the handheld transmitter will light its indicator LED in blue. When operating a channel in latched mode, the handheld transmitter will light its indicator LED in light blue.

The transmitter is powered by two AA-type batteries that can be replaced via a sliding battery cover on the back of the transmitter.

Think Safety!
**Do not install or operate where damage
to persons or property may occur**

Limited Warranty

Customer satisfaction is a fundamental policy at Kramble Industries Inc. All customers can rely upon and expect to receive prompt, efficient and courteous service on all Kramble Industries Inc. manufactured equipment from each and every employee of the organization.

Kramble Industries Inc. with its office at 20-3924 Brodsky, Saskatoon, SK warrants:

To the Original Purchaser/User, each product manufactured by Kramble Industries Inc. to be free from defective material and workmanship, under normal use and service, for a period of 12 months subject to conditions outlined below. The obligation under this warranty is limited to repair, or replacement with a similar genuine company part, for any part of the product of the company's manufacture that is found to be defective.

Warranty period begins the day of purchase. During the first (1st) through the twelfth (12th) month, Kramble will furnish without charge, F.O.B. its plant, a similar genuine part to replace any part of a product of the company's manufacture which proves to be defective, in normal use and service, during this time. Labor to install or repair such parts will be absorbed by Kramble Industries Inc. If this work is to be done other than Kramble personnel, prior approval must be given by Kramble Industries Inc. as to rate and time.

This warranty shall bind the company only as follows:

1. The warranty shall be limited to the repair or replacement of defective parts, all other damage, loss, cost or obligation and claim whatsoever, statutory or otherwise, are hereby waived by the original purchaser/user, and again, the warranty hereby given covers only those labor charges specifically authorized by the company in advance.
2. The warranty shall not apply to any failure, or damage incurred through neglect, lack of maintenance, misuse, abuse, accident, improper installation, re-designing of assemblies, ignorance, or through any other cause beyond the control of the company.
3. The warranty does not cover products of other manufacturers beyond such warranty as may be made by such manufacturer.
4. The warranty shall not apply to normal maintenance services, or to deterioration of appearance of items due to normal use and exposure.
5. The warranty shall not apply when the original purchaser/user has allowed repair and/or service work to be conducted on the product without authorization from the company.

IMPORTANT NOTE:

Before any warranty work is done, contact Kramble Industries Inc. for authorization. Failure to do so may result in denial of warranty.

Kramble Industries Inc. is not responsible or liable for indirect, special, or consequential damages arising out of or in connection with the use or performance of the product or other damage with respect to any economic loss, loss of property, loss of revenue or profit, or costs of removal, installation, or reinstallation..