



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

Interface

According to IEC 61169-16

Contents and Documentation

This kit is delivered with

- **Standard Definitions Card**
Printed Standard Definitions that can be used on nearly all Vector Network Analyzers
- **Certificate of Testing**
- **Lanyard**
- **Hard Shell Case**
- **Protection Caps**
- **User Manual**

Material and plating

Connector parts

Center conductor
Outer conductor
Coupling nut
Body
Dielectric
Substrate

Material

CuBe
Stainless steel
Stainless steel
Aluminum
PS
Al₂O₃

Plating

Gold, min. 1.27 μm, over nickel
Passivated
Passivated
black anodized

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Electrical data

Frequency range	DC to 12 GHz
Thru	
Return loss	≥ 36 dB, DC to 4 GHz ≥ 27 dB, 4 GHz to 8 GHz ≥ 25 dB, 8 GHz to 12 GHz
Open	
Error from nominal phase ¹	≤ 3.0°, DC to 4 GHz ≤ 5.0°, 4 GHz to 8 GHz ≤ 6.0°, 8 GHz to 12 GHz
Short	
Error from nominal phase ²	≤ 2.5°, DC to 4 GHz ≤ 4.0°, 4 GHz to 8 GHz ≤ 5.0°, 8 GHz to 12 GHz
Load	
Return loss	≥ 38 dB, DC to 4 GHz ≥ 32 dB, 4 GHz to 8 GHz ≥ 30 dB, 8 GHz to 12 GHz
DC-Resistance	75 Ω ± 0.75 Ω
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	1.70 Nm
Recommended torque	1.10 Nm
Gauge	5.28 mm to 5.36 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.

Thru

Offset Z ₀ / Impedance / Z ₀	75 Ω
Offset Delay	214.148 ps
Length (electrical) / Offset Length	64.20 mm
Offset Loss	1.20 GΩ/s
Loss	0.0149 dB/√GHz
Line Loss @ 1GHz	0.0002 dB/mm

Open

Offset Z ₀ / Impedance / Z ₀	75 Ω
Offset Delay	41.095 ps
Length (electrical) / Offset Length	12.32 mm
Offset Loss	1.20 GΩ/s
Loss	0.0057 dB/√GHz
Fringing Capacitances	C ₀ = -5.66000 x 10 ⁻¹⁵ F / -5.66000 fF C ₁ = -320.000 x 10 ⁻²⁷ F/Hz / -0.32000 fF /GHz C ₂ = 188.000 x 10 ⁻³⁶ F/Hz ² / 0.18800 fF /GHz ² C ₃ = -9.40000 x 10 ⁻⁴⁵ F/Hz ³ / -0.00940 fF /GHz ³

Short

Offset Z_o / Impedance / Z_o	75 Ω
Offset Delay	41.095 ps
Length (electrical) / Offset Length	12.32 mm
Offset Loss	1.20 GΩ/s
Loss	0.0057 dB/√GHz
Short Inductance	$L_0 = 22.8000 \times 10^{-12} \text{ H} \quad / \quad 22.8000 \text{ pH}$
	$L_1 = -1630.00 \times 10^{-24} \text{ H/Hz} \quad / \quad -1.63000 \text{ pH/GHz}$
	$L_2 = 23.0000 \times 10^{-33} \text{ H/Hz}^2 \quad / \quad 0.02300 \text{ pH/GHz}^2$
	$L_3 = -2.40000 \times 10^{-42} \text{ H/Hz}^3 \quad / \quad -0.00240 \text{ pH/GHz}^3$

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 GΩ/s
Loss	0.0000 dB/√GHz

Environmental data

Operating temperature range ³	+20 °C to +26 °C
Rated temperature range of use ⁴	0 °C to +50 °C
Storage temperature range	-40 °C to +85 °C
RoHS	compliant

³ Temperature range over which these specifications are valid.

⁴ This range is underneath and above the operating temperature range, within the calibration kit is fully functional and could be used without damage

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

Weight	257 g/pce
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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.

For the installation of the electrotechnical equipment, particular electrotechnical expertise is required.



Draft	Date	Approved	Date	Rev.	Engineering change number	Name	Date
Marcel Panicke	14.01.16	Lars Ramtke	30.05.23	f00	23-0004	Marion Striegler	26.05.23