

TAMS 1805A 5 Channel Switch

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Introduction

The TAMS 1805A 5 Channel Switch is a USB controlled high current switch. See Figure 1.

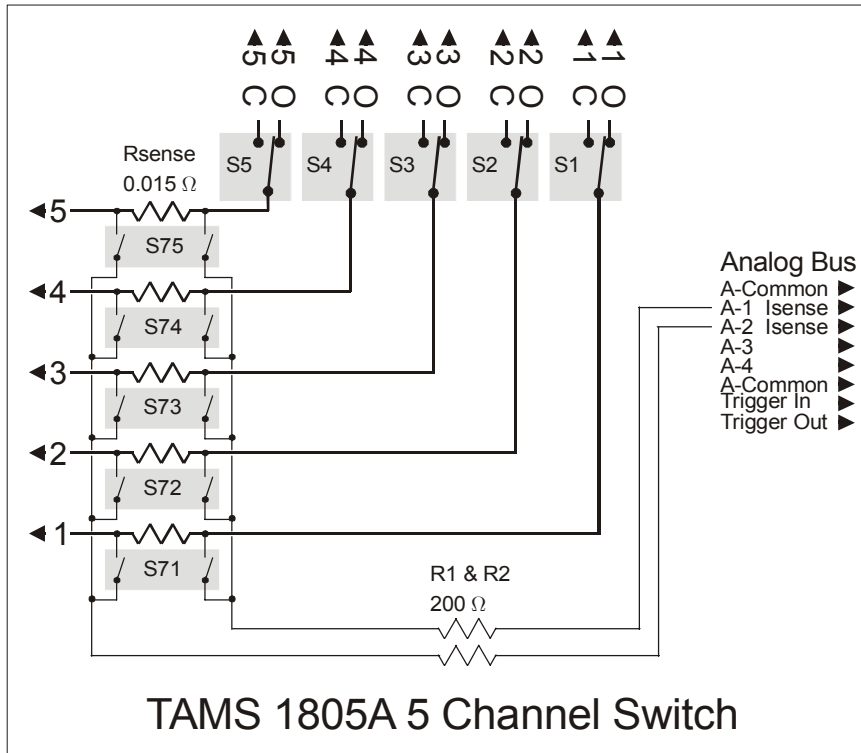


Figure 1 -- TAMS 1805A 5 Channel Switch

The TAMS 1805A consists of 5 SPDT relays (labeled S1 through S5 in figure 1) with all connections brought to terminals for maximum flexibility. So, for example, terminal 1 can be connected to either terminal 1O (via an “OPEN” command) or terminal 1C (via a “CLOSE” command).

Please observe all safety precautions listed in the Installation and Operation Manual.

Measuring Current Flow

The current flow across any single channel can be measured using relays 71 through 75. For example, to measure the current flow through channel 3, close relay 73. This will route the signals across the current sense resistor Rsense to pins A-1 and A-2 of the

Analog Bus. Connecting A-1 and A-2 to a high impedance voltmeter will allow measuring the voltage across the sense resistor and calculating the current.

At most one relay 71 through 75 should be closed at any time in order to prevent channel-to-channel current flows. The TAMS 1805A does not enforce this exclusion, so use care when controlling the switch and writing test programs.

Relays types

The power relays S1 – S5 are dual coil latching armature type relays.
The signal relays S71 – S75 are reed relays.

Relay Operation

Direct IO

Direct IO commands open and close the relays as follows:

```
OPEN (@1, 2)    -- connect "1" to "10" and connect
                 "2" to "20"
                 -- this also disconnects "1" from
                 "1C" and "2" from "2C"

CLOSE (@1, 2)   -- connect "1" to "1C" and connect
                 "2" to "2C"
                 -- this also disconnects "1" from
                 "10" and "2" from "20"
```

IVI driver and NI Switch Manager

These drivers all use a “connect pin to pin” model. Instead of referencing the relay number, they reference the terminal or pin name, here called a “channel name”.

Consider this example for a TAMS 1805A card,

```
ts1805a_Connect (h, "1", "1c");
```

This call connects channel “1” with channel “1c”. In other words, it closes relay 1. This call opens relay 1:

```
ts1805a_Connect (h, "1", "1o");
```

The channels for the IVI driver and switch manager are as follows:

```
"1", "2", "3", "4", "5",  
"1o", "2o", "3o", "4o", "5o",  
"1c", "2c", "3c", "4c", "5c",  
"I1", "I2", "I3", "I4", "I5",  
"Isense"
```

Channels 1, 2, 3, 4, and 5 are the "common" for each of the five power relays.

Channels 1o, 2o, 3o, 4o, 5o are the "open" contact position of each power relay.

Channels 1c, 2c, 3c, 4c, 5c are the "closed" contact position of each power relay.

The Isense channel is Analog Bus terminals A-1 and A-2. Isense can be connected to I1, I2, etc. to measure the current flow in channel 1, 2, etc.

Example commands:

```
ts1805a_Connect (h, "1", "1c")  
    -- connect channels 1 and 1c  
  
ts1805a_Connect (b, "Isense", "I4")  
    -- connect analog bus A-1 and A-2 to each side of  
    -- the current sense resistor on channel 4.  
  
ts1805a_Disconnect (b, "Isense", "I4")  
    -- Disconnect analog bus A-1 and A-2 from each  
    -- side of current sense resistor on channel 4.
```

Connectors

The TAMS 1805A uses Phoenix Contact 150 mil (3.81mm) "Mini Combicon" connectors.

The "straight" plugs are part number 18 27 73 2. These can be used with Cable Housings or Connector Hood part number 18 34 37 2.

The "vertical" or "right angle" screw terminal plugs are part number 18 28 37 5 for the wires to exit toward the side of the TAMS 1805A with the TAMS logo (the left side when viewed from the front).

The “vertical” or “right angle” screw terminal plugs are part number 18 28 52 4 for the wires to exit away from the side of the TAMS 1805A with the TAMS logo (the right side when viewed from the front).

The insulation displacement plugs are part number 18 97 57 1.

The red connectors keys are part number 17 34 63 4.

Phoenix Contact is at www.phoenixcontact.com.

Appendix A: Specifications

Supported Configurations

Operating systems: Windows 2000 and Windows XP

Microsoft Internet Explorer version 5.01 or later is required

USB versions: 2.0 and 1.1 Full speed

Electrical

USB connection: USB “B” type connector

USB current consumption: 150mA maximum

Switched voltage and current:

100VAC maximum

30VDC maximum

8 Amps maximum

Switched power:

800VA max AC

240W max DC

Current measurement: $R_{sense} = 0.015 \text{ Ohms}$, +/- 1 %

Total Contact Resistance: 60mOhms initial, typical

Switching speed, scan list: 50 steps per second, maximum

Screw terminal wire: AWG 28 – 16

Screw terminal torque: 0.22 – 0.25 Nm

General

Operating Temperature: 0C to 40C

Storage Temperature: -40C to 70C

Transportation Temperature: -40C to 70C

Operating Altitude: 3000 meters maximum

Operating Humidity: 10 – 80% RH, non-condensing

Note: all specifications are subject to change without notice.

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