

# POWER SUPPLIES

4SPI-20 POLARITY LOCKER

## SITUATION

A DBS dish with a (4) polarity LNB needs to be powered independently removing the burden from DBS multi-switches. Each LNB input requires a voltage greater than 16.5 volts.

## SOLUTION

Model **4SPI-20** powers either a multiple input LNB or (4) discrete LNBs' with 20 Vdc and polarity locks the four LNB outputs.

## RELATED CONSIDERATIONS

22 kHz is blocked from the RF outputs to the LNB inputs. This feature prevents DBS switches from changing the polarity of the LNBs. Short circuit protection is provided for each LNB input. A short on any (1) input will only affect that input. The LED will change to RED when presented a short.

## FEATURES

- *DBS Compatibility . . . . . 4 Polarity stacked LNBs*
- *2 Amp Power Supply . . . . . powers LNBs & line amplifiers*
- *Locks LNBs . . . . . one polarity on each of (4) coax*
- *Blocks 22 kHz . . . . . from multiple switches*
- *Dual Ground Screw Case . . . . . Die cast Aluminum*

## APPLICATION NOTES

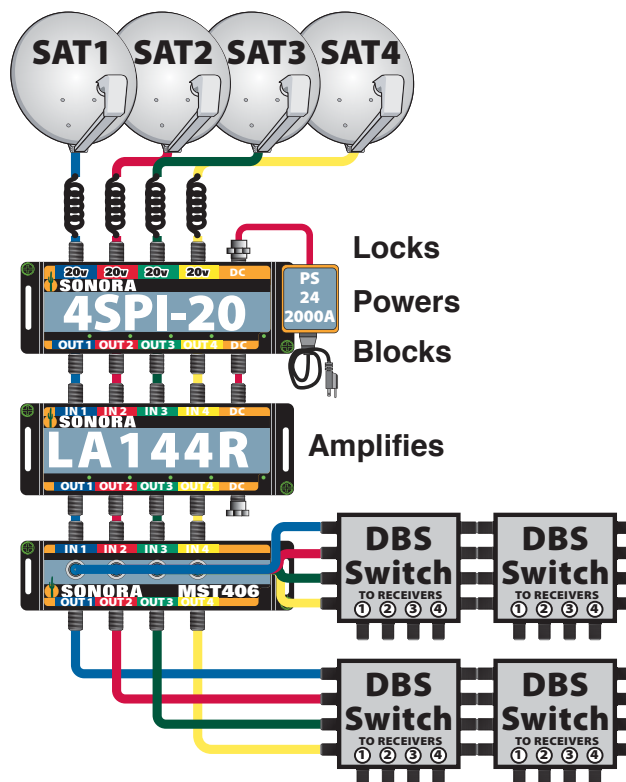
Home DBS systems using stacked LNBs use receiver power or DBS switch power to power the LNBs. In a commercial system or a large residential system, multiple DBS switches are used. An independent LNB power inserter is needed.

Model **4SPI-20** provides LNB powering to lock the dish. Without a polarity locker, each switch fights for control of the LNB polarity. Model **LA144R** amplifiers may be powered by the polarity locker for installations with long dish to switch installations.



## DESCRIPTION

(4) Stacked LNB polarity locker and power booster.



Revised Jun 2 2014

## STACKED LNB Ku Frequency Plan

Updated:  
JUNE 1, 2014



SAT 1	
20V	1 3 5 7 9 1 1 1 1 1 2 2 2 2 3 3 3 2 2 2 2 2 1 1 1 1 1 1 8 6 4 2
SAT 2	
20V	1 3 5 7 9 1 1 1 1 1 2 2 2 2 3 3 3 2 2 2 2 2 1 1 1 1 1 1 8 6 4 2
SAT 3	
20V	1 3 5 7 9 1 1 1 1 1 2 2 2 2 3 3 3 2 2 2 2 2 1 1 1 1 1 1 8 6 4 2
SAT 4	
20V	1 3 5 7 9 1 1 1 1 1 2 2 2 2 3 3 3 2 2 2 2 2 1 1 1 1 1 1 8 6 4 2

950.....1450...1680.....2150

Stacked LNBs' are used by multiple DBS operators. The figure above is the transponder layout for high side inverted stacking of the even polarity. Note that the highest frequency even transponder is #2.

Some operators employ switches in their LNBs that can be controlled by DBS switches. The 4SPI-20 blocks 22 kHz DiSEqC communication from switches and receivers to force the LNBs to output the (4) polarities. Check with your DBS provider for the polarity assigned each LNB output. They may be noted on the LNB body.

## SPECIFICATIONS

### Specifications ..... Typical ..... QC Limit

Inputs / Outputs .....	(4) @ 7 to 2400 MHz
Insertion Loss.....	0.5 dB..... 1 dB
Return Loss 54-2400 MHz.....	12 dB.....10 dB

### Power Specifications

Input Transformer .....	24 VDC, 2 Amp
	100 to 240 VAC input, switching, short circuit protected

### Output Voltages and tones

SAT 1 .....	20 Vdc
SAT 2 .....	20 Vdc
SAT 3 .....	20 Vdc
SAT 4 .....	20 Vdc

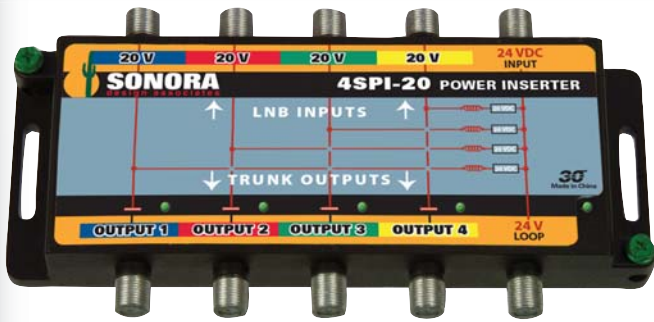
### Mechanical Specifications

Dimensions .....	6"L x 3.5"W x 7/8"H
Weight .....	1.75 lb (0.8 kg)
Master Carton (18 units) .....	20" x 10" x 10"
Master Carton Weight.....	34 lb. (15.5 kg)

### Environmental Specifications

Operating Environment:.....	Indoor/Outdoor Lock box
Ambient Temperature.....	-30° C to +70°C

A common problem for installers is maintaining the correct trunk to switch polarity. Check with your DBS switch provider to verify which polarity is required at each port. In general, the most popular satellite band goes to the first port of the switch. The least commonly used satellite is connected to the last port. **Cables from the Polarity locker outputs must match the switch.**



## Stacked LNB Power Inserter

Features: Simplifies MDU installations by providing an integrated module for locking LNB polarizations and satellite selection

### 4SPI-20 Trunk Power Inserter

- Powers (4) LNBs
- Regulated DC Voltages
- F-Connector Power Input
- Power LED Indicators
- Looped DC Output

Parameter	UNIT	4SPI-20
Operating Frequency Range	MHz	250 - 2400
Insertion Loss	dB	1.5 (max.)
Flatness in operating frequency range	dB	± 0.5
Number of Input Ports	Each	(4) F
Number of Output Ports	Each	(4) F
Isolation between ports	dB	> 35 dB
Input / Output Return Loss	dB	> 12 (min)
DC Power provided to inputs	VDC	
Port #1 (20 V)	VDC	20 ± 0.5
Port #2 (20 V)	VDC	20 ± 0.5
Port #3 (20 V)	VDC	20 ± 0.5
Port #4 (20 V)	VDC	20 ± 0.5
Number of LEDs	Each	5 (1 per input & 1 for adaptor input)
DC Power Path	mA	1000 (max.) From DC Input to each Input
DC Power Connector Type	Each	(1) F
Switching Mode Power Supply		24 V, 2 A (min)
Short Circuit Protection		Yes, Multi fuse
Lightning Surge Protection		32 V p-p, max shunt current 200 A; 8 msec, 1.5 kW max dissipation
Ground Screws	Each	(2) Ground Screw.
Dimensions L x W x H	mm	58 x 188 x 23
Environmental Requirements		Indoor use only
Operating Temperature range	°C	-34 to + 60 Indoor housing
Humidity		Shall survive exposure to 95% relative humidity over operating temperature