Schneider Electric

Installation and Configuration

Dry Contact I/O SmartSlot Card

AP9613

This manual is available in English on the enclosed CD.

Contents

Safety Overview

Important Safety Information

Follow all applicable electrical codes for your installation area.

Read the instructions carefully to become familiar with the equipment before trying to install, operate, service or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE addresses practices not related to physical injury including certain environmental hazards, potential damage or loss of data.

Product Overview

Introduction

The Schneider Electric™ Dry Contact I/O SmartSlot Card (AP9613) is a management product that provides the following features:

- **UPS status information** presented through 6 fully isolated output relays. This is expandable to 8 using universal input/output ports and optional Dry Contact I/O Accessory (AP9810)

- **UPS control and testing** by using 4 opto-isolated input contacts. An additional 4 input contacts (non opto-isolated) may be added using universal input/output ports and an optional Dry Contact I/O Accessory (AP9810)

- **UPS control and testing based on environmental conditions** using universal input/output ports and an optional Environmental Sensor (AP9335T or AP9335TH)

- **screw terminal connectors** for easy integration into various management systems

- a **Configuration Utility user interface** to customize your setup, see "Connecting to the configuration utility" on page 14

For more details, see "Showing the product detail" on page 4, "Configuring the Dip Switches" on page 7, "Installing" on page 9, "Specifications" on page 16.

Product description

The Schneider Electric Dry Contact I/O SmartSlot Card consists of a printed circuit board assembly. It installs in the SmartSlot of the UPS host device. The product contents are:

- the Dry Contact I/O SmartSlot Card
- the USB A to Mini B cable (to access the Configuration Utility, see "Connecting to the configuration utility")
- this printed manual

Hardware and software requirements and tools needed

The Dry Contact I/O SmartSlot Card works with most APC by Schneider Electric UPS devices with an output rated less than or equal to 160kVA and an available SmartSlot.

While most devices meet this requirement; verify the compatibility of your device by locating it on the APC website, www.apc.com, and checking for compatible accessories.

You need the following tools:

- #1 Phillips screwdriver for screw terminals
- #2 Phillips screwdriver for SmartSlot screws
- a wrench of size 1" or 25.4 mm, or adjustable, to tighten the grommet

For the Configuration Utility, you need: Windows (XP, 2003, 2008, Vista, or 7) and Internet Explorer browser v7 or higher.

Showing the product detail

Itemizing the features of the Dry Contact I/O SmartSlot Card

Dry Contact I/O SmartSlot Card

Item	Name	Description
❶	Universal I/O ports 1 and 2	These support the AP9335T/ TH and AP9810 dry contact accessories
❷	USB cable connector	Connecting this to your PC enables usage of the Configuration Utility.
❸	Reset button	Use an appropriately sized, non-metallic tool to press the Reset button. Holding the button for 5 seconds reboots the Card. Holding the button for 25 seconds resets the Card to the factory defaults. (The status light flashes green when you do this).
❹	Status indicator	• SOLID GREEN indicates communications and operations are fine • FLASHING GREEN indicates the Card is initializing • FLASHING RED indicates a communication fault • SOLID RED indicates a non-operational fault
❺	Dip switches	These are located near the back of the front panel on the right-hand side. See the "Location of dip switches" and "Configuring the Dip Switches" sections.
❻	Output relay terminals	Connections for alarm outputs. See "Itemizing the input contact and output relay terminal blocks" and "Ratings for input contacts and output relays" .
❼	Input contact terminals	Connections for control inputs. See "Itemizing the input contact and output relay terminal blocks" and "Ratings for input contacts and output relays" .
❽	Cord grip	Supports the cabling that is used to control external devices, or to connect up external switches. The bare wires connect to the terminal blocks on the Card. The cord grip is plastic and can secure a single cord with a diameter range of 5.8 – 10mm. This limits the number of conductors (inside the cord) and the power ratings.

Itemizing the input contact and output relay terminal blocks

Number of positions on each terminal block	9
Tightening torque	0.35 N.m
Tightening torque max	0.4 N.m
Wire stripping length	5 mm
Minimum wire gauge	0.14 mm^2 (26 AWG)
Maximum wire gauge	2.5 mm^2 (14 AWG)
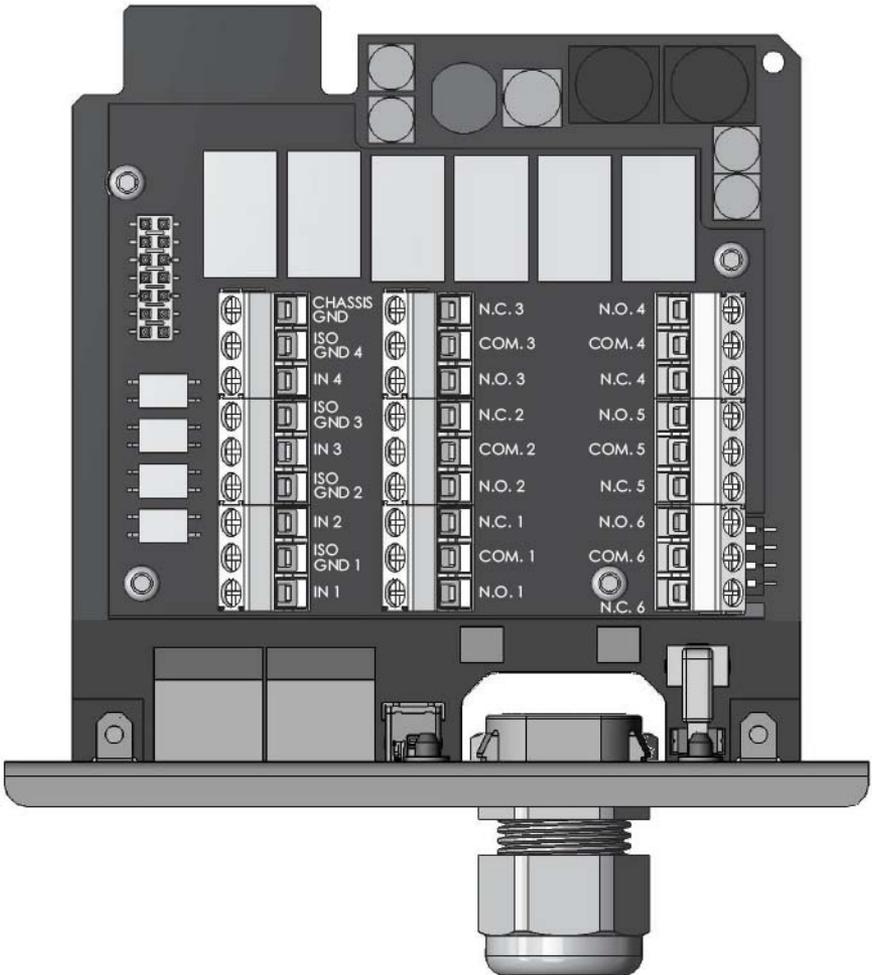
Configuring the Dip Switches

The Dry Contact I/O SmartSlot Card requires configuration before testing, final installation, and use.

See "Location of dip switches" directly below and "Dip switches: input and outputs" .

Location of dip switches

The "callout" below points to the location of the dip switches on the card, and shows one possible configuration: ON-OFF-OFF-ON.

See the other possible configurations at "Dip switches: input and outputs"
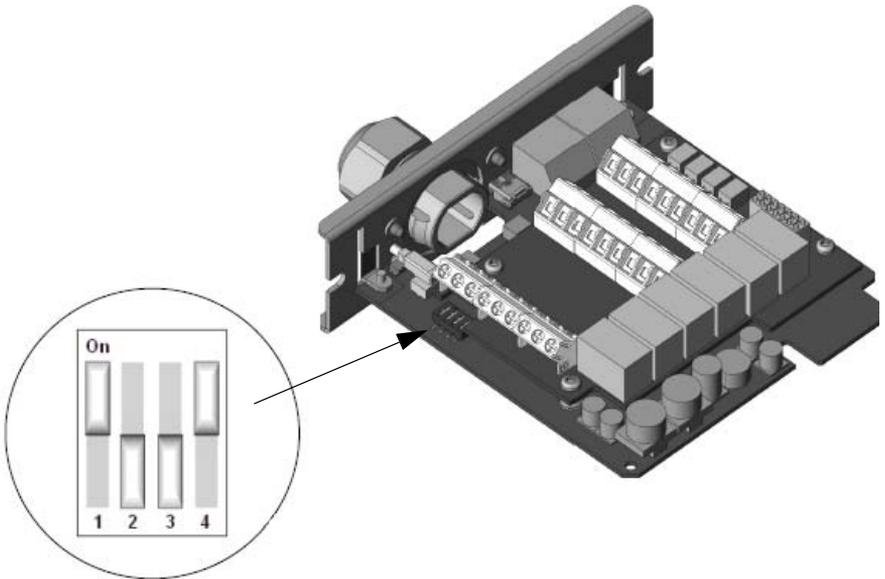
Dip switches: input and outputs

The table below lists the four possible configurations, with their corresponding inputs and outputs.

	Configuration 1	Configuration 2	Configuration 3	Configuration 4*
	On 1 2 3 4 OFF-OFF-OFF-ON	On 1 2 3 4 ON-OFF-OFF-ON	On 1 2 3 4 OFF-ON-OFF-ON	On 1 2 3 4 ON-ON-OFF-ON
Inputs	**Device Actions**			
1	Turn the UPS on.			See Configuration Utility
2	Turn the UPS off.		Turn the UPS off safely.	See Configuration Utility
3	Start UPS self-test.			See Configuration Utility
4	Shut down the UPS when on battery except for self-test or runtime calibration.	Put the UPS in bypass, if bypass is available on the UPS.	Shut down the UPS when on battery except for self-test or runtime calibration.	See Configuration Utility
Outputs	**Device State**			
1	The UPS is on-battery (e.g., during a power failure, self-test, or runtime calibration).			See Configuration Utility
2	The UPS has a low battery.			See Configuration Utility
3	The protected load is not receiving power from the UPS or communication between the UPS and the Relay I/O Card has been lost.			See Configuration Utility
4	Replace the UPS battery.		UPS commanded to turn on (echo of Input 1).	See Configuration Utility
5	The UPS is overloaded.	The UPS is in bypass by selection from software, front panel, or rear panel.	UPS commanded to turn off gracefully (echo of Input 2).	See Configuration Utility
6	Any UPS fault or self-test failure.	Any UPS fault, self-test failure, or overload.	Any UPS fault, self-test failure, overload, or replace battery	See Configuration Utility

* With this setup (the factory default), the Configuration Utility is used automatically.

Installing

See "Planning your installation" directly below, and

Planning your installation

Operating considerations

⚠ DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH
Read and understand this manual and the manuals of the UPS before installing this card. Installation must be performed by qualified personnel. The user is responsible for compliance with all international and national electric code requirements.
Failure to follow these instructions will result in death or serious injury.

Note the following characteristics of the Dry Contact I/O SmartSlot Card when making decisions regarding system integration:

- The coils for all output relays are normally energized. The Card will generate all possible alarms in case of a system fault, such as cable failure, removal of the Dry Contact I/O SmartSlot Card, severe UPS battery discharge, or catastrophic hardware failure on the Card.

- All output relays are isolated from each other and from the UPS system ground.

- All input contacts are isolated from the UPS system ground but are common to each other

- Control inputs are driven by user-supplied dry contact outputs. The dry contact closure sensing voltage available on these inputs is nominally 5 VDC at less than 1 mA. All control inputs are referenced to the UPS system ground.

- All control inputs must be stable for a minimum of one second to be considered valid. Longer delays can be set through the Configuration Utility. Control inputs can be asserted indefinitely.

- Be careful to assert just a single input to a device. Avoid initiating simultaneous, conflicting actions, e.g. input #1 (turn the UPS on) and input #2 (turn the UPS off).

- Control inputs are acted upon immediately after validation. However, there are several UPS conditions that can cause an input to be ineffective, such as self-test or runtime calibration. For confirmation of

inputs, we recommend that an output be configured and monitored appropriately to determine the effectiveness of an input.

- Do not wire this Dry Contact I/O SmartSlot Card when the power is on.

- The installation of this Dry Contact I/O SmartSlot Card must follow applicable building and electrical codes.

- Do not use this card to control voltage exceeding 30 VAC or VDC.

- For proper operation, ensure that the UPS is grounded and the Dry Contact I/O Card is secured with two screws to the UPS.

- Use only a single cord with the plastic cord grip.

See "Ratings for input contacts and output relays" on page 17 in "Specifications" .

Connection strategies

You can connect the alarm outputs of the Dry Contact I/O SmartSlot Card in several ways to meet the requirements of your management systems or switched load. Both normally open (N.O.) and normally closed (N.C.) systems are accommodated in any combination of AND or OR configurations.

You can combine Dry Contact I/O SmartSlot Card alarm outputs to form compound outputs, such as "replace battery OR fault" or "on-battery AND low battery."
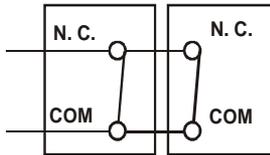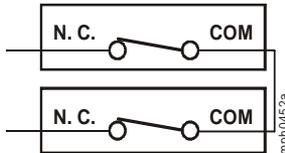
N. O. AND
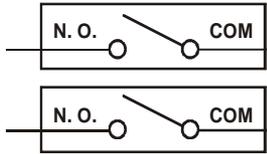
N. O. OR
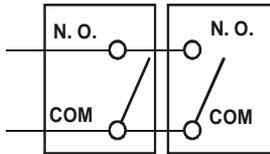

N. C. AND

N. C. OR

Installation steps

> ⚠️ Warning: After installation, it is strongly recommended that you fully test your configuration before putting it into a production environment.

1. Make all connections to the Dry Contact I/O SmartSlot Card to support your configuration before continuing. See "Itemizing the input contact and output relay terminal blocks" on page 6 for information on making the connections.

> ⚠️ **Electrostatic discharge**: The Dry Contact I/O SmartSlot Card is sensitive to static electricity. Handle the Card by the end plate only. Do not touch the exposed printed circuit board.

2. Use a #2 Phillips-head screwdriver to remove the two screws retaining the slot cover on the host device. Keep the screws for use later. Keep the slot cover for future use.
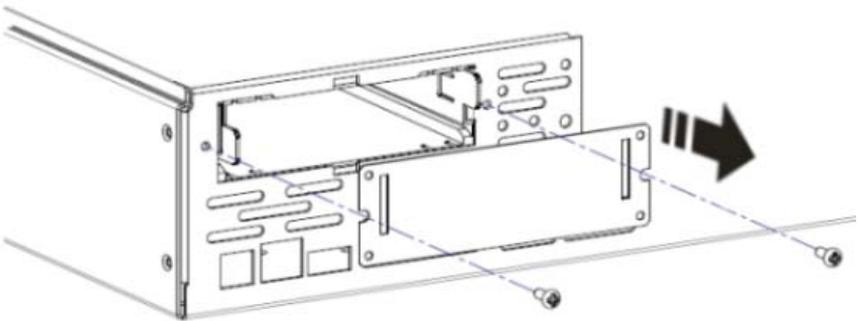
3. Orient the Card to fit in the Card slot as shown. Slide the Card all the way into the slot until the end plate is flush with the back panel of the host device.
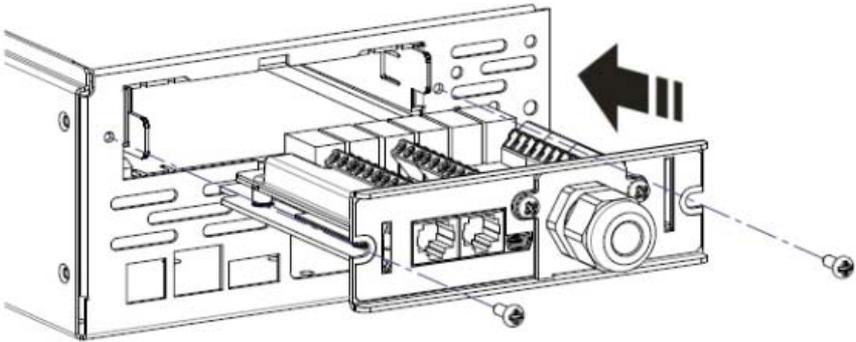
Trying to install the Card upside down may damage it. Observe the correct orientation of the Card. The sides of the printed circuit board align with the guides in the sides of the Card slot. The slot may be oriented horizontally or vertically in the host device, which must be off.

4. Secure the Card with the screws removed in step 3.

In order to provide proper grounding, the SmartSlot screws must be installed, the metal clamp must be securely tightened, and the UPS must be properly grounded.

5. Ensure the status LED is illuminated (see "Showing the product detail" on page 4).

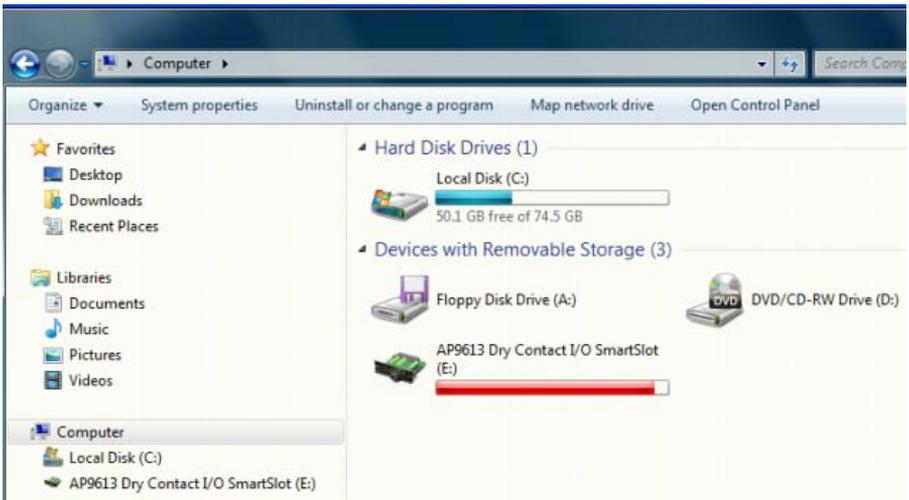See "Connecting to the configuration utility" on the following page.

Connecting to the configuration utility

The Configuration Utility does not need to be installed, it runs off the Card. With the Utility, you can:

- review the **status** of your AP9613 Dry Contact I/O SmartSlot Card and Universal I/O ports
- perform **actions** in response to a status change in an input port or to some UPS event
- **change the status of an output relay port** in response to a condition occurring in a device such as your UPS or an environmental monitor
- upgrade the **firmware** on your AP9613 Dry Contact SmartSlot I/O Card

To launch the Configuration Utility user interface, use the USB cable to connect your PC to the port indicated by item #2 on your Dry Contact I/O front panel (see "Itemizing the features of the Dry Contact I/O SmartSlot Card" on page 4).

When the Card is connected to the host PC, it displays as a drive letter on your PC, see drive E in the graphic below for example.

To run the Utility, launch the `runme.hta` file located in the root of the drive.

For information on using the Configuration Utility user interface, refer to its online help.

When you connect your Card with your PC using the USB cable, the Configuration Utility reads a file called `config.lua` on the Card. Each time you save a new configuration using the Utility, this file is overwritten. It is also possible to edit `config.lua` directly using a text editor like Notepad or Microsoft Word.

See the section in the Configuration Utility online help called "Copying your Configuration" for information on copying your configuration to another installation of the Card by copying the `config.lua` file.

Specifications

For all specifications, when there is a difference between the VDE and UL approval standards, use the lower rating.

Electrical, physical, environmental, and approval specifications

Item	Specification
Electrical	
Nominal switching capacity	3A@ 30 VAC or VDC
Rated voltage	24 VDC
Rated current	200 mA
Input Contact (#1–4) and Output Relay (#1–6)	See "Ratings for input contacts and output relays" on page 17
Physical	
Size (height × width × depth)	38.00 x 121.00 x 108.00 mm 1.50 x 4.75 x 4.25 in
Shipping size (height × width × depth)	73.00 x 165.00 x 234.95 mm 2.86 x 6.50 x 9.25 in
Weight	0.14 kg 0.30 lb
Shipping weight	0.45 kg 1.00 lb
Environmental	
Elevation Operating Storage	0 to 3000 m (0 to 10,000 ft) 0 to 15 000 m (0 to 50,000 ft)
Temperature Operating Storage	0 to 40°C (32 to 104°F) -15 to 65°C (5 to 149°F)

Item	Specification
Relative Humidity Operating Storage	0 to 95% 0 to 95%
Approvals	
Emissions and Immunity Verification:	FCC Part 15 Class A, EN 55022 Class A, EN 55024, EN 61000-3-2, EN 61000-3-3, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11

Ratings for input contacts and output relays

	Voltage Rating	Current Rating (Max.)
Input Contact (#1–4)	0–30 VDC Minimum for active: 4.5 V Maximum for inactive: 0.5 V	N/A
Output Relay (#1–6)	0–30 VAC or VDC	3 A per relay (16 A Total Max)

Warranty

Two-Year Factory Warranty

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