

Application Notes – SMRHS implementation of PanelPro

Lockout Controls/Indications

The system uses one output to enable lockout; this drives one relay and one yellow LED in series. The contacts of the relay then determine how current is routed (current sinking outputs on C-MRI) – either through the C-MRI path (relay powered, lockout enabled) or local ground (relay not powered, lockout disabled).

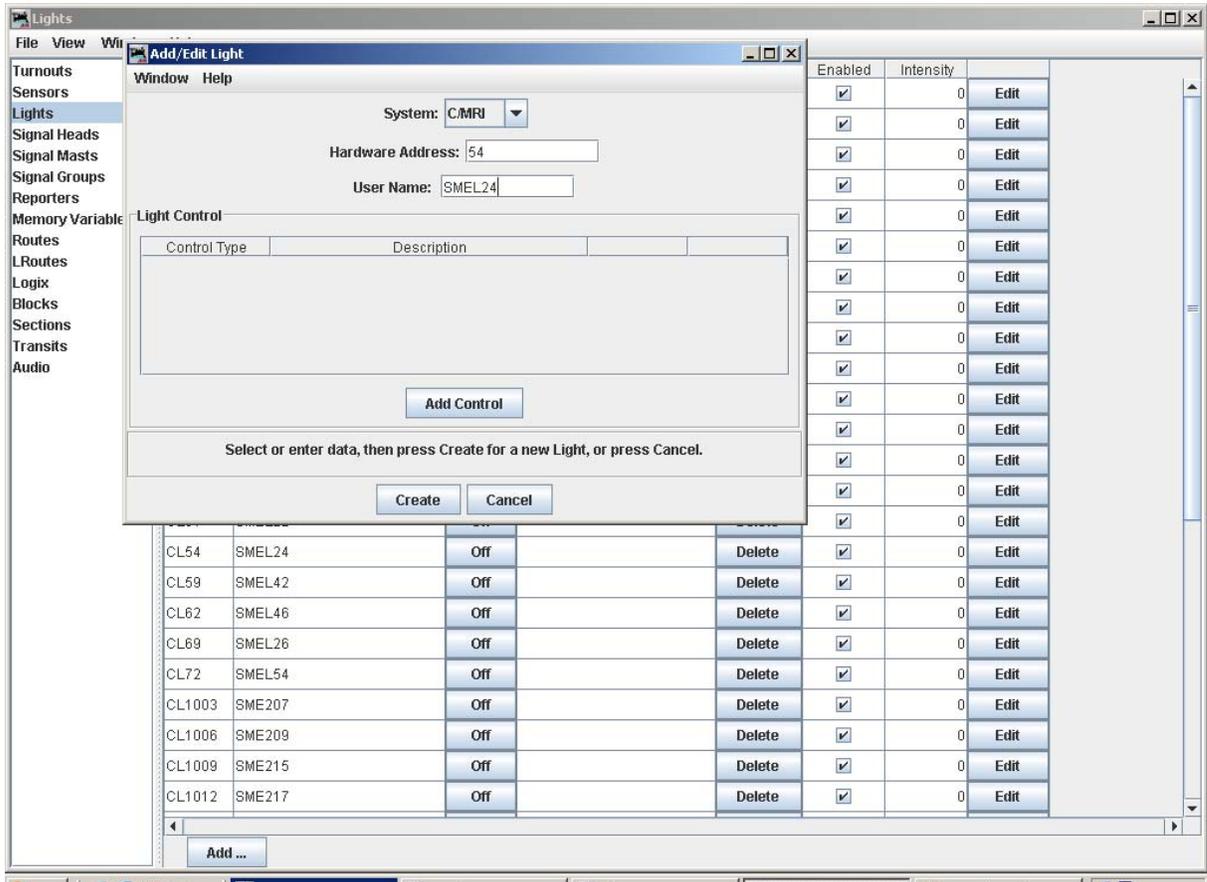
JMRI software is setup to control the lockout as follows.

1. Create an Internal Sensor –note that we are using either the switch number (see LOCKOUT 255) or the JMRI sequential i/o (input/output) number (see L26 Reno). In this example we will use “L24”.

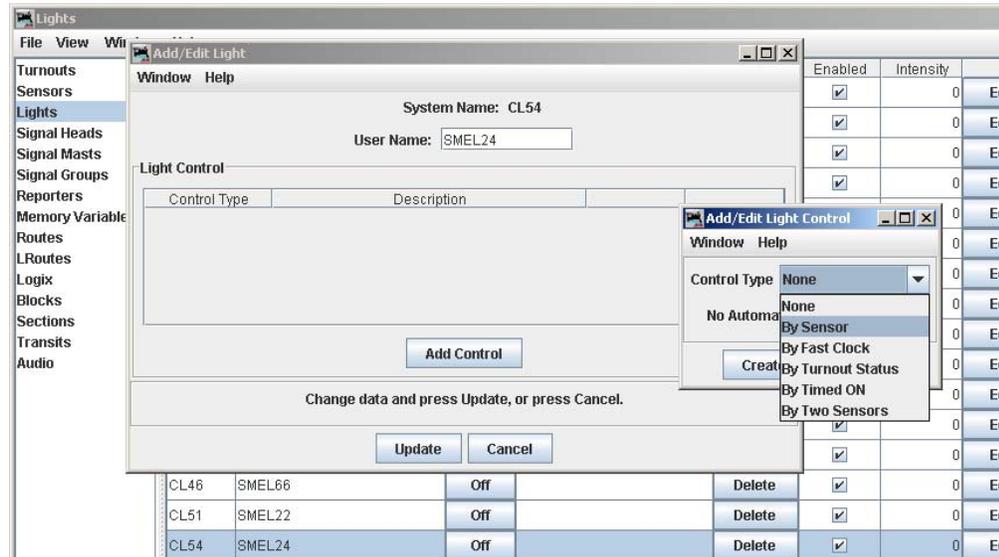
The screenshot shows the 'Sensors' window in the PanelPro software. The window has a menu bar (File, View, Window, Help) and a sidebar on the left with a tree view containing categories like Turnouts, Sensors, Lights, Signal Heads, Signal Masts, Signal Groups, Reporters, Memory Variables, Routes, LRoutes, Logix, Blocks, Sections, Transits, and Audio. The main area displays a table of sensors under the 'Internal' tab. The table has columns for System, User Name, State, Comment, Delete, and Inverted. An 'Add New Sensor' dialog box is open over the table, showing the following fields: System (Internal), Hardware Address (L24), User Name (LOCKOUT L24), and an 'Add a range' checkbox. The dialog also has an 'OK' button.

System	User Name	State	Comment	Delete	Inverted
ISCLOC...		Active		Delete	<input type="checkbox"/>
ISL102		Unknown		Delete	<input type="checkbox"/>
ISL92		Unknown		Delete	<input type="checkbox"/>
IS26					
IS69					
IS253					
IS253.1					
IS255	LOCKOUT 255	Unknown		Delete	<input type="checkbox"/>
IS257	LOCKOUT 257	Unknown		Delete	<input type="checkbox"/>
IS259	LOCKOUT 259	Unknown		Delete	<input type="checkbox"/>
IS261	LOCKOUT 261	Unknown		Delete	<input type="checkbox"/>
IS263	LOCKOUT 263	Unknown		Delete	<input type="checkbox"/>
IS265	LOCKOUT 265	Unknown		Delete	<input type="checkbox"/>
IS267	LOCKOUT 267	Unknown		Delete	<input type="checkbox"/>
IS0069	LOCKOUT L26 Reno	Unknown		Delete	<input type="checkbox"/>
IS1043	LOCKOUT L16 Marysville	Unknown		Delete	<input type="checkbox"/>

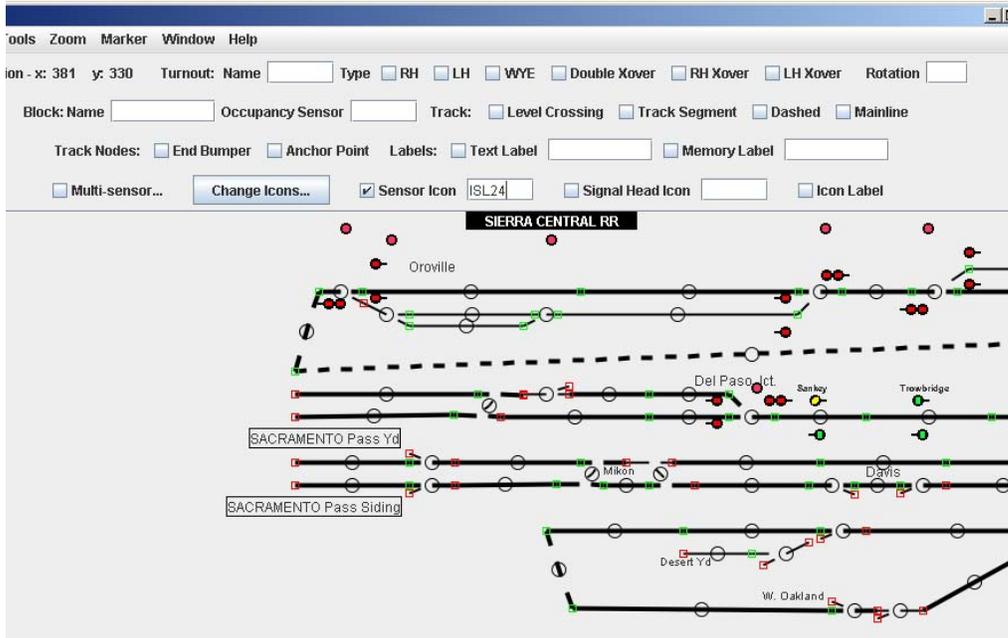
2. Create a Light output using the 1) hardware address = JMRI number scheme and 2) User Name nomenclature SME (switch machine enable) + switch number.



3. Then click Add Control, control type By Sensor, type in sensor name IS--- (whatever you created in step 1). Sense for ON = ACTIVE (default). Click Create.

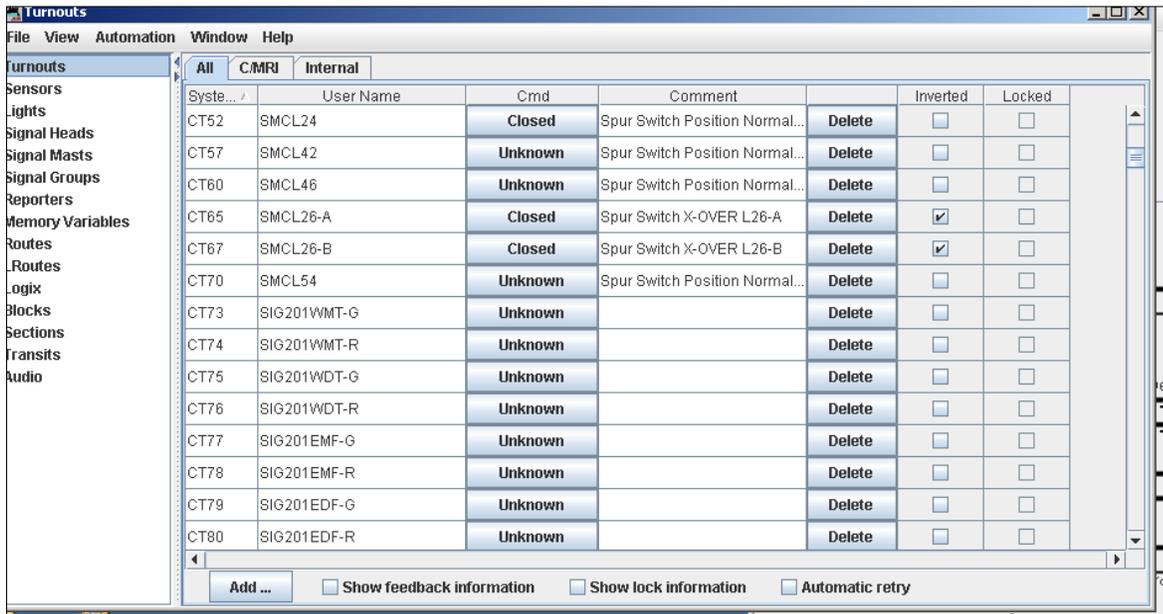


- Now you are ready to put the icon for the Internal Sensor on the layout schematic. In the screen, note we have checked “Sensor Icon” and typed in the name ISL24. Holding the Shift key, left-button mouse click to drop the new icon onto the drawing somewhere. Once it is placed, you can right click/drag into position. Left-click the icon to change state, it will settle into a 2-state indication, yellow=on, gray=off. If you watch the Lights table you will see the corresponding output toggle on/off; and if you have the output connected out at the layout you should see the yellow LED fire and the relay should ‘click’ on/off.



Cross Over Switches

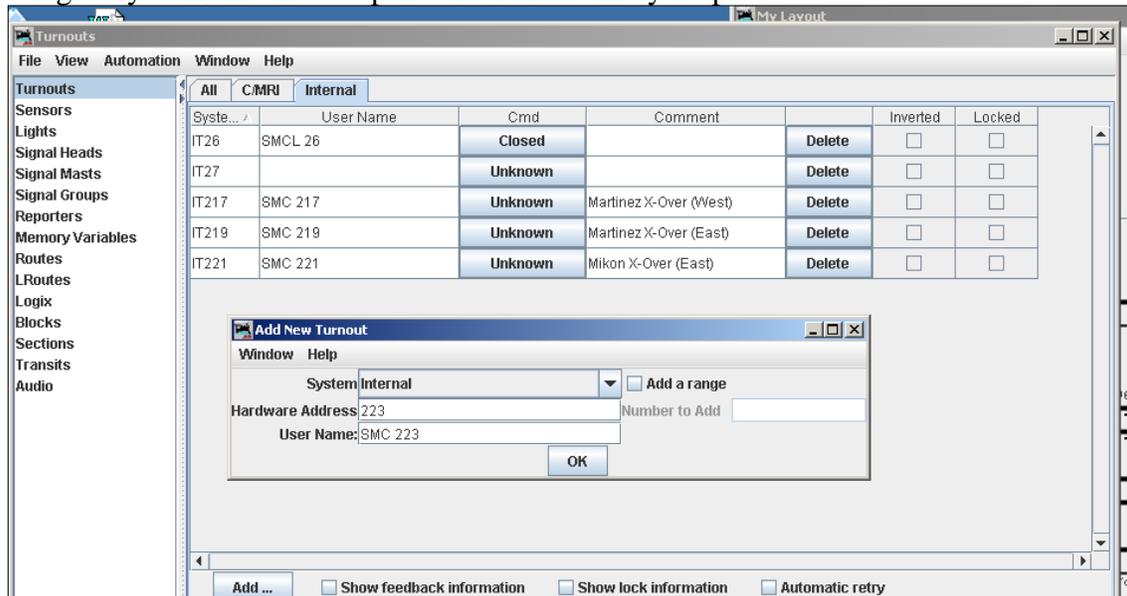
We are using two discrete pairs of CMRI outputs coupled to two discrete relay interface boards to control each switch machine. The CMRI outputs are set up as binary (two bits used per switch) with a -A and -B suffix to the same SMC# or SMCL#. See SMCL26_a and -B below.



The screenshot shows the 'Turnouts' window in the software. The 'Internal' tab is selected, displaying a table of turnout configurations. The table has columns for System, User Name, Cmd, Comment, Delete, Inverted, and Locked. The data is as follows:

System	User Name	Cmd	Comment	Delete	Inverted	Locked
CT52	SMCL24	Closed	Spur Switch Position Normal...	Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT57	SMCL42	Unknown	Spur Switch Position Normal...	Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT60	SMCL46	Unknown	Spur Switch Position Normal...	Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT65	SMCL26-A	Closed	Spur Switch X-OVER L26-A	Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CT67	SMCL26-B	Closed	Spur Switch X-OVER L26-B	Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CT70	SMCL54	Unknown	Spur Switch Position Normal...	Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT73	SIG201WMT-G	Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT74	SIG201WMT-R	Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT75	SIG201WDT-G	Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT76	SIG201WDT-R	Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT77	SIG201EMF-G	Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT78	SIG201EMF-R	Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT79	SIG201EDF-G	Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>
CT80	SIG201EDF-R	Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>

An internal switch machine control (SMC or SMCL) is created in the PanelPro software to logically combine the two pairs of discrete binary outputs.



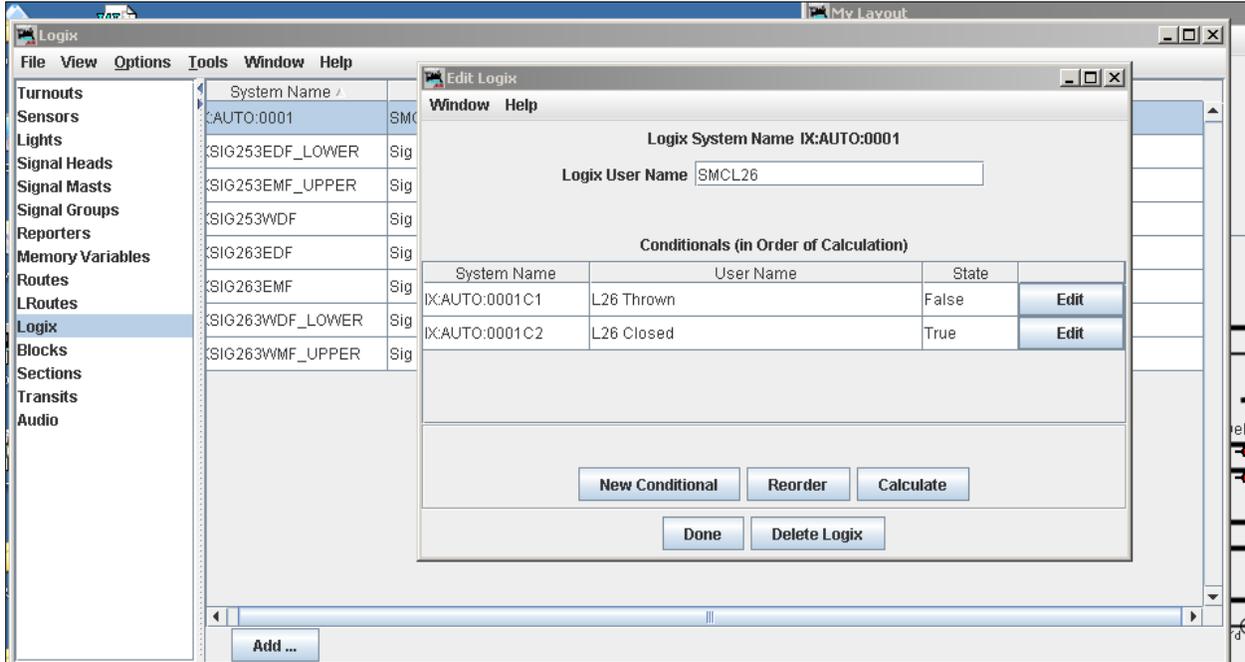
The screenshot shows the 'Turnouts' window with the 'Internal' tab selected. The table below shows the current turnout configurations:

System	User Name	Cmd	Comment	Delete	Inverted	Locked
IT26	SMCL 26	Closed		Delete	<input type="checkbox"/>	<input type="checkbox"/>
IT27		Unknown		Delete	<input type="checkbox"/>	<input type="checkbox"/>
IT217	SMC 217	Unknown	Martinez X-Over (West)	Delete	<input type="checkbox"/>	<input type="checkbox"/>
IT219	SMC 219	Unknown	Martinez X-Over (East)	Delete	<input type="checkbox"/>	<input type="checkbox"/>
IT221	SMC 221	Unknown	Mikon X-Over (East)	Delete	<input type="checkbox"/>	<input type="checkbox"/>

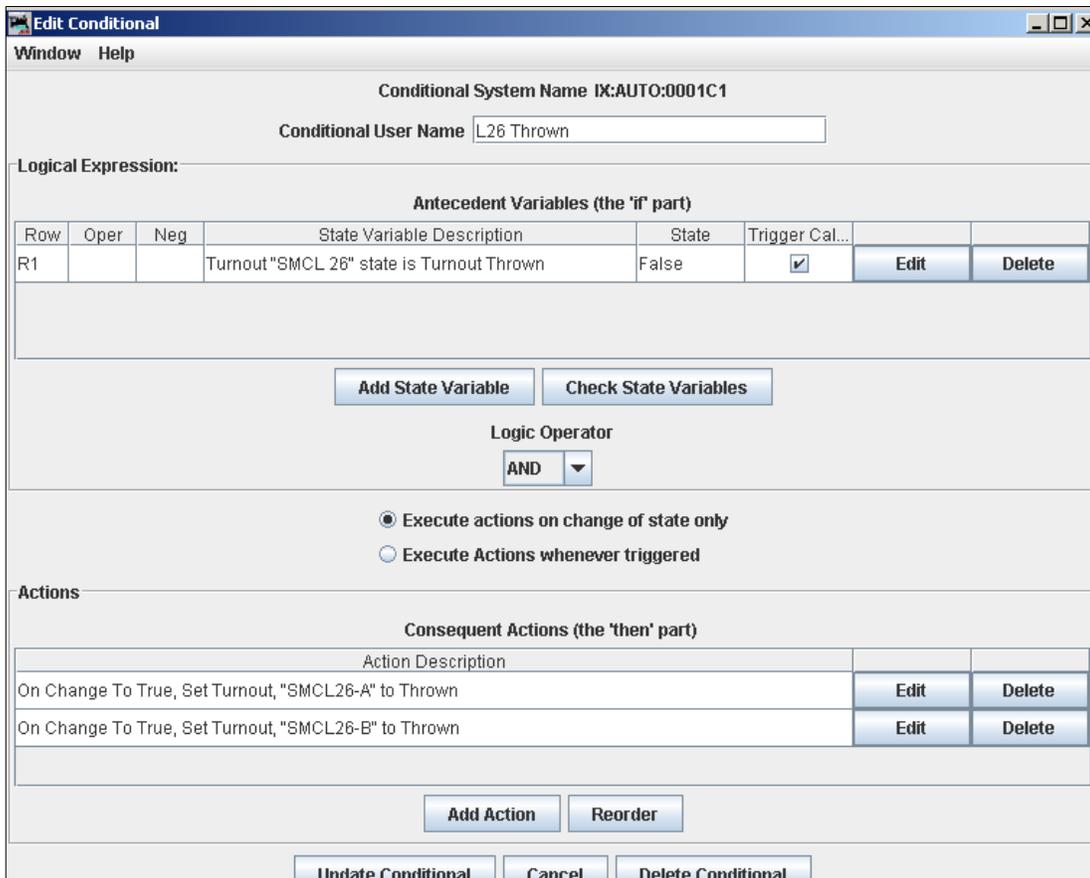
An 'Add New Turnout' dialog box is open, showing the following fields:

- System: Internal
- Hardware Address: 223
- User Name: SMC 223
- Buttons: Add a range, Number to Add, OK

A LOGIX is set up to link the internal turnout to the two discrete switch machine controls.



Each state (thrown, closed) is defined for the internal switch and then the logic is embedded (click on the Edit button)



And here is the opposite state:

Edit Conditional

Window Help

Conditional System Name IX:AUTO:0001C2

Conditional User Name

Logical Expression:

Antecedent Variables (the 'if' part)

Row	Oper	Neg	State Variable Description	State	Trigger Cal...		
R1			Turnout "IT26" state is Turnout Closed	True	<input checked="" type="checkbox"/>	Edit	Delete

Logic Operator

▼

Execute actions on change of state only

Execute Actions whenever triggered

Actions

Consequent Actions (the 'then' part)

Action Description		
On Change To True, Set Turnout, "CT65" to Closed	Edit	Delete
On Change To True, Set Turnout, "CT67" to Closed	Edit	Delete

