

Introduction

This guide contains information on S46 relay installation and system configuration that is necessary after installing new relays. To install a relay, refer to “Relay kits” on page 1 for a description of the kits and then follow the applicable installation instructions.

WARNING: The information in this section is only intended for qualified service personnel. Do not attempt to replace parts or otherwise service the equipment unless you are qualified to do so.

Relay kits

Table 1 summarizes available relay kits and part numbers.

WARNING: Use only the parts specified in Table 1 of this guide when servicing the equipment. Use of improper parts may expose the operator to hazardous voltages that could result in personal injury or death.

Table 1
S46 relay kits

Relay kit model number (Description)	Relay location	Kit parts summary (Quantity)	Keithley part number	Installation reference
S46-SPDT-KIT-R (18GHz SPDT)	1 to 8	4-40 x5/8 PPH screws (2) SPDT relay (1) SPDT bracket (1) Connecting cable (1)	4-40X5/8PPH S40-0154 SYS46-314A SYS46-311C	“18, 26.5, and 40GHZ Relay 1-8 installation” on page 2
S46-SP4T-KIT-R (18GHz SP4T)	A to D	4-40 x1/4 PPHSEM screws (2) SP4T relay (1) Ribbon cable (1)	4-40X1/4PPHSEM RL-282-2 CA-286-1B	“18GHz, 26.5 and 40GHz Relay A-D installation” on page 3
S46-SP6T-KIT-R (18GHz SP6T)	A to D	4-40 x1/4 PPHSEM screws (2) SP6T relay (1) Ribbon cable (1)	4-40X1/4PPHSEM RL-282-1 CA-286-1B	“18GHz, 26.5 and 40GHz Relay A-D installation” on page 3
S46-SPDT-KIT-26 (26.5GHz SPDT)	1 to 8	4-40 x5/8 PPH screws (2) SPDT relay (1) SPDT bracket (1) Connecting cable (1)	4-40X5/8PPH RL-308 SYS46-314A SYS46-311C	“18, 26.5, and 40GHZ Relay 1-8 installation” on page 2
S46-SP4T-KIT-26 (26.5GHz SP4T)	A to D	SP4T relay (1) Ribbon cable (1)	RL-312 S46-U100-350A	“18GHz, 26.5 and 40GHz Relay A-D installation” on page 3
S46-SP6T-KIT-26 (26.5GHz SP6T)	A to D	SP6T relay (1) Ribbon cable (1)	RL-309 S46-U100-350A	“18GHz, 26.5 and 40GHz Relay A-D installation” on page 3

Table 1 (Continued)
S46 relay kits

Relay kit model number (Description)	Relay location	Kit parts summary (Quantity)	Keithley part number	Installation reference
S46-SPDT-KIT-40 (40GHz SPDT)	1 to 8	4-40 x5/8 PPH screws (2) SPDT relay (1) SPDT bracket (1) Connecting cable (1)	4-40X5/8PPH 21409 SYS46-314A SYS46-311C	“18, 26.5, and 40GHZ Relay 1-8 installation” on page 2
S46-SP4T-KIT-40 (40GHz SP4T)	A to D	SP4T relay (1) Ribbon cable (1)	S40-0013 S46-U100-350A	“18GHz, 26.5 and 40GHz Relay A-D installation” on page 3
S46-SP6T-KIT-40 (40GHz SP6T)	A to D	SP6T relay (1) Ribbon cable (1)	S40-0166 S46-U100-350A	“18GHz, 26.5 and 40GHz Relay A-D installation” on page 3

Installation

Before installing the relays, remove the screws that secure the S46 top cover, and then remove the cover.

WARNING: Disconnect the line cord and all cables from the S46 before removing the top cover.

To find the applicable installation procedure for your specific kit, refer to the Installation reference column contained in [Table 1](#), and then perform the installation.

18, 26.5, and 40GHZ Relay 1-8 installation

1. Remove the nuts securing the cover plate over the mounting hole where the new relay is to be installed (see [Figure 1](#)).
2. Install the support SPDT bracket at the relay location securing it with two nuts.
3. Thread the red and black wires (from the relay) through the PVC Tubing (TX-52-7)(not shown—part of connecting cable SYS46-311C). The TX-52-7 may be cut to a length that will allow the relay assembly to be removed without removing the top cover.
4. Referring to [Figure 1](#), solder the two control wires to the terminals of the relay.
5. Install the relay on the support bracket using the supplied 4-40X5/8PPH screws.
6. Plug the wire connector into the appropriate circuit board connector (see [Figure 2](#)).
7. Install the top cover, and then configure the system as covered in [“System configuration” on page 3](#) of this guide.

Figure 1
RELAY 1-8 installation

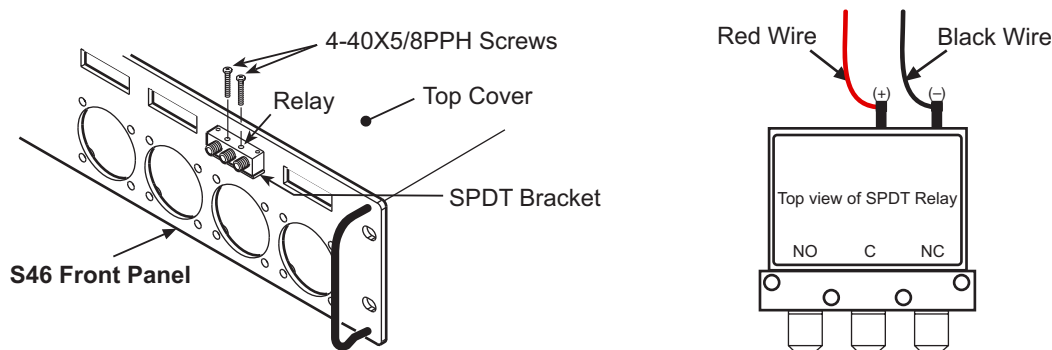
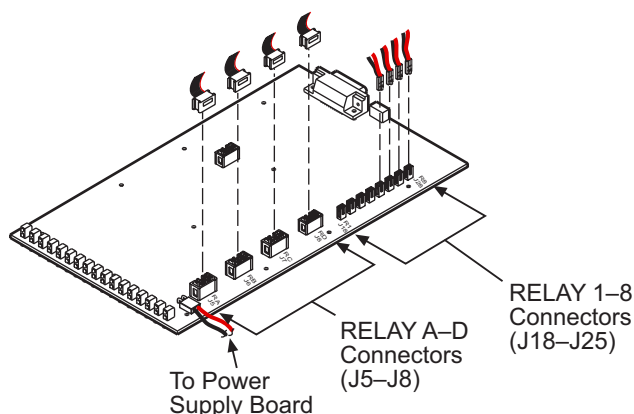


Figure 2
Relay connector locations



Relay	Connector
1	J18
2	J19
3	J20
4	J21
5	J22
6	J23
7	J24
8	J25

Relay	Connector
A	J5
B	J6
C	J7
D	J8

18GHz, 26.5 and 40GHz Relay A-D installation

NOTE: Install 26.5 and 40GHz SP6T with port 6 at 12 o'clock position. Control wiring changes port orientation—dimple identifies operational port 2.

1. Remove the four screws securing the cover plate over the mounting hole where the new relay is to be installed (see [Figure 3](#)).
2. Connect the supplied ribbon cable to the relay (see [Figure 3](#)):
For 18GHz relays—Connect the supplied ribbon cable to the relay securing it with the two 4-40X1/4PPHSEM screws.
For 26.5 and 40GHz relays—Solder the supplied ribbon cable to the relay control solder pins.
3. Insert the relay in the mounting hole, and then secure it with the four screws removed in step 1.
4. Plug the ribbon connector into the appropriate circuit board connector (see [Figure 2](#)).
5. Install the top cover, and then configure the system as covered in “[System configuration](#)” on [page 3](#) of this guide.

System configuration

After installing the new relays, you must program the S46 for the new relay configuration with the following command:

```
:ROUT:CONF:CPOL <clist>
```

<clist> is defined as follows:

```
clist = (@0 | 3-6, 0 | 3-6, 0 | 3-6, 0 | 3-6, 0 | 1, ... 0 | 1)
```

```
Relay:  A      B      C      D      1  ...  8
```

NOTE: All switch locations must be included in the <clist> whether or not all locations are populated. The numeric value (1 or 3-6) indicates the number of throws, while a value of 0 indicates that a location is not populated.

For example, if RELAY A and RELAY B are SP6T, RELAY 1 and RELAY 2 are SPDTs, and all other locations are not populated, the command syntax would be:

```
:ROUT:CONF:CPOL (@6,6,0,0,1,1,0,0,0,0,0,0)
```

See Section 3 of the S46 Instruction Manual (document number S46-901-01) for detailed programming information.

Figure 3
 18, 26.5, and 40GHz Relay A-D installation

