

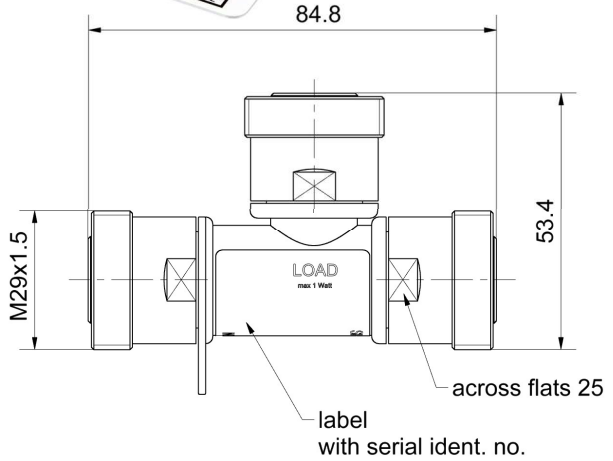


Rosenberger
Calibration Kit
SW-XXXXXX

Handling precautions

- Keep connectors clean.
- Connect calibration standards only to test and other devices that have been checked for gauge.
- Do not touch the contact

Standard	Thru (Ω)	Load (Ω)	Open (Ω)	Unit	Short (Ω)	Unit
Min. Freq.	0	0	0	GHz	0	GHz
Max. Freq.	0	0	0	GHz	0	GHz
Offset Cap.	50	50	50	Ω	50	Ω
Offset Loss	208.61	208.61	208.61	dB	208.61	dB
Cl / L1	2.91	2.91	2.91	pF	2.91	pF
Cl / L2	0	0	0	pF	0	pF
Cl / L3	0	0	0	pF	0	pF
Cl / L4	0	0	0	pF	0	pF
Cl / L5	0	0	0	pF	0	pF
Cl / L6	0	0	0	pF	0	pF
Cl / L7	0	0	0	pF	0	pF
Cl / L8	0	0	0	pF	0	pF
Cl / L9	0	0	0	pF	0	pF
Cl / L10	0	0	0	pF	0	pF
Cl / L11	0	0	0	pF	0	pF
Cl / L12	0	0	0	pF	0	pF
Cl / L13	0	0	0	pF	0	pF
Cl / L14	0	0	0	pF	0	pF
Cl / L15	0	0	0	pF	0	pF
Cl / L16	0	0	0	pF	0	pF
Cl / L17	0	0	0	pF	0	pF
Cl / L18	0	0	0	pF	0	pF
Cl / L19	0	0	0	pF	0	pF
Cl / L20	0	0	0	pF	0	pF
Cl / L21	0	0	0	pF	0	pF
Cl / L22	0	0	0	pF	0	pF
Cl / L23	0	0	0	pF	0	pF
Cl / L24	0	0	0	pF	0	pF
Cl / L25	0	0	0	pF	0	pF
Cl / L26	0	0	0	pF	0	pF
Cl / L27	0	0	0	pF	0	pF
Cl / L28	0	0	0	pF	0	pF
Cl / L29	0	0	0	pF	0	pF
Cl / L30	0	0	0	pF	0	pF
Cl / L31	0	0	0	pF	0	pF
Cl / L32	0	0	0	pF	0	pF
Cl / L33	0	0	0	pF	0	pF
Cl / L34	0	0	0	pF	0	pF
Cl / L35	0	0	0	pF	0	pF
Cl / L36	0	0	0	pF	0	pF
Cl / L37	0	0	0	pF	0	pF
Cl / L38	0	0	0	pF	0	pF
Cl / L39	0	0	0	pF	0	pF
Cl / L40	0	0	0	pF	0	pF
Cl / L41	0	0	0	pF	0	pF
Cl / L42	0	0	0	pF	0	pF
Cl / L43	0	0	0	pF	0	pF
Cl / L44	0	0	0	pF	0	pF
Cl / L45	0	0	0	pF	0	pF
Cl / L46	0	0	0	pF	0	pF
Cl / L47	0	0	0	pF	0	pF
Cl / L48	0	0	0	pF	0	pF
Cl / L49	0	0	0	pF	0	pF
Cl / L50	0	0	0	pF	0	pF
Cl / L51	0	0	0	pF	0	pF
Cl / L52	0	0	0	pF	0	pF
Cl / L53	0	0	0	pF	0	pF
Cl / L54	0	0	0	pF	0	pF
Cl / L55	0	0	0	pF	0	pF
Cl / L56	0	0	0	pF	0	pF
Cl / L57	0	0	0	pF	0	pF
Cl / L58	0	0	0	pF	0	pF
Cl / L59	0	0	0	pF	0	pF
Cl / L60	0	0	0	pF	0	pF
Cl / L61	0	0	0	pF	0	pF
Cl / L62	0	0	0	pF	0	pF
Cl / L63	0	0	0	pF	0	pF
Cl / L64	0	0	0	pF	0	pF
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Cl / L67	0	0	0	pF	0	pF
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Cl / L78	0	0	0	pF	0	pF
Cl / L79	0	0	0	pF	0	pF
Cl / L80	0	0	0	pF	0	pF
Cl / L81	0	0	0	pF	0	pF
Cl / L82	0	0	0	pF	0	pF
Cl / L83	0	0	0	pF	0	pF
Cl / L84	0	0	0	pF	0	pF
Cl / L85	0	0	0	pF	0	pF
Cl / L86	0	0	0	pF	0	pF
Cl / L87	0	0	0	pF	0	pF
Cl / L88	0	0	0	pF	0	pF
Cl / L89	0	0	0	pF	0	pF
Cl / L90	0	0	0	pF	0	pF
Cl / L91	0	0	0	pF	0	pF
Cl / L92	0	0	0	pF	0	pF
Cl / L93	0	0	0	pF	0	pF
Cl / L94	0	0	0	pF	0	pF
Cl / L95	0	0	0	pF	0	pF
Cl / L96	0	0	0	pF	0	pF
Cl / L97	0	0	0	pF	0	pF
Cl / L98	0	0	0	pF	0	pF
Cl / L99	0	0	0	pF	0	pF
Cl / L100	0	0	0	pF	0	pF



All dimensions are in mm; tolerances according to ISO 2768 m-H

Interface

According to IEC 61169-4, EN 122190, DIN 47223

Contents and Documentation

- This kit is delivered with
- **Standard Definitions Card**
Printed Standard Definitions that can be used on nearly all Vector Network Analyzers
 - **Test Results Documentation**
 - **Lanyard**
 - **Hard Shell Case**
 - **Protection Caps**

Material and plating

Connector parts	Material	Plating
Center conductor	CuBe	Gold, min. 1.27 µm, over nickel
Outer conductor	Brass	Flash white bronze over silver(e.g. Optargen®)
Body	Brass	powder coated
Dielectric	PP	
Substrate	Al ₂ O ₃	

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Electrical data

Frequency range DC to 6 GHz

Open

Return loss ≤ 0.15 dB, DC to 6 GHz
 Error from nominal phase¹ $\leq 3.0^\circ$, DC to 6 GHz

Short

Return loss ≤ 0.15 dB, DC to 6 GHz
 Error from nominal phase² $\leq 3.0^\circ$, DC to 6 GHz

Load

Return loss ≥ 40 dB, DC to 2.5 GHz
 ≥ 38 dB, 2.5 GHz to 6 GHz
 DC-Resistance $50 \Omega \pm 0.5 \Omega$
 Power handling (at 25 °C, sea level) ≤ 1.0 W, derate by 0.01 W/K

¹ The nominal phase is defined by the Offset Delay, the Offset Loss and the Fringing Capacitances

² The nominal phase is defined by the Offset Delay, the Offset Loss and the Short Inductance

Mechanical data

Mating cycles ≥ 500
 Maximum torque 30 Nm
 Recommended torque 2.26 Nm
 Gauge 1.77 mm to 2.07 mm

General standard definitions

For proper operation the vector network analyzer (VNA) needs a model describing the electrical behaviour of this calibration standard. The different models, units, and terms used will depend on the VNA type and they will have to be entered into the VNA. All values are based on typical geometry and plating.

Open

Offset Z_o / Impedance / Z_o 50 Ω
 Offset Delay 87.394 ps
 Length (electrical) / Offset Length 26.20 mm
 Offset Loss 0.50 G Ω /s
 Loss 0.0076 dB/ $\sqrt{\text{GHz}}$
 Fringing Capacitances $C_0 = 177.000 \times 10^{-15}$ F / 177.000 fF
 $C_1 = 7200.00 \times 10^{-27}$ F/Hz / 7.20000 fF /GHz
 $C_2 = -3300.00 \times 10^{-36}$ F/Hz² / -3.30000 fF /GHz²
 $C_3 = 386.000 \times 10^{-45}$ F/Hz³ / 0.38600 fF /GHz³

Short

Offset Z_o / Impedance / Z_o	50 Ω		
Offset Delay	96.734 ps		
Length (electrical) / Offset Length	29.00 mm		
Offset Loss	0.50 G Ω /s		
Loss	0.0084 dB/ $\sqrt{\text{GHz}}$		
Short Inductance	$L_0 = 0.0000 \times 10^{-12}$ H	/	0.0000 pH
	$L_1 = 0.0000 \times 10^{-24}$ H/Hz	/	0.0000 pH/GHz
	$L_2 = 0.0000 \times 10^{-33}$ H/Hz ²	/	0.0000 pH/GHz ²
	$L_3 = 0.0000 \times 10^{-42}$ H/Hz ³	/	0.0000 pH/GHz ³

Load

Offset Z_o / Impedance / Z_o	50 Ω
Offset Delay	0.0000 ps
Length (electrical) / Offset Length	0.000 mm
Offset Loss	0.00 G Ω /s
Loss	0.0000 dB/ $\sqrt{\text{GHz}}$

Environmental data

Operating temperature range ³	0 °C to +50 °C
Storage temperature range	- 55 °C to +90 °C
RoHS	compliant

³ Temperature range over which these specifications are valid.

Declaration of documentation

Standard delivery for this kit includes Test Results. The documentation issued reports which quantities were tested individually, traceable to national / international standards. Model based standard definitions of the calibration standards are reported in Agilent / Keysight, Rohde & Schwarz and Anritsu compatible VNA format.

Inspection interval

Recommendation	12 months
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Packing

Standard	1 pce in bag
Weight	310 g/pce

While the information has been carefully compiled to the best of our knowledge, nothing is intended as representation or warranty on our part and no statement herein shall be construed as recommendation to infringe existing patents. In the effort to improve our products, we reserve the right to make changes judged to be necessary.

Draft	Date	Approved	Date	Rev.	Engineering change number	Name	Date
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