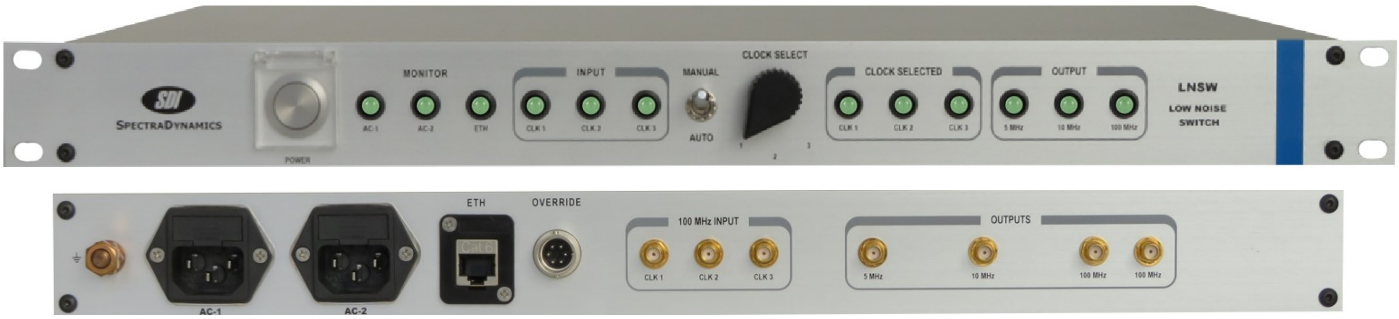
LNSW Low Noise Switch

SpectraDynamics, Inc.



The LNSW is a low-noise frequency divider switch that takes a 100 MHz reference signal, selected from one of three inputs, and divides it to provide outputs at 5 MHz, 10 MHz, and 100 MHz with exceptional low additive phase noise and minimal signal distortion. The instrument may be operated manually by setting the front panel switch to the manual selection position and turning the front panel rotary switch to select one of the three clock reference signals. When remote operation is desired, the toggle switch may be set to the auto position and the instrument can then be controlled through the Ethernet port.

The LNSW is housed in a 1U, 19-inch rackmount enclosure and features four buffered and isolated outputs. All input and output power levels are monitored and compared to a set threshold of +7 dBm or a level defined by the user. If the signal level on any input or output drops below the set threshold, the monitor LED turns off indicating a fault condition, and the fault is reported through the Ethernet interface.

The LNSW features a redundant power supply system with alarm monitoring, enabling it to be powered by one or two 100-240 VAC mains sources. If the instrument is powered by two AC sources, the failure of one AC source does not interrupt its continuous operation, it only turns off the corresponding monitor LED and activates an alarm that will be transmitted via the Ethernet interface when the instrument is operated in auto mode.

FEATURES

- High isolation
- Low distortion
- Low phase noise
- Low temperature coefficient
- Signal Monitor LEDs
- Ethernet: remote monitor and control
- Redundant power supply system

APPLICATIONS

- Atomic frequency standards
- Atomic time scales
- High performance testing facilities
- Laboratory frequency distribution
- Reference frequency distribution

SPECIFICATIONS

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Max Input Level	1 dB compression	19	18	-	dBm
Min Input Level**	No fault	7	8	-	dBm
5 MHz Output Level	50 Ohm Load	12	13	14	dBm
10 MHz Output Level	50 Ohm Load	12	13	14	dBm
100 MHz Output Level	50 Ohm Load	11	12	13	dBm
Impedance	output	-	50	-	Ohms
Return Loss	input(S_{11})	-	-15	-10	dB
Return Loss	output(S_{22})	-	-15	-10	dB
Distortion*	+12 dBm	-	-60	-40	dBc
Isolation	output to output	105	110	-	dB
	output to input	105	110	-	dB
Spurious		-	-	-100	dBc
5 MHz Phase Noise* (Residual)	1 Hz	-	-135	-128	dBc/Hz
	10 Hz	-	-149	-141	
	100 Hz	-	-159	-148	
	1 kHz	-	-166	-153	
	10 kHz	-	-173	-156	
	100 kHz	-	-175	-156	
10 MHz Phase Noise* (Residual)	1 Hz	-	-131	-123	dBc/Hz
	10 Hz	-	-144	-135	
	100 Hz	-	-154	-142	
	1 kHz	-	-161	-147	
	10 kHz	-	-169	-150	
	100 kHz	-	-171	-150	
100 MHz Phase Noise* (Residual)	1 Hz	-	-134	-105	dBc/Hz
	10 Hz	-	-145	-121	
	100 Hz	-	-155	-134	
	1 kHz	-	-165	-156	
	10 kHz	-	-172	-165	
	100 kHz	-	-174	-166	

* Tests are done at 100 MHz and +13 dBm input unless otherwise specified.

** Default threshold setting is +7 dBm, this can be changed by the user through a Telnet command interface.

- ♦ Rackmount chassis: 1U H, 19“ W, 14” D
- ♦ Weight 4.5 kg (10 lbs)
- ♦ AC Input Voltage Range: 90-264 VAC, 22 W, 47-63 Hz,
- ♦ DC Input Voltage Range:12-36 VDC, 13 W
- ♦ Operation environment: 0 to +50 ºC,
- ♦ Humidity: 5% to 95% Non-condensing
- ♦ Storage temperature: -10 to +75 ºC