Silence Sensor Manual

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Silence Sensor

Overview

The Radio Systems Silence Sensor is a fail-safe program feed switcher utilizing a 4PDT relay (to switch one stereo balanced program channel), activated by an automatic silence sensor circuit, remote control triggers, or front panel manual control. On activation, the unit will switch an auxiliary feed to the output until main audio resumes or the unit is manually reset. The unit also features an audible alarm, front panel and remote activate, reset and defeat functions.

Installation

Wiring

1) Connect the main (program), auxiliary (standby) input and switched output (transmitter feed) audio lines. All inputs are stereo and balanced.

2) Connect any remote control connections to be utilized. The following are available.

Control Inputs

Remote Trip 1

Remote Trip 2

Remote Trip 3

Arm/Defeat

Reset

Note: all inputs are opto-isolated.

Connect a DC voltage between +5 and +15 volts and unit ground to the terminals provided.

Stereo Outputs

Trip LED

Arm LED

Audio Silence LED

Remote 1 Silence LED

Remote 2 Silence LED

Remote 3 Silence LED

Note: These terminals are pull-to-ground. They provide a ground return path whenever their associated front-panel LED is illuminated.

Note: The remote trip inputs (1-3) are intended for connection to STL and satellite squelch relays and other failure indicators from program transmission equipment.

Programming

1) Set the silence delay rear panel DIP switches for the delay time between silence detection and unit trigger. Range is 2 - 510 seconds. Factory default is 6 seconds.

2) Set the restore delay rear panel dip switch for the delay time between the restoration of main channel audio and the unit's return to normal (main input) operation. Range is 2 - 254 seconds. The last DIP switch disables the restore function. Factory default is 6 seconds.

   Note: Select a DIP switch time by setting the switch down (thrown towards the rear of the unit). Dipswitch times are additive.

3) An internal jumper is provided to increase the sensitivity of the silence sensor. No jumper (factory default) is –24 dBm, a jumper installed in the left and center pins of the jumper yields –34dBm of sensitivity, and a jumper installed in the right and center pins of the jumper yields –44dBm of sensitivity.

Operation

1) When the unit is armed, it will trigger in the absence of main channel audio (-24, -34,-44 dBm – dependent on programming) after the DIP switch set delay time (a minimum of 6 seconds is recommended to avoid false triggers). Remote failure alarms (eg. STL failure) will cause an immediate trigger and switch to remote opera tion.

2) Trigger will cause the auxiliary audio input to be routed to the switched output, the internal sonalert to sound, the "tripped" LED to light, and one of the four silence sensor LEDs to illuminate, indicating the cause for the tripped state.

3) The correction of any problem whicch caused the unit to trigger (audio loss or remote failure) will automatically restore the unit to normal mode after the DIP switch set restore delay (a minimum of 6 seconds is recom mended to avoid chatter).

> **Note:** A reset initiated by the return of main audio or an external remote control reset will not extinguish the silence detector LEDs. These stay illuminated to provide a history of the failure.

4) The front panel reset switch will force the unit back to normal operating mode if in the tripped state, and clear all fault LEDs. If the arm condition still exists, the unit will trip again after the delay time out. If the unit has already automatically reset, the reset switch can be used to clear the silence detector fault LED's.

5) The front panel activate switch puts the unit in silence detect (operating) mode. When the disarm lamp is lit, the main audio input is always routed to the switch output. Note that the main audio input is wired via the switching relay N/C contacts, so this is the fail-safe mode in the event of a power failure or unit power supply malfunction.

6) The front panel test switch forces a trigger mode. Only the "tripped" LED will light during a test. Use the reset switch to clear this mode.

> **Note:** All front panel push buttons are momentary.

Bill Of Materials

Level	Seq.	Component - Item	Component - Description	UOM	QTY.
1	10	10863	DA 4X4 CHASSIS	EA	1.0
1	20	11279	SILENT SENSOR FRONT PANEL	EA	1.0
1	30	11278	SILENCE SENSOR BD ASSY	EA	1.0
2	10	11277	PCB SILENT SENSOR	EA	1.0
2	20	11288	PIEZO BUZZER REF: B1	EA	1.0
2	30	8825	CAP 50 PF SILVER MICA REF: C10;C11;C12;C13;C14;C15;C16; C17	EA	8.0
2	40	2906	CAP 300 PF SILVER MICA REF: C1;C2;C3;C4;C5;C6;C7;C8;C9	EA	8.0
2	50	8192	CAP 30 PF SILVER MICA REF: C23;C24	EA	2.0
2	60	1049	CAP 100 UF 25V NP REF: C25;C27	EA	2.0
2	70	8191	CAP 10 UF 35V ELEC REF: C34	EA	1.0
2	80	5744	CAP 100 UF 25V RAD +/- 20% REF: C35;C36;C37;C39;C43	EA	5.0
2	90	10597	CAP 4700 UF 35V REF: C38;C41	EA	2.0
2	100	5743	CAP .1 UF FILM REF: C5;C18;C19;C20;C21;C22;C26; C28;C29;C30;C31;C32;C33;C40; C42	EA	15.0
2	110	7786	DIODE 1N4735A REF: D16	EA	1.0
2	120	1012	DIODE 1N4148 REF: D1;D2;D3;D4;D5;D7;D8;D9;D10; D11;D12;D13;D14;D15	EA	14.0
2	130	10975	LED 3MM AMBER HI BRIGHTNESS REF: D24;D29;D30;D31;D32	EA	5.0
2	140	13051	RED LED HI BRIGHTNESS LITEON REF: D25;D28;D33	EA	3.0
2	150	10683	LED 3MM GREEN HIGH CURRENT REF: D26;D27	EA	2.0
2	160	7012	DIODE 1N4005 REF: D6;D17;D18;D19;D20;D21;D22; D23	EA	8.0
2	170	10489	FUSE HOLDER REF: F1	EA	1.0
2	180	7790	TERMINAL BLOCK 5 PIN REF: J1;J2;J3;J4;J5;J6;J7	EA	7.0
2	190	10491	IEC POWER CONNECTOR REF: J8	EA	1.0
2	200	10484	SAMTEC 8 PIN MRT HEADER REF: J9	EA	1.0
2	210	10490	SAMTEC 8 PIN FRT HEADER REF: J10	EA	1.0
2	220	7770	HEADER 3 PIN SINGLE ROW .1 REF: JU1;JU2	EA	2.0
2	230	7784	RELAY DPDT 12V REF: K1;K2	EA	2.0

Level	Seq.	Component - Item	Component - Description	UOM	QTY.
2	240	10328	TRANSISTOR 2N7000 REF: Q1;Q2;Q3;Q4;Q5;Q6;Q7;Q10	EA	8.0
2	250	6118	TRANSISTOR 2N4401 REF: Q8;Q9	EA	2.0
2	260	10326	RES NETWORK 10K (COMMON) REF: R14;R15	EA	2.0
2	270	3558	RES 5.11k 1/4W 1% REF: R18;R19;R20;R21;R22;R23;R55;R56; R57;R58;R16;R17;R89;R97	EA	14.0
2	280	5872	RES 1K 1/4W 1% REF: R1;R2;R3;R4;R5;R6;R7;R8;R75;R76	EA	10.0
2	290	5716	RES 1.0M 1/4W 1% REF: R25;R27;R29;R31;R33;R85;R86	EA	7.0
2	300	7533	RES 220 OHM 1/4W 5% REF: R77	EA	1.0
2	310	2816	RES 10K 1/4W 1% REF: R30;R32;R24;R26;R28;R94;R95;R96	EA	8.0
2	320	9278	RES 2,55K 1/4W 1% REF: R38;R39;R43;R44;R47;R48;R34;R35	EA	8.0
2	330	1030	RES 470 OHM 1/4W 5% REF: R40;R41;R49;R54;R59;R62;R63;R66; R73;R74;R45;R82;R78;R79;R80;R81; R46;R36;R37;R50;R51;R52;R53	EA	23.0
2	340	10933	RES 33 OHM 1/2W 5% REF: R42	EA	1.0
2	350	5729	RES 2.21K 1/4W 1% REF: R60;R61;R90;R93	EA	4.0
2	360	1018	RES 100K 1/4W 5% REF: R64;R65	EA	2.0
2	370	11286	RES 14.0K 1/4W 1% REF: R68;R71	EA	2.0
2	380	11285	RES 30.9K 1/4W 1% REF:R70;R67	EA	2.0
2	390	10620	RES 3.40K 1/4W 1% REF: R72;R69	EA	2.0
2	400	7514	RES 3.32K 1/4W 1% REF: R83;R88	EA	2.0
2	410	5718	RES 10.2K 1/4W 1% REF: R84;R87	EA	2.0
2	420	1162	RES 10 MEG 1/4W 5% REF: R91;R92	EA	2.0
2	430	7133	RES 0.0 OHM 1/4W REF: R98;R108	EA	2.0
2	440	1107	RES 330 OHM 1/4W 5% REF: R100;R103;R104;R105;R107;R99	EA	6.0
2	450	2831	RES 1K 1/2W 5% REF: R9;R10;R11;R12;R13;R101;R102;R109	EA	8.0
2	460	10847	FUSE 0.3 AMP REF: F1	EA	1.0
2	470	5758	JUMPER PLUG .1” REF: JU1;JU2	EA	2.0
2	480	11109	SCREW 8-32 X 1 1/2 TRUSS HD REF: T1	EA	1.0

Level	Seq.	Component - Item	Component - Description	UOM	QTY.
2	490	9290	NUT KEP #8 REF: T1	EA	1.0
2	500	8228	SOCKET 40 PIN IC REF: U11	EA	1.0
2	510	1069	NUT 4-40 REF: U12	EA	1.0
2	520	1070	WASHER LOCK 4-40 REF: U12	EA	1.0
2	530	2846	HEAT SINK TO-220 REF: U12	EA	1.0
2	540	7601	SIL-PAD TO-220 REF: U12	EA	1.0
2	550	7602	SHOULDER WASHER FOR T-220 REF: U12	EA	1.0
2	560	8233	SCREW 4-40 X 3/8 PHILLIPS PAN REF: U12	EA	1.0
2	570	3225	SOCKET 6 PIN DIP REF: U1;U2;U3;U4;U5	EA	5.0
2	580	1011	SOCKET 8 PIN DIP REF: U6;U7;U8;U9;U10	EA	5.0
2	590	9284	SWITCH 8 POSITION DIP REF: S1;S2	EA	2.0
2	600	9542	SWITCH SINGLE STATION “F” REF: S3;S4;S5;S6	EA	4.0
2	610	10492	SWITCH DPDT REF: SW1	EA	1.0
2	620	10788	TRANSFORMER DA TOROID REF: T1	EA	1.0
2	630	4390	IC LM358N REF: U10	EA	1.0
2	640	11287	IC PROGRAMMED SILENCE SENSOR REF: U11	EA	1.0
2	650	3679	VR 7805 REF:U12	EA	1.0
2	660	3680	VR L7815CV REF: U13	EA	1.0
2	670	3681	VR LM7915CT REF: U14	EA	1.0
2	680	9340	IC TIL113 REF: U1;U2;U3;U4;U5	EA	5.0
2	690	1010	IC 5532 REF: U6;U7;U8;U9	EA	4.0
2	700	10943	MICROPROCESSOR CRYSTAL 16 MHz REF: Y1	EA	1.0
2	710	1033	RES 100 OHM 1/4W 5% REF: R106	EA	1.0
1	40	10658	FISH PAPER	EA	1.0
1	50	9155	POWER CABLE 3-COND TO IEC REF: SHPPING	EA	1.0
1	60	7602	SHOULDER WASHER FOR T-220	EA	2.0
1	70	1069	NUT 4-40	EA	2.0
1	80	1154	NUT KNURL 6-32	EA	1.0
1	90	2919	SCREW 6-32 X 1/2 PH PHIL	EA	3.0

Level	Seq.	Component - Item	Component - Description	UOM	QTY.
1	100	7646	KEEP NUT #6	EA	3.0
1	110	3516	SCREW 6-32 X 1/4 BLACK PANHEAD	EA	6.0
1	120	10688	STANDOFF 440 X 1 7/16	EA	2.0
1	130	1070	WASHER LOCK 4-40	EA	2.0
1	140	7583	SCREW 4-40 X 3/16 FLAT PHILLIP	EA	2.0
1	150	1134	HEAT SINK AAVID 5750B	EA	2.0
1	160	10449	BOX 1U RACKMOUNT	EA	1.0
1	170	11049	SCREW 6-32 X 1/4 BH BLACK REF: FRONT PANEL	EA	4.0
1	180	11452	SCREW 4-40 X 3/16 PH PHIL ITLW REF: BOARD MOUNTING	EA	9.0
1	190	13661	SILENCE SENSOR COVER	EA	1.0

Warranty

Radio Systems, Inc. warrants this equipment to be free from defects in materials and workmanship for a period of one (1) year.

This warranty extends to first users of the product and future owners who purchase this product within the warranty period.

The terms of this warranty are null and void if this product is stored or operated in an enviroment not conducive to electronic equipment, or shows signs of misuse or modifications, which affect the proper functioning of the product. This warranty does not apply to damage caused by fire, smoke, flood, lightning, or acts of nature and physical abuse.

Radio Systems, Inc., and its associated companies, authorized distributors, and personnel are not liable for loss of revenues or other damages, or effects to the broadcast signal quality or coverage which may result from the improper functioning of this product.

Repair Policy

Technical assistance is available at any time, at no charge, by phone or correspondence.

During the warranty period, there will be no charge for parts or service made to units which show no sign of misuse by customer or lightning caused damage. The customer is responsible for the cost of shipping their unit back to Radio Systems for repair.

During the warranty period, shipment of small parts and assemblies may also be made at a charge to the user. Emergency shipments of replacement parts and circuits will be made at the user's request for an extra shipping and service charge. Chargeable services will be made COD or on Net-30 day terms to users with established accounts.

During the warranty period, full credit or return of COD charges (less any service and expedited shipping charges) will be made to users who return the defective parts or circuits within 30 days, if the damage is covered under the terms of the warranty.

Return Instructions

Contact Radio Systems (856-467-8000) for a return authorization number.

Pack all items carefully and ship prepaid, via UPS insured, to:

Radio Systems, Inc.
Attn: R.A. # _____
601 Heron Drive
Bridgeport, NJ 08014-0458

Enclose a note that includes your name, company, phone number, the serial number, return address (no box numbers), and a complete description of the problem.