

MODLINE

SOLID-STATE VHF CONVERTERS

MODEL SCON- (HIGH/LOW) SERIES

DESCRIPTION

Model SCON- (High/Low)* Series is a line of single-channel converters designed for converting high-band vhf tv channels to low-band channels at the head-end of an MATV system. Units are available for making the conversions listed in Table 1.

TABLE 1—MODEL SCON- (HIGH/LOW) CONVERSIONS

FROM CHANNEL	TO CHANNEL
7	2, 3, 4, or 5
8	2, 3, 4, 5, or 6
9	2, 4, 5, or 6
10	2, 3, 4, 5, or 6
11	2, 3, 4, 5, or 6
12	2, 3, 5, or 6
13	2, 3, 4, 5, or 6

The converters consist of an oscillator/mixer Model OMA-3 Series 2, a plug-in input channel filter Model FHC-**, and a plug-in output channel filter Model FLC-**, all mounted on a 3½" x 19" panel. A buffer amplifier at the OMA input prevents radiation from the antenna of the oscillator signal and other spurious signals.

To reduce the potential for interference on other channels, including those not carried initially, oscillator frequencies have been chosen so that wherever possible both fundamental and second harmonic frequencies fall outside the vhf tv bands. However, the potential for second harmonic interference in the channel 10 to 13 range does exist with the 7/4, 7/5, 8/5, 8/6, and 9/6 conversions and users should be certain that, in view of this, projected system assignments can be handled. Oscillator frequencies are listed in Table 2.

Each SCON- (High/Low) is supplied with mounting screws and two F-59A cable connectors.

SPECIFICATIONS

PASS BAND	6 MHz
GAIN	2 dB min.
FLATNESS	1 dB P/V
SKIRT SHARPNESS	12 dB at 6 MHz below channel edge 14 dB at 6 MHz above channel edge
INPUT (for 30 dB S/N ratio)	200μV min.
OUTPUT CAPABILITY (for 5%, 0.5 dB sync clipping)	+35 dBmV (56,000μV) min.
NOISE FIGURE	15 dB max.
OSC. OUTPUT AT OUTPUT TERM.	+17 dBmV max.
IMPEDANCE (both terminals)	75 Ω
MATCH * Input	10 dB min. return loss (VSWR 1.92:1 max.)
Output	9 dB min. return loss (VSWR 2.10:1 max.)
AMBIENT OPERATING TEMP. RANGE	32° F to 130° F (0° C to 55° C)
POWER REQUIREMENTS	115V, 60Hz, 0.04A, 5W

INSTALLATION

GENERAL

Some conversions produce out-of-channel spurious signals at the frequencies listed in Table 3. In general, the signals in the "F" column can be suppressed by providing a single-channel amplifier or a channel filter tuned to the converted

TABLE 2—MODEL SCON- (HIGH/LOW) OSCILLATOR FREQUENCIES

FROM CHANNEL	TO CHANNEL				
	2	3	4	5	6
7	120 MHz	114 MHz	108 MHz	98 MHz	—
8	126 MHz	120 MHz	114 MHz	104 MHz	98 MHz
9	132 MHz	—	120 MHz	110 MHz	104 MHz
10	138 MHz	132 MHz	126 MHz	116 MHz	110 MHz
11	144 MHz	138 MHz	132 MHz	122 MHz	116 MHz
12	150 MHz	144 MHz	—	128 MHz	122 MHz
13	156 MHz	150 MHz	144 MHz	134 MHz	128 MHz

*Units are marked with the conversion channels; e.g., Model SCON-9/4 converts channel 9 to channel 4.
**Model number refers to tuned channel; e.g., Model FHC-9 is tuned to channel 9.

TABLE 3—OUT-OF-CHANNEL SPURIOUS OUTPUTS

FROM CHANNEL	TO CHANNEL									
	2		3		4		5		6	
	T	F	T	F	T	F	T	F	T	F
7	60.25 MHz	64.75 MHz	—	—	—	—	—	—	—	—
8	—	66.25 MHz 70.75 MHz	58.75 MHz	54.25 MHz	—	—	—	—	—	—
9	—	76.25 MHz	—	—	—	—	—	—	—	—
10	—	78.25 MHz 82.75 MHz	66.25 MHz	70.75 MHz	—	54.25 MHz 58.75 MHz	—	—	—	—
11	—	84.25 MHz	—	76.75 MHz	64.75 MHz	60.25 MHz	—	—	—	—
12	—	—	—	78.25 MHz 82.75 MHz	—	—	—	—	—	—
13	—	—	—	84.25 MHz	—	76.75 MHz	—	56.75 MHz	—	—

channel after the converter. A 3 dB pad should be included between the filter and converter to prevent interaction.

The signals in the "T" column are too close to the converted channel for simple filtering and require trapping out with a Model TLB tuned to the spurious signal.

For example, the 7/2 conversion produces an "F" signal at 64.75 MHz and a "T" signal at 60.25 MHz. A channel filter or a single-channel amplifier tuned to channel 2 will suppress the 64.74 MHz signal, and a TLB tuned to 60.25 MHz will suppress the spurious signal at that frequency.

PROCEDURE

- Mount the converter in a 19" rack using the four 10-32 x $\frac{3}{8}$ " machine screws supplied.
- Install an F-59A connector on the input and output cables as follows:
 - Remove 7/16" of the cable outer jacket (Figure 1).
 - Fan the shield back over the jacket, then trim the shield close to the jacket.
 - Remove $\frac{1}{4}$ " of the dielectric; do not nick the center conductor.
 - Scrape off any fuzz from the surface of the center conductor and file off any burrs from its end.

e. Push the connector mandrel between the cable dielectric and shield until the built-in ferrule is positioned entirely over the cable jacket.

f. Use a Jerrold crimping tool Model PL-659 for crimping the ferrule tight.

- Where necessary, mount the spurious signal suppression devices and prepare jumper cables as above for connecting the devices.
- Make all connections. After hand-tightening the connectors, wrench-tighten them 1/6 turn.

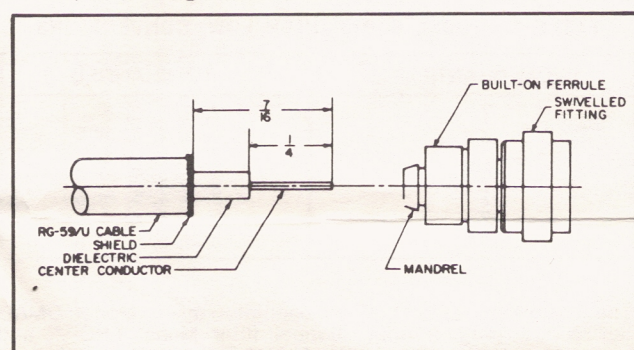


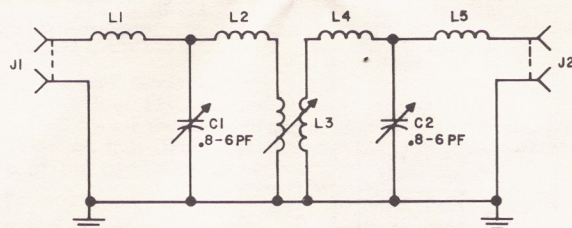
Figure 1. RG-59/U Prepared for F-59A Connector

REPLACEMENT PARTS LIST

Assembly: High-Channel Filter, Model FHC Ref. Dwg. No.: 861-834					Assembly: Osc./Mixer, Model OMA-3, Ser. 2 Ref. Dwg. No.: 861-867				
ITEM	SCHEMATIC DESIGNATION	QTY.	DESCRIPTION	JERROLD PART NO.	ITEM	SCHEMATIC DESIGNATION	QTY.	DESCRIPTION	JERROLD PART NO.
1	C1, 2	2	CAPACITORS 1—6pF, trimmer	128-550	1	C1	1	6.8pF, 5%, NPO, disc	124-112
2	L1, 5	2	COILS		2	C2, 3	2	0.02μF, 25V, RMC, disc	124-065
3	L2, 4	2	Coil assembly	B155-184-2	3	C4, 12, 17	3	1000pF, GMV, disc	123-115
4	L3	1	Coil assembly	B155-185	4	C5, 13	2	1000pF, GMV, feed-thru	129-205
			Coil assembly	B155-186	5	C6	1	1.5pF, feed-thru	129-204
5	J1, 2	2	CONNECTORS F-61A	C821-155	6	C7	1	12pF, 10%, NPO, disc	124-102
Assembly: Low-Channel Filter, Model FLC Ref. Dwg. No.: 861-835					7	C8	1	10pF, 10%, NPO, disc	124-106
1	C1, 2	2	CAPACITORS 0.9 —12pF, trimmer	128-549	8	C9	1	46pF, 5% disc	124-069
2	L1, 2, 4, 5,	4	COILS		9	C10, 11	2	1000pF, GMV, stand-off	129-111
3	L3	1	Coil assembly	B155-188-1	10	C14	1	250μF, 25V, electrolytic	127-062
			Coil assembly	B155-189-2	11	C15	1	0.01μF, GMV, disc	124-031
4	J1, 2	2	CONNECTORS F-61A	C821-155	12	C16 (for osc. ranges 80-100 MHz and 110-130 MHz)	1	4.7pF	124-118
					13	C17	1	47 pF, ±0.25pF, 500V	124-118
					14	C18	1	2.2pF, 10%, 500V	122-008
								COILS	
					15	L1	1	Coil assembly	B155-208
					16	L2	1	Coil assembly	B155-209

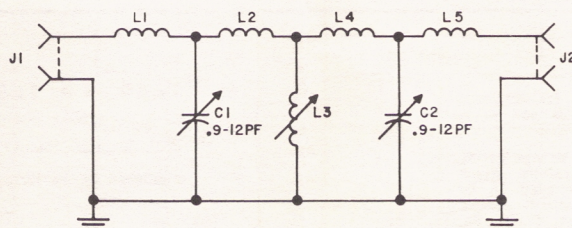
ITEM	SCHEMATIC DESIGNATION	QTY.	DESCRIPTION	JERROLD PART NO.	ITEM	SCHEMATIC DESIGNATION	QTY.	DESCRIPTION	JERROLD PART NO.
			COILS (continued)					RESISTORS	
17	L3	1	Coil assembly	B155-190	27	R1	1	56 Ω , 5%, $\frac{1}{2}$ W	112-203
18	L4 (for xtal. freq. 80-110 MHz)	1	Coil assembly (iron tuning slug)	B155-190-0	28	R2	1	270 Ω , 5%, $\frac{1}{4}$ W	112-993
	L4 (for xtal. freq. 110-165.25 MHz)	1	Coil assembly (brass tuning slug)	B155-190-1	29	R3	1	2.2k Ω , 10%, $\frac{1}{2}$ W	112-404
19	L5	1	Toroid	109-161	30	R4	1	4.7k Ω , 10%, $\frac{1}{2}$ W	112-446
20	L6, 7	2	Choke	157-006	31	R5	1	3k Ω , 5%, $\frac{1}{4}$ W	112-934
			CONNECTORS		32	R6	1	2.7k Ω , 10%, $\frac{1}{2}$ W	112-416
21	J1, 2	2	PF-59A	B812-007	33	R7	1	1.2k Ω , 10%, $\frac{1}{2}$ W	112-374
			CRYSTAL		34	R8	1	560 Ω , 10%, $\frac{1}{2}$ W	112-332
22	Y1	1	Quartz (specify frequency)	139-109	35	R9	1	27 Ω , 5%, $\frac{1}{2}$ W	112-161
			DIODES		36	R10	1	180 Ω , 10%, $\frac{1}{2}$ W	112-269
23	CR1—4	4	Matched quad	A139-234	37	R11	1	1.5k Ω , 10%, $\frac{1}{2}$ W	112-383
24	CR5	1	Zener, Hoffman 1N1773A	137-720	38	R12	1	220k Ω , 20%, $\frac{1}{2}$ W	112-659
25	CR6	1	Silicon, Solitron CER-69A	137-684	39	R13	1	1M Ω , 20%, $\frac{1}{2}$ W	112-743
			PILOT LIGHTS		40	R14	1	2k Ω , 5%, $\frac{1}{4}$ W	112-930
26	DS1, 2	2	Lamp, Neon, NE-2	102-003				SWITCH	
					41	S1	1	SPDT, slide	162-002
								TRANSFORMERS	
					42	T1, 4	2	Transformer assembly	B144-149
					43	T2, 3	2	Transformer assembly	B144-147
					44	T5	1	Power transformer	B141-233
								TRANSISTORS	
					45	Q1	1	Amperex A2165	130-198
					46	Q2	1	RCA 36479	130-138

SCHEMATIC
FILTER HIGH CHANNEL
MODEL FHC



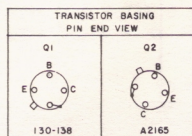
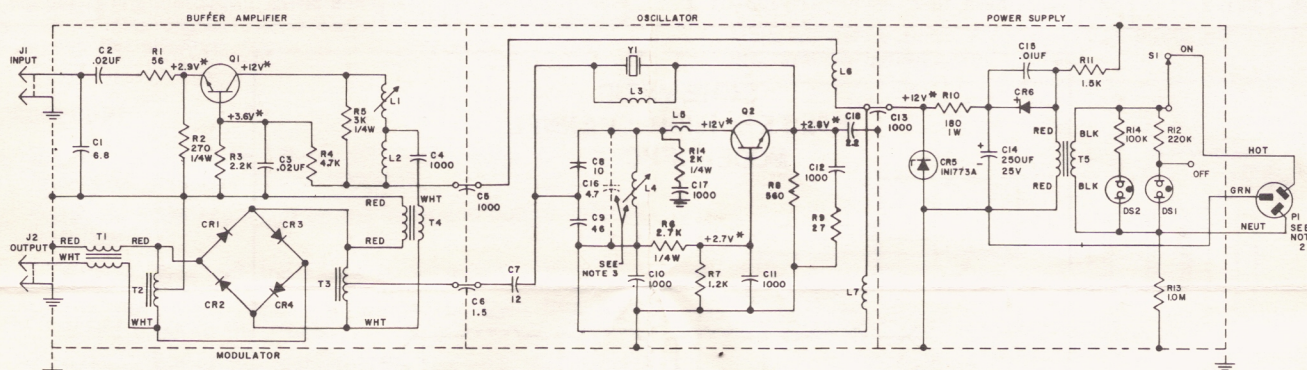
B861-834-0

SCHEMATIC
FILTER LOW CHANNEL
MODEL FLC



B861-835-0

SCHEMATIC
OSCILLATOR - MIXER
MODEL OMA-3
SERIES 2



NOMINAL TRANSISTOR QUIESCENT POINTS	
	Q1
V _{CE}	9.0 VOLTS
I _C	10 mA
P _D	95 mW
	Q2
V _{CE}	8.5 VOLTS
I _C	6 mA
P _D	50 mW

- NOTES:
- UNLESS OTHERWISE SPECIFIED:
A. ALL CAPACITOR VALUES GIVEN IN PF.
B. ALL RESISTORS ARE IN OHMS, 1/2 W.
 - PLUG VIEWED FROM PIN (MATING) SIDE.
 - XTAL RANGE C16 L4 SLUG
80-100 MC ON IRON
100-110 MC OFF IRON
110-130 MC ON BRASS
130-162.25 MC OFF BRASS
 - ASTERISK (*) DENOTES DC VOLTAGES MEASURED WITH 20,000 Ω/VOLT METER REFERENCED TO CHASSIS, CRYSTAL REMOVED.

D861-867-A

WARRANTY

Each unit of Jerrold Equipment is warranted for 90 days against original factory imperfections in material and workmanship.

In the event any unit of equipment should fail in service during this period, pack the complete defective unit carefully, attach a letter stating the reasons the unit was believed to be defective, and return it to our Service Department, Jerrold Electronics Corp., 15th Street and Lehigh Avenue, Phila., Pa. 19132, prepaying transportation charges. It shall be repaired or replaced at no charge.

Such service or repairs as may be necessary as the result of abuse or accident are not included in the warranty. In the event of any service breakdowns after the warranty period, this unit may be returned for repairs at a nominal charge.

All Data Subject to Change Without Notice

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EDUCATIONAL AND COMMUNICATION SYSTEMS DIVISION
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