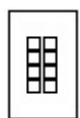
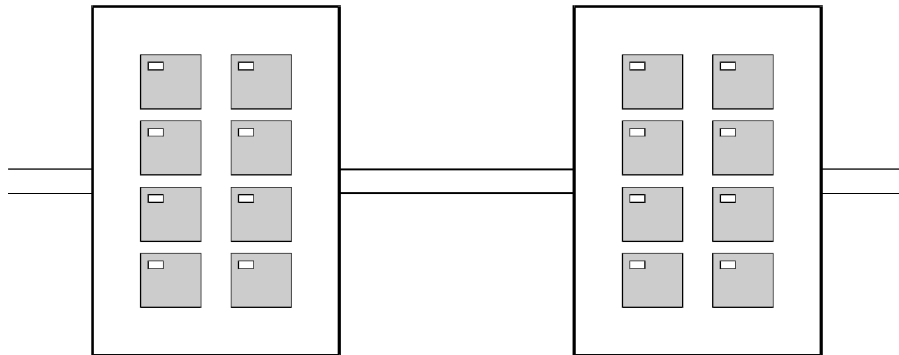


# MCP Smart Switch Manual

## For Contractors



**Touch-Plate<sup>®</sup> Lighting Controls**

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## Theory of Operation

The Touch-Plate MCP smart switch is an addressable switch that communicates to the lighting control network using RS 485 protocol. The smart switch requires smart switch wire that is supplied by Touch-Plate. The switches communicate using one pair of shielded wires and are powered by one pair of unshielded wires. The smart switch is powered by a 24 VAC power supply manufactured by Touch-Plate (Model SS-98-PS). Each MCP panel supports one run of smart switches, and each smart switch run can support 32 smart switches with 1-8 inputs (buttons) each. If more than 32 smart switches are required, a second MCP panel must be installed.

## Planning Concerns

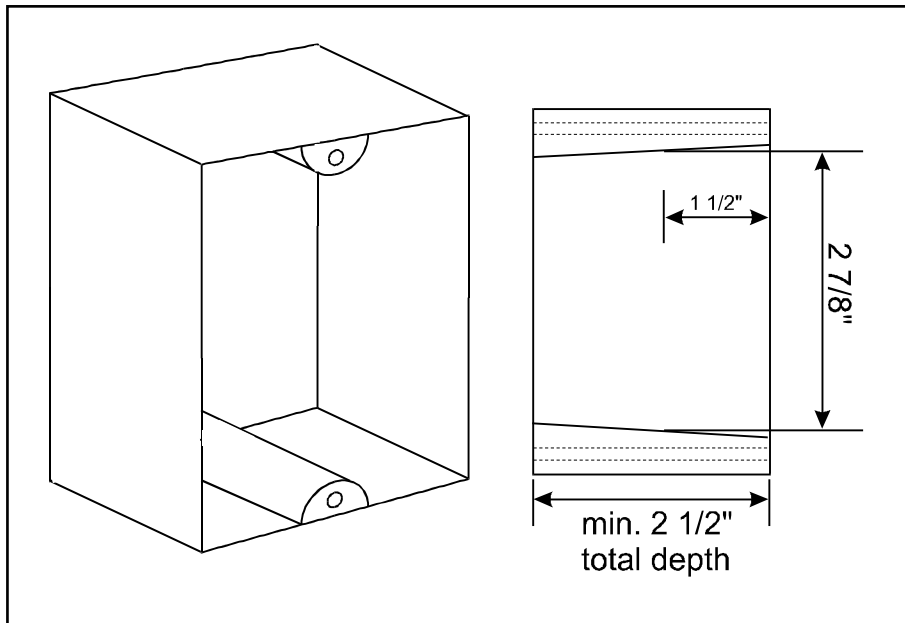
### 1. Cable:

**Residential:** MUST use Touchplate's Smart Switch Cable, which includes data and power wires.

**Commercial:** Touchplate's Smart Switch Cable is STRONGLY recommended, but Belden 9729 may be used for the data cable. 2 #18 wires must be run with the Belden wire to supply power to the switches.

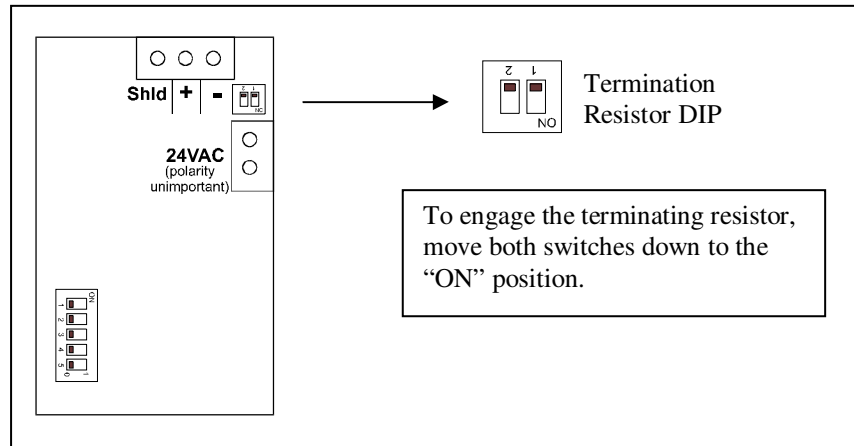
**NOTE: Cabling substitutions will invalidate the warranty.** Strict adherence to cabling requirements is necessary due to the high speed of the data transmission and other RS-485 protocol parameters. Substitutions in wire can cause intermittent failures in the network for reasons such as different capacitance properties among wire types, and possible reflectance on the network. The Touch-Plate product is engineered specifically as a networking product capable of high speed and long distance, therefore no substitutions are allowed.

Our Smart Switch Cable is also more flexible than some Belden cable, making it easier to work with when installing the switches. Stiff cable can make installing switches rather difficult when fitting the switch in the wall box with the excess cable.



**Figure 1:** Requirements for a Smart Switch wallbox.

2. **Wall boxes:** Use specified wall box types only (see “Important Notes” and Fig. 1)
3. **Max Switches Per Panel:** Each MCP panel is capable of supporting no more than 32 smart switch stations. Only one run of smart switch cable can be run per MCP panel; each panel must have a separate run of data cable for its smart switches.
4. **No ‘T’ connections:** The cable must be run in and out of each wall box, except for the last station where the cable terminates and no cable comes back out of it. Do not cut the cable except when installing each individual smart switch. All switches must be connected in-line with no switch having more than one switch before it and one switch after it. If a cable branches off to two or more cables, the switches will fail.
5. **Addressing switches:** Switches must each have a unique address from 32 to 63. The convention for addressing is to start with lower numbers nearest to the panel. The address for each location must be recorded. (See Fig. 6 to set addresses.)
6. **Order of switches in run:** The address for each switch location and the order that they were connected to the cable is needed for troubleshooting. The last switch in the run must have its terminating resistor engaged.

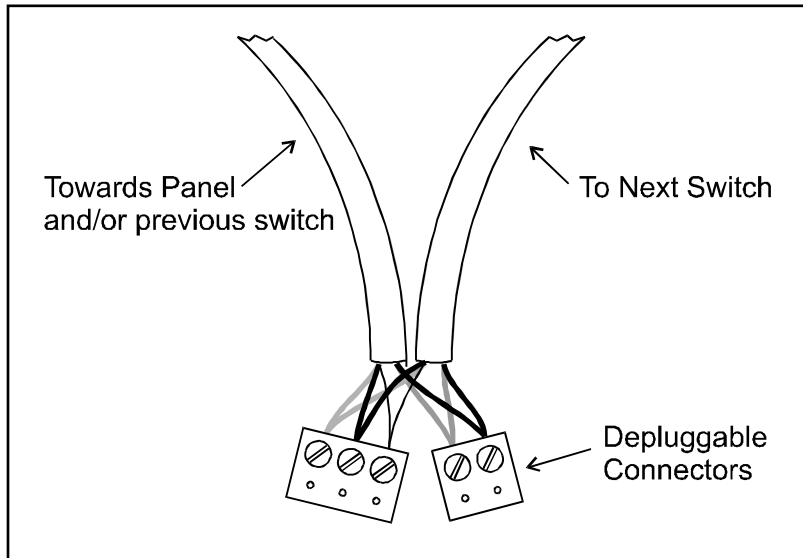


**Figure 2:** Engaging the Terminating Resistor on the Last Switch

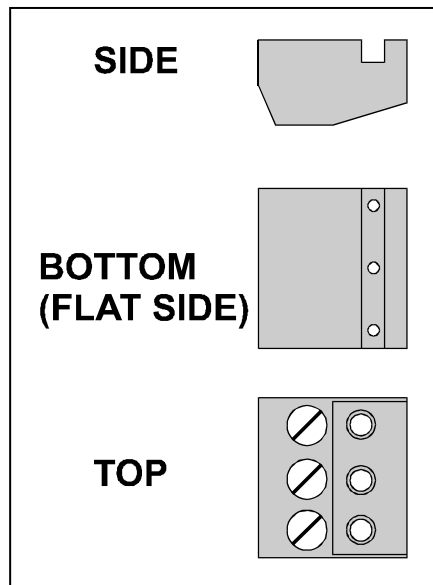
7. **No Wire Splices:** In a data network such as the smart-switch network it is important not to have wire splices where there is no switch installed since they cause signal degradation. If a wire splice has occurred for any reason, replace the spliced wire section with a new, straight run of wire with no splices.
8. **More than 32 switches:** If the system requires more than 32 smart-switch stations, it must be configured as a two-panel network to allow for a second run of smart switches.
9. **Button Assignments:** When filling out the switch schedule to assign buttons to lights, use Fig. 7 as a guide for different button configurations. Each button in a Smart Switch has an ID# from 0 to 8. For example, the upper-right button on a four-button Smart Switch has ID# 5. The ID#'s correspond to their positions on the switch, so a one-button switch has ID# 1, and NOT zero.

## **Installing**

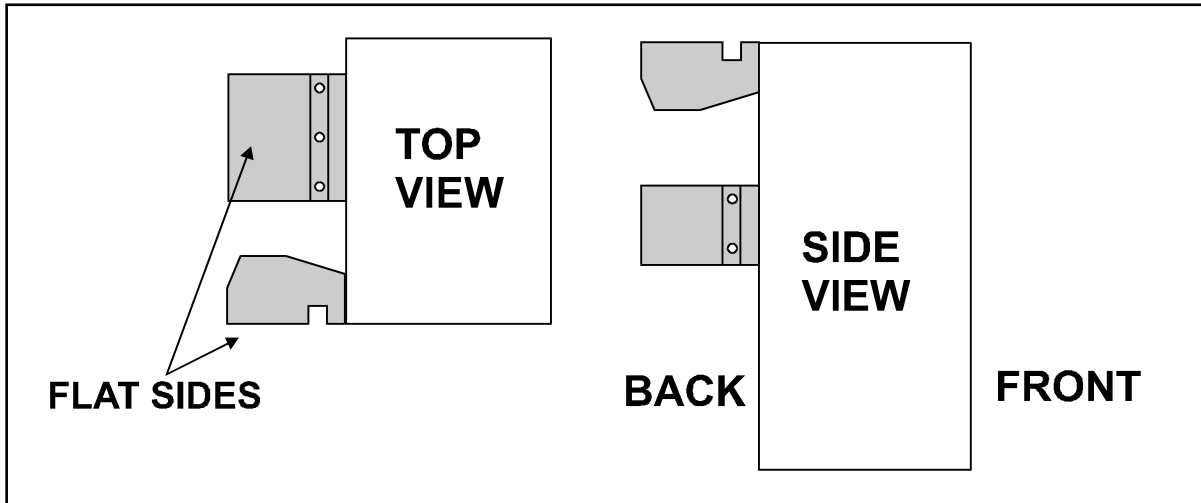
1. **Shielding:** The smart switch shield must be grounded at the MCP panels' system board where the cable begins.
2. **Connecting Switches:** The smart-switches are connected to the cable by cutting the cable and joining two each of the data and power wires to de-pluggable connectors. The data and shield wires are connected with a 3-position connector and the power wires are connected with a 2-position connector. (See Figs. 3-6 for details on smart switch connections.) By convention, if the data wires are blue and white, use the blue for (+) and white for (-). If red and black, use red for (+). If black and white, use black for (+).



**Figure 3:** Depluggable connectors for connecting Smart Switches



**Figure 4:** The Depluggable Connector



**Figure 5:** The connectors must be wired such that the flat side of the connectors are toward the outside of the switch. (Or the switch might not clear the wall box.)

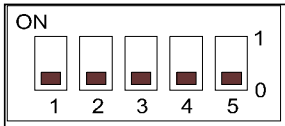
3. **Connection to panel:** The smart-switch data run is connected to the 'B' bus on the system board.

## **Important Notes**

- No substitutions are allowed for the Touchplate Smart-Switch cable in all residential jobs.
- One MCP panel is capable of no more than 32 smart-switch stations.
- The last switch in the run of cable must have its terminating resistors engaged.
- The order that the switches are connected to the cable must be recorded.
- When connecting wires to the de-pluggable connectors, only strip about 3/16" of wire to prevent crossing wires.
- The run of cable must never branch off to more than one switch following a switch. If more than two sets of wires are being connected to any one switch, branching is occurring at that point and the switches will fail.

- Some molded boxes will not fit Touchplate Smart Switches due to an oversized hump at the top and bottom for the mounting screws. A box will work if it maintains at least 2 7/8 inches of height clearance to a depth of 1 1/2 inches into the box. Also, the total depth of the box should be at least 2 1/2 inches to allow ample room for the data cables. (See Fig. 1)

Smart Switch Address Settings



UP is a '1'  
DOWN is a '0'

12345 -dip switch numbers correspond to columns below.

32	00000
33	10000
34	01000
35	11000
36	00100
37	10100
38	01100
39	11100
40	00010
41	10010
42	01010
43	11010
44	00110
45	10110
46	01110
47	11110
48	00001
49	10001
50	01001
51	11001
52	00101
53	10101
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55	11101
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57	10011
58	01011
59	11011
60	00111
61	10111
62	01111
63	11111

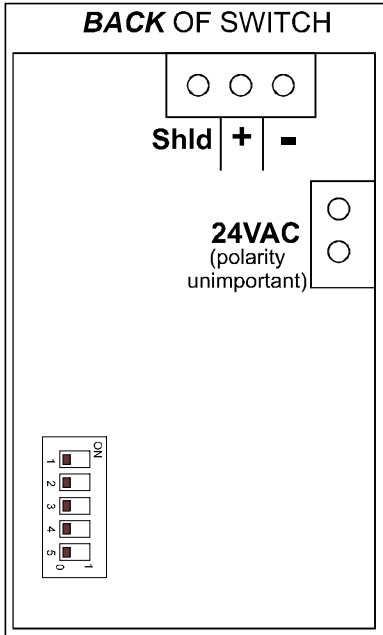
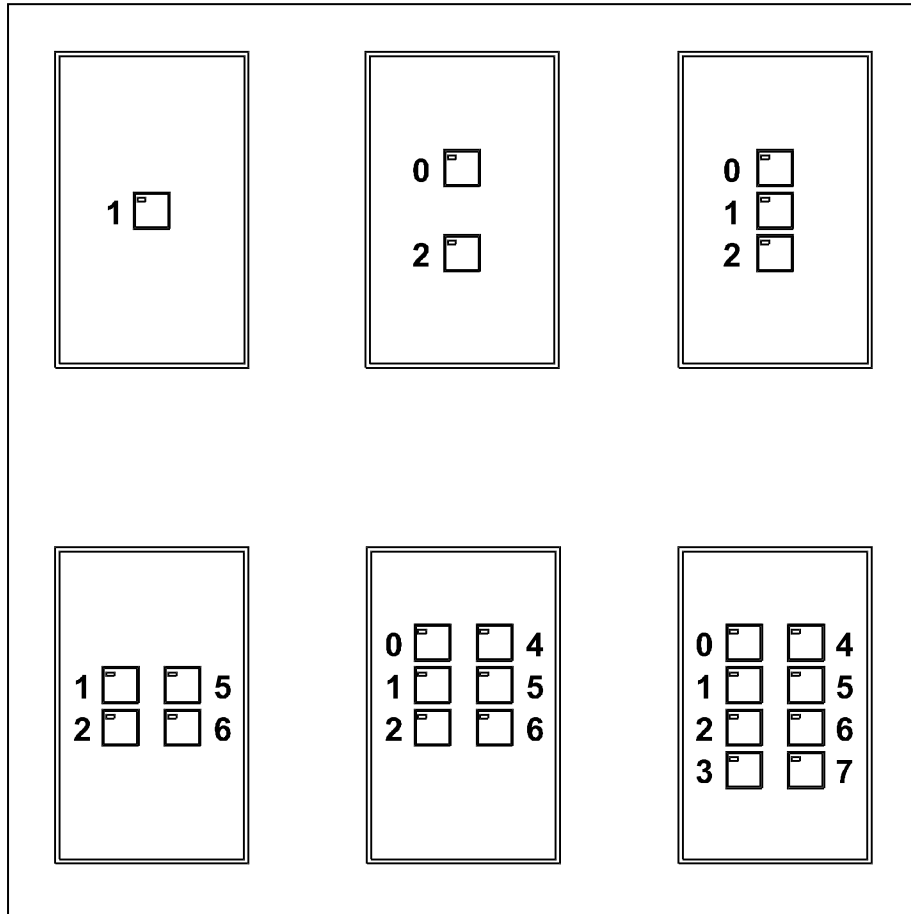
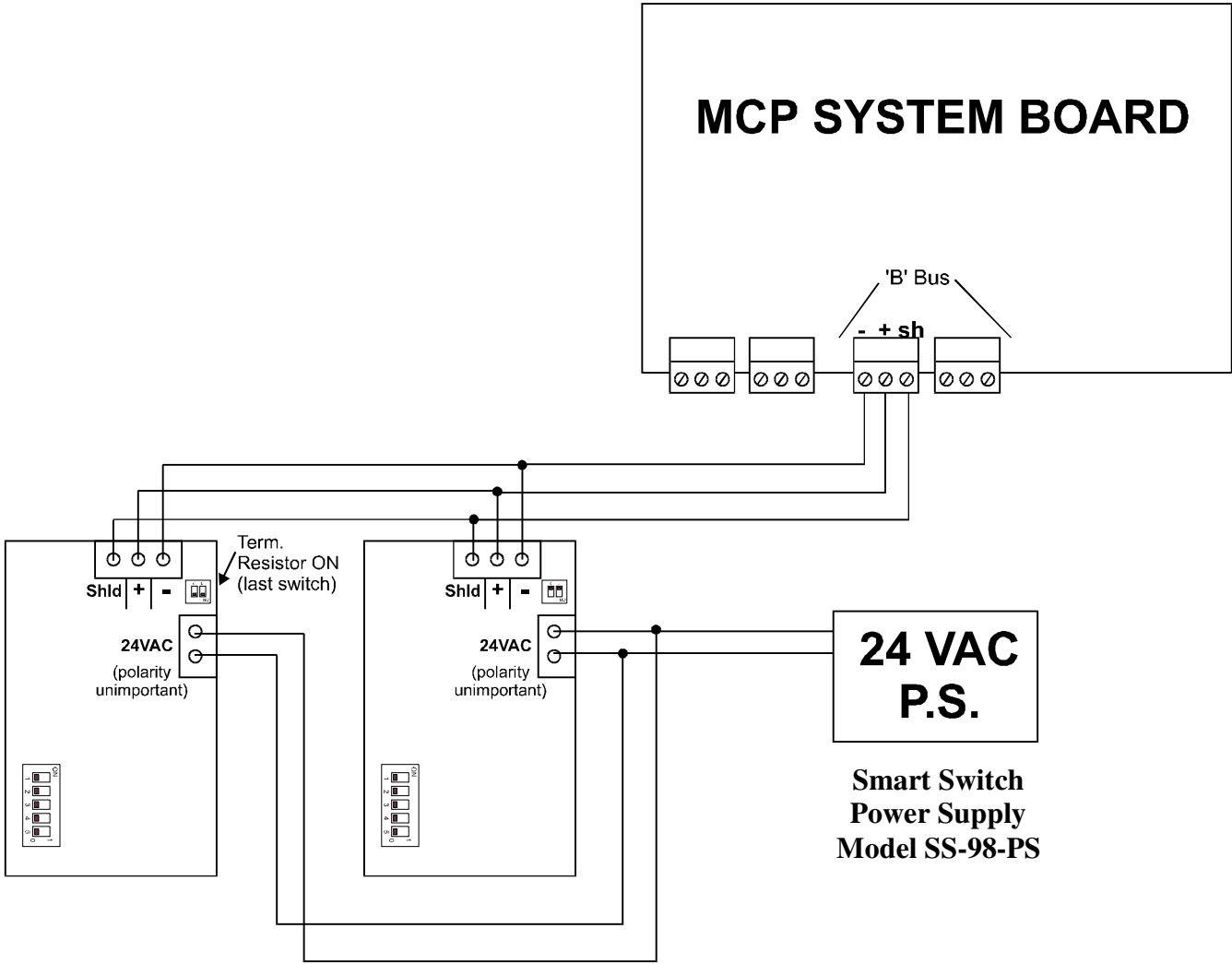


Figure 6: Switch addressing and connections.





**Figure 7:** Button Input #'s for Different Button Configurations



Typical Wiring Diagram for MCP Smart Switches



**Smart Switch Schedule** \_\_\_\_\_ **Project:** \_\_\_\_\_ **Date** \_\_\_\_\_

Panel node # :

I.D.:

Location:

Master Control Panel (MCP) System by: Touch-Plate

Switch Address (32-63)	Input # (Button#) (0-7)	Location	Target	Signal (Cycle, ON, OFF, Dim)	Priority	Engraving	Comment / Color

**Touch-Plate ® Lighting Controls**