WSDU-1X8AR

8 Way High Dynamic Signal Conditioning Multicoupler 100 kHz…4000 MHz

Features
- wideband
- high dynamic
- variable signal level for each output

Applications
- Broadcast and GNSS distribution
- AM, FM, IBOC, DAB, DVB-T, SDARS
- GNSS: GPS, Galileo, GLONASS, Beidou
- Emulation of handover scenarios

Scope
WSDU-1X8AR is a wideband signal distribution unit consisting of an active multicoupler with additional programmable attenuators per output. The level of each of the 8 outputs can be set over a large power range. The device supports frequencies from 100 kHz up to 4000 MHz.

Distribution without Loss in Level
The RF input the signal is amplified by using broadband low-noise amplifiers with a wide dynamic range. As a result, the distributed input signal is made available at the eight outputs of the multicoupler with up to 9 dB gain. All inputs and outputs have N female connectors on the rear side of the device.

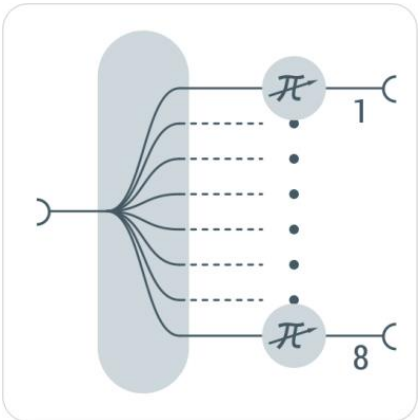
Wideband Distribution Systems
The wide frequency range makes WSDU-1X8AR ideally suited for applications such as research and development (R&D) or production where broadcast and navigation signals must be distributed to many devices under test (DUTs).

High Output Level Dynamic
Each output is equipped with a programmable attenuator with a dynamic of 95.25 dB. The attenuation is settable in 0.25 dB steps. The attenuation can be set individual for each channel.

High Output-to-Output Isolation
WSDU-1X8AR features a high port-to-port isolation. Thus, the connected receivers are prevented from affecting each other, e.g. via local oscillators or synthesizers.

Multiple Control Modes
WSDU-1X8AR can be controlled manually either via front panel or via standard remote interfaces USB and LAN. The device is controlled through simple ASCII strings.

Principal Diagram



RF Specification

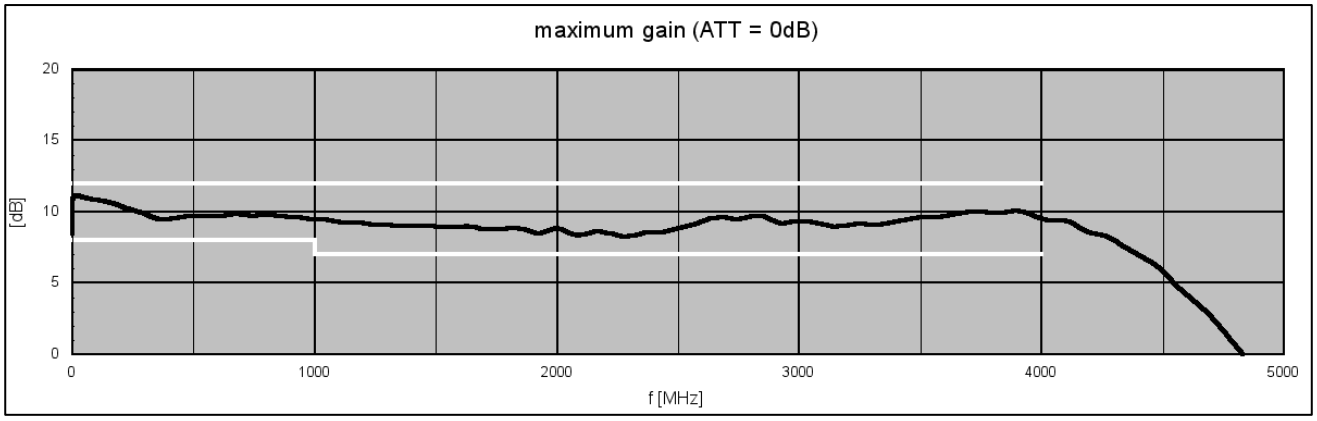
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ohm	
low frequency	f_{min}		100	150	kHz	
high frequency	f_{max}	4000	4500		MHz	
gain	S_{21}	8	10	12	dB	f ≤ 1 GHz, ATT = 0 dB
	S_{21}	7	9	11		f > 1 GHz, ATT = 0 dB
gain flatness	ΔS_{21}		±1.5		dB	
attenuation range	a	0.00		95.25	dB	
attenuation step size	Δa		0.25		dB	
input return loss	S_{11}		-11	-7	dB	f < 500 kHz
	S_{11}		-15	-10	dB	500 kHz ≤ f ≤ 3GHz
	S_{11}		-11	-8	dB	f > 3 GHz
output return loss	S_{22}		-13	-10	dB	
reverse isolation	S_{12}		-100		dB	
output isolation	S_{23}		-40	-35	dB	neighboured outputs (d=1)
	S_{23}		-75		dB	distance > 1
1 dB compression	P_{1dB}	+13	+15		dBm	f ≤ 1 GHz, ATT = 0 dB
	P_{1dB}	+10	+13			f > 1 GHz
3rd order intercept	OIP3[1]	+24	+27		dBm	f = 1000 MHz, @ ATT = 0 dB
	OIP3[1]	+21	+24		dBm	f = 2000 MHz, @ ATT = 0 dB
	OIP3[1]	+19	+22		dBm	f = 3000 MHz, @ ATT = 0 dB
noise figure	NF		13	16	dB	
maximum input power	$P_{in\ max}$			+15	dBm	CW, no damage
DC voltage	U_{DC}			20	V	input and outputs
ESD discharge resistor	R_{ESD}		4.7		kΩ	input and outputs
RF connectors	X_{RF}	SMA female				

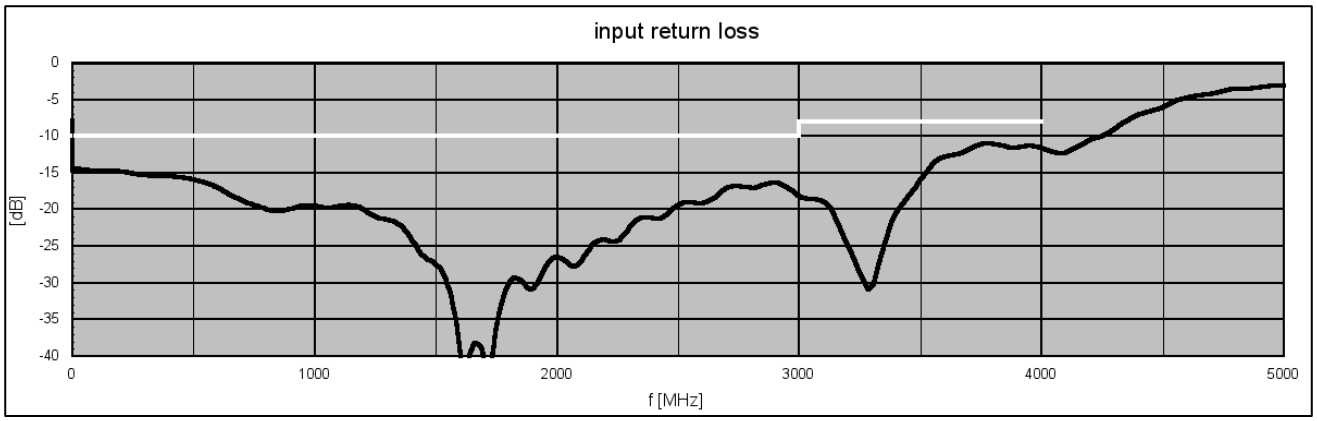
Note 1: frequency space 100 MHz

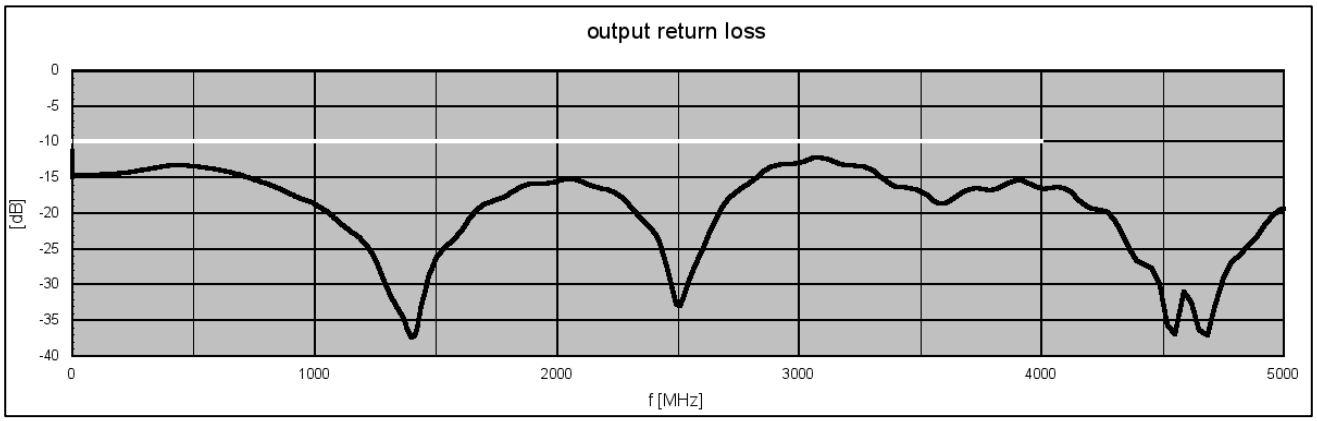
Common Specification

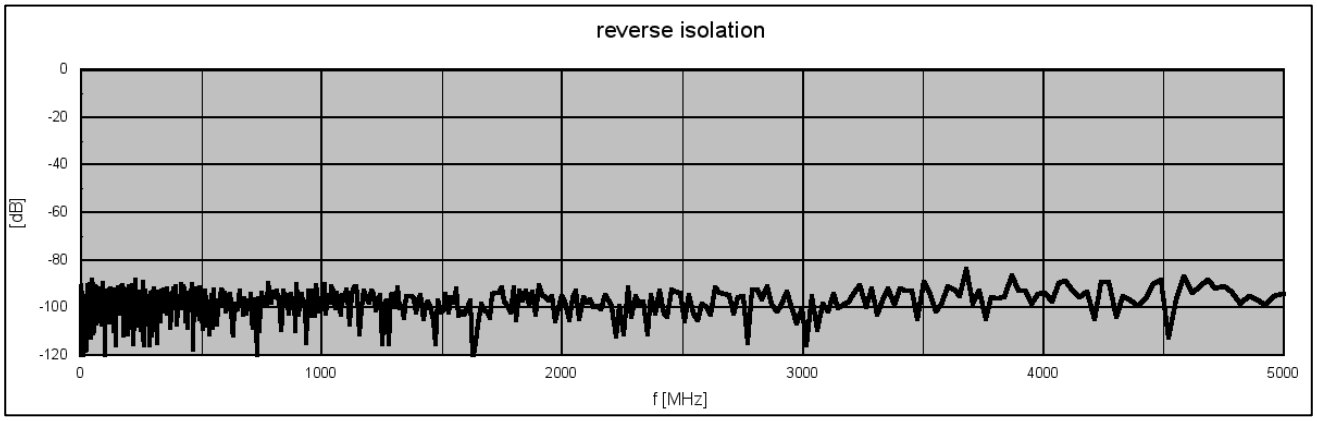
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
voltage supply range	U_{AC}	90	230	260	V	50 / 60 Hz AC
power consumption	P_{AC}		20	50	W	
power socket	X_{AC}	IEC-60320 C14				country specific mains cable
Dimensions and weight						
dimensions	W x H x D	approx. 482 x 44 x 265			mm	19” 1 U, without connectors and handles
weight	m		3.4		kg	
Environment conditions						
operating temp. range	T_o	+5		+45	°C	
storage temp. range	T_s	-40		+70	°C	
Remote interfaces (variant with remote device monitoring)						
remote ports	LAN	10/100BaseT		TCP/IP		RJ45
	USB	2.0 (high speed)				USB type B
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-1X8AR		P/N: 1807.6302.1			

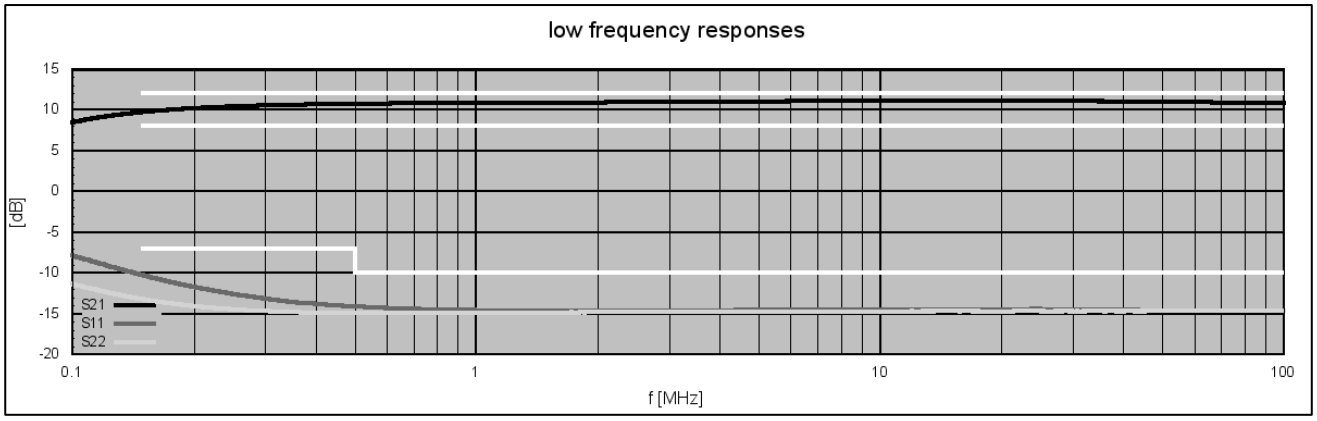
S-Parameters (typical responses)

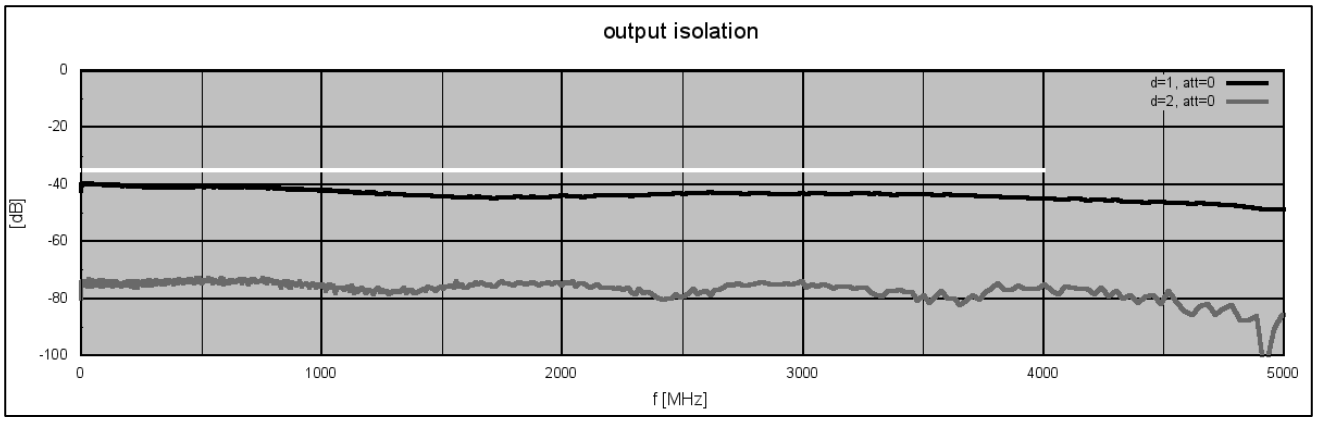


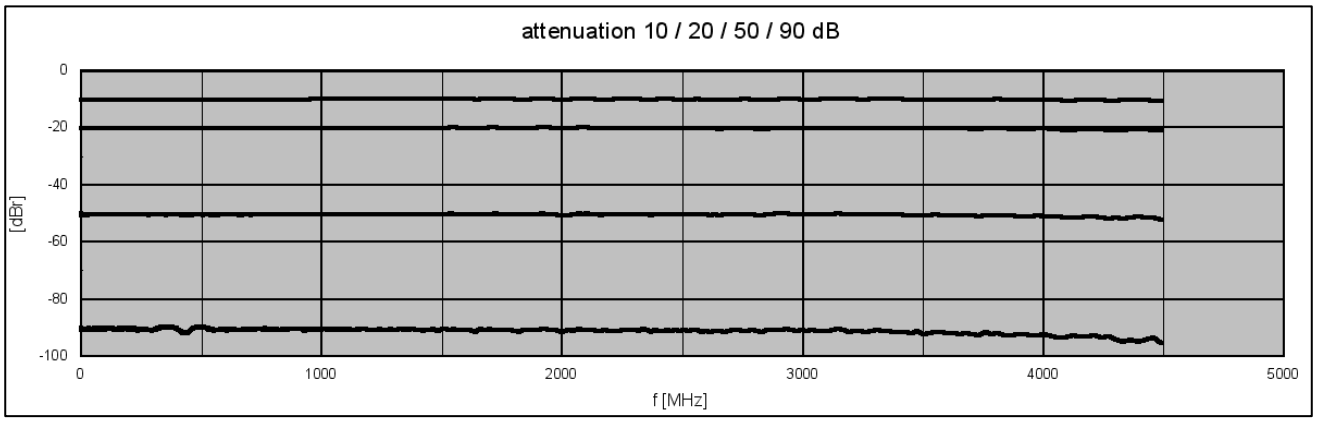


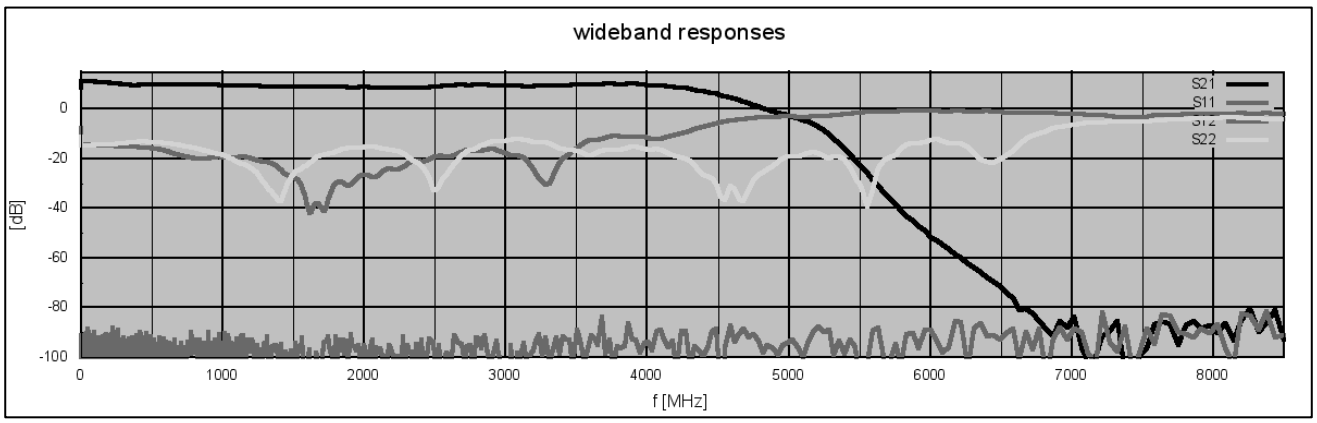




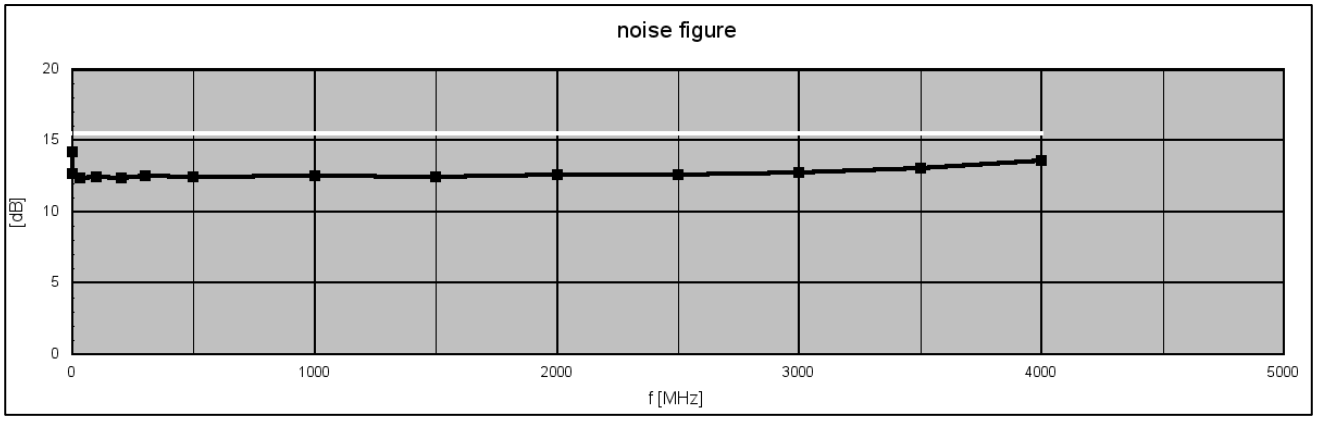

low frequency responses
15
10
5
0
-5
-10
-15
-20
[dB]
S21
S11
S22
0.1
1
10
100
f [MHz]

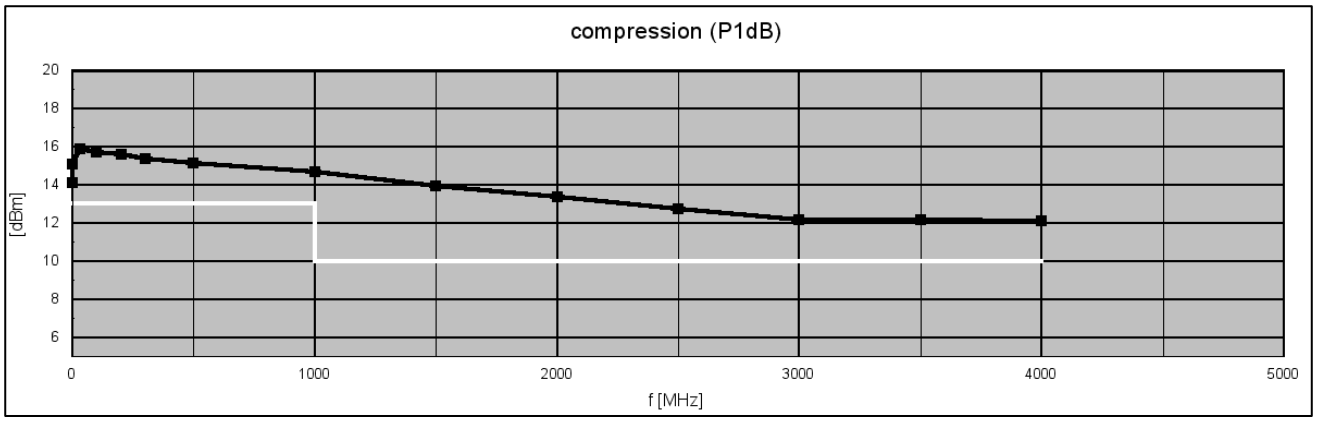

output isolation
0
-20
-40
-60
-80
-100
[dB]
d=1, att=0
d=2, att=0
0
1000
2000
3000
4000
5000
f [MHz]

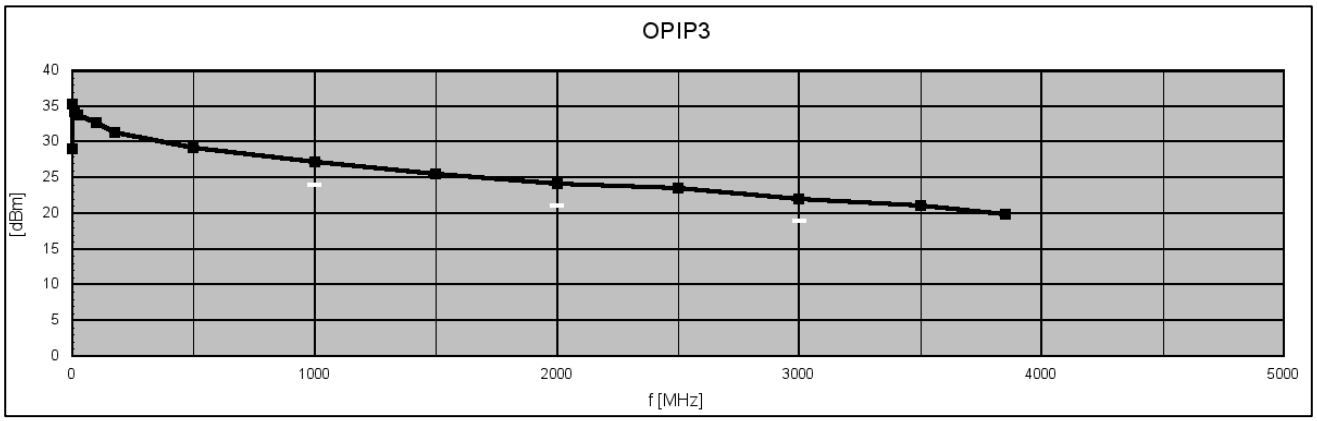

attenuation 10 / 20 / 50 / 90 dB
0
-20
-40
-60
-80
-100
[dBr]
0
1000
2000
3000
4000
5000
f [MHz]


wideband responses
0
-20
-40
-60
-80
-100
[dB]
S21
S11
S22
0
1000
2000
3000
4000
5000
6000
7000
8000
f [MHz]

Dynamic Range





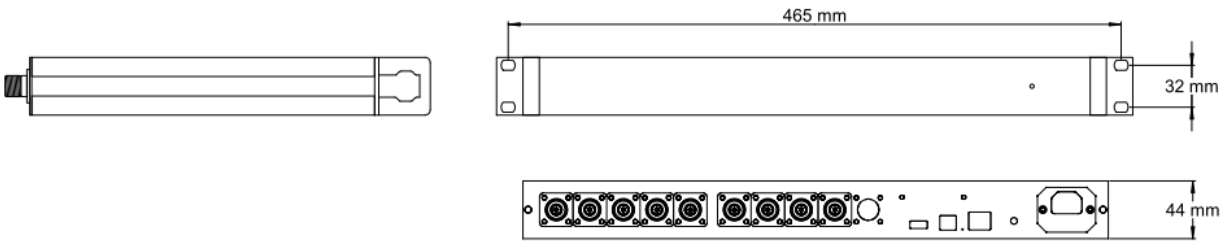


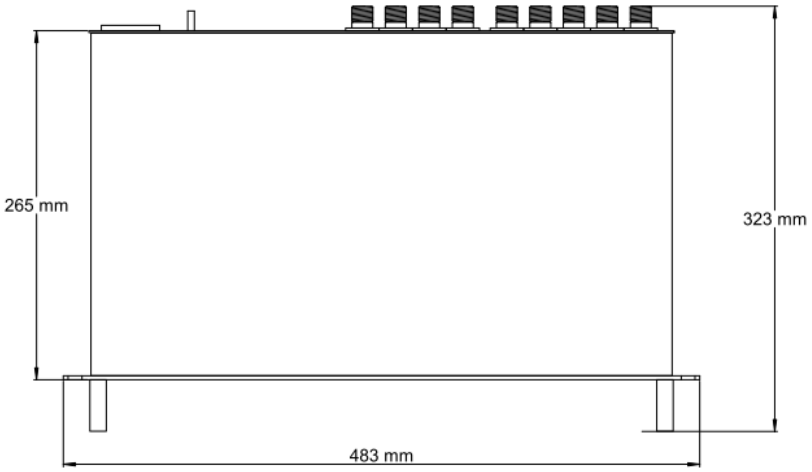
Appearances

Front View

Rear View

Dimensions





all dimensions in mm
± 2 mm

Related Products

Product	P/N	Description
WSDU-1X8LR	1107.6152	High Dynamic 8 Way Multicoupler for Broadcast Signals 100 kHz … 4000 MHz AC or DC power supply
WSDU-2X4LR	1107.6252	High Dynamic 2 Section 4 Way Multicoupler for Broadcast Signals 100 kHz … 4000 MHz AC or DC power supply
WSDU-1X8R	1107.6102	High Dynamic 8 Way Multicoupler 100 kHz … 4000 MHz AC or DC power supply
WSDU-2X4R	1107.6202	High Dynamic 2 Section 4 Way Multicoupler 100 kHz … 4000 MHz AC or DC power supply
WSDU-1X8AR	1807.6302	8 Way High Dynamic Signal Conditioning Multicoupler 100 kHz…4000 MHz AC or DC power supply
WSDU-1X8SR	1502.6102	High Dynamic 1X8 Shortwave Signal Distribution Unit 200 kHz … 30 MHz AC or DC power supply Variant with LAN remote interface with SNMPv2 trap function available
WSDU-2X4SER	2306.6102	2-Section 4-Way Signal Distribution Unit Section A: 200 kHz … 30 MHz Section B: 20… 8000 MHz AC or DC power supply Variant with LAN remote interface with SNMPv2 trap function available
WSDU-1X8ER	1501.6302	Extremely Wideband 1 to 8 Signal Distribution Unit 20 … 8000 MHz AC or DC power supply Variant with LAN remote interface with SNMPv2 trap function available
WSDU-2X4ER	1501.6202	Extremely Wideband 2 Section 1X4 Signal Distribution Unit 20 MHz… 8000 MHz AC or DC power supply Variant with LAN remote interface with SNMPv2 trap function available
WSDU-1X8UR	2109.6002	Ultra-Wideband 8-Way Signal Distribution Unit 100 kHz … 18 GHz AC or DC power supply LAN remote interface with SNMPv2 trap function