



Agilent 7061A and 87130A Switch Attenuator Drivers Configuration Guide

The purpose of this document is to aid the user in configuring switching systems utilizing Agilent Technologies switch and attenuator drivers, models 11713A, 70611A, 70612A/C, 70613A/C, and 87130A.

Sensing capability

The 87130A and 70611A switch drivers have sensing capability, often called “readback.” This capability allows the driver to “read” or “sense” the position or state of the switch or attenuator section. It accomplishes this function by monitoring the voltage on the two drive lines to each switch or attenuator section. If an open circuit is detected, it means that the switch or attenuator section is in the state driven by that line. In other words, that section is either “open” or “closed” and is disabled from being driven by that line. If the voltage measured is +24 VDC, it means that the switch section is enabled, or ready to be switched to the state designated by the particular drive line.

70611A driver

The 70611A switch driver is a Modular Measurement System (MMS) module, used to drive attenuators and switches in conjunction with the 84940A driver card. The 70611A can drive up to eight external driver cards. The following pages will explain how to configure systems both with an internal driver card, or with external driver cards.

The 70612A/C and 70613A/C are special versions of the 70611A, and may be used to drive external driver cards in the same manner as the 70611A.

All cabling and drive information listed for the 70611A is applicable to the 70612A/C and 70613A/C.

87130A driver

The 87130A is similar to the 70611A, but has the addition of an internal 24 VDC power supply to drive switches and attenuators. The 87130A has one internal driver card, capable of driving up to 31 switch and/or attenuator sections. It may also be used to drive up to seven additional 84940A

driver cards, allowing up to 248 switch or attenuator sections to be driven. See Figures 1, 3, 5, 6, and 8.

While the 87130A has a driver card installed internally, the connections to that card are intended to be made externally. This is accomplished by the use of an interface card, the 84941A. This card consists of a 68-pin SCSI connector and thirty-one 4-pin output connectors. See Figures 2, 4, and 7. It is recommended that the 84941A be used with the 87130A for easiest system integration.

11713A driver

The 11713A attenuator-switch driver is capable of driving up to ten switch or attenuator sections. It drives with steady-state 24 VDC. It is compatible with any switches or attenuators that require +24 VDC common, with ground for individual line activation. It has the capability of being controlled either programmatically or manually. For applications requiring more than ten pairs of drive lines, multiple 11713A may be used. For larger systems, however, it is generally more economical to use the 87130A.

Currently, the following switch and attenuator models have the sensing capability when used with either the 87130A or 70611A.

Switches

8762A/B/C/F, 33311A/B/C
8763A/B/C, 33312A/B/C
8764A/B/C, 33313A/B/C
87204A/B/C
87206A/B/C
87606B
87222C/D/E

Attenuators

8494G/H, 33320G/H
8495G/H/X, 33321G/H/K
8496G/H, 33322G/H
84904K/L, 33324K/L
84906K/L, 33326K/L
84907K/L, 33327K/L



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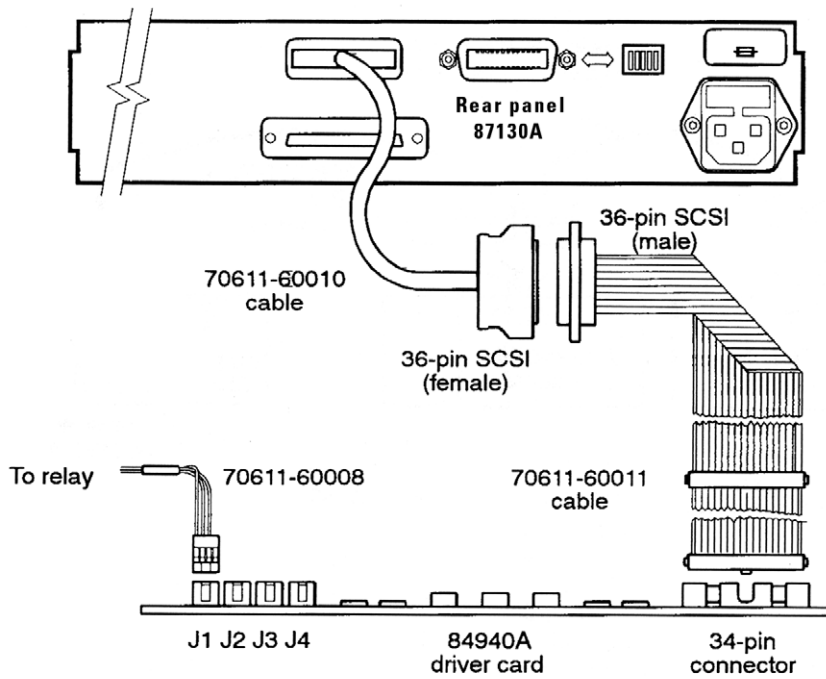


Figure 1. Typical operating setup using external driver(s)

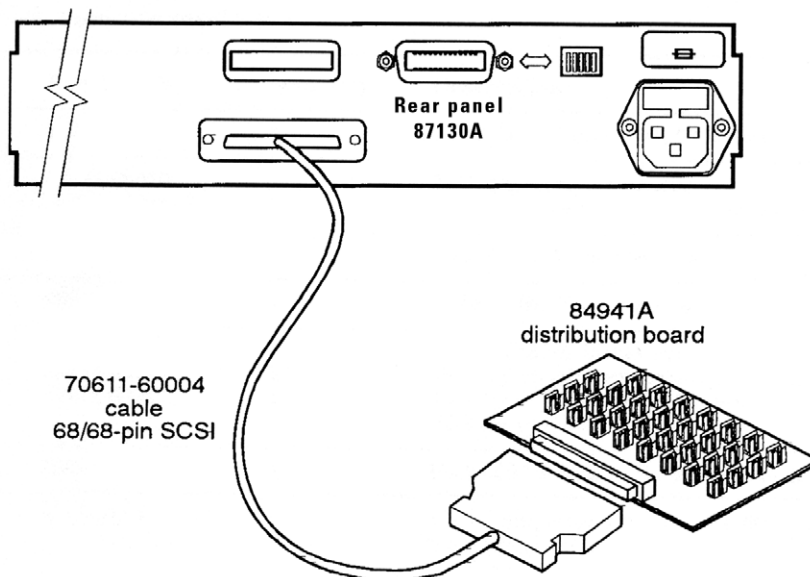


Figure 2. Typical operating setup using internal drivers in the 87130A

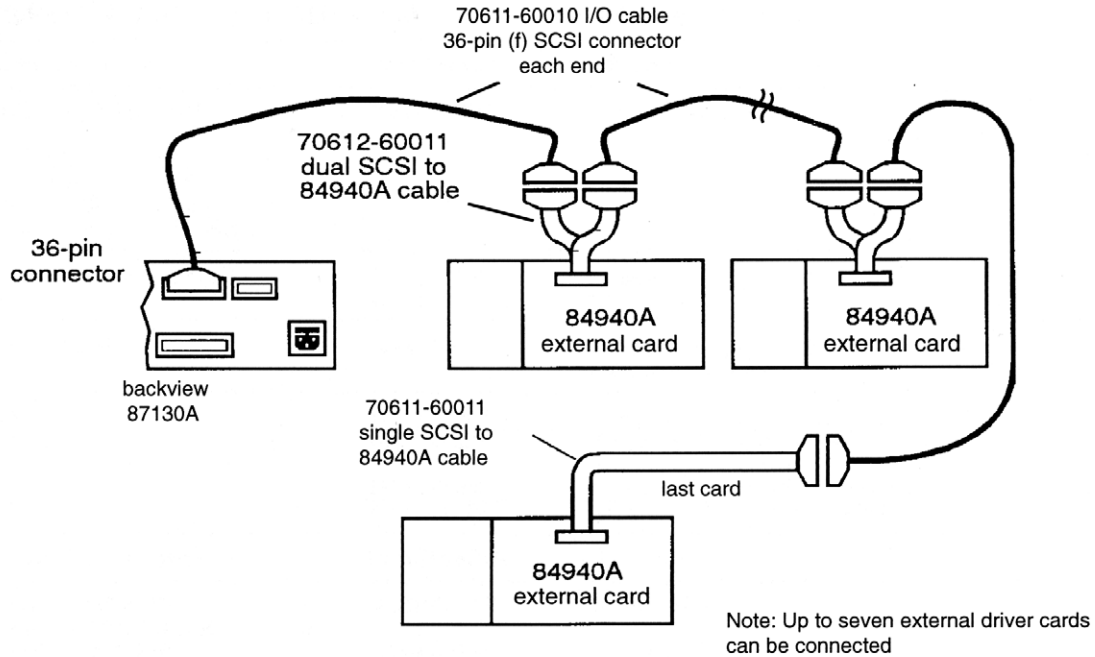


Figure 3. Expanding drive capability

The following tables list the proper cables to use with various combinations of switches, attenuators, internal and external driver cards, and switch drivers.

Cables included with various models

Model number	Part number	Quantity	Description
11713A	8120-2703	2	Dual Viking connectors, 60 inches long, 12 conductor cable see Figure 9
70611A	70611-60010	1	36/36 SCSI, 62 inches long
	70611-60011	1	36 SCSI/34 PCB connectors, ribbon cable 18 inches
87130A	70611-60004	1	68/68 SCSI, 72 inches long
84940A	70611-60010	1	36/36 SCSI, 62 inches long
	70611-60011	1	36 SCSI/34 PCB connectors, ribbon cable 18 inches
	70611-60013	1	36 SCSI to ribbon cable, 72 inches, plus two separate 34-pin PCB connectors (1251-7090)
84941A	70611-60008	1	Pack of 31 cables, each 52 inches long
84941A-K06	-	-	Deletes 70611-60003 cables
8494G/H	8120-2178	1	Viking connector to bare wires, 60 inches long, 9 conductor cable.
8495G/H/K			
8496G/H			
8497K			

**Cables to use with various Agilent switches, attenuators, and drivers
87130A or 70611A plus 84940A and/or 84941A**

Switch part number	Part number	Remarks
8762A/B/C (33311A/B/C)	70611-60008	31 cables, each 52 inches long (supplied with 84941A)
8763A/B/C (33312A/B/C) 8764A/B/C (33313A/B/C) (Options 024 and 100 required) 8765A/B/C/D/F (Option 024 and 100)		Opt 100 = solder terminals use 11761A - C01 for standard 8765 series switches without Option 100
8766K/7K/8K (33363K/4K/5K)	70612-60017 or 11764-60005	20-inch cable 30-inch cable
8769K (33366K)	84941A-K03	available on special order, 12-pin Viking to (5) 4-pin Berg connectors.
87104A/B/C 87106A/B/C	11764-60007 70611-60008	16-pin DIP to six 4-pin connector-for standard switches, 30" long (for use with Option 100 switches only) Note: Must ground PIN 15 of switch
87204A/B/C 87206A/B/C	11764-60008 70611-60008	16-pin DIP to six 4-pin connectors-for standard switches, 30" long (for use with Option 100 switch only) Note: Must ground PIN 15 of switch
87606B	11764-60008 70611-60008	16-pin DIP to six 4-pin connectors-for standard switches, 30" long (for use with Option 100 switch only) Note: Must ground PIN 15 of switch
87222C/D/E	11764-60009 11764-60010	30 inches long, 10-pin DIP to 4-pin BERG connector no sensing capability 30 inches long, 10-pin DIP to 4-pin BERG connector with sensing capability

Attenuator part number	Part number	Remarks
8494G/H (33320G/H) 8495G/H/K (33321 G/H/K) 8496G/H (33322G/H) 8497K (33323K)	70612-60017 or 11764-60005	20-inch cable 30-inch cable
84904K/L (33324K/L) 84906K/L (33326K/L) 84907K/L (33327K/L)	70612-60016 or 11764-60006	20-inch cable 30-inch cable

11713A Driver

Switch part number	Part number	Remarks
8762A/B/C (33311A/B/C) 8763A/B/C (33312A/B/C) 8764A/B/C (33313A/B/C) 8765A/B/C/D/F (33314A/B/C/D) (Options 024 & 100 required)	8120-2178 or 5061-0969 or 26 AWG wire	60 inches long, 9-conductor cable, to Viking connector (for four switches) 60 inches long, 12-conductor cable, to Viking connector (for five switches) three wires required per switch (two switches maximum)
8765A/B/C/D/F (33314A/B/C/D) (Option 024 only)	11761A	Viking connector to four ribbon cables to connect up to four switches
8766K/7K/8K/9K (33366K/7K/8K/9K)	8120-2703	60 inches long, 12-conductor cable, dual Viking connector
87104A/B, 87204A/B/C (Option 100) 87106A/B 87206A/B/C (Option 100) 87406B (Option 100) 87606B (Option 100)	5061-0969	Viking connector to tinned leads (one required) Viking connector to tinned leads (two required) Viking connector to tinned leads (two required) Viking connector to tinned leads (two required)

Attenuator part number	Part number	Remarks
8494G/H (33320G/H) 8495G/H/K (33321 G/H/K) 8496G/H (33322G/H) 8497K (33323K) 84904K/L (33324K/L) 84906K/L (33326K/L) 84907K/L (33327K/L)	8120-2703 11764A	60 inches long, 12-conductor cable, dual Viking connector Viking connector to 10-pin DIP plug, 60 inches long

Cables between modules	Part number	Remarks
70611A or 87130A to external driver cards, separately housed	70612-60011 plus 70611-60011	Two 36-pin (m) SCSI to 34-pin printed circuit board connector 36/36-pin (m) SCSI
70611A or 87130A to external driver cards, commonly housed	70611-60013	Ribbon cable with two 1251-7090 printed circuit board connectors, supplied separately. Additional connectors may be added as required.

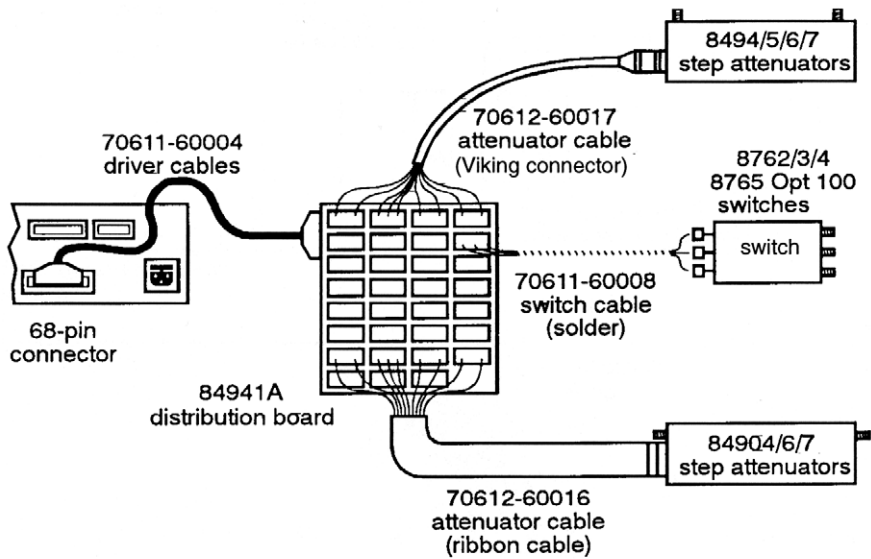


Figure 4. Connecting devices

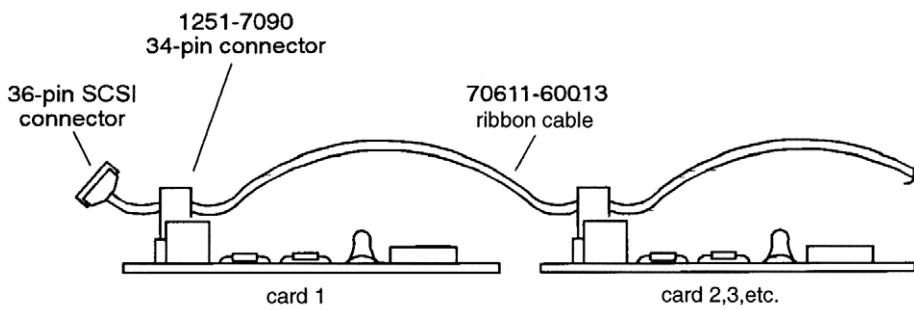
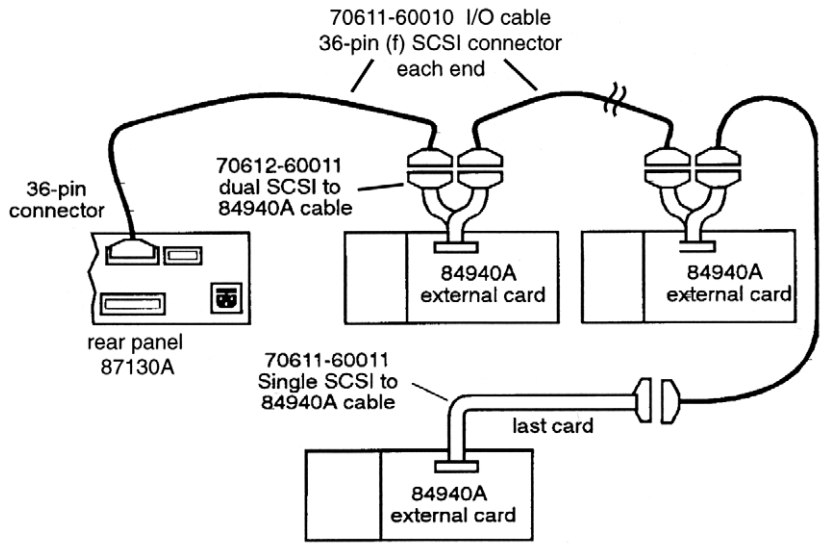


Figure 5. Typical daisy chain of driver cards in single enclosures



Note: Up to seven external driver cards can be connected

Figure 6. Daisy chain of driver cards in different enclosures

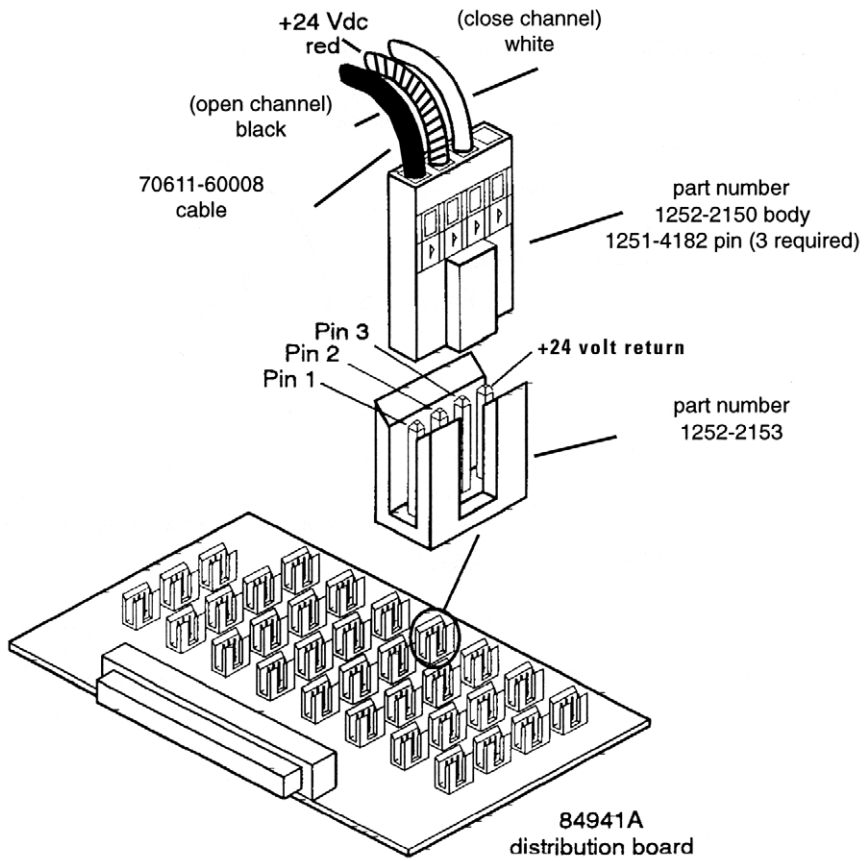


Figure 7. Single typical switch channel connector

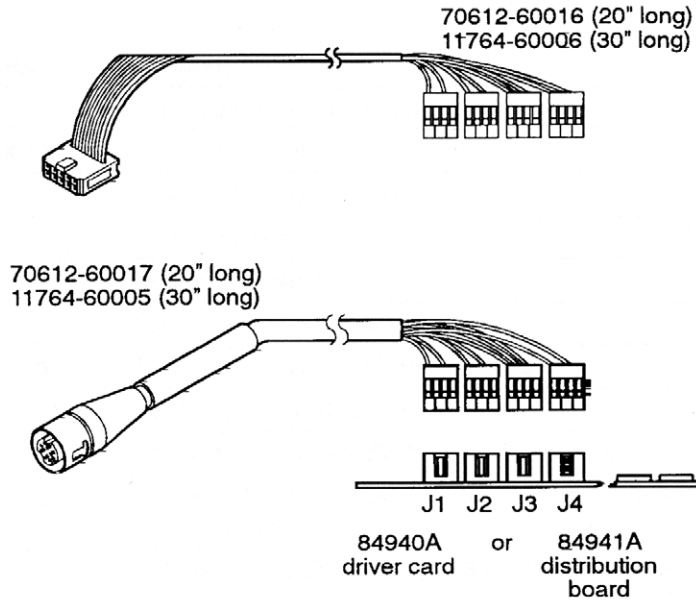


Figure 8. Typical attenuator cables connected to an 84940A/84941A

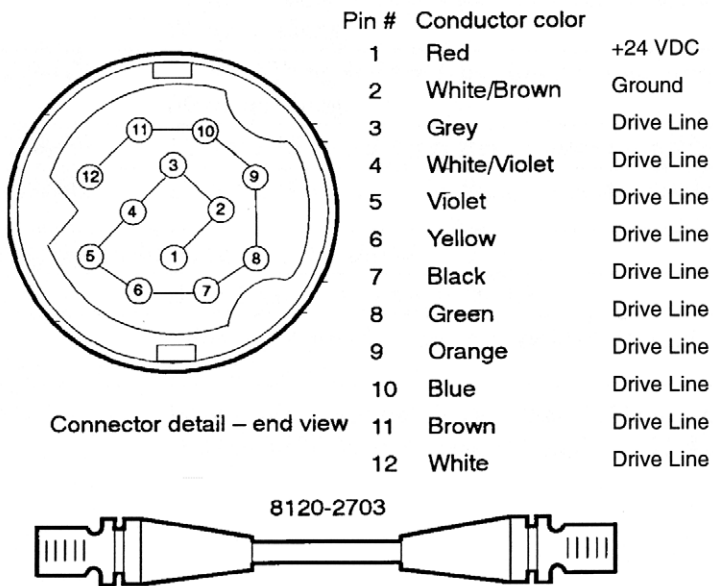


Figure 9. Viking cable and pin outs

Ordering Guide

Model/part number	Description	Quantity
70611A	attenuator/switch driver	
87130A	attenuator/switch driver	
84940A	driver board	
84941A	interface board (includes 70611-60008)	
70611-60004	68/68-pin SCSI cable	
70611-60008 (11764H)	Pack of 31 cables, 52 inches long	
70611-60010	36/36-pin (m) SCSI cable	
70611-60011	36 SCSI to 34-pin PCB connector cable	
70611-60013	36 SCSI to ribbon cable (includes two 1251-7090 connectors)	
70612-60011	Two 36-pin SCSI to single 34-pin PCB connector cable	
70612-60016	10-pin DIP to four 4-pin Berg connector cable, 20 inches long	
11764-60006 (11764F)	10-pin DIP to four 4-pin Berg connector cable, 30 inches long	
70612-60017	12-pin Viking to four 4-pin Berg connector cable, 20 inches long	
11764-60005 (11764E)	12-pin Viking to four 4-pin Berg connector cable, 30 inches long	
11764-60007 (11764G)	16-pin DIP to six 4-pin Berg connector cable, 30 inches long	
11764-60008 (11764J)	16-pin DIP to six 4-pin Berg connector cable, 30 inches long	
11764-60009	10-pin DIP to 4-pin Berg connector, 30 inches long No sensing capability	
11764-60010	10-pin DIP to 4-pin Berg connection, 30 inches long with sensing capability	
For custom cabling, the following may be used:		
1252-2150	Berg 4-pin connector body (f)	
1251-4182	Connector pin (for use with 1252-2150 and 26 AWG wire)	
1252-2153	Berg 4-pin connector body, male, PC board mount Dupont #HT 208A crimping tool for 1251-4182 connector pins.	

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