Symphoni AV Voice+

Product Manual

15th February 2008

Contents:

Fulleon Ltd
Llantarnam Park
Cwmbran
Gwent
Newport
NP44 3AW
www.fulleon.co.uk
T +44 (0)1633 628500
F +44 (0)1633 866346

Introduction

The Symphoni AV Voice+ sounder beacon housing uses the Fulleon Symphoni AV (combined sounder beacon) housing.

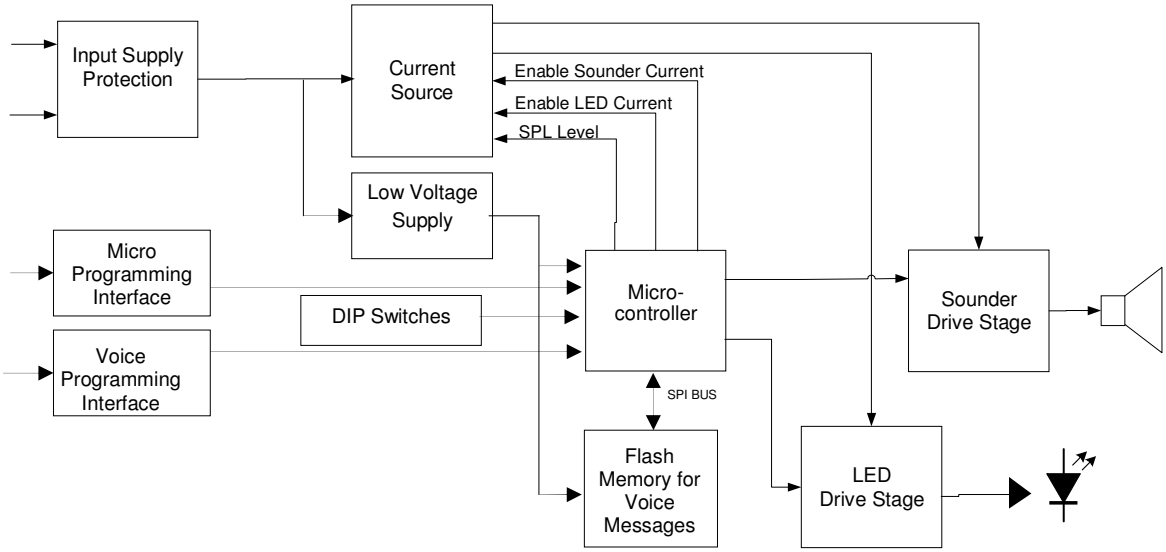
It is a conventional product using the power up status of the connected loop to begin operation. The Sound Pressure Level (SPL) performance and light output is as defined in the requirement specification document.

Loop connection is via a screw terminal connector block for ease of termination of cables. Each connector has a terminal for loop in and out. Provision is made for a first and second stage alarm input control.

The same PCB is used for the Symphoni Voice+, however in that product the LED drive components are omitted.

The unit is available as an IP and Non-IP product.

Functional Block Diagram



General Functional Description

Input Supply Protection

The circuit provides supply voltage reverse polarity connection protection and transient suppression via bi-directional transorbs.

Low Voltage Power Supply

The power supply is an integrated voltage regulator providing a nominal 3.3V supply.

Micro Programming Interface

The micro programming interface is a set of PCB pads, which connect direct to the micro controller built in firmware flash controller pins. A special pin jig adaptor is used to upload the firmware via these pads from a PC controlling a Texas microcontroller programming device. No external power supply to the sounder is required for this operation.

Voice Programming Interface

The voice programming interface is a PCB pluggable connector which connects direct to the micro controller built in USART controller pins. A special USB to serial adaptor is used to upload the voice message .wav files via these pads, from a PC windows explorer or GUI environment. . No external power supply to the sounder is required for this operation.

Flash Memory for Voice Messages

The voice programming interface to flash memory communications are controlled by the micro firmware which must be uploaded first prior to voice upload, the firmware for which has been written by HCC-embedded and is incorporated into the sounder firmware compilation.

To operate, the voice message DIP switches must be all set to OPEN position. This places the sounder into voice programming mode when the Voice programming interface is plugged into the USB port via the serial adaptor unit.

Tone and Flash Generator Micro-controller

The tones and light output timings are generated by a crystal driven MSP430.

Tone, volume and message settings are all selected via the PCB DIP switches. First and second tone / message combination are selected by the application of power to the appropriate supply terminals.

Constant Current and Sound Driver

This constant current circuit is designed to minimise the current ripple on the incoming supply. The current remains constant independent of which tone is selected. The circuit charges the reservoir capacitor used to supply the voltage to the speaker.

The circuit has two preset current levels depending which volume level is selected.

The sound driver is a simple emitter follower circuit, with inductor across the speaker (piezo) to provide resonance.

Constant Current and Flash Driver

As for the sound driver the constant current circuit is repeated this time to charge the reservoir capacitors providing voltage for the beacon LEDs.

The LEDs, three parallel banks of 4 leds in series are driven by two transistors (complimentary darlington), current through the leds is limited by a resistor, this limit ensures that the reservoir capacitors have sufficient time to fully charge between flashes.

SPL Data (Converted to 1 Meter).

Sample No. : 1
Tone No. 1: Continuous
Frequency: 900Hz
Configuration settings: 1110

Volume level: High Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	79.0	80.0	<6	77.0	68.0	<6
45º	86.0	77.0	<6	85.0	87.0	<6
75º	90.0	91.0	<6	90.0	92.0	<6
105º	90.0	91.0	<6	89.0	91.0	<6
135º	85.0	86.0	<6	85.0	87.0	<6
165º	76.0	77.0	<6	76.0	78.0	<6

Volume level: Low Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	66.0	67.0	<6	64.0	64.0	<6
45º	73.0	75.0	<6	73.0	73.0	<6
75º	80.0	80.0	<6	79.0	80.0	<6
105º	79.0	80.0	<6	78.0	79.0	<6
135º	73.0	74.0	<6	73.0	73.0	<6
165º	63.0	64.0	<6	64.0	64.0	<6

Specimen No.: 1
Tone No. 2: Slow Whoop
Frequency: 500 to 1200Hz
Configuration settings: 0110

Volume level: High Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	79.0	80.0	<6	78.0	80.0	<6
45º	87.0	88.0	<6	76.0	88.0	<6
75º	91.0	93.0	<6	92.0	93.0	<6
105º	92.0	93.0	<6	92.0	93.0	<6
135º	87.0	88.0	<6	86.0	87.0	<6
165º	77.0	78.0	<6	78.0	79.0	<6

Volume level: Low Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	70.0	71.0	<6	69.0	70.0	<6
45º	78.0	79.0	<6	78.0	79.0	<6
75º	84.0	85.0	<6	84.0	85.0	<6
105º	84.0	85.0	<6	84.0	85.0	<6
135º	78.0	79.0	<6	78.0	78.0	<6
165º	68.0	69.0	<6	68.0	69.0	<6

Specimen No.: 1
Tone No. 3: Alternating
Frequency: 990 & 650Hz
Configuration settings: 1010

Volume level: High Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	79.0	80.0	<6	76.0	78.0	<6
45º	86.0	87.0	<6	85.0	87.0	<6
75º	90.0	91.0	<6	90.0	91.0	<6
105º	90.0	92.0	<6	89.0	91.0	<6
135º	85.0	86.0	<6	84.0	86.0	<6
165º	76.0	77.0	<6	75.0	77.0	<6

Volume level: Low Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	65.0	66.0	<6	65.0	65.0	<6
45º	75.0	75.0	<6	74.0	75.0	<6
75º	80.0	80.0	<6	80.0	81.0	<6
105º	80.0	80.0	<6	80.0	80.0	<6
135º	74.0	74.0	<6	73.0	74.0	<6
165º	64.0	65.0	<6	65.0	66.0	<6

Specimen No.: 1
Tone No. 4: Intermittent
Frequency: 990Hz
Configuration settings: 0010

Volume level: High Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	78.0	80.0	<6	76.0	78.0	<6
45º	86.0	88.0	<6	85.0	87.0	<6
75º	89.0	91.0	<6	89.0	91.0	<6
105º	89.0	91.0	<6	90.0	91.0	<6
135º	85.0	87.0	<6	85.0	86.0	<6
165º	76.0	78.0	<6	75.0	77.0	<6

Volume level: Low Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	66.0	67.0	<6	64.0	64.0	<6
45º	75.0	75.0	<6	74.0	75.0	<6
75º	79.0	79.0	<6	78.0	79.0	<6
105º	79.0	79.0	<6	79.0	79.0	<6
135º	74.0	74.0	<6	73.0	74.0	<6
165º	64.0	65.0	<6	64.0	65.0	<6

Specimen No.: 1
Tone No. 5: Sweep (DIN)
Frequency: 1200 – 500Hz
Configuration settings: 1100

Volume level: High Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	80.0	81.0	<6	79.0	81.0	<6
45º	87.0	89.0	<6	87.0	89.0	<6
75º	92.0	93.0	<6	92.0	94.0	<6
105º	92.0	94.0	<6	92.0	94.0	<6
135º	87.0	89.0	<6	87.0	89.0	<6
165º	79.0	80.0	<6	79.0	80.0	<6

Volume level: Low Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	70.0	71.0	<6	69.0	70.0	<6
45º	79.0	79.0	<6	78.0	79.0	<6
75º	84.0	85.0	<6	84.0	84.0	<6
105º	84.0	85.0	<6	84.0	84.0	<6
135º	78.0	79.0	<6	78.0	79.0	<6
165º	69.0	70.0	<6	69.0	70.0	<6

Specimen No.: 1
Tone No. 6: Intermittent Pulses
Frequency: 990Hz
Configuration settings: 0100

Volume level: High Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	78.0	79.0	<6	76.0	78.0	<6
45º	85.0	87.0	<6	85.0	86.0	<6
75º	90.0	91.0	<6	89.0	91.0	<6
105º	89.0	91.0	<6	89.0	91.0	<6
135º	85.0	87.0	<6	84.0	86.0	<6
165º	76.0	77.0	<6	75.0	77.0	<6

Volume level: Low Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	66.0	67.0	<6	63.0	64.0	<6
45º	75.0	75.0	<6	74.0	75.0	<6
75º	78.0	79.0	<6	78.0	79.0	<6
105º	78.0	79.0	<6	78.0	79.0	<6
135º	74.0	75.0	<6	74.0	75.0	<6
165º	64.0	65.0	<6	64.0	65.0	<6

Specimen No.: 1
Tone No. 7: Sweep
Frequency: 800 – 970Hz
Configuration settings: 1000

Volume level: High Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	79.0	81.0	<6	79.0	80.0	<6
45º	87.0	89.0	<6	87.0	88.0	<6
75º	92.0	93.0	<6	92.0	93.0	<6
105º	92.0	94.0	<6	92.0	94.0	<6
135º	87.0	89.0	<6	87.0	88.0	<6
165º	78.0	80.0	<6	78.0	79.0	<6

Volume level: Low Volume

	dB(A) Horizontal Plane			dB(A) Vertical Plane		
Position	Vmin	Vmax	Difference	Vmin	Vmax	Difference
15º	68.0	69.0	<6	68.0	69.0	<6
45º	78.0	79.0	<6	78.0	79.0	<6
75º	83.0	84.0	<6	84.0	84.0	<6
105º	83.0	84.0	<6	83.0	84.0	<6
135º	78.0	79.0	<6	78.0	79.0	<6
165º	69.0	70.0	<6	68.0	69.0	<6

Revision History

Revision History		
Issue 1	15/02/2008	First Issue
Issue 2	06/06/2011	Updated for SPL Data.
Issue 3	09/06/2011	Updated for SPL Data.