

# R&S® M3SR Series4400

## Specifications

R&S® GU221 Filter Control Unit

SOVERON  
True independence is a choice



Data Sheet  
Version 05.00

**ROHDE & SCHWARZ**

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# CONTENTS

<b>Definitions .....</b>	<b>3</b>
<b>Specifications.....</b>	<b>4</b>
Power supply .....	4
RF characteristics.....	4
Environmental specifications .....	5
General data.....	6
<b>Ordering information .....</b>	<b>7</b>

# Definitions

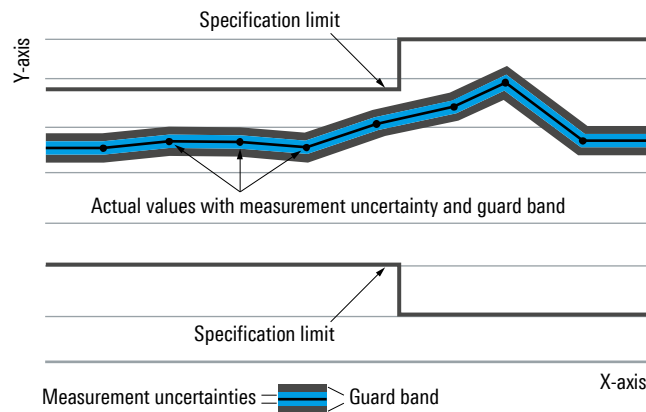
## General

Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

## Specifications with limits

Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as  $<$ ,  $\leq$ ,  $>$ ,  $\geq$ ,  $\pm$ , or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



## Specifications without limits

Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.

## Typical data (typ.)

Characterizes product performance by means of representative information for the given parameter. When marked with  $<$ ,  $>$  or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

## Nominal values (nom.)

Characterize product performance by means of a representative value for the given parameter (e.g. nominal impedance). In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

## Measured values (meas.)

Characterize expected product performance by means of measurement results gained from individual samples.

## Uncertainties

Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are indicated as follows: "parameter: value".

Typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

## Specifications

The radio systems described are hardware- and software-configurable.  
The system delivered has the configuration as confirmed in the order.

### Power supply

AC mains supply	input voltage	100 V to 240 V
	frequency	47 Hz to 64 Hz
	input power consumption	150 VA
	connector type	EURO connector, in line with IEC 60320, DIN 49457 safety class 1
DC battery supply	input voltage	+19 V to +32 V (nom. 28 V)
	input power consumption	approx. 120 W
	connector type	XLR connector, 3 pins
AC and battery operation	type of switchover	automatic switchover without time delay, priority to AC supply
	leakage current from battery input, when supplied with AC	< 12.4 mA at 31 V

### RF characteristics

Independent steering lines		4 lines
Frequency separation	configurable per line during setup	1.0 % to 10 %
Channel spacing	configurable per line during setup	8.33 kHz, 12.5 kHz, 25 kHz
Impedance		50 $\Omega$ (nom.)
Power handling capacity	per line	$\leq 200$ W
Insertion loss	between RF <sub>IN</sub> and RF <sub>OUT</sub> (precondition: transceiver filter path is switched)	
	100 MHz to 163 MHz	VHF: $\leq 0.2$ dB
	225 MHz to 400 MHz	UHF: $\leq 0.23$ dB
Crosstalk attenuation	between RF <sub>IN</sub> and RF <sub>OUT</sub> (precondition: transceiver filter path is switched)	
	100 MHz to 163 MHz	VHF: $\geq 90$ dB
	225 MHz to 400 MHz	UHF: $\geq 90$ dB
	between two lines (precondition: transceiver filter path is switched)	
	100 MHz to 163 MHz	VHF: $\geq 120$ dB
	225 MHz to 400 MHz	UHF: $\geq 120$ dB

## Environmental specifications

<b>Environmental data</b>		
Temperature ranges	in line with MIL-STD-810G	
Operating temperature range	method 501.5 proc. II	−10 °C to +55 °C
Storage temperature range	method 502.5 proc. I	−40 °C to +70 °C
Humidity (noncondensed)	in line with MIL-STD-810G, method 507.5	≤ 95 % relative humidity and variation of temperature between +25 °C and +55 °C
Vibration (sinusoidal)	in line with MIL-STD-810G, method 528, type 1, table 528-I	0.76 mm to 0.25 mm single amplitude, 4 Hz to 33 Hz; test period: 40 min in each of the three axes
Vibration (random)	in line with MIL-STD-810G, method 514.6	shipboard random vibration exposure at 4 Hz to 100 Hz: 0.03 g <sup>2</sup> /Hz (1.2 g RMS); test period: 20 min in each of the three axes
Shock resistance	in line with MIL-STD-810G, method 516.6, proc. I	ramp: 6 dB/octave up to 45 Hz; 45 Hz to 2000 Hz: ≤ 40 g, 2 × 3 shocks (one shock in each direction in each of the three axes)
Cooling/air convection		no forced convection air cooling necessary
<b>Electromagnetic capability</b>		
Conducted emissions	in line with MIL-STD-461G	
	30 Hz to 10 kHz	CE101, limit figure: CE101-1/-2, pages 29/30
	10 kHz to 10 MHz	CE102, limit figure: CE102-1, page 37
Conducted susceptibility	in line with MIL-STD-461G	
	30 Hz to 150 kHz	CS101, limit figure: CS101-1/-2, pages 50/51
	10 kHz to 200 MHz, bulk cable injection	CS114, limit figure: CS114/CS114-1, ships (metallic below decks), N = NAVY, CURVE 2, pages 66/67
	10 kHz to 100 MHz, transients	CS116, limit figure: CS116-2, page 81
Radiated emissions	in line with MIL-STD-461G	
	30 Hz to 100 kHz, magnetic field	RE101, limit figure: RE101-2, page 107
	10 kHz to 18 GHz, electric field	RE102, limit figure: RE102-1/-4, pages 114 to 117
Radiated susceptibility	in line with MIL-STD-461G	
	30 Hz to 100 kHz, magnetic field	RS101, limit figure: RS101-1, page 132
	2 MHz to 40 GHz, electric field	RS103, limit table: ships (below decks), N = NAVY, page 145
<b>Miscellaneous requirements</b>		
Protection class		IP20, in line with IEC 60529
Electrical safety		DIN EN 62368-1: 2014+AC: 2015
Transients and spikes	AC supply (85 V to 264 V)	STANAG 1008, Ed. 9
	DC supply (19 V to 31 V)	STANAG 1008, Ed. 9
RoHS		in line with 2015/863/EU directive
REACH		in line with 2006/1907/EU directive
RED		in line with 2014/53/EU directive
CE mark		CE certificate by manufacturer

## General data

Acoustic noise	installation in operating room (distance = 1 m)	< 41 dBA
MTTR	replacement of AC/DC module, display board, main board	< 30 min
MTBF	conditions in line with MIL-HDBK-217F, notice 2, +21°C, naval sheltered	> 100 000 h
Materials	housing	nonmagnetic
	lines and wires	PVC isolation prohibited, nonhalogen lines, self-extinguishing
Colors	front panel	RAL 7047-HR (telegrey 4)
	labels	RAL 7021 (black grey)
Dimensions	W x D x H	482.6 mm (19" plug-in) x 425.9 mm (4 HU) x 528 mm (over all) (19 in (19" plug-in) x 16.8 in (4 HU) x 21 in (over all))
Weight		≤ 12.8 kg (28.2 lb)

## Ordering information

A system with a new material number will be set up from the components listed (base unit, radio software, hardware and software options).

Designation	Type	Order No.
Filter control unit	R&S®GU221	6164.6009.04
Adapter 25P male to 37P female	Adapter-1	6164.0490.00
Adapter 37P male to 25P female	Adapter-2	6198.0484.00

## Service that adds value

- ▶ Worldwide
- ▶ Local and personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ Long-term dependability

## Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

[www.rohde-schwarz.com](http://www.rohde-schwarz.com)

## Sustainable product design

- ▶ Environmental compatibility and eco-footprint
- ▶ Energy efficiency and low emissions
- ▶ Longevity and optimized total cost of ownership

Certified Quality Management

**ISO 9001**

Certified Environmental Management

**ISO 14001**

Certified Quality Management

**AQAP-2110**

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