

Re: Certification of Prince Transmitter
Model/PN: LH/VA3823
FCC ID: CB2VA3823
CANADA: to be provided

USER'S MANUAL
(PRELIMINARY)

The Vehicle User's Manual is preparation. The following material will be contained in the manual:

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. 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.

WARNING: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

On the subsequent pages are DRAFT materials that will be included in the User's/Service literature.

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GENERAL

This system provides the owner with vehicle information and an integrated HomeLink[®]. The HomeLink[®] portion of the circuitry is separate from the vehicle information section, except that the compass microprocessor controls the power to the HomeLink[®] section, and serially communicates to the HomeLink[®] microprocessor which switch has been pressed. All the following information refers to the HomeLink[®] part of the system.

Operational Description

This system gives the vehicle owner the ability to use a garage door opener (GDO) that is integral to the interior trim of the vehicle. The HomeLink[®] shall be capable of learning and remembering variables required to emulate three different GDO transmitters. In the learn mode of operation, the user selects one of three channels. The HomeLink[®] determines the frequency, data and, where applicable, the Rolling Code manufacturer of the original GDO transmitter (OT). The frequency and data stream or rolling algorithm parameters (created within the OT's Rolling Code guidelines) are then stored in non-volatile memory (NVM) for use in the transmit mode of operation. Once contained in memory, the HomeLink[®] shall activate the given receiver by repeating, at the proper frequency, either a fixed data stream or a hopping data stream created with the OT's Rolling Code algorithm.

HomeLink[®] Transmit Mode of Operation

If a selected channel has been previously trained, the HomeLink[®] shall operate in **transmit** mode. To operate the HomeLink[®] in the transmit mode, the user shall activate one of three transmit buttons. The Compass microprocessor shall determine which button has been activated and send the information serially to the HomeLink[®] microprocessor, which shall transmit appropriate data at the proper RF carrier frequency.

The VFD screen will display "Channel X Transmitting" and the indicator shall be **ON** continually during transmit mode. Where "X" is either a 1,2 or 3 corresponding to the channel being transmitted and the indicator is a dot on the VFD.

The VFD indicator shall rapidly blink (4Hz \pm 10%) for 2 \pm 10% seconds followed by continuous illumination during Rolling Code PWM transmissions.

The HomeLink[®] will continue in the transmit mode for twenty (20 \pm 10%) seconds before proceeding to the learning mode of operation.

HomeLink[®] Default Mode of Operation

If a selected channel has never been previously trained nor previously erased, the HomeLink[®] shall operate in **default** mode. To operate the HomeLink[®] in the default mode, the user shall activate one of three transmit buttons. The HomeLink[®] shall determine which button has been activated, and using a pre-determined identification code and frequency (see Appendix B for details) shall transmit such data with the VFD indicator continually on. The HomeLink[®] will continue in the default mode for twenty (20 \pm 10%) seconds before proceeding to the learning mode of operation.

HomeLink® Rolling Code Default Mode of Operation

The user places the HomeLink® in rolling code default mode by simultaneously holding down buttons one, two, and three for more than $30 \pm 10\%$ seconds. The VFD shall display "Channels Defaulted" and the indicator shall be off.

If buttons one, two and three are released while the VFD indicator is rapidly blinking (< 10 seconds), all three channels will be cleared of data. When one of these channels is subsequently activated, the device shall immediately enter the learn mode of operation.

To operate the HomeLink® unit in the rolling code default mode, the user shall activate one of the three transmit buttons. The HomeLink® unit shall determine which button has been activated and using a pre-determined code-hopping algorithm, bit period and frequency (see Appendix B for details) shall transmit such data with the VFD indicator rapidly blinking ($4\text{Hz} \pm 10\%$) for $2 \pm 10\%$ seconds followed by continuous illumination.

HomeLink® Learn Mode of Operation

The HomeLink® system can learn up to three (3) separate garage door opener (GDO) systems. To train a GDO transmitter to the HomeLink® system, the user shall complete the following steps:

- select one of three channels by selecting 1 of three transmit buttons. If more than one channel is selected at one time, the HomeLink® shall give the lowest numbered channel highest priority. For example if channel 2 and 3 are selected, channel 2 shall have the higher priority.
- hold a HomeLink® button for twenty ($20 \pm 10\%$) seconds at which time the learn mode shall be indicated. The HomeLink® shall be in learn mode only if the VFD displays "Channel X Training" and the indicator is blinking at a rate of $1\text{Hz} \pm 10\%$. (The HomeLink® shall immediately enter learn mode if the selected channel is determined to be clear of data). Where "X" is either a 1,2 or 3 corresponding to the channel being trained.
- hold the original GDO transmitter (O.T.) near the HomeLink®. The HomeLink® shall train when the OT is held within 1 inch, and shall not train if the OT is held more than 3 feet away from the unit. Once in learn mode, the training process will be complete in ≤ 90 seconds and shall be indicated by the VFD displaying "Channel X Trained" and rapidly blinking the indicator ($4\text{Hz} \pm 10\%$) 40 times. After completion the VFD indicator shall be off.
- the data containing the frequency of operation and security code information shall be stored in non-volatile memory (NVM).

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HomeLink® Clear Mode of Operation

The NVM of the HomeLink® can be completely erased by simultaneously holding down buttons one and three for more than $20 \pm 10\%$ seconds. Prior to the 20 seconds, the VFD shall display "Clearing Channels". Successful erasure of the memory shall be indicated by displaying "Channels Cleared" and rapidly blinking the indicator ($4\text{Hz} \pm 10\%$) 40 times.

- If buttons one and three are released while the VFD indicator is blinking rapidly (<10 seconds), all three channels shall be cleared of data. When one of these channels is subsequently activated, the device shall immediately enter **learn** mode of operation.
- If buttons one and three are continually activated for more than 10 seconds after the rapid blinking starts, the VFD shall display "Channels Defaulted" and the indicator shall be solid on. When one of these channels is subsequently activated, the device shall immediately enter **default** mode of operation.
- If buttons one, two, and three are continually activated for more than 10 seconds after the rapid blinking starts, the VFD indicator shall be off. When one of these channels is subsequently activated, the device shall immediately enter **rolling code default** mode of operation for that channel.

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