



INSTRUCTION DATA

Dowty RFL Industries Inc. • Boonton, New Jersey

Model 66 AMUX

ANALOG MULTIPLEX CARD

DESCRIPTION

The Model 66 AMUX (Figure 1) is one of the DRFL Series 66 TDMS plug-in modules. Its purpose is to switch one of multiple analog signals to an A/D converter for conversion. The card will handle 8 differential or 16 single-ended input signals; however, more than one card may be used for larger systems. Provision has been made for either internal channel sequencing or external channel selection. If internal sequencing is used, there are jumpers available to program the last channel used. This card is a "build-it-yourself" type that the system designer can tailor to his application by specifying options. This card uses solid state switches.

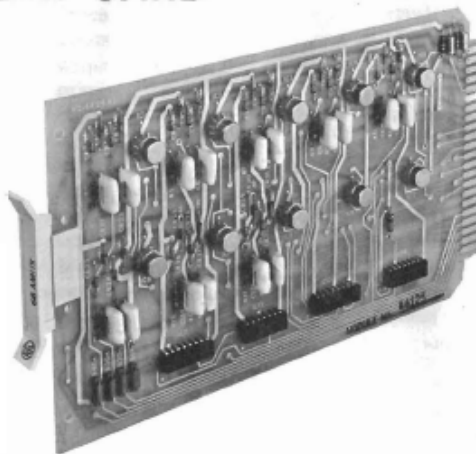


Figure 1. Model 66 AMUX Analog Multiplex Card.

SPECIFICATIONS

No. of Channels: 8 differential or 16 single-ended.

Input Voltage Range: -10 to +10 V dc.

Leakage Current: 1 μ A max. to any analog terminal.

On Resistance: 400 ohms max.

Temperature Range: -30°C to +70°C.

Power: ± 11 to 13 V dc @ 5 mA + 2 mA for each analog switch.

Size: Two standard one-half-inch module spaces in an RFL Model 68 Chassis.

OPTIONS AVAILABLE

TABLE 1 - OPTIONS AVAILABLE																
MODEL SUFFIX for 66 AMUX-		APPLICATIONS		OPTIONS										WIRING NOTES		
WITH NO SEQ	WITH AUTO SEQ			NO-44123 Basic Card	NO-44123-1 Analog Switch	NO-44123-2 Analog Switch	NO-44123-3 Analog Switch	NO-44123-4 Analog Switch	NO-44123-5 Analog Switch	NO-44123-6 Analog Switch	NO-44123-7 Analog Switch	NO-44123-8 Analog Switch	NO-44123-9 Analog Switch			NO-44123-10 Sequencer
-0	-13	Single Card with Single-Ended Inputs	2 Channels	*									Δ	Δ	"A OUT" to A/D CONVERTER	
-1	-14		3 or 4 Channels	*	*									Δ		Δ
-2	-15		5 or 6 Channels	*	*	*								Δ		Δ
-3	-16		7 or 8 Channels	*	*	*	*							Δ		Δ
-4	-17		9 or 10 Channels	*	*	*	*	*				*		Δ		*
-5	-18		11 or 12 Channels	*	*	*	*	*	*			*		Δ		*
-6	-19	Single Card with Differential Inputs	13 or 14 Channels	*	*	*	*	*	*		*		Δ	*	"A OUT" to "AC IN" "B OUT" to "BC IN" "C OUT" to A/D CONVERTER	
-7	-20		15 or 16 Channels	*	*	*	*	*	*	*	*	*		Δ		*
-8	-21		2 Channels	*				*						Δ		Δ
-9	-22		3 or 4 Channels	*	*			*	*					Δ		Δ
-10	-23		5 or 6 Channels	*	*	*		*	*	*				Δ		Δ
-11	-24		7 or 8 Channels	*	*	*	*	*	*	*	*	*		Δ		Δ
-12	-25	First Card of a Two-Card System with more than 8 Differential Inputs.		*	*	*	*	*	*	*	*	*	Δ	*	1st CARD "A OUT" to 1st CARD "AC IN" 1st CARD "B OUT" to 1st CARD "AD IN" 2nd CARD "A OUT" to 1st CARD "BC IN" 2nd CARD "B OUT" to 1st CARD "BD IN" 1st CARD "C OUT" to A/D CONVERTER 1st CARD "D OUT" to A/D CONVERTER CONNECT "SELECTED CHANNEL" TERMINALS IN PARALLEL	
-8	-8	Second Card of System with more than 8 Differential Inputs.	9 or 10 Channels	*	*	*	*	*	*	*	*	*	*	*		
-9	-9		11 or 12 Channels	*	*			*	*					*		
-10	-10		13 or 14 Channels	*	*	*	*	*	*	*	*	*	*	*		
-11	-11		15 or 16 Channels	*	*	*	*	*	*	*	*	*	*	*		

NOTE: * Indicates components required for card with or without sequencer.
Δ Indicates additional components required for card with sequencer installed.
Indicates components for second card of two-card system either with or without sequencer.

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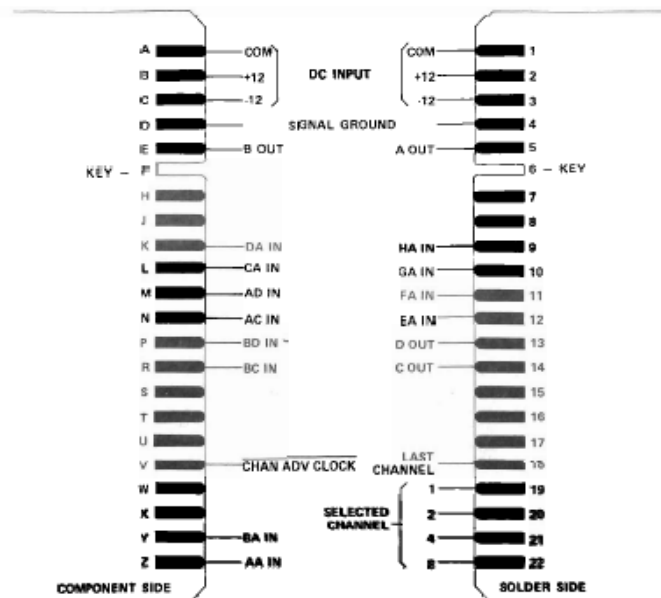


Figure 2. Edge connector terminal assignments, Model 66 AMUX Analog Multiplex Card.

PROGRAMMING AND CONNECTION

CAUTION

These modules contain CMOS logic circuits and special handling precautions should be observed. Refer to "CMOS Handling Precautions", DRFL document 12175.

All unused logic input terminals or unused inputs to CMOS IC's must be returned to \bar{V} or COM.

Logic Signals: Terminals 19 through 22 are used to input a four bit binary code to control which analog channel will be selected when the Sequencer option is not specified. If the Sequencer option is specified, these SELECTED CHANNEL terminals are used as outputs to tell which analog channel has been selected.

If the Sequencer option is specified, the counter is updated to the next channel on the negative going transition of the pulse supplied to terminal V (CHAN ADV CLOCK). This pulse is usually derived from terminals 18 and V of the DRFL Model 66 ADC Analog-to-Digital Converter; however, the system designer may choose to connect it elsewhere for special applications. The output at terminal 18 (LAST CHANNEL) will be high when the counter output coincides with the last-

SELECTED CHANNEL

CHAN ADV

LAST CHANNEL

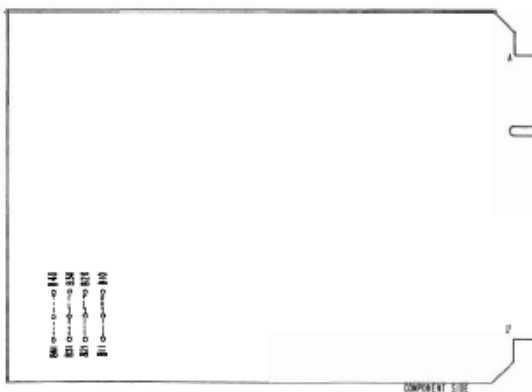


Figure 4. Location of jumpers for programming, Model 66 AMUX.

channel-used programming. The next CHAN ADV CLOCK pulse to occur after LAST CHANNEL goes high will cause the sequence counter to return to all zeros.

To program the Sequencer option for the last channel used, the B jumpers shown in Figure 2, are installed in binary fashion for M where

$M = \text{jumper of last channel used} - 1.$

Example 1: Three channels are used. $M = 2.$

Install jumpers as shown in Figure 3a.

Example 2: Twelve channels are used. $M = 11.$

Install jumpers as shown in Figure 3b.

Example 3: Sixteen channels are used. $M = 15.$

Install jumpers as shown in Figure 3c.

Analog Signals: Refer to Table 1 to determine which options will be installed. The Table also shows the connection of the A OUT and B OUT terminals and of Options HB-44129-8 and HB-44129-9. The analog signals are connected to input terminals AA IN through HA IN and AB IN through HB IN. These are protected from most external surges.

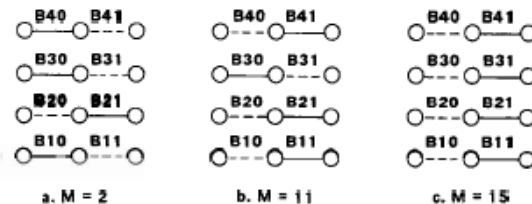


Figure 3. Examples of jumper programming.

Table 2
Replaceable Parts

Circuit Symbol (See Figure 4)	Description	Part Number
Model 66 AMUX Analog Multiplex Card - Assembly No. HB-44125		
NOTE		
The presence of many of the following parts will depend upon the options ordered. Refer to Table 1 and Figure 4.		
CAPACITORS		
C1, 2	Capacitor, tantalum, 4.7 μ F, 20%, 20V, Kemet T322B475MO20AS or equiv.	1007 711
C3-18	Capacitor, metalized polyester, 0.1 μ F, 10%, 250V, Seacor 106-0.1 or equiv.	1007 1255
C19	Capacitor, ceramic, 220pF, 10%, 200V, Type CK05	0100 6
RESISTORS		
R1, 19	Resistor, metal film, 12.1K, 1%, 1/4W, Type RN1/4	0410 1392
R2	Resistor, metal film, 47.5K, 1%, 1/4W, Type RN1/4	0410 1449
R3-18	Resistor, metal film, 150 ohm, 1%, 1/4W, Type RN1/4	0410 1209
SEMICONDUCTORS		
CR1-32	Diode, silicon, 1N914B or 1N4448	26482
IC1-10	MOS dual SPST analog switch, Siliconix DG200BA or equiv.	0605 3
IC11	MOS 4-bit magnitude comparator, Motorola MC14585CP or equiv.	0615 39
IC12	MOS 7-stage binary counter, RCA CD4024BE or equiv.	0615 14
IC13	MOS BCD-to-decimal decoder, National Semiconductor MM74C42N or equiv.	0615 47
IC14	MOS hex inverter/buffer, RCA CD4049AE or equiv.	0615 7
MISCELLANEOUS COMPONENTS		
---	Shorting bar, single, Aries LP300 or equiv.	42904

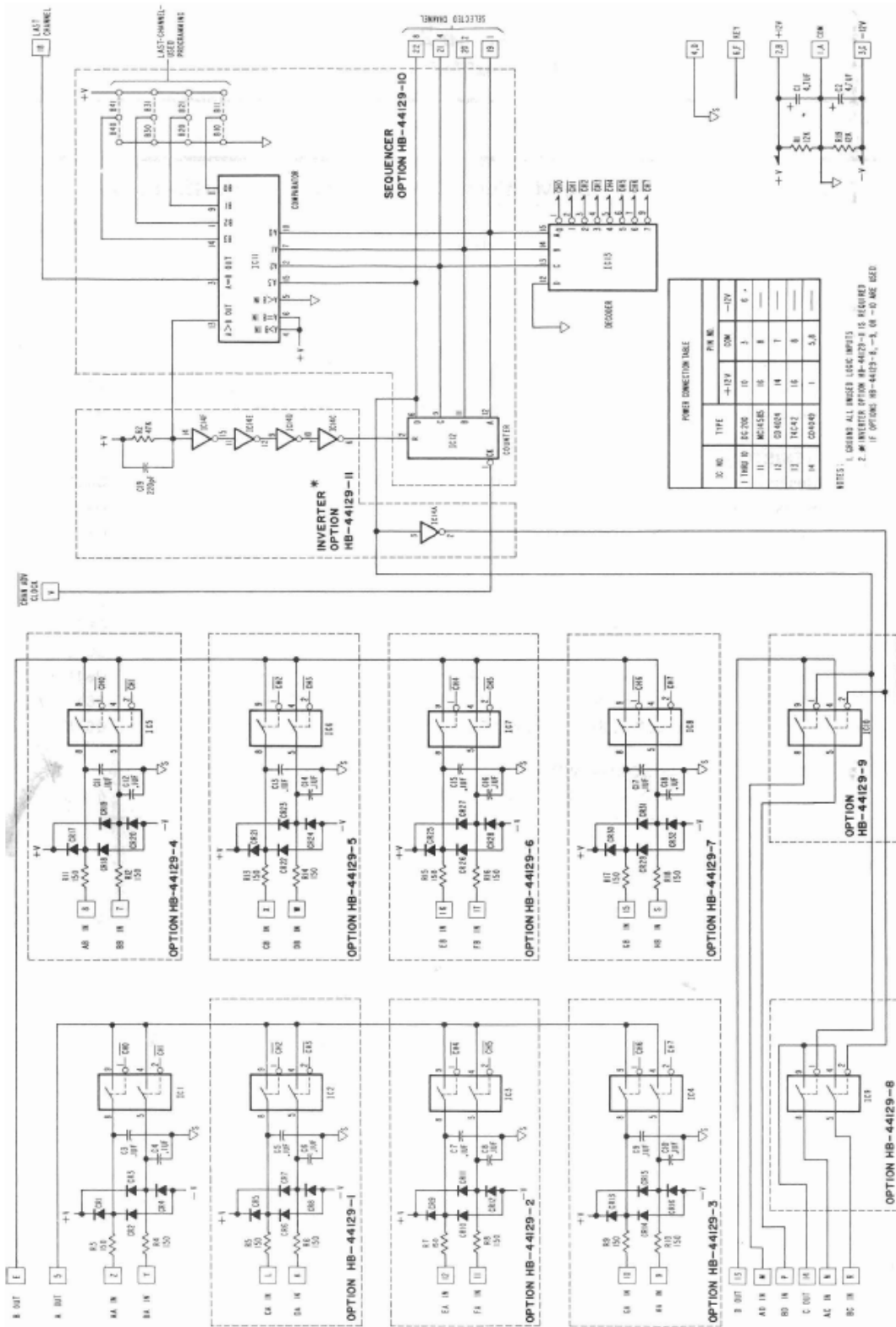


Figure 5. Schematic - Model 66 AMUX Analog Multiplex Card (HE-44127).