

## Switches

### Switch Cables<sup>1</sup>

HP Model Number	HP Part Number	Where Used	Description
<b>11761A</b>		11713A to 8765	Viking to (4) ribbon cable connectors
	<b>11764-60007</b>	84941A dist bd to 87104/106 <sup>2</sup>	16-pin DIP to (6) 4-pin Berg connector, 30-inches
	<b>11764-60008</b>	84941A dist bd to 87204/206	16-pin DIP to (6) 4-pin Berg connector, 30-inches
	<b>70611-60008</b>	84941A dist bd to 8762/63/64, 8765 Opt. 100	(31) 52-inch cables, 4-pin Berg connector to bare wires
		84941A dist bd to 87104/106 Opt. 100 <sup>2</sup>	
		84941A dist bd to 87204/206 Opt. 100	
<b>84941A-K03</b>		84941A dist bd to 8769K	12-pin Viking to (5) 4-pin Berg connector, 60-inches
	<b>5061-0969</b>	11713A to 87104/106 Opt. 100	Viking to bare wires, 60-inches (2 required for HP 87106/206)
		11713A to 87204/206 Opt. 100	

<sup>1</sup> For complete cable configuration information, used for connection to HP attenuator/switch drivers, request publication number 5963-2038E, *HP 70611A, HP 87130A and HP 11713A Switch Attenuator Driver Configuration Guide*.

<sup>2</sup> Does not provide sensing when used with HP attenuator/switch drivers.

**Some HP switches are also available as OEM equivalents. This table shows the corresponding model numbers.**

HP Model Number	OEM Model Number
8762A	33311A
8762B	33311B
8762C	33311C
8763B	33312B
8764A	33313A
8764B	33313B
8764C	33313C
8765A	33314A
8765B	33314B
8765D	33314D

## Drivers and Interface Modules



**Figure 1.** HP 11713A (upper left), HP 70611A (upper right), HP 87130A (lower).

### HP 11713A Attenuator/Switch Driver

The HP 11713A attenuator/switch driver provides simple HP-IB control of up to ten 24 Vdc solenoid activated switch or attenuator sections. The HP 11713A supplies 24 Vdc common and ten pairs of current sinking contacts to control up to 10 relays. The internal 24 Vdc power supply of the HP 11713A can deliver control signals totaling 0.625 amps continuously or 1.25 amps for one second. Each HP 11713A comes equipped with two plug-in drive cables for driving attenuators. Other cables are also available. The convenient front panel controls allow manual control of individual attenuator sections and/or switches.

### HP 70611A Attenuator/Switch Driver for MMS

The HP 70611A is a 1 / 8 MMS module capable of driving up to 248 electromechanical switches or attenuator switch sections. The HP 70611A is MSIB, SCPI and HP-IB compatible. In addition to being programmable, the HP 70611A features an extremely user-friendly manual interface via any MMS display unit. The highlight of the manual interface is the operator's ability to customize groups of switch control lines and their settings, then identify these switch settings with user-defined alphanumeric labels. In this manner, end users of the HP 70611A can define custom menus with their own identification labels for simplified manual control.

The HP 70611A can store up to 256 user-defined, labeled paths. Path definitions can be stored in non-volatile EPROM. Groups of paths can be stored in "directories" for easier access to similar path commands. The HP 70611A controls switches or attenuator sections in banks of 31 (eight banks total) through individual HP 84940A I/O driver cards which are, in turn, directly wired to the switches and/or attenuators.



**Figure 2.** HP 87130A with various attenuators and switches.

### HP 70612/613 Series MMS Interface Modules

In addition to custom interface modules, HP offers off-the-shelf interface solutions in MMS. The HP 70612 (1 x 6 switch tree) series and the HP 70613 (2 x 5 switch tree) series are microwave matrixes available in 2 / 8 MMS modules with integrated controllers. They are equipped with front panel indicators to facilitate manual use and the integrated controller has all the capabilities of the HP 70611A attenuator/switch driver. A variety of options are available for the HP 70612/13 series including performance to 26.5 GHz, terminated or unterminated switches, integrated attenuators and a choice of port locations. For a more detailed description of these products, refer to publication number 5091-4897E, Modular Measurement System Technical Data Sheet.

### HP 87130A Attenuator/Switch Driver

The HP 87130A is a 3.5-inch high (2 rack units), full rack width attenuator/switch driver capable of driving up to 248 electromechanical switches or attenuator sections. The HP 87130A is controlled over HP-IB via standard commands for programmable instruments (SCPI). The HP 87130A has been designed for use in both ATE switching systems and computer controlled bench-top applications. Control and programming are accomplished via application programs in IBASIC, RMB, C or Pascal. An ITG driver is also available for use separately or in conjunction with HP's Visual Engineering Environment (VEE).

The HP 87130A is electronically identical to the HP 70611A and shares its performance characteristics with the exception of the method of manual control. The HP 87130A has no front panel controls. Manual control of the HP 87130A is realized through its ITG driver and a computer controller. The HP 87130A can drive 31 switches or attenuator sections directly