Operating and Service Manual

Agilent Technologies
85331A SP2T and 85332A SP4T
PIN Switches

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1

General Information

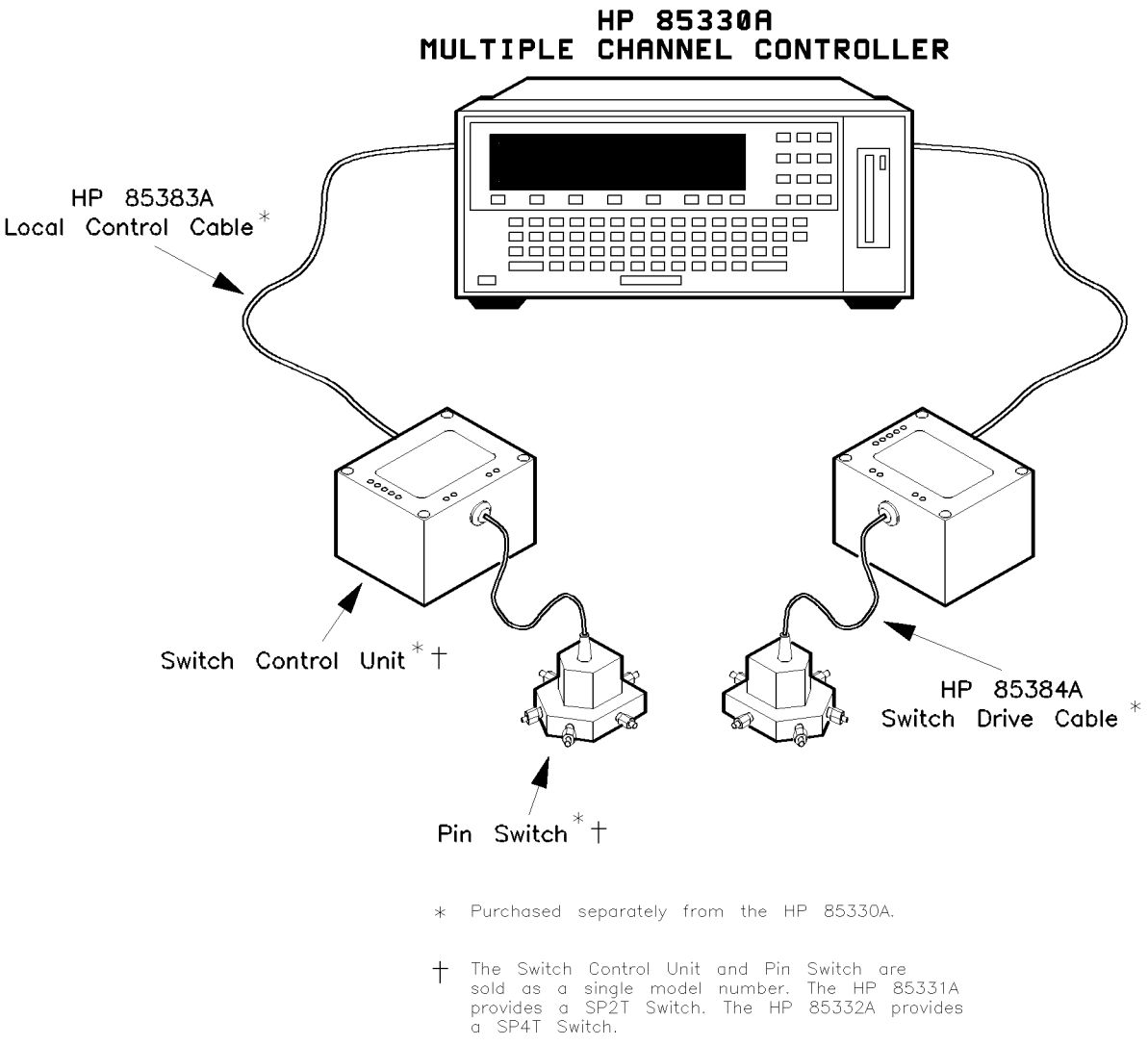

Figure 1-1. 85330A System Overview

The switches are broadband, high-isolation switches. Each switch is supplied with a switch control unit. Specifications and performance characteristics are provided later in this chapter.

The 85331A SP2T PIN Switch

The 85331A SP2T PIN switch consists of two modules:

- A switch control unit (SCU)
- A high-speed high-isolation SP2T microwave switch module

The 85332A SP4T PIN Switch

Identical to the 85331A except that the 85332A uses a SP4T switch module.

Supplied Equipment

Table 1-1. Supplied Equipment

Item	Part Number	Qty.
PIN switch	Refer 85330A Service	1
Switch Control Unit	Refer 85330A Service	1
Mounting Screws 1/4-28 x 1/2 in	N/A	4
Adapter, 2.4 mm (M) to 3.5 mm (F)	1250-2276	3 for 85331A 5 for 85332A

Switch Control Units

In standard systems, the multiple channel controller communicates with *one or two* switch control Units (SCUs). SCUs perform the following tasks:

- They decode binary information from the multiple channel controller to determine which switch should be closed.
- They provide the necessary bias voltages to the switches, which causes them to switch states.

In a standard system, one SCU is connected to the multiple channel controller's `PORT 1` connecter, and the other SCU is connected to `PORT 2`. The separate ports provide the ability to put switches at the transmit and receive site. In custom systems, SCUs may be daisy-chained to provide many channels with a single multiple channel controller. Special system configurations are available that can add remote multiple channel controllers and expand the switch tree or extend the physical distance switches can be placed from the control room. Additional multiple channel controllers can be up to 1000 meters away from the master.

Installation

Installation is described in the *Agilent 85330A Operating, Programming, and Service Manual*. The 85330A manual describes:

- Cable connections
- Switch and SCU mounting information

Switch Characteristics

Electrical Characteristics

Table 1-2. Switch Typical Characteristics

Characteristic	Typical Performance
Average Power Capacity	500 mW at 25 to 55°C[1]
Allowable Addresses	0 to 7 (0 is default)

1 Capacity decreases linearly to 0% at 150°C.

Table 1-3. Switch S-Parameter Specifications

Model	Frequency Range (GHz)	ON S21 (dB)	OFF S21 (dB)	OFF S22 (dB)	ON S22 (dB)	ON S11 (dB)	Max Power (dB)
85331A	0.045 to 0.5	−2	−85	−19.0	−10.0	−10.0	+27
SP2T	0.5 to 18	−4.5	−90	−19.0	−10.0	−10.0	+27
	18 to 26.5	−6.0	−90	−12.5	−6.0	−5.5	+27
	26.5 to 40	−10.0	−85	−10.0	−6.0	−4.5	+27
85332A	0.045 to 0.5	−2	−85	−19.0	−9.0	−10.0	+27
SP4T	0.5 to 18	−4.5	−90	−19.0	−9.0	−10.0	+27
	18 to 26.5	−7.0	−90	−12.5	−5.0	−5.5	+27
	26.5 to 40	−12.0	−85	−10.0	−4.5	−4.0	+27

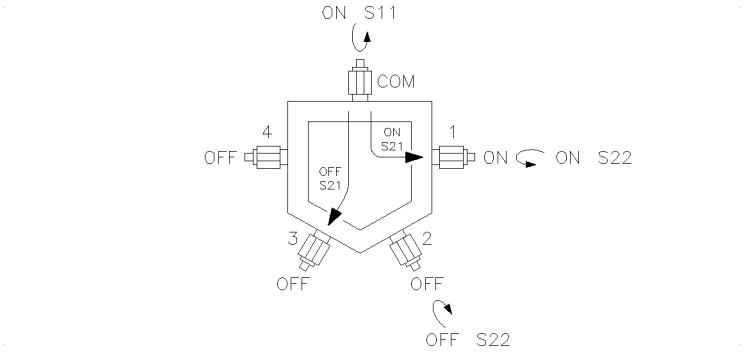

Figure 1-2. Switch Port Match Definitions for Switch ON/OFF States

Typical Switching Speed

Typical Switching speed: less than 1 microsecond. (The switch module can switch from one port to another in less than 1 microsecond.)

Physical Characteristics

Connectors

Switch Module all RF ports 2.4 mm (female)

SCU Input bias and data interface: 24C Male, Amphenol 165-27

Output bias and data interface: 24C female, Amphenol 165-28

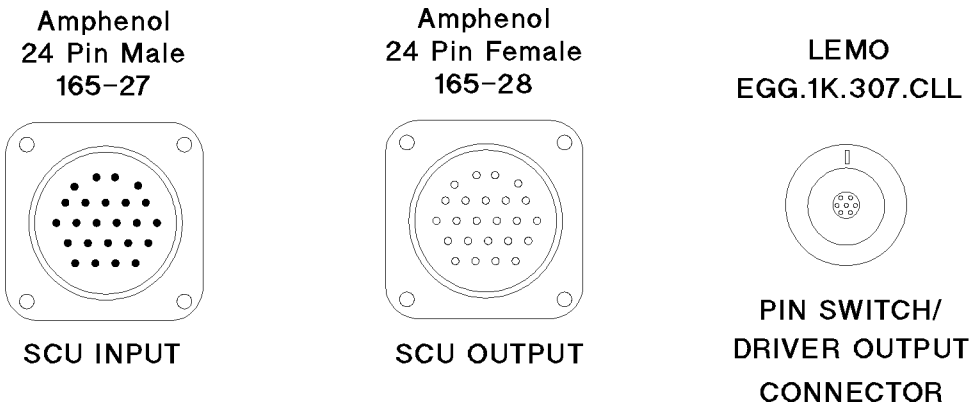

Figure 1-3. SCU and PIN Switch Connectors

Size and Weight

Switch Module 65 mm x 70 mm x 70 mm (approximately)

0.35 kg (0.7 lbs)

SCU 122 mm x 96 mm x 80 mm (approximately)

1.32 kg (2.9 lbs)

PIN Switch/SCU Environmental Limits

PIN Switches and SCU's are designed for outdoor use.

Table 1-4. PIN Switch/Switch Control Unit Environmental Limits

Temperature	
For Operation:	−20 to +55°C (−4 to 131°F)
For Storage:	−40 to +70°C; (−40 to 158°F)
Humidity	
For Operation:	5% to 95% at +40°C or less (non condensing)
For Storage:	5% to 95% at +65°C or less (non condensing)
Pressure Altitude	
Operation or Storage:	Less than 4,600 meters (15,000 feet)