

 Dynamic Sciences International, Inc

R-1580A

MICROWAVE

DOWNCONVERTER



1580A Microwave Downconverter

Highlights

- The DSII Model R-1580A Microwave Downconverter extends the coverage of the R-1550A, pr other DSII wide range receivers, to 22 GHz.
- The Downconverter features a simplified human interface which permits direct tuning to desired frequencies without requiring operator interpretation. When connected to the R-1550A, the receiver tuning display is extended to 22 GHz, and tuning, port selection, gain adjustment and attenuation settings are all accomplished with receiver controls and displays, eliminating the need for adjusting the controls of both units.
- The R-1580A is fully compatible with DSII automated measurement systems, such as the DSI-1550A. When the Downconverter is connected, the extended frequency range is seamlessly integrated with the system sweep and interactive displays.
- The R-1580A Downconverter utilizes a multiple conversion design with pre-selection filtering, low phase-noise synthesizers, and high quality components to provide superior signal capture capability. The built-in microprocessor controls operations and provides display of frequency and status. Communications with external equipment is provided via the IEEE-488 bus.

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Equipment description

The model R-1580A microwave downconverter consists of modularly constructed electronic circuits that are contained within a radio frequency shielded enclosure and integrated with a front panel section containing the operator controls and indicators. Input and output connections are provided by dedicated connectors located on the front and back panels of the instrument. Function control signals and interface data used by separately mounted equipment are provided through multi-contact connectors that use distinctive configurations to prevent improper positioning when mated. Two mounting configurations may be used when installing the downconverter, a tilt stand bench mount or a rack mount. Physical characteristics for both configurations are listed in the Physical Characteristics. Mechanical dimensions are shown below.

Physical Characteristics

Characteristics	Parameter
Standard Height	7.00 in (178 mm)
Standard Width	17.00 in (432 mm)
Standard depth	21.00 in (533 mm)
Rack Mount Height	7.00 in (178 mm)
Rack Mount Width	19.00 in (483 mm)
Rack Mount Depth	21.00 in (533 mm)
Cooling	Free Convection
Weight	40 LBS./18.14 Kg
Operating	32° to 95°F (0° to 35°C)
Storage	-40° to 167°F (-40° to 75°C)
Relative Humidity	
Operating	0% - 85% non condensing
Storage	0% -95% non condensing

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R-1580A Front Panel

The following provides a short explanation of function and purpose for each designated item located on the front and back panels of the downconverter.

Power Switch:	Two- position switch that controls the input power to the downconverter.
Signal In Connector:	Female “Planar” connector for input of RF signals.
Signal In Indicator:	Light emitting diode (LED) that is lit when the SIGNAL IN connector is selected.
Calibrate In connector:	Female “Planar” connector for input of RF signals.
Calibrate In Indicator:	LED that is lit when the CALIBRATE IN connector is selected.
Input Select Switch:	3 position button that selects the input signal from SIGNAL IN and CALIBRATE IN.
IF Out Connector:	Female “N” connector for output of downconverter RF signals.
Attenuation switch:	Pushbutton that selects the input signal attenuation level.
Attenuation Indicators:	2 that light to indicate hardware- select attenuation levels.
Auto-Indicator:	LED that is lit when attenuation switch is used to select the AUTO mode attenuation.
Remote Indicator:	LED that lights to indicate that the downconverter is being controlled by an external device via the IEEE-488 bus.
Unlock Indicator:	LED that lights to indicate that at least one of the local oscillators in the downconverter is not locked at the proper frequency.
Tuning Pushbutton:	Pushbutton that provides manual tuning over the downconverter frequency range.

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Tuning Control:	Provides manual tuning over the downconverter frequency range.
Tuning Mode Button:	Pushbutton that selects the local data entry and operational mode of the downconverter.
Tuning Mode Indicators:	5 LEDs that individually light to indicate the select local data entry and operational mode of the downconverter.
Display Dimmer:	Setup Mode that provides control of the illumination intensity of the DISPLAYS.
Regulation Indicator:	Status message that indicates that a regulator is not within regulation limits.
IEEE-488 Bus Connector:	Double row, 24 contact connector used to interface IEEE-488 bus control and data.
AC Input Connector:	Three-pin socket used to input AC power to the downconverter.

R-1580A Rear Panel

Identification

IEEE-488 Bus Connector

110/220 Line Voltage Select Switch

Power Adapter

Chasis ground



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Specifications

The specifications outlined are the performance standards to which the instrument is tested. If variations to specifications have been requested, a notice of engineering change and identification of the variance are included in this document.

Input Frequency Range:	1 to 22 GHz
Output Frequency Range:	600 MHz to 1800 MHz
Input VSWR:	2.5:1 maximum
Noise Figure:	1 to 12 GHz: 12 dB maximum 12 to 22 GHz 14 dB maximum
Input Impedance:	50Ω nominal at all attenuator settings
Tuning:	Single Knob or Rocker Tuning with selectable tuning rate
Tuning Display:	9 digit LED, adjustable intensity
Tuning Resolution:	Determined by the resolution of the associated receiver
IF Bandwidth:	400 MHz
Input Attenuator:	
Range:	0-70 dB in 10 dB steps
Operation:	Manual, Auto, and Remote
Switching Time:	Less than 30 msec
Band Switching and Setting Time:	50 msec typical
Maximum Tolerated RF Input:	CW (rms):
	+10 dB with 0 dB attenuation
	+20 dB with 10 dB attenuation
	+30 dB with 20 dB attenuation
Maximum Output Level:	0 dB into 50Ω
Image Rejection:	60 dB minimum: fixed and tracking filters eliminate image and multiple responses
IF Rejection:	60 dB minimum

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Specifications Continued

LO Leakage at Input Connector:	Less than -80 dBm maximum
Third Order Input Intercept:	-8 dBm typical
1 dB Input Compression Point:	-30 dBm minimum with input attenuator in 0 dB position
Dynamic Range @ 100 MHz Bandwidth:	(1dB compression to noise floor) 50 dB minimum with input attenuator in 0 dB position
Frequency Reference:	No inversion
Operating Frequency Stability:	After 30 minutes warm-up stability is nominally equal to frequency stability
Input, Output and Calibrate Connectors:	Planar Type
External Data Interface:	IEEE-488
Remotely Controllable Functions:	Frequency, Attenuation, Input port select, Step size, Step up, Step down plus Calibration and Service Functions
Input Power:	115/230VAC \pm 10%. 50/60 Hz single phase, 175VA maximum



"Performance Measurements"

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