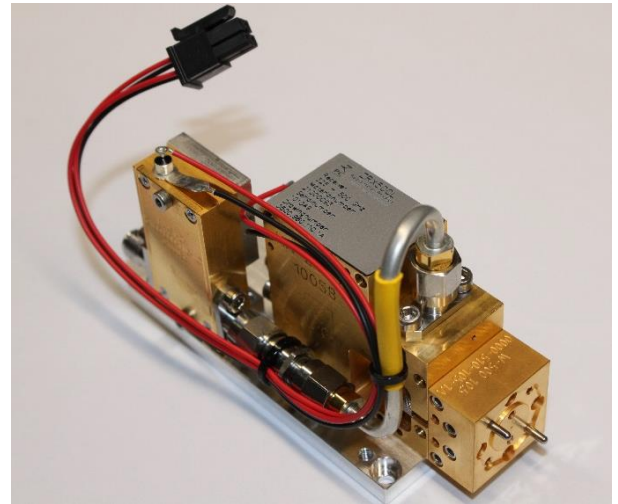
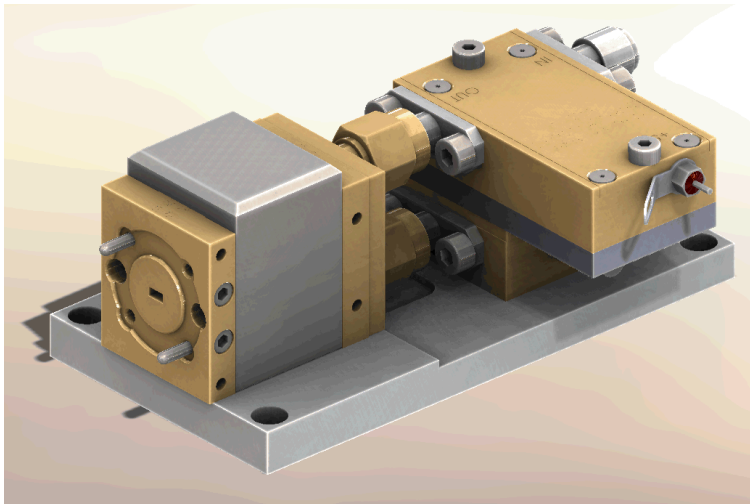


RPG ZRXxxxL Millimeter-Wave Receiver Specifications



Radiometer Physics
A Rohde & Schwarz Company

[Test & Measurement](#)

[Product Datasheet](#)

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Definitions

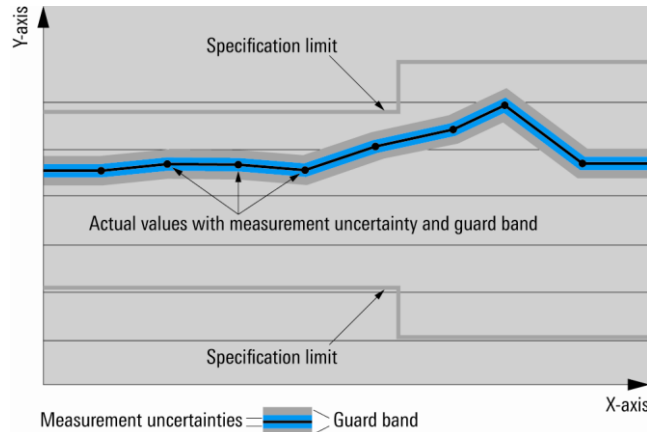
General

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.



Non-traceable specifications with limits (n. trc.)

Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Radiometer Physics laboratories.

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”.

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Radiometer Physics.

General information

The RPG ZRXxxxL millimeter-wave receiver are optional for the following four-port vector network analyzers: R&S®ZVA24, R&S®ZVA40, R&S®ZVA50 or R&S®ZVA67, and R&S®ZVT20 (not suitable for RPG ZRX500L) with at least four ports. The converters facilitate measurements in the millimeter-wave frequency range. The RPG ZRXxxxL millimeter-wave receiver are available for the frequency bands from 50 GHz to 75 GHz (RPG ZRX75L), from 75 GHz to 110 GHz (RPG ZRX110L), from 220 GHz to 330 GHz (RPG ZRX330L) and from 330 GHz to 500 GHz (RPG ZRX500L). Other frequency bands are covered by other models from the RPG ZRXxxx receiver or R&S®ZCxxx converter series.

The millimeter-wave receiver consist of a simple harmonic mixer as downconverter, a booster amplifier for a controlled input power and a low noise amplifier for the IF-signal.

The four-port network analyzer must be equipped with the R&S®ZVAxx-B16 and R&S®ZVA-K8 options.

The RPG ZRXxxxL millimeter-wave receiver come with the following accessories:

- Hex ball driver
- Two coaxial cables with SMA connectors for the reference and measurement output signals
- Mounting plate
- DC cable
- Waveguide flange screws and dowel pins
- Documentation

The RPG ZRXxxxL millimeter-wave receiver must be operated with a power supply module.

Specifications

Test port (RF IN)

Frequency range	RPG ZRX75L	50 GHz to 75 GHz
	RPG ZRX110L	75 GHz to 110 GHz
	RPG ZRX330L	220 GHz to 330 GHz
	RPG ZRX500L	330 GHz to 500 GHz
Waveguide designator	RPG ZRX75L	WR-15
	RPG ZRX110L	WR-10
	RPG ZRX330L	WR-3.4
	RPG ZRX500L	WR-2.2
Connector type (anti cocking flange)	RPG ZRX75L	precision waveguide flange compatible with flange types UG-387/U and IEEE 1785.2a
	RPG ZRX110L	
	RPG ZRX330L	
	RPG ZRX500L	
Damage level	RPG ZRXxxxL	+ 10 dBm

Source input (LO IN)

Connector type	RPG ZRXxxxL	2.92 mm, female
Frequency range and multiplication factor	RPG ZRX75L	8.333 GHz to 12.500 GHz × 6
	RPG ZRX110L	9.375 GHz to 13.750 GHz × 8
	RPG ZRX330L	9.166 GHz to 13.750 GHz × 24
	RPG ZRX500L	13.541 GHz to 20.833 GHz × 24
Input power range	RPG ZRX75L	Typ. + 7 dBm
	RPG ZRX110L	Typ. + 7 dBm
	RPG ZRX330L	Typ. + 7 dBm
	RPG ZRX500L	Typ. + 7 dBm

Measurement output (IF OUT)

Connector type	RPG ZRXxxxL	SMA, female
Frequency range	RPG ZRX75L	5 MHz to 2900 MHz
	RPG ZRX110L	5 MHz to 2900 MHz
	RPG ZRX330L	5 MHz to 2900 MHz
	RPG ZRX500L	5 MHz to 2900 MHz

Power supply input (POWER SUPPLY)

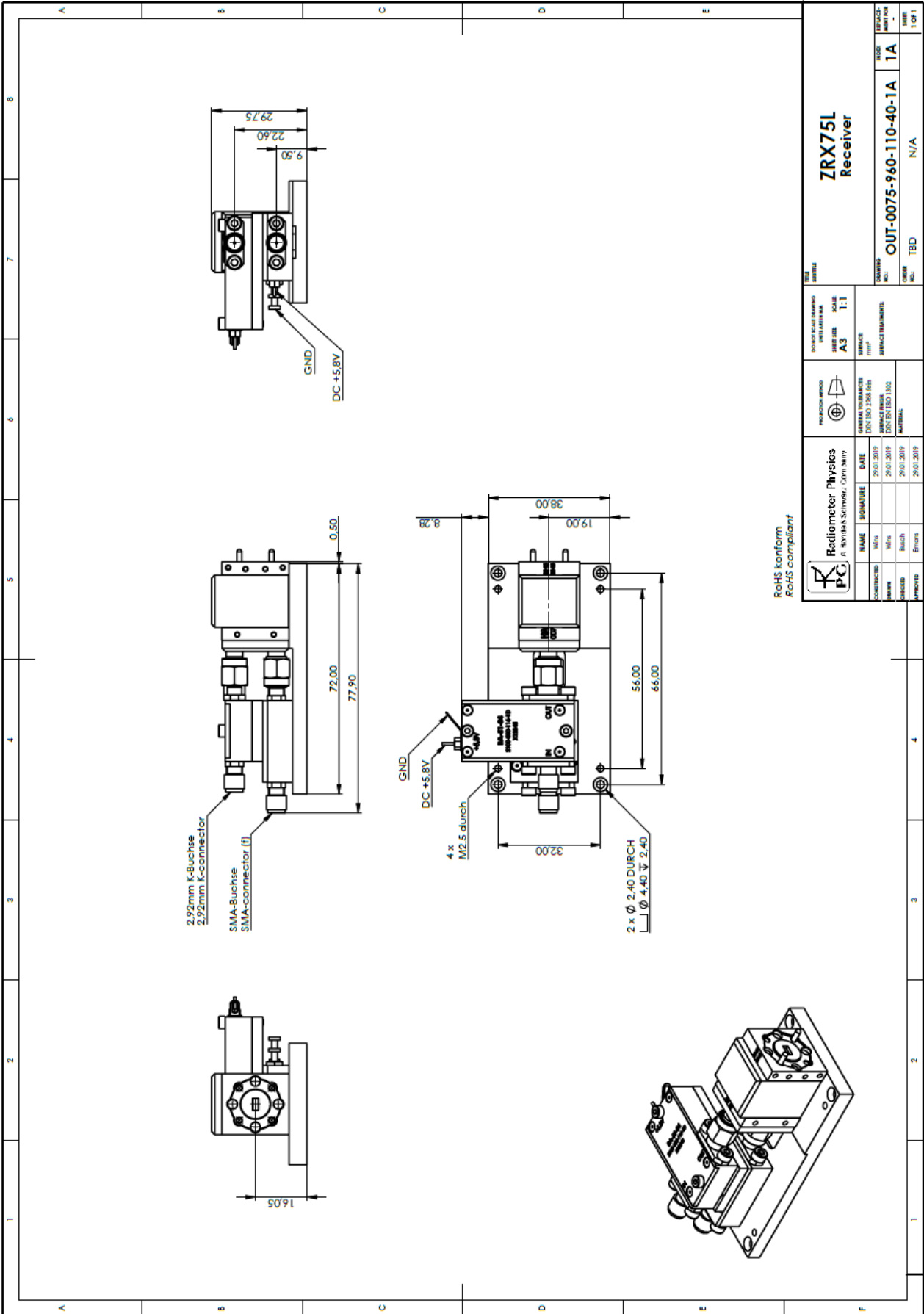
Connector type	RPG ZRXxxxL	DC solder contact
Power consumption	RPG ZRXxxxL	2 W
IF-Amplifier	RPG ZRXxxxL	50 mA @ + 7.0 VDC, max. + 9.0 VDC
LO-Driver-Amplifier	RPG ZRXxxxL	150 mA @ + 7.0 VDC, max. + 12.0 VDC

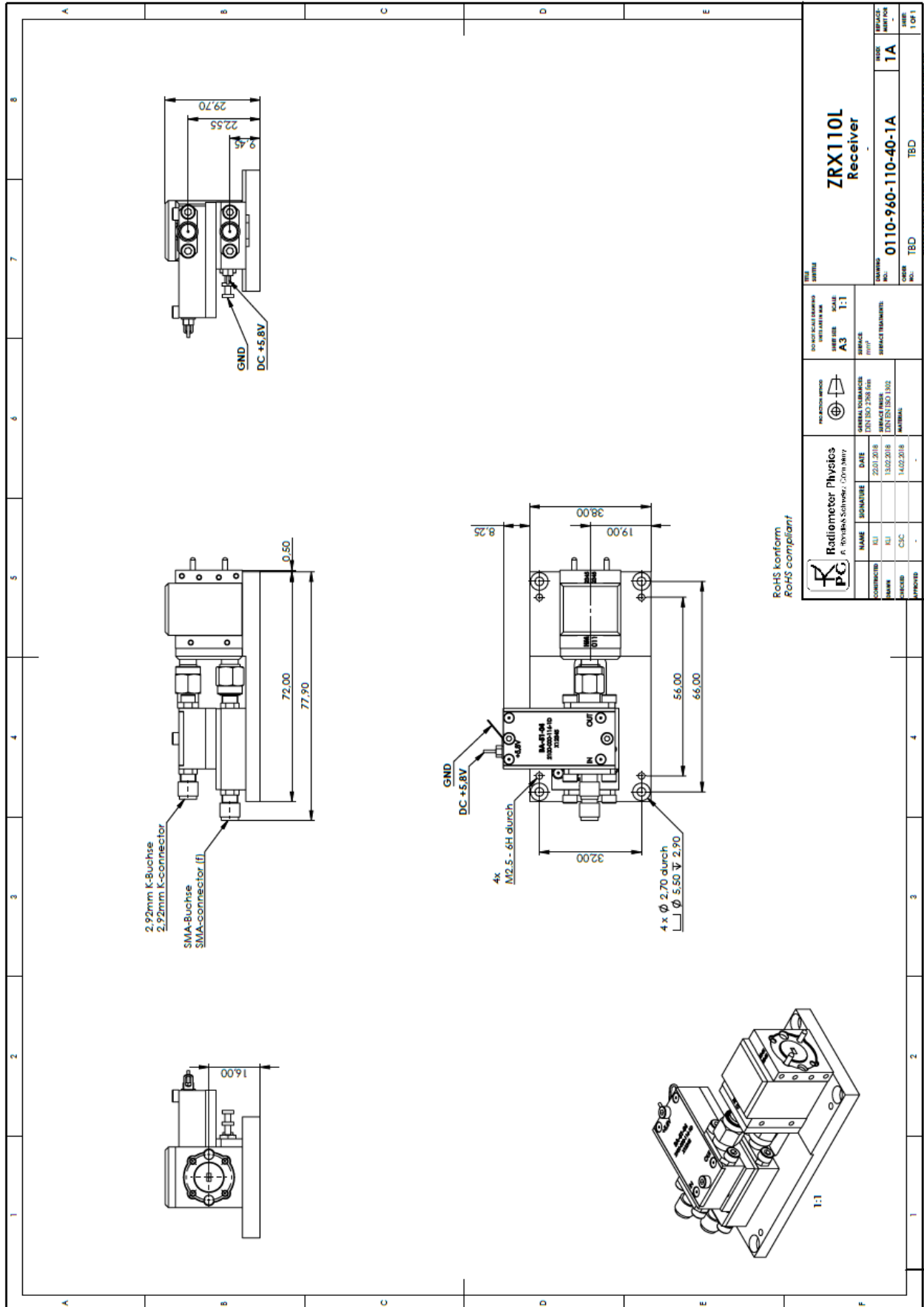
System characteristics

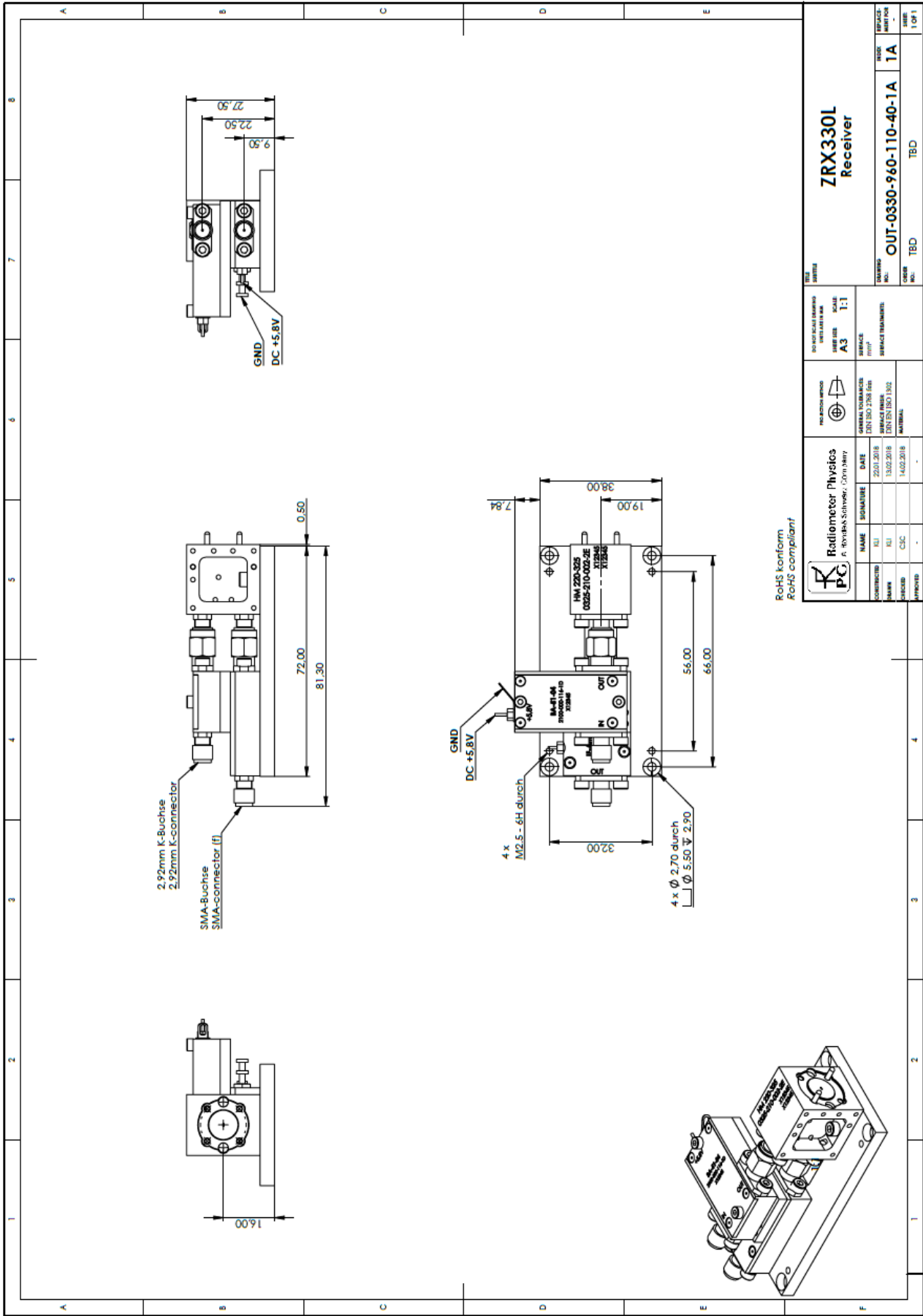
Conversion Loss	RPG ZRX75L	typ. 17 dB, < 23 dB
	RPG ZRX110L	typ. 20 dB, < 30 dB
	RPG ZRX330L	typ. 35 dB, < 45 dB
	RPG ZRX500L	typ. 40 dB, < 55 dB
IF-Gain	RPG ZRX75L	20 dB
	RPG ZRX110L	20 dB
	RPG ZRX330L	40 dB
	RPG ZRX500L	40 dB

General data

Temperature loading	operating temperature range	+ 18 °C to + 28 °C
	permissible temperature range	+ 5 °C to + 40 °C
	storage temperature range	- 40 °C to + 70 °C
Damp heat		in line with IEC 60068-2-1 and IEC 60068-2-2
		+ 40 °C at 80 % rel. humidity, in line with IEC 60068-2-30
Mechanical resistance	vibration, sinusoidal	5 Hz to 150 Hz, in line with IEC 60068-2-6
	vibration, random	10 Hz to 300 Hz, in line with IEC 60068-2-64
	shock	40 g shock spectrum, in line with MIL-STD-810, method 516, procedure I
Operation	permissible altitude	3000 m above sea level
Weight		0.5 kg (1.1 lb)
Shipping weight		1 kg (2.2 lb)

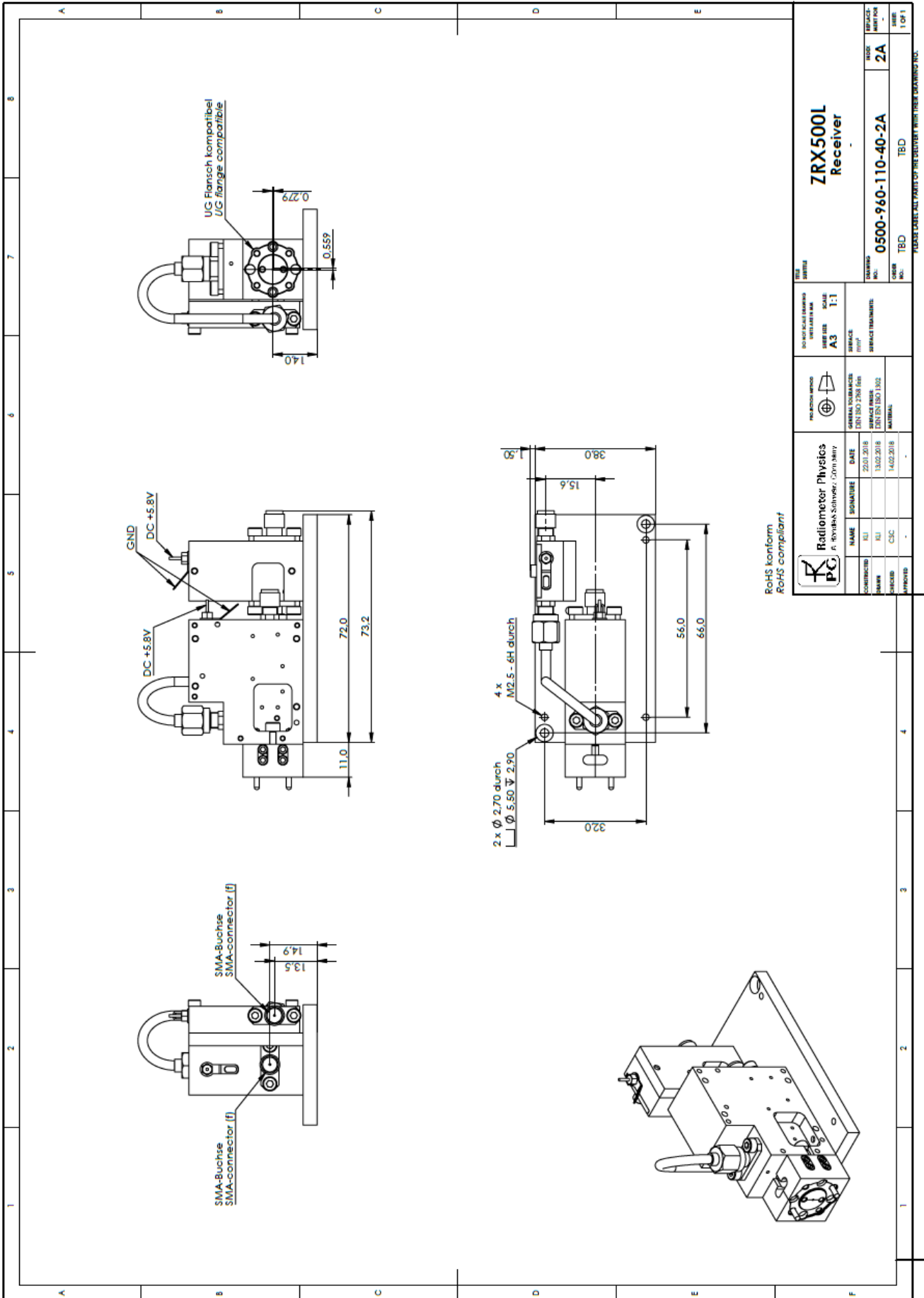






RoHS konform
RoHS compliant!

PC		Radiometer Physics		Signature		Signature		Signature	
NAME	KU	DATE	22.01.2018	DATE	13.02.2018	DATE	14.02.2018	DATE	TBD
CONSTRUCTED	KU	DATE	13.02.2018	DATE	14.02.2018	DATE	TBD	DATE	TBD
DRAWN	KU	DATE	13.02.2018	DATE	14.02.2018	DATE	TBD	DATE	TBD
CHECKED	CSC	DATE	14.02.2018	DATE	TBD	DATE	TBD	DATE	TBD
APPROVED	-	DATE	-	DATE	-	DATE	-	DATE	-
RoHS konform RoHS compliant!		Radiometer Physics P. Rohde & Schwarz Company		Signature		Signature		Signature	
Production Drawing		Drawing Title		Drawing No.		Drawing Rev.		Drawing Date	
A3		Scale		1:1		Drawing No.		OUT-0330-960-110-40-1A	
Drawing No.		Drawing Title		Drawing Rev.		Drawing Date		Drawing Date	
Drawing Title		Drawing Rev.		Drawing Date		Drawing Date		Drawing Date	
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Drawing Title		Drawing Rev.		Drawing Date		Drawing Date		Drawing Date	



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Radiometer Physics P. ROTHMANN, G. SCHNEIDER, G. GRIEBNER		PRODUCTION METHOD MOUNTING METHOD SCALE SHEET SIZE A3 1:1		TITLE ZRX500L Receiver DRAWING NO. 0500-960-110-40-2A CODE NO. TBD		REVISION NO. 2A SHEET NO. 1 OF 1	
NAME SCHNEIDER DATE 22.01.2018		GENERAL STANDARDS DIN ISO 2768 for DIMENSIONS DIN EN ISO 1302 MATERIALS		SURFACE TREATMENT SURFACE TREATMENT		DRAWING NO. 0500-960-110-40-2A CODE NO. TBD	
CONTRACTED BY NAME RADIOMETER PHYSICS	DATE 13.02.2018	CHECKED BY NAME SCHNEIDER	DATE 14.02.2018	PLEASE LIST ALL PARTS OF THE DELIVERY LIST DRAWING NO.			

Ordering information

Designation	Type	Order No.
Receiver WR-15	RPG ZRX75L	3642.6330.02 (21000090)
Receiver WR-10	RPG ZRX110L	3642.6918.02 (21000091)
Receiver WR-3.4	RPG ZRX330L	3642.6924.02 (21000092)
Receiver WR-2.2	RPG ZRX500L	3642.7108.02 (21000093)
Test Cable, 3.5 mm (f) to 3.5 mm (m), length: 910 mm (two cables per converter required)	R&S®ZV-Z193	1306.4520.36
Test Cable, 2.92 mm (f) to 2.92 mm (m), length: 910 mm (two cables per converter required)	R&S®ZV-Z195	1306.4536.36
Adapter Kit, including a power divider and two right angle SMA (m/m) adapters (required if R&S®ZVA24 var. 28 or R&S®ZVA40 var. 48 (VNAs with four sources) is used)	R&S®ZCAK	1323.7746.24
Adapter Kit, including four 1.85 mm (f) to 2.92 mm (m) adapters and four 1.85 mm (m) to 2.92 mm (f) adapters (required if R&S®ZVA50 is used)	R&S®ZCAK	1323.7746.50
Adapter Kit, including a power divider, two right angle SMA (m/m) adapters, three 1.85 mm (f) to 2.92 mm (m) adapters and four 1.85 mm (m) to 2.92 mm (f) adapters (required if R&S®ZVA67 is used)	R&S®ZCAK	1323.7746.67
Torque Wrench, for waveguide flange screws	R&S®ZV-Z1000	1314.5467.02
Angled Wrench, for waveguide flange screws	R&S®ZCAW	1175.1960.00
Angled Torque Wrench, for waveguide flange screws	R&S®ZCTW	1175.2014.02

Service options		
Extended Warranty, one year	R&S®WE1	Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2	
Extended Warranty, three years	R&S®WE3	
Extended Warranty, four years	R&S®WE4	
Extended Warranty with Calibration Coverage, one year	R&S®CW1	
Extended Warranty with Calibration Coverage, two years	R&S®CW2	
Extended Warranty with Calibration Coverage, three years	R&S®CW3	
Extended Warranty with Calibration Coverage, four years	R&S®CW4	

Extended warranty with a term of one to four years (WE1 to WE4)

Repairs carried out during the contract term are free of charge ¹. Necessary calibration and adjustments carried out during repairs are also covered.

Extended warranty with calibration (CW1 to CW4)

Enhance your extended warranty by adding calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated, inspected and maintained during the term of the contract. It includes all repairs ¹ and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

For product brochure, see PD 3607.1471.12 and www.rohde-schwarz.com

¹ Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.