

## WSDU-1X8A

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

### Features

- wideband
- high dynamic
- high level range

### Applications

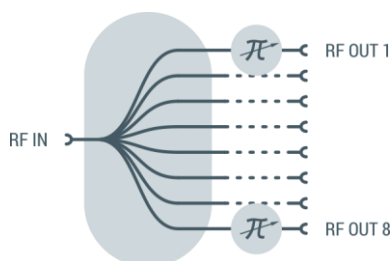
- Broadcast and GNSS distribution
- AM, FM, IBOC, DAB, DVB-T, SDARS
- GNSS: GPS, Galileo, GLONASS, Beidou
- R&D (Research & Development)
- Product validation
- Production



### Scope

The WSDU-1X8A is a wideband signal distribution unit which consists an active multicoupler with programmable attenuators in each output path. As a result, the level in each of the 8 outputs can be set individually over a large range. The module operates in the frequency range 100 kHz to more than 4000 MHz. The slot-in module is foreseen for integration into SR6-11C system platform.

### Principal Block Diagram



### Distribution without Loss in Level

The RF input signals are amplified 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. The RF in- and outputs are SMA female connectors, located on the rear side of the module.

### Wideband Distribution Systems

The wide frequency range makes WSDU-1X8A 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 setting range of 95.25 dB. The attenuators are settable individual for each channel in 0.25 dB steps.

### High Output-to-Output Isolation

The WSDU-1X8A features a high output-to-output isolation. Thus, changing the load at an output causes nearly no effects to the power level at the other outputs.

### Remote Control

In combination with the SR6-CU controller module, the WSDU-1X8A is remote controllable via standard interfaces USB and LAN with simple SCPI orientated ASCII strings. The WSDU-1X8A has a standby function for energy saving.

### Built-In Test Function

Total current consumption, operating points of amplifier stages and internal temperature of WSDU-1X8A are monitored. The module status can be read out via remote interface.

**RF Specification**

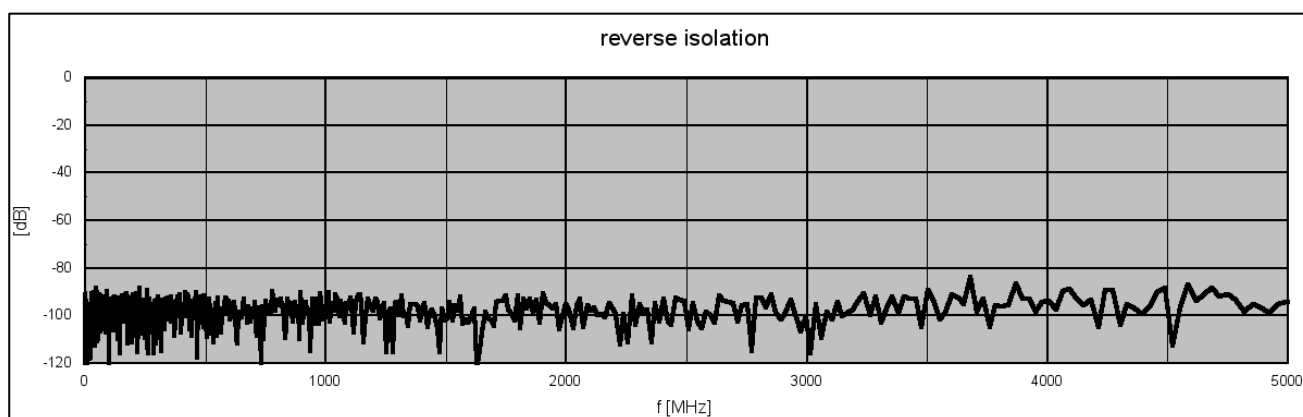
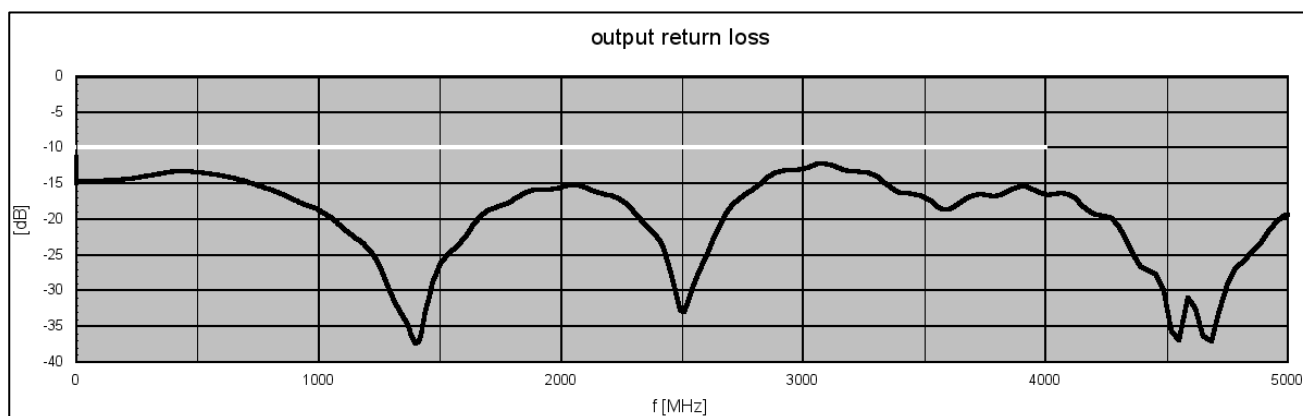
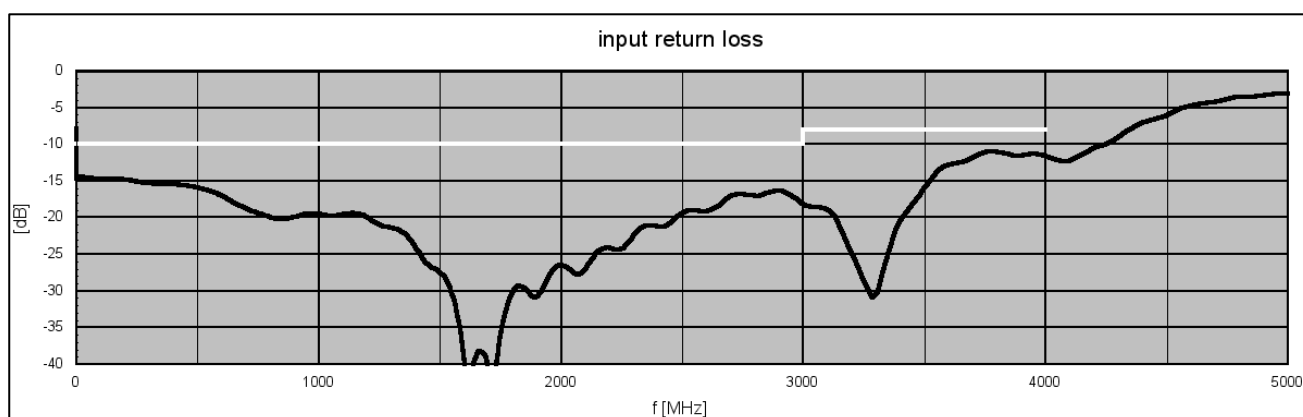
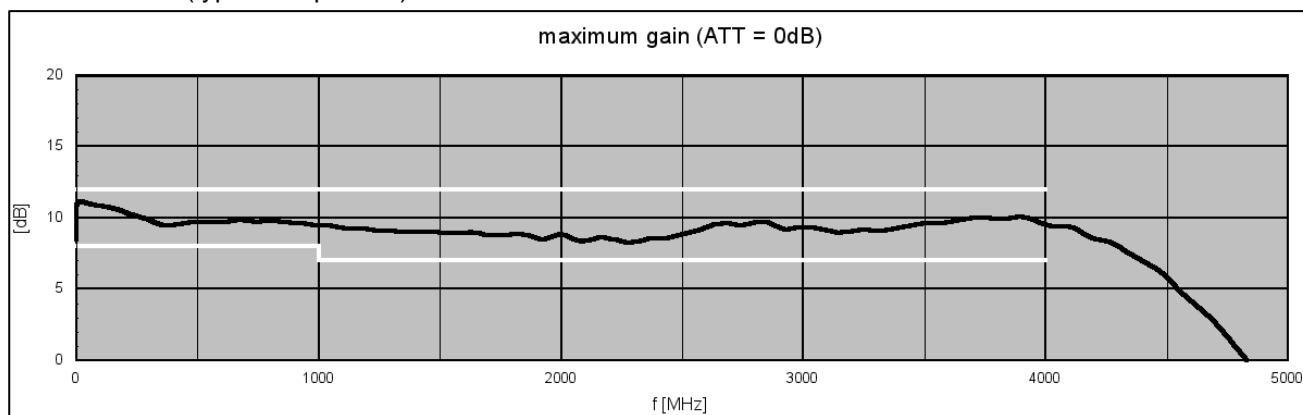
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	$Z_{IN}/Z_{OUT}$		50		$\Omega$	
low frequency	$f_{MIN}$		100	150	kHz	
high frequency	$f_{MAX}$	4000	4500		MHz	
gain	$S_{21}$	8	10	12	dB	$f \leq 1000 \text{ MHz}$ , $ATT = 0 \text{ dB}$
	$S_{21}$	7	9	12		$f > 1000 \text{ MHz}$ , $ATT = 0 \text{ dB}$
attenuation range	a	0.00		95.25	dB	
attenuation step size	$\Delta a$		0.25		dB	
input return loss	$S_{11}$		-14	-10	dB	$f \geq 500 \text{ kHz}$
output return loss	$S_{22}$		-15	-10	dB	
reverse isolation	$S_{12}$		-90		dB	
output isolation	$S_{23}$		-40	-35	dB	neighbouring outputs (d=1)
	$S_{23}$		-75		dB	distance > 1
1 dB compression	$P_{1dB}$	+13	+16		dBm	$f \leq 1 \text{ GHz}$ , $ATT = 0 \text{ dB}$
	$P_{1dB}$	+10	+13			$f > 1 \text{ GHz}$
3 <sup>rd</sup> order intercept	$OIP3^1$	+24	+27		dBm	$f = 1000 \text{ MHz}$ , $ATT = 0 \text{ dB}$
	$OIP3^1$	+21	+24		dBm	$f = 2000 \text{ MHz}$ , $ATT = 0 \text{ dB}$
	$OIP3^1$	+19	+22		dBm	$f = 3000 \text{ MHz}$ , $ATT = 0 \text{ dB}$
noise figure	NF		12	16	dB	
maximum input power	$P_{RF}$			+15	dBm	CW, no damage
DC voltage	$U_{DC}$			20	V	input and outputs
ESD discharge resistor	$R_{ESD}$		4.7		k $\Omega$	input and outputs
RF connectors	$X_{RF}$	SMA female				

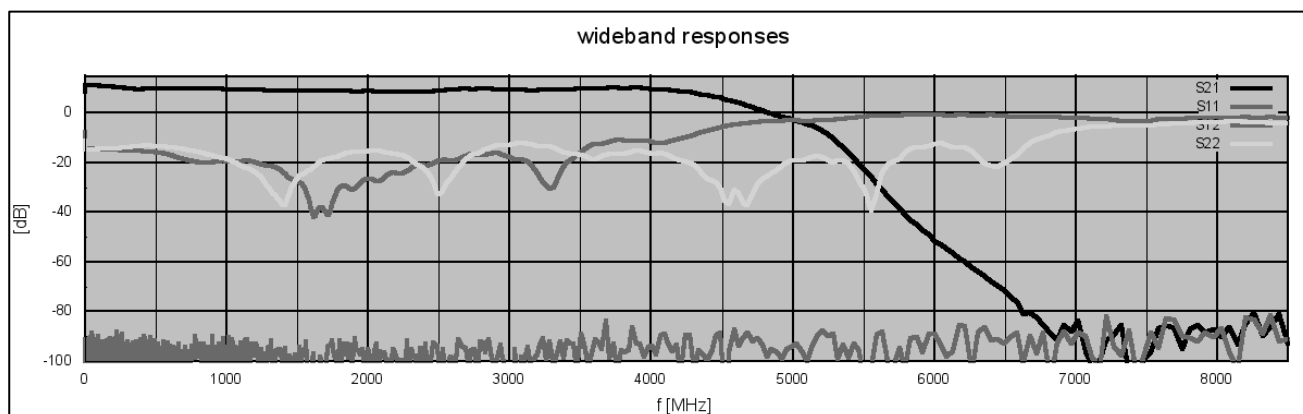
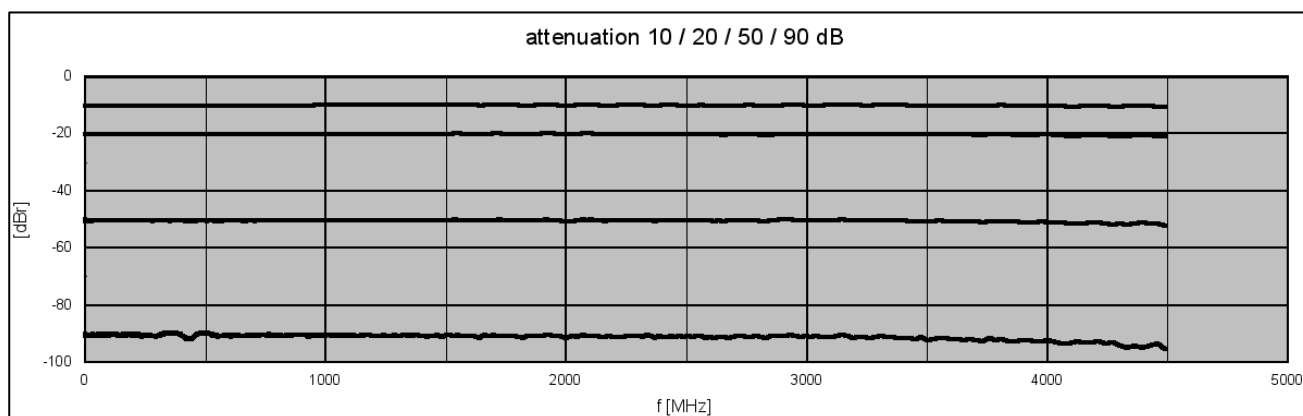
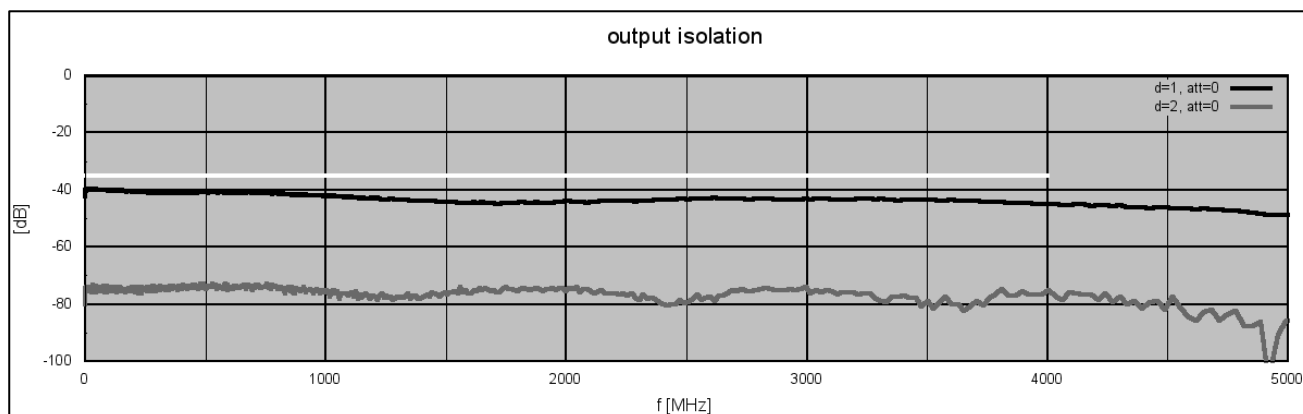
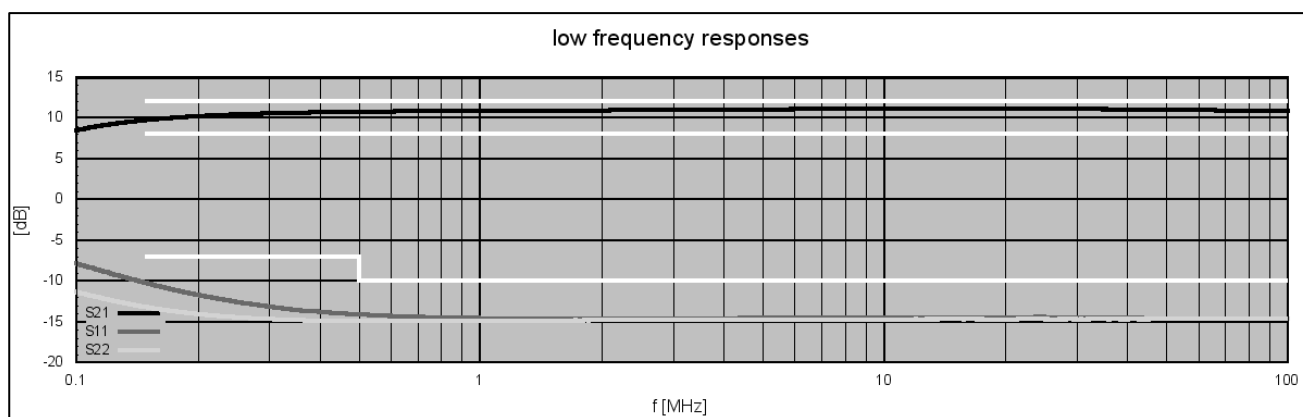
Note 1: frequency space 100 MHz

**Common Specification**

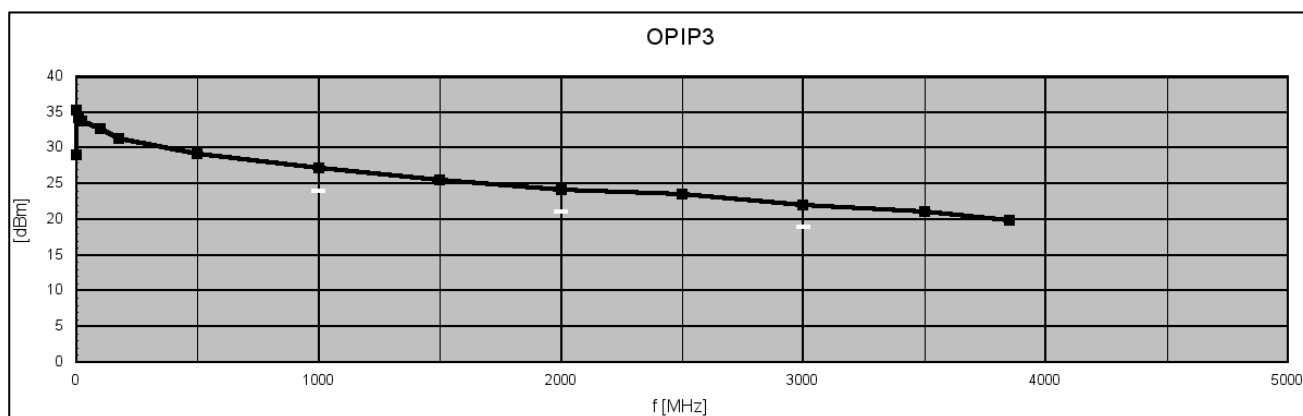
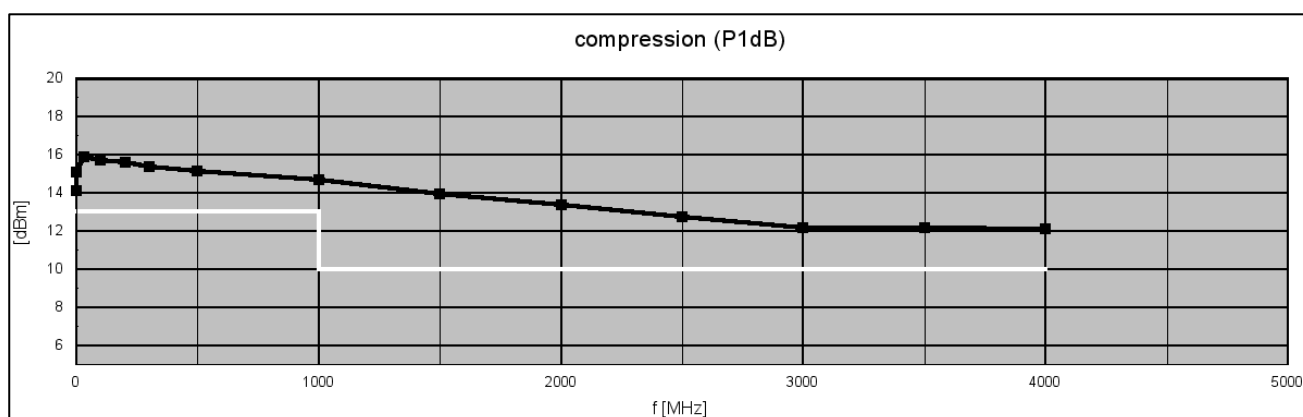
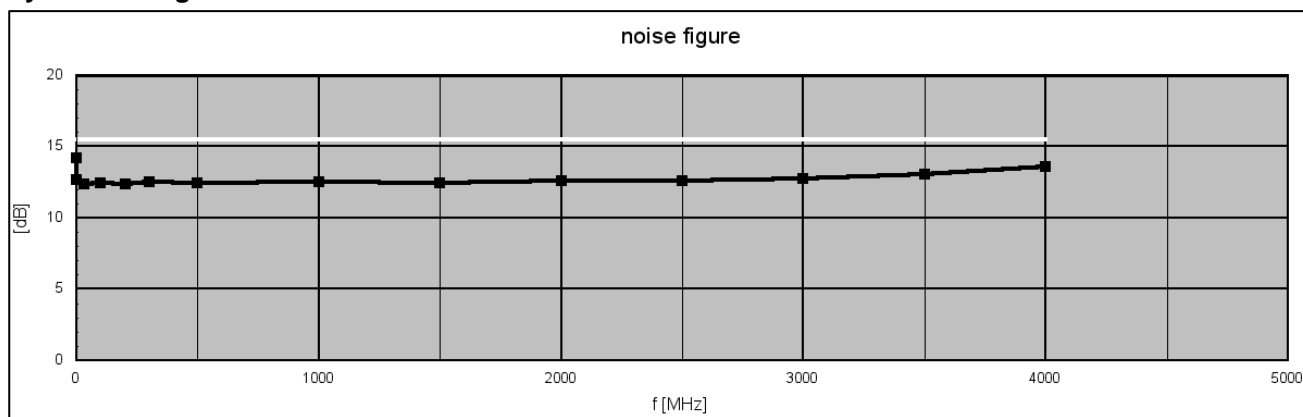
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	$U_{DC}$	23.5		24.5	V	DC
power consumption	$P_{OPR}$		14		W	operation
	$P_{STB}$		1		W	standby
dimensions	W x H x D	approx. 30 x 262 x 197			mm	6 U, 6HP
weight	m		1.2		kg	
operating temp. range	$T_o$	+5		+55	$^{\circ}\text{C}$	ambiance
storage temp. range	$T_s$	-40		+70	$^{\circ}\text{C}$	
ordering information		WSDU-1X8A		1807.6300.1		



**S-Parameters** (typical responses)



## Dynamic Range



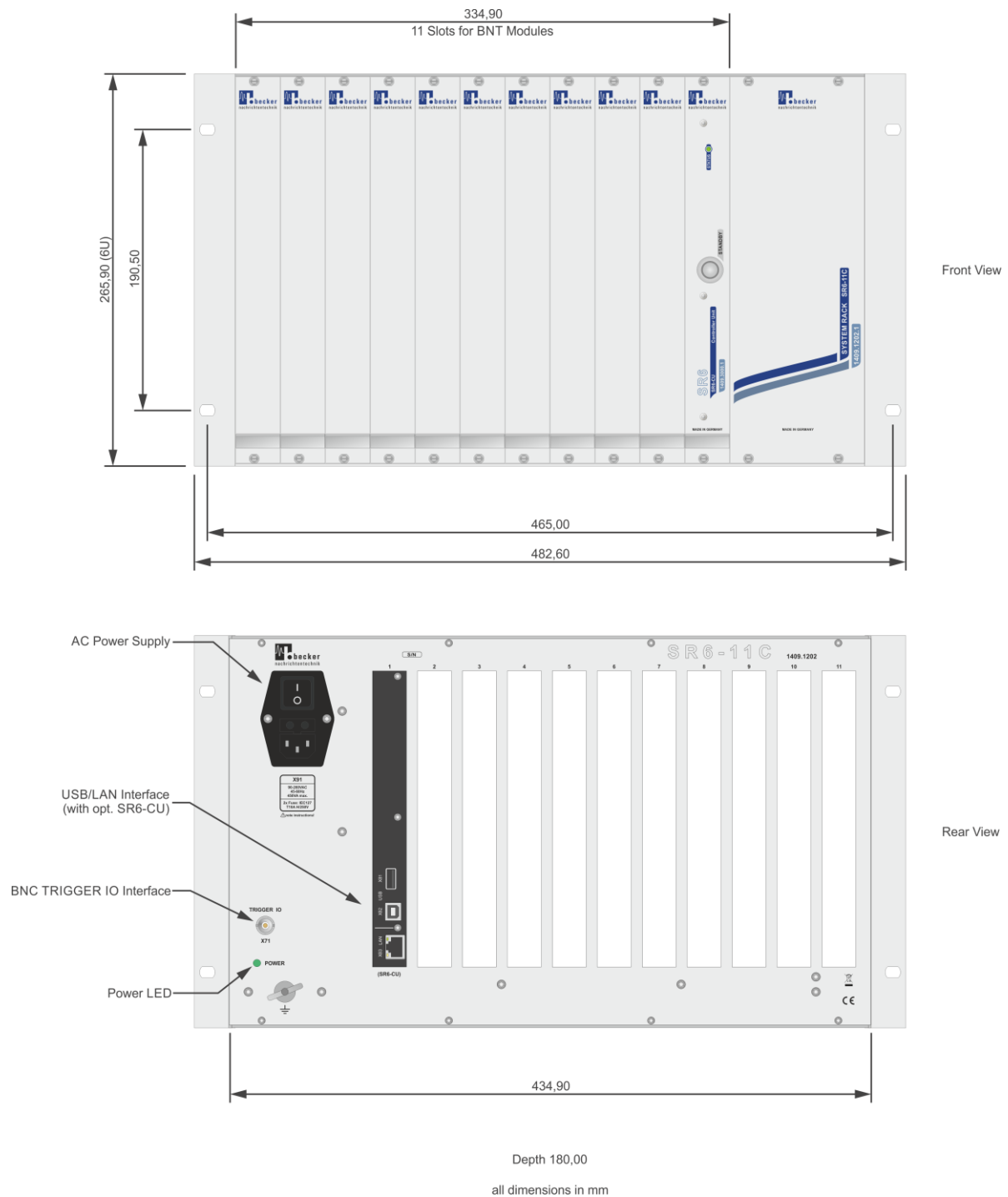
## Appearances

### SR6-11C System Platform

The WSDU-1X8A module is foreseen for the integration into the SR6-11C system platform. 11 slots in the SR6-11C can be used for modules like RF switches, matrices, multicouplers, attenuators,

BIAS-Ts, level detectors, bi-directional splitters/combiners for signal conditioning and a controller unit. For the module health monitoring a SR6-CU controller unit is required.

### Dimensions of SR6-11C System Platform



## Front View



## Rear View



## SR6-11C System Platform



**Related Products**

Product	Description	P/N
SR6-11C	System Platform with 11 Slots for Modules	1409.1202.1
SR6-CU	Controller Unit with LAN and USB Remote Interface	1409.3000.1
<b>Unidirectional Products: Active Multicouplers, Matrices, Level Detectors</b>		
WSDU-1X8L	8 Way Multicoupler Module, 100 kHz ... 4000 MHz	1807.6100.1
WSDU-2X4L	2 Section Hi Dynamic 4 Way Multicoupler Module, 100 kHz ... 4000 MHz	1807.6200.1
WSDU-2X4E+	2 Section 1x4 plus 1x2 Multicoupler Module, 20 ... 8000 MHz	1501.6200.1
WSDU-1X8U	Ultra-Wideband 8-Way Multicoupler Module, 100 kHz ... 18000 MHz	2109.6000.1
WSDU-1X8S	High Dynamic 1x8 Shortwave Multicoupler Module, 300 kHz ... 30 MHz	1502.6100.1
WSDU-1X8A	8 Way High Dynamic Signal Conditioning Multicoupler, 100 kHz ... 4000 MHz	1807.6300.1
WSDU-2X4A	2 Section 4 Way High Dynamic Signal Conditioning Multicoupler, 100 kHz ... 4000 MHz	1807.6400.1
WSDU-1X2PM	2 Channel, 5 W Multicoupler with ALC Capability, 20 MHz...3000 MHz	1606.6000.1
RSWM-4X4	4x4 Switching Matrix -Non-blocking-, 100 kHz ... 4000 MHz or 20 MHz ... 4000 MHz	1205.4100.1
RSWM-4X4E	4x4 Ultra-Wideband Switching Matrix -Non-blocking-, 20 MHz ... 8000 MHz	2001.4100.1
RFLD-8RE	8 Channel True Power RF Level Detector, 1 MHz ... 8000 MHz	1505.8000.1
<b>Bi-Directional Products: Switches, Matrices, Attenuators, Delay Lines, BIAS-Ts, Splitters/Combiners, Filters</b>		
BSDU-1X8A	8 Way Bi-directional Signal Conditioning Splitter Module, 500 ... 9000 MHz	2109.6200.1
BSDU-2X4A	2 Section 4 Way Bi-directional Signal Conditioning Splitter Module, 500 ... 9000 MHz	2109.6250.1
RSWU-2SP4TS+	2 Channel Non-reflective SP4T Switches plus 1 Channel SPDT Switch, 100 kHz ... 8500 MHz	1408.4010.1
RSWU-8SPSTS	8 Channel Non-reflective SPST Switch, 100 kHz ... 8500 MHz	1408.4000.1
RSWU-4SPDTS	4 Channel Non-reflective SPDT Switch, 100 kHz ... 8500 MHz	1408.4020.1
RSWU-8SPST-CS	8 Channel High Isolation SPST with DC Load Simulation, 100 kHz ... 7500 MHz	1811.4100.1
BSWM-4X4E	4x4 High Isolation Bi-Directional Switching Matrix –Blocking-, 100 kHz ... 7500 MHz	1205.4600.1
ATT-8E	8 Channel Digital Step Attenuator 0 ... 31.75 dB, 100 kHz ... 8000 MHz	1503.4000.1
DLL-4	4 Channel Programmable Delay Line 0 ... 1700 ps, 250 MHz ... 4000 MHz	1303.4200.1
PT-4CS	4 Channel Programmable DC Sink 0 ... 400 mA, 100 kHz ... 8500 MHz	1605.2020.1
PT-4CL	4 Channel Wideband DC Load, 100 kHz ... 8500 MHz	1605.2040.1
FBS-1590	L1 Band GNSS Notch Filter	1511.5100.1

