

RSWM-3X8VVER

Banded High Dynamic 3X8 Switching Matrix, 30 MHz ... 6000 MHz

Features

- high dynamic
- high isolation
- non-blocking
- 2x VHF input 30 MHz ... 1 GHz
- wideband input 30 MHz ... 6 GHz
- compact 19" 1U design
- graphical user interface

Applications

- radio monitoring
- spectrum monitoring
- COMINT / SIGINT
- signal routing



At a Glance

Modern radio monitoring systems need an unrestricted access to many antennas from a variety of receivers. By using the non-blocking architecture of RSWM, specialized and general-purpose receivers can be used alongside each other and chose any of the available antennas without interference between the receivers.

Due to its band-selective inputs, the high linearity and low noise figure of the device ensure excellent signal integrity on the path from the antenna to the receiver. Low cross-talk enables the reception of weak signals on one antenna in the presence of strong signals on a different antenna.

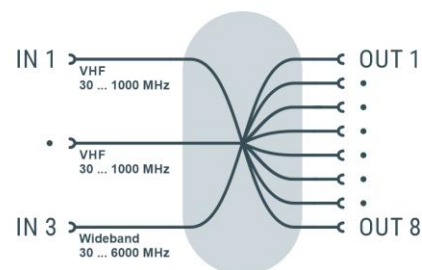
The very large bandwidth of the wideband input covers all commercial cellular and ISM communication bands up to and including WiFi7.

AC or DC Power Supply Options

The RSWM-3X8VVER comes in variants designed for either DC or AC mains power supply, catering to both stationary and mobile applications. Both variants support a broad input voltage range, whether AC or DC.

Principal Block Diagram

The RSWM-3X8VVER features three band-specific inputs and eight equivalent outputs interconnected via a non-blocking matrix. A single input can route to multiple outputs without any loss of signal transmission.



Wear-free Solid-State Switches

The RSWM-3X8VVER incorporates modern solid-state switching elements, guaranteeing rapid response to operational inputs and an unlimited number of switching cycles with minimal maintenance requirements.

High Channel Isolation

To prevent unintentional signal coupling between different signal types, the device provides high channel isolation. Strong and weak signals in adjacent radio channels do not affect each other.

Versatile Control

The RSWM-3X8VVER is equipped with multiple control options for user convenience. It features LAN and USB remote control interfaces. Depending on the customer's needs, the system can be managed using SCPI-based ASCII commands via its interface ports.

VHF Input Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z _{IN} /Z _{OUT}		50		ohms	
number of inputs	n _{IN}		2			
low frequency	f _{MIN}			30	MHz	
high frequency	f _{MAX}	1000			MHz	
gain	S ₂₁	-5 ^{*2}	3 ^{*1}	+10 ^{*2}	dB	
input return loss	S ₁₁		-13	-9 ^{*2}	dB	
output return loss	S ₂₂		-13	-9 ^{*2}	dB	
input compression	P _{1dB}	+6 ^{*2}	≥ +7 ^{*1}		dBm	*design goal
input 3 rd order intercept	IIP3 ^{*1}	+24 ^{*2}	≥ +27 ^{*1}		dBm	f ≤ 800 MHz *design goal
	IIP3 ^{*1}	+22 ^{*2}	≥ +27 ^{*1}		dBm	f > 800 MHz ^{*2}
noise figure	NF		≤ 10 ^{*1}	13 ^{*2}	dB	*design goal
output isolation	S ₃₂		-21	-13 ^{*2}	dB	
input power	P _{IN}			+25	dBm	CW, no damage
maximum DC voltage	U _{DC}			20	V	all RF ports
ESD discharge resistor	R _{ESD}		4.7		kΩ	all RF ports
RF connectors	X _{RF}	SMA female				

*1: design goal

*2: rough design limits, to be refined

Wideband Input Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z _{IN} /Z _{OUT}		50		ohms	
number of inputs	n _{IN}		1			
low frequency	f _{MIN}			30	MHz	
high frequency	f _{MAX}	6000			MHz	
gain	S ₂₁	-1	5	6	dB	f ≤ 1 GHz
	S ₂₁	-4	2	5	dB	f > 1 GHz
input return loss	S ₁₁		-13	-9 ^{*2}	dB	
output return loss	S ₂₂		-13	-9 ^{*2}	dB	
input compression	P _{1dB}	-4 ^{*2}	0		dBm	
input 3 rd order intercept	IIP3 ¹	+9 ^{*2}	+14		dBm	f ≤ 1.5 GHz
	IIP3 ¹	+8 ^{*2}	+13			1.5 GHz < f ≤ 4 GHz
	IIP3 ¹	+7 ^{*2}	+12			f > 4 GHz
noise figure	NF		11	14 ^{*2}	dB	f < 100 MHz
	NF		10	12 ^{*2}	dB	f ≥ 100 MHz
output isolation	S ₃₂		-30	-18 ^{*2}	dB	
input power	P _{IN}			+10	dBm	CW, no damage
maximum DC voltage	U _{DC}			20	V	all RF ports
ESD discharge resistor	R _{ESD}		4.7		kΩ	all RF ports
RF connectors	X _{RF}	SMA female				

*2: rough design limits, to be refined



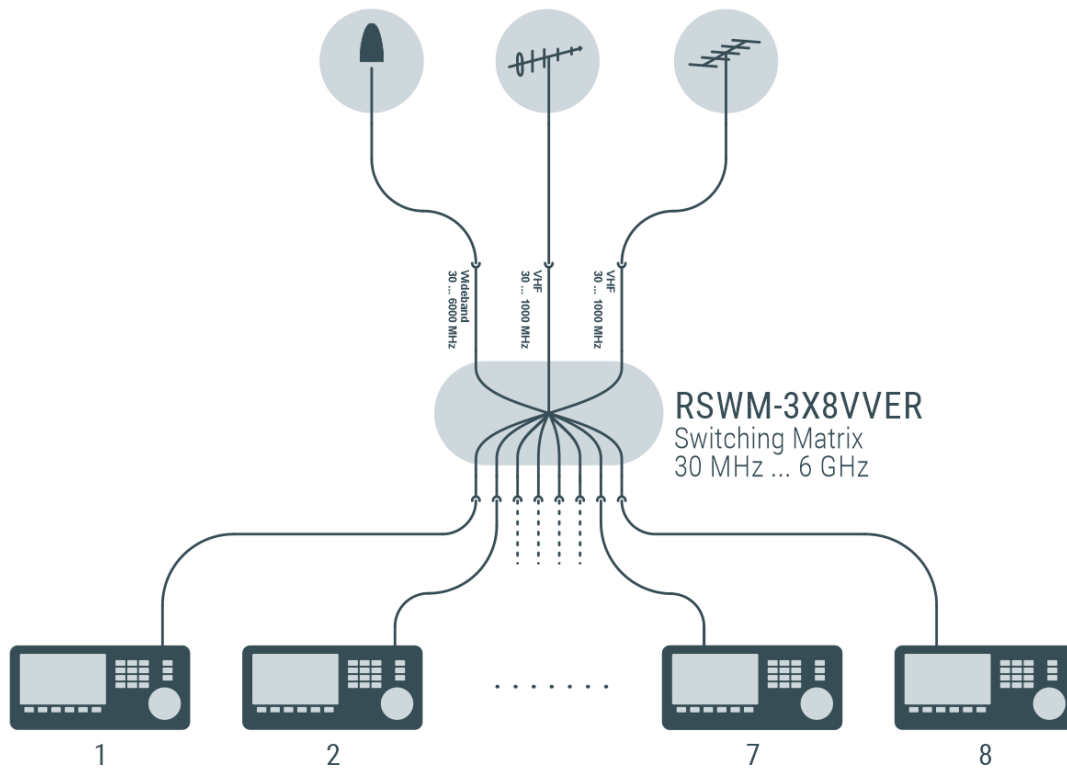
Common Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply		90	230	260	V	50 / 60 Hz AC
power consumption				100 ^{*2}	W	
power socket	X _{AC}	IEC-60320 C14				country specific mains cable
switching time	t _{SW}			10	ms	between two switching commands
Remote interfaces						
	LAN	10/100 BaseT	TCP/IP			RJ45
	USB	2.0 (high speed)				USB type B
Dimensions and weight						
dimensions	W x H x D	appr. 483(420) x 44 x 503			mm	19" 1 U, without connectors and handles, (width w/o mounting brackets)
weight	m		11.7	12.5	kg	
Environment conditions						
operating temp. range	T _o	+5		+45	°C	
storage temp. range	T _s	-40		+70	°C	
Cooling	Passive, at least ½ U free air-cooling space over and under the device needed ^{*2}					
Product conformity						
Electromagnetic compatibility	EU: in line with EMC directive (2014/30/EC)					applied harmonized standards: MIL-STD-461F (CE101, CE102, CE106, CS101, CS114, CS116, RE101, RE102, RS101, RS103), EN61326-2-1, (for use in control and laboratory environments), EN55035, EN55032, EN61000-3-2, EN61000-3-3
Electrical safety	EU: in line with low voltage directive (2014/35/EC)					applied harmonized standard: EN 61010-1
Environmental reliability	Operating temperature: -5° / +55° (Methods 501.6 and 502.6 Proc. II), Humidity: RH 70% within the operating temperature range (Method 507.6 Proc. II), Vibrations: random vibration in the X, Y and Z axes as specified below for a period of 60 minutes per axis: (Method 528.1 Proc. I) <ul style="list-style-type: none"> - 1.25 mm over frequency 4 – 14 Hz - 4 g over frequency 14 – 50 Hz - 0.8 g over frequency 50 – 100 Hz - Shock: 10g and 50 ms half-sine pulse in the vertical and horizontal direction (Method 516.7.) 					applied harmonized standard: MIL-STD-810G w Change 1
Ordering information						
RSWM-3X8VVER	2103.4202.1	Banded High Dynamic 3X8 Switching Matrix 30 MHz ... 6000 MHz AC-Supply				
Optional accessory						
FDPLX-100500	2103.6101.1	Frequency Diplexer 30...100 MHz / 500...3000 MHz				
RJ45-200	2103.0017.1	Data Cable RJ45 male (screwable, IP67) - RJ45 200cm				
USBBA-300	2103.0027.1	Data Cable USB type B male (screwable, IP67) - USB type A male 300cm				



Application Example

The RSWM-3X8VVER is suitable for both radio monitoring applications as well as test environments for research and development. Aided by the RSWM-3X8VVER the customer is able to route input signals to any output of the device. As the illustration shows the input can either be equipped with different signal sources or antennas:



Band-Selective Radio Monitoring

Appearances

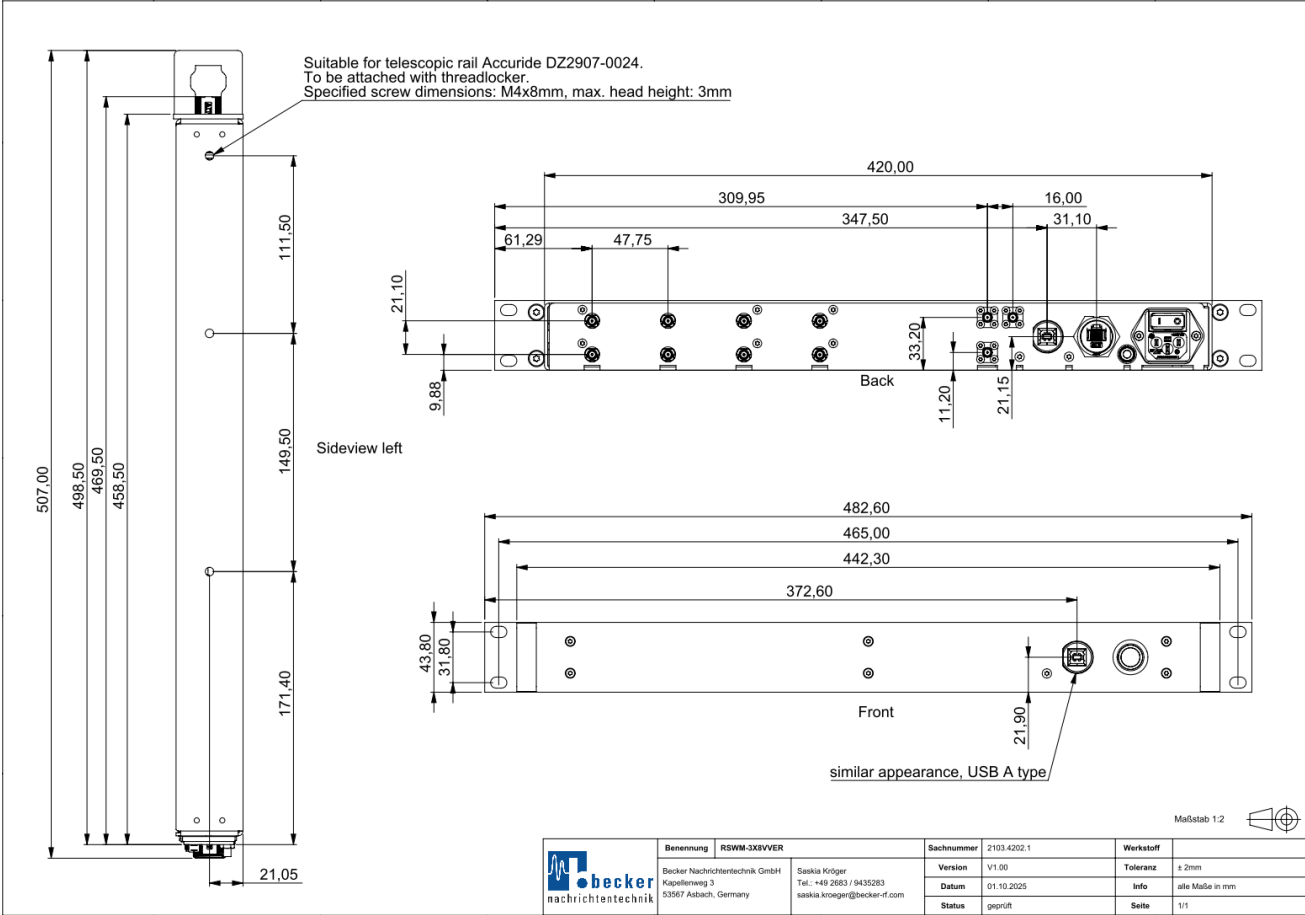
Front View



Rear View



Dimensions



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