1. Introduction

NOVA HELIX is a range of single- and multichannel radio receivers incorporating secure code-hopping technology. The NOVA HELIX product line offers both link and master learning capabilities to provide the user with the utmost in reliability and security and the technology inherent in all NOVA HELIX receivers ensures that the functionality goes well beyond the scope of standard receivers, literally putting unsurpassed convenience at the user’s fingertips. In addition, the system supports backward compatibility with the NOVA range of transmitters, meaning that there is no need to purchase additional equipment if presently using one of NOVA.

2. Important safety instructions

1. All installation, repair and service work to the product must be done by a suitably qualified person.
2. Do not in any way modify the components of the system.
3. Do not install this product near sensitive electrical components.
4. Do not install the equipment in an explosive atmosphere: the presence of flammable gas or fumes is a very dangerous to safety.
5. Do not leave packing materials (plastic, polystyrene, etc.) within reach of children as these materials are potential sources of danger.
6. Dispose of all waste products like packing materials, according to local regulations.
7. Centurion Systems (Pty) Ltd does not accept any liability caused by improper use of the product, or for use other than that for which the automated system was intended.
8. This product was designed and built strictly for the use indicated in this documentation. Any other use, not expressly indicated here, could compromise the serviceability of the product and/or be a source of danger.
9. Anything not expressly specified in these instructions is not permitted. Please do not proceed with the installation until you have read and fully understood the safety instructions included in your product packaging. The safety instructions are also available on www.centurion.systems and may also be obtained by contacting Centurion Systems (Pty) Ltd on +27 860 236 879 (SA only).

3. Icons used in this guide

This icon indicates tips and other information that could be useful during the installation.

This icon denotes variations and other aspects that should be considered during installation.

4. General description

This operating manual describes the operation of the NOVA HELIX receivers.
1. The NOVA HELIX functionality allows for both “Master” learning and “Link” learning. Link learning is the learning process associated with fitting a link to the J1 jumper on the receiver to learn buttons into memory. Master learning, by contrast, uses a master button to place the receiver in Learn Mode (no links required) remotely.
2. Multichannel receivers support up to 15 unique output channels. (SmartSwitch II devices act as the additional physical outputs).
3. All receivers support the ability to disable the function jumppers, J1 and J2 for additional security.
4. All receivers support SmartSwitch II interfacing capability.
5. All receivers support the new time autoLearn feature.
6. Multichannel receivers support advanced channel mapping functionality due to demoLearn.
7. Multichannel receivers support sticky latch functionality.
8. Multichannel receivers support simultaneous channel activation functionality.
9. Multichannel receivers support beep-on-activation functionality.

5. Technical specifications

Technical Data

Multichannel Receiver

Operating frequency: 433.92MHz

Supply voltage: 12V – 24V DC

Quiescence current: 12V DC 11mA

Maximum current DC: 80mA

Operating temperature: -15°C – 50°C

Humidity: 0 – 90% (non-condensing)

Sensitivity: -115dB

Self-learning memory: 250 buttons

Receiver enclosure: UV-stabilised ABS

Current consumption: 30mA

6. Product identification

Multichannel receiver

7. Mounting the receiver

Multi-channel receiver

8. Terminal identification

Power supply 15V – 30V DC only

Relay Input 1 5V

Relay Input 2 12V

Relay Input 3 12V

Relay Input 4 12V

9. Learning the First Master

1. To learn the first transmitter button into the receiver, the receiver transmitter memory as well as the channel compartment related to the function being learnt, must be blank. A channel compartment is a memory space that stores all the transmitter buttons that activate the functionality associated with the channel for example activating a gate motor.

2. In the case of multichannel receivers, if a channel other than the first channel (default channel) is to be mastered, start by placing links on the required channel jumpers to select the channel operationally needed. This informs the receiver that a channel other than channel 1 is to be mastered.

10. Learning Additional Master Buttons

1. Press and hold the button that presently activates the device in question, for between 10 and 20 seconds. For example, if you want to add another transmitter to your garage door motor, press and hold the button that presently activates it. After 10 seconds, the receiver will provide a long beep to indicate that it has entered learning mode. The receiver will automatically exit Learn Mode after 10 seconds. During this time, only buttons on the master channel, or those associated with the master channel, will be learnt. While in Learn Mode the LED on the receiver will remain on.

2. Any additional remotes learned into the receiver using this method will automatically be granted master privileges. To demaster a button, please follow the steps in section 11.

3. Press and hold any remote buttons you wish to learn into the receiver for a minimum of three seconds, after which a double-beep will indicate successful learning.

4. Any button that is pressed while the receiver is in Learn Mode will be added by an additional 10 seconds from the time the button is released.

5. If no additional buttons are pressed within the 10 seconds learning period, the receiver will automatically exit Learn Mode. The exit is signalled by an extended single beep. The Status LED also switches off and resumes its responsibilities in normal mode.

11. Demastering Buttons

When a HELIX system is commissioned, all buttons learnt into the receiver are granted master privileges that receiver. From a security perspective, this is neither always desirable. To overcome the security issues, the system has the ability to ‘demaster’ remote buttons.

1. Press and hold the master button that is associated with the same functionality as the buttons that need to be demastered. The master button must be pressed for between 20 and 30 seconds.

2. After a long double-beep indicates that 20 seconds have elapsed, release the button. Ignore the single beep at 10 seconds.

3. The receiver will remain in Demastering Mode for a period of 10 seconds failing any additional button presses.

4. Press and hold the button you wish to demaster for a minimum of three seconds.

5. Any transmitter button which is pressed will be acknowledged with a short beep.

6. A short triple-beep acknowledges the demastering operation, but the button is only demastered once it is released.

7. If no additional buttons are pressed within the 10 seconds Demastering Period, the receiver will automatically exit demaster mode. This exit is signalled by an extended single beep. The Status LED also switches flashing and resumes its responsibilities in normal mode.

8. To determine whether a button has been demastered, note the behaviour of the Status LED when the button is pressed. A demastered button will turn the LED on while the button is being pressed.

12. Deleting Buttons

To delete transmitter buttons, follow the steps detailed below.

1. Follow the steps to enter Demastering Mode. For reference follow steps one through four in the Demastering Buttons section. The Demastering channel need not be the same as the channel associated with the button that must be deleted.

2. While in Demastering Mode, press and hold the button that must be deleted for between 10 and 30 seconds.

3. After holding down the button for 10 seconds, the receiver will emit a short beep.

4. After the short beep the button must be released.

5. The receiver indicates a successful deletion operation with four short beeps.

6. Once deleted, the system transitions back to Demastering Mode. Further buttons may be deleted following steps 2 through 7. Remember the system must remain in demastering mode to delete buttons.

7. If no additional buttons are pressed within the 10 seconds demastering period, the receiver will automatically exit demaster mode. This exit is signalled by an extended single beep. The Status LED also switches flashing and resumes its responsibilities in normal mode.
13. Link Learning
Link Learning is the learning process associated with fitting a plastic link over the pin 13 on the jumper to provide a path on the receiver in order to learn remote buttons into memory. Learning buttons using this method involves no other jumpers or pins attached to the receiver.

1. Fit the link J2 with power on the receiver. On multi-channel receivers, fit links on the channel jumpers to the pins on the remote that is required for remotes that are to be learned into the system.

2. If no channel jumpers are linked, the system defaults to learning everything.

3. When jumper J1 is fitted, the LED will turn on as per Master Learn Mode.

4. Press a new button to learn it into the system.

5. If the button is a new button, the LED will flash while the button is held down. Once the button is released, a short beep will confirm that the button has been learned into memory.

6. If the button is a demastered button, the LED will flash (4 milliseconds on/448 milliseconds off) to register that the button transmission is being received, and that the button is a demastered button.

7. When the demastered button is released, the receiver will complete the learning operation and remaster the button. A single beep signal will end the operation, confirming to the user that the button has been remastered. The LED will turn on again at the end of the operation.

8. If the link J1 is removed, the system will default to the first channel only.

Link Learn Remastering
1. To remaster a remote in this mode, start by entering Master Learn Mode.

2. Press a new button to learn it into the system.

3. If the entire memory must be erased (or the Settings Memory must be erased), then do not fit links to any of the channel jumpers.

14. Link Erase Mode
There are two primary types of erase that pertain to all the receiver variants.

Transmitter Memory Erase

- Settings Memory Erase

The procedure to perform the erase operation is documented below:

1. The procedure to perform the erase operation is documented below:

2. To bulk demaster remotes, follow the procedure highlighted below:

3. To confirm the bulk demastering operation, jumper J1 must be removed. If the jumper is not initially pressed, ensure that the jumper has then been removed, the bulk demastering operation is not executed. This is useful if the mode is enter accidentally and no buttons must automatically be demastered.

AutoLearn Mode
AutoLearn functionality allows the receiver to remain in Learn Mode for a maximum period of 7 days or until the system is automatically time-out. This is useful in cases where not all individual buttons have been pressed or remain remotes that enter into the receiver’s memory. Multi-channel receivers now support the ability to remaster buttons to channels that will either be learned into the system or released from it.

1. Channel compartments pertaining to the remote must be blank.

2. The system will default to channel 1, but only if the channel is blank.

3. If the link J1 and power on the receiver: One of two possible situations will result:

- The selected channel (set via the channel jumpers) is blank. In this case, the system enters the first channel, where the system will default to channel 1, but only if the channel is blank.

- The selected channel (set via the channel jumpers) is not blank. In this case, the system will demaster channel 1, then enter channel configuration mode. Whenever a button is recognized, the receiver will attempt to establish the button-to-functionality (channel) relationship. The transmitter that is used to establish the relationship is not learned into memory at this stage (although a button sent into memory may be learned into memory at any time after the button has been remastered).

4. To re-enable the jumper interface, repeat steps 1 through 4 again.

15. Output Configuration
Channel settings notify the user when a receiver output responds when it is activated. The output can be configured to act as a latching output, a periodic output, or any combination thereof. A latching output provides a required logic for an alarm or equivalent output functionality. Every button transaction associated with a latching output will toggle the current output state of the channel. When used to control multichannel receivers, channel settings are set on an output by output basis. To set the output for each channel, select the relevant jumper (channel jumper). For example: To set output 1, place a link on channel jumper C1, C2 and C3 for 35 seconds. This is a special feature on all receiver variants that allows the receiver to output an on/off signal which will either be a periodic output, a long delay or an on/off output, depending on the jumper setting. When jumper J2 is removed, both jumpers will be disabled and no output operation may take place on either output.

16. Advanced Features
Bulk Demastering
Since all remotes that are added to the receiver are always associated with master privileges, the Helix offers users a facility whereby certain groups of remotes, currently learnt into the receiver, can be demastered simultaneously. This is an important feature since having multiple masters might at times be considered a security risk.

To bulk demaster remotes, follow the procedure highlighted below:

1. Remaster all the buttons on the receiver.

2. If the receiver is a multi-channel receiver, place links on the channel jumpers.

3. If the link J1 across jumper J2 and the middle pin complete the erase operation.

4. The LED will flash 10 times to indicate that it is about to enter the erase operation complete.

5. After the LED has flashed 10 times, it will turn off. The procedure may still be altered by remastering power off to the receiver.

6. Remove the link across jumper J2 and the middle pin to complete the erase operation.

7. The LED will flash 10 times to indicate that the erase operation complete.

8. The property that differentiates the two erase operations is the state of the Transmitter Memory. If the memory is blank (i.e. buttons are learnt into memory), then the receiver will perform the Transmitter Memory erase operation. If, on the other hand, the Transmitter Memory is blank, then the Settings Memory erase operation is performed.

15. Remastering Buttons
If a button has been demastered, it can be remastered. There are two methods:

Link Learn Remastering
1. To remaster a remote, start by entering Link Learning Mode. For reference follow steps 1 and 2 in the Link Learning section.

2. To remaster buttons associated with a specific channel, fit the channel jumper Link Learning. With links fitted, only buttons associated with a selected channel can be remastered. All other buttons will remain on the receiver, but will not be processed.