NI PXI-4021

Switch Controller

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Choosing a Switch Controller

Selecting a Switch Controller

After selecting your switch modules, the next step in configuring your switching system is to select the appropriate switch controller. A switch controller delivers the digital communication between the switch module and the driver software.

PXI Switches

In a PXI system, the PXI controller controls all PXI switches. Examples of PXI controllers include an embedded controller or a PC controlling a PXI system via MXI-3.

SCXI Switches

SCXI switch require a dedicated switch controller such as an NI 4021, NI 4060, PXI-4070 FlexDMM, or E Series device.

SCXI-1000 or SCXI-1001 Chassis

SCXI switches have two types or rear connectors that differentiate their cabling schemes – a 10-pin and a 50-pin. Refer to Table 1 to select your cabling accessories according to its rear connector configuration.

		SCXI Controller			
Rear Connector	**Switch Module**	**NI 4021**	**NI 4060[1]**	**PXI-4070**	**E Series**
10-pin	SCXI-1127 SCXI-1128 SCXI-1129 SCXI-1166[1] SCXI-1193[1]	SCXI-1359 Kit	SCXI-1357 Kit SCXI-1358 Kit SCXI-1359 Kit	SCXI-1357 Kit SCXI-1358 Kit SCXI-1359 Kit	Can Control but not cable directly to switch module[2]
50-pin	SCXI-1160 SCXI-1161 SCXI-1163R SCXI-1190 SCXI-1191 SCXI-1192	SCXI-1362	SCXI-1362	SCXI-1362	SH6868-EP and SCXI-1349

[1]An NI 4060 cannot control SCXI-1166 and SCXI-1193 [2]An E Series device can control these switches when cabled to another SCXI module in the same chassis. The cable SCXI module can be an SCXI signal conditioning device or another SCXI switch module. Alternatively you can install the E Series device in the rightmost slot of a PXI-1010 or PXI-1011 chassis.

Table 1. SCXI Switch Controller Selection

PXI-1010 or PXI-1011 Combination Chassis

- If you place your switch controller in the rightmost PXI slot of the chassis, you do not need any extra cabling to control your switch module.
- If the controller is not in the rightmost slot of the chassis, refer to Table 1 to select your cabling.

Routing High-Voltage Signals From a Switch to an NI 4060 or PXI-4070 FlexDMM

The SCXI-1127, SCXI-1128, and SCXI-1129 have the capability to route analog signals to their rear connector. If you want to share these signals among several modules in a PXI-1010 or SCXI chassis, you need to use a high-voltage analog bus (HVAB) adapter, such as the SCXI-1357, SCXI-1358, and SCXI-1359. The PXI-1011 has an integrated high-voltage backplane.

You can also route these signals to the NI 4060 or PXI-4070 FlexDMM for measurements.

- If you are using a PXI-1010 or an SCXI chassis use an SCXI-1357 or SCXI-1359 kit.
- If you are using a PXI-1011 use an HV8-BAN4 cable.

Figure 1. PXI/SCXI Combination System

Accessories and Cables

Switch Controllers (See Figure 1)

NI 4021 Switch Controllers provides complete control of an SCXI-based switching system. These accessories are the ideal low-cost control solution when switching modules are used with third-party instruments or to route signals to measurement devices other than the NI 4060 or PXI-4070 DMMs. An NI 4021 requires no additional software.

PXI-4021 778277-01
PCI-4021 778278-01

Figure 1. NI PXI-4021 Switch Controller

High-Voltage Backplane Assemblies

For the SCXI-1127, SCXI-1128, and SCXI-1129 multiplexer/matrix modules. The SCXI-1357 consists of a 4-slot high-voltage backplane, two cables for routing analog and digital signals to an external scanning DMM, and two analog bus plugs for connecting the backplane components. The SCXI-1358 is identical to the SCXI-1357, except it is for a 12-slot SCXI chassis. To add more chassis to your high-voltage backplane configuration, purchase one add-on kit for each chassis added. You can intermix 4 and 12-slot chassis.

Figure 2. SCXI-1357 High-Voltage Backplane Assembly Kit

SCXI-1357 (4-Slot) (See Figure 2)

1 m cables.....776575-571
2 m cables.....776575-572
Backplane only.....776575-57
Add-on chassis kit (4-slot) 776575-57M

Figure 3. Add-On Chassis Kit (4-Slot)

SCXI-1358 (12-slot) (See Figure 3)

1 m cables.....776575-581
2 m cables.....776575-582
Backplane only.....776575-58
Add-on chassis kit (8-slot) 776575-58M

SCXI Communication Adapter Kits

These kits include a backplane adapter that connects the digital control lines of the NI 4060, PXI-4070 DMM, or NI 4021 switch controller to the switch modules. The SCXI-1359 Kit includes an SCXI-1359 backplane and an SH9MD-AUX cable. The SCXI-1362 Kit includes an SCXI-1362 backplane and an SH9MD-AUX cable. During multichassis expansion the SH9MD-AUX cable is used to connect two SCXI-1362 backplanes.

Figure 4. SCXI-1359 Adapter Kit

SCXI-1359 (See Figure 4)

1 m cable 776575-591
2 m cable 776575-592
Backplane only.....776575-59

Figure 5. SCXI-1362 Adapter Kit

SCXI-1362 (See Figure 5)

1 m cable 776575-621
2 m cable 776575-622
Backplane only.....776575-62