BSWM-4X8ER

Bidirectional Blocking Wideband 4X8 Switching Matrix 100 kHz … 8500 MHz

Features

- extremely wideband
- high isolation
- high dynamic
- non-reflective
- compact 19”, 1 U design
- graphical user interface

Applications

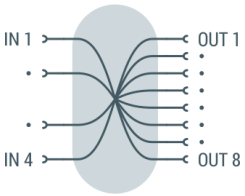
- MIMO test
- network investigation
- signal routing
- research & development (R&D)
- test equipment

At a Glance

Modern communication standards like cellular Wi-Fi, ISM and Bluetooth need bidirectional signal transmissions, independent of the multiplex method TDD (Time Domain Division) or FDD (Frequency Domain Division). The BSWM-4X8ER is an innovative and efficient solution for modern communication systems that must cover the frequency range up to 8 GHz. It offers 4 full parallel bidirectional signal paths.

Principal Block Diagram

The BSWM-4X8ER has 4 equivalent inputs and 8 equivalent outputs. The matrix is a blocking type suitable for bidirectional point to point links. Each output port can be connected to one input. If a new input is selected for an output, the existing connection is disconnected.



Wear-free Solid-State Switches

Inside the BSWM-4X8ER modern solid state switching elements are integrated. This ensures a quick response to operating inputs and a huge number of switching cycles with a minimum of maintenance.

High Channel Isolation

To avoid unintended coupling between different types of signals the device offers a high channel isolation. Adjacent radio channels with strong and weak signals have no influence to each other.

Versatile Control

To control and operate with BSWM-4X8ER the device is equipped with a local MMI on the front panel as well as LAN and USB interfaces. Suitable to the customer’s application the user is able to manage the system either through the associated and intuitive web-based user interface or with SCPI-based ASCII-commands via its interface ports.

Synchronous Operation

The BSWM-4X8ER offers two switching modes:

- Direct switch execution after receiving single commands.
- Common synchronous switching after executed by a SYNC command.

In synchronous mode all upcoming switching operations are done only after receiving a SYNC command.

External Triggering

Like many other products of Becker Nachrichtentechnik GmbH, the BSWM-4X8ER offers a TRIGGER IO port. Due to the physical interface the device features a synchronous execution of switching operations in a compound of many matrices, triggered by hardware.

RF Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{IN}/Z_{OUT}		50		Ω	
number of inputs	N_{IN}		4			bi-directional, blocking
number of outputs	N_{OUT}		8			bi-directional, blocking
low frequency	f_{MIN}		100	200	kHz	
high frequency	f_{MAX}	8000	8300		MHz	
insertion loss	S_{21}		-4		dB	f ≤ 4000 MHz
			-6		dB	f > 4000 MHz
return loss	S_{11}/S_{22}		-14	-11	dB	f ≤ 4000 MHz
			-10	-8		f > 4000 MHz
OFF isolation	S_{21}		-90	-80	dB	f ≤ 4000 MHz, SPDT switch open
			-85	-70		f > 4000 MHz
channel isolation	S_{23}		-90	-80	dB	f ≤ 4000 MHz, SPDT switch closed
			-85	-70		f > 4000 MHz
3rd order intercept	OIP3		+47		dBm	
2rd order intercept	OIP2		+85		dBm	
DC voltage	U_{DC}			20	V	RF ports
ESD discharge resistor	R_{ESD}		4.7		kΩ	RF ports
RF power	P_{ON_MAX}			+30	dBm	CW, “ON”, f > 10 MHz
	P_{OFF_MAX}			+20	dBm	CW, “OFF”, f > 10 MHz
RF connectors	X_{RF}		SMA female			rear side
processing time	t_{SW}		15		ms	between two switching commands
trigger input	X_{TRIG}		BNC female			internal 1 kΩ pull up, active high
trigger level	u_{TRIG}		TTL (0 / 5 V)			
trigger offset	t_{O_FALL}		6.5		µs	50% trigger → 50% RF falling edge, note 1
	t_{O_RISE}		1.1		µs	50% trigger → 50% RF rising edge, note 1
switch rise time	t_{RISE}		1		µs	10% → 90% RF
switch fall time	t_{FALL}		2		µs	90% → 10% RF

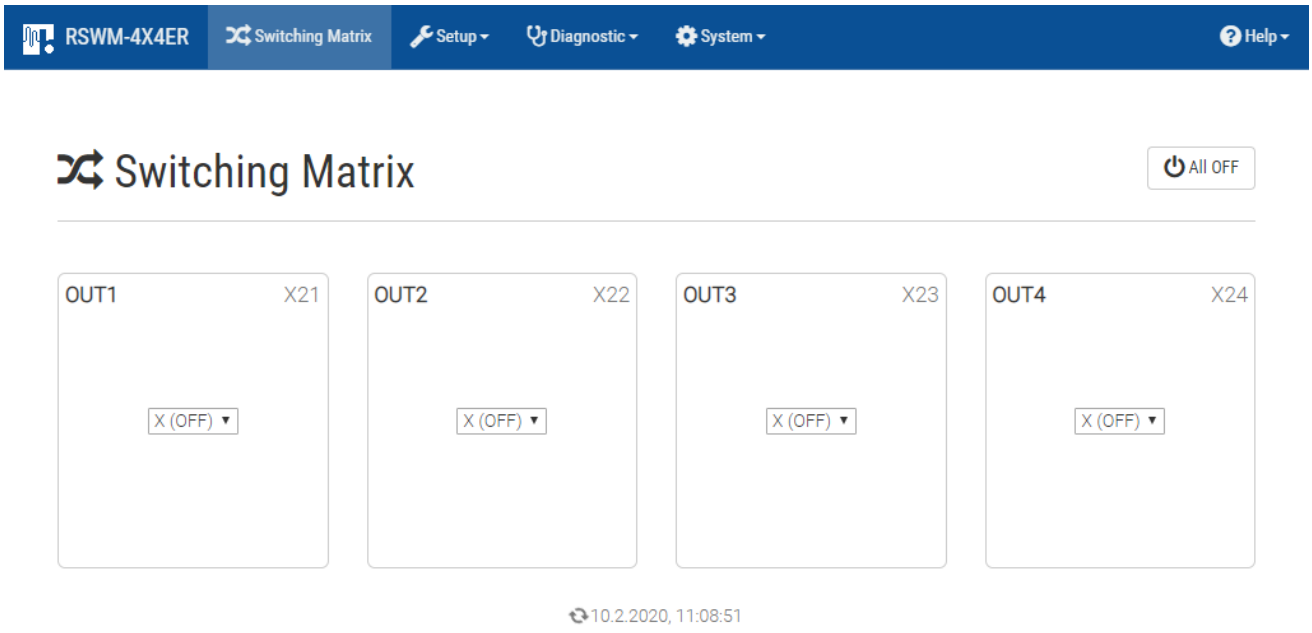
Note 1: capacitive load at ‘TRIGGER IO’ Port ≤ 100pF, trigger mode “OUT”

Common Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply		90	230	260	V	50 / 60 Hz AC
power consumption			35		W	
power socket	X_{AC}	IEC-60320 C14				country specific mains cable
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	approx. 482 x 44 x 455			mm	19” 1 U, without connectors and handles
weight	m		4.5		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: EN61326-2-1, (for use in control and laboratory environments), EN55024, 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
Ordering information	BSWM-4X8ER	2103.4702.1				

Screenshot of Graphic User Interface

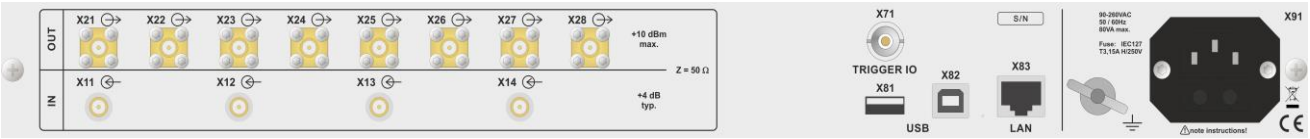
The GUI allows the definition of application-specific labels to make the selection of inputs more meaningful.



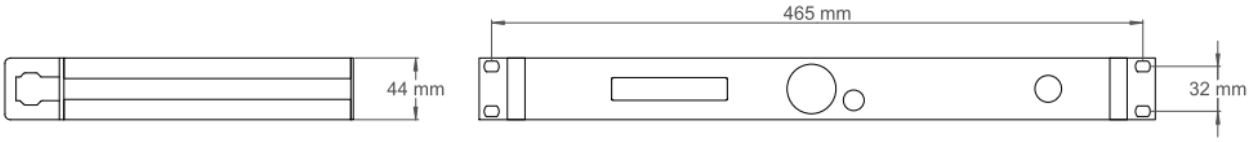
Appearances

Front View

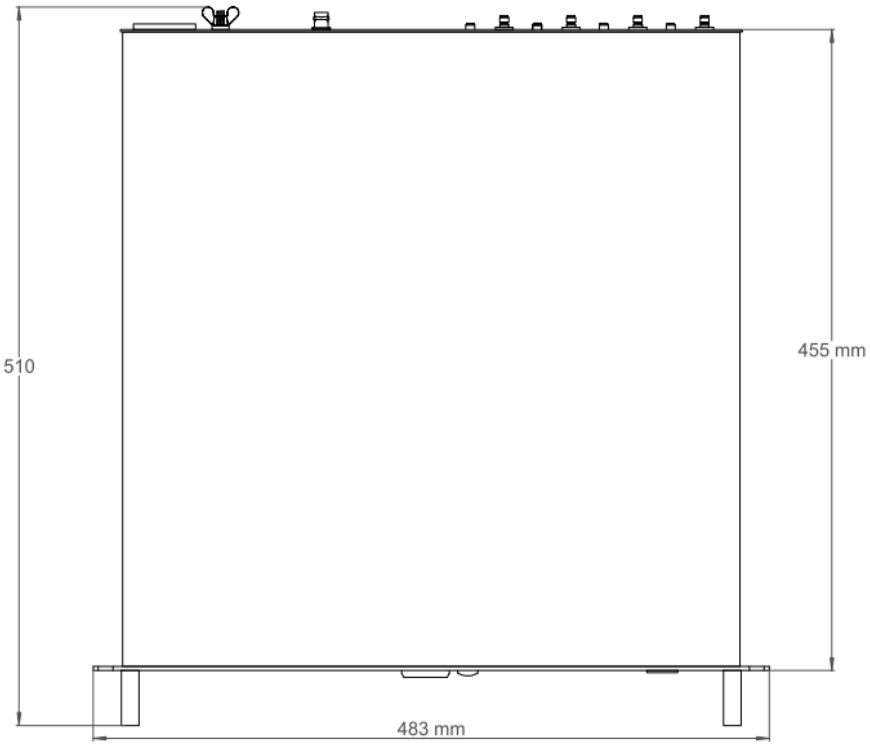
Rear View



Dimensions



all dimensions in mm
± 2 mm



Related Products

Product	P/N	Description
RSWM-4X4R	1205.4102.x	Wideband Non-Blocking 4X4 Switching Matrix 2 variants: 100 kHz … 4000 MHz and 20 MHz … 4000 MHz, LAN remote interface with SNMPv2 trap function.
RSWM-4X8R	2103.4302.1	Wideband Non-Blocking 4X8 Switching Matrix 20 MHz … 4000 MHz, LAN remote interface with SNMPv2 trap function.
RSWM-8X8R	2103.4502.1	Wideband Non-Blocking 8X8 Switching Matrix 20 MHz … 4000 MHz, LAN remote interface with SNMPv2 trap function.
RSWM-4X4ER	1205.4202.1	Extremely Wideband Non-Blocking 4X4 Switching Matrix 20 … 8000 MHz, LAN remote interface with SNMPv2 trap function.
RSWM-4X8ER	2103.4402.1	Extremely Wideband Non-Blocking 4X8 Switching Matrix 20 … 8000 MHz, LAN remote interface with SNMPv2 trap function.
RSWM-8X8ER	2103.4602.1	Extremely Wideband Non-Blocking 8X8 Switching Matrix 20 … 8000 MHz, LAN remote interface with SNMPv2 trap function.
BSWM-4X4ER	1205.4502.1	4X4 Bidirectional Blocking Wideband Switching Matrix 100 kHz … 8000 MHz, LAN remote interface with SNMPv2 trap function.
BSWM-4X8ER	2103.4702.1	4X8 Bidirectional Blocking Wideband Switching Matrix 100 kHz … 8000 MHz, LAN remote interface with SNMPv2 trap function.
BSWM-8X8ER	2103.4802.1	8X8 Bidirectional Blocking Wideband Switching Matrix 100 kHz … 8000 MHz, LAN remote interface with SNMPv2 trap function.