

## SBC-16

CONTROL PANEL  
SINGLE BUS  
16x1

OPERATOR'S MANUAL



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# **SBC-16 PANEL OPERATION**

## **GENERAL**

The SBC-16 is a single bus control panel capable of switching any one of sixteen inputs to a designated output. The output is selected via DIP switches for outputs 1 to 16. Up to four input LEVELS allow the panels to control video only, audio only or audio follow video switches to any one OUTPUT in a 16X16 matrix.

## **SYSTEM SETUP**

Located through the opening on the rear of the unit is a twelve position DIP switch (**S17**). The DIP switch performs three functions--selects the panel's COMM address, sets the active input LEVEL(s) and selects the OUTPUT address. S17 is only "tested" once at power up, so if any switch settings are changed, you must cycle power to the panel for the new settings to become active.

## **COMM ADDRESS (S17,1-4)**

The SBC-16 needs to have its own unique COMM address to distinguish it from other control panels that may be in the system. There are sixteen possible addresses, and therefore the system can have up to sixteen panels. If there is more than one panel controlling the router, or additional panels are being added to an existing system, make sure they each have a unique address. See the table located later in this document for COMM address setup.

## **ACTIVE LEVELS (S17,5-8)**

The panel can switch one or more input LEVEL(S). The LEVEL(S) to be switched are determined by switch S17, positions 5 - 8. When the appropriate switch is set to "ON", that LEVEL will follow whatever is selected by the INPUT keys. If no LEVELS are made active the panel will default to LEVEL 1. See the table located later in this document for active LEVEL setup.

## **OUTPUT (S17,9-12)**

This panel is capable of addressing any 1 of 16 OUTPUTS. Selection of the OUTPUT address is by switch S17 positions 9 - 12. See the table located later in this document for the OUTPUT address setup.

## **INPUT KEYS**

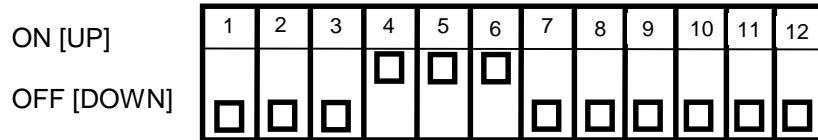
The INPUT keys provided on the front of the panel are used to select any one of sixteen inputs to the designated output. Note that the displayed status is for the lowest selected active LEVEL, as explained previously. To change an INPUT, select a new input key. The TAKE is automatic. However, if the selected INPUT key continues to flash, the panel is unable to communicate with the SCI. This is most often caused by an open COMM line.

## **STATUS**

The active input is designated by the input button with the illuminated LED. The LED indicating the selected source should be illuminated continuously. A flashing LED indicates a failure to communicate between the control panel and the system control interface module.

If more than one level of control is selected on a control panel the LED will be lit on the input button for the lowest level selected for that control panel. This may seem confusing, perhaps this example may shed some light on this issue. Perhaps there are two control panels addressed as #1 and #2, both selected for output #1. Panel address #1 is set to control levels 1 (video) and 2 (audio). Panel address #2 is set to control level 2 (audio) only. When panel #1 switches to source 5, both panels will indicate source 5 active by button 5's LED being illuminated. Then panel #2 switches the audio source to 4. This will cause the panel #2 button 4 to illuminate (button 5 LED will not be lit). However, panel #1 will have button 5 illuminated as the video source (the lowest level selected for that panel) will not have switched.

**SBC-16 COMM ADDRESS SELECTOR SWITCH [S17,1-4]**



**S17 CONFIGURATION**

ADDRESS	S17,1	S17,2	S17,3	S17,4
1	OFF	OFF	OFF	ON
2	OFF	OFF	ON	OFF
3	OFF	OFF	ON	ON
4	OFF	ON	OFF	OFF
5	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF
7	OFF	ON	ON	ON
8	ON	OFF	OFF	OFF
9	ON	OFF	OFF	ON
10	ON	OFF	ON	OFF
11	ON	OFF	ON	ON
12	ON	ON	OFF	OFF
13	ON	ON	OFF	ON
14	ON	ON	ON	OFF
15	ON	ON	ON	ON
16	OFF	OFF	OFF	OFF

**SBC-16 ACTIVE LEVEL SWITCH SELECTOR [S17,5-8]**

When the appropriate switch is on, the Level will follow the input as selected on the panel. If all switches are OFF the panel will default to LEVEL 1 only. Any combination of switches is acceptable. A typical audio follow video would have both levels 1 and 2 activated. Video only switch would have level 1 activated. An audio only switch can be performed by activating level 2 only. These examples assume the default factory level configurations of the switch modules.

S17,5 OFF	LEVEL 1 OFF	S17,7 OFF	LEVEL 3 OFF
S17,5 ON	LEVEL 1 ON	S17,7 ON	LEVEL 3 ON
S17,6 OFF	LEVEL 2 OFF	S17,8 OFF	LEVEL 4 OFF
S17,6 ON	LEVEL 2 ON	S17,8 ON	LEVEL 4 ON

**SBC-16 OUTPUT ADDRESS [S17, 5-8]**

OUTPUT ADDRESS	S17, Pos.9	S17, Pos.10	S17, Pos.11	S17, Pos.12
1	OFF	OFF	OFF	OFF
2	OFF	OFF	OFF	ON
3	OFF	OFF	ON	OFF
4	OFF	OFF	ON	ON
5	OFF	ON	OFF	OFF
6	OFF	ON	OFF	ON
7	OFF	ON	ON	OFF
8	OFF	ON	ON	ON
9	ON	OFF	OFF	OFF
10	ON	OFF	OFF	ON
11	ON	OFF	ON	OFF
12	ON	OFF	ON	ON
13	ON	ON	OFF	OFF
14	ON	ON	OFF	ON
15	ON	ON	ON	OFF
16	ON	ON	ON	ON

## **SBC-16 THEORY OF OPERATION**

### **POWER SUPPLY**

Power to the remote panel is supplied by a 9-12 VDC wall pack power supply through J1. Polyswitch RT1 provides fault current protection to the wall pack supply and the remote panel. Diode D3 (in combination with RT1) also provides reverse voltage protection should a wrong polarity power supply accidentally be connected to the remote panel. The 9-12 VDC input is regulated to 5 VDC by U3.

### **MICROPROCESSOR, I/O**

All functions of the remote panel are controlled by U1, an 8051 type microprocessor. The microprocessor is complete with a serial port, RAM, counters, I/O lines and program storage EEPROM. Y1, C8 and C9 make up the 14.7 MHz oscillator clock for U1.

U2 combines the individual microprocessor TXD and RXD lines into a single COMM line. It also provides the necessary drive and level conversion between the microprocessor serial I/O lines and the COMM line interface. Resistors R2 and R3 provide a bias for the COMM input signal comparator. The direction of the COMM line is controlled by P3.7, and is normally in the receive mode except when a panel transaction is made.

### **DISPLAY AND KEYBOARD**

The display and keyboard are controlled by the microprocessor through U4 and U5. U4 contains the column data and U5 the row data for the display/keyboard matrix. Data is serially transmitted from the microprocessor to U4 and U5 via the P1.0 and P1.1 lines. Data in U4 and U5 is latched by a strobe signal on P1.2. To turn on a display LED, the respective row line goes high, and the corresponding column line goes low. The display mux rate is about 10mS per column digit.

The keys are scanned by turning off all row drivers and testing the KROW1, KROW2, KROW3 and KROW4 lines while the column transistors are turned on one at a time.