

# INSTALLATION NOTES



## X-TWR INTERFACE Two Way Radio Transceiver

Product Part No. 106-462

- Ness Two Way Radio interface for Ness D8/D16 Deluxe and XCEL panels.
- Receives Two Way Radio Arm / Disarm / Panic / Aux / Low Batt signals from Ness TWR devices
- Spread spectrum frequency-hopping technology for improved security and range
- Supports multiple Ness TWR devices (up to the capacity of the control panel)
- Easy programming - enrol devices via the control panel + Prog link at the X-TWR
- Data interface to Ness D8/D16 panels

Compatible with



**D8x D16x DELUXE**



## INTRODUCTION

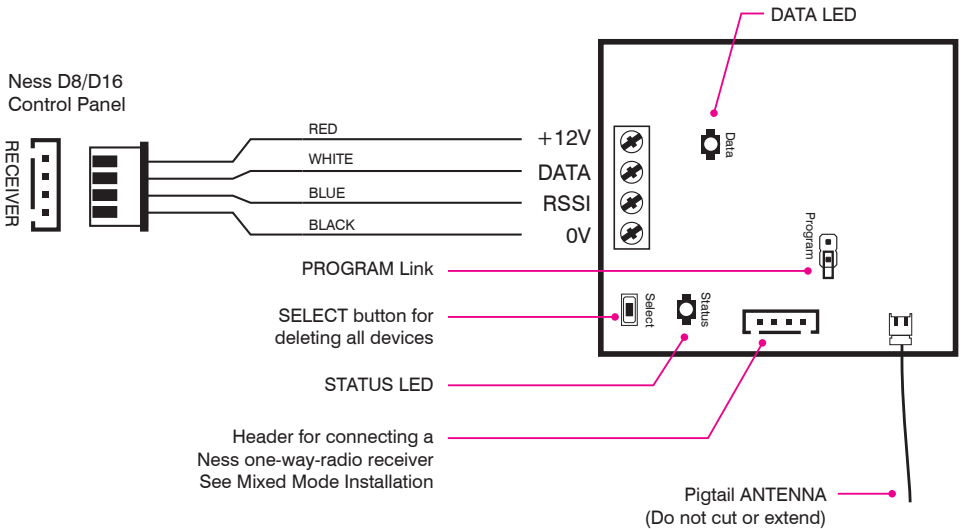
The Ness X-TWR Transceiver provides Two Way Radio functionality for Ness D8/D16 control panels for use with Ness TWR radio keys and devices.

Ness Two Way Radio devices employ spread spectrum frequency-hopping technology for improved security and range, also providing acknowledgement of signal with feedback from the transceiver.

The X-TWR supports up to 64 individual Ness TWR devices, up to the capacity of the control panel. For example when used with D16XCEL, up to 48 TWR radio keys and 16 TWR radio PIRs or other devices.

X-TWR also has an onboard socket for connection of a regular Ness one-way-radio receiver. This handy feature means you can upgrade to two-way-radio while retaining any existing one-way-radio devices.

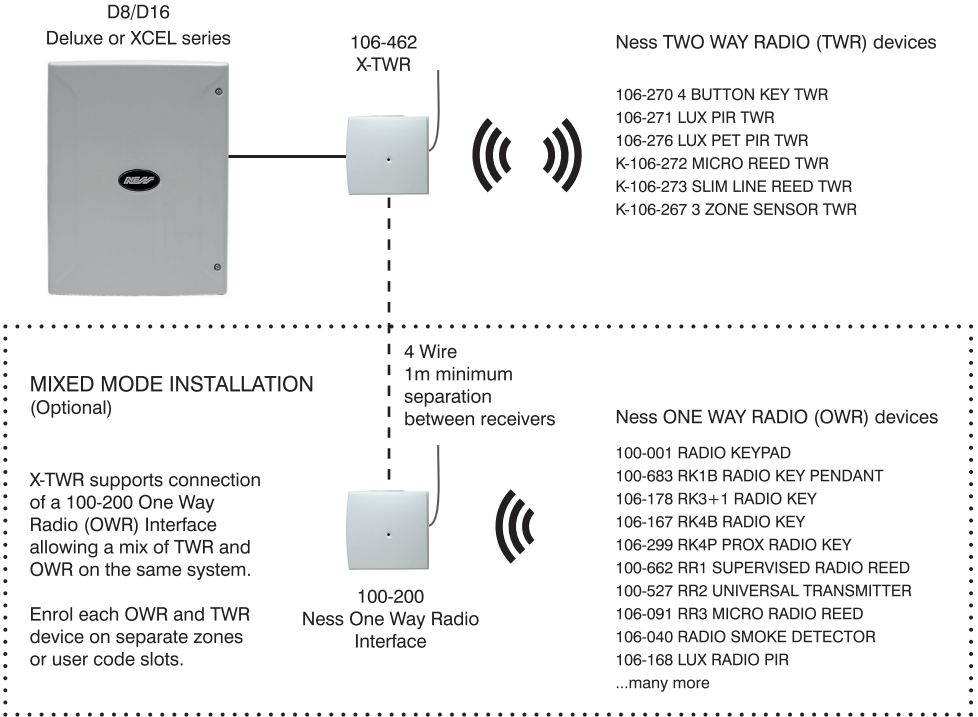
## COMPONENTS



## LEDS

LED	FLASH	MEANING
STATUS LED	One flash every 3 seconds	Normal Operating Mode
	Continuous Flash	Program Mode
	3 fast flashes	Valid Learn signal received
	5 fast flashes	All devices have been deleted (See: Select Button)
DATA LED	One flash	Sending data to the control panel

# SYSTEM OVERVIEW



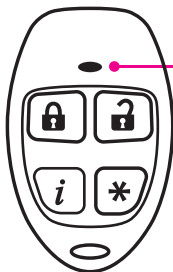
## OPERATION

### TWO WAY RADIO FEEDBACK

Rather than only sending a signal in one direction, Ness Two Way Radio devices are 'transceivers' and receive a feedback signal from the transceiver, providing acknowledgement of signal.

Note that X-TWR exchanges two way radio data with radio keys and devices however it does not 'know' the status of the D8/D16 control panel. Arm/Disarm feedback is normally provided by siren chirps and/or keypad beeps.

Example  
106-270 TWR Radio Key



After a button press...

RED LED means the signal has been received by the X-TWR and acknowledged

## PROGRAMMING

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### PROGRAM MODE



Link is ON

Program

### OPERATING MODE



Link if OFF or

'parked' on one pin

#### X-TWR Receiver Program Mode

- To enter program mode place the link on the Program pins.
- To exit program mode remove the link. Park the link on one pin to prevent losing it.

#### Automatic Program Exit

- If the program link is left on, X-TWR automatically returns to normal operating mode after 4 minutes of no activity of the SELECT button.  
To restart program mode, remove and refit the program link or briefly press the Select button.

## PROGRAMMING & ENROLLING OVERVIEW

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- Enrolling of TWR devices into a D8/D16 control panel is identical to traditional Ness one way radio programming. The only extra step is to first enrol the radio devices into the X-TWR transceiver.
- Once a device is enrolled in X-TWR it remains programmed until erased by deleting all X-TWR devices.
- Deleting a radio device in the control panel does not delete it from the X-TWR. Unused devices can remain in the X-TWR without affecting its operation.
- Deleting All Devices from X-TWR does not delete the devices from the control panel. The same radio devices once re-enrolled into the X-TWR will continue to work in the control panel.
- A radio device already enrolled in X-TWR can be programmed into the control panel without having to re-enrol it in the X-TWR.
- Radio devices can be either pre-enrolled into X-TWR or enrolled simultaneously with the control panel.

For example, if adding TWR to an existing D8/D16 system you could enrol a number of TWR devices into an X-TWR transceiver at your premises. Then on site, leave the X-TWR in normal operating mode (program link off) and just enrol the devices into the control panel.

Simultaneous programming method is described in the Programming Detail steps.

See Programming Detail, next pages.

## DELETE ALL DEVICES



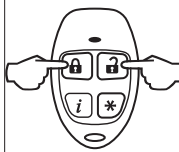



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To delete all devices and return X-TWR to factory default settings.

While in Program Mode, press and hold the Select button for at least 2 seconds. The Status LED will flash quickly 5 times to indicate successful default.









## PROGRAMMING DETAIL

### RADIO KEYS

STEP	DESCRIPTION	ACTION	DISPLAY	NOTE
<b>1</b> <b>CONTROL PANEL</b>	Setup the control panel to program a radio key. [Programming steps from the D8/D16 Deluxe and XCEL Installer Manual] <ol style="list-style-type: none"> <li>1 In Installer Program Mode, enter the option number for the user code which will become a radio code. (Example, enter P256E for user code 56).</li> <li>2 <b>KPX+</b> Press EXCLUDE E for Extra Options mode. (Exclude icon is on). <b>NAVIGATOR</b> Press Extra Code Options.</li> <li>3 <b>KPX+</b> Press 5E to enable that user code as a Radio Code. (Icon 5 is on). <b>NAVIGATOR</b> Press 5 - Radio Code.</li> <li>4 <b>KPX+</b> EXCLUDE E to exit Extra Options mode. (The Exclude icon is off). <b>NAVIGATOR</b> Press  to exit the Extra Options screen.</li> <li>5 <b>KPX+</b> Press 1E (The OK icon will turn ON to indicate ready to accept the Radio Key) <b>NAVIGATOR</b> Press </li> </ol> <p>If a code is already programmed the OK icon will not turn on and a warning beep will sound. To clear the code, press 0E to clear existing codes from the panel then go back to step 5.</p>			
<b>2</b> <b>X-TWR RECEIVER</b>	Fit the Program link.	 Program	 Fast flash	X-TWR Interface is ready to learn a new device and forward the device to the control panel.
<i>Handy Hint. Step 2 can be skipped if for some reason you need to re-enrol a device into the D8/D16 control panel. Once a device is enrolled in X-TWR it remains programmed until erased.</i>				
<b>3</b> <b>TWR RADIO KEY</b>	Send a Learn signal.  Press Arm/Disarm together		 3 flashes then Slow Flash	The radio key has been enrolled in the X-TWR and also has been sent to the control panel.
<b>4</b> <b>CONTROL PANEL</b>	Once the Radio Key is accepted by the control panel, the OK icon will turn off and the keypad will sound 3 beeps.  If the OK icon stays on and a warning beep sounds, the Radio Key is already assigned to another User Code and must be cleared from that User Code first.			
<b>5</b> <b>X-TWR RECEIVER</b>	Remove (park) the Program link.	 Program	 One flash every 3sec	X-TWR Interface is in normal run mode.

## PROGRAMMING DETAIL

### RADIO DEVICES to Zones

STEP	DESCRIPTION	ACTION	DISPLAY	NOTE
<b>1</b> <b>CONTROL PANEL</b>	Setup the control panel to program radio devices to zones.  [Programming steps from the D8/D16 Deluxe and XCEL Installer Manual] <ol style="list-style-type: none"> <li>Select a zone using P101E – P116E (options P109E–P116E apply to D16 only). If the zone already has a Radio Device programmed the KPX ARMED light will be ON. Or on Navigator keypad 'Radio Programmed' will display. Press 0E (or Delete Device) to delete.</li> <li> Press 1E (The OK icon indicates 'Ready To Learn')  Press </li> <li>Send a Learn signal from the radio device by inserting the battery.               <ol style="list-style-type: none"> <li>If the Radio Device is accepted, the OK icon will turn off, the ARMED light will turn on and 3 beeps will sound. On the Navigator keypad 'Radio Programmed' will display.</li> <li>If an error beep sounds, the Radio Device is already assigned to another zone and must be cleared from that zone first.</li> </ol> </li> </ol> <p><b>EXAMPLE: To program a Radio PIR on zone 1:</b>  <b>P101E 1E (or press Program Device)</b> Insert the battery in the Radio PIR</p>			
<b>2</b> <b>X-TWR RECEIVER</b>	Fit the Program link.	 Program	 Fast flash	X-TWR Interface is ready to learn a new device and forward the device to the control panel.
<i>Handy Hint. Step 2 can be skipped if for some reason you need to re-enrol a device into the D8/D16 control panel. Once a device is enrolled in X-TWR it remains programmed until erased.</i>				
<b>3</b> <b>TWR RADIO DEVICE</b>	Send a Learn signal.	Send a Learn signal from the radio device:	 3 flashes then Slow Flash	The radio device has been enrolled in the X-TWR and also has been sent to the control panel.
<b>4</b> <b>CONTROL PANEL</b>	Once the Radio Device is accepted by the control panel, the OK icon will turn off and the keypad will sound 3 beeps.  If the OK icon stays on and a warning beep sounds, the Radio Device is already assigned to another zone and must be cleared from that zone first.			
<b>5</b> <b>X-TWR RECEIVER</b>	Remove (park) the Program link.	 Program	 One flash every 3sec	X-TWR Interface is in normal run mode.

## HOW TO SEND A LEARN SIGNAL FROM NESS TWR DEVICES

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DEVICE	ACTION TO SEND A LEARN SIGNAL
106-270 4 BUTTON KEY TWR	Press Arm/Disarm together
106-271 LUX PIR TWR	Insert the batteries
106-276 LUX PET PIR TWR	Insert the batteries
K-106-272 MICRO REED TWR	Insert the battery
K-106-273 SLIM LINE REED TWR	Insert the battery
K-106-267 3 Zone Sensor TWR	Insert the battery

### SIGNAL STRENGTH TEST

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The signal strength of TWR devices can be tested at the control panel using the procedure described in the D8/D16 installation manual.

In test mode the keypad (KPX or Navigator) displays the radio signal strength of the device under test.

The higher the number displayed (and beeped) the stronger the signal received.

#### TEST SEQUENCE:

- 1 Enter the program option for the radio device to be tested  
For Radio Keys: options P201E–P256E. For Radio Devices, options P101E–P116E.
- 2 Press 3E
- 3 Trigger the radio device
  - A zone light 1 to 8 (LCD keypad) or a number (Navigator keypad) indicates the strength of the signal. Higher numbers indicate stronger signals.
  - The Signal Strength display remains on until another command is entered.
  - To clear the display and re-test the transmitter, press 3E again.

#### NOTES

- Test the signal strength of Radio Keys in USER PROGRAM Mode or INSTALLER PROGRAM Mode.
- Signal strength of all other Radio Devices is tested in INSTALLER PROGRAM Mode.
- PRESS 3E to test the signal strength of the selected transmitter ONLY. (Other devices will be ignored).
- PRESS 4E to test the signal strength of any other Ness TWR transmitter (the transmitter must already be enrolled in the X-TWR but just for testing purposes doesn't need to be enrolled in the D8/D16 panel.)

## SPECIFICATIONS

OPERATING VOLTAGE	10–15V DC provided by D8/D16 control panel
QUIESCENT CURRENT DRAW	25mA
RADIO FREQUENCY	902-928 MHz spread spectrum frequency-hopping
COMPATIBILITY	Panels: Any Ness D8/D16 series supporting Ness radio interface Devices: Ness TWR devices
MAX. RADIO DEVICES	64
DIMENSIONS (IN HOUSING)	75 x 80 x 28mm
WEIGHT	73g

Device Compatibility (Devices sold separately)

106-270 4 BUTTON KEY TWR  
106-271 LUX PIR TWR  
106-276 LUX PET PIR TWR  
K-106-272 MICRO REED TWR  
K-106-273 SLIM LINE REED TWR  
K-106-267 3 Zone Sensor TWR

Ness Corporation manufacturing processes are accredited to ISO9001 quality standards and all possible care and diligence has been applied during manufacture to ensure the reliable operation of this product. However there are various external factors that may impede or restrict the operation of this product in accordance with the product's specification.

These factors include, but are not limited to:

1. Erratic or reduced radio range. Ness radio products are sophisticated low power devices, however the presence of in-band radio signals, high power transmissions or interference caused by electrical appliances such as wireless routers, cordless phones, computers, TVs and other electronic devices may reduce the range performance. While such occurrences are unusual, they are possible. In this case it may be necessary to either increase the physical separation between the Ness receiver and other devices or if possible change the radio frequency or channel of the other devices.
2. Unauthorised tampering, physical damage, electrical interruptions such as mains failure, electrical spikes or lightning.



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