

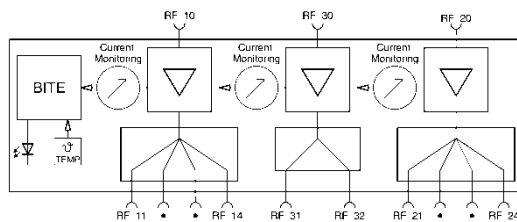
Extremely Wideband 2 CH 1 to 4 plus 1 to 2 Signal Distribution Unit 20 ... 8000 MHz

Features

- 3 independent RF channels
- useable in 1X8 configuration
- without signal losses
- low power consumption
- built-in test capability

Applications

- VHF, UHF and SHF
- signal distributions
- radio monitoring
- receiving systems
- wideband LO distribution
- production and end test
- R&D



Scope

WSDU-2X4E+ is an extremely wideband multicoupler containing two channels 1 to 4 plus one channel 1 to 2 in a single module. The frequency range extends from 20 MHz to more than 8000 MHz.

Lossless Signal Distribution

The RF input signal is amplified by broadband low-noise amplifiers with a wide dynamic range. As a result, the distributed input signals are made available at the outputs of the three multicouplers without any loss in level. All inputs and outputs are SMA female connectors.

Large Scale Distribution Systems

In combination with the system platform SR6-11C, large-scale distribution systems can be realized in a scalable and flexible way. Up to 11 modules can be integrated in one SR6-11C system platform in compact 6 U.

Various Multicoupler Solutions

With the help of WSDU-2X4E+, various distribution solutions can be realized.

Two-channel 1X4 distributions and an additional 1X2 multicoupler are available in one single module. Combining the channel 1X2 with the two 1X4 channels, an ultra-wideband 1X8 multicoupler can easily be realized.

Best Amplitude and Phase Balance

In applications such as LO distribution, good amplitude and phase balance performance is required. The design of WSDU-2X4E+ is optimized for best phase and amplitude balance.

Combination with Other Modules

Becker Nachrichtentechnik GmbH offers a variety of active multicouplers and switch modules which are optimized for application in further frequency ranges. All module types are compatible with the SR6-11C system platform and can be combined. Please refer to chapter 'Related Products' for more information about WSDU modules offered by Becker Nachrichtentechnik GmbH.

Device Monitoring

WSDU-2X4E+ module is equipped with a built-in test capability. In combination with the SR6-11C system platform equipped with the controller unit SR6-CU, device monitoring of all installed WSDU-2X4E+ modules is possible. The monitoring function (BITE) allows a read out of the status of all installed multicoupler modules via USB or LAN interface of the controller module. This offers the

possibility to query information about operating points of the internal wideband amplifier stages, the temperature and the device identification in form of SCPI-oriented ASCII strings. WSDU-2X4E+ is able to identify failures and automatically inform the monitoring system via the SR6-CU unit.

RF Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ohm	
low frequency	f_{min}		10	20	MHz	
high frequency	f_{max}	8000	8500		MHz	
1X4 multicoupler		2 channels				
1X2 multicoupler		1 channel				
RF connectors		SMA female				
1X4 multicouplers						
gain	S_{21}	3	4	5.5	dB	$f \leq 1.0$ GHz
	S_{21}	1.5	3.5	5.5	dB	$1.0 \text{ GHz} < f \leq 7.0$ GHz
	S_{21}	0.5	3.5	5.5	dB	$f > 7.0$ GHz
gain flatness	ΔS_{21}		± 1		dB	
input return loss	S_{11}		-15	-9	dB	
	S_{22}		-20	-15	dB	$f \leq 2.0$ GHz
output return loss	S_{22}		-15	-10	dB	$f > 2.0$ GHz
	S_{12}		-70	-55	dB	
reverse isolation	S_{12}		-70	-55	dB	
output isolation	S_{23}		-30	-20	dB	distance = 1
	S_{23}		-50	-40	dB	distance > 1
channel isolation	CH_{ISO}		-90	-70	dB	between 1x4 couplers
1 dB compression	P_{1dB}	+3	+6		dBm	
3 rd order intercept	$OPIP3^1$	+17	+21		dBm	$f \leq 1$ GHz
	$OPIP3^1$	+14	+17		dBm	$1 \text{ GHz} < f \leq 4.0$ GHz
	$OPIP3^1$	+11	+15		dBm	$f > 4.0$ GHz
2 nd order intercept	$OPIP2^2$	+25	+40		dBm	40/60 MHz, 1000/1100 MHz
	$OPIP2^2$	+17	+30		dBm	3000/3100 MHz, 3900/4000 MHz
noise figure	NF		9	11	dB	$f < 100$ MHz
	NF		7.5	9	dB	$100 \text{ MHz} \leq f \leq 7.0$ GHz
	NF		8	10	dB	$f > 7.0$ GHz
input power	P_{in}			+10	dBm	CW, no damage



Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
1X2 multicoupler						
gain	S ₂₁	-1	1	2.5	dB	
gain flatness	ΔS ₂₁		±0.8		dB	
input return loss	S ₁₁		-15	-11	dB	f ≤ 6 GHz
	S ₁₁		-12	-9	dB	f > 6 GHz
output return loss	S ₂₂		-16	-13	dB	f ≤ 4 GHz
	S ₂₂		-10	-7		f > 4 GHz
reverse isolation	S ₁₂		-35	-25	dB	
output isolation	S ₂₃		-20	-17	dB	
1 dB compression	P _{1dB}	5	8		dBm	
3 rd order intercept	OIP3 ¹	+16	+21			f ≤ 4.0 GHz
	OIP3 ¹	+13	+17			f > 4.0 GHz
2 nd order intercept	OIP2 ²	+25	+35		dBm	40/60 MHz, 1000/1100 MHz
	OIP2 ²	+17	+35		dBm	3000/3100 MHz, 3900/4000 MHz
noise figure	NF		8	10	dB	f ≤ 100 MHz
	NF		7	9	dB	f > 100 MHz
input power	P _{in max}			+5	dBm	CW, no damage
1X8 multicoupler (user cascade of 1x2 and 2x4, typical values for reference only)						
gain	S ₂₁		5		dB	f ≤ 1.0 GHz
	S ₂₁		3		dB	f > 1.0 GHz
gain flatness	ΔS ₂₁		±2		dB	
input return loss	S ₁₁		-16		dB	
output return loss	S ₂₂		-17		dB	f ≤ 6.5 GHz
	S ₂₂		-13		dB	f > 6.5 GHz
reverse isolation	S ₁₂		-90		dB	
output isolation	S ₂₃		-30		dB	distance = 1
	S ₂₃		-50		dB	distance > 2
1 dB compression	P _{1dB}		+6		dBm	f ≤ 3.0 GHz
	P _{1dB}		+5		dBm	f > 3.0 GHz
3 rd order intercept	OIP3 ¹		+19		dBm	f ≤ 1.5 GHz
	OIP3 ¹		+16		dBm	1.5 GHz < f ≤ 4.0 GHz
	OIP3 ¹		+14		dBm	f > 4.0 GHz
2 nd order intercept	OIP2 ²		+38		dBm	40/60 MHz
	OIP2 ²		+33		dBm	1000/1100 MHz
	OIP2 ²		+26		dBm	3000/3100 MHz, 3900/4000 MHz
noise figure	NF		11		dB	f < 100 MHz
	NF		9.5		dB	f ≥ 100 MHz

Note 1: P_{in} = 2 x -10 dBm, specified and tested for Δf = 50 MHz

Note 2: P_{in} = 2 x -10 dBm, specified and tested for mentioned frequency pairs

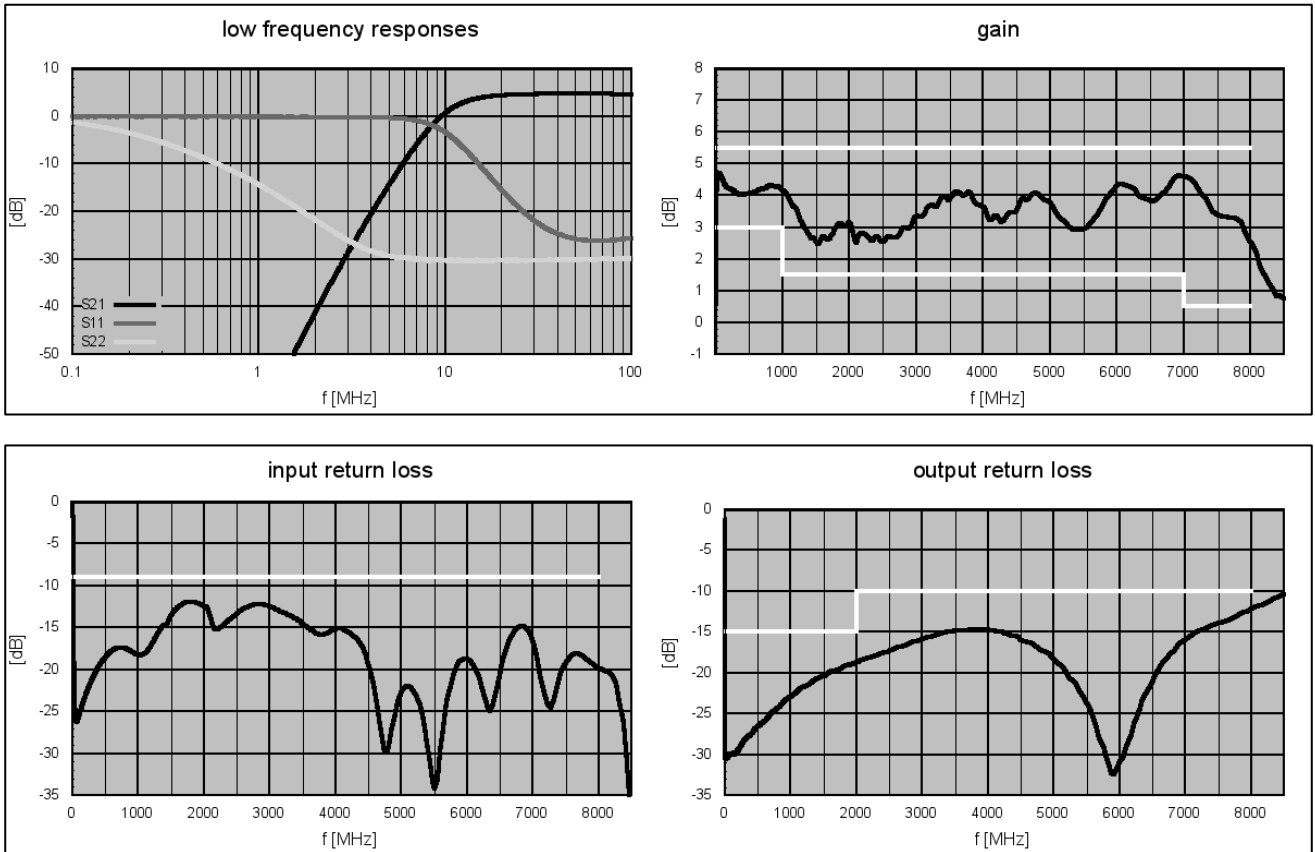
OIP2 & OIP3 values are the average of the upper and lower intermodulation distortion.

Common Specifications

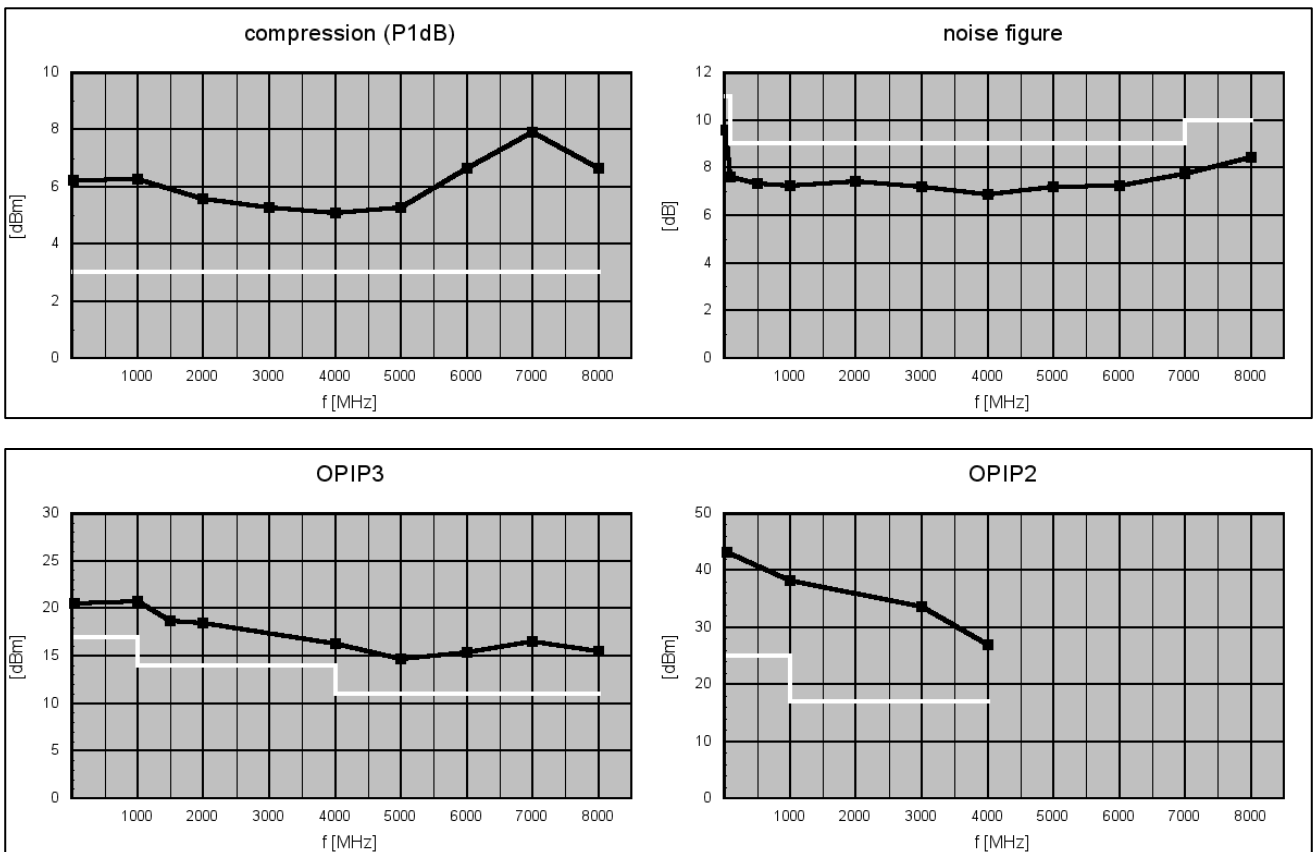
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	U	23.5		24.5	V	DC
power consumption	P		5		W	
dimensions	L x W x H	approx. 197 x 30 x 262			mm	6 U, 6 HP
weight			1.2		K	
operating temp. range	T _o	+5		+60	°C	
storage temp. range	T _s	-40		+70	°C	
ordering information		WSDU-2X4E+		1501.6200.1		



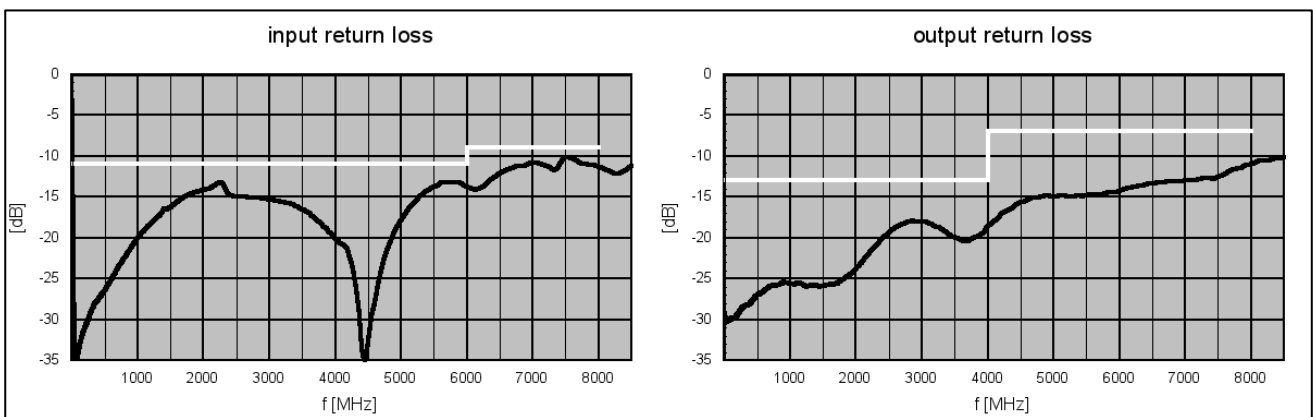
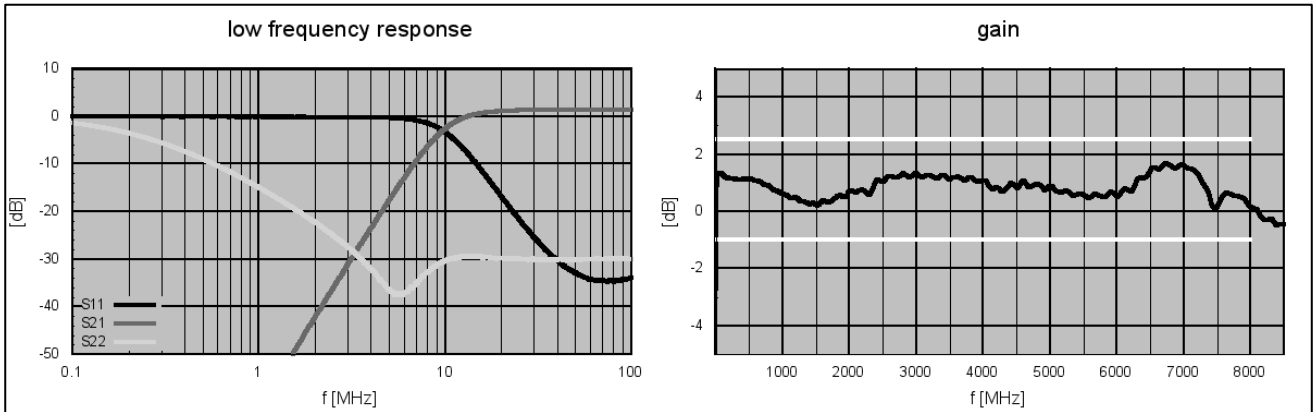
S-Parameters (1X4)



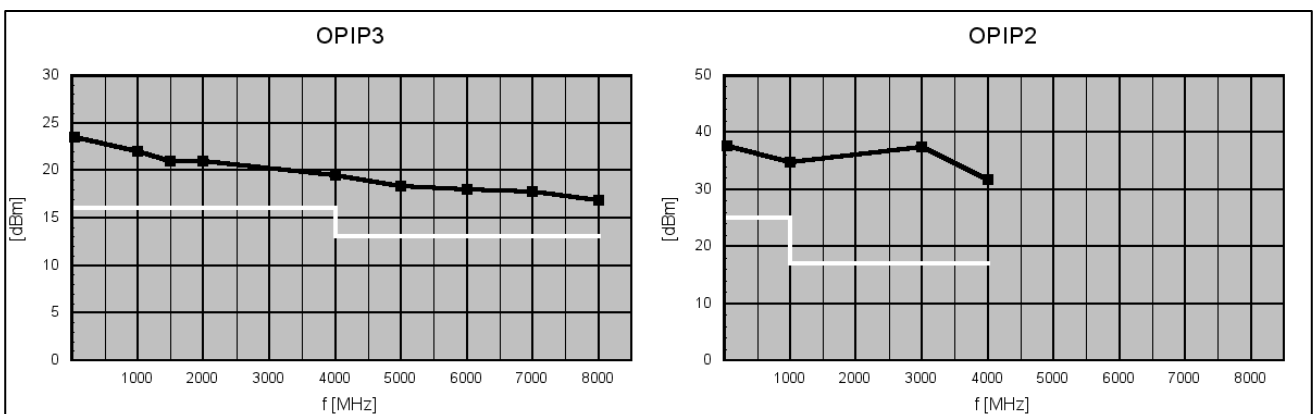
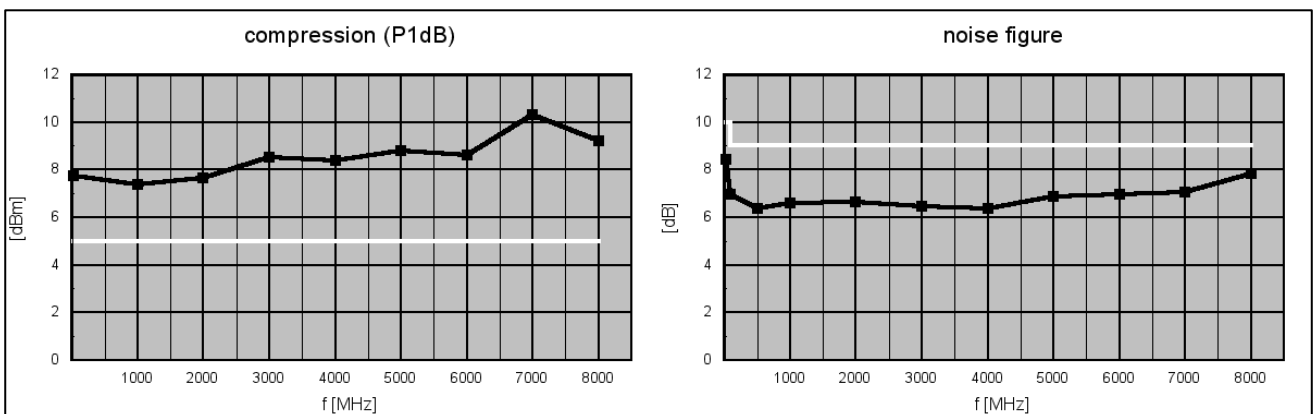
Dynamic Range (1X4)



S-Parameters (1X2)



Dynamic Range (1X2)



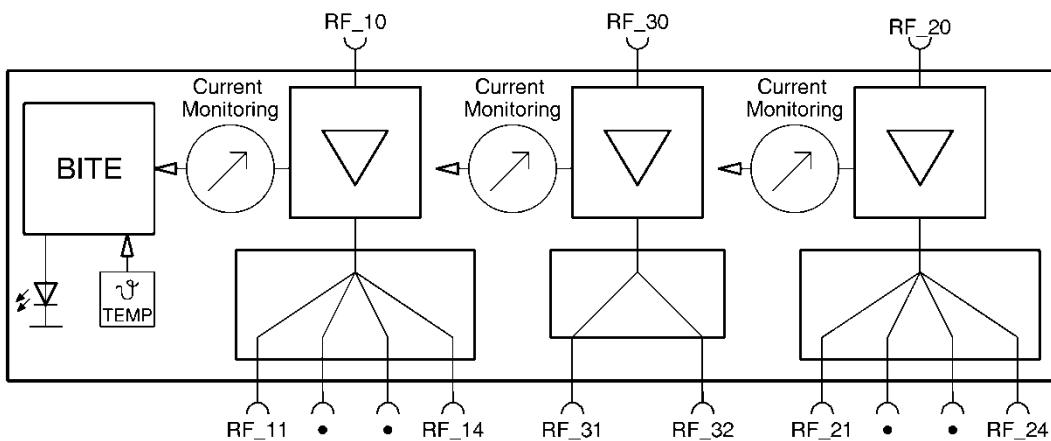
Front View



Rear View (similar appearance)

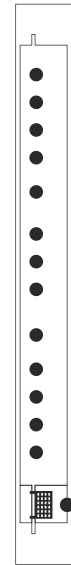
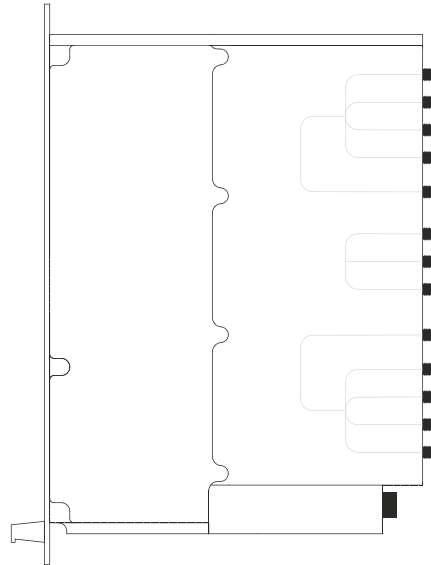


Block Diagram



Dimensions

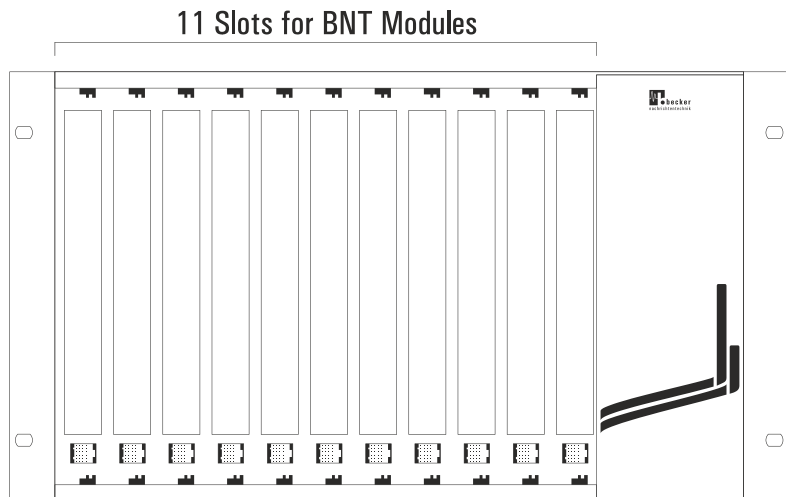
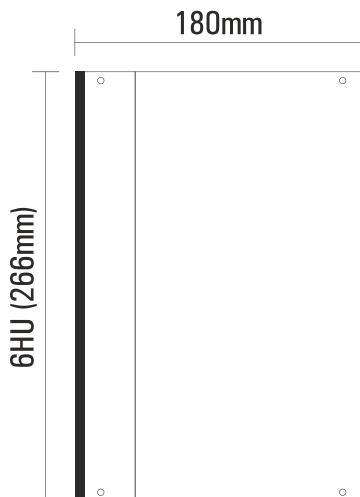
Status Indicator



RF Ports

SR6-11C
Connector

SR6-11C System Platform

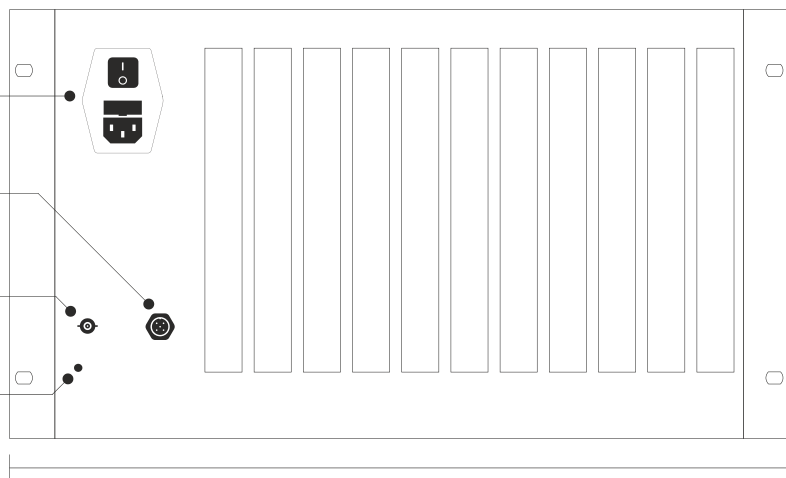


AC Power Supply

Binary Interface

TRIGGER-IO

Power Indicator



19" (482mm)



Related Products

Product	Description	P/N
SR6-11C	System Platform with 11 Slots	1409.1202.1
SR6-CU	Controller Unit with LAN and USB	1409.3000.1
WSDU-2X4ER	Extremely Wideband Two Channel 1X4 Signal Distribution Unit 20 ... 8000 MHz, 19" 1 U Device	1501.6202.2
WSDU-1X4ER	Extremely Wideband 1X4 Multicoupler 20 ... 8000 MHz, 19" 1 U Device	1501.6102.1
WSDU-1X8ER	Extremely Wideband 1X8 Signal Distribution Unit 20 ... 8000 MHz, 19" 1 U Device	1501.6302.1
WSDU1X8	8 Way Multicoupler 100 kHz ... 4000 MHz	1202.6100.1
WSDU-1X2PL	5 W Medium Output Power Multicoupler 20 ... 2800 MHz	1202.6300.3
WSDU-1X8P	8 x 400 mW 8 Way Multicoupler 20... 2700 MHz	1209.6001.1
WSDU-1X8S	8 Way Multicoupler for the Short Wave Range 1.7 ... 30 MHz	1502.6100.1

