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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.

Agilent Technologies

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Specifications

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

Specifications	
Driver power supply	
Voltage	+24 ±2.0 Vdc
Current	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	
	100 or 120 Vac, +5%, –10% at 48 to 440 Hz
	200 or 240 Vac, +5%, –10% at 48 to 66 Hz
Power	80 VA maximum
	10 µs maximum for contact pairs 1 through 8
Response time	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)
	Height: 102 mm (4 inches including feet)
	Rack height: 89 mm (3.5 inches, half-width module)
	Width: 213 mm (8.4 inches)
Dimensions	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:

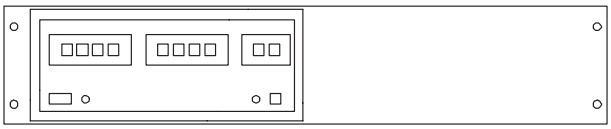
Agilent 11761A – Viking connector to four ribbon cables; connects up to four switches.

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

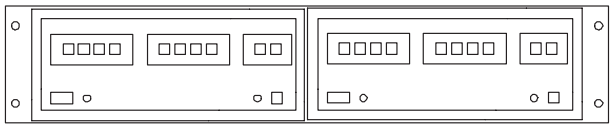
5061-0969 – 12-pin conductor cable, bare wire to Viking connector (for five switches), 60 inches long

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



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Cable Drawings Available for Agilent 11713A Attenuator/ Switch Driver

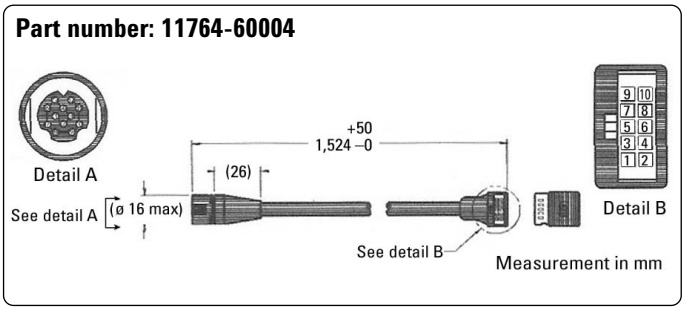


Figure 1. 11764-60004 Viking connector to 10-pin DIP plug

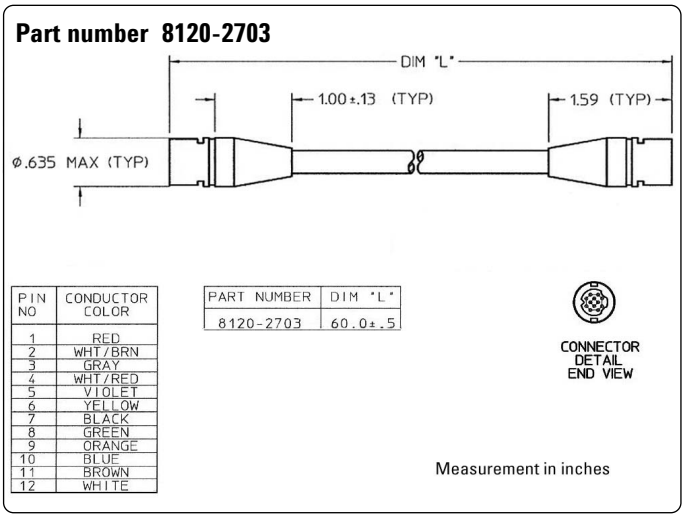


Figure 2. 8120-2703 Viking to Viking drive cables

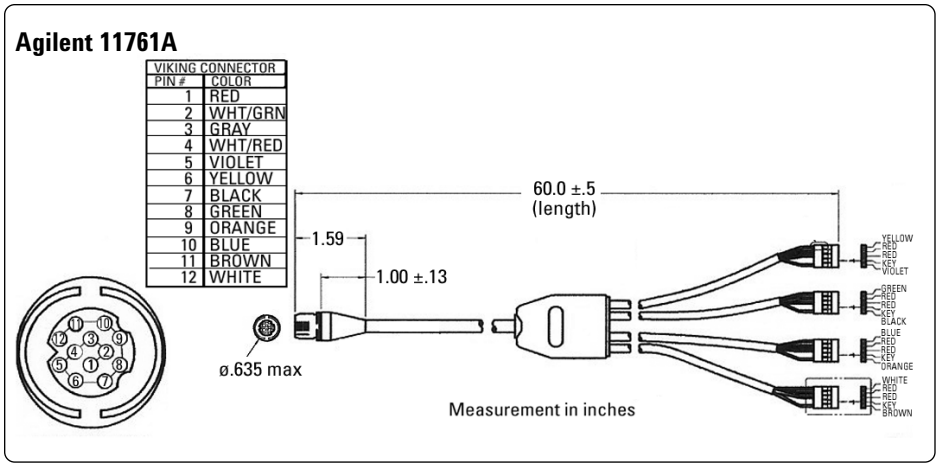


Figure 3. 11761A Viking connector to four ribbon cables to connect up to four switches

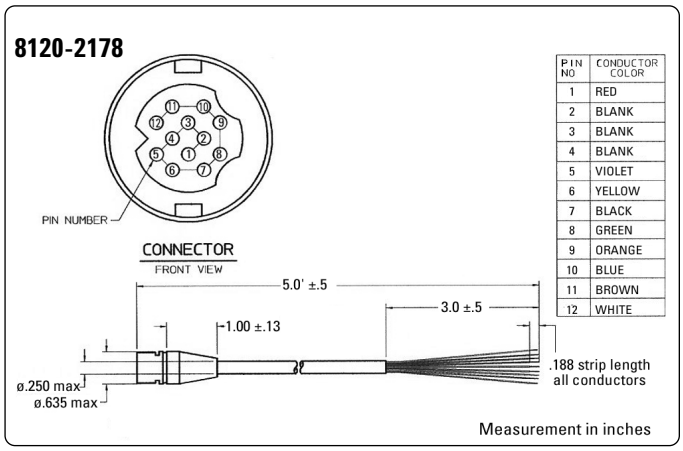


Figure 4. 8120-2178 9-pin conductor cable, to Viking connector (for four switches), 60 inches long

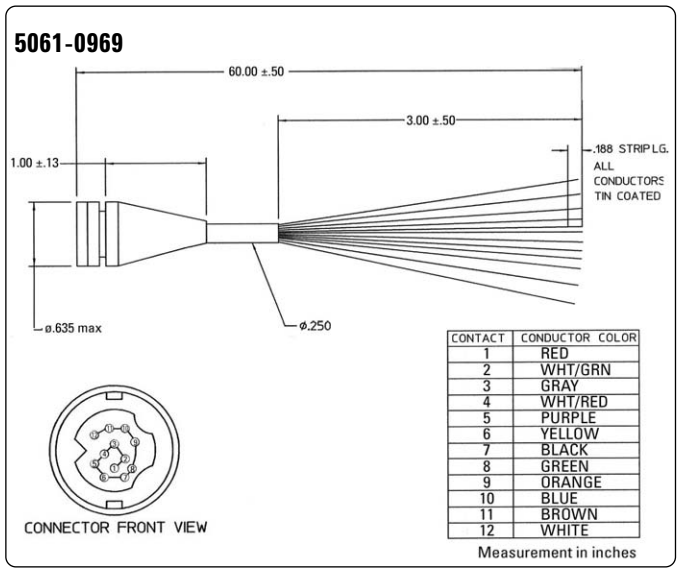


Figure 5. 5061-0969 12-pin conductor cable, bare wire to Viking connector (for five switches), 60 inches long

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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 suppled 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)

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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
S9	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
S0	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
Attenuator X		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
Attenuator Y		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

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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

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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.

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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		
					Option 016	Option 060		8766K	8767K	8768K
			Pin number	Wire color	DIP pin number Agilent 5062-0703	Viking cable Agilent 8120-2178	Wire color	RF connector	RF connector	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

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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	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
	3	OFF	9	orange	3	9	orange	
		ON	10	blue	9	10	blue	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
	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

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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)	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

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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
			Pin number	Wire color	DIP pin number Agilent 5062-0703	Viking cable Agilent 8120-2178	Wire color	Attenuation				
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
			Pin number	Viking cable Agilent 11764-60004 (optional)	Attenuation				
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	–	–	–	–	–

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(fax) (65) 6755 0042
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