

Precision Fixed Attenuators

Series 41 Gold Line Attenuators

for precision measurement applications

41W-x

DC to 110 GHz, 3 dB to 10 dB

41VA-x

DC to 70 GHz, 3 dB to 40 dB

41KC-x

DC to 40 GHz, 3 dB to 20 dB

41KB-x

DC to 26.5 GHz, 3 dB to 20 dB

Series 43 Silver Line Attenuators

for use in systems and OEM equipment

43KC-x

DC to 40 GHz, 3 dB to 20 dB

43KB-x

DC to 26.5 GHz, 3 dB to 20 dB



Introduction

Anritsu attenuators define the standard for fixed attenuator performance and reliability. The precision 41 and 43 series fixed attenuators are produced in two series: Gold Line and Silver Line. The Gold Line series covers DC to 110 GHz, whereas the Silver Line series covers DC to 40 GHz.

Features

- 3, 6, or 10 dB attenuation up to 110 GHz, 40 dB attenuation up to 70 GHz
- Low SWR, 1.28:1 up to 40 GHz; 2.0:1 up to 110 GHz
- The W1 Connector™ is compatible with 1 mm connectors
- The V Connector™ is compatible with 2.4 mm connectors
- The K Connector™ is compatible with 3.5 mm and SMA connectors
- Gold Line attenuators are serialized for traceability
- Design is robust and well suited for high frequency system and instrumentation applications
- Anritsu offers metrology-grade adapters and calibration devices for better repeatability and performance

Available Models

Gold Line Model	Frequency Range	Attenuation	Connectors	Impedance	Max Input Power
41W-3, 41W-6, 41W-10	DC to 110 GHz	3 dB, 6 dB, 10 dB	W1(f) to W1(m)	50 Ω	0.2 W
41VA-3, 41VA-6, 41VA-10, 41VA-20, 41VA-30, 41VA-40	DC to 70 GHz	3 dB, 6 dB, 10 dB, 20 dB, 30dB, 40 dB	V(f) to V(m)	50 Ω	2.0 W
41KC-3, 41KC-6, 41KC-10, 41KC-20	DC to 40 GHz	3 dB, 6 dB, 10 dB, 20 dB	K(f) to K(m)	50 Ω	2.0 W
41KB-3, 41KB-6, 41KB-10, 41KB-20	DC to 26.5 GHz	3 dB, 6 dB, 10 dB, 20 dB	K(f) to K(m)	50 Ω	2.0 W
Silver Line Model					
43KC-3, 43KC-6, 43KC-10, 43KC-20	DC to 40 GHz	3 dB, 6 dB, 10 dB, 20 dB	K(f) to K(m)	50 Ω	2.0 W
43KB-3, 43KB-6, 43KB-10, 43KB-20	DC to 26.5 GHz	3 dB, 6 dB, 10 dB, 20 dB	K(f) to K(m)	50 Ω	2.0 W

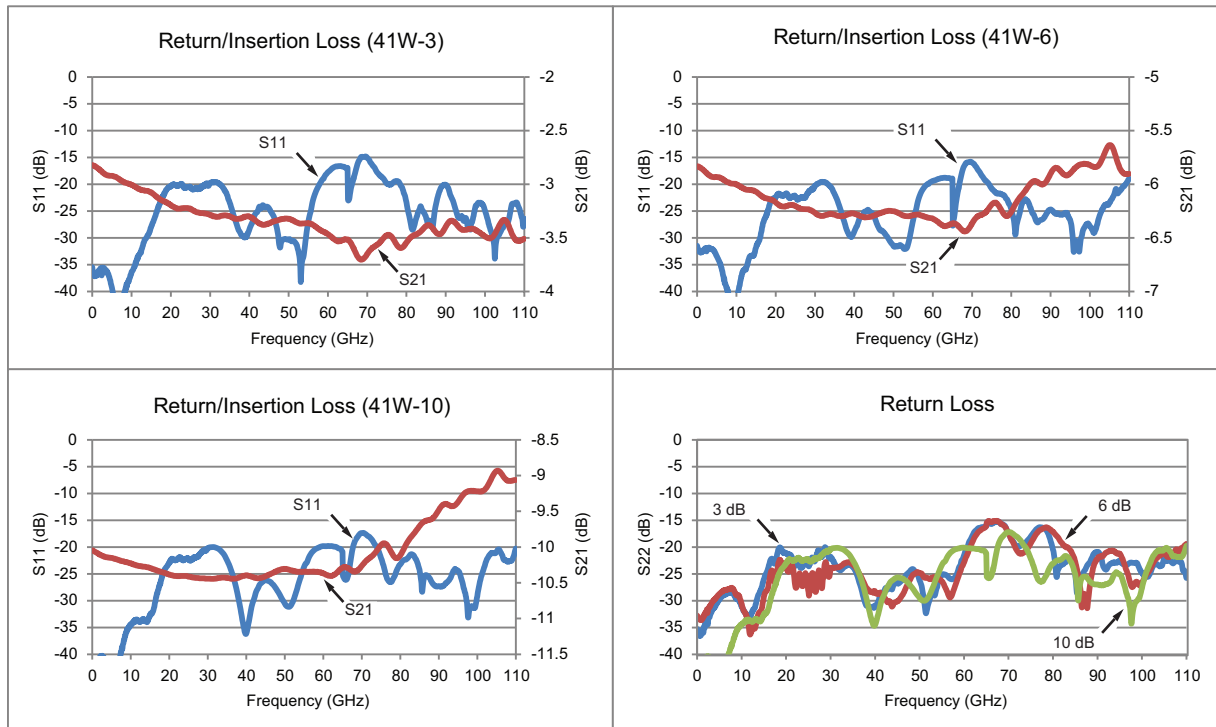
Specifications

General

Insertion Loss Temperature Coefficient: 0.001 dB/dB/°C max
 Temperature Range: 41W: Operating: 0 °C to +70 °C; Non-operating: -55 °C to +125 °C
 41VA, 41K, 43K: Operating: -55 °C to +85 °C; Non-operating: -55 °C to +125 °C
 Weight: 41W: 12 g
 41VA, 41K, 43K: 8 g

Gold Line Attenuators

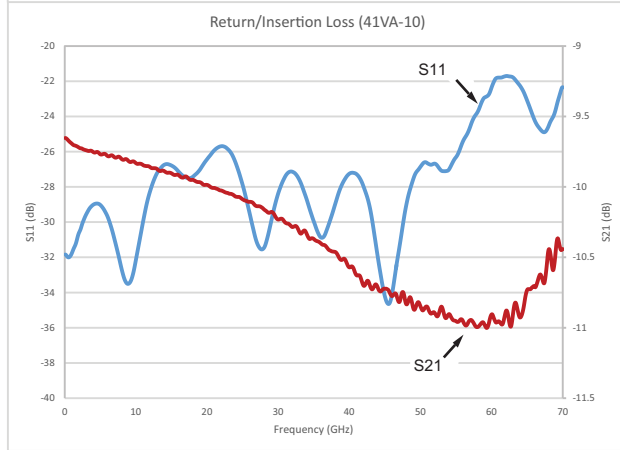
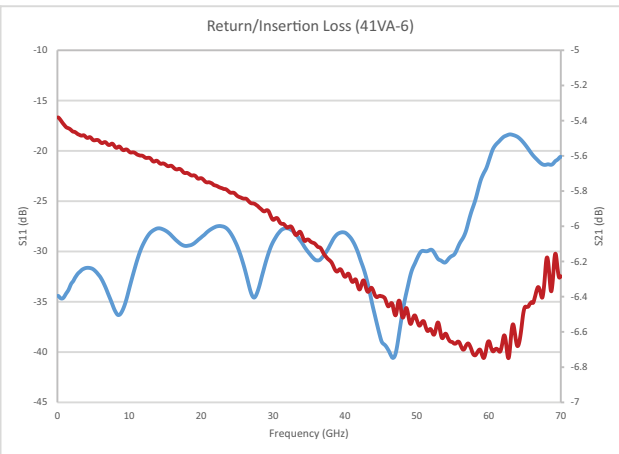
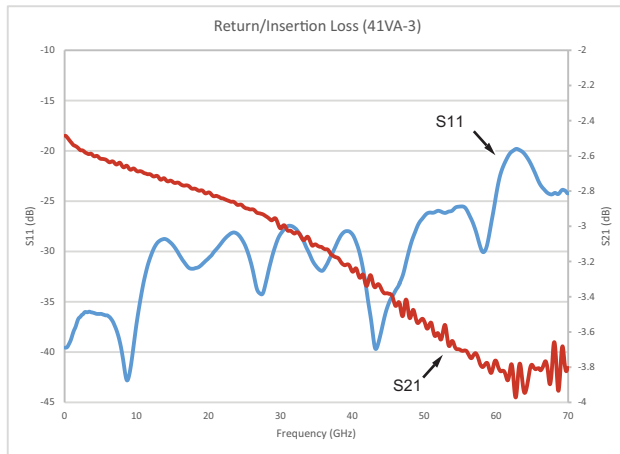
Model and Frequency Range	Insertion Loss		Return Loss (min)			
	DC to 20 GHz	> 20 GHz to 110 GHz	DC to 15 GHz	> 15 GHz to 50 GHz	> 50 GHz to 105 GHz	> 105 GHz to 110 GHz
41W-3	2.00 dB to 4.00 dB	1.00 dB to 5.00 dB	20.00 dB	15.00 dB	12.00 dB	10.00 dB
41W-6	5.00 dB to 7.00 dB	4.50 dB to 7.50 dB	20.00 dB	15.00 dB	12.00 dB	10.00 dB
41W-10	9.00 dB to 11.00 dB	8.50 dB to 11.50 dB	20.00 dB	15.00 dB	12.00 dB	10.00 dB



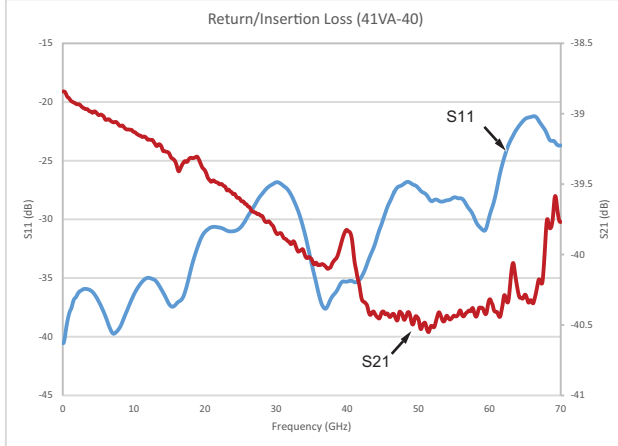
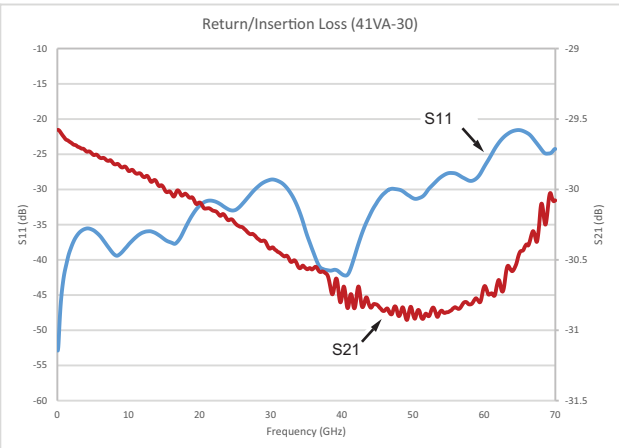
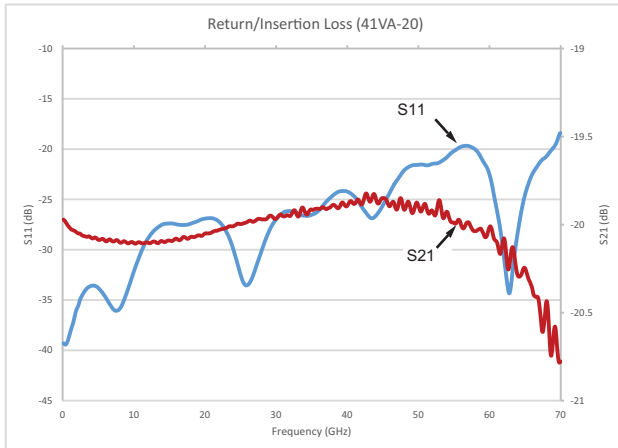
All plots typical.

Gold Line Attenuators

Model and Frequency Range	Insertion Loss							Return Loss (min)		
	DC to 2.5 GHz	> 2.5 GHz to 10 GHz	> 10 GHz to 20 GHz	> 20 GHz to 30 GHz	> 30 GHz to 50 GHz	> 50 GHz to 60 GHz	> 60 GHz to 70 GHz	DC to 10 GHz	> 10 GHz to 45 GHz	> 45 GHz to 70 GHz
41VA-3	2.2 dB to 3.0 dB	2.4 dB to 3.6 dB	2.4 dB to 3.9 dB	2.4 dB to 4.5 dB	2.6 dB to 4.0 dB	3.1 dB to 4.4 dB	3.1 dB to 4.4 dB	25.00 dB	20.00 dB	15.00 dB
41VA-6	5.1 dB to 5.8 dB	5.1 dB to 5.8 dB	5.3 dB to 6.3 dB	5.3 dB to 6.3 dB	5.6 dB to 6.9 dB	5.3 dB to 6.9 dB	5.3 dB to 6.9 dB	25.00 dB	20.00 dB	15.00 dB
41VA-10	9.6 dB to 10.6 dB	9.6 dB to 10.6 dB	9.7 dB to 10.8 dB	9.7 dB to 10.8 dB	9.9 dB to 11.3 dB	9.9 dB to 11.4 dB	9.4 dB to 11.4 dB	25.00 dB	20.00 dB	15.00 dB



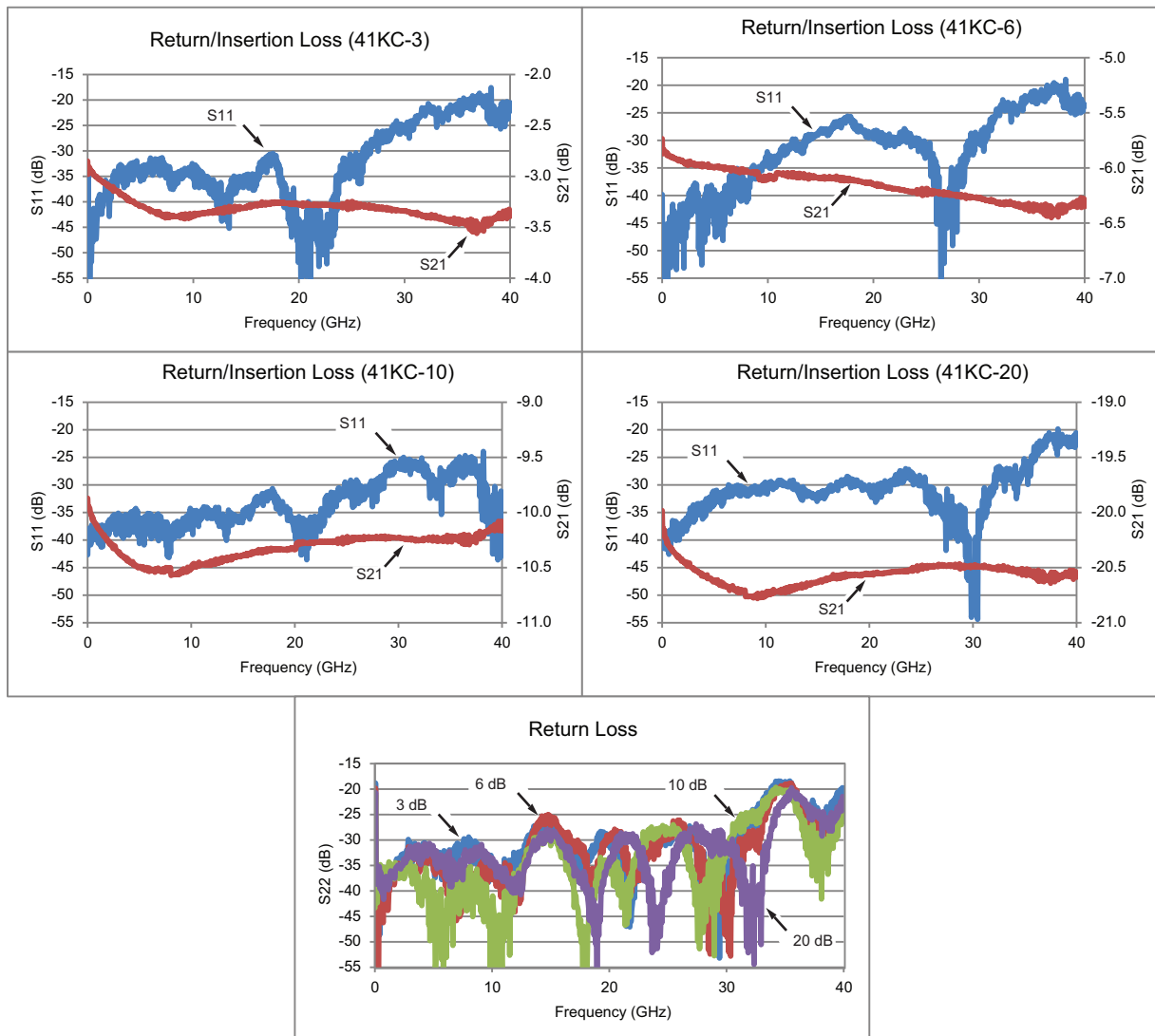
Model and Frequency Range	Insertion Loss						Return Loss (min)				
	DC to 2.5 GHz	> 2.5 GHz to 20 GHz	> 20 GHz to 40 GHz	> 40 GHz to 50 GHz	> 50 GHz to 60 GHz	> 60 GHz to 70 GHz	DC to 12 GHz	> 12 GHz to 18 GHz	> 18 GHz to 26.5 GHz	> 26.5 GHz to 40 GHz	> 40 GHz to 60 GHz
41VA-20	19.7 dB to 20.4 dB	19.7 dB to 20.4 dB	19.6 dB to 20.4 dB	19.5 dB to 20.4 dB	18.5 dB to 20.4 dB	19.7 dB to 21.1 dB	25.00 dB	20.00 dB	15.00 dB	15.00 dB	14.00 dB
41VA-30	29.2 dB to 30.6 dB	29.2 dB to 31.4 dB	29.6 dB to 31.4 dB	30.2 dB to 31.4 dB	30.2 dB to 31.4 dB	29.4 dB to 31.4 dB	25.00 dB	20.00 dB	20.00 dB	15.00 dB	15.00 dB
41VA-40	38.4 dB to 40 dB	38.4 dB to 40 dB	38.8 dB to 41.2 dB	38.8 dB to 41.1 dB	38.6 dB to 41.1 dB	38.6 dB to 41.1 dB	25.00 dB	20.00 dB	15.00 dB	15.00 dB	15.00 dB



All plots typical.

Gold Line Attenuators

Model and Frequency Range	Insertion Loss			Return Loss (min)			
	DC to 18 GHz	> 18 GHz to 26.5 GHz	> 26.5 GHz to 40 GHz	DC to 12 GHz	> 12 GHz to 18 GHz	> 18 GHz to 26.5 GHz	> 26.5 GHz to 40 GHz
41KC-3	2.6 dB to 3.4 dB	2.5 dB to 3.5 dB	2.2 dB to 3.8 dB	26.44 dB	23.13 dB	19.73 dB	15.21 dB
41KC-6	5.6 dB to 6.4 dB	5.5 dB to 6.5 dB	5.2 dB to 6.8 dB	26.44 dB	23.13 dB	21.66 dB	18.22 dB
41KC-10	9.6 dB to 10.4 dB	9.5 dB to 10.5 dB	9.2 dB to 10.8 dB	26.44 dB	23.13 dB	21.66 dB	18.22 dB
41KC-20	19.6 dB to 20.4 dB	19.5 dB to 20.5 dB	19.2 dB to 20.8 dB	26.44 dB	23.13 dB	21.66 dB	18.22 dB
Model and Frequency Range	DC to 18 GHz	> 18 GHz to 26.5 GHz		DC to 12 GHz	> 12 GHz to 18 GHz	> 18 GHz to 26.5 GHz	
41KB-3	2.6 dB to 3.4 dB	2.5 dB to 3.5 dB		26.44 dB	23.13 dB	19.73 dB	
41KB-6	5.6 dB to 6.4 dB	5.5 dB to 6.5 dB		26.44 dB	23.13 dB	21.66 dB	
41KB-10	9.6 dB to 10.4 dB	9.5 dB to 10.5 dB		26.44 dB	23.13 dB	21.66 dB	
41KB-20	19.6 dB to 20.4 dB	19.5 dB to 20.5 dB		26.44 dB	23.13 dB	21.66 dB	



All plots typical.

Silver Line Attenuators

Model and Frequency Range	Attenuation Flatness ^a			Return Loss (min)			
	DC to 18 GHz	> 18 GHz to 26.5 GHz	> 26.5 GHz to 40 GHz	DC to 12 GHz	> 12 GHz to 18 GHz	> 18 GHz to 26.5 GHz	> 26.5 GHz to 40 GHz
43KC-3	±0.5 dB	±0.6 dB	±0.9 dB	23.13 dB	20.81 dB	17.69 dB	13.98 dB
43KC-6	±0.5 dB	±0.6 dB	±0.9 dB	23.13 dB	20.81 dB	17.69 dB	15.56 dB
43KC-10	±0.5 dB	±0.6 dB	±0.9 dB	23.13 dB	20.81 dB	17.69 dB	15.56 dB
43KC-20	±0.5 dB	±0.6 dB	±0.9 dB	23.13 dB	20.81 dB	17.69 dB	15.56 dB
Model and Frequency Range	DC to 18 GHz	> 18 GHz to 26.5 GHz		DC to 12 GHz	> 12 GHz to 18 GHz	> 18 GHz to 26.5 GHz	
43KB-3	±0.5 dB	±0.6 dB		23.13 dB	20.81 dB	17.69 dB	
43KB-6	±0.5 dB	±0.6 dB		23.13 dB	20.81 dB	17.69 dB	
43KB-10	±0.5 dB	±0.6 dB		23.13 dB	20.81 dB	17.69 dB	
43KB-20	±0.5 dB	±0.6 dB		23.13 dB	20.81 dB	17.69 dB	

a. Attenuation accuracy: ±1 dB from DC to 26.5 GHz, ±1.3 dB from > 26.5 to 40 GHz; including frequency response and DC offset

Environmental (per MIL-STD-202F)

Temperature Shock	-55 °C to +150 °C
Humidity	95% at 40 °C, 96 hours, Test 103B, Condition B
Shock	100 G _n peak sawtooth, method 213, Condition B
Vibration	Sinewave: 10 Hz to 2000 Hz, 0.06" DA, method 204, test condition D Random: 50 Hz to 2000 Hz, 11.6 Grms, Power Spectral Density 0.1 Grms 2 Hz, Method 214, Test Condition 1, Letter D
Salt Spray ¹	5% concentration for 48 hours, Method 101D, Condition B

Regulatory Compliance

41KC, 41KB, 43KC, 43KB, 41W, 41VA RoHS Directive 2015/863/EU

Ordering Information

Gold Line Model Precision Fixed Attenuators (each attenuator is serialized for traceability)

Part Number	Description
41W-3, 41W-6, 41W-10	DC to 110 GHz, 3 dB, 6 dB, 10 dB, W1(f) to W1(m), 50 Ω
41VA-3, 41VA-6, 41VA-10, 41VA-20, 41VA-30, 41VA-40	DC to 70 GHz, 3 dB, 6 dB, 10 dB, 20 dB, 30 dB, 40 dB, V(f) to V(m), 50 Ω
41KC-3, 41KC-6, 41KC-10, 41KC-20	DC to 40 GHz, 3 dB, 6 dB, 10 dB, 20 dB, K(f) to K(m), 50 Ω
41KB-3, 41KB-6, 41KB-10, 41KB-20	DC to 26.5 GHz, 3 dB, 6 dB, 10 dB, 20 dB, K(f) to K(m), 50 Ω
Precision Fixed Attenuator Sets	A set of 3, 6, 10, and 20 dB Gold Line Attenuators (Series 41) supplied in a hardwood case. Calibration data are included for each unit.
41VA-S	41VA Series Precision Fixed Attenuator Set
41KC-S	41KC Series Precision Fixed Attenuator Set
41KB-S	41KB Series Precision Fixed Attenuator Set

Silver Line Model Fixed Attenuators

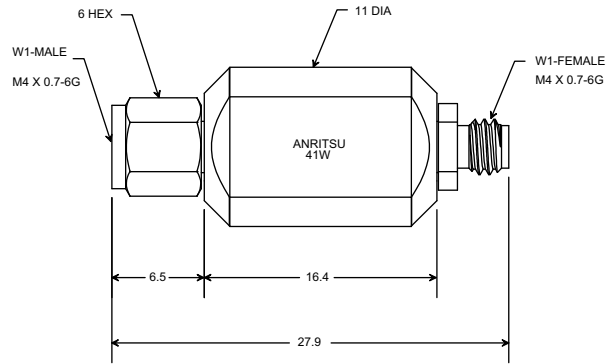
Part Number	Description
43KC-3, 43KC-6, 43KC-10, 43KC-20	DC to 40 GHz, 3 dB, 6 dB, 10 dB, 20 dB, K(f) to K(m), 50 Ω
43KB-3, 43KB-6, 43KB-10, 43KB-20	DC to 26.5 GHz, 3 dB, 6 dB, 10 dB, 20 dB, K(f) to K(m), 50 Ω

Calibration Data

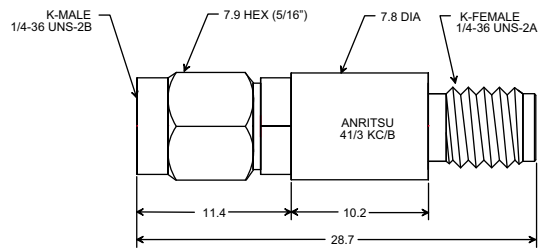
Part Number	Description
41W-099	Premium Calibration to ISO17025 and ANSI/NCSL Z540-1. Includes calibration certificate, test report, and uncertainty data.
41K-CAL	Standard Calibration to ISO17025 and ANSI/NCSL Z540-1. Includes calibration certificate.
41VA-99	Premium Calibration to ISO17025 and ANSI/NCSL Z540-1. Includes calibration certificate, test report, and uncertainty data.

1. Salt spray does not apply to the 41W series attenuators or 41VA-3, 41VA-6, and 41VA-10 attenuators.

Dimensions

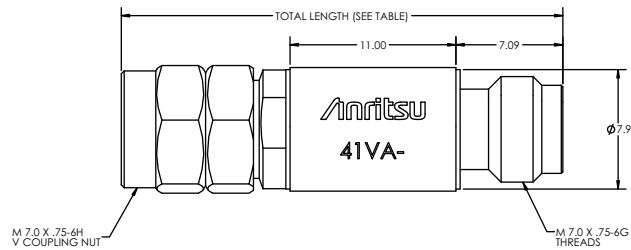


Models 41W-x



Models 41K-x/43K-x

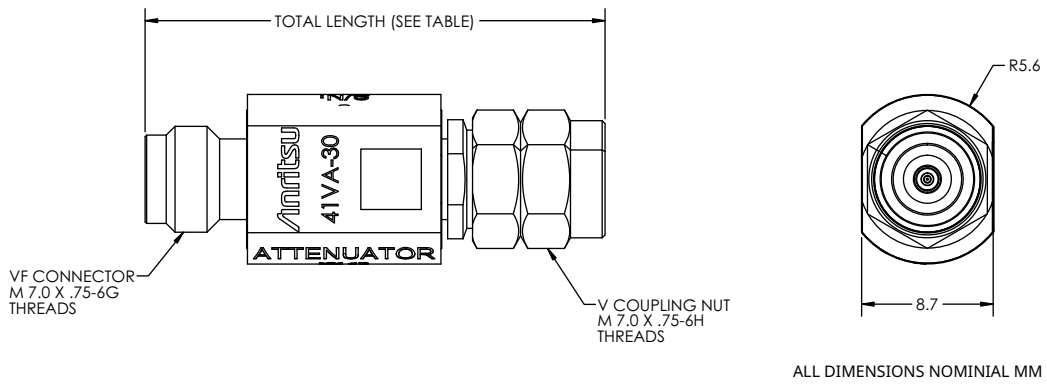
All dimensions in mm



Models 41VA-3, 6, 10, 20

Technical Data

Fixed Attenuators



Models 41VA-30, 40

Model	Total Length (mm)
41VA-3	29.00
41VA-6	29.00
41VA-10	29.00
41VA-20	29.45
41VA-30	30.20
41VA-40	30.65

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• United States

Anritsu Americas Sales Company
450 Century Parkway, Suite 190,
Allen, TX 75013, U.S.A.
Phone: +1-800-Anritsu (1-800-267-4878)

• Canada

Anritsu Electronics Ltd.
700 Silver Seven Road, Suite 120,
Kanata, Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

• Brazil

Anritsu Elettronica Ltda.
Praça Amadeu Amaral, 27 - 1 Andar
01327-010 - Bela Vista - Sao Paulo - SP, Brazil
Phone: +55-11-3283-2511
Fax: +55-11-3288-6940

• Mexico

Anritsu Company, S.A. de C.V.
Blvd Miguel de Cervantes Saavedra #169 Piso 1,
Col. Granada, Mexico, Ciudad de Mexico,
11520, MEXICO
Phone: +52-55-4169-7104

• United Kingdom

Anritsu EMEA Ltd.
200 Capability Green,
Luton, Bedfordshire, LU1 3LU, U.K.
Phone: +44-1582-433200
Fax: +44-1582-731303

• France

Anritsu S.A.
12 avenue du Québec, Immeuble Goyave,
91140 VILLEBON SUR YVETTE, France
Phone: +33-1-60-92-15-50

• Germany

Anritsu GmbH
Nemetschek Haus, Konrad-Zuse-Platz 1,
81829 München, Germany
Phone: +49-89-442308-0
Fax: +49-89-442308-55

• Italy

Anritsu S.r.l.
Spaces Eur Arte, Viale dell'Arte 25, 00144 Roma, Italy
Phone: +39-6-509-9711

• Sweden

Anritsu AB
Kistagången 20 B, 2 tr, 164 40 Kista, Sweden
Phone: +46-8-534-707-00

• Finland

Anritsu AB
Technopolis Aviapolis, Teknobulevardi 3-5 (D208.5.),
FI-01530 Vantaa, Finland
Phone: +358-20-741-8100

• Denmark

Anritsu A/S
c/o Regus Winghouse, Ørestads Boulevard 73, 4th floor,
2300 Copenhagen S, Denmark
Phone: +45-7211-2200

• Russia

Anritsu EMEA Ltd.
Representation Office in Russia
Tverskaya str. 16/2, bld. 1, 7th floor,
Moscow 125009, Russia
Phone: +7-495-363-1694
Fax: +7-495-935-8962

• Spain

Anritsu EMEA Ltd.
Representation Office in Spain
Paseo de la Castellana, 141.
Planta 5, Edificio Cuzco IV
28046, Madrid, Spain
Phone: +34-91-572-6761

• Austria

Anritsu EMEA GmbH
Am Belvedere 10, A-1100 Vienna, Austria
Phone: +43-(0)1-717-28-710

• United Arab Emirates

Anritsu EMEA Ltd.
Anritsu A/S
Office No. 164, Building 17, Dubai Internet City
P. O. Box - 501901, Dubai, United Arab Emirates
Phone: +971-4-3758479

• India

Anritsu India Private Limited
6th Floor, Indiqube ETA, No.38/4, Adjacent to EMC2,
Doddanekundi, Outer Ring Road,
Bengaluru - 560048, India
Phone: +91-80-6728-1300
Fax: +91-80-6728-1301

• Singapore

Anritsu Pte. Ltd.
11 Chang Charn Road, #04-01, Shriro House
Singapore 159640
Phone: +65-6282-2400
Fax: +65-6282-2533

• Vietnam

Anritsu Company Limited
16th Floor, Peakview Tower, 36 Hoang Cau Street,
O Cho Dua Ward, Dong Da District, Hanoi, Vietnam
Phone: +84-24-3201-2730

• P.R. China (Shanghai)

Anritsu (China) Co., Ltd.
Room 2701-2705, Tower A, New Caohejing
International Business Center No. 391 Gui Ping Road
Shanghai, 200233, P.R. China
Phone: +86-21-6237-0898
Fax: +86-21-6237-0899

• P.R. China (Hong Kong)

Anritsu Company Ltd.
Unit 1006-7, 10/F., Greenfield Tower, Concordia Plaza,
No. 1 Science Museum Road, Tsim Sha Tsui East,
Kowloon, Hong Kong, P.R. China
Phone: +852-2301-4980
Fax: +852-2301-3545

• Japan

Anritsu Corporation
8-5, Tamura-cho, Atsugi-shi, Kanagawa, 243-0016 Japan
Phone: +81-46-296-6509
Fax: +81-46-225-8352

• South Korea

Anritsu Corporation, Ltd.
5FL, 235 Pangyoeyeok-ro, Bundang-gu, Seongnam-si,
Gyeonggi-do 13494, South Korea
Phone: +82-31-696-7750
Fax: +82-31-696-7751

• Australia

Anritsu Pty. Ltd.
Unit 20, 21-35 Ricketts Road,
Mount Waverley, Victoria 3149, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

• Taiwan

Anritsu Company Inc.
7F, No. 316, Sec. 1, NeiHu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

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