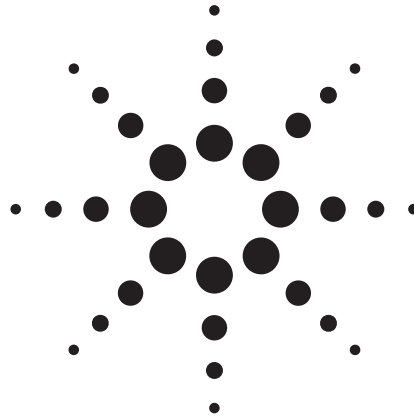


## Agilent 11713A Attenuator/Switch Driver

### Configuration Guide



This configuration guide will help you through the process of configuring a switching system utilizing Agilent's 11713A attenuator/switch driver.

The 11713A is capable of driving up to ten switch or attenuator sections. It drives with steady-state 24 Vdc and is compatible with any switch or attenuator that requires +24 Vdc common, with ground for individual line activations. Switch and attenuator control can be accomplished manually from the front panel push-buttons or automatically over the GPIB interface bus. For applications requiring more than ten pairs of drivelines, multiple 11713A may be used. Each 11713A comes equipped with two plug-in drive cables for driving attenuators. A variety of other cables are also available.

Contact your Agilent representative at the offices listed on the back page of this guide if you need more information.



## Specifications

**Table 1. 11713A attenuator/switch driver specifications and supplemental characteristics**

Specifications	
<b>Driver power supply</b>	
<b>Voltage</b>	+24 ±2.0 Vdc
<b>Current</b>	1.3 A maximum peak for 1 second
	0.65 A maximum continuous current
	Contact pairs 1 through 8, 9 and 0, maximum current of 0.65 A continuous through one or all contacts
Supplemental Characteristics	
Power	100 or 120 Vac, +5%, –10% at 48 to 440 Hz
	200 or 240 Vac, +5%, –10% at 48 to 66 Hz
	80 VA maximum
Response time	10 μs maximum for contact pairs 1 through 8
	20 ms maximum for contact pairs 9 and 0
Driver life	> 2,000,000 switchings at maximum current for contact pairs 9 and 0
Maximum load inductance	500 mH
Maximum load capacitance	< 0.01 μF for contact pairs 9 and 0
Net weight	4.1 kg (9 lbs)
Dimensions	Height: 102 mm (4 inches including feet)
	Rack height: 89 mm (3.5 inches, half-width module)
	Width: 213 mm (8.4 inches)
	Depth: 295 mm (11.6 inches)

## Selection Options

### Agilent 11713A attenuator/switch driver include:

Return-to-Agilent warranty and service plans extendable to three years and covers power cords.

### Agilent 11713A attenuator/switch driver options:

(One of the following options is required)

**Option 001** – Viking connector to 10-pin DIP plug; quantity (2).  
Agilent 11764-60004

**Option 101** – Viking to Viking drive cables; quantity (2).  
Agilent 8120-2703

### Available cable accessories:

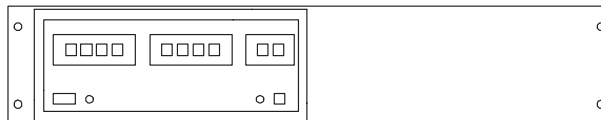
**Agilent 11761A** – Viking connector to four ribbon cables; connects up to four switches.

**8120-2178** – 9-pin conductor cable, to Viking connector (for four switches), 60 inches long

**5061-0969** – 12-pin conductor cable, bare wire to Viking connector (for five switches), 60 inches long

### Available rack mount kit accessories:

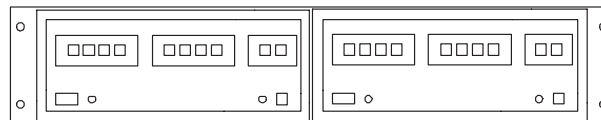
**5063-9240** – Kit rack adapter to mount a single instrument



To mount two instruments side-by-side, order

**5061-9694** – Lock link kit and

**5063-9212** – Rack mount flange kit



# Cable Drawings Available for Agilent 11713A Attenuator/ Switch Driver

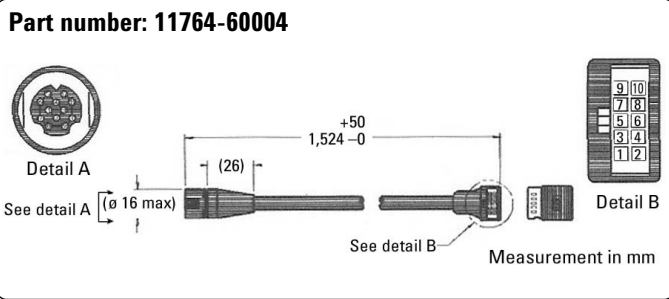


Figure 1. 11764-60004 Viking connector to 10-pin DIP plug

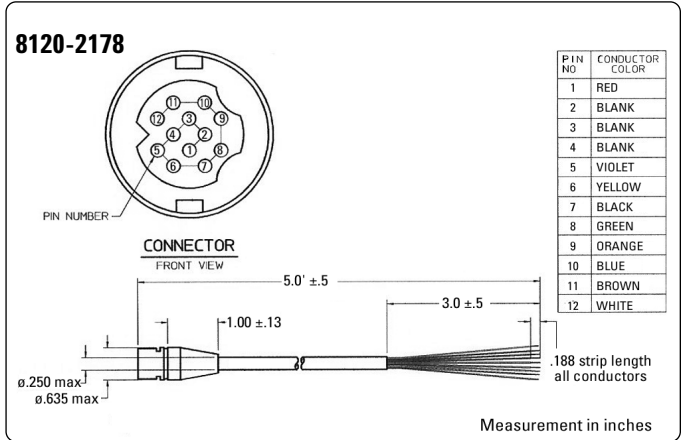


Figure 4. 8120-2178 9-pin conductor cable, to Viking connector (for four switches), 60 inches long

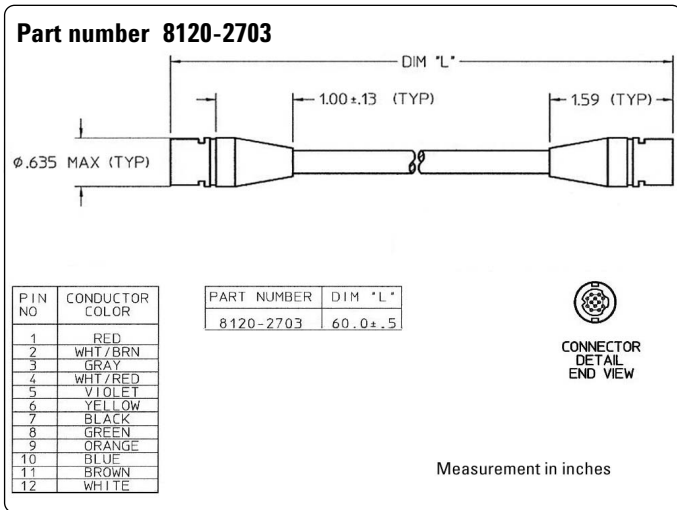


Figure 2. 8120-2703 Viking to Viking drive cables

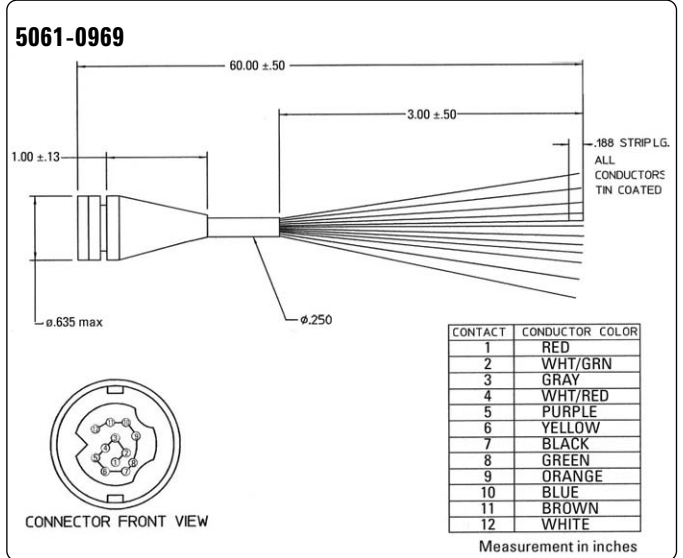


Figure 5. 5061-0969 12-pin conductor cable, bare wire to Viking connector (for five switches), 60 inches long

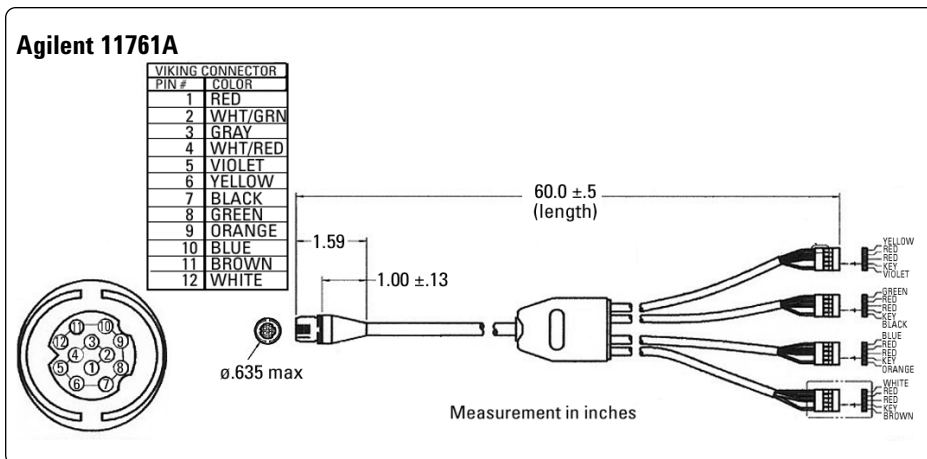


Figure 3. 11761A Viking connector to four ribbon cables to connect up to four switches

## Compatible Attenuators and Switches

The 11713A attenuator/switch driver is designed to drive the following Agilent attenuators and switches.

**Table 2. Compatible Agilent switches**

Agilent product number	Table reference	Switch family	Cables supplied with switch
8761B	4	SPDT	NA
8762A/B/C/F	5	SPDT	NA
8763A/B/C	5	Bypass	NA
8764A/B/C	5	Bypass	NA
8765A/B/C/D/F	6	SPDT	33314-60006
87104A/B/C	7	Multiport	1253-5524 and 8120-1869
87204A/B/C	8	Multiport	1253-5524 and 8120-1869
87106A/B/C	9	Multiport	1253-5524 and 8120-1869
87406B	9	Matrix	1253-5524 and 8120-1869
87206A/B/C	10	Multiport	1253-5524 and 8120-1869
87606B	10	Matrix	1253-5524 and 8120-1869
8766K, 8767K, 8768K	11	Multiport	Option 016: 5062-0703 or Option 060: 8120-2178
8769K	12	Multiport	Option 016: 5061-0958 or Option 060: 5061-0969
8767M	13	Multiport	11764-60004 (optional)
8768M	13	Multiport	11764-60004 (optional)
8769M	14	Multiport	5064-7848 (optional)
87222C/D/E	15	Transfer	8120-3308
N1810TL, N1810UL	16	SPDT	NA
N1811TL, N1812UL	16	Bypass	NA

**Table 3. Compatible Agilent attenuators**

Agilent product number	Table reference	Attenuator family	Cables supplied with attenuator
8494G/H	17	Attenuator	Option 016: 5062-0703 or Option 060: 8120-2178
8495G/H/K	17	Attenuator	Option 016: 5062-0703 or Option 060: 8120-2178
8496G/H	17	Attenuator	Option 016: 5062-0703 or Option 060: 8120-2178
8497K	17	Attenuator	Option 016: 5062-0703 or Option 060: 8120-2178
84904K/L/M	18	Attenuator	11764-60004 (optional)
84905M	18	Attenuator	11764-60004 (optional)
84906K/L	18	Attenuator	11764-60004 (optional)
84907K/L	18	Attenuator	11764-60004 (optional)
84908M	18	Attenuator	11764-60004 (optional)

# Configuration Information for Switches

The 11713A attenuator/switch driver configuration tables designed to drive Agilent switches are listed below.

**Table 4. 8761B SPDT switch configuration**

From 11713A				8761B switch		
		Pin number	Wire color	Device under test (DUT)	RF connector	DC connector
<b>S9</b>	OFF	S9 A = 24 V, B = 0 V	N/A	DUT 1	2 to C connected	DUT1<+> connected to S9A
	ON	S9 A = 0 V, B = 24 V	N/A		1 to C connected	DUT1<-> connected to S9B
<b>S0</b>	OFF	S0 A = 24 V, B = 0 V	N/A	DUT 2	2 to C connected	DUT2<+> connected to S0A
	ON	S0 A = 0 V, B = 24 V	N/A		1 to C connected	DUT2<-> connected to S0B

**Table 5. 8762A/B/C/F SPDT switch, 8763A/B/C and 8764A/B/C bypass switch configuration**

From 11713A				8762,3,4 A/B/C Switch and 8762F Switch				
		Pin number	Wire color	Device under test (DUT)	RF connector	Solder terminal		
<b>Attenuator X</b>		24 Vdc	1	red	DUT 1 to 4 (shared)		C	
	1	OFF	5	violet	DUT 1	2 to 3 connected, 4 to 5 connected	1	
		ON	6	yellow		1 to 2 connected, 3 to 4 connected	2	
	2	OFF	7	black	DUT 2	2 to 3 connected, 4 to 5 connected	1	
		ON	8	green		1 to 2 connected, 3 to 4 connected	2	
	3	OFF	9	orange	DUT 3	2 to 3 connected, 4 to 5 connected	1	
		ON	10	blue		1 to 2 connected, 3 to 4 connected	2	
	4	OFF	11	brown	DUT 4	2 to 3 connected, 4 to 5 connected	1	
		ON	12	white		1 to 2 connected, 3 to 4 connected	2	
	<b>Attenuator Y</b>		24 Vdc	1	red	DUT 5 to 8 (shared)		C
		5	OFF	5	violet	DUT 5	2 to 3 connected, 4 to 5 connected	1
			ON	6	yellow		1 to 2 connected, 3 to 4 connected	2
6		OFF	7	black	DUT 6	2 to 3 connected, 4 to 5 connected	1	
		ON	8	green		1 to 2 connected, 3 to 4 connected	2	
7		OFF	9	orange	DUT 7	2 to 3 connected, 4 to 5 connected	1	
		ON	10	blue		1 to 2 connected, 3 to 4 connected	2	
8		OFF	11	brown	DUT 8	2 to 3 connected, 4 to 5 connected	1	
		ON	12	white		1 to 2 connected, 3 to 4 connected	2	

**Table 6. 8765A/B/C/D/F SPDT switch configuration.**

From 11713A				8765A/B/C/D/F switch					
		Pin number	Wire color	Device under test (DUT)	RF connector	Option 024	Wire color Agilent 33314-60006	Option 324	
Attenuator X		24 Vdc	1	red	DUT 1 to 4 (shared)		Pin 3 and Pin 4 (+V)	red and orange	Terminal 2 and terminal 3
	1	OFF	5	violet	DUT 1	2 to C connected	1	black	1
		ON	6	yellow		1 to C connected	5	yellow	4
	2	OFF	7	black	DUT 2	2 to C connected	1	black	1
		ON	8	green		1 to C connected	5	yellow	4
	3	OFF	9	orange	DUT 3	2 to C connected	1	black	1
		ON	10	blue		1 to C connected	5	yellow	4
	4	OFF	11	brown	DUT 4	2 to C connected	1	black	1
ON		12	white	1 to C connected		5	yellow	4	
Attenuator Y		24 Vdc	1	red	DUT 5 to 8 (shared)		Pin 3 and Pin 4 (+V)	red and orange	Terminal 2 and terminal 3
	5	OFF	5	violet	DUT 5	2 to C connected	1	black	1
		ON	6	yellow		1 to C connected	5	yellow	4
	6	OFF	7	black	DUT 6	2 to C connected	1	black	1
		ON	8	green		1 to C connected	5	yellow	4
	7	OFF	9	orange	DUT 7	2 to C connected	1	black	1
		ON	10	blue		1 to C connected	5	yellow	4
	8	OFF	11	brown	DUT 8	2 to C connected	1	black	1
		ON	12	white		1 to C connected	5	yellow	4

**Table 7. 87104A/B/C multiport switch configuration**

From 11713A				87104A/B/C switch				
		Pin number	Wire color	Device under test (DUT)	RF connector	Pin number	Wire color Agilent 8120-1869 and 1253-5524	
Attenuator X		24 Vdc	1	red	DUT 1		1	brown
		Gnd	2	white/brown			15	green
	1	OFF	5	violet		Port 1	3	orange
	2	OFF	7	black		Port 2	5	green
	3	OFF	9	orange		Port 3	7	violet
	4	OFF	11	brown		Port 4	9	white
Attenuator Y		24 Vdc	1	red	DUT 2		1	brown
		Gnd	2	white/brown			15	green
	5	OFF	5	violet		Port 1	3	orange
	6	OFF	7	black		Port 2	5	green
	7	OFF	9	orange		Port 3	7	violet
	8	OFF	11	brown		Port 4	9	white

**Table 8. 87204A/B/C multiport switch configuration**

From 11713A					87204A/B/C switch					
		Pin number	Wire color	Device under test (DUT)	RF connector	Pin number	Wire color Agilent 8120-1869 and 1253-5524			
Attenuator X		24 Vdc	1	red	DUT 1		1	brown		
		Gnd	2	white/brown			15	green		
	1	OFF	5	violet		Port 1	3	orange		
		ON	6	yellow			4	yellow		
	2	OFF	7	black		Port 2	5	green		
		ON	8	green			6	blue		
	3	OFF	9	orange		Port 3	7	violet		
		ON	10	blue			8	gray		
	4	OFF	11	brown		Port 4	9	white		
		ON	12	white			10	black		
	Attenuator Y		24 Vdc	1		red	DUT 2		1	brown
			Gnd	2		white/brown			15	green
5		OFF	5	violet	Port 1	3		orange		
		ON	6	yellow		4		yellow		
6		OFF	7	black	Port 2	5		green		
		ON	8	green		6		blue		
7		OFF	9	orange	Port 3	7		violet		
		ON	10	blue		8		gray		
8		OFF	11	brown	Port 4	9		white		
		ON	12	white		10		black		

**Table 9. 87106A/B/C multiport switch and 87406B matrix switch configuration**

From 11713A					87106A/B/C and 87406B switch			
		Pin number	Wire color	Device under test (DUT)	RF connector	Pin number	Wire color Agilent 8120-1869 and 1253-5524	
Attenuator X		24 Vdc	1	red	Shared (port 1 to 4)		1	brown
		Gnd	2	white/brown			15	green
	1	OFF	5	violet	DUT 1	Port 1	3	orange
	2	OFF	7	black		Port 2	5	green
	3	OFF	9	orange		Port 3	7	violet
	4	OFF	11	brown		Port 4	9	white
Attenuator Y		24 Vdc	1	red	Shared (port 5 to 6)		1	brown
		Gnd	2	white/brown			15	green
	5	OFF	5	violet	DUT 1	Port 5	11	brown
	6	OFF	7	black		Port 6	13	orange

Note: Need two cables from 11713A in order to drive one 6-port multiport.

**Table 10. 87206A/B/C multiport switch and 87606B matrix switch configuration**

From 11713A				87206A/B/C and 87606B switch						
		Pin number	Wire color	Device under test (DUT)	RF connector	Pin number	Wire color Agilent 8120-1869 and 1253-5524			
Attenuator X		24 Vdc	1	red	Shared (port 1 to 4)		1	brown		
		Gnd	2	white/brown			15	green		
	1	OFF	5	violet	DUT 1	Port 1	3	orange		
		ON	6	yellow			4	yellow		
	2	OFF	7	black		Port 2	5	green		
		ON	8	green			6	blue		
	3	OFF	9	orange		Port 3	7	violet		
		ON	10	blue			8	gray		
	4	OFF	11	brown		Port 4	9	white		
		ON	12	white			10	black		
	Attenuator Y		24 Vdc	1		red	Shared (port 5 to 6)		1	brown
			Gnd	2		white/brown			15	green
5		OFF	5	violet		DUT 1	Port 5	11	brown	
		ON	6	yellow				12	red	
6		OFF	7	black	Port 6		13	orange		
		ON	8	green			14	yellow		

Note: Need two cables from 11713A in order to drive one 6-port multiport.

**Table 11. 8766K, 8767K, 8768K multiport switch configuration**

From 11713A				Switch option			Agilent product number			
		Pin number	Wire color	Option 016 DIP pin number Agilent 5062-0703	Option 060 Viking cable Agilent 8120-2178	Wire color	8766K RF connector	8767K RF connector	8768K RF connector	
Attenuator X	1	OFF	5	violet	13	5	violet			
		ON	6	yellow	2	6	yellow	Common to 1, the rest OFF	Common to 3, the rest OFF	Common to 4, the rest OFF
	2	OFF	7	black	11	7	black			
		ON	8	green	5	8	green	Common to 2, the rest OFF	Common to 1, the rest OFF	Common to 2, the rest OFF
	3	OFF	9	orange	3	9	orange			
		ON	10	blue	9	10	blue		Common to 2, the rest OFF	Common to 3, the rest OFF
	4	OFF	11	brown	4	11	brown			
		ON	12	white	10	12	white			Common to 1, the rest OFF
			24 Vdc	1	red	6	1	red		
								All OFF is Common to 3	All OFF is Common to 4	All OFF is Common to 5



**Table 12. 8769K multiport switch configuration**

From 11713A				Switch option			Agilent product number
				Option 016	Option 060		8769K
		Pin number	Wire color	DIP pin number Agilent 5061-0958	Viking cable Agilent 5061-0969	Wire color	RF connector
Attenuator X	1	OFF	5	violet	13	5	violet
		ON	6	yellow	2	6	yellow
	2	OFF	7	black	11	7	black
		ON	8	green	5	8	green
	3	OFF	9	orange	3	9	orange
		ON	10	blue	9	10	blue
	4	OFF	11	brown	4	11	brown
		ON	12	white	10	12	white
S9	OFF	4	violet	7	4	grey	
	ON	3	yellow	8	3	white/red	Common to 5, the rest OFF
Attenuator X/Y	24 Vdc	1	red	6	1	red	
							All OFF is Common to 6

**Table 13. 8767M, 8768M multiport switch configuration (with optional cable 11764-60004)**

From 11713A				Agilent product number	
				8767M	8768M
		Pin number	RF connector	RF connector	
Attenuator X	1	OFF	5		
		ON	6	Common to 3, the rest OFF	Common to 4, the rest OFF
	2	OFF	7		
		ON	8	Common to 1, the rest OFF	Common to 2, the rest OFF
	3	OFF	9		
		ON	10	Common to 2, the rest OFF	Common to 3, the rest OFF
	4	OFF	11		
		ON	12		Common to 1, the rest OFF
		24 Vdc	1		
				All OFF is Common to 4	All OFF is Common to 6

**Table 14. 8769M multiport switch configuration (with optional cable 5064-7848)**

From 11713A				Agilent product number
				8769M
		Pin number	RF connector	
Attenuator X	1	OFF	5	
		ON	6	Common to 4, the rest OFF
	2	OFF	7	
		ON	8	Common to 2, the rest OFF
	3	OFF	9	
		ON	10	Common to 3, the rest OFF
	4	OFF	11	
		ON	12	Common to 1, the rest OFF
	S9	OFF	4	
		ON	3	Common to 5, the rest OFF
	24 Vdc	1		
				All OFF is Common to 6

**Table 15. 87222C/D/E transfer switch configuration**

From 11713A				87222C/D/E switch				
		Pin number	Wire color	Device under test (DUT)	RF connector	Pin number	Wire color Agilent 8120-3308	
Attenuator X		24 Vdc	1	red	shared DUT 1 to 4	1	brown	
		Gnd	2	white/brown		9	white	
	1	OFF	5	violet	DUT 1	Drive A (1 to 2, 3 to 4)	3	orange
		ON	6	yellow		Drive B (1 to 4, 2 to 3)	5	green
	2	OFF	7	black	DUT 2	Drive A (1 to 2, 3 to 4)	3	orange
		ON	8	green		Drive B (1 to 4, 2 to 3)	5	green
	3	OFF	9	orange	DUT 3	Drive A (1 to 2, 3 to 4)	3	orange
		ON	10	blue		Drive B (1 to 4, 2 to 3)	5	green
	4	OFF	11	brown	DUT 4	Drive A (1 to 2, 3 to 4)	3	orange
		ON	12	white		Drive B (1 to 4, 2 to 3)	5	green
	Attenuator Y		24 Vdc	1	red	shared DUT 5 to 8	1	brown
			Gnd	2	white/brown		9	white
5		OFF	5	violet	DUT 5	Drive A (1 to 2, 3 to 4)	3	orange
		ON	6	yellow		Drive B (1 to 4, 2 to 3)	5	green
6		OFF	7	black	DUT 6	Drive A (1 to 2, 3 to 4)	3	orange
		ON	8	green		Drive B (1 to 4, 2 to 3)	5	green
7		OFF	9	orange	DUT 7	Drive A (1 to 2, 3 to 4)	3	orange
		ON	10	blue		Drive B (1 to 4, 2 to 3)	5	green
8		OFF	11	brown	DUT 8	Drive A (1 to 2, 3 to 4)	3	orange
		ON	12	white		Drive B (1 to 4, 2 to 3)	5	green

**Table 16. N1811TL and N1812UL bypass switch and N1810UL and N1810TL SPDT switch configuration**

From 11713A				N1811TL, N1812UL, N1810UL and N1810TL Switch				
		Pin number	Wire color	Device under test (DUT)	Option 201	Option 202		
Attenuator X		24 Vdc	1	red	DUT 1 to 4 (shared)	Pin 5 (+V)	+V	
		1	OFF	5	violet	DUT 1	Pin 4 (A)	A
	ON		6	yellow	Pin 3 (B)		B	
	2	OFF	7	black	DUT 2	Pin 4 (A)	A	
		ON	8	green		Pin 3 (B)	B	
	3	OFF	9	orange	DUT 3	Pin 4 (A)	A	
		ON	10	blue		Pin 3 (B)	B	
	4	OFF	11	brown	DUT 4	Pin 4 (A)	A	
		ON	12	white		Pin 3 (B)	B	
	Attenuator Y		24 Vdc	1	red	DUT 5 to 8 (shared)	Pin 5 (+V)	+V
			5	OFF	5	violet	DUT 5	Pin 4 (A)
		ON		6	yellow	Pin 3 (B)		B
6		OFF	7	black	DUT 6	Pin 4 (A)	A	
		ON	8	green		Pin 3 (B)	B	
7		OFF	9	orange	DUT 7	Pin 4 (A)	A	
		ON	10	blue		Pin 3 (B)	B	
8		OFF	11	brown	DUT 8	Pin 4 (A)	A	
		ON	12	white		Pin 3 (B)	B	

# Configuration Information for Attenuators

The 11713A attenuator/switch driver configuration tables designed to drive Agilent Technologies attenuators are listed below.

**Table 17. 8494G/H and 8495G/H/K and 8496G/H and 8497K attenuator configuration**

From 11713A				Attenuator option			Agilent product number						
				Option 016	Option 060		8494G/H	8495G/H	8496G/H	8495K	8497K		
				DIP pin number Agilent 5062-0703	Viking cable Agilent 8120-2178	Wire color	Attenuation						
				Pin number	Wire color								
Attenuator X	1	OFF	5	violet	13	5	violet	0 dB	0 dB	0 dB	0 dB	0 dB	
		ON	6	yellow	2	6	yellow	1 dB	10 dB	10 dB	10 dB	10 dB	
	2	OFF	7	black	11	7	black	0 dB	0 dB	0 dB	0 dB	0 dB	
		ON	8	green	5	8	green	2 dB	20 dB	20 dB	20 dB	20 dB	
	3	OFF	9	orange	3	9	orange	0 dB	0 dB	0 dB	0 dB	0 dB	
		ON	10	blue	9	10	blue	4 dB	40 dB	40 dB	20 dB	30 dB	
	4	OFF	11	brown	4	11	brown	0 dB	—	0 dB	0 dB	0 dB	
		ON	12	white	10	12	white	4 dB	—	40 dB	20 dB	30 dB	
			24 Vdc	1	red	6	1	red	—	—	—	—	—

**Table 18. 84904K/L/M and 84905M and 84906K/L and 84907K/L, and 84908M attenuator configuration (with optional cable 11764-60004)**

From 11713A				Agilent product number					
				84904K/L/M	84905M	84906K/L	84907K/L	84908M	
				Viking cable Agilent 11764-60004 (optional)	Attenuation				
				Pin number					
Attenuator X	1	OFF	5	5	0 dB	0 dB	0 dB	0 dB	0 dB
		ON	6	6	1 dB	10 dB	10 dB	10 dB	5 dB
	2	OFF	7	7	0 dB	0 dB	0 dB	0 dB	0 dB
		ON	8	8	2 dB	20 dB	20 dB	20 dB	10 dB
	3	OFF	9	9	0 dB	0 dB	0 dB	0 dB	0 dB
		ON	10	10	4 dB	30 dB	30 dB	40 dB	20 dB
	4	OFF	11	11	0 dB	—	0 dB	—	0 dB
		ON	12	12	4 dB	—	30 dB	—	30 dB
			24 Vdc	1	1	—	—	—	—