

WSDU-1X16ER_LNA

Extremely Wideband High Dynamic 16 Way Multicoupler 30 MHz ... 8000 MHz

Features

- robust against high RF input power
- low noise and low distortion mode
- lossless signal distribution

Applications

- radio monitoring
- direction finding
- homeland security



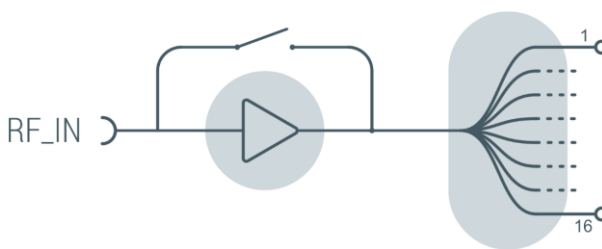
At a Glance

Multicouplers are needed to distribute a common signal source to many outputs without loss in level and low distortion. In receiving applications, a huge amount of radio signals covered in the large frequency range effort high demands to the linearity and the noise of the multicoupler.

The WSDU-1X16ER_LNA is the right solution for modern radio signal distribution systems that must cover the frequency range up to more than 8 GHz.

Simplified Block Diagram

The WSDU-1X16ER_LNA distributes the signals from one input to 16 equal outputs without loss in level.



Input Signal Clipper

To protect the RF input against very strong RF signals in the close environment coming e.g. from mobile phones the WSDU-1X16ER_LNA has an input signal clipper. RF signals up to 1.5 W can be fed in the RF input without destruction of the device. In the case of overdriving the distribution amplifiers caused by too much RF input level the power LED indicates the compression in LNA OFF mode.

Low Noise / Low Distortion Mode

The WSDU-1X16ER_LNA has a bypass able low noise amplifier stage at the RF input. This enables an optimized operation in different receiving situations with low and high signal levels.

Lossless 1 to 16 Signal Distribution

The signal at the input is amplified by using broadband low-noise amplifiers with a wide dynamic range -weak signals are linearly amplified even if they occur next to signals with very strong levels-. As a result, the distributed input signal is made available at the 16 outputs without any loss in level.

The hardware structure of the distribution offers optimal phase and amplitude balance performance. All inputs and outputs have SMA female connectors.

VLF und HF Suppression

For the use in VHF, UHF and SHF receiving systems strong signals from i.e. local medium wave radio stations must be suppressed. The WSDU-1X16ER_LNA offers an integrated high pass filter for an effective suppression of frequencies less than 5 MHz.

High Port-to-Port Isolation

WSDU-1X16ER features a high port-to-port isolation at the outputs. The connected receivers are prevented from affecting each other, e.g. via local oscillators or synthesizers.

RF Specification

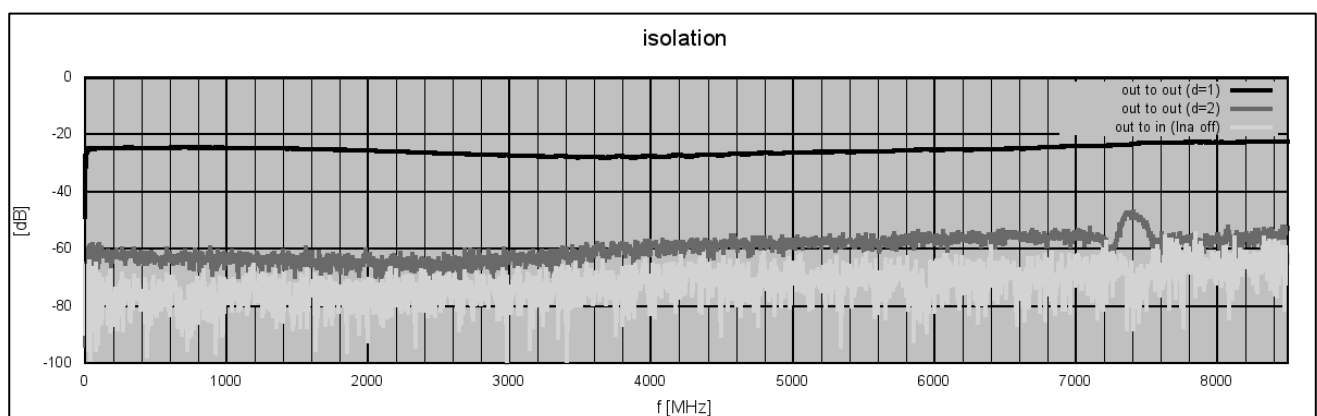
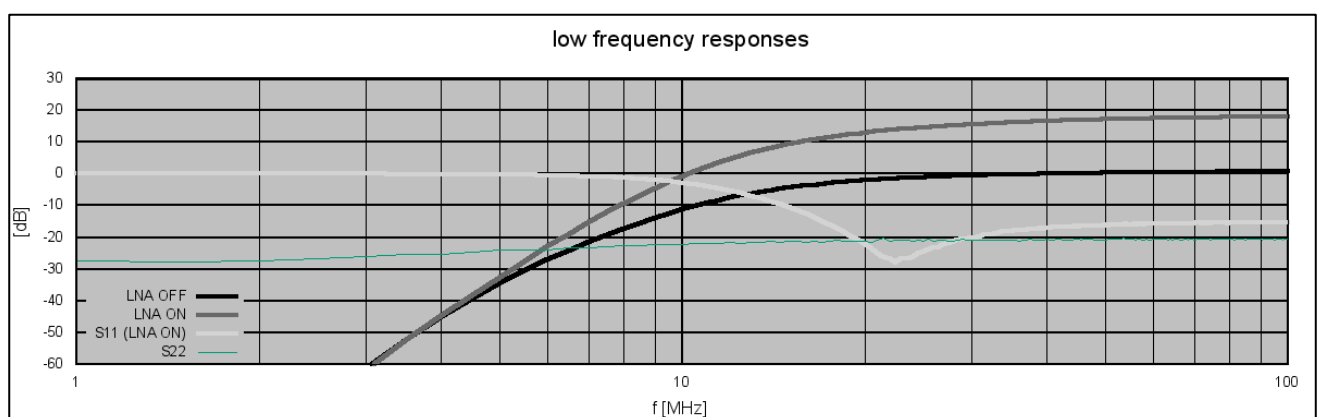
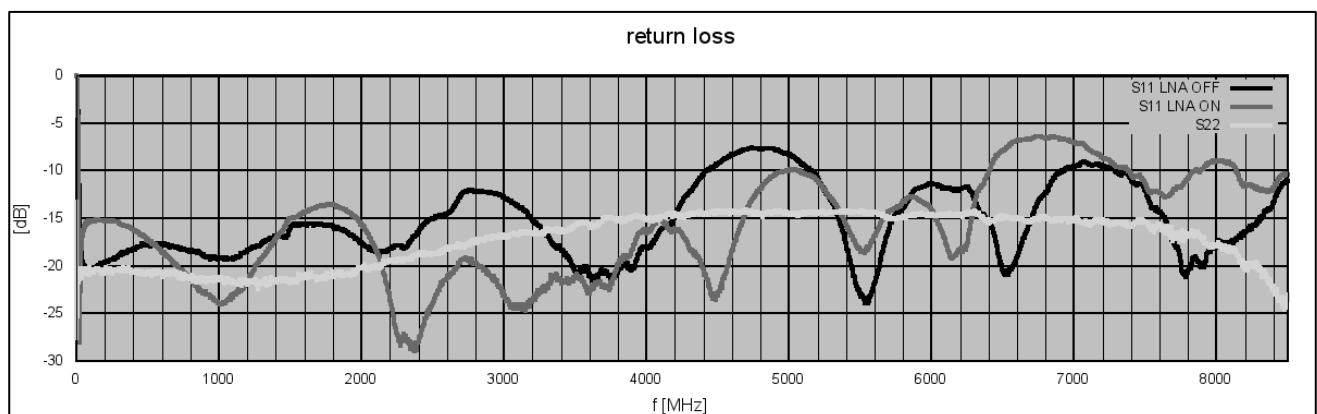
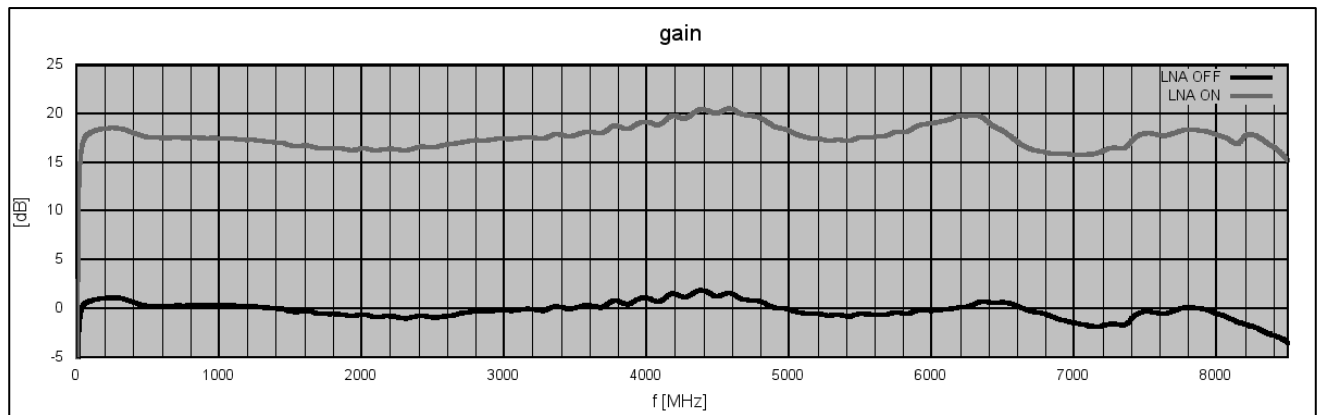
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{IN}/Z_{OUT}		50		ohms	
low frequency	f_{MIN}		20	30	MHz	
high frequency	f_{MAX}	8000	8500		MHz	
high pass suppression	S_{21}		-30		dBr	@ 5 MHz
	S_{21}		<-60		dBr	@ 1 MHz
gain	S_{21}		18		dB	LNA on
gain flatness	ΔS_{21}		± 2.5		dB	LNA on
input return loss	S_{11}		-17		dB	$f \leq 4000$ MHz
	S_{11}		-10		dB	$f > 4000$ MHz
gain	S_{21}		0		dB	LNA off
gain flatness	ΔS_{21}		± 1.5		dB	LNA off
input return loss	S_{11}		-17		dB	$f \leq 4000$ MHz
	S_{11}		-10		dB	$f > 4000$ MHz
output return loss	S_{22}		-17		dB	
reverse isolation	S_{12}		-75		dB	LNA off
output isolation	S_{23}		-23		dB	neighbored outputs (d=1)
	S_{23}		-60		dB	distance > 1
1 dB compression	P_{1dB}		+5		dBm	$f \leq 3$ GHz
3 rd order intercept	OIP3 ¹		+15		dBm	
2 nd order intercept	OIP2		+44		dBm	50/80 MHz
	OIP2		+41		dBm	1000/1100 MHz
	OIP2		+37		dBm	3000/3100 MHz,
	OIP2		+33		dBm	4200/4300 MHz
noise figure	NF		5		dB	LNA on, $f \leq 6$ GHz
	NF		13		dB	LNA off, $f \leq 6$ GHz
maximum input power	$P_{RF\ max}^2$			+32	dBm	CW, no damage
maximum DC voltage	U_{DC}			20	V	all RF ports
ESD discharge resistor	R_{ESD}		4.7		k Ω	all RF ports
RF connectors	X_{RF}	SMA female				

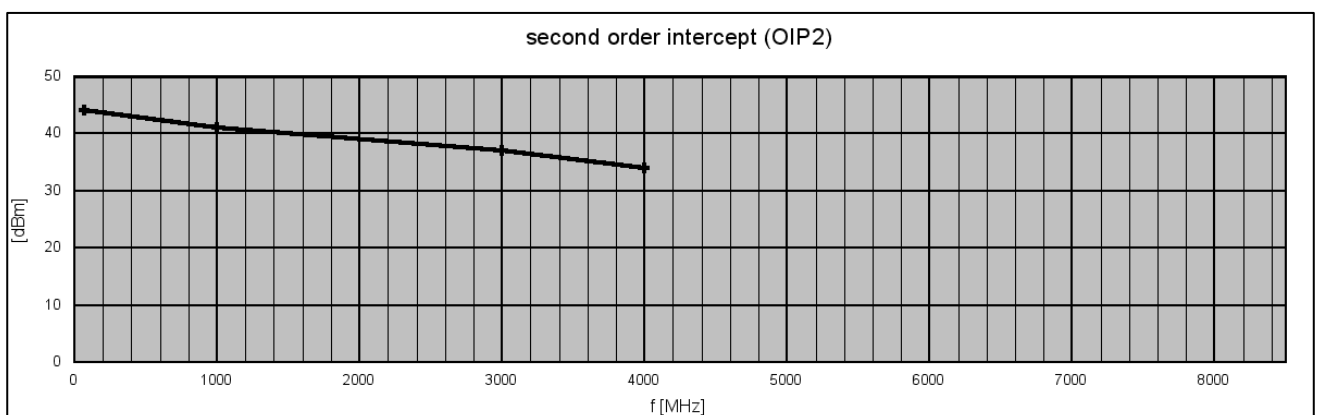
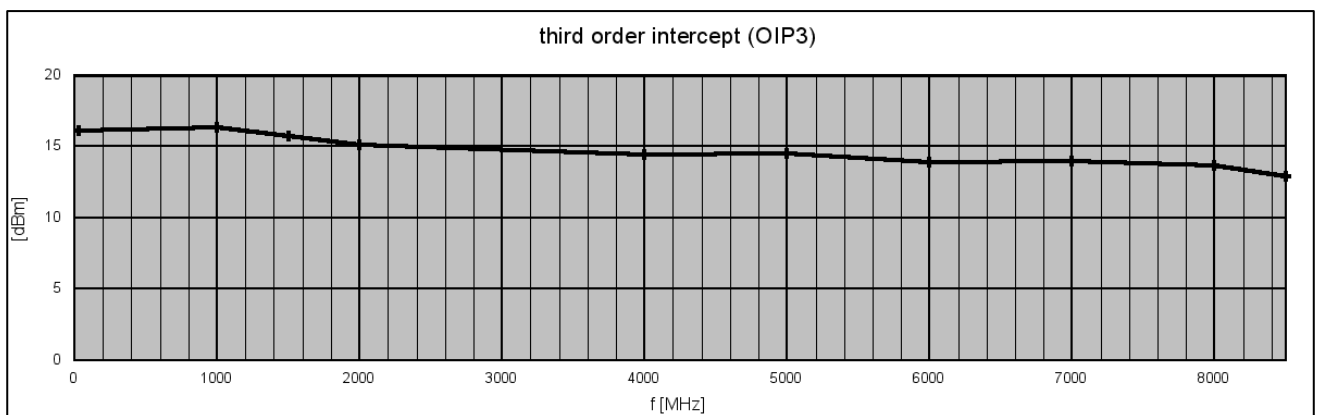
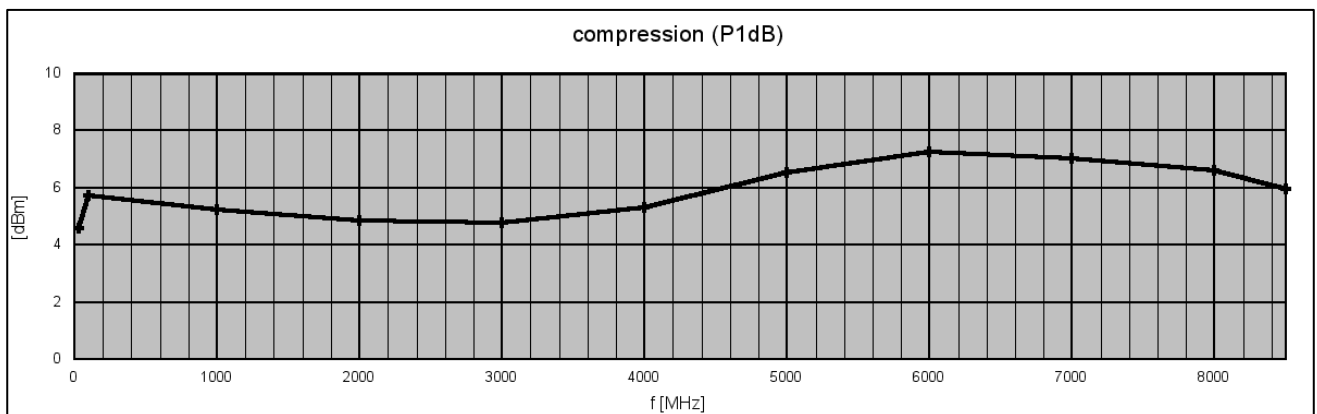
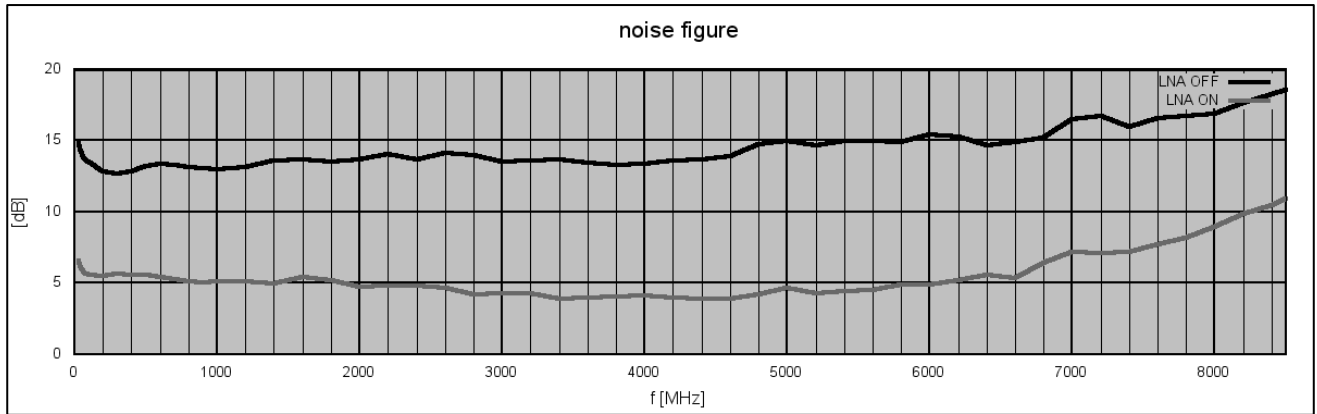
Note 1: frequency space 100 MHz

Note 2: linear operation with input signal level up to +2 dBm.

Common Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
voltage supply range	U _{AC}	90	230	260	V	50 / 60 Hz AC
power consumption	P		13		W	
power socket	X _{AC}	IEC-60320 C14				country specific mains cable
LNA Control	X71, D-SUB, 9 pole, male, Pin 1: LNA_CNTRL, Pin 6,7,8,9 = GND)					
	LVTTL (0V = LNA_OFF, 3V3 = LNA_ON, internal Pullup 10K)					
Dimensions and weight						
dimensions	W x H x D	approx. 482 x 44 x 210			mm	19" 1 U, without connectors and handles
weight	m		3.5		kg	
Environment Conditions						
operating temp. range	T _o	+5		+45	°C	
storage temp. range	T _s	-40		+70	°C	
Product conformity						
Electromagnetic compatibility	EU: in line with EMC directive (2014/30/EC)					applied harmonized standards: EN 61326-1 (for use in industrial environment), EN 61326-2-1, EN 55011 (class B), EN 61000-3-2, EN 61000-3-3
Electrical safety	EU: in line with low voltage directive (2014/35/EC)					applied harmonized standard: EN 61010-1
Ordering information	WSDU-1X16ER_LNA		P/N: 1501.6502.1			

S-Parameters (typical responses)

Dynamic Range (typical responses)

Appearances

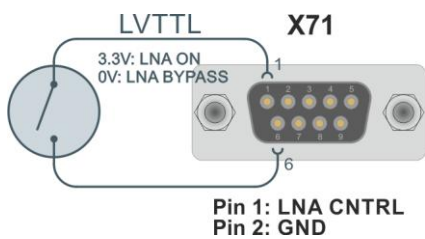
Front View



Rear View



Assignment LNA CNTRL Connector



PIN	1	6,7,8,9	2,3,4,5
Signal	LNA CNTRL LVTTL (0/3.3V)	GND	n.c.

LNA is bypassed when external switch is closed

Related Products

[Active RF Multicouplers](#)

[Active Wideband RF Signalcombiners](#)

[Bi-directional RF Signal Splitters/Combiners](#)

[RF Switches](#)

[RF Switch Matrices](#)

[Programmable RF Attenuators](#)

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