REDTRONIC
VEHICLE WARNING AND SAFETY SOLUTIONS

MANUFACTURED IN THE UNITED KINGDOM

S20IS

Neodymium 20W Speaker with Integrated Siren USER MANUAL

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1.0 Introduction

The S20IS siren is an intelligent, user-friendly programmable siren system. The siren system utilises cutting-edge technology to allow the siren the produce any worldwide emergency vehicle warning siren tone within a single device.

2.0 Siren Specification

Standard Features:

- IP69K Rated
- 11-16v & 20-30v Operation
- 3 Programmable Inputs
- 9 country tone settings
- 26 Optional Tone Functions
- Momentary & Latching switch functions
- Synchronisation
- Monitor Output
- Voltage Sense: 9.5v De-power
- Double-hit off (less than 312mSec apart)

Programmable Features:

- Tone options
- 3 +ve or –ve trip options
- Night mode Function
- *(set as 90-100dB)*
- 11 UK/ International sequenced tone options

3.0 Power Specification

- S20IS sirens are manufactured to operate within the voltage range of 11-16v & 20-30v DC ***Please note*** **no operation outside these limits – do not power between 16-20v**

Supply Voltage

11-16v / 20-30v DC full power
10-11v DC *Possible* Reduced sound output
9.5v DC Siren shuts down

Supply Current

Up to **2.4A** when operational.
Approximately 10mA when inactive

Siren Audio Output @ 13.8V:
Maximum: 20W RMS approx. into 4 ohms, *may vary according to tone.*
Low/Night: 6W RMS approx. into 4 ohms (90-100dB)

Protection
Under voltage trip: 9.5Volts nominal.
Overcurrent trip: 4 Amps supply current approx., auto-resetting.

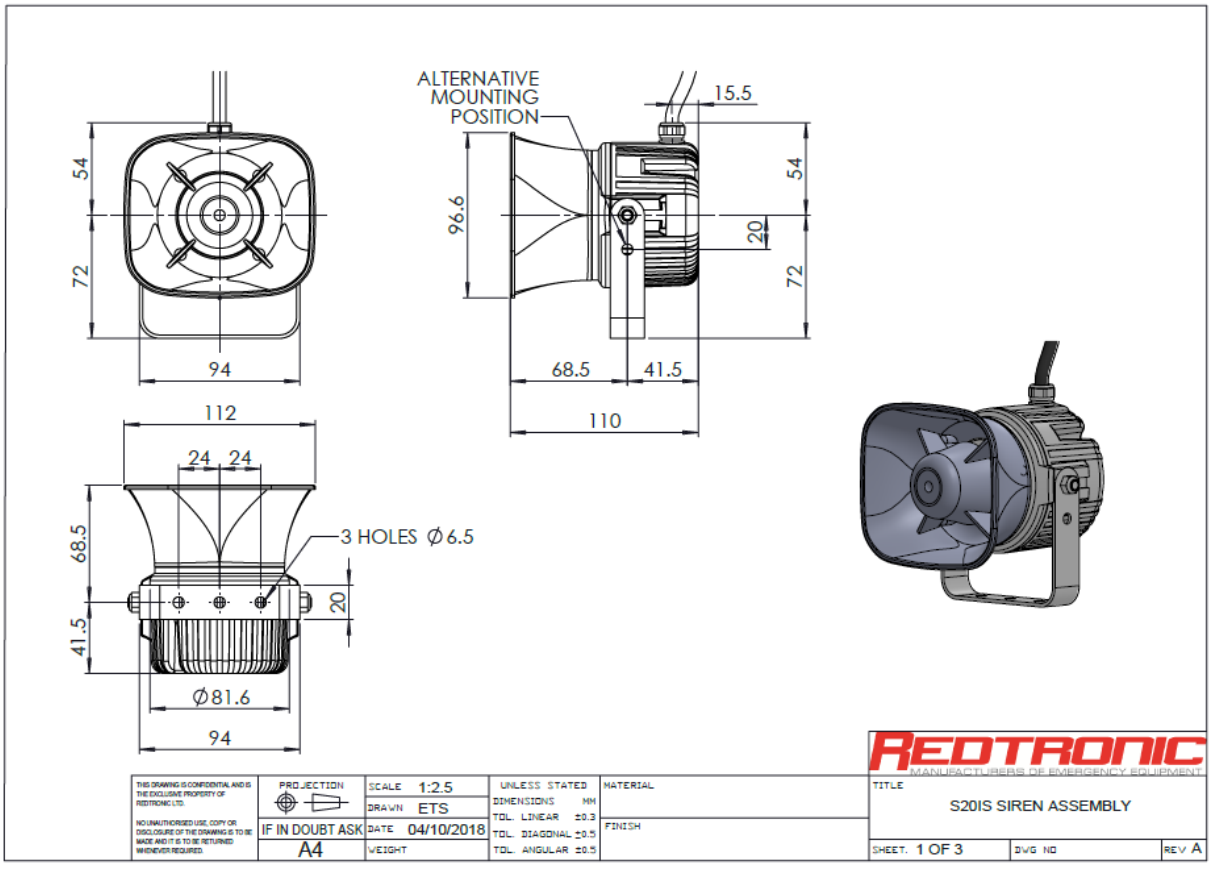
4.0 Internal Controller

There are three programmable inputs (TRIGGER T1-T3) available to programme to selectable tone options. These can be set in +ve or –ve operational polarity depending on the switch input required.

4.1 Input / Output functions

	Function	Colour	Description
Standby Mode	Gnd	Black	Ground/0V (High current stud connector)
	V+	Red	Power In, positive (High current stud connector)
	Trigger 1	Brown	Programmable as +ve or -ve (+ve default)
	Trigger 2	Blue	Programmable as +ve or -ve (+ve default)
	Trigger 3	Green	Programmable as +ve or -ve (+ve default)
	Sync	Yellow	Sync In/Out
	Configure/Night	Grey	Dual function - use to configure device and for 'Night mode'
	Function 1	Orange	Volume (mainly for microphone)
	Function 2	Violet	Volume (mainly microphone)
	Monitor	White	A positive output to indicate that siren is working. Will drive upto 50mA at nominal supply voltage

4.2 Dimensions



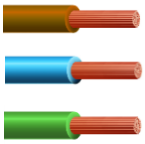
5.0 Setting the Trigger Polarity

5.1 **Trigger Polarity** (Trigger 1-3 +ve or –ve setting)

The S20IS siren has '3' trigger wires which can be set to 2 options for polarity depending on your switch requirement. This may be a **+ve** or –ve trip. **As default the unit is set to a +ve trip.**

Note: Each Trigger can be set to a different polarity if required.

If you require a negative trip follow this setup procedure:

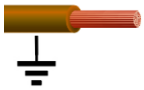


T1: Trigger 1 brown wire
T2: Trigger 2 blue wire
T3: Trigger 3 green wire

a) Ensure no power is applied to the unit (*Red & Black wire*)

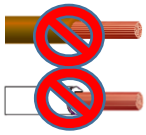
b) Apply the white *(monitor)* wire to **+ve** permanently.

c) Now apply power to the unit (*Red & Black wire*). This will put the unit into 'low volume setup mode' and will produce **4 BEEPS**



d) Select the trigger input you wish to designate polarity to. In this case, we are setting T1 brown wire. Apply to **–ve Ground**

e) The speaker will 'BEEP' to confirm input is set to **–ve** polarity



f) Remove the brown wire from ground

g) Remove the white *(monitor)* wire from **+ve.**

h) The unit is now set with T1 as **–ve ground** trigger

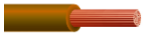
i) Repeat on inputs T2 and T3 if desired

5.2 To return to **+ve** trigger, simply reverse the operation by reversing the action in the same format:

a) Ensure no power is applied to the unit (*Red & Black wire*)

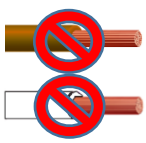
b) Apply the white *(monitor)* wire to **+ve** permanently.

c) Now apply power to the unit (*Red & Black wire*). This will put the unit into 'low volume setup mode' and will produce **4 BEEPS**



d) Select the trigger input you wish to designate polarity to. In this case, we are setting T1 brown wire. Apply to **+ve**

e) The speaker will 'BEEP' to confirm input is set to **+ve** polarity



f) Remove the brown wire from ground

g) Remove the white *(monitor)* wire from **+ve**.

6.0 Setting the Country Mode

6.1 Summary of Country Modes

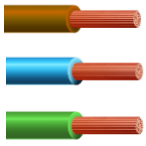
Country	Beeps
UK/international	1
Cyprus	2
Germany	3
Austria	4
Netherlands	5
France	6
Italy	7
Finland	8
Norway	9

6.2 Setting a COUNTRY to an input

The S20IS siren can be set to have the 3 trigger inputs (to select the tone) set to any number of 9 optional 'country settings' – this designates the available tones for each region.

Note: All Trigger inputs are locked to the same 'country' within the software. You cannot set any input to a different country setting.

Example: in order to have 'Germany City tone' you must first set the Trigger output to 'Germany Country setting 3'.



T1: Trigger 1 brown wire
T2: Trigger 2 blue wire
T3: Trigger 3 green wire

a) Ensure no power is applied to the unit (*Red & Black wire*)

b) Apply the white *(monitor)* wire to **+ve** permanently.

c) Now apply power to the unit (*Red & Black wire*). This will put the unit into 'low volume setup mode' and will produce **4 BEEPS**

d) Select the trigger input you wish to designate polarity to. In this case we are setting Trigger 2 blue wire. Apply to **+ve**. The speaker will 'BEEP' to confirm input is set to **+ve** polarity

e) Pulse the grey *(Configure)* wire **+ve** momentarily. On each 'country' selection there will be a number of 'BEEPS', these signify the 'region' as table in **6.1** (above). E.g France tone selection will activate as **'6 short beeps'**

f) Remove the trigger wire – (in this example) Trigger 2 blue wire **+ve** momentarily.

g) Remove the white *(monitor)* wire from **+ve**.

h) The unit is now set with T2 blue wire as **FRANCE DEFAULT TONE MODE**

7.0 Setting the Tone

7.1 Summary of Tones

The S20 has 26 optional 'tones' built into the software and these are easily selectable on each of the T1-T3 outputs.

Available tones within S20 product are:

	Tone	Fixed trigger action	Tone summary
1	Wail	Momentary trigger	650-1500Hz
2	Yelp	Momentary trigger	650-1500Hz a faster version of Wail
3	Hi-lo	Momentary trigger	622/830Hz.
4	Phaser	Momentary trigger	10 cycles of 650-1500Hz sweeps per Second (has priority over other tones)
5	Bullhorn	Momentary trigger	650-900Hz (has priority over other tones)
6	Whoop (single)	Momentary trigger	Whoop, sweep from 650 to 1500Hz in approx. 600mSec with optional repeat
7	Cyprus tone	Momentary trigger	Austrian Police tone>Bullhorn>International Hi-lo> Austrian Police tone
8	German country	Latched trigger	360-630Hz
9	German City	Latched trigger	360-630Hz
10	German compressor	Latched trigger	360-630Hz
11	Austria Fire Vibrato	Latched trigger	392Hz and 523Hz
12	Austria Rettung Vibrato	Latched trigger	392Hz and 523Hz
13	Austria Special Vibrato	Latched trigger	440Hz and 587Hz.
14	Austria Police Vibrato	Latched trigger	392Hz and 523Hz
15	Netherlands tone Standard	Latched trigger	375 and 500Hz tones
16	Netherlands tone Vibrato	Latched trigger	375 and 500Hz tones with vibrato
17	French Police	Latched trigger	435/580Hz, 55 cycles/minute
18	French Fire	Latched trigger	435/488Hz, 27.5 cycles/minute
19	French Samu UMH	Latched trigger	435/651Hz, 55 cycles/minute
20	French Gendamerie	Latched trigger	435/740Hz, 55 cycles/minute
21	French Ambulance ASA	Latched trigger	420/516/420Hz + 1.5Sec gap, 30 full cycles/minute
22	Italy Police	Latched trigger	392-660Hz
23	Italy Ambulance	Latched trigger	392-660Hz
24	Finland tone	Latched trigger	Yelp 650-1500Hz for 6 seconds, Hi-Lo (Two-tone), 622/830Hz. For 6 seconds (alternating)
25	Norway Wail	Latched trigger	650-1500Hz Wail
26	Norway Yelp	Momentary trigger	10 second tone 650-1500Hz (has priority over wail tone)

7.2 Summary of Default tones for each 'Country'

To make programming simple, T1-T3 has a default tone applied to each of the trigger outputs. We set them as standard as the below setting

Country	Beeps	Input type	T1 default	T2 default	T3 default	Frequency
UK/international	1	momentary	wail-yelp-off	10 second phaser	whoop	600-1500Hz
Cyprus	2	momentary	Police-bullhorn-Hilo	Bullhorn	Police	600-1500Hz
Germany	3	Constant	Country	City	Compressor	360-630Hz
Austria	4	Constant	Fire	Rettung (Rescue)	Police	392-523Hz
Netherlands	5	Constant	Low Vibrato tone	High Vibrato tone	Low Vibrato tone	375-500Hz
France	6	Constant	Police	Fire	Ambulance	435-740Hz
Italy	7	Constant	Police	Ambulance	Police	392-660Hz
Finland	8	Constant	Hilo/Yelp	Hilo/Yelp	Hilo/Yelp	600-1500Hz
Norway	9	Constant	Wail	10 second yelp		600-1500Hz

7.3 Change preset tones on each trigger T1-T3

Once the 'Country' has been set (see 6.0 Setting the Country) you can alter the 'default' tones for that country to the other options available. Note: Some countries will have limited tone options due to the number of 'tones' available to that country for compliance to regulatory standards.

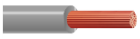
To change the preset tone on a trigger, follow this example:

a) Ensure the Siren is in 'Standby' mode

b) Apply the white *(monitor)* wire to **+ve** permanently.

c) Apply the brown *(T1 tone trigger)* wire to **+ve permanently**

d) A tone will start



e) Apply the grey *(Config)* wire to **+ve** momentarily

f) The tone will change to the next available tone

g) Release the brown and grey wires

h) The tone is now saved.

7.4 Loop Tone Options

All 'UK/International' tones (Country setting 1 {1 beep}) allow for loop options to be enabled. These tones can be triggered using a successive momentary action which will activate the tones in a loop as follows:

	Loop options	Fixed trigger action
1	Wail-yelp-off	Momentary trigger
2	Wail-yelp-phaser-off	Momentary trigger
3	Wail-yelp-hilo-off	Momentary trigger
4	Hilo-yelp-wail-off	Momentary trigger
5	Wail-yelp	Momentary trigger
6	Wail-yelp-phaser	Momentary trigger
7	Wail-yelp-hilo	Momentary trigger
8	Hilo-yelp-wail	Momentary trigger
9	Bullhorn only	Momentary trigger
10	Phaser only – 10 second burst	Momentary trigger
11	Yelp only	Momentary trigger
12	Whoop only	Momentary trigger
13	Wail only	Momentary trigger

7.5 Changing a Tone on an input on a momentary input

a) Ensure the Siren is in 'Standby' mode

b) Apply the white *(monitor)* wire to **+ve** permanently.

c) Apply the brown *(T1 tone trigger)* wire to **+ve momentarily**

d) The tone sequence will start, with a short cycle of the tone

e) Apply the grey *(Config)* wire to **+ve** momentarily

f) The tone will change to the next available tone sequence (***in order of tones 1-11***)

g) Release the brown and grey wires

h) The tone is now saved.

8.0 Priority Tones

The Priority of Trigger inputs is (High Priority) T3 > T2 > T1 (Low Priority). This is important if you wish a tone to override the current tone

9.0 Night Mode

9.1 Activating Night Mode

There is a 'Night mode' available on the device which will reduce the sound output to between 90-100dB when the siren is activated with 'night mode' applied.

a) Ensure the Siren is in 'Standby' mode (or siren may be activated)

b) Apply the grey *(Configure)* wire to **+ve** permanently

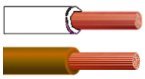
c) The sound output will reduce to 90-100dB

Note: the Night Mode sound output level of 90-100dB is a set level due to regulatory requirements and safety. The level of the Night mode is not able to be altered by the user.

10.0 Test Mode

To enter a 'test mode' to ensure the S20 siren is functioning on the correct tone you can follow the following procedure:

a) Ensure the Siren is in 'Standby' mode

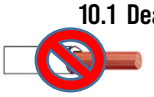


b) Apply the white *(monitor)* wire to **+ve** permanently.

c) Apply the brown *(T1 tone trigger) (or T2/T3)* wire to **+ve** **momentarily**

d) **The tone will start at a level of only 1/25th power of full volume**

10.1 Deactivate test mode:



a) Remove the white *(monitor)* wire from **+ve** supply.

11.0 Monitor Output

11.1 Monitor output function

The monitor output activates when the Siren is outputting a sound of more than 4 watts. Detected faults, such as loss of communication to the siren driver board, will prevent the signal from activating. Any detected fault will cause the LED internal to the speaker housing to flash (see 12.0 Diagnostic LED) and the monitor output will deactivate.

The monitor output wire (white) can be connected to an external LED signal, buzzer or computer to monitor speaker output compliance. This is a positive output that will drive up to 50mA at nominal voltage supply. Please do not put a heavy load to this wire connection. When there is non-compliance to the standard, the signal will deactivate.

12.0 Diagnostic LED

12.1 Explaining how the diagnostic led works

Within the siren (not visible externally) there is an LED inbuilt which indicates supply on and normal siren operation. If a fault condition exists, a repetitive sequence of flashes indicates the nature of the fault as follows:-

1) Constantly lit – normal operation;
2) 1 flash – speaker not connected/weak or volume low;
3) 2 flashes – overload detected;
4) 4 flashes – under voltage power supply detected;
5) 8 flashes – over temperature;

Other combinations may occur:

e.g. **6 flashes** = 4+2 = under voltage/overload.

Fault codes are reset when siren or PA is activated, as appropriate.

Note: Opening the siren may invalidate warranty. Please contact the factory if there are any issues with lack of functionality on the siren.

13.0 Synchronisation between units

The Sync input/output is used to synchronise S20IS siren products **exclusively** with other Redtronic S20IS siren products. The Sync wire *(yellow)* should be connected only to other REDTRONIC S20IS products that are required to run in sequence with each other.

DO NOT APPLY THE YELLOW WIRE TO +VE SUPPLY IN ANY CIRCUMSTANCE.

DO NOT APPLY THE YELLOW WIRE TO ANY OTHER REDTRONIC PRODUCTS (APART FROM S20IS PRODUCTS) AS THIS WILL INVALIDATE THE WARRANTY (SUCH AS 'WARNING LIGHTS').

14.0 Restore Factory settings

SOFTWARE DOES NOT CURRENTLY SUPPORT RESTORE FUNCTION