

INSTRUCTION MANUAL

P/N 70421 SWITCH/COMBINER

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70421 Switch/Combiner

1.0 General

1.1 Equipment Description

The 70421 Switch/Combiner provides amplification and combining of three 70 MHz \pm 20 MHz IF inputs to provide a 0 dB gain of the output signal. It allows for selection of one, two or all three signals to be combined. This selection can be made through a DB9, female connector or by manually toggling SPDT switches. DC voltage is input through the DB9, and an indication of internal or external selection is also provided. A green LED shows that DC power is applied. The IF connectors are 2 BNC and 1 TNC for inputs and TNC for the output. The unit is in a 1.2" high X 3.3" wide X 5.1" deep aluminum chassis.

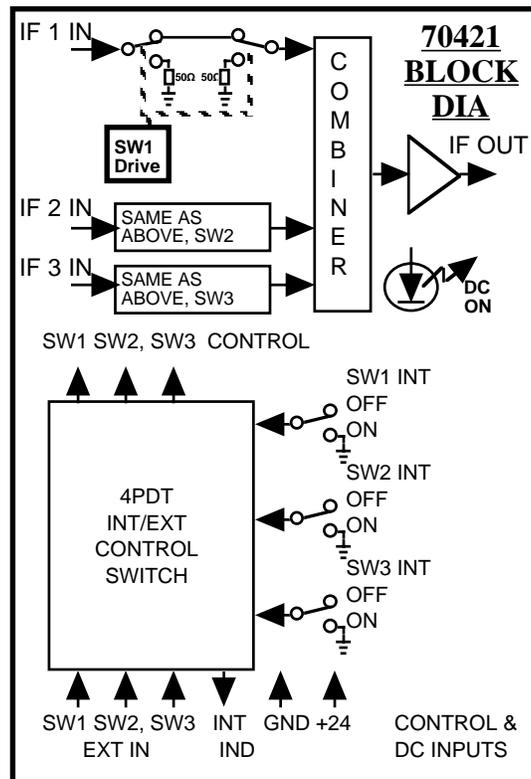


FIGURE 1.1 Block Diagram

1.2 Technical Characteristics

TABLE 1.0 70421 Switch Specifications*

Switch Characteristics

Frequency	70 ± 20 MHz, minimum, Operational 10 - 200 MHz
Impedance, In, Out	50 ohms
Return Loss, In, Out	> 15 dB
Level, Max.	+5 dBm
Level, 1 dB Comp.	+10 dBm
Splitter Type	Reactive
Isolation, Port to Port	> 20 dB, >30 dB typical
Insertion Loss	0±1 dB

Controls and Indicators

Switch Select	Open circuit or +5VDC select CH1, CH2, and/or CH3 Closures to ground deselect CH1, CH2, and/or CH3
DC Power	Green LED

Other

Connectors, IF, 50 ohm	BNC, female (IF1, IF3), TNC, female (IF2, IF OUT)
Connector, DC, controls	DB9, female
Mechanical	1.2”high X 3.3” wide X 5.1” deep
Power	+24 VDC, 100ma, max

*+10°C to +40°C; 2000 meters max elevation; 80% max humidity; Pollution Degree 2;
Specifications subject to change without notice.

2.0 Installation

2.1 Mechanical

The 70421 is packaged in an aluminum chassis. The unit can be mounted to a panel using the 2 holes at the bottom side flange. The unit derives +24 VDC from pin 5 and Ground from pin 9 of J4, the DB9 Control connector. (See Figure 2.1 and Figure 2.2).

2.1.1 Cleaning Instructions

Wipe the exterior with a dry, soft cloth. Use no detergent or cleaning chemicals.

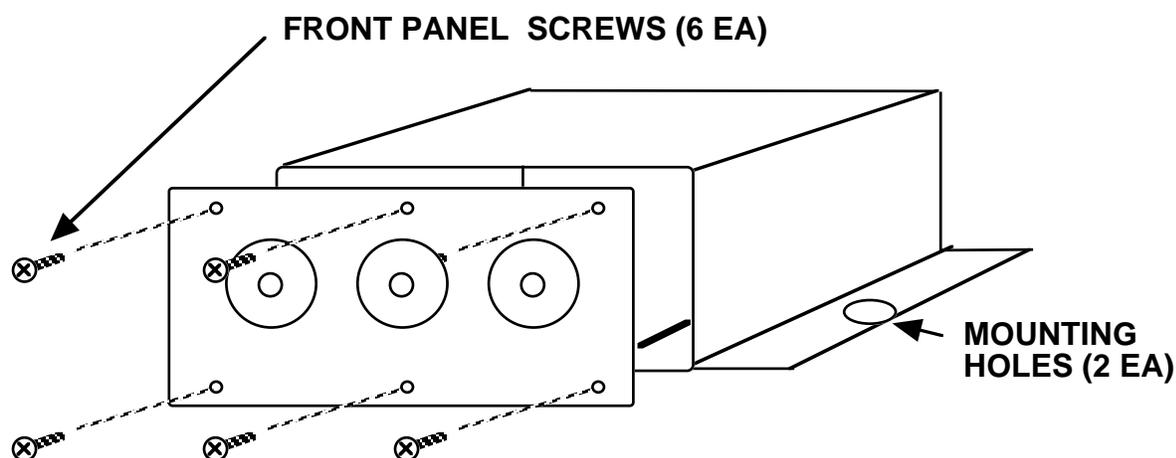


FIGURE 2.1 70421 Assembly Drawing

2.2 Controls and Indicators

A green LED indicates presence of DC power. Switch S4 selects either internal (INT) control using toggle switches S1-S3 or external (EXT) control using the DB9 connector, J4. Closures to ground at pins 1, 2, and 3 of J4 will deselect inputs at J3, J2, and J1 respectively (only when switch S4 is set to EXT). An open circuit or +5VDC at pins 1, 2, and 3 of J4 will select IF inputs at J3, J2, and J1, respectively. Toggle switches S1, S2, and S3 may also be used (only when switch S4 is set to INT) to select (UP) and deselect (DOWN) inputs at J3, J2, and J1 respectively (See Figure 2.3. and Table 2.1).

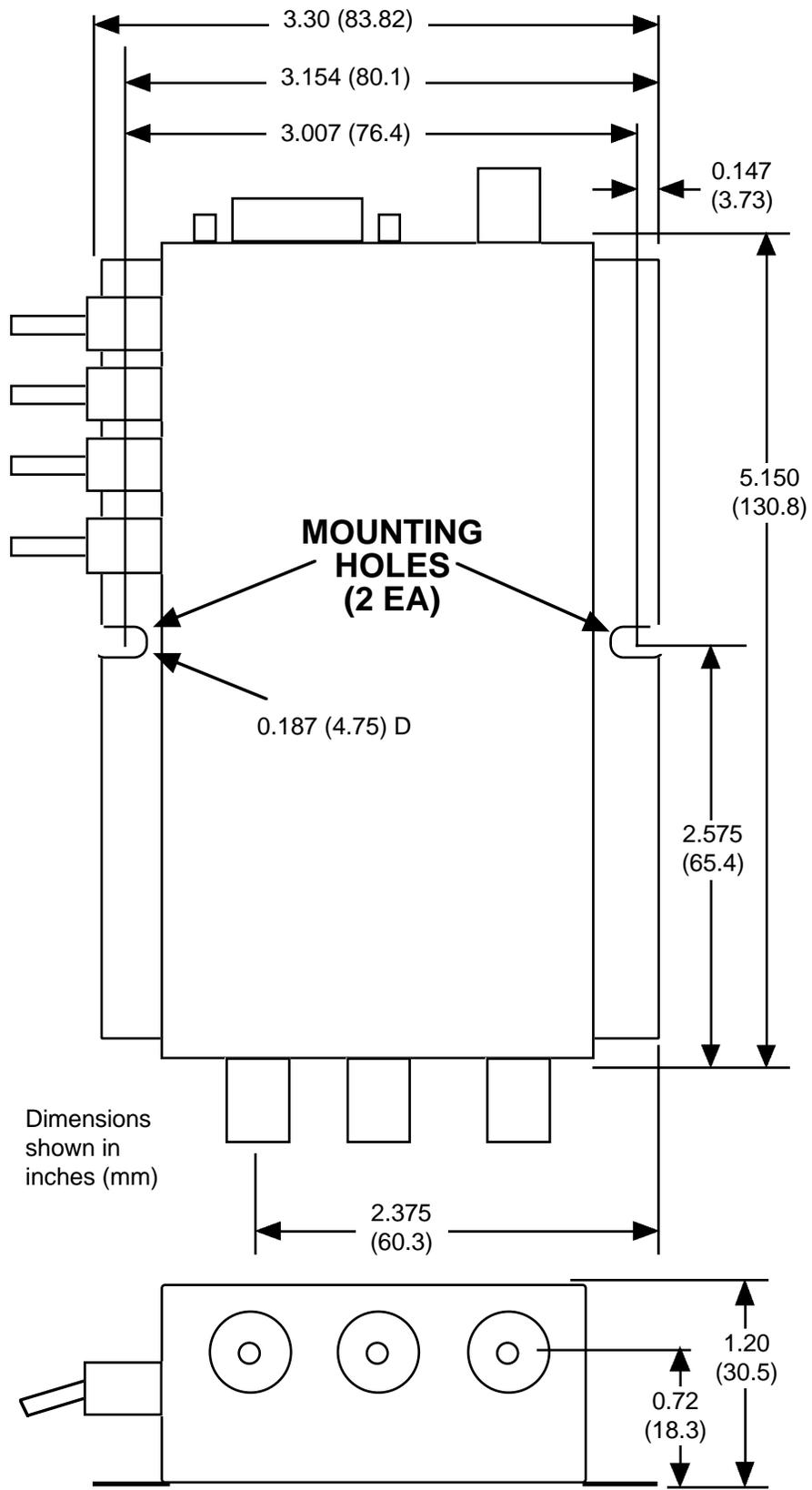


FIGURE 2.2 70421 Package Dimensions

2.3 Input / Output Signals

Figure 2.3 and Table 2.1 show the 70421 input and output signals.

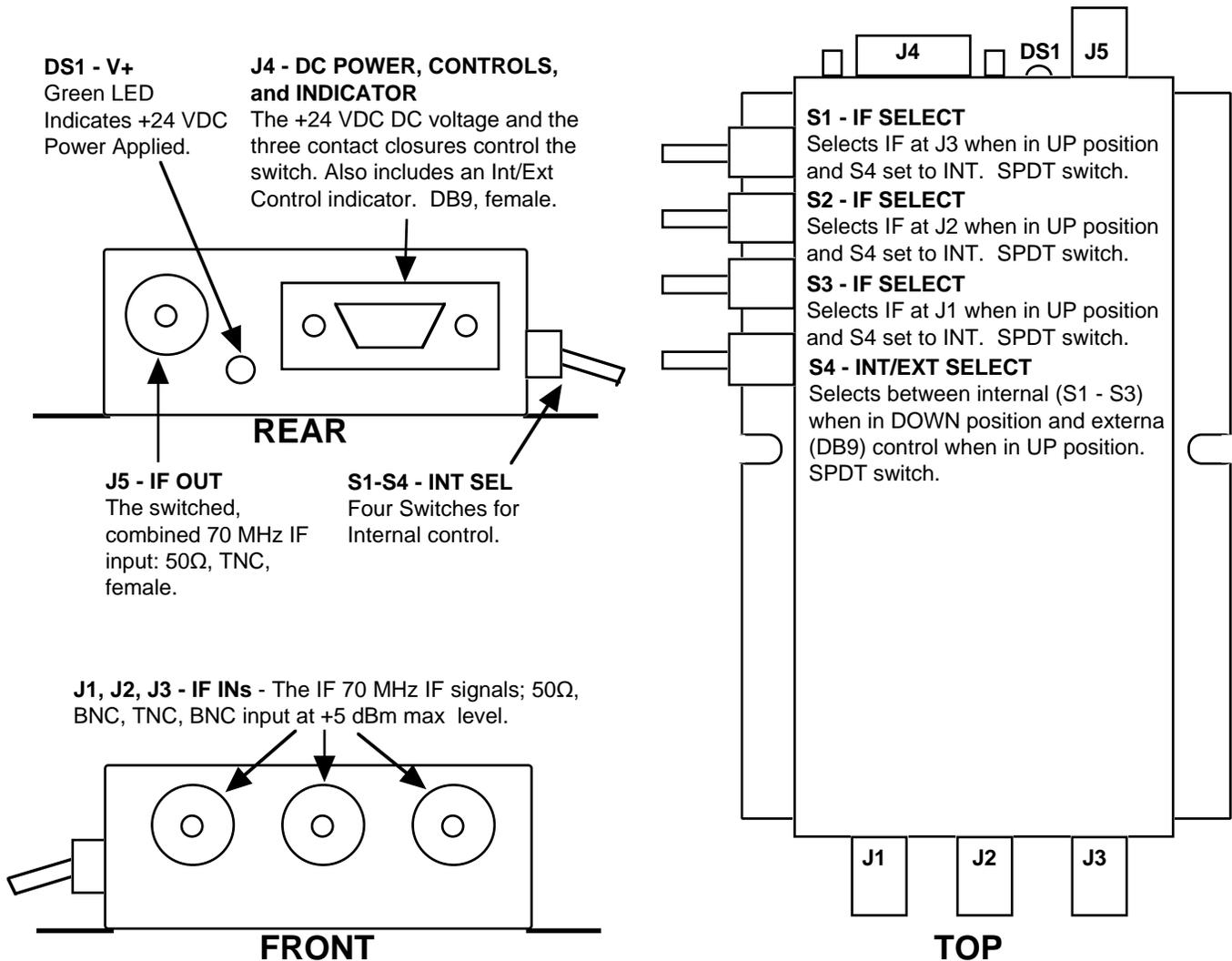


FIGURE 2.3 70421 Input, Output, Power LED, Control

TABLE 2.1 70421 Input and Output Signals

CONN.	DESCRIPTION	FUNCTION	COMMENTS
J1	BNC, female	IF IN	+5 dBm, max, 50 ohm
J2	TNC, female	IF IN	+5 dBm, max, 50 ohm
J3	BNC, female	IF IN	+5 dBm, max, 50 ohm
J5	TNC, female	IF OUT	+5 dBm, max, 50 ohm
J4 - PIN	CONTROLS		
1	SELECT J3 IF	EXTERNAL CLOSURE IN	GND OFF; Open or +5 VDC, max. ON
2	SELECT J2 IF	EXTERNAL CLOSURE IN	GND OFF; Open or +5 VDC, max. ON
3	SELECT J1 IF	EXTERNAL CLOSURE IN	GND OFF; Open or +5 VDC, max. ON
4	INT/EXT INDICATOR	CONTROL INDICATOR	GND INT (switches); Open EXT (DB9)
5	+24 VOLTS.	+24 ± 0.5 VOLTS, DC IN	100 ma, max
6	GROUND	GROUND	
7	GROUND	GROUND	
8	GROUND	GROUND	
9	GROUND	GROUND	
SWITCHES			
S1	SELECT J3 IF	INTERNAL CLOSURE	Switch UP = ON; Switch DOWN = OFF
S2	SELECT J2 IF	INTERNAL CLOSURE	Switch UP = ON; Switch DOWN = OFF
S3	SELECT J1 IF	INTERNAL CLOSURE	Switch UP = ON; Switch DOWN = OFF
S4	SELECT INT/EXT	CONTROL	Switch UP = EXT; Switch DOWN = INT

2.4 Installation / Operation

2.4.1 Installing and Operating the 70421

1. Secure the 70421 to a panel using the two bottom mounting holes (see Figure 2.1 and Figure 2.2)
2. Be sure the DC voltage to power the 70421 is $+24 \pm 0.5$ VDC on pin 5 of the CONTROL connector, J4.
3. Observe that green power LED (DS1) is illuminated.
4. Connect +5 dBm, maximum, 70 MHz \pm 20 MHz signals to the IF IN connectors, J1, J2, and/or J3 (Figure 2.3).
5. Connect the IF OUT, J5 (Figure 2.3), to the external equipment.
6. Select internal or external control using toggle switch, S4.
7. If S4 is set to internal (pin 4 of J4 will be grounded), select J3, J2, and/or J1 using switches, S1, S2, and S3, respectively.
8. If S4 is set to external (pin 4 of J4 will be open), select J3, J2, and/or J1 using pins 1, 2, and 3, respectively on J4, the DB9 connector.

3.0 Circuit Description

3.1 Block Diagram Description - 70421 (Figure 3.1)

The selected 70 MHz inputs go to a solid state switch that terminates the input in 50 ohms or passes the signal through to the combiner. The combined signals then go through an amplifier to provide 0 dB gain. The external control signals pass through a 4PDT switch that determines if the IF switches are controlled by external signals or the switches on the side of the 70421 chassis.

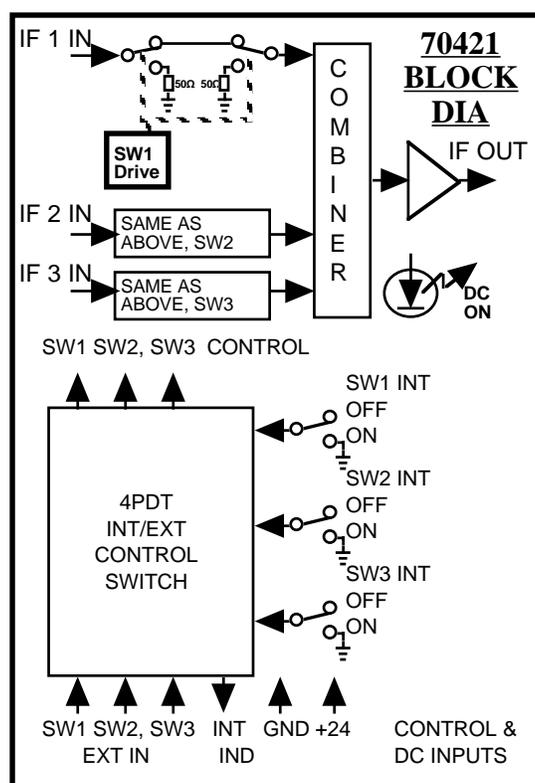


FIGURE 3.1 Block Diagram

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