

POWER SUPPLIES

COAX DC INSERTERS

SITUATION

DBS devices require DC voltage on the coax output connector and RF signals must pass from input to output on the power inserter.

SOLUTION

Sonora power inserters couple regulated DC voltage on coax cables while allowing the DBS signal to pass through the inserter. DC Power originates from switching, short circuit protected transformers.

RELATED CONSIDERATIONS

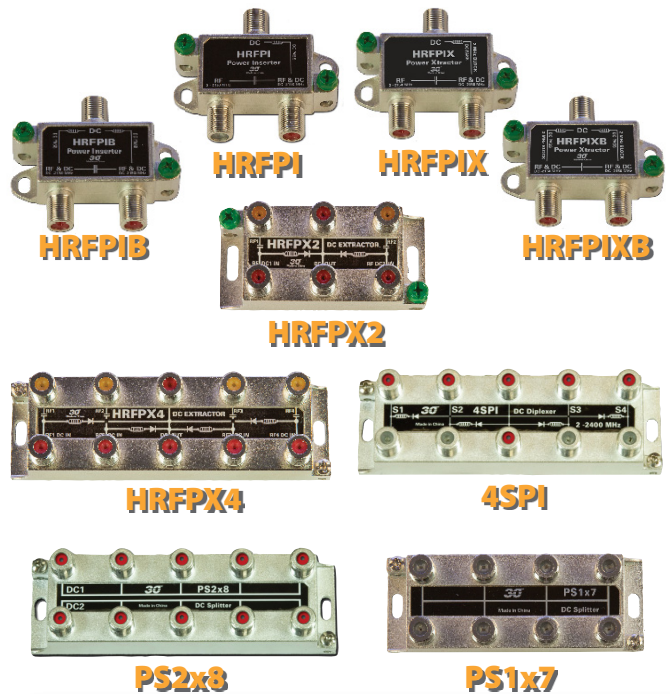
DC can be inserted in one direction (**HRFPI**) or both directions (**HRFPIB**) on the coax. In some applications, filtering is required to prevent 22 kHz or 2.3 MHz from leaking in or out of the DC port. Models **HRFPIX** or **HRFPIXB** pass 22 kHz on the RF ports and filter 22 kHz and 2.3 MHz from the DC ports.

FEATURES

- *DBS compatibility..... DBS Ka/Ku*
- *Frequency Response 1 MHz to 2400 MHz*
- *Dual Ground Screw Case: Die cast RF shielded*
- *Switching DC Power Supplies: short circuit protected
..... Regulated Output Voltage*

APPLICATION NOTES

HRFPI	single direction DC inserter
.....	1 -2400 MHz
HRFPIB	bidirectional DC inserter
.....	1 -2400 MHz
HRFPIX	DC inserter / extractor
.....	22 kHz -2400 MHz
HRFPIXB	DC bidirectional inserter / extractor
.....	22 kHz -2400 MHz
HRFPX2	DC dual extractor combiner
.....	22 kHz & 2.3 MHz filter
HRFPX4	DC Quad extractor combiner
.....	22 kHz & 2.3 MHz filter
4SPI	(4) "Coax" DC inserter
.....	1 -2400 MHz



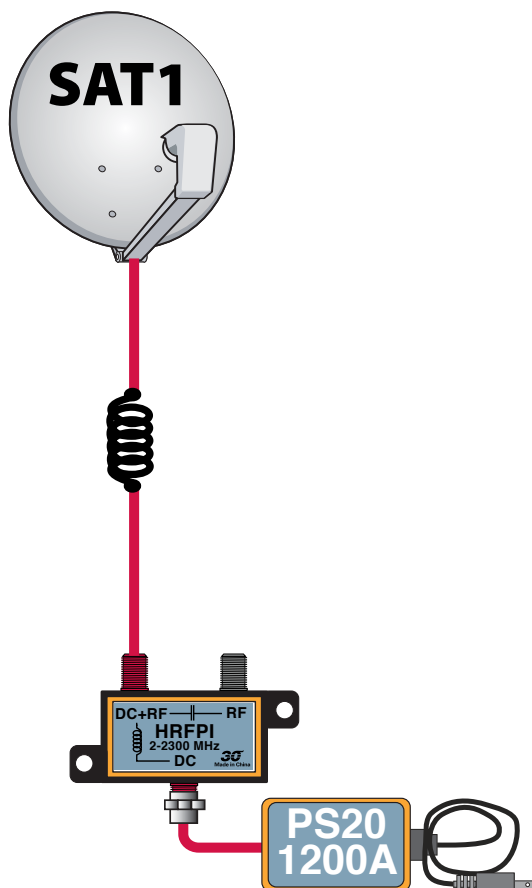
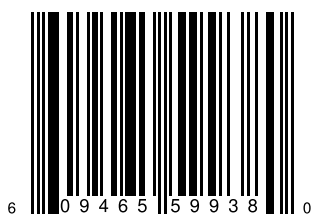
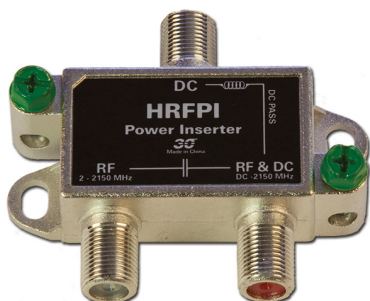
DESCRIPTION

Power inserters couple or de couple DC power on coax cables to supply DBS LNBs, line amplifiers and switches.



PS2x8	DC Splitter
.....	(2) "F" DC Inputs to (8) "F" DC Outputs
PS1x7	DC Splitter
.....	(1) "F" DC Input to (7) "F" DC Outputs
PS12250	3 Watt 12 V, 0.25 Amp
PS121000A	12 Watt 12 V, 1.0 Amp
PS201200A	24 Watt 20 V, 1.2 Amp
PS242000A	48 Watt 24 V, 2.0 Amp

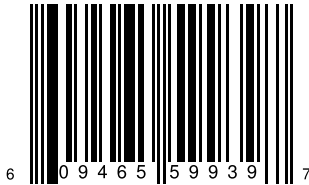
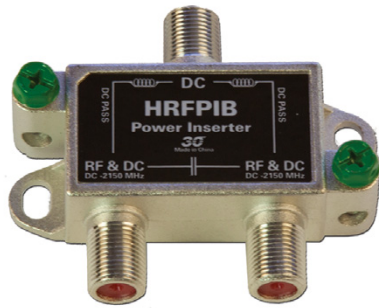
Revised Oct 20 2014



HRFPI DC Power Inserter

- Passes 1 to 2400 MHz , "RF" to "RF+DC"
- Inserts DC to "RF+DC "Port
- Blocks DC from "RF+DC " to "RF" Port
- F-Female Connector for DC Input
- F-Female Connector for RF Input
- F-Female Connector for RF Output

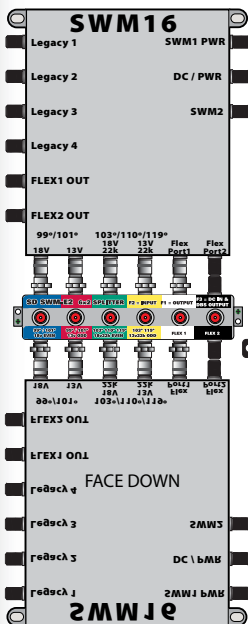
Parameter	Unit	HRFPI
Frequency Range		
RF PORT	MHz	1 to 2400
RF+DC PORT	MHz	DC, 1 to 2400
DC PORT	MHz	DC
Connectors		
DC (INPUT / OUTPUT)	each	(1) F-Female
RF + DC (INPUT)	each	(1) F-Female
RF + DC (OUTPUT)	each	(1) F-Female
Loss RF+DC to RF PORT		
DC passing		NO
SWM FSK (2.3 MHz)	dB	< 0.5
7 - 42 MHz	dB	< 0.5
54 to 625 MHz	dB	< 0.5
625 to 2150 MHz	dB	< 1.5
2150 to 2400 MHz	dB	< 2.0
Rejection RF to DC		
FSK 2.3 MHz	dB	> 26
7 - 42 MHz	dB	> 45
54 to 625 MHz	dB	> 60
625 to 2150 MHz	dB	> 35
2150 to 2400 MHz	dB	> 35
Return Loss RF+DC PORTS		
FSK 2.3 MHz	dB	>14
7 - 42 MHz	dB	>14
54 to 625 MHz	dB	>14
625 to 2150 MHz	dB	> 13
2150 to 2400 MHz	dB	> 11
DC Power pass		
Dc to (2) RF+DC PORTS	Amp	3 (max)
Grounding Block	(2) ea	NEC 2008 250.126 10 gauge copper
Dimensions L x W x H	Inch	2.0 x 2.3 x 0.7
Environmental		Indoor Only
Operating Temperature	°C	-34 to + 60



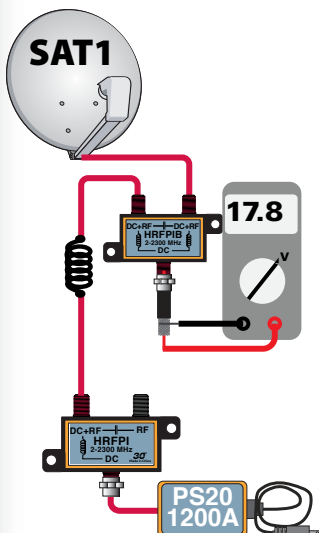
HRFPIB DC Power Inserter

- Passes RF 1 MHz to 2400 MHz
- Inserts DC to both "RF+DC" Ports
- Passes DC from "RF+DC" Port1 to "RF+DC" Port2
- F-Female Connector for DC Input
- F-Female Connector for RF Input
- F-Female Connector for RF Output

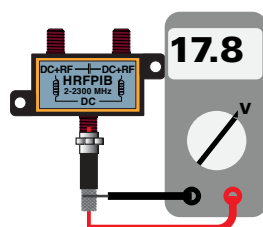
Parameter	Unit	HRFPIB
Frequency Range		
RF+DC PORT	MHz	DC, 1 to 2400
RF+DC PORT	MHz	DC, 1 to 2400
DC PORT	MHz	DC
Connectors		
DC (INPUT / OUTPUT)	each	(1) F-Female
RF + DC (INPUT)	each	(1) F-Female
RF + DC (OUTPUT)	each	(1) F-Female
Loss RF+DC to RF+DC PORT		
DC passing		YES
SWM FSK (2.3 MHz)	dB	< 0.5
7 - 42 MHz	dB	< 0.5
54 to 625 MHz	dB	< 1.5
625 to 2150 MHz	dB	< 2.0
2150 to 2400 MHz	dB	< 2.0
Rejection RF to DC		
FSK 2.3 MHz	dB	> 26
7 - 42 MHz	dB	> 45
54 to 625 MHz	dB	> 60
625 to 2150 MHz	dB	> 35
2150 to 2400 MHz	dB	> 35
Return Loss RF+DC PORTS		
FSK 2.3 MHz	dB	>14
7 - 42 MHz	dB	>14
54 to 625 MHz	dB	>14
625 to 2150 MHz	dB	> 13
2150 to 2400 MHz	dB	> 11
DC Power pass		
Dc to (2) RF+DC PORTS	Amp	3 (max)
Grounding Block	(2) ea	NEC 2008 250.126 10 gauge copper
Dimensions L x W x H	Inch	2.0 x 2.3 x 0.7
Environmental		Indoor Only
Operating Temperature	°C	-34 to + 60

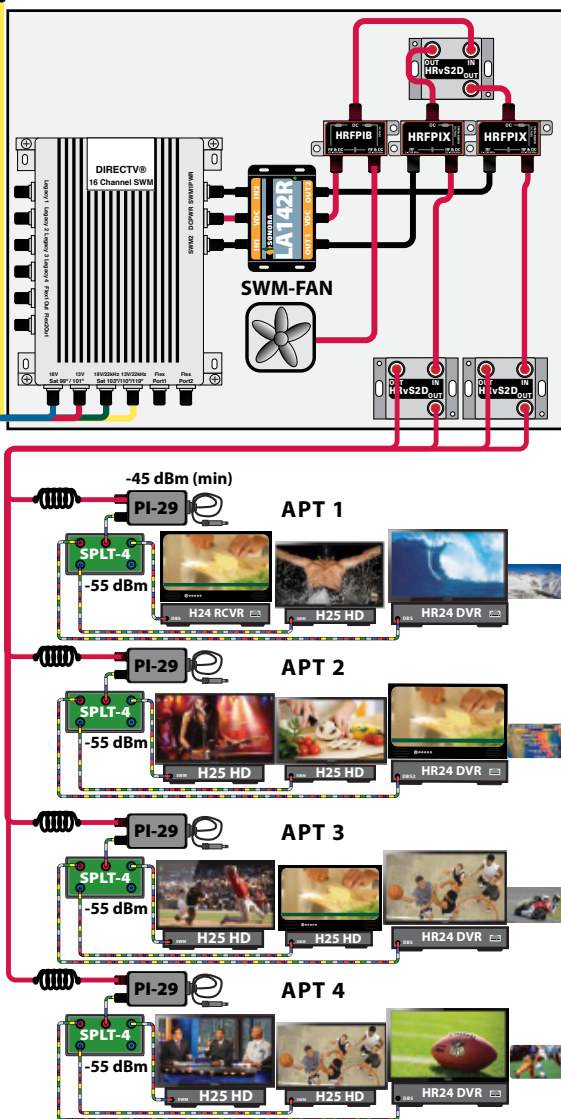
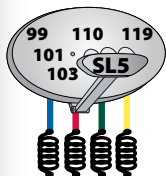


Model **HRFPIB** combined with model **PS242000A** powers (2) **SWM16** switches via the DC/PWR port. The total current draw at 24 volts is less than 1.5A.



Model **HRFPIB** may be used with a voltmeter to measure the voltage on the coax while the load device is in operation. This is useful more measuring the voltage at the LNB after a long coax run.

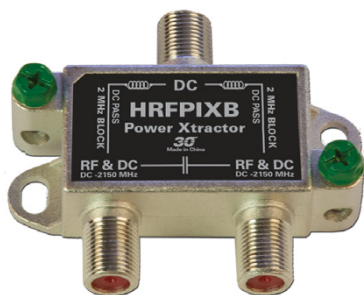




HRFPIX DC Power Inserter / Extractor

- Passes 22 kHz to 2400 MHz from "RF+DC" to "RF" port
- Extracts DC from "RF+DC" Port
- Blocks DC from "RF+DC" to "RF" port
- F-Female Connector for DC Port
- F-Female Connector for RF Port
- F-Female Connector for RF Port

Parameter	Unit	HRFPIX
Frequency Range		
RF+DC PORT	MHz	22 kHz to 2400
RF+DC PORT	MHz	22 kHz to 2400
DC PORT	MHz	DC
Connectors		
DC (INPUT / OUTPUT)	each	(1) F-Female
RF + DC (INPUT)	each	(1) F-Female
RF + DC (OUTPUT)	each	(1) F-Female
Loss RF+DC to RF PORT		
DC passing		NO
DISEqC (22 kHz)	dB	< 0.5
22 kHz impedance	ohm	< 2
SWM FSK (2.3 MHz)	dB	< 0.5
7 - 42 MHz	dB	< 0.5
54 to 625 MHz	dB	< 1.5
625 to 2150 MHz	dB	< 2.0
2150 to 2400 MHz		
Rejection RF to DC		
22 kHz	dB	> 65
22 kHz impedance	ohm	> 10k
FSK 2.3 MHz	dB	> 65
7 - 42 MHz	dB	> 60
54 to 625 MHz	dB	> 35
625 to 2150 MHz	dB	> 35
2150 to 2400 MHz		
Return Loss RF+DC PORTS		
22 kHz	dB	> 12
FSK 2.3 MHz	dB	> 14
7 - 42 MHz	dB	> 14
54 to 625 MHz	dB	> 14
625 to 2150 MHz	dB	> 13
2150 to 2400 MHz	dB	> 11
DC Power pass		
Dc to (2) RF+DC PORTS	Amp	3 (max)
Grounding Block	(2) ea	NEC 2008 250.126 10 gauge copper
Dimensions L x W x H	Inch	2.0 x 2.3 x 0.7
Environmental		Indoor Only
Operating Temperature	°C	-34 to + 60



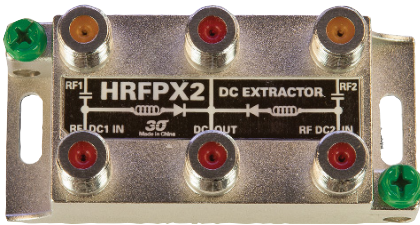
Model **HRFPIXB** may be used with a coax cables carrying DC and 22 kHz signals. The "DC" port is isolated from the 22 kHz signals to prevent 22 kHz distortion.

Model **HRFPIXB** may be used between DBS switches and LNBs to extract the DC while passing the DC and 22 kHz signals to the LNB.

HRFPIXB DC Power Inserter / Extractor

- Passes 22 kHz to 2400 MHz "RF+DC" to "RF+DC" port
- Extracts DC from "RF+DC" Ports
- Passes DC from "RF+DC" to "RF+DC" port
- F-Female Connector for DC Port
- F-Female Connector for "RF+DC" Port 1
- F-Female Connector for "RF+DC" Port 2

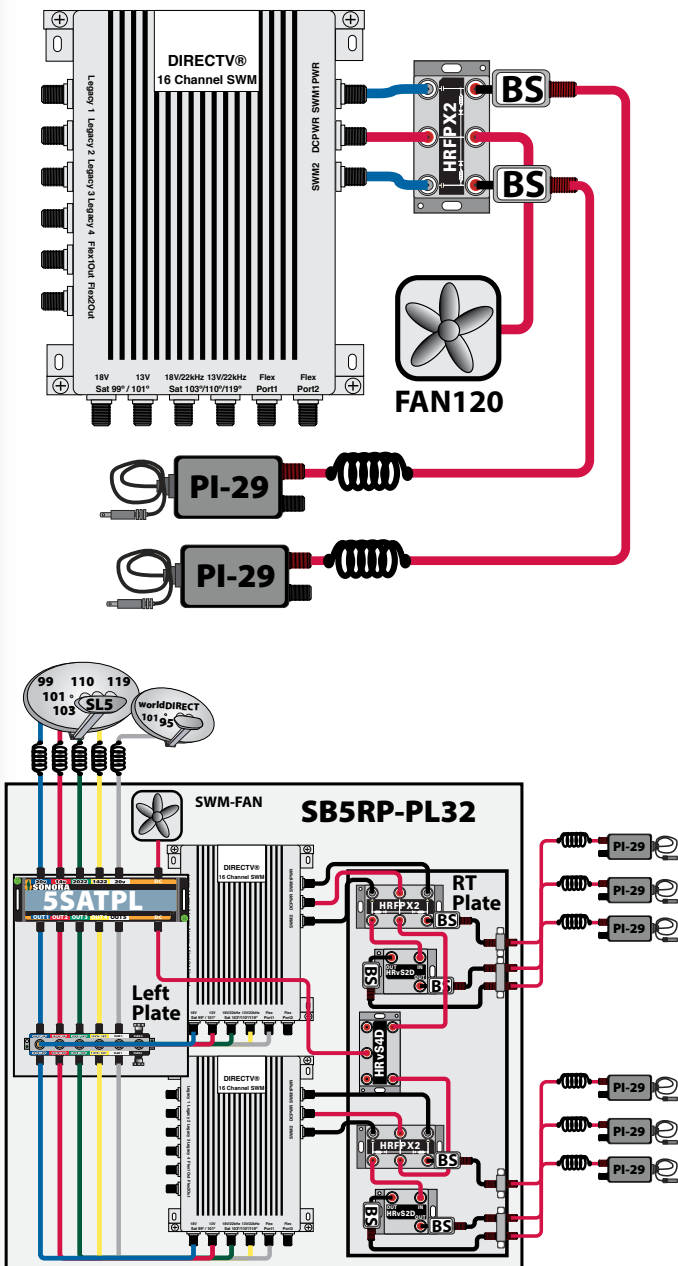
Parameter	Unit	HRFPIXB
Frequency Range		
RF+DC PORT	MHz	DC, 22 kHz to 2400
RF+DC PORT	MHz	DC, 22 kHz to 2400
DC PORT	MHz	DC
Connectors		
DC (INPUT / OUTPUT)	each	(1) F-Female
RF + DC (INPUT)	each	(1) F-Female
RF + DC (OUTPUT)	each	(1) F-Female
Loss RF+DC to RF+DC PORT		
DC passing		Yes
DISEqC (22 kHz)	dB	< 0.5
22 kHz Impedance	ohm	< 2
SWM FSK (2.3 MHz)	dB	< 0.5
7 - 42 MHz	dB	< 0.5
54 to 625 MHz	dB	< 1.5
625 to 2150 MHz	dB	< 2.0
2150 to 2400 MHz		
Rejection RF to DC		
22 kHz	dB	> 65
22 kHz Impedance	ohm	> 10 k
FSK 2.3 MHz	dB	> 65
7 - 42 MHz	dB	> 65
54 to 625 MHz	dB	> 60
625 to 2150 MHz	dB	> 35
2150 to 2400 MHz	dB	> 35
Return Loss RF+DC PORTS		
22 kHz	dB	>12
FSK 2.3 MHz	dB	>14
7 - 42 MHz	dB	>14
54 to 625 MHz	dB	>14
625 to 2150 MHz	dB	> 13
2150 to 2400 MHz	dB	> 11
DC Power pass		
Dc to (2) RF+DC PORTS	Amp	3 (max)
Grounding Block	(2) ea	NEC 2008 250.126 10 gauge copper
Dimensions L x W x H	Inch	2.0 x 2.3 x 0.7
Environmental		Indoor Only
Operating Temperature	°C	-34 to + 60

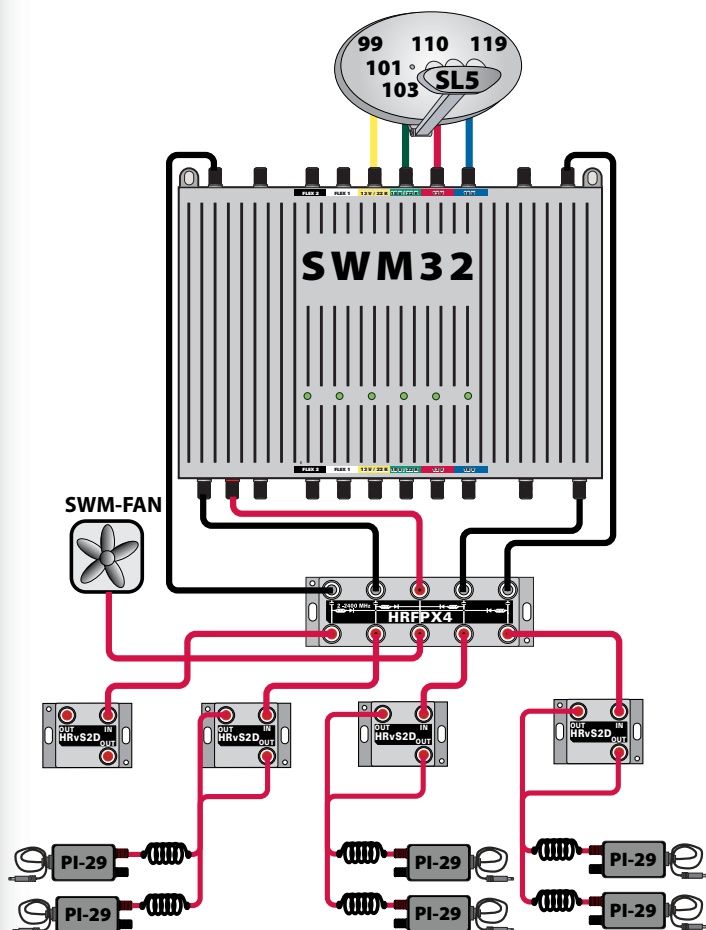


HRFPX2 DC Power Extractor

- Passes 22 kHz to 2400 MHz from "RF DC" to "RF" ports
- Extracts DC from "RF DC 1" and "RF DC2" ports
- Combines DC from "RF DC1" and "RF DC2" ports
- Blocks 22 kHz and 2.3 MHz from "DC OUT"
- Dual Green Ground Screws

Parameter	Unit	HRFPX2
Frequency Range		
RF DC1 PORT	MHz	DC, 22 kHz to 2400
RF DC2 PORT	MHz	DC, 22 kHz to 2400
RF1 PORT	MHz	22 kHz to 2400
RF2 PORT	MHz	22 kHz to 2400
DC PORT		DC, No RF
Connectors		
DC (OUTPUT)	each	(2) F-Female
RF1 (OUTPUT)	each	(1) F-Female
RF2 (OUTPUT)	each	(1) F-Female
Loss RF+DC to RF+DC PORT		
DC passing		Yes
DISEqC (22 kHz)	dB	< 0.5
22 kHz Impedance	ohm	< 2
SWM FSK (2.3 MHz)	dB	< 0.5
7 - 42 MHz	dB	< 0.5
54 to 700 MHz	dB	< 1.5
700 to 2150 MHz	dB	< 2.0
2150 to 2400 MHz	dB	< 2.5
Rejection RF to DC		
22 kHz	dB	> 65
22 kHz Impedance	ohm	> 2 k
FSK 2.3 MHz	dB	> 65
7 - 42 MHz	dB	> 65
54 to 700 MHz	dB	> 60
700 to 2150 MHz	dB	> 35
2150 to 2400 MHz	dB	> 35
Return Loss RF+DC PORTS		
22 kHz	dB	> 12
FSK 2.3 MHz	dB	> 14
7 - 42 MHz	dB	> 14
54 to 700 MHz	dB	> 14
700 to 2150 MHz	dB	> 13
2150 to 2400 MHz	dB	> 11
DC Power pass		
Dc to (2) RF+DC PORTS	Amp	3 (max)
Grounding Block	(2) ea	NEC 2008 250.126 10 gauge copper
Dimensions L x W x H	Inch	2.0 x 2.3 x 0.7
Environmental		Indoor Only
Operating Temperature	°C	-34 to + 60

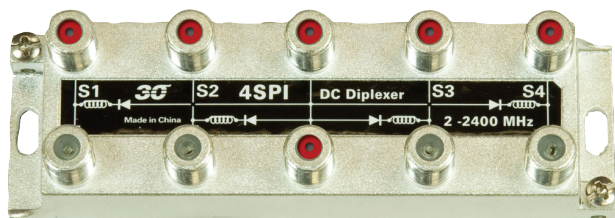




HRFPX4 DC Power Extractor

- Passes 22 kHz to 2400 MHz from "RF DC" to "RF" ports
- Extracts DC from "RFDC 1,2,3,4" ports
- Combines DC from "RFDC 1,2,3,4" ports
- Blocks 22 kHz and 2.3 MHz from "DC OUT"
- Dual Ground Screws

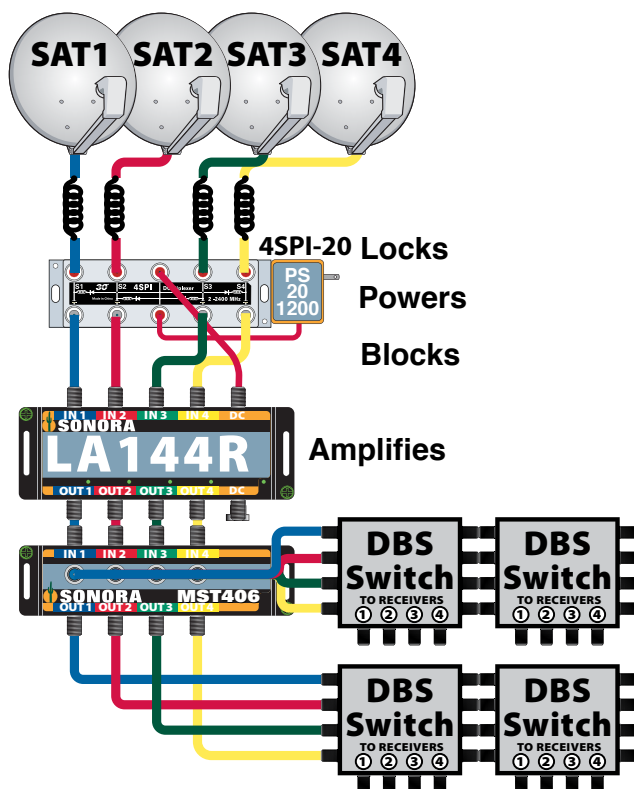
Parameter	Unit	HRFPX4
Frequency Range		
RF DC1,2,3,4 PORTS	MHz	DC, 22 kHz to 2400
RF1,2,3,4 PORT	MHz	22 kHz to 2400
DC PORTS		DC, No RF
Connectors		
DC (OUTPUT)	each	(2) F-Female
RFDC (INPUT)	each	(4) F-Female
RF (OUTPUT)	each	(4) F-Female
Loss RF+DC to RF+DC PORT		
DC passing		Yes
DISEqC (22 kHz)	dB	< 0.5
22 kHz Impedance	ohm	< 2
SWM FSK (2.3 MHz)	dB	< 0.5
7 - 42 MHz	dB	< 0.5
54 to 700 MHz	dB	< 1.5
700 to 2150 MHz	dB	< 2.0
2150 to 2400 MHz	dB	< 2.5
Rejection RF to DC		
22 kHz	dB	> 65
22 kHz Impedance	ohm	> 2 k
FSK 2.3 MHz	dB	> 65
7 - 42 MHz	dB	> 65
54 to 625 MHz	dB	> 60
625 to 2150 MHz	dB	> 35
2150 to 2400 MHz	dB	> 35
Return Loss RF+DC PORTS		
22 kHz	dB	>12
FSK 2.3 MHz	dB	>14
7 - 42 MHz	dB	>14
54 to 625 MHz	dB	>14
625 to 2150 MHz	dB	> 13
2150 to 2400 MHz	dB	> 11
DC Power pass		
Dc to (2) RF+DC PORTS	Amp	3 (max)
Grounding Block	(2) ea	NEC 2008 250.126 10 gauge copper
Dimensions L x W x H	Inch	2.0 x 2.3 x 0.7
Environmental		Indoor Only
Operating Temperature	°C	-34 to + 60



4SPIv DC Power Inserter

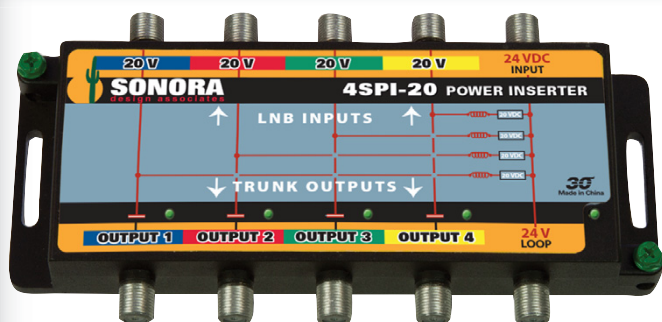
- Passes 1 to 2400 MHz , "RF" to "RF+DC"
- Inserts DC to (4) "RF+DC" Ports
- Blocks 22 kHz from "RF" to "RF+DC" ports
- F-Female Connector for DC Input
- F-Female Connector for RF Input
- F-Female Connector for RF Output

Parameter	Unit	4SPIv
Frequency Range		
RF PORTS (4)	MHz	1 to 2400
RF+DC PORTS (4)	MHz	DC, 1 to 2400
DC PORTS (2)	MHz	DC
Connectors		
DC (INPUT / OUTPUT)	each	(2) F-Female
RF + DC (INPUT)	each	(4) F-Female
RF (OUTPUT)	each	(4) F-Female
Loss RF+DC to RF PORT		
DC passing		YES
SWM FSK (2.3 MHz)	dB	< 0.5
7 - 42 MHz	dB	< 0.5
54 to 625 MHz	dB	< 0.5
625 to 2150 MHz	dB	< 1.5
2150 to 2400 MHz	dB	< 2.0
Rejection RF to DC		
FSK 2.3 MHz	dB	> 26
7 - 42 MHz	dB	> 45
54 to 625 MHz	dB	> 60
625 to 2150 MHz	dB	> 35
2150 to 2400 MHz	dB	> 35
Return Loss RF+DC PORTS		
FSK 2.3 MHz	dB	> 14
7 - 42 MHz	dB	> 14
54 to 625 MHz	dB	> 14
625 to 2150 MHz	dB	> 13
2150 to 2400 MHz	dB	> 11
DC Power pass		
Dc to (2) RF+DC PORTS	Amp	3 (max)
Grounding Block	(2) ea	NEC 2008 250.126 10 gauge copper
Dimensions L x W x H	Inch	2.0 x 2.3 x 0.7
Environmental		Indoor Only
Operating Temperature	°C	-34 to + 60



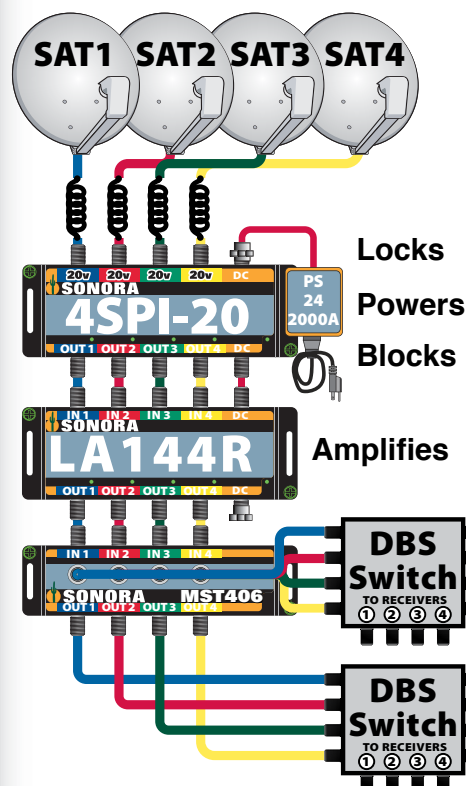
Stacked LNB Power Inserter

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



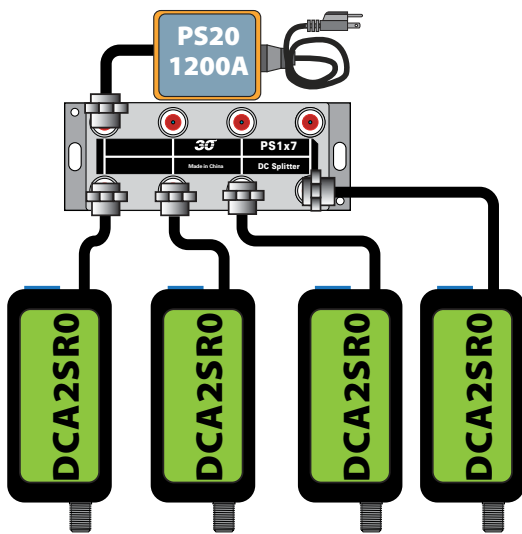
Parameter	UNIT	4SPI-20
Operating Frequency Range	MHz	250 - 2400
Insertion Loss	dB	1.5 (max.)
Flatness in frequency range	dB	± 0.5
Number of Input Ports	Each	(4) F
Number of Output Ports	Each	(4) F
Isolation between ports	dB	> 35 dB
Input / Output Return Loss	dB	> 12 (min)
DC Power provided to inputs	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



PS1X7 7-Way DC Splitter

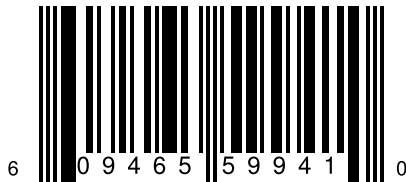
- F-Connector for DC Input
- F-Connector for DC Outputs

Parameter	UNIT	PS1X7
DC Input Connectors	Each	(1) F Female
DC Input Current	A	5 max
DC Outputs	Each	(7) F Female



Model **PS1x7** is used with a large capacity power adaptor to power multiple **DCA2R0** MoCA adaptors. The adaptors work over a range of voltages at a constant (3.1) watts. At 20 volts each draws 155 mA. The model **PS201200A** power supply is capable of 1.2 Amps. If (7) adaptors were to be powered, the total current would be one Amp.

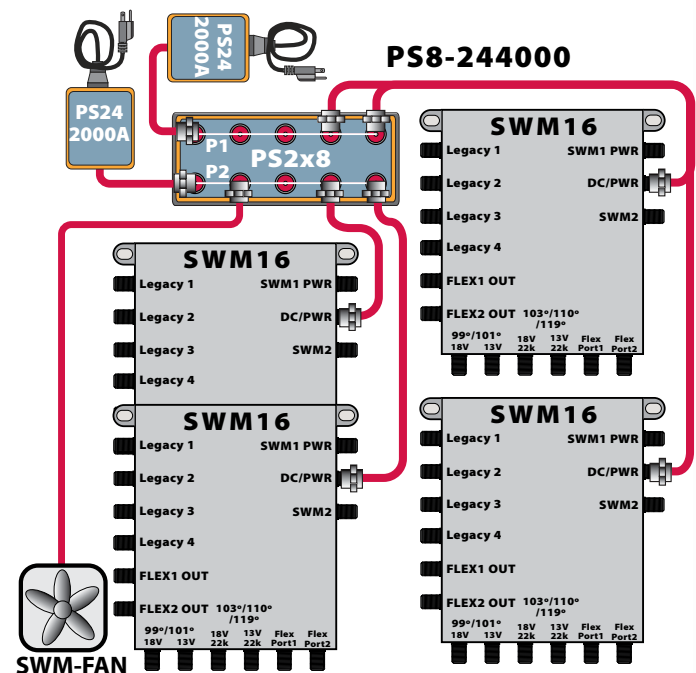
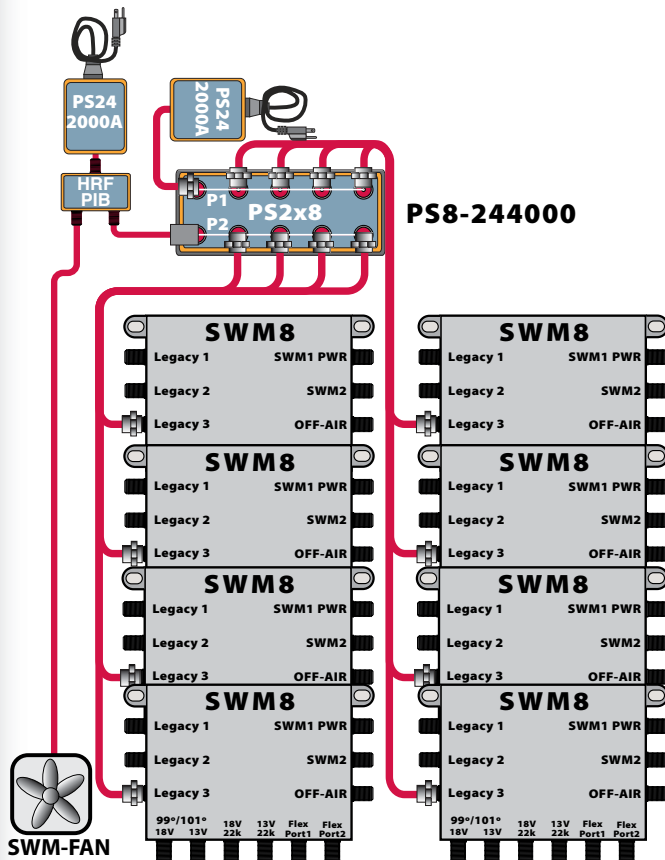
At 24 volts each draws 135 mA. The model **PS242000A** power supply is capable of 2.1 Amps. If (7) adaptors were to be powered, the total current would be 0.95 Amp.



PS2X8 Dual 4-Way DC Splitter

- F-Connector for (2) DC Inputs
- F-Connector for (8) DC Outputs

Parameter	UNIT	PS2X8
DC Input Connectors	Each	(2) F Female
DC Input Current	A	5 max
DC1 Outputs	Each	(4) F Female
DC2 Outputs	Each	(4) F Female



Model **PS2X8** with (2) **PS242000A** power supplies provides 24 volts at 4 amps of current to up to (8) outputs. The current use per supply is $(4) \times 385 \text{ mA} = 1.54 \text{ Amps}$. $(4 \times 9.25 \text{ W/SWM8} = 37\text{W})$

(8) SWM8 units in a box is equivalent to a 75 watt bulb. Model **SWM-FAN** provides airflow for lock boxes housing SWM8 switches. Model **HRFPIB** is used to split the DC of one supply to power model **SWM-FAN**. (105 mA)

Model **SWM16** can be powered via the DC/PWR port. The current draw was measured at 29 and 24 volts:

- 29 V = 607 mA = 17.6 watts
- 24 V = 720 mA = 17.3 watts

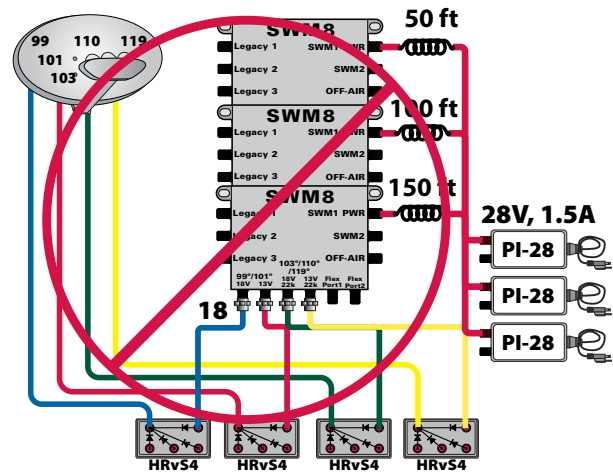
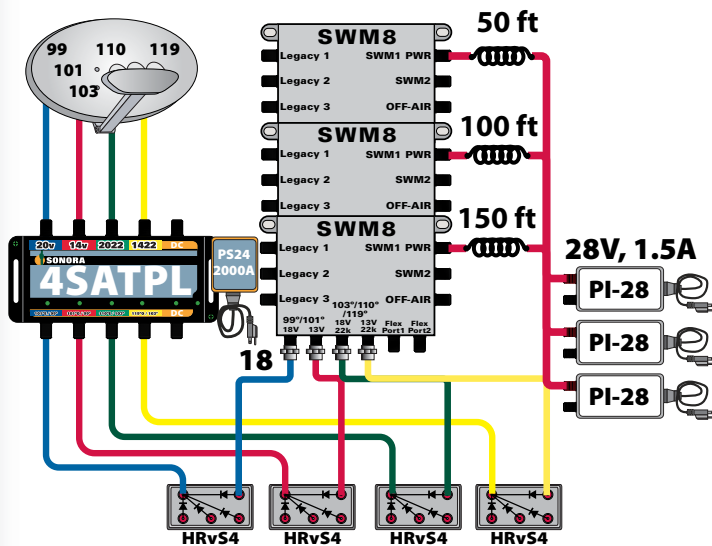
Powering (4) SWM16 switches draws 1.4 Amps from each power supply. The current use for supply 2 is $(2) \times 720 \text{ mA} + 105 \text{ mA (fan)} = 1.5 \text{ Amps}$. NO SL5 powering is allowed with this configuration.

SWM to SL5 22 kHz Communication

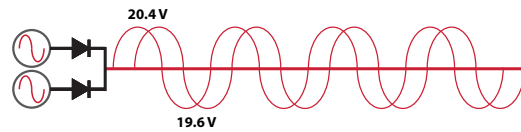
Issue : Multiple SWM switches are sending 22 kHz signals to the SL5. Some channels are missing.

Multiple 22 kHz signals when combined can create constructive and destructive interference. 180° out of phase combining will reduce the 22 kHz signal to zero!

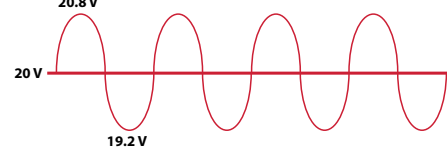
Solution: Model 4SATPL-T polarity locker generates one set of voltages and 22 kHz tones while blocking the 22 kHz signals generated by multiple switches.



90° PHASE SHIFT 22 KHZ



IN PHASE 22 KHZ



180° PHASE SHIFT 22 KHZ





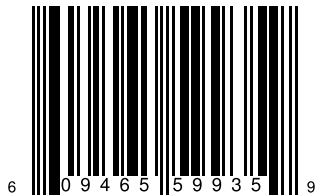
PS12250

6 0 9 4 6 5 5 9 9 3 4 2

PS12250 12 V DC Power Supply

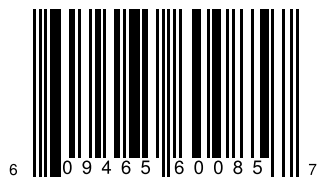
- 0.25 Amp
- UL Approved
- Small Footprint
- F-Connector for DC Output
- Overload Protection

Parameter	UNIT	PS12250
Rated Input Voltage	Vac	100 to 240
Operating Input Range	Vac	90 to 264
Rated Input Frequency	Hz	47 to 63
Rated Input Current	A	0.15 max
No Load Input Current	mA	< 15
Maximum Input Power	W	5.01
AC Input Connector	Type	US PIN
Nominal DC Output Voltage	Vdc	12
Rated load current	A	0.25 max
Minimum load current	A	0.0 A
Ripple & Noise	mVp-p	100
DC Output Cable	Feet	1
Switching Efficiency	%	59
DC Power Connector Type	Each	(1) F Female
DC Adaptor included	Each	(1) F71 Male to Male
Short Circuit Protection		Yes, Multi fuse
Dimensions L x W x H	mm	56 x 35 x 24
Environmental Requirements		Indoor use only
Ambient Temperature range	°C	0 to + 45
Humidity		Shall survive 90% relative humidity over operating temperature
Safety Ratings Agencies	USA Canada Europe Japan Taiwan China Britain	UL60950 CSA C22.2 NO.950 TUV/VDE-EN60950 J60950(H14)/J55001(H14) CNS13438 GB4943-2001 EN60950-1:2000

**PS121000A** 12 V DC Power Supply

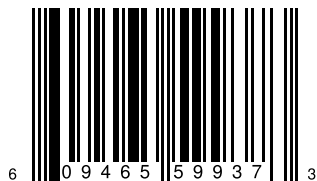
- 1 Amp
- UL Approved
- Interchangeable AC Cord
- F-Connector for DC Output
- Overload Protection

Parameter	UNIT	PS121000A
Rated Input Voltage	Vac	100 to 240
Operating Input Range	Vac	90 to 264
Rated Input Frequency	Hz	47 to 63
Rated Input Current	A	0.4 max
No Load Input Current	mA	< 20
Maximum Input Power	W	16.58
AC Input Cable	Feet	6
AC Input connector		Mini 2 pin
Nominal DC Output Voltage	Vdc	12
Rated load current	A	1 max
Minimum load current	A	0.05A
Ripple & Noise	mVp-p	120
DC Output Cable	Feet	6
Switching Efficiency	%	72
DC Power Connector Type	Each	(1) F Female
DC Adaptor included	Each	(1) F71 Male to Male
Short Circuit Protection		Yes, Multi fuse
Dimensions L x W x H	mm	110 x 53 x 37
Environmental Requirements		Indoor use only
Ambient Temperature range	°C	0 to + 45
Humidity		Shall survive 90% relative humidity over operating temperature
Safety Ratings Agencies	USA Canada Europe Japan Taiwan China Britain	UL60950-1 CSA C22.2 NO.950 TUV/VDE-EN60950-1 J60950(H14)/J55001(H14) CNS13438 GB4943-2001 EN60950-1:2000

**PS201200A** DC Power Supply

- 1.2 Amp
- UL Approved
- Universal AC cord, US standard
- F-Connector for DC Output
- Overload Protection

Parameter	UNIT	PS201200A
Rated Input Voltage	Vac	100 to 240
Operating Input Range	Vac	90 to 264
Rated Input Frequency	Hz	47 to 63
Rated Input Current	A	0.6 max
No Load Input Current	mA	< 25
Maximum Input Power	W	30.53
AC Input connector		2 Conductor Cord, US PIN
Nominal DC Output Voltage	Vdc	20
Rated load current	A	1.2 max
Minimum load current	A	0.0
Ripple & Noise	mVp-p	150
DC Output Cable	Feet	6
Switching Efficiency	%	78.6
DC Power Connector Type	Each	(1) F Female
DC Adaptor included	Each	(1) F71 Male to Male
Short Circuit Protection		Yes, Multi fuse
Dimensions L x W x H	mm	82 x 44 x 48
Environmental Requirements		Indoor use only
Ambient Temperature range	°C	0 to + 45
Humidity		Shall survive 90% relative humidity over operating temperature
Safety Ratings Agencies	USA Canada Europe Japan Taiwan China Britain	UL60950-1 CSA C22.2 NO.950 TUV/VDE-EN60950 J60950(H14)/J55001(H14) CNS13438 GB4943-2001 EN60950-1:2004

**PS242000A** DC Power Supply

- 2.08 Amp (50 Watt)
- UL Approved
- Interchangeable AC Cord
- F-Connector for DC Output
- Overload Protection

Parameter	UNIT	PS242000A
Rated Input Voltage	Vac	100 to 240
Operating Input Range	Vac	90 to 264
Rated Input Frequency	Hz	47 to 63
Rated Input Current	A	1.2 max
No Load Input Current	mA	< 20
Maximum Input Power	W	58.6
AC Input Cable	Feet	6
AC Input connector		Mini 2 pin
Nominal DC Output Voltage	Vdc	24
Rated load current	A	2.08 max
Minimum load current	A	0.05A
Ripple & Noise	mVp-p	240
Switching Efficiency	%	85
DC Output Cable	Feet	6
DC Power Connector Type	Each	(1) F Female
DC Adaptor included	Each	(1) F71 Male to Male
Short Circuit Protection		Yes, Multi fuse
Dimensions L x W x H	mm	110 x 53 x 37
Environmental Requirements		Indoor use only
Ambient Temperature range	°C	0 to + 45
Humidity		Shall survive 90% relative humidity over operating temperature
Safety Ratings Agencies	USA Canada Europe Japan Taiwan China Britain	UL60950-1 CSA C22.2 NO.950 TUV/VDE-EN60950-1 J60950(H14)/J55001(H14) CNS13438 GB4943-2001 EN60950-1:2000