AutoHoot™

User Manual

For the latest information and support please go to our website www.autohoot.com

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008SL025/1 19/03/2013

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1 INTRODUCTION

Thank you for choosing Richard Paul Russell Ltd's AutoHoot.

AutoHoot is an electronic control unit. It has been designed for simple operation when a particular sound signal sequence is required to be emitted with reliable timing. It is not envisaged that the user would switch frequently between the standard sequences but this is possible to do. AutoHoot is supplied with over 30 standard sequences pre-programmed into the memory. It is also possible for the user to write and add custom sequences; for this a USB Configuration Cable is required to connect the AutoHoot to a PC for programming.

AutoHoot is ideal for starting sailing races using one of the pre-programmed start sequences and for providing additional sound signals during racing; for recalls, postponements and for finishing boats.

It can also provide timing and sound signals for circuit training and other interval training sessions.

AutoHoot has an internal buzzer for providing local advance warning of upcoming sound signals; a 12V horn or sounder needs to be connected to produce a high decibel output.

Trademarks

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Document revision summary

Issue	Date	Description
1	March 2013	Original document
2		

Our products are in continuous development and therefore specifications may be subject to change and design improvements may be implemented without prior notice. Please visit our web site www.r-p-r.co.uk for the most up to date information on our products.

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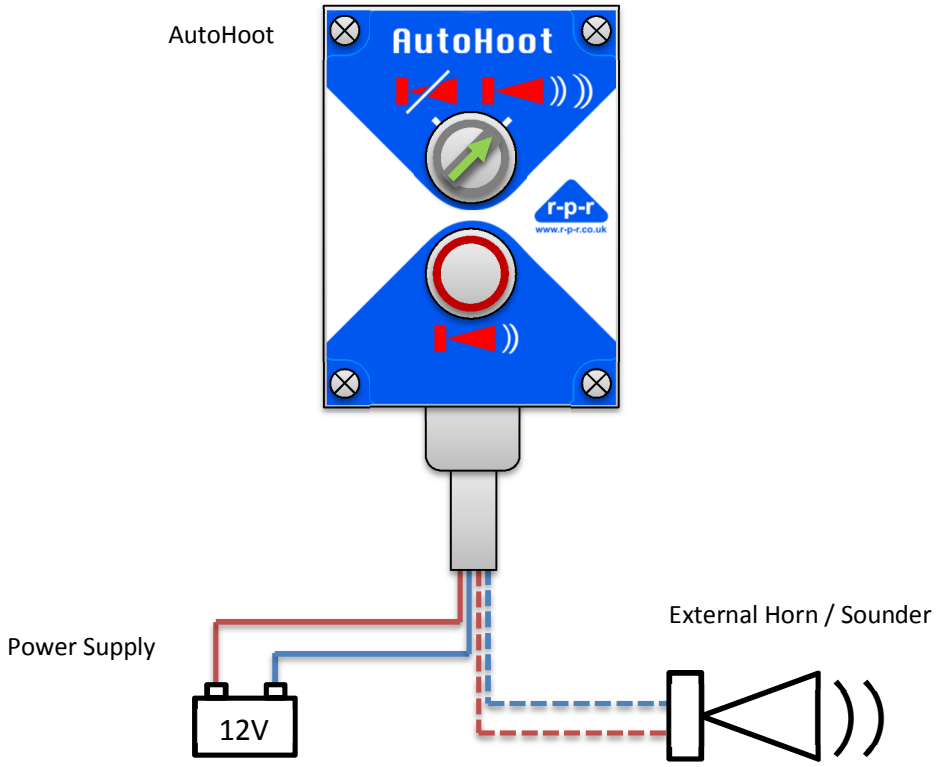
2 QUICK START: EASY STEPS TO USING AUTOHOOT

❶.....	Connect horn/sounder to AutoHoot	see section 6.2
❷.....	Connect power to AutoHoot	see section 6.3
❸.....	Fasten enclosure closed and tighten cable gland	see section 6.5
❹.....	Select sequence	see section 7
❺.....	Turn Auto Switch to ON when ready to start sequence	
❻.....	Press Hoot Button at any time if additional signal required	
❼.....	⑦ ⑥ ⑤ ④ ③ ② ① ⑧ ⑨ ⑩ ⑪ ⑫	
❽.....	Turn Auto Switch to OFF when sequence completed	

3 TYPICAL AUTOHOOT SYSTEM



4 CONTROLS OVERVIEW

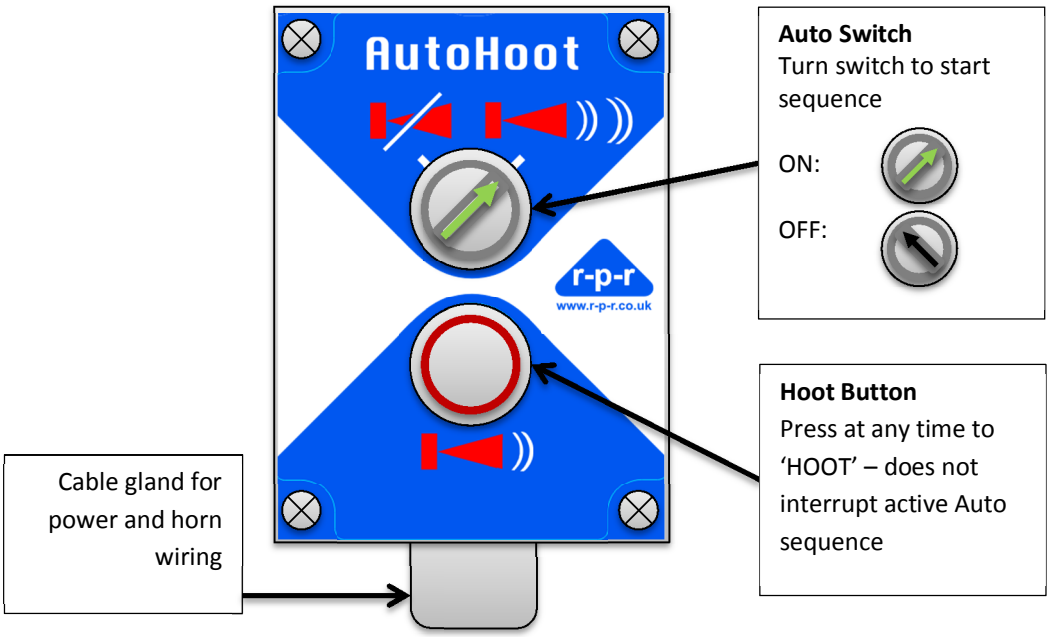


Figure 1

5 CONNECTION DIAGRAM

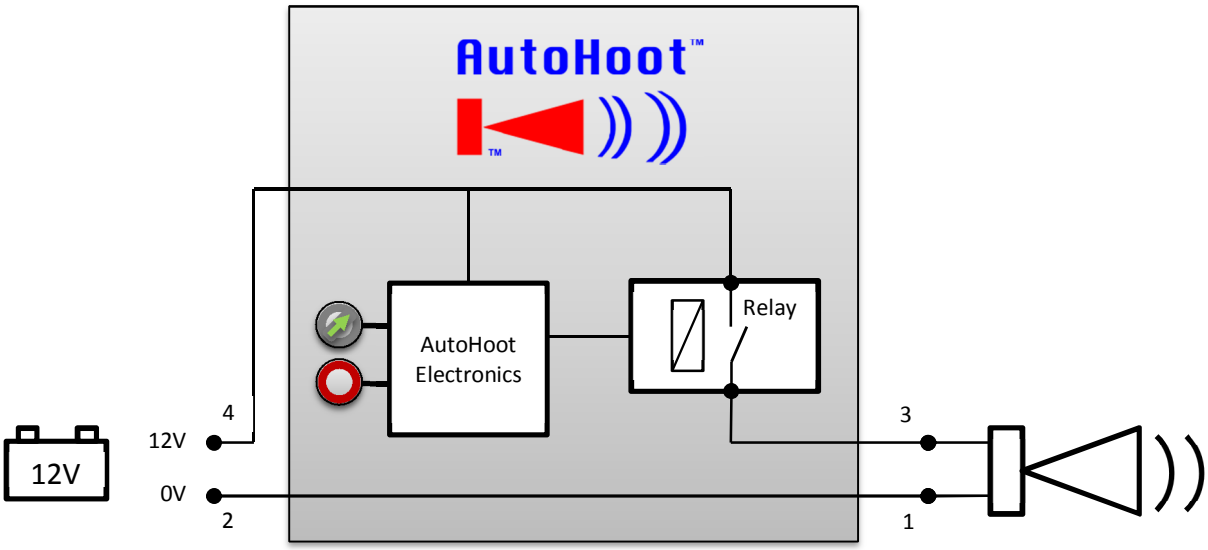


Figure 2

6 INSTALLATION

6.1 Wiring Connections

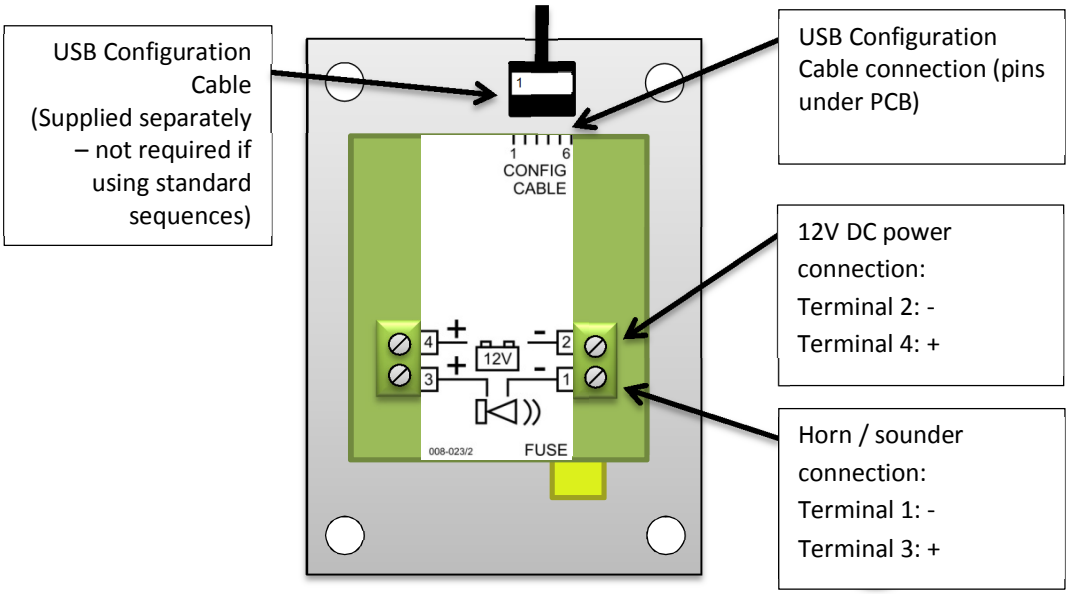


Figure 3

6.2 Horn / Sounder

A 12V horn or sounder needs to be connected to produce a high decibel output. The choice of horn or sounder will depend on the application.

For starting dinghy races on restricted water, the type of low cost car horn that can be purchased from a local car accessory shop is suitable. For starting large fleet sailing races on open water, a large truck horn or marine horn would be better.

Car & marine horns can require high peak currents so long cable runs should be avoided.

For indoor use, a fire alarm sounder may produce sufficient decibels as a sound signal.

The horn is connected via terminals 1 (-ve) and 3 (+ve) on the green connector blocks.

6.3 Power Supply

12V DC power is supplied via terminals 2 (-ve) and 4 (+ve) on the green connector blocks.

The power supply needs to be capable of supplying sufficient current to the particular horn/sounder that is connected.

Typically power will be supplied via a 12V car battery or the committee boat's main battery.

6.4 USB Configuration Cable

The AutoHoot may be operated with any of the standard pre-programmed sequences without connection to a PC. If other sequences are required, it is necessary to connect the AutoHoot to a PC using the USB Configuration Cable. This cable is available from Richard Paul Russell Ltd.

The USB Configuration Cable connects to the pin header on the underside of the PCB as indicated by the label on the PCB. Ensure that the connector is correctly aligned such that pin 1 is connected to terminal 1 on the connector. See Figure 3.

6.5 Installation

Snap-on flanges are provided to aid mounting of the AutoHoot.

Cable entry to the AutoHoot enclosure should be via the fitted cable gland. The cable gland is suitable for cable diameters 5 to 13mm. It includes 2 sizes of grommet; select the most appropriate for the cable size used. The cable gland should be tightened to ensure watertight integrity.

Cable connection is to rising clamp style terminals. If the wire used is multi-strand, ensure that all strands are inserted in the terminal hole.

Please note that interconnection of all components should be completed prior to applying power.

After wiring is complete, check that front of enclosure is fully sealed to the back by tightening the four enclosure screws.

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7 BASIC OPERATION

7.1 Standard Pre-programmed Sequences

AutoHoot is pre-programmed with the following sequences including a selection of sailing race start sequences and some typical circuit training sequences:

No	Name	Description
1	Rule 26 1.5s rep no delay	ISAF Rule 26 (5,4,1,start) – 1.5 sec hoots with long hoot at 1 min to go, multiple starts at 5 min intervals, no delay before first signal
2	Rule 26 1.5s no delay	ISAF Rule 26 (5,4,1,start) – 1.5 sec hoots with long hoot at 1 min to go, one start only, no delay before first signal
3	Rule 26 1.5s rep 10s delay	ISAF Rule 26 (5,4,1,start) – 1.5 sec hoots with long hoot at 1 min to go, multiple starts at 5 min intervals, 10 sec delay before first signal
4	Rule 26 1.5s 10s delay	ISAF Rule 26 (5,4,1,start) – 1.5 sec hoots with long hoot at 1 min to go, one start only, 10 sec delay before first signal
5	Rule 26 2.5s rep no delay	ISAF Rule 26 (5,4,1,start) – 2.5 sec hoots with long hoot at 1 min to go, multiple starts at 5 min intervals, no delay before first signal
6	Rule 26 2.5s no delay	ISAF Rule 26 (5,4,1,start) – 2.5 sec hoots with long hoot at 1 min to go, one start only, no delay before first signal
7	Rule 26 2.5s rep 10s delay	ISAF Rule 26 (5,4,1,start) – 2.5 sec hoots with long hoot at 1 min to go, multiple starts at 5 min intervals, 10 sec delay before first signal
8	Rule 26 2.5s 10s delay	ISAF Rule 26 (5,4,1,start) – 2.5 sec hoots with long hoot at 1 min to go, one start only, 10 sec delay before first signal
9	Rule 26 2.5s 10min rep no delay	ISAF Rule 26 (5,4,1,start) – 2.5 sec hoots with long hoot at 1 min to go, multiple starts at 10 min intervals, no delay before first signal
10	Rule 26 2.5s 10min rep 10s delay	ISAF Rule 26 (5,4,1,start) – 2.5 sec hoots with long hoot at 1 min to go, multiple starts at 10 min intervals, 10 sec delay before first signal
11	3,2,1(long),0 rep no delay	3,2,1,start with long hoot at 1 min to go – multiple starts at 3 min intervals, no delay before first signal
12	3,2,1(long),0 no delay	3,2,1,start with long hoot at 1 min to go – one start only, no delay before first signal
13	3,2,1(long),0 rep 10s delay	3,2,1,start with long hoot at 1 min to go – multiple starts at 3 min intervals, 10 sec delay before first signal
14	3,2,1(long),0 10s delay	3,2,1,start with long hoot at 1 min to go – one start only, 10 sec delay before first signal
15	5 min hoots	1 signal every 5 min
16	4 min hoots	1 signal every 4 min
17	3 min hoots	1 signal every 3 min
18	2 min hoots	1 signal every 2 min
19	1 min hoots	1 signal every 1 min
20	5 min count-down	5 min count-down to start – 5 long hoots at 5 min, 4 at 4 min, 3 at 3 min, 2 at 2 min, 1 long & 3 short at 1 min 30 sec, 1 long at 1 min, 3 short at 30 sec, 2 short at 20, 1 short at 10 & 5,4,3,2 & 1 sec & 1 long at start, one start only

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No	Name	Description
21	5 min count-down rep.	As per No.20 but with multiple starts at 5 min intervals
22	3 min count-down (Appx S)	US Sailing RRS Appendix S Sound-Signal Starting System (includes 3 long hoots at 3 min, 2 at 2 min, 1 long & 3 short at 1 min 30 sec, 1 long at 1 min, 3 short at 30 sec, 2 short at 20, 1 short at 10 & 5,4,3,2,1 sec & 1 long at start, one start only)
23	3 min count-down rep.	As per No.22 but with multiple starts at 3 min intervals
24	1 min count-down	1 min count-down to start – 1 long hoot at 1 min, 3 short at 30 sec, 2 short at 20, 1 short at 10 & 5,4,3,2 & 1 sec & 1 long at start, one start only
25	1 min count-down rep.	As per No.24 but with multiple starts at 1 min intervals
26	3 min team race	Team Racing Start – 3 long hoots at 3 min, 2 at 2 min, 1 at 1 min, 3 short at 30 sec, 2 short at 20, 1 short at 10 & 5,4,3,2,1 sec & 1 long at start, one start only
27	3 min team race rep.	As per No.26 but with multiple starts at 3 min intervals
28	3 min team race rep 4min	As per No.26 but with multiple starts at 4 min intervals
29	3 min team race rep 5min	As per No.26 but with multiple starts at 5 min intervals
30	3 min team race rep 6min	As per No.26 but with multiple starts at 6 min intervals
31	match race 10 min	ISAF Appendix C 3.1 Match Racing Starting Signals with 'Attention signal' at 10 min before first start, start signal is the warning for next flight (i.e. starts at 5 min intervals)
32	match race 6 min	As per 31 but 'Attention signal' at 6 min before first start
33	Circuits 5x45on+20rest	Circuit training – each station has 5 exercises x 45 sec with 20 sec rest between stations, half way signal & 10 sec countdown to end of each exercise
34	Circuits 6x30on+15rest	Circuit training – each station has 6 exercises x 30 sec with 15 sec rest between stations, half way signal & 10 sec countdown to end of each exercise
35	Circuits 10x60on30off+120rest	Circuit training – circuit of 10 exercises, 60 sec on with 30 sec rest between each exercise and 2 min rest between circuits, half way signal & 10 sec countdown to end of each exercise
36	Fog horn powered underway	ColRegs - Signals in Restricted Visibility - Power-Driven Vessels Underway – 1 prolonged blast every 1 min
37	Fog horn sailing	ColRegs - Signals in Restricted Visibility - Sailing Vessels Underway – 1 prolonged blast followed by two short blasts every 1 min

The default active sequence is no 1.
If alternative sequences are required, please refer to section 8 for how to program custom sequences.

7.2 Indication of Active Sequence

On power up the LEDs will flash to indicate the active sequence:

The red LED will flash the 10's followed by the green LED for the 1's.

e.g. red LED flashes 3 times, green LED flashes 5 times; Sequence No = 35

7.3 To Select New Active Sequence (without PC connection)

1. Power down AutoHoot
2. Ensure Auto Switch in OFF position
3. On power up, the Hoot Button must be held pressed for 15 seconds **15 SEC**
4. When both red & green LEDs turn on, release the Hoot Button **RELEASE**
5. Press the Hoot Button the number of times equal to the 10's of the sequence number required (e.g. for Sequence No = 23, press Hoot Button 2 times). Red LED will flash off when button pressed
6. Rotate Auto Switch to ON position
7. Press the Hoot Button the number of times equal to the 1's of the sequence number required (e.g. for Sequence No = 23, press Hoot Button 3 times). Green LED will flash off when button pressed.
8. Rotate Auto Switch to OFF position
9. The red and green LEDs will turn off
10. The red and green LEDs will flash to indicate the selected sequence, as at on power on (see section 7.2). This sequence is now active.

Note: If the sequence selected does not exist, the active sequence will remain unchanged.

Note: If the selection process is not completed, the unit will time out 15 seconds after the last action. The active sequence will remain unchanged.

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7.4 To Run a Sequence

To start the selected sequence running, rotate the Auto Switch to the ON position. The green LED will turn on:

Auto Switch in ON position

When the sequence has completed, or in the case of a continuously repeating sequence has run sufficient cycles, rotate the Auto Switch to the OFF position.

At any stage it is required to abandon the active sequence (e.g. after a sailing race general recall or postponement) the sequence may be terminated by rotating the Auto Switch to OFF position.

Note: It is not possible to pause the active sequence; when the Auto Switch is subsequently rotated to the ON position, the sequence will re-start from the beginning.

At any time an additional sound signal is required (e.g. on a sailing race individual or general recall or when finishing a competitor) pressing the Hoot Button will produce a sound signal for the duration the Hoot Button is held down.

Hoot Button – press & hold for additional sound signal

Using the Hoot Button does not interrupt any sequence that is currently running.

8 ADVANCED OPERATION

AutoHoot is supplied pre-programmed with a number of standard sequences but if one of these does not fulfil the requirements of an application, any possible combination of sound signals may be programmed by the user. For this 'advanced' operation, a USB Configuration Cable is required.

Connection of AutoHoot to a PC running terminal emulation software, such as HyperTerminal, via the USB Configuration Cable enables the following advanced features to be accessed:

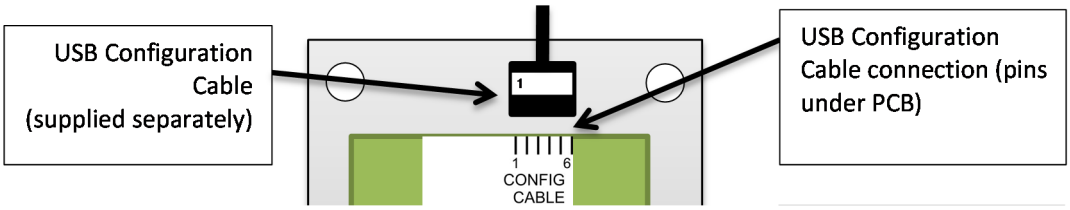
- Output list of all programmed sequences
- Output details of each programmed sequence
- Programme custom sequences

Since Microsoft released Windows Vista, HyperTerminal has not been packaged with Windows software. If your PC does not have HyperTerminal installed, you may download HyperTerminal from the internet, copy the program files from an old XP machine or use alternative free software.

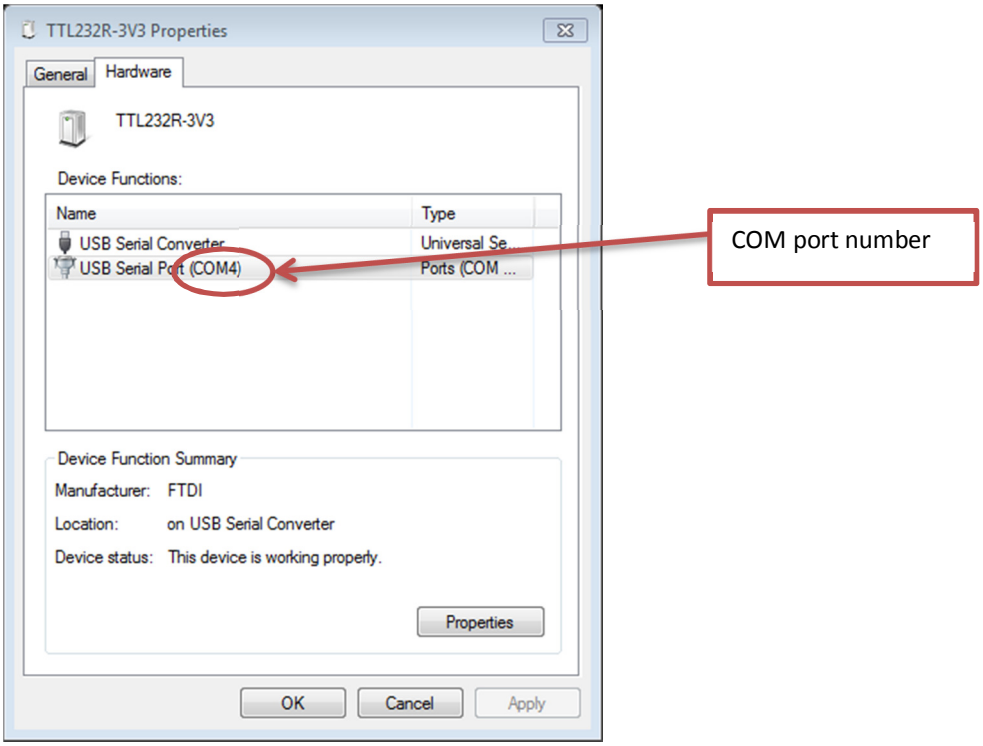
The instructions below refer to HyperTerminal but other terminal emulation software may be used.

8.1 To Set Up Communication between AutoHoot and a PC

1. Switch off power to the AutoHoot.
2. Unscrew AutoHoot enclosure to access the PCB.
3. Plug USB Configuration Cable into AutoHoot. Ensure pin 1 of connector on USB cable matches pin 1 on AutoHoot pin header.

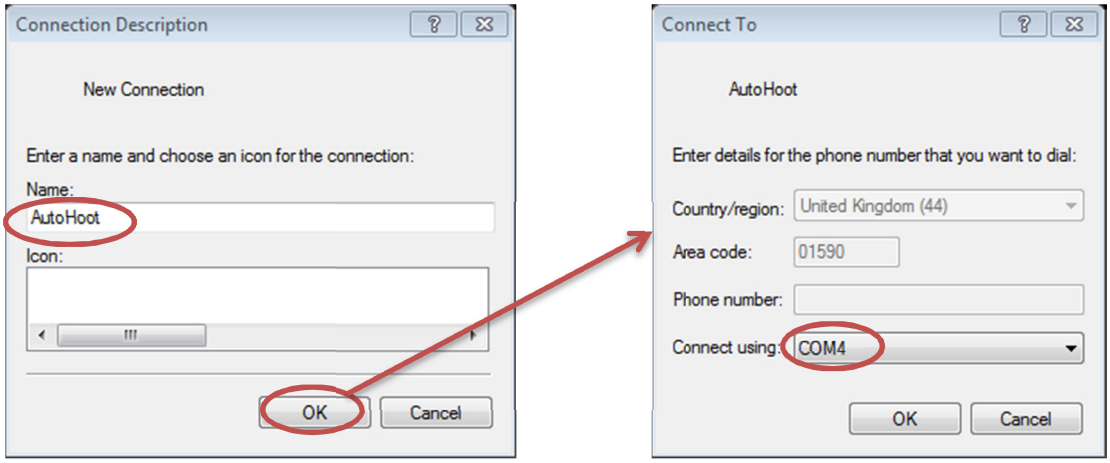


4. Plug USB cable into USB port on PC.
5. On your PC, go to CONTROL PANEL then VIEW DEVICES AND PRINTERS.
6. Find device 'TTL232R-3V3'
7. Right click to display PROPERTIES



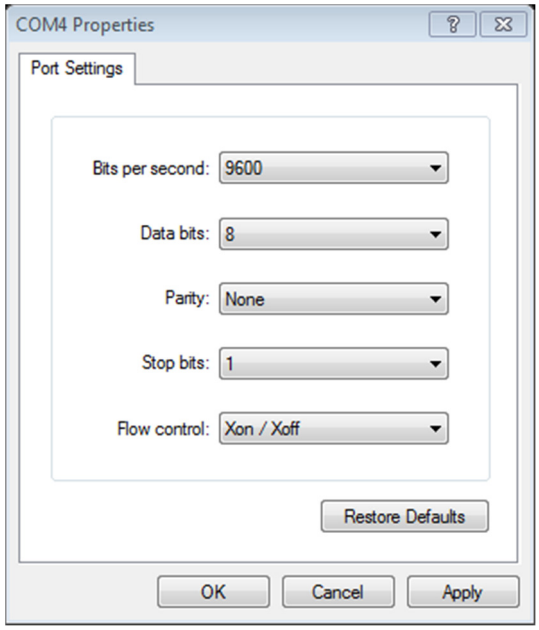
8. Under the HARDWARE tab, take note of the USB serial COM port number. E.g. COM4 above
9. Open HyperTerminal (or other terminal emulation software)
10. You may give the connection a name, e.g. AutoHoot.

11. Select to connect using the correct COM port as identified above, e.g. COM4



12. Set up of the connection must be as follows:

- 9600 bits per second
- 8 data bits
- No parity
- 1 Stop bit
- X on / X off flow control

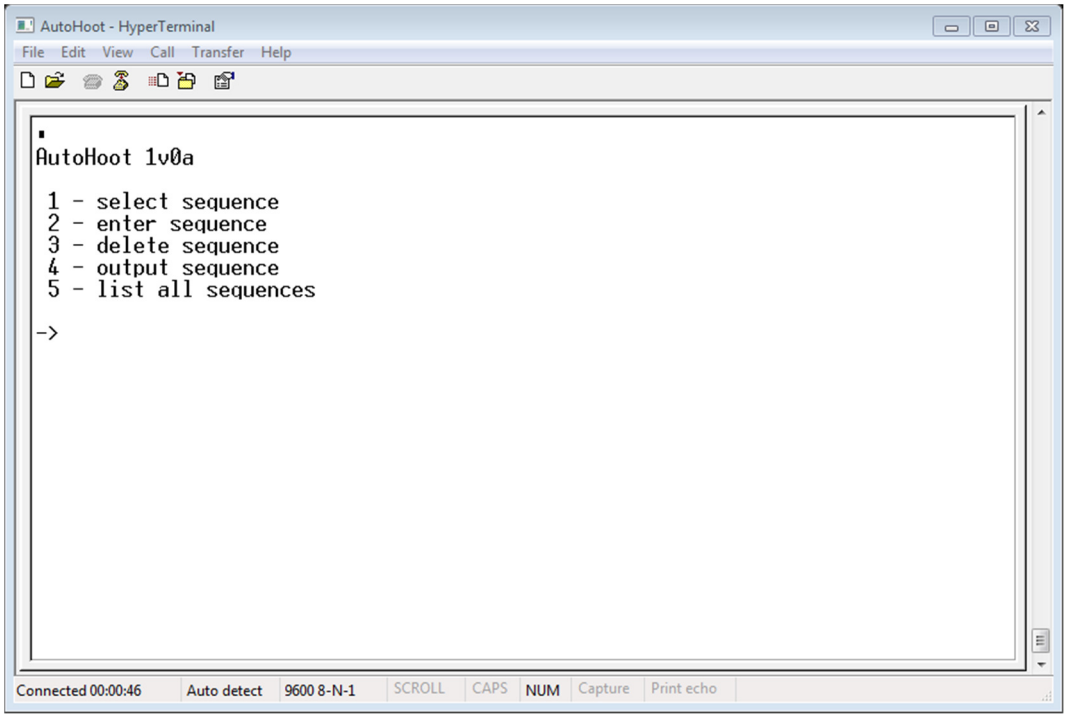


13. Click OK to save the settings

14. Connect power to AutoHoot.

15. The AutoHoot will output to the HyperTerminal screen: 'AutoHoot' followed by the software version number.

16. Press ENTER on your PC keypad, the AutoHoot menu will output as below:



8.2 To List all Sequences

At the User Prompt (->) type '5' to list all sequences

- All available sequences are listed in numerical order
- The active (selected) sequence is highlighted by an asterisk *
- The amount of program memory used is indicated by 'X% used'

```
AutoHoot 1v0a

 1 - select sequence
 2 - enter sequence
 3 - delete sequence
 4 - output sequence
 5 - list all sequences

->5

 No.    Name
*1  "Rule 26 1.5s rep no delay"
 2  "Rule 26 1.5s no delay"
 3  "Rule 26 1.5s rep 10s delay"
 4  "Rule 26 1.5s 10s delay"
 5  "Rule 26 2.5s rep no delay"
 6  "Rule 26 2.5s no delay"
 7  "Rule 26 2.5s rep 10s delay"
 8  "Rule 26 2.5s 10s delay"
 9  "Rule 26 2.5s 10min rep no delay"
 10  "Rule 26 2.5s 10min rep 10s delay"
```

```
 11  "3,2,1(long),0 rep no delay"
 12  "3,2,1(long),0 no delay"
 13  "3,2,1(long),0 rep 10s delay"
 14  "3,2,1(long),0 10s delay"
 15  "5 min hoots"
 16  "4 min hoots"
 17  "3 min hoots"
 18  "2 min hoots"
 19  "1 min hoots"
 20  "5 min count-down"
 21  "5 min count-down rep."
 22  "3 min count-down (Appx S)"
 23  "3 min count-down rep."
 24  "1 min count-down"
 25  "1 min count-down rep."
 26  "3 min team race"
 27  "3 min team race rep."
 28  "3 min team race rep 4min"
 29  "3 min team race rep 5min"
 30  "3 min team race rep 6min"
 31  "match race 10 min"
 33  "Circuits 5x45on+20rest"
 34  "Circuits 6x30on+15rest"
 35  "Circuits 10x60on30off+120rest"

 60% used

->
```

8.3 To Select New Active Sequence

At the User Prompt (->) type '1' to select a different sequence to be active.

When prompted by 'sequence number?' type the number of the sequence to become active.

```
 1 - select sequence
 2 - enter sequence
 3 - delete sequence
 4 - output sequence
 5 - list all sequences

->1 - select sequence
 sequence number? 2
 sequence number = 2
->
```

If then '5' is typed again, to list all sequences, the asterisk will now indicate the newly selected sequence as active.

```
->1 - select sequence
 sequence number? 2
 sequence number = 2
->5

 No.    Name
 1  "Rule 26 1.5s rep no delay"
*2  "Rule 26 1.5s no delay"
 3  "Rule 26 1.5s rep 10s delay"
 4  "Rule 26 1.5s 10s delay"
 5  "Rule 26 2.5s rep no delay"
```

Note: If the sequence number entered is not available an error message will be displayed; the active sequence will remain unchanged.

Note: Pressing ESC will exit the command.

8.4 To Output a Sequence

At the User Prompt (->) type '4' to output a sequence.

When prompted by 'sequence number?' type the number of the sequence to be displayed. The full sequence will then be output.

```
->4 - output sequence
 sequence number? 1


1 SEQUENCE = 1
2 NAME = "Rule 26 1.5s rep no delay"
3 SET HootLength = 1.5
4 DELAY 00:00.0
5 HOOT
6 DELAY 01:00.0
7 HOOT
8 SET HootLength = 3.0
9 DELAY 03:00.0
10 HOOT
11 SET HootLength = 1.5
12 DELAY 01:00.0
13 HOOT
14 GOTO 6
15 END


->4 - output sequence
 sequence number? 34


1 SEQUENCE = 34
2 NAME = "Circuits 6x30on+15rest"
3 SET Count = 6
4 SET HootLength = 2.5
5 HOOT
6 DELAY 00:15.0
7 SET HootLength = 0.5
8 HOOT
9 DELAY 00:05.0
10 HOOT
11 DELAY 00:01.0
12 HOOT
13 DELAY 00:01.0
14 HOOT
15 DELAY 00:01.0
16 HOOT
17 DELAY 00:01.0
18 HOOT
19 DELAY 00:01.0
20 HOOT
21 DELAY 00:01.0
22 HOOT
23 DELAY 00:01.0
```

```
24 HOOT
25 DELAY 00:01.0
26 HOOT
27 DELAY 00:01.0
28 HOOT
29 DELAY 00:01.0
30 JUMPNZ 4
31 SET HootLength = 2.5
32 HOOT
33 DELAY 00:03.0
34 HOOT
35 DELAY 00:07.0
36 SET HootLength = 0.5
37 HOOT
38 DELAY 00:01.0
39 HOOT
40 DELAY 00:01.0
41 HOOT
42 DELAY 00:01.0
43 HOOT
44 DELAY 00:01.0
45 HOOT
46 DELAY 00:01.0
47 GOTO 3
48 END


->
```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8.5 To Program a Custom Sequence

Each sequence requires a name and a number. Sequences are stored in AutoHoot in terms of actions and delays between actions.

1. At the User Prompt (->) type '2' to enter sequence
2. At prompt 'sequence number?' type the number for the new sequence (between 1 and 255)
3. At prompt 'sequence name?' type the name by which the sequence will be recognised (up to 32 characters)

```
->2 - enter sequence
 sequence number? 40
 sequence name? Demo Start

 ? - instruction help
 L - list
 END - exit

1 SEQUENCE = 40
2 NAME = "Demo Start"
-> 3
```

4. Starting from line 3, with one instruction per line, the sequence instructions may then be typed in. Sequences are stored in AutoHoot in terms of actions and delays between actions. A number of parameters, such as the length of the sound signal, may be set.
5. Instructions may be drafted in Notepad or other text editor and copied into HyperTerminal using the 'Edit' – 'Paste to host' function. This is recommended for long or complicated sequences. More than one line may be copied at a time.
6. Whilst in editing mode, typing '?' after the User Prompt lists all available instructions that may be used to program the AutoHoot:

```
1 SEQUENCE = 40
2 NAME = "Demo Start"
-> 3 ?

instructions
 DELAY = m:s.s
 END
 GOSEQUENCE n
 GOTO n or @+-n
 HOOT s.s
 JUMPNZ n or @+-n
 NAME = "text"
 SEND = "text"
 SEQUENCE = n
 SET Beeps = s
 SET Count = n
 SET HootLength = s.s
 SUBSEQUENCE n

-> 3
```

7. At any time after the User Prompt typing 'L' lists the sequence code currently being edited up to the current line:

```
-> 6 L
1 SEQUENCE = 40
2 NAME = "Demo Start"
3 HOOT
4 DELAY 01:00.0
5 HOOT
-> 6
```

8. At any time whilst inputting a sequence it is possible to make a change to an earlier instruction line if needed. This is done by pre-fixing the current instruction line with the line number of the line to change. This new line will overwrite the original line of the same number and all subsequent lines entered. Entry of instructions will continue from the edited line.

```
1 SEQUENCE = 40
2 NAME = "Demo Start"
3 HOOT
4 DELAY 01:00.0
5 HOOT
-> 6 3 SET HootLength = 2.5
3 SET HootLength = 2.5
-> 4 HOOT
4 HOOT
-> 5
```

9. When the list of instructions is complete, instruction END must be used to exit the sequence. There is a user prompt 'save sequence? Y/N' before the new sequence is saved.

10. Once the END instruction is input the sequence may not be edited (only deleted in whole).

```
1 SEQUENCE = 40
2 NAME = "Demo Start"
3 SET HootLength = 2.5
-> 4 HOOT
4 HOOT
-> 5 DELAY = 01:00
5 DELAY 01:00.0
-> 6 HOOT
6 HOOT
-> 7 END
7 END
 save sequence? Y

 sequence saved
->
```

Note: The maximum number of lines per sequence is approx. 200.

Note: A sequence may be deleted by selecting '3' from the AutoHoot menu. It is possible to delete the standard pre-programmed sequences.

8.6 AutoHoot Instructions

AutoHoot is programmed using a combination of the following instructions:

Instruction	Description	Valid Parameters	Example	Default value
DELAY	Time delay before next instruction is implemented, in minutes (m) and seconds (s) to the nearest 0.1 sec	mm:ss.s	DELAY = 01:30.0 (delay for 1 min 30 sec)	-
END	End of the sequence – always required as final line. Use to exit program editing.	-	END	-
GOSEQUENCE	Jump to another sequence. Can be used to join sequences together. Will not return to original sequence.	Sequence number (between 1 and 255)	GOSEQUENCE 2 (will leave current sequence to run sequence 2)	-
GOTO	Jump to defined line in the code or jump forward or back by certain number of lines (when @ used). Useful when a sequence is required to repeat indefinitely.	Line number or @ Line difference	GOTO 5 (will jump to line 5 of sequence) GOTO @-5 (will jump back 5 lines of sequence)	-
HOOT	Output sound signal. Length of HOOT is pre-set using SET HootLength.	-	HOOT	-
JUMPNZ	Use at the end of part of a sequence that is to repeat. JUMPNZ decrements the Count by 1 and if the Count is then not zero jumps to the defined line in the code or jumps forward or back by certain number of lines (when @ used).	Line number or @ Line difference	JUMPNZ 5 (will jump to line 5 of sequence) JUMPNZ @+5 (will jump forward 5 lines of sequence)	-
NAME	Name of the sequence	Up to 32 characters (including spaces)	NAME = "My Sequence"	
SEND	Outputs a message to the USB Configuration Cable.	Up to 100 characters (including spaces)	SEND = "My text message"	
SEQUENCE	Number of the sequence. Must be the first line of a sequence.	Sequence number (between 1 and 255)	SEQUENCE = 100	-
SET Beeps	Defines time, to nearest second, for which a series of short sound signals is output by the AutoHoot internal buzzer, before the end of a DELAY. See below for details.	s (between 0 and 120 seconds)	SET Beeps = 40 (Beep series will run in the last 40 seconds before the end of the current DELAY period)	5
SET Count	Defines total number of loops for part of a sequence to repeat. To be used with JUMPNZ.	c	SET Count = 3 (Subsequence loop will run repeat 3 times)	-
SET HootLength	Defines length of subsequent HOOTs output, in seconds to the nearest 0.1 sec. HootLength remains at this value until next SET HootLength instruction.	s.s (between 0.1 and 255 seconds)	SET HootLength = 4.5 (subsequent HOOTS will have 4.5 sec duration)	1.5
SUBSEQUENCE	Enables another sequence to be used as part of current sequence. Will return to next line of original sequence.	Sequence number (between 1 and 255)	SUBSEQUENCE = 100	-
?	Help – lists prompts for valid instructions	-	?	-
L	Lists the sequence code currently being edited	-	L	-

8.7 SET Beeps Function

A series of warning Beeps may be output by the AutoHoot internal buzzer before the end of a DELAY. The time at which this Beep series starts before the end of the DELAY is defined by SET Beeps (in seconds).

The full series of Beeps that may be output is as follows:

Time before end of DELAY	Warning Beep Signal
2 min	2 long
1 min	1 long
30 sec	3 short
20 sec	2 short
10 sec	1 short
5 sec	1 short
4 sec	1 short
3 sec	1 short
2 sec	1 short
1 sec	1 short
0 sec	Beep equal in duration to HootLength

The proportion of the Beep series that is used will depend on the number of seconds set by SET Beeps. It is also limited by the DELAY. For example, if SET Beeps = 40 and DELAY = 02:00, the Beeps will commence 30 secs to go before end of the delay with 3 short Beeps followed by 2 short at 20 sec to go etc. If the SET Beeps = 40 and DELAY = 00:15, the Beeps will just start with 10 sec to go before the end of the delay.

If a warning Beep is required when the sequence is first started or an individual Beep is useful at any stage during the sequence, an additional instruction line of DELAY = 0 may be inserted.

Beeps may be switched off by using instruction SET Beeps with no value, i.e. “SET Beeps =”.

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9 AUTOHOOT SPECIFICATION

Physical	Dimensions	Width: 80 mm Depth: 53 mm Height: 106 mm (excluding cable gland)
	Weight	220g
	Enclosure material	ABS (UL94-HB flame retardant) plastic
	Mounting	Snap-on flanges
	Cable Entry	Compression cable gland. With two part compression ring. Cable diameter 5 to 13 mm
Sequences	Pre-programmed sequences	Selectable by switch sequence on power up
	Custom sequences	User programmable via optional USB Configuration Cable
Switches	Auto Switch	Stainless steel 2 position rotary switch with illuminated arrow. IP67 rated
	Hoot Button	Stainless steel push-button switch with illuminated ring. IP67 rated
Relay (Horn connection)	Rated Current	20A
	Endurance	>300,000 operations with resistive load at 20A
	Connection	Rising clamp style terminals (2.5mm^2 cable)
Timing	Accuracy	±20 ppm at 25 ºC (ageing ±5 ppm max at 25 ºC) per year
Communication	Protocol	Asynchronous 8 bit data (no parity, 1 stop bit, Xon/Xoff). 9600 baud. 3.3V logic level signal.
	Connection	AutoHoot USB Configuration Cable connects to internal pin header
Power	Power requirement	6.5 to 15 Vdc
	Current at 12Vdc	30 mA typical (with LEDs on, excluding horn current)
	Supply input protection	Polarity reversal protected. Internal replaceable fuse – 20A micro-blade automobile fuse
	Connection	Rising clamp style terminals (2.5mm^2 cable)
Environmental	Operating Temperature Range	-40 ºC to +85 ºC
	Storage Temperature Range	-40 ºC to +85 ºC
	Enclosure protection	IP67
Guarantee	Period	1 year (refer to Appendix)

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APPENDICES

A1 Guarantee

System components are warranted for a period of twelve (12) months from the original date of purchase, against defective materials and workmanship. In the event that warranty service is required, please contact Richard Paul Russell Ltd.

This warranty is only valid if, when warranty service is required, a full description of the fault is provided and presented with the original invoice, and the serial number(s) on the component has not been defaced.

Richard Paul Russell Ltd's liability is limited to items of its own manufacture, and it does not accept liability for any loss resulting from the operation or interpretation of the results from this equipment.

This warranty covers none of the following:

- Periodic check ups, maintenance and repair or replacement of parts due to normal wear and tear.
- Cost relating to transport, removal, or installation of the component.
- Misuse, including failure to use the component for its normal purpose or incorrect installation.
- Damage caused by Lightning, Water, Fire, Acts of God, War, Public Disturbances, incorrect supply voltage or any other cause beyond the control of Richard Paul Russell Ltd.
- Units which have been repaired or units altered by a party other than Richard Paul Russell Ltd's employees or agents without prior written consent from Richard Paul Russell Ltd.

In no event shall Richard Paul Russell Ltd be liable under any circumstances for any direct, indirect or consequential damages, any financial loss or any lost data contained in any product (including any returned product), regardless of the cause of loss. Richard Paul Russell Ltd products are not warranted to operate without failure. Richard Paul Russell Ltd's products must not be used in life support systems or other application where failure could threaten injury or life.

The Customers statutory rights are not affected by this warranty. Unless there is national legislation to the contrary, the rights under this warranty are the customer's sole rights and Richard Paul Russell Ltd shall not be liable for indirect or consequential loss or damage to any other related equipment or material.

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A2 Electromagnetic Conformity

EC DECLARATION OF CONFORMITY ACCORDING TO COUNCIL DIRECTIVE 2004/108/EC

We, Richard Paul Russell Limited of

New Harbour Building
Bath Road
Lymington
Hampshire SO41 3SE
United Kingdom

Declare under our sole responsibility that the product:

AutoHoot

Manufactured by: Richard Paul Russell Limited

to which this declaration relates, is in conformity with the protection requirements of Council Directive 2004/108/EC on the approximation of the laws relating to electromagnetic compatibility.

This Declaration of Conformity is based upon compliance of the product with the following harmonised standards:

Emissions EN 61326:2006

Immunity EN 61326:2006

Signed by: R.P.Russell

Richard Paul Russell – Director

Date of Issue: 19 March 2013

Place of Issue Richard Paul Russell Limited
New Harbour Building, Bath Road
Lymington SO41 3SE, UK

A3 WEEE (Waste, Electrical and Electronic Equipment) Statement

The WEEE directive places an obligation on all EU-based manufacturers and importers to take-back electronic products at the end of their useful life. Richard Paul Russell Ltd accepts its responsibility to finance the cost of treatment and recovery of redundant WEEE in accordance with the specific WEEE recycling requirements.

This symbol on the product or on its packaging indicates that the product must NOT be disposed of with normal household waste. Instead, it is the end user's responsibility to dispose of their waste equipment by arranging to return it to a designated collection point for the recycling of WEEE. By separating and recycling waste equipment at the time of disposal, natural resources will be conserved and it will be ensured that the equipment is recycled in a manner that protects human health and the environment. For more information about where you can send your waste equipment for recycling, please contact your local council office or visit our website www.r-p-r.co.uk.

A4 RoHS Statement
(The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2006)

AutoHoot has been designed to comply with EU Directive 2002/95/EC on RoHS regulations that came into force on 1 July 2006. The unit is assembled from compliant components.

RoHS is often referred to as the lead-free directive, but it restricts the use of the following six substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

PBB and PBDE are flame retardants used in some plastics.