

BSWM-4X4E

4X4 High Isolation Switching Matrix -blocking- 100 kHz ... 7500 MHz

Features

- wideband
- suitable for bi-directional signals
- high OFF and channel isolation
- fast switching speed
- non-reflective

Applications

- Cellular, Wi-Fi, ISM, Bluetooth signal routing
- laboratory equipment
- ATE (automatic test equipment)
- research & development (R&D)

At a Glance

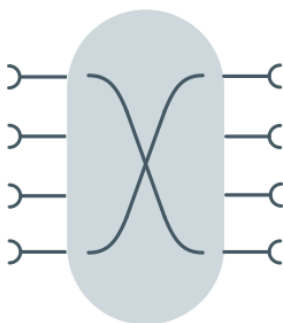
Modern communication standards like cellular, Wi-Fi, ISM and Bluetooth need bi-directional signal transmissions, independent of the multiplex method: TDD (Time Domain Division) or FDD (Frequency Domain Division).

BSWM-4X4E is right solution to route communication testers to DUTs (Devices under Test) or transceivers to antennas. It offers 4 full parallel bi-directional signal paths for point-to point connections.

The BSWM-4X4E matrix is foreseen for the integration into the SR6-11C system platform.

Principal Block Diagram

The BSWM-4X4E has 4 equivalent inputs and 4 equivalent outputs. The matrix is a blocking type. Each input can be connected to an output as required.



Wear-free Solid State Switches

The switching elements in the BSWM-4X4E are solid state types. This ensures a short switching time and a huge number of switching cycles with a minimum of maintenance.

High Channel Isolation

To avoid unwanted signal coupling between the channels BSWM-4X4E has high channel isolation. Adjacent channels with strong and weak signals have no influence to each other.

Remote Control

In combination with the SR6-CU controller module, the BSWM-4X4E is remote controllable via standard interfaces USB and LAN with simple SCPI orientated ASCII strings.

Built-In Test Function

Internal supply voltages and internal temperature of BSWM-4X4E are monitored. The module status can be read out via remote interface.

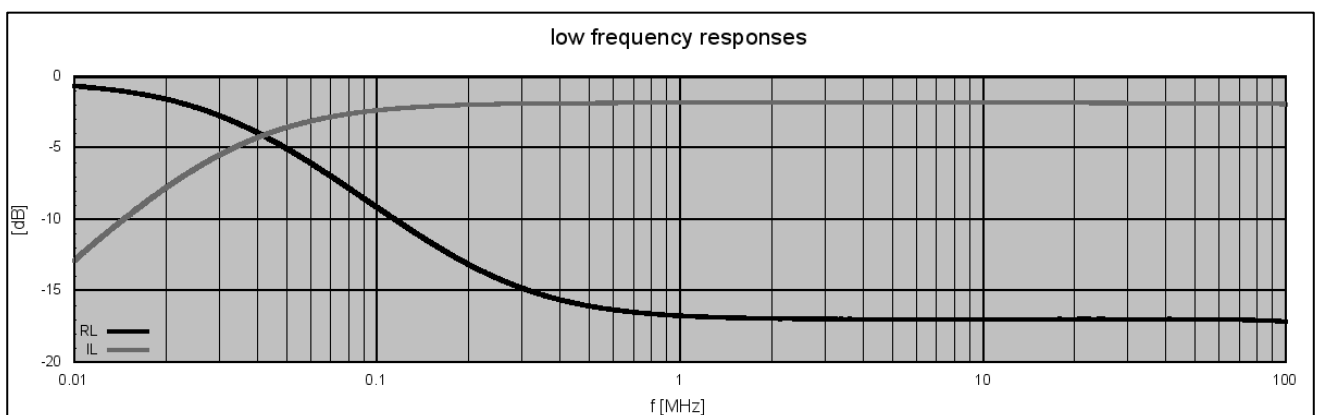
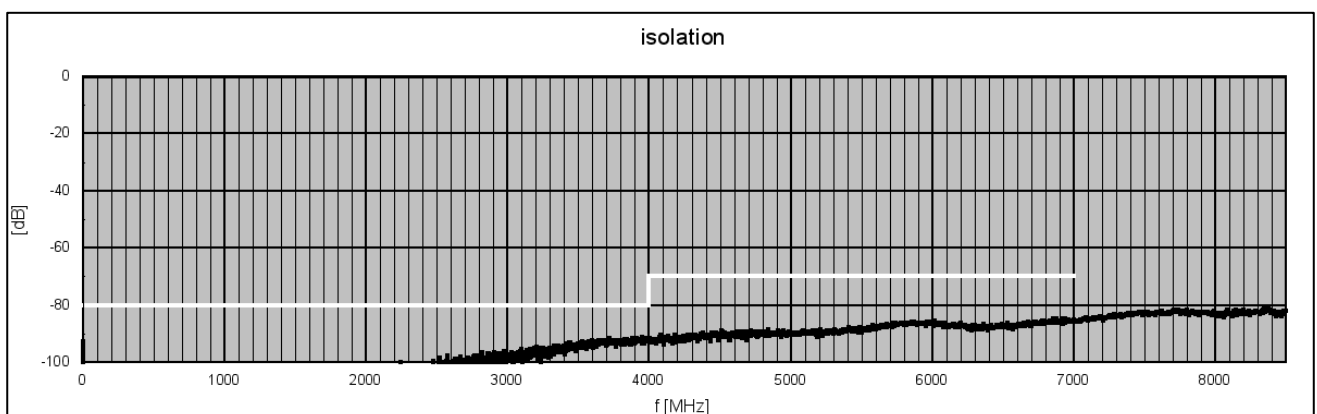
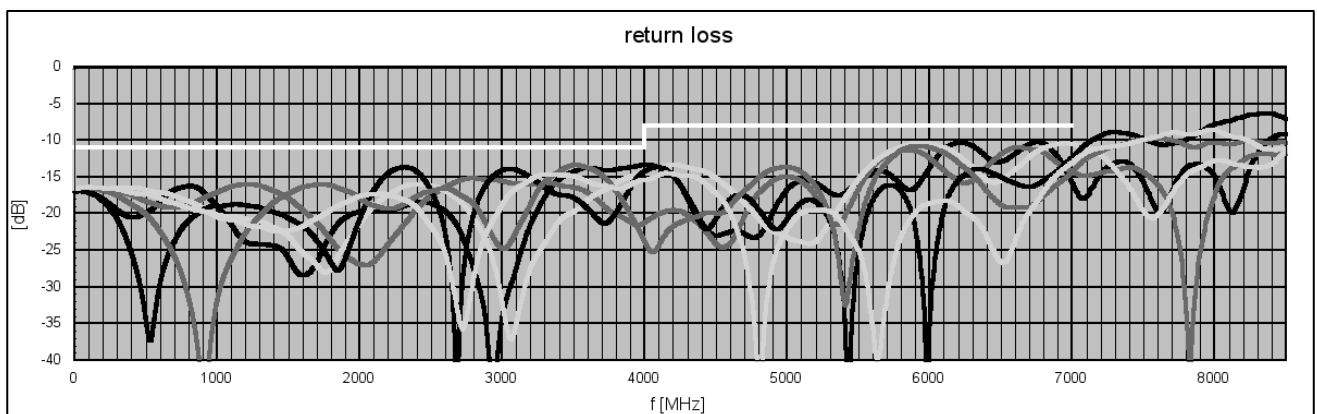
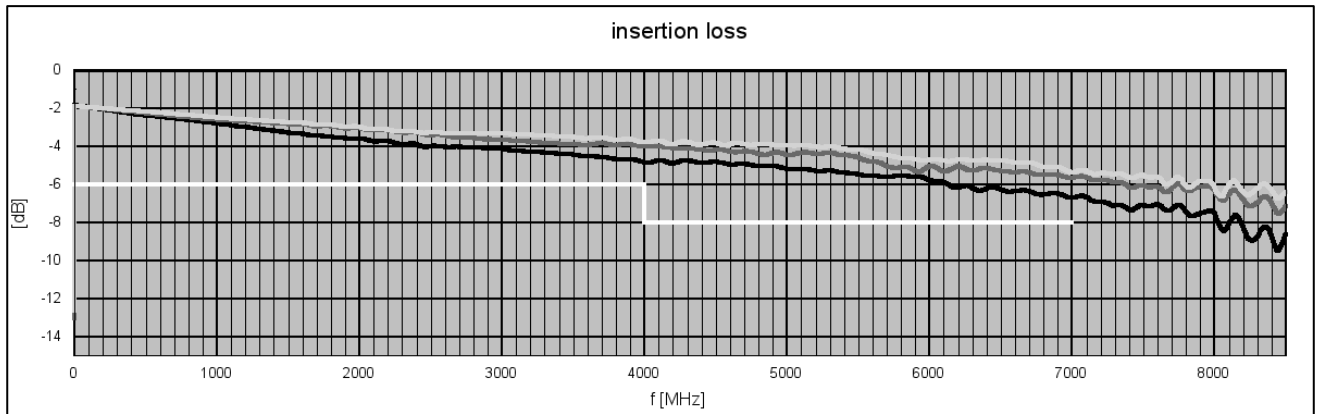
RF Specification

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|------------------------|------------------|------------|------|------|------------|---------------------------------------|
| impedance | Z_{IN}/Z_{OUT} | | 50 | | Ω | |
| number of inputs | f_{MIN} | | 4 | | | bi-directional, blocking |
| number of outputs | f_{MAX} | | 4 | | | bi-directional, blocking |
| low frequency | f_{MIN} | | 100 | 200 | kHz | |
| high frequency | f_{MAX} | 7000 | 7500 | | MHz | |
| insertion loss | S_{21} | -6 | -3 | | dB | $f \leq 4000$ MHz |
| | | -8 | -5 | | dB | $f > 4000$ MHz |
| OFF isolation | S_{21} | | -90 | -80 | dB | $f \leq 4000$ MHz, SPDT switch open |
| | | | -85 | -70 | | $f > 4000$ MHz |
| channel isolation | S_{23} | | -90 | -80 | dB | $f \leq 4000$ MHz, SPDT switch closed |
| | | | -85 | -70 | | $f > 4000$ MHz |
| return loss | S_{11}/S_{22} | | -14 | -11 | dB | $f \leq 4000$ MHz |
| | | | -10 | -8 | | $f > 4000$ MHz |
| DC voltage | U_{DC} | | | 20 | V | RF ports |
| ESD discharge resistor | R_{ESD} | | 4.7 | | k Ω | 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 |

Common Specification

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|-----------------------|-----------|------------------------|------------------|------|--------------------|-------------|
| power supply | U_{DC} | 23.5 | 24.0 | 24.5 | V | via SR6-11C |
| power consumption | P_{DC} | | 2 | | W | |
| dimensions | WxHxD | approx. 30 x 262 x 197 | | | mm | 6 U, 6 HP |
| weight | m | | 1 | | kg | |
| operating temp. range | T_o | +5 | | +60 | $^{\circ}\text{C}$ | |
| storage temp. range | T_s | -40 | | +70 | $^{\circ}\text{C}$ | |
| ordering information | BSWM-4X4E | | P/N: 1205.4600.1 | | | |



S-Parameters (typical responses)

SR6-11C System Platform

The BSWM-4X4E 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.

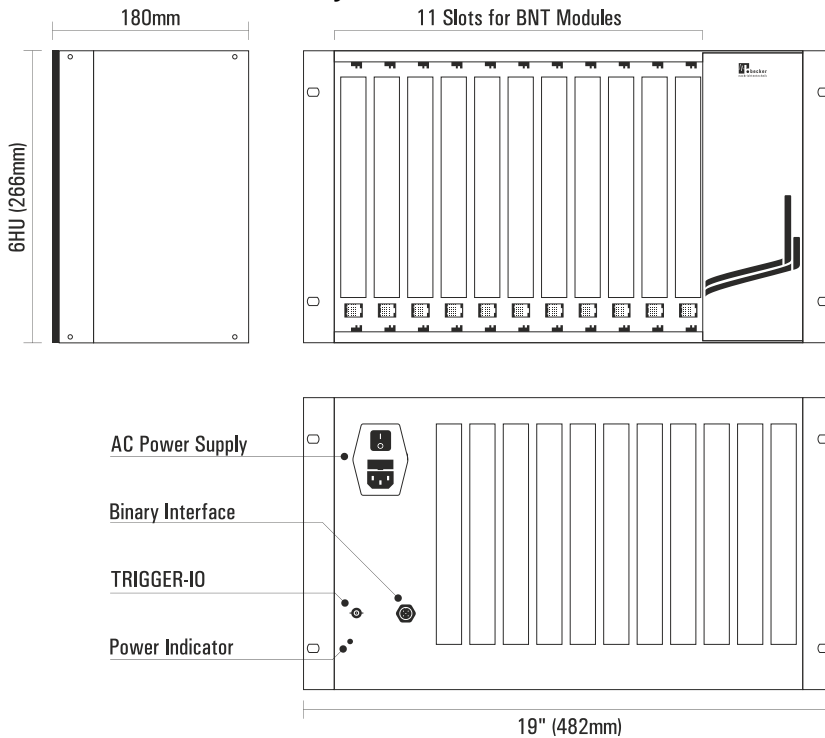
For the control of BSWM-4X4E module, the SR6-CU controller unit is required.

Via the Trigger-IO interface at the rear side of the SR6-11C System Platform a synchronous operation in a device network of SR6-11C can be realized.

After a positive TTL pulse slope at the trigger input, the preloaded configurations are executed only by hardware in micro seconds.

In applications with very fast execution demands the hardware can be directly controlled via the binary interface on the rear side.

Dimensions of SR6-11C System Platform



Appearances



BSWM-4X4E
front view



BSWM-4X4E
rear view



SR6-11C front view

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 |
| Unidirectional Products: Active Multicouplers, Matrices, Level Detectors | | |
| 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-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-1X8S | High Dynamic 1x8 Shortwave Multicoupler Module 300 kHz ... 30 MHz | 1502.6100.1 |
| WSDU-1X2P | 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 |
| 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 |
| Bi-Directional Products: Switches, Matrices, Attenuators, Delay Lines, BIAS-Ts, Splitters/Combiners, Filters | | |
| 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 |
| BSDU-2X4A+ | 2 Section 4 Way, Bi-Directional Signal Conditioning plus 2 Way Splitter/Combiner, 500 MHz ... 7500 MHz | 1903.6100.1 |
| BSDU-2X4+ | 2 Section 4 Way Wideband Bi-Directional plus 2 Way Splitter/Combiner, 500 MHz ... 7500 MHz | 1903.6200.1 |
| FBS-1590 | L1 Band GNSS Notch Filter | 1511.5100.1 |

