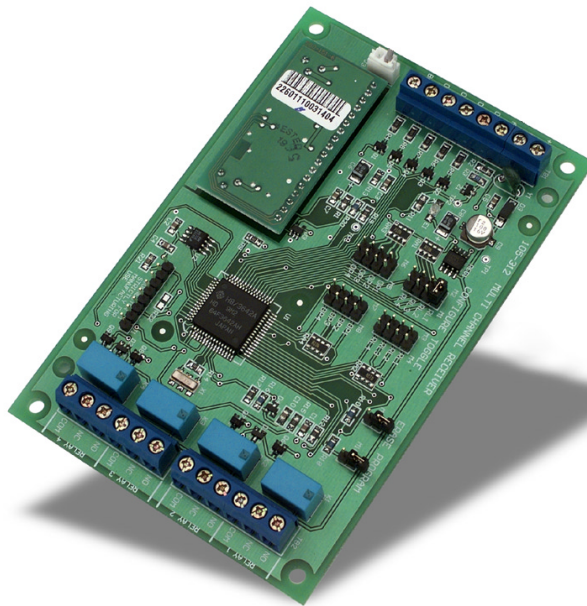




MULTI CHANNEL RECEIVER

Part No 100-666

INSTALLATION & PROGRAMMING MANUAL



ENCRYPTED OPERATION

8 OUTPUTS

4 RELAYS • 4 OPEN COLLECTORS

UP TO 16 TRANSMITTERS PER OUTPUT

PROGRAMMABLE OUTPUTS

PULSED • TOGGLE • LATCHING

EASY PROGRAMMING

NON-VOLATILE MEMORY



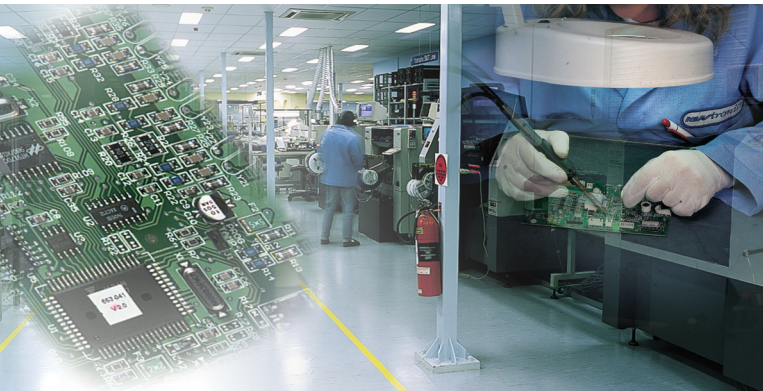


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Endorsed
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ISO9001
LIC.No. QEC2074
NSW Head Office only



Ness Security Products Pty Ltd
ACN 069 984 372

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designer and
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high quality security
products”*

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ENCRYPTED OPERATION

8 OUTPUTS

4 RELAYS • 4 OPEN COLLECTORS

UP TO 16 TRANSMITTERS PER OUTPUT

PROGRAMMABLE OUTPUTS

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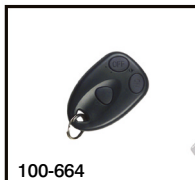
The Ness Multi-Channel Receiver (MCR) is a unique high performance 303.875MHz radio receiver designed to operate in conjunction with Ness proprietary radio transmitting devices, including radio keys, radio reed switches and radio PIRs.

The MCR can be used for alarm panels which do not provide a wireless facility: for connecting radio detectors for zone alarms, panic buttons, and radio keys for arming and disarming the panel. The AUX input of the MCR enables it to identify the Armed/Disarmed status of a panel, which allows correct arming and disarming using separate ON and OFF radio key buttons (unlike a single key button toggle output which can place the panel in the wrong state without the user realising).

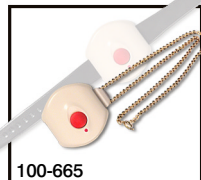
The MCR is ideal for applications which require remotely switched relay outputs for power switching, e.g. garage door opening, etc. 4 relays and 4 open-collector transistor outputs are provided.

Any combination of encrypted and non-encrypted radio keys (1, 3 and 4 button), radio reed switches and radio PIRs can be flexibly configured: One device can control any number of outputs; up to 16 devices can control a particular output. Outputs can be configured in Pulse, Toggle or Latch modes.

The MCR is supplied as a printed circuit board assembly with mounting stand-offs, for installation inside a control panel or other enclosure. Terminal blocks are provided for all external connections.



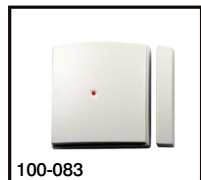
100-664
NESS RADIO KEY
3 BUTTON, WATERPROOF



100-665
NESS RADIO KEY PENDANT
1 BUTTON WATERPROOF



100-662
NESS MINI RADIO REED
SWITCH



100-083
NESS MULTI-PURPOSE
RADIO REED SWITCH



100-663
NESS RADIO PIR



100-203
NESS RADIO SMOKE
DETECTOR

COMPATIBILITY

The Ness MCR can be used with any combination of the following Ness radio devices.

Types of events transmitted

100-664 Ness Radio Key, 3 button

- ON • OFF • PANIC • LOW BATTERY

100-665 Ness Radio Key Pendant, 1 button

- PANIC • LOW BATTERY

100-663 Ness Radio PIR

- ALARM • LOW BATTERY

100-662 Ness Mini Radio Reed Switch

- ALARM • ALARM RESTORE • LOW BATTERY

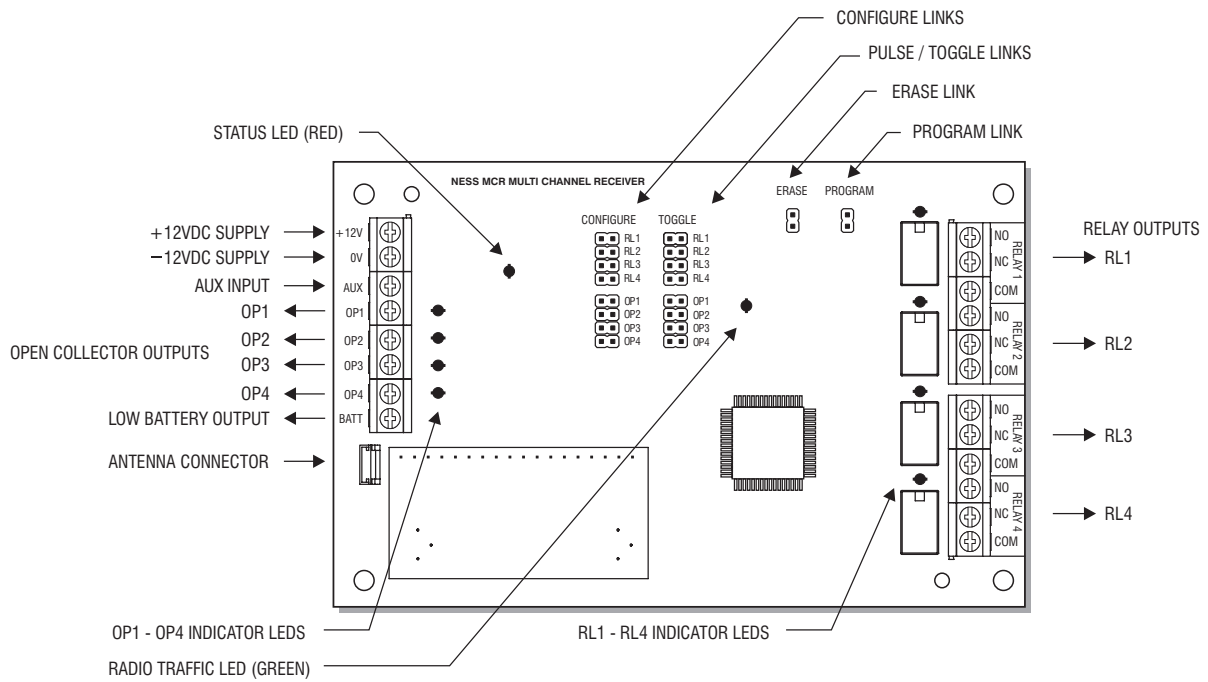
100-083 Ness Multi-purpose Radio Reed Switch

- ALARM • ALARM RESTORE • LOW BATTERY

100-203 Ness Radio Smoke Detector

- ALARM • ALARM RESTORE • LOW BATTERY

INPUTS & OUTPUTS



INPUTS & OUTPUTS

+12V
Power supply 10—14VDC

0V
Power supply ground

AUX
The AUX input controls the state of RL1.
Low = <1V, High = >4V
AUX is pulled high internally if not connected.

OP1 - OP4
Open Collector transistor outputs (switches low) 20mA @ 12V.
These outputs can be programmed to operate in Pulse, Toggle or Latching modes.

RL1 - RL4
Changeover relay outputs (Com, N/O, N/C) rated at up to 1A @ 28V. These outputs can be programmed to operate in Pulse, Toggle or Latching modes. (See page 6).

BATT
Low Battery indication received from radio devices. Open Collector transistor output (switches low) 20mA @ 12V

This output will pulse ON for 2 seconds every time a low battery message is received from a programmed radio device.

Note 1: The MCR provides no means of identifying which device caused the Low Battery alarm, however all Ness radio devices display a Low Battery condition by flashing their LED (instead of turning it on steady) when transmitting.

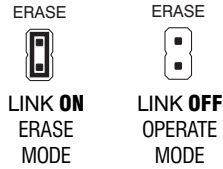
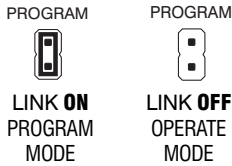
Note 2: If you have a number of Radio PIRs or Radio Reed Switches installed, it is likely that all these devices' batteries will run low at the same time. However, common sense should prevail - for example, a reed switch on a door which is regularly opened and closed will run its battery down long before one on a window which is never opened.

RADIO ANTENNA (J3)

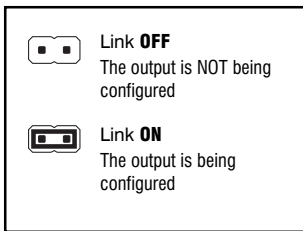
Always keep the antenna well away from the control panel, wiring and potential radio interference devices. The antenna should be kept straight (not coiled or knotted).

NEVER SHORTEN OR LENGTHEN THE ANTENNA. IT IS A CRITICALLY TUNED LENGTH.

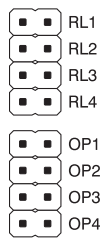
LINKS



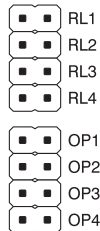
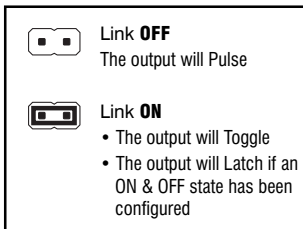
In PROGRAM MODE



CONFIGURE



TOGGLE



TOGGLE links have no effect in Program Mode. TOGGLE links can be set ON or OFF at any time in Operate Mode.

PROGRAM LINK

Set the PROGRAM link ON to enter PROGRAM mode. MCR RED LED will double flash when in program mode.

ERASE LINK

Set the ERASE link ON to erase all programming.

MCR RED LED will flash rapidly for 5 seconds to warn that the MCR memory will be erased. Remove the link when the RED LED starts double flashing. (The Erase sequence can be aborted by removing the link during the 5 second countdown).

BEWARE, this will erase ALL transmitters. (Transmitters cannot be erased individually).

CONFIGURE LINKS

When in program mode, the CONFIGURE links are used to program which output or outputs will be triggered by a transmitter.

The CONFIGURE links have no effect in normal Operating Mode, but it is recommended that you remove all CONFIGURE links when programming is complete. (This will prevent accidental configuring of the wrong outputs when you next go into program mode.)

TOGGLE LINKS

In Operate Mode, the Toggle links set the outputs for Pulse, Toggle or Latch operation.

PULSE (APPLIES TO ALL OUTPUTS)

The output turns ON for 2 seconds

TOGGLE (APPLIES TO ALL OUTPUTS)

The output inverts its current state

LATCH (APPLIES TO ALL OUTPUTS, EXCEPT RL1)

The output follows the state of the transmitter.

Example:

Press a Radio Key ON button - the configured output latches ON

Press the Radio Key ON button again - the configured output stays ON

Press the Radio Key OFF button - the configured output turns OFF

Press the Radio Key OFF button again - the configured output stays ON

For Latch operation, an Event Pair must be configured for the output. The Toggle link must be ON for the output.

For further information, see Advanced Programming, page 17.

CONDITIONAL OUTPUT (APPLIES TO RL1 ONLY)

The output follows the state of the transmitter. The operation of RL1 is conditional on the state of the AUX input.

RL1 will Latch OFF or Pulse OFF only if AUX is Low

RL1 will Latch ON or Pulse ON only if AUX is High

An Event Pair must be configured for the output.

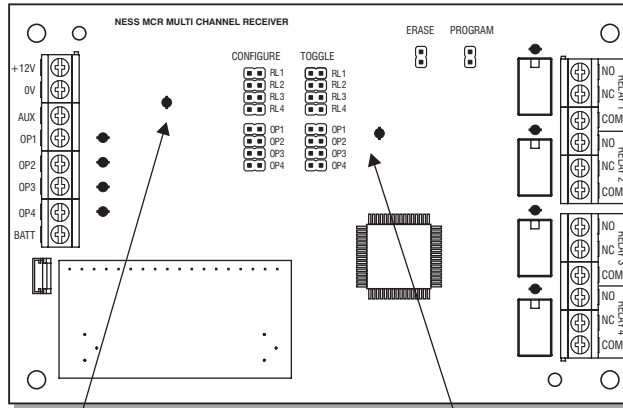
The RL1 Toggle link must OFF for Conditional Pulse.

The RL1 Toggle link must ON for Conditional Latch.

For programming examples, see page 15.

See page 17 Table 2, for a full description of the behaviour of RL1 when controlled by the AUX input.

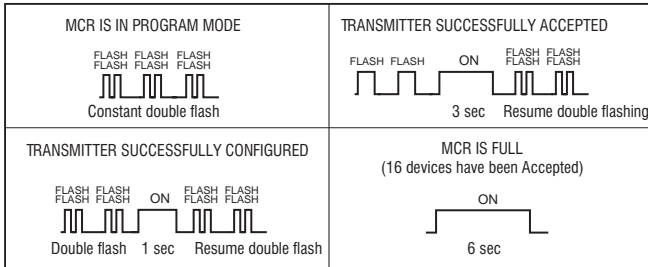
LED OPERATION



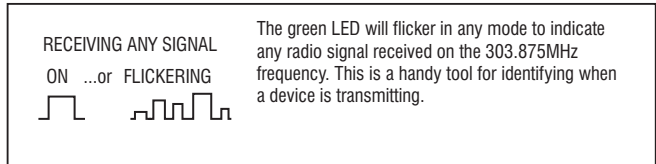
STATUS LED (RED)

RADIO TRAFFIC LED (GREEN)

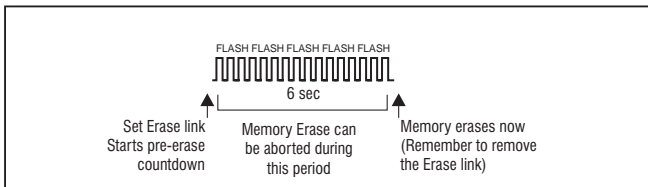
MCR RED LED OPERATION in Program Mode



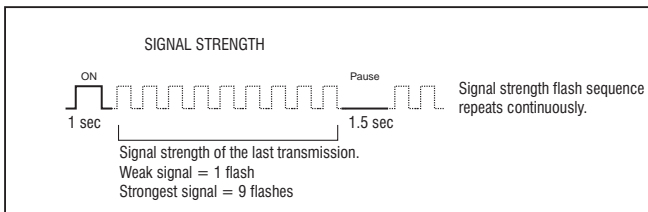
MCR GREEN LED OPERATION



MCR RED LED OPERATION in Erase Mode



MCR RED LED OPERATION in Operate Mode



FREQUENTLY ASKED QUESTIONS

HOW MANY TRANSMITTERS?

Up to 16 Ness radio transmitters can be used with the Ness MCR. This includes any combination of Ness Radio Keys and all types of Ness Radio detectors and reed switches.

HOW MANY OUTPUTS PER TRANSMITTER?

A transmitter can be configured to operate one or more relay or open collector outputs.

Up to 16 transmitters can be configured per output.

TYPES OF NESS TRANSMITTERS?

The Ness MCR will work with both the new generation 56 bit encrypted Ness transmitters and the previous generation 24 bit Ness transmitters.

I CAN'T REMEMBER IF I HAVE ALREADY ACCEPTED A TRANSMITTER

Just try Accepting the transmitter again. If it is already Accepted, the MCR Red LED will turn ON for 1 second. (Instead of Flash, Flash, ON 3 sec, if it had not already been Accepted).

I DON'T KNOW WHICH OUTPUT A TRANSMITTER IS CONFIGURED TO

Trigger the transmitter and look at the MCR board. Each output has an LED which turns ON when the output is ON.

DO I NEED TO ACCEPT A TRANSMITTER MORE THAN ONCE?

No. Once a transmitter has been Accepted, it is stored in the MCR's memory and is always recognised as a valid transmitter. An Accepted transmitter can be Configured more than once at any time.

WHY DOES THE GREEN LED SOMETIMES FLICKER?

The Green LED indicates the presence of ANY radio signals on the 303.875MHz frequency. This can be handy when you are trying to identify all the transmitters in a building.

WHY DOES THE RED STATUS LED ALWAYS FLASH?

The Red LED repeatedly flashes the signal strength of the last signal received.

PROGRAMMING

HOW TO PROGRAM THE MCR

The Ness MCR is an intelligent microprocessor based product, which makes programming straightforward and easy. In program mode, the MCR "learns" the unique code and configuration for each transmitter.

PROGRAMMING STEPS

ACCEPT

Accepting the transmitter teaches the MCR the unique code of the transmitter.

1. Make sure all Configure links are OFF
2. Set the Program link ON
3. Press and hold the Panic button for 8 seconds
(To Accept a Radio Key)...or,
Connect the transmitter's battery
(To Accept any other type of Ness transmitter)

The MCR Red LED will Flash + Flash + ON for 3 sec when a transmitter is successfully accepted.

CONFIGURE

Configuring teaches the MCR which output/s will be triggered by an accepted transmitter.

With the Program link still ON

4. Set the required CONFIGURE Link ON
5. Trigger the transmitter

The MCR Red LED will turn ON for 3 sec when a transmitter is successfully configured.

FINISH PROGRAMMING

6. Set the Program link OFF

SET THE OUTPUT

7. Set the Toggle link ON or OFF

Set the Toggle link for the configured output to make the output Pulse, Toggle or Latch.

Toggle Link OFF: The output will Pulse (turn On for 2 seconds)

Toggle Link ON: The output will invert it's state on every transmission.

(With the Toggle Link ON, an output will Latch if an Event Pair has been configured to that output.)

For detailed programming instructions for each transmitter, see **Programming Transmitters, pages 10-15**

ACCEPTING NESS TRANSMITTERS

All Ness transmitters manufactured and sold after January 2001 are encrypted 56 bit devices.

This manual has been written assuming only 56 bit transmitters are being used.

The previous generation 24 bit Ness transmitters can still be used with the MCR. The only difference being the slightly different procedure for Accepting these transmitters.

ACCEPTING A 24 BIT RADIO KEY

Press any button 3 times. The MCR LED will blink twice briefly and then turn on for 3 seconds to indicate device is programmed.

ACCEPTING A 56 BIT RADIO KEY

Press and hold down the PANIC button for approximately 8 seconds. The MCR LED will blink after a few seconds, and several seconds later it will blink twice briefly and then turn on for 3 seconds to indicate device is programmed.

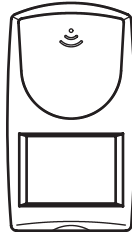
ACCEPTING A 24 BIT DETECTOR

Trigger the detector. The MCR LED will blink twice briefly and then turn on for 3 seconds to indicate device is programmed.

ACCEPTING A 56 BIT DETECTOR

Power-up the device you wish to program. The MCR LED will blink twice briefly and then turn on for 3 seconds to indicate device is programmed.

Part No. 100-663

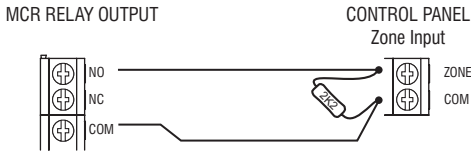


NESS RADIO PIR

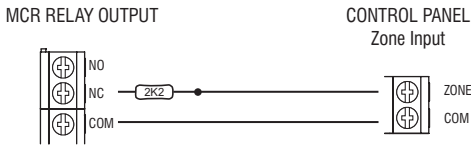
TYPICAL APPLICATIONS:

Adding Radio PIRs to Ness 5000 series, PRO series and other control panels. The Radio PIR will trigger a single output in Pulse Mode.

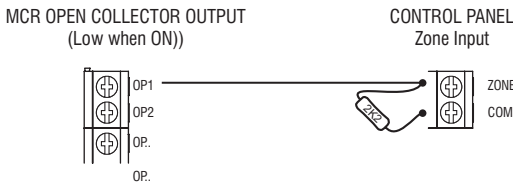
MCR to CONTROL PANEL
Using a Normally Open relay output



MCR to CONTROL PANEL
Using a Normally Closed relay output



MCR to CONTROL PANEL
Using an Open Collector output



* The MCR must share the control panel's power supply
* This connection is suitable for all Ness control panels or other control panels with negative zone common

ACCEPTING THE TRANSMITTER

To "learn" the unique code of the transmitter

- 1 MCR > Set all CONFIGURE links to the OFF position
- 2 MCR > Set to the PROGRAM Link to the ON position
MCR Red LED will Double Flash constantly
- 3 PIR > Set the TEST link to the ON position
- 4 PIR > Connect the 9V battery
MCR Red LED will Flash + Flash + ON for 3 seconds

CONFIGURING OUTPUTS

To program which output will be triggered by the transmitter

- 5 MCR > Set the CONFIGURE Link for the output to the ON position
e.g. If you want this device to operate relay 1, set CONFIGURE, RL1 link ON
- 6 PIR > Trigger the PIR
MCR Red LED will turn ON for 1 second

TO FINISH PROGRAMMING

- 7 MCR > Set the PROGRAM Link to the OFF position
MCR > Set all CONFIGURE links to the OFF position
MCR Red LED will start flashing the signal strength of the last transmission
- 8 PIR > Set the TEST link to the OFF position

SETTING THE OUTPUTS

Set the output for Pulse or Toggle operation. For a Radio PIR, you will usually only require Pulse operation.

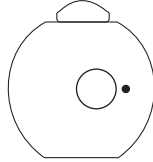
- 9 MCR > Set the corresponding TOGGLE link to the OFF position.
(e.g. If you have configured the PIR to trigger Relay 1, then set the RL1 TOGGLE link to OFF)

NOTE: Toggle links can be set or removed at any time in normal Operate Mode.

MCR RED LED OPERATION in Program Mode

<p>MCR IS IN PROGRAM MODE</p> <p>Constant double flash</p>	<p>TRANSMITTER SUCCESSFULLY ACCEPTED</p> <p>3 sec Resume double flashing</p>
<p>TRANSMITTER SUCCESSFULLY CONFIGURED</p> <p>Double flash 1 sec Resume double flash</p>	<p>MCR IS FULL (16 devices have been Accepted)</p> <p>6 sec</p>

Part No. 100-665

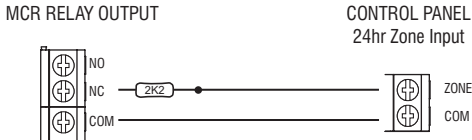


NESS RADIO KEY PENDANT

TYPICAL APPLICATIONS:

Panic button, external lighting, garage door, etc.

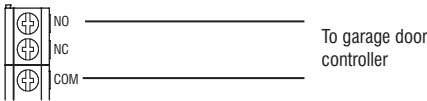
PANIC BUTTON APPLICATION Triggering a 24hr zone input



Configure the MCR output for Pulse operation

GARAGE DOOR OPENER (For garage door controllers requiring a pulsed (momentary) closed contact to operate)

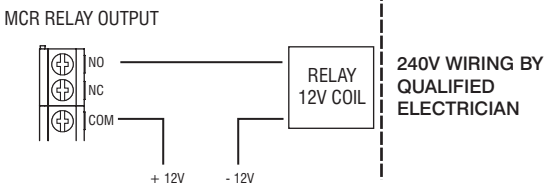
MCR RELAY OUTPUT



Configure the MCR output for Pulse operation

WARNING: Connection of the Ness MCR to any other device is to be undertaken at the installer's own risk. The Ness MCR is NOT suitable for connection to 240V mains devices.

SWITCHING LIGHTS



Configure the MCR output for Toggle operation.

WARNING: Connection of the Ness MCR to any other device is to be undertaken at the installer's own risk. The Ness MCR is NOT suitable for connection to 240V mains devices.

ACCEPTING THE TRANSMITTER

To "learn" the unique code of the transmitter

- ❶ MCR > Set all CONFIGURE links to the OFF position
- ❷ MCR > Set to the PROGRAM Link to the ON position
MCR Red LED will Double Flash constantly
- ❸ PENDANT > Press the Transmit button
MCR Red LED will Flash + Flash + ON for 3 seconds

CONFIGURING OUTPUTS

To program which output will be triggered

- ❹ MCR > Set the CONFIGURE Link for the output to the ON position
e.g. If you want this device to operate relay 2, set CONFIGURE, RL2 link ON
- ❺ PENDANT > Press the Transmit button
MCR Red LED will turn ON for 1 second

TO FINISH PROGRAMMING

- ❻ MCR > Set the PROGRAM Link to the OFF position
MCR > Set all CONFIGURE links to the OFF position
MCR Red LED will start flashing the signal strength of the last transmission

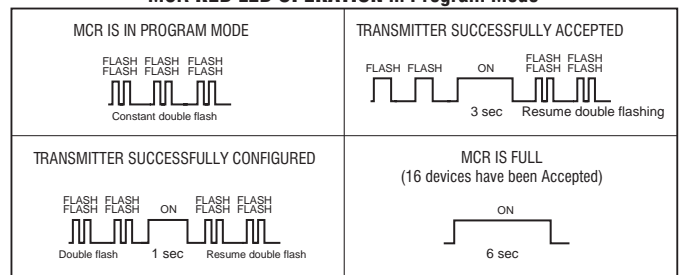
SETTING THE OUTPUTS

Set the output for Pulse or Toggle operation. For a Radio Pendant, you can select Pulse or Toggle operation, depending on the application.

- ❼ MCR > Set the corresponding TOGGLE link to the OFF position.
(e.g. If you have configured the Pendant to trigger Relay 2, then set the RL2 TOGGLE link to OFF)

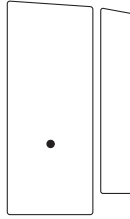
NOTE: Toggle links can be set or removed at any time in normal Operate Mode.

MCR RED LED OPERATION in Program Mode



NESS MINIATURE RADIO REED SWITCH

Part No. 100-662

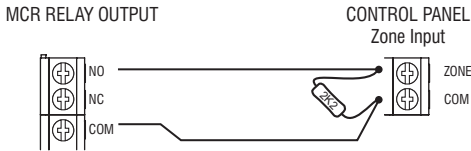


TYPICAL APPLICATIONS:

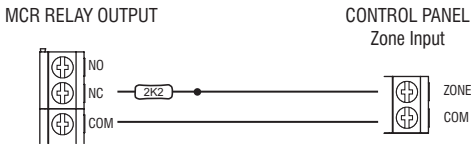
Adding Radio Reed Switches to Ness 5000 series and PRO series control panels.

The Radio Reed Switch can be configured to trigger an output on an Alarm or Restore condition, or both.

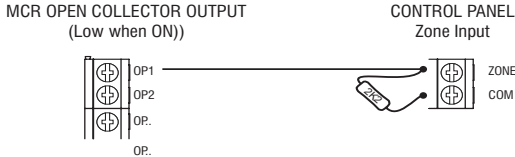
MCR to CONTROL PANEL
Using a Normally Open relay output



MCR to CONTROL PANEL
Using a Normally Closed relay output



MCR to CONTROL PANEL
Using an Open Collector output



* The MCR must share the control panel's power supply
* This connection is suitable for all Ness control panels or other control panels with negative zone common

ACCEPTING THE TRANSMITTER

To "learn" the unique code of the transmitter

- ❶ MCR > Set all CONFIGURE links to the OFF position
- ❷ MCR > Set to the PROGRAM Link to the ON position
MCR Red LED will Double Flash constantly
- ❸ REED SWITCH > Connect the 3V battery
MCR Red LED will Flash + Flash + ON for 3 seconds

CONFIGURING OUTPUTS

To program which output will be triggered

- ❹ REED SWITCH > Place the magnet next to the reed switch
- ❺ MCR > Set the CONFIGURE Link for the output to the ON position
e.g. If you want this device to operate relay 3, set CONFIGURE, RL3 link ON
- ❻ REED SWITCH > Move the magnet away from the reed switch
MCR Red LED will turn ON for 1 second
(At this stage, keep the magnet away from the reed switch until you have set the program link to the OFF position).

TO FINISH PROGRAMMING

- ❼ MCR > Set the PROGRAM Link to the OFF position
MCR > Set all CONFIGURE links to the OFF position
MCR Red LED will start flashing the signal strength of the last transmission

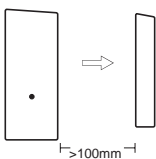
SETTING THE OUTPUTS

In this case, set the Toggle link OFF. The output will Pulse only when the reed switch is Opened.

- ❽ MCR > Set the corresponding TOGGLE link to the OFF position.
(e.g. If you have configured the Radio Reed Switch to trigger Relay 3, then set the RL3 TOGGLE link to OFF)

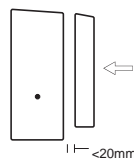
NOTE: Toggle links can be set or removed at any time in normal Operate Mode.

ALARM only
(ON Event)



To Pulse the output ONLY by an ALARM condition, follow steps 1 to 8 on this page.

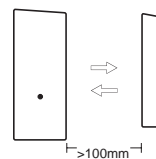
RESTORE only
(OFF Event)



To Pulse the output ONLY by a RESTORE condition, reverse Steps 4 and 6, i.e.

Step 4, keep the magnet 100mm away from the reed switch. Step 6, place the magnet next to the reed switch.

ALARM + RESTORE
(Event Pair)



To LATCH the output by an ALARM & RESTORE condition:

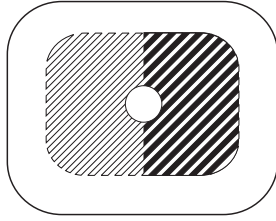
Configure an Event Pair, at Step 6, move the magnet away from the reed switch and immediately return the magnet next to the reed switch.
(Set the TOGGLE link to the ON position.)

MCR RED LED OPERATION in Program Mode

<p>MCR IS IN PROGRAM MODE</p> <p>Constant double flash</p>	<p>TRANSMITTER SUCCESSFULLY ACCEPTED</p> <p>3 sec Resume double flashing</p>
<p>TRANSMITTER SUCCESSFULLY CONFIGURED</p> <p>Double flash 1 sec Resume double flash</p>	<p>MCR IS FULL (16 devices have been Accepted)</p> <p>6 sec</p>

Note : If multiple Ness Radio Reed Switches are sending Alarm/Restore Event Pairs to the same MCR output, the output will turn OFF when all the configured Radio Reed Switches are closed (Restored).

Part No. 100-203



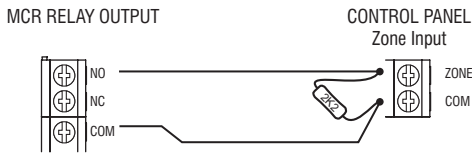
NESS RADIO SMOKE DETECTOR

TYPICAL APPLICATIONS:

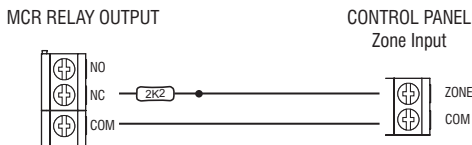
Adding radio smoke detectors to Ness 5000 series, PRO series and other control panels.

The radio smoke detector will trigger a single output in Pulse Mode.

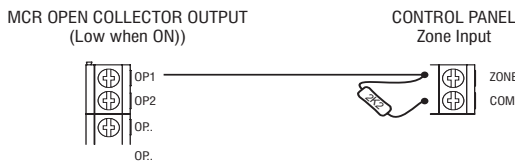
MCR to CONTROL PANEL
Using a Normally Open relay output



MCR to CONTROL PANEL
Using a Normally Closed relay output



MCR to CONTROL PANEL
Using an Open Collector output



* The MCR must share the control panel's power supply
* This connection is suitable for all Ness control panels or other control panels with negative zone common

ACCEPTING THE TRANSMITTER

To "learn" the unique code of the transmitter

- 1 MCR > Set all CONFIGURE links to the OFF position
- 2 MCR > Set to the PROGRAM Link to the ON position
MCR Red LED will Double Flash constantly
- 3 SMOKE DET > Press and hold the TEST button for 5 seconds
MCR Red LED will Flash + Flash + ON for 3 seconds
(The smoke detector's siren will also sound)

CONFIGURING OUTPUTS

To program which output will be triggered by the transmitter

- 4 MCR > Set the CONFIGURE Link for the output to the ON position
e.g. If you want this device to operate relay 1, set CONFIGURE, RL1 link ON
- 5 SMOKE DET > Press and hold the TEST button for 5 seconds
MCR Red LED will turn ON for 1 second

TO FINISH PROGRAMMING

- 6 MCR > Set the PROGRAM Link to the OFF position
MCR > Set all CONFIGURE links to the OFF position
MCR Red LED will start flashing the signal strength of the last transmission

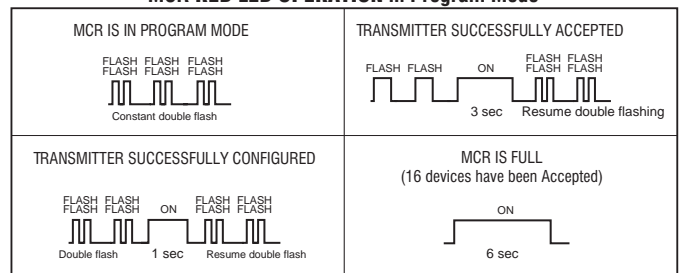
SETTING THE OUTPUTS

Set the output for Pulse or Toggle operation. For a Radio Smoke Detector, you will usually only require Pulse operation.

- 7 MCR > Set the corresponding TOGGLE link to the OFF position.
(e.g. If you have configured the Smoke Detector to trigger Relay 1, then set the RL1 TOGGLE link to OFF)

NOTE: Toggle links can be set or removed at any time in normal Operate Mode.

MCR RED LED OPERATION in Program Mode



Part No. 100-664



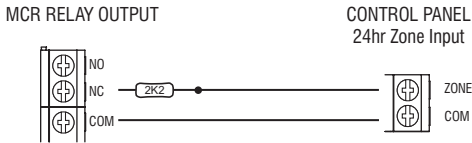
NESS RADIO KEY 3 BUTTON

ONE BUTTON PER OUTPUT

TYPICAL APPLICATIONS:

Control panel Arm/Disarm, Panic button, garage door opening, lighting

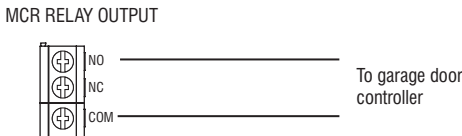
PANIC BUTTON APPLICATION
Triggering a 24hr zone input



Configure the MCR output for Pulse operation

GARAGE DOOR OPENER

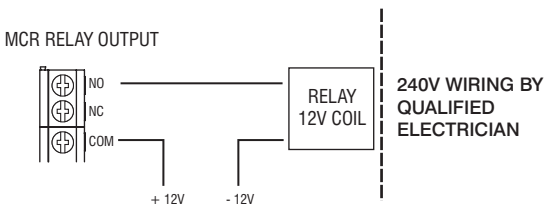
(For garage door controllers requiring a pulsed (momentary) closed contact to operate)



Configure the MCR output for Pulse operation

WARNING: Connection of the Ness MCR to any other device is to be undertaken at the installer's own risk. The Ness MCR is NOT suitable for connection to 240V mains devices.

SWITCHING LIGHTS



Configure the MCR output for Toggle operation.

WARNING: Connection of the Ness MCR to any other device is to be undertaken at the installer's own risk. The Ness MCR is NOT suitable for connection to 240V mains devices.

ACCEPTING THE TRANSMITTER

To "learn" the unique code of the transmitter

- ❶ MCR > Set all CONFIGURE links to the OFF position
- ❷ MCR > Set to the PROGRAM Link to the ON position
MCR Red LED will Double Flash constantly
- ❸ RADIO KEY > Press and hold the PANIC button for 8 seconds
MCR Red LED will Flash + Flash + ON for 3 seconds

CONFIGURING OUTPUTS

To program which output will be triggered

- ❹ MCR > Set the CONFIGURE Link for the output to the ON position
e.g. If you want this device to operate relay 3, set CONFIGURE, RL3 link ON
- ❺ RADIO KEY > Press the OFF button
MCR Red LED will turn ON for 1 second
- ❻ MCR > Remove the CONFIGURE RL3 link

Repeat steps 4 -6 for the ON button and the PANIC button. At step 4, simply set the CONFIGURE link for the output which will be triggered by each button

TO FINISH PROGRAMMING

- ❼ MCR > Set the PROGRAM Link to the OFF position
MCR > Set all CONFIGURE links to the OFF position
MCR Red LED will start flashing the signal strength of the last transmission

SETTING THE OUTPUTS

In this case, the Toggle links can be OFF or ON for the outputs configured for each Radio Key button.

- Link OFF: the output will Pulse each time the button is pressed.
- Link ON: the output will Toggle each time the button is pressed.

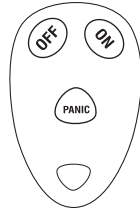
- ❸ MCR > Set the corresponding TOGGLE link/s.

NOTE: Toggle links can be set or removed at any time in normal Operate Mode.

MCR RED LED OPERATION in Program Mode

<p>MCR IS IN PROGRAM MODE</p> <p>Constant double flash</p>	<p>TRANSMITTER SUCCESSFULLY ACCEPTED</p> <p>3 sec Resume double flashing</p>
<p>TRANSMITTER SUCCESSFULLY CONFIGURED</p> <p>Double flash 1 sec Resume double flash</p>	<p>MCR IS FULL (16 devices have been Accepted)</p> <p>6 sec</p>

Part No. 100-664



NESS RADIO KEY 3 BUTTON

INTELLIGENT ARM/DISARM OF A CONTROL PANEL USING THE RL1 CONDITIONAL OUTPUT (Conditional Pulse Mode)

TYPICAL APPLICATIONS:

Arm/Disarm of Ness PRO-L, PRO-LD and L8 control panels.

ACCEPTING THE TRANSMITTER

To "learn" the unique code of the transmitter

- ❶ MCR > Set all CONFIGURE links to the OFF position
- ❷ MCR > Set to the PROGRAM Link to the ON position
MCR Red LED will Double Flash constantly
- ❸ RADIO KEY > Press and hold the PANIC button for 8 seconds
MCR Red LED will Flash + Flash + ON for 3 seconds

CONFIGURING OUTPUTS

To program which output will be triggered

- ❹ MCR > Set the CONFIGURE, RL1 Link to the ON position
- ❺ RADIO KEY > Press the OFF button
MCR Red LED will turn ON for 1 second
- RADIO KEY > Press the ON button
MCR Red LED will turn ON for 1 second

TO FINISH PROGRAMMING

- ❻ MCR > Set the PROGRAM Link to the OFF position
MCR > Set all CONFIGURE links to the OFF position
MCR Red LED will start flashing the signal strength of the last transmission

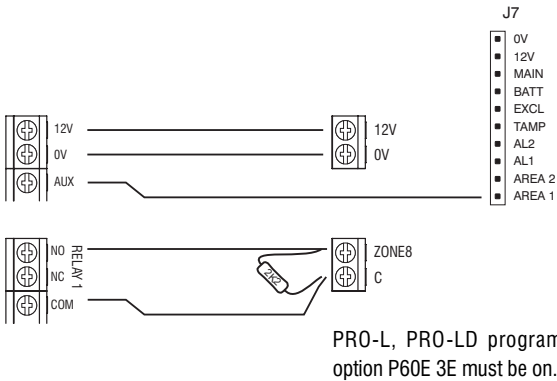
SETTING THE OUTPUTS

In this case, the TOGGLE, RL1 link must be OFF.

- ❼ MCR > Set TOGGLE, RL1 link to OFF position.

NESS MCR

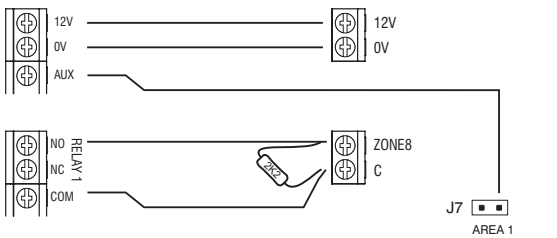
NESS PRO-L, PRO-LD



PRO-L, PRO-LD program option P60E 3E must be on.

NESS MCR

NESS L8



L8 program option P60E 3E must be on.

HOW IT WORKS

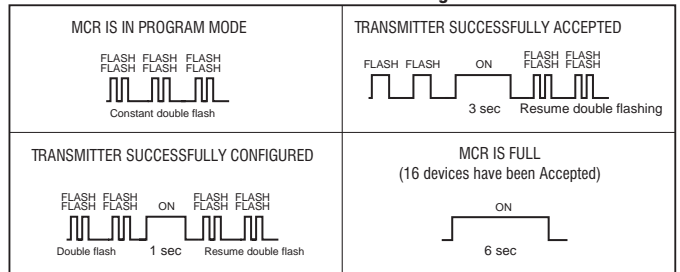
Intelligent Arm and Disarm works with control panels which have an output to indicate the Armed state of the control panel.

In this case, the Ness PRO-L, PRO-LD and the L8 have an output which is LOW when the panel is Armed. This output is connected to the AUX input on the Ness MCR.

When the panel is Disarmed, the AUX input will be "High", pressing the Radio Key OFF button will have no effect. Pressing the ON button will Pulse RL1, which will Arm the panel.

When the panel is Armed, the AUX input will be "Low", pressing the Radio Key ON button will have no effect. Pressing the OFF button will Pulse RL1, which will Disarm the panel.

MCR RED LED OPERATION in Program Mode



ADVANCED OPTIONS

Experienced users may want to try some of the advanced output options of the Ness MCR. The following examples will describe the use of Multi-Outputs and Event Pairs.

MULTI-OUTPUTS

Transmitters are usually configured to trigger a single output on the MCR. However, the MCR allows a single transmitter to trigger multiple outputs or multiple transmitters to trigger a single input.

MULTIPLE TRANSMITTERS TO A SINGLE OUTPUT

This is usually used when a number of transmitters need to perform the same action; the obvious example being arming and disarming of a control panel.

Other possible uses:

- Multiple Radio Keys arming and disarming a control panel
- Multiple Radio Keys operating a garage door
- Multiple Radio PIRs triggering a single output for front and rear “Door Alert” in a shop.
- Multiple Radio Smoke Detectors triggering the same output which is connected to a 24hr input on the control panel.

HOW TO PROGRAM:

Once a transmitter has been Accepted, it can be Configured to any output. In Program Mode, simply set the required Configure link ON and trigger one or more transmitters to configure them to that output.

SINGLE TRANSMITTER TO MULTIPLE OUTPUTS

Configuring a transmitter to simultaneously trigger more than one output makes a number of powerful options available.

EXAMPLE 1:

To expand on the example on page 15: Ness Radio Key Intelligent Latch function. We will also configure the Radio Key ON button to trigger OP1 (which is set for Pulse operation).

RESULT:

Press the ON button > RL1 pulses, OP1 pulses
Press the OFF button > RL1 pulses

This provides a second output which can drive a buzzer to give audible indication each time the control panel is armed.

EXAMPLE 2:

A Ness Radio Key is being used to operate a motorised garage door which requires a Pulsed output to open or close the door.

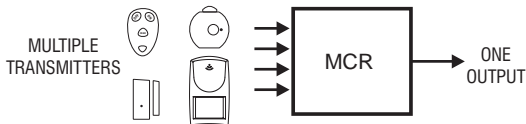
We have configured the Radio Key Panic button to RL1 (Pulsed) and the Radio Key Panic button is also configured to OP2 (Toggle).

RL1 is connected to the garage door controller. OP2 is connected to an LED to indicate “door open”.

RESULT:

Press the PANIC button > RL1 pulses, OP2 toggles ON
(Garage door opens, OP2 turns ON (LED is ON))
Press the PANIC button > RL1 pulses, OP2 toggles OFF
(Garage door closes, OP2 turns OFF (LED is OFF))

The LED provides remote indication when the garage door is left open.



Multiple transmitters can trigger a single output



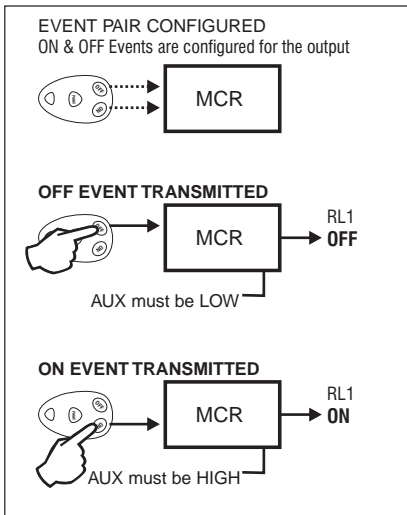
A single transmitter can trigger multiple outputs

RADIO EVENTS

All alarms from Ness transmitters can be defined as either ON Events or OFF Events. These two event types can make any output Pulse, Toggle or Latch, depending on how that output is configured.

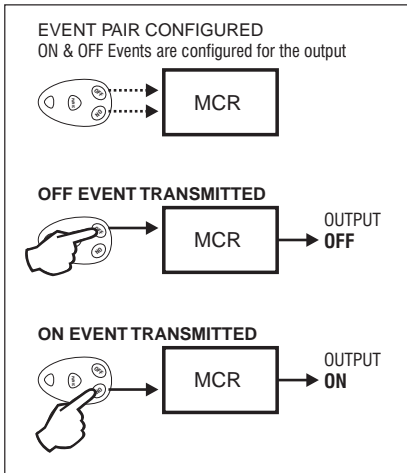
Normally, there is no practical difference between ON Events and OFF Events. Any type of transmitter event can be configured to trigger any output. ON and OFF events are processed separately only when Event Pairs are configured for an output.

EVENT PAIR OPERATION - RL1



In this example, the Toggle link for the output must be ON

EVENT PAIR OPERATION ALL OTHER OUTPUTS



In this example, the Toggle link for the output must be ON

EVENT PAIRS

When an Event Pair has been configured for an output, the Ness MCR will apply special handling to the ON and OFF events from the transmitter.

The MCR applies special handling to each output conditional on:

- Whether the event received is part of an event pair
- Whether the event received is an ON or OFF event
- The state of the Toggle link for that output
- The state of the AUX input (for RL1 only).

See Table 2 on the next page for details of Event to Output mapping for all transmitters.

HOW TO CONFIGURE EVENT PAIRS.

An Event Pair is created by configuring two events from the same transmitter to one output on the MCR. For example, on the Ness Radio Key; configure the ON and OFF buttons to one output on the MCR.

WHICH TRANSMITTERS?

Event Pairs are sent by the Ness 3 Button Radio Key, Ness 4 Button Radio Key and the Ness Radio Reed Switch.

See Table 1.

APPLICATIONS

Typical applications for Event Pairs:

- Intelligent Arm/Disarm of control panels. See page 15.
- Ness Radio Reed Switch with Alarm & Restore. See page 12.

Table 1. ALLOWABLE EVENT TYPES - ALL TRANSMITTERS

	Ness Radio Key 1 button 100-665	Ness Radio Key 3 button 100-664	Ness Radio Key 4 button 100-xxx	Ness Radio PIR 100-663	Ness Radio Reed Switch 100-662	Ness Radio Smoke Detector 100-203
ON Event	Red button	ON or PANIC	ON or PANIC	ALARM	ALARM	ALARM
OFF Event		OFF	OFF or 4th		RESTORE	
EVENT PAIRS		ON+OFF	ON+OFF PANIC+4th		ALARM+ RESTORE	

This table defines each transmitter event as either an ON Event or OFF Event. Line 3 shows the allowable Event Pairs.

Table 2.

OUTPUT TABLE

TRANSMITTER EVENTS TO OUTPUT MAPPING

MCR PROGRAMMING		EVENT	OUTPUTS		
TOGGLE LINK	RADIO EVENTS CONFIGURED FOR THIS OUTPUT	RADIO EVENT SENT BY TRANSMITTER	RELAY 1	AUX INPUT High = >4V Low = <1V	ANY OTHER OUTPUT

NESS RADIO KEY 1 BUTTON 100-665

OFF	ON Button	ON Button	Pulse	if AUX is High	Pulse
ON	ON Button	ON Button	Toggle	if AUX is High	Toggle

NESS RADIO KEY 3 BUTTON 100-664

OFF	EVENT PAIR	OFF Button	OFF Button	Pulse	if AUX is High	Pulse
		ON Button or Panic	ON Button	Pulse	if AUX is High	Pulse
		ON+OFF Buttons	OFF Button	Pulse	if AUX is Low	Pulse
			ON Button	Pulse	if AUX is High	Pulse
ON	EVENT PAIR	OFF Button	OFF Button	Toggle	if AUX is High	Toggle
		ON Button or Panic	ON Button	Toggle	if AUX is High	Toggle
		ON+OFF Buttons	OFF Button	Latch OFF	if AUX is Low	Latch Off
			ON Button	Latch ON	if AUX is High	Latch On

NESS RADIO KEY 4 BUTTON 100-XXX

OFF	EVENT PAIR	OFF or 4th Button	OFF or 4th Button	Pulse	if AUX is High	Pulse
		ON Button or Panic	ON Button or Panic	Pulse	if AUX is High	Pulse
		ON+OFF Buttons Panic+4th Button	OFF or 4th Button	Pulse	if AUX is Low	Pulse
			ON Button or Panic	Pulse	if AUX is High	Pulse
ON	EVENT PAIR	OFF or 4th Button	OFF or 4th Button	Toggle	if AUX is High	Toggle
		ON Button or Panic	ON Button or Panic	Toggle	if AUX is High	Toggle
		ON+OFF Buttons Panic+4th Button	OFF or 4th Button	Latch OFF	if AUX is Low	Latch Off
			ON Button or Panic	Latch ON	if AUX is High	Latch On

NESS RADIO PIR 100-663

OFF	ALARM	ALARM	Pulse	if AUX is High	Pulse
ON	ALARM	ALARM	Toggle	if AUX is High	Toggle

REED SWITCH RESTORALS

If multiple Ness Radio Reed Switches are sending Alarm/Restore Event Pairs to the same MCR output, the output will turn OFF when all the configured Radio Reed Switches are closed (Restored).

NESS RADIO REED SWITCH 100-662

OFF	EVENT PAIR	RESTORE	RESTORE	Pulse	if AUX is High	Pulse
		ALARM	ALARM	Pulse	if AUX is High	Pulse
		ALARM+RESTORE	RESTORE	Pulse	if AUX is Low	Pulse
			ALARM	Pulse	if AUX is High	Pulse
ON	EVENT PAIR	RESTORE	RESTORE	Toggle	if AUX is High	Toggle
		ALARM	ALARM	Toggle	if AUX is High	Toggle
		ALARM+RESTORE	RESTORE	Latch OFF	if AUX is Low	Latch Off
			ALARM	Latch ON	if AUX is High	Latch On

NESS RADIO SMOKE DETECTOR 100-203

OFF	ALARM	ALARM	Pulse	if AUX is High	Pulse
ON	ALARM	ALARM	Toggle	if AUX is High	Toggle

SPECIFICATIONS

RADIO DEVICES

Maximum number	16
Type	Keys and/or detectors
Protocol	Ness proprietary; 24-bit non-encrypted and/or 56-bit encrypted

RADIO RECEIVER

Type	Superheterodyne
Frequency	303.875MHz
Bandwidth (3dB)	800kHz
Sensitivity	> -100dB

RELAYS

Number	4
Contact dry rating	1A at 28V
Contact configuration	Normally Open, Normally Closed, Common

OPEN-COLLECTOR TRANSISTOR OUTPUTS

Number	4 general + 1 low battery
Rating	20mA at 12V
Configuration	Switches to ground when active

GENERAL

Operating voltage	10-14V
Quiescent current	18mA
Energise current per relay	12mA
Dimensions (no stand-offs)	132 x 85 x 13mm
Weight	80g

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MCR Multi-Channel Receiver Manual - Part Number 890-242
Revision 1

mcr manual4 pmo250101
With thanks to Mark Elkington for writing technical documents in English.