

Coaxial attenuators

Description and purpose

D2M coaxial attenuators are designed for use in laboratory measurements as attenuation standards. The attenuators may be used as attenuation coefficient standards to check performance of scalar and vector network analyzers. Attenuator bodies and nuts are made of stainless steel. Central conductors are made of tempered beryllium bronze and plated with wear-proof gold. Low dielectric permeability and high strength insulation is applied. Used materials and attenuator design provide high stability of parameters, low reflection level and low attenuation irregularity for a great number of connect/disconnect cycles at operating temperatures between $-60\text{ }^{\circ}\text{C}$ and $+85\text{ }^{\circ}\text{C}$. Minimum screen attenuation is 100 dB. Custom attenuators with maximum operating temperature up to $+110\text{ }^{\circ}\text{C}$ are available for ordering. D2M attenuators are manufactured in accordance with ZHNCU.434821.007 TU specification.



Specifications

D2M-18 coaxial attenuators

Model	Connector	Rated attenuation, dB	Attenuation irregularity, dB	Frequency range, GHz	VSWR, max. (typ.)	P_{in}^* , W, max.	P_p^{***} , W, max.	Fig.
D2M-18-3-01R-01	Type III (female) – type III (male)	3	± 0.3	0 ... 18	1.2 (1.15)	3.5**	700	1
D2M-18-3-11R-11	Type N (female) – type N (male)	3						
D2M-18-6-01R-01	Type III (female) – type III (male)	6						
D2M-18-6-11R-11	Type N (female) – type N (male)	6						
D2M-18-10-01R-01	Type III (female) – type III (male)	10						
D2M-18-10-11R-11	Type N (female) – type N (male)	10						
D2M-18-15-01R-01	Type III (female) – type III (male)	15						
D2M-18-15-11R-11	Type N (female) – type N (male)	15						
D2M-18-20-01R-01	Type III (female) – type III (male)	20						
D2M-18-20-11R-11	Type N (female) – type N (male)	20						
D2M-18-25-01R-01	Type III (female) – type III (male)	25						
D2M-18-25-11R-11	Type N (female) – type N (male)	25						
D2M-18-30-01R-01	Type III (female) – type III (male)	30						
D2M-18-30-11R-11	Type N (female) – type N (male)	30						
D2M-18-40-01R-01	Type III (female) – type III (male)	40	± 1					
D2M-18-40-11R-11	Type N (female) – type N (male)	40	± 1					
D2M-18-50-01R-01	Type III (female) – type III (male)	50	± 1					
D2M-18-50-11R-11	Type N (female) – type N (male)	50	± 1					

* Maximum long-term dissipated power for direct current.

** The value is given for normal climatic conditions. For increased ambient temperature, reduction of input power is recommended.

*** For 1 μs pulse duration and pulse ratio of 1000.

D2M-20 coaxial attenuators

Model	Connector	Rated attenuation, dB		VSWR, max. (typ.)	Attenuation irregularity, dB		P _{IN} *, W, max.		Fig.
					0 ... 12 GHz	12 ... 20 GHz			
D2M-20-3-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	3	0 ... 20	1.2 (1.15)	± 0.3	± 0.5	2**	400	2
D2M-20-3-13R-13	3.5 mm (female) – 3.5 mm (male)								
D2M-20-6-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	6							
D2M-20-6-13R-13	3.5 mm (female) – 3.5 mm (male)								
D2M-20-10-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	10							
D2M-20-10-13R-13	3.5 mm (female) – 3.5 mm (male)								
D2M-20-15-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	15							
D2M-20-15-13R-13	3.5 mm (female) – 3.5 mm (male)								
D2M-20-20-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	20							
D2M-20-20-13R-13	3.5 mm (female) – 3.5 mm (male)								
D2M-20-30-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	30							
D2M-20-30-13R-13	3.5 mm (female) – 3.5 mm (male)								

* Maximum long-term dissipated power for direct current.

** The value is given for normal climatic conditions. For increased ambient temperature, reduction of input power is recommended.

*** For 1 μs pulse duration and pulse ratio of 1000.

D2M-32 coaxial attenuators

Model	Connector	Rated attenuation, dB	Frequency range, GHz	VSWR, max. (typ.)		Attenuation irregularity, dB				
				0 ... 20 GHz	20 ... 32 GHz	0 ... 20 GHz	20 ... 32 GHz			
D2M-32-3-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	3	0 ... 32	1.17	1.25	± 0.3	± 0.5	2**	400	2
D2M-32-3-13R-13	3.5 mm (female) – 3.5 mm (male)									
D2M-32-6-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	6								
D2M-32-6-13R-13	3.5 mm (female) – 3.5 mm (male)									
D2M-32-10-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	10								
D2M-32-10-13R-13	3.5 mm (female) – 3.5 mm (male)									
D2M-32-15-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	15								
D2M-32-15-13R-13	3.5 mm (female) – 3.5 mm (male)									
D2M-32-20-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	20								
D2M-32-20-13R-13	3.5 mm (female) – 3.5 mm (male)									
D2M-32-30-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	30								
D2M-32-30-13R-13	3.5 mm (female) – 3.5 mm (male)									
D2M-32-40-03R-03	Type IX, ver. 3 (female) – type IX, ver. 3 (male)	40								
D2M-32-40-13R-13	3.5 mm (female) – 3.5 mm (male)									

*Maximum long-term dissipated power for direct current.

** The value is given for normal climatic conditions. For increased ambient temperature, reduction of input power is recommended.

*** For 1 μs pulse duration and pulse ratio of 1000.

D2M-40 coaxial attenuators

Model	Connector	Attenuation, dB	Frequency range, GHz	VSWR, max.	P_{in}^* , W, max.	P_p^{***} , W, max.	Fig.
D2M-40-3-14R-14	2.92 mm (female) – 2.92 mm (male)	3 ± 0.7	0 ... 40	1.2	1.5**	300	3
D2M-40-6-14R-14	2.92 mm (female) – 2.92 mm (male)	6 ± 0.7					
D2M-40-10-14R-14	2.92 mm (female) – 2.92 mm (male)	10 ± 0.7					
D2M-40-15-14R-14	2.92 mm (female) – 2.92 mm (male)	15 ± 0.7					
D2M-40-20-14R-14	2.92 mm (female) – 2.92 mm (male)	20 ± 0.8					
D2M-40-25-14R-14	2.92 mm (female) – 2.92 mm (male)	25 ± 0.8					
D2M-40-30-14R-14	2.92 mm (female) – 2.92 mm (male)	30 ± 0.8					
D2M-40-40-14R-14	2.92 mm (female) – 2.92 mm (male)	$40^{+0.2}_{-1}$					

* Maximum long-term dissipated power for direct current.

** The value is given for normal climatic conditions. For increased ambient temperature, reduction of input power is recommended.

*** For 1 μ s pulse duration and pulse ratio of 1000.

D2M-50 coaxial attenuators

Model	Connector	Attenuation, dB	Frequency range, GHz	VSWR, max.	P_{in}^* , W, max.	P_p^{***} , W, max.	Fig.
D2M-50-3-05R-05	2.4 mm (female) – 2.4 mm (male)	3 ± 0.7	0 ... 50	1.2	1.5**	300	4
D2M-50-6-05R-05	2.4 mm (female) – 2.4 mm (male)	6 ± 0.7					
D2M-50-10-05R-05	2.4 mm (female) – 2.4 mm (male)	10 ± 0.7					
D2M-50-15-05R-05	2.4 mm (female) – 2.4 mm (male)	15 ± 0.7					
D2M-50-20-05R-05	2.4 mm (female) – 2.4 mm (male)	20 ± 0.8					
D2M-50-25-05R-05	2.4 mm (female) – 2.4 mm (male)	25 ± 0.8					
D2M-50-30-05R-05	2.4 mm (female) – 2.4 mm (male)	30 ± 0.8					
D2M-50-40-05R-05	2.4 mm (female) – 2.4 mm (male)	$40^{+0.2}_{-1.5}$					

* Maximum long-term dissipated power for direct current.

** The value is given for normal climatic conditions. For increased ambient temperature, reduction of input power is recommended.

*** For 1 μ s pulse duration and pulse ratio of 1000.

Dimensions

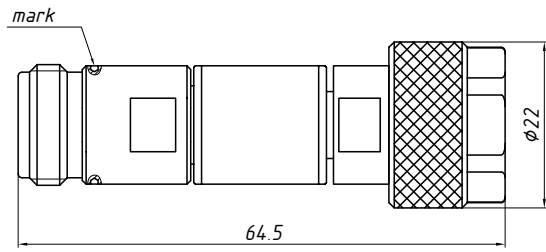


Fig. 1

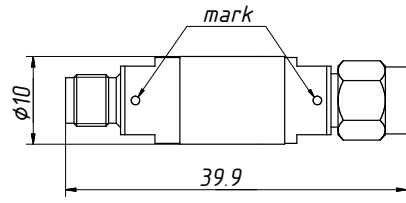


Fig. 2

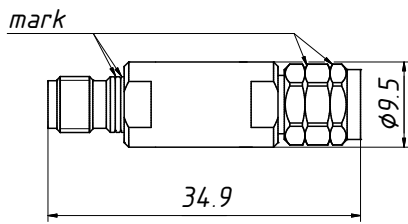


Fig. 3

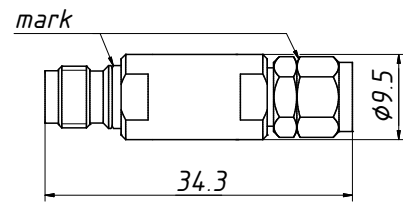


Fig. 4

Ordering example

- D2M-18-10-11R-11 Coaxial attenuator, type N (female) – type N (female), attenuation 10 dB.