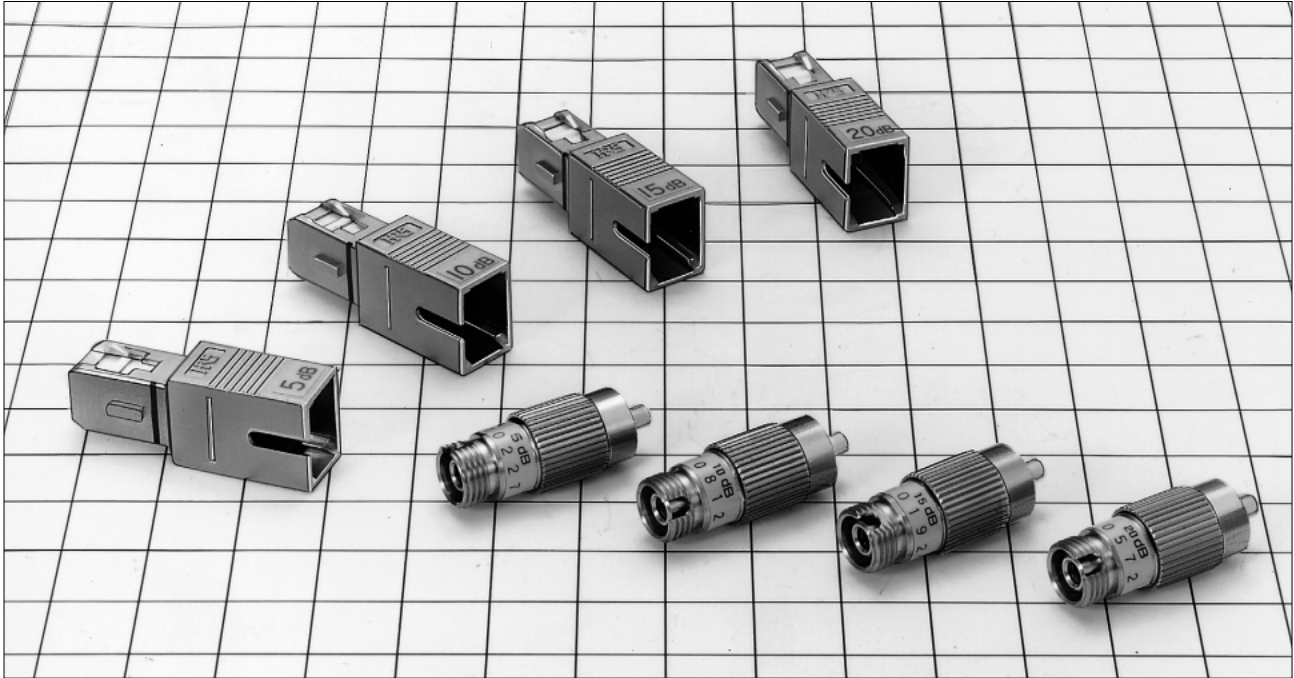


# Optical Fixed Attenuators



## ■ Features

### 1. Superb operational qualities.

These fixed attenuators are of the Plug-Jack type and offer superb operational qualities in comparison to the Jack-Jack type when mounted to panel interfaces and in other applications.

### 2. Two types are available, one that uses an evaporated metal attenuation film and another that uses a dielectric multi-layer film.

### 3. The attenuation tolerance can be specified by grade.

### 4. We would be pleased to discuss your needs for other kinds of attenuators, reflection attenuators, fiber, and other products.

## ■ Applications

Power level adjustment of optical fiber transfer backbones, and fiber applications.

## Product Standards

Rating	Operating temperature range	-25°C ~ 85°C	Storage temperature range	-25°C ~ 85°C
Item		Test Method (JIS C 5961)	Standard	
Optical Performance	Reflection attenuation	(SM)	1,300nm wavelength	22 dB or greater (PC), 40 dB (AdPC), 60 dB (Angled PC)
		(GI)		22 dB or greater (PC)
	Attenuation	(S grade)		Nominal value ±1.0 dB
		(A grade)		Nominal value ±1.5 dB
Mechanical performance	Coupling force and separation force (SC type)		Measure when connectors are coupled and separated in the direction of the axis.	Coupling force 19.6 N or less Separation force 19.6 N or less
	Split sleeve holding force of the adapter		φ2.499 ±0.0005-mm zirconia gauge	Phosphor bronze 2 to 5.9 N Zirconia @2 to 3.9 N
	Repetitive operation		500 times	1) The standard for attenuation after test must be satisfied. 2) No damage, cracks, or part looseness
	Vibration resistance		Vibration range of 10 to 55 Hz, in 3 directions, 3 hours each	
	Shock resistance		Acceleration of 981 m/s <sup>2</sup> , in both directions along 3 axes, 3 times each (Total of 18 times)	
Environmental performance	Humidity resistance (Temperature and humidity cycle)		Temperature-10°C to 65°C, humidity 90 to 96% 10 cycles	No conspicuous corrosion
	Temperature cycle		Temperature-25°C to 70°C 100 cycles	
	Heat resistance		Leave for 500 hours at a temperature of 85°C	
	Cold resistance		Leave for 500 hours at a temperature of -25°C	
	Salt fog		Left in a 5% concentration of salt fog for 48 hours	

## Materials

### HRFC Plug Type

Part Name	Material	Notes
Coupling	Copper alloy	NTT FC corresponding item
Housing	Stainless steel	
Ferrule	Zirconia	
Split sleeve	Zirconia, copper alloy	

### HRFC Plug Type

Part Name	Material	Notes
Housing	Polybutylene terephthalate	NTT FC corresponding item
Ferrule	Zirconia	
Split sleeve	Zirconia, copper alloy	

## Structure of the Product Number

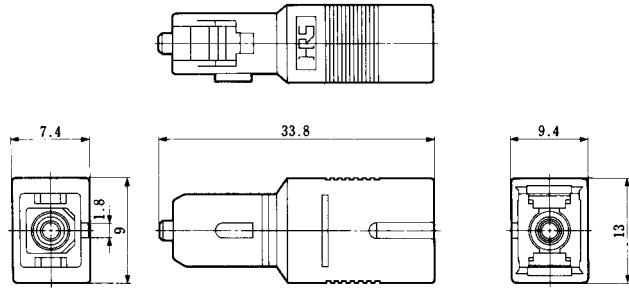
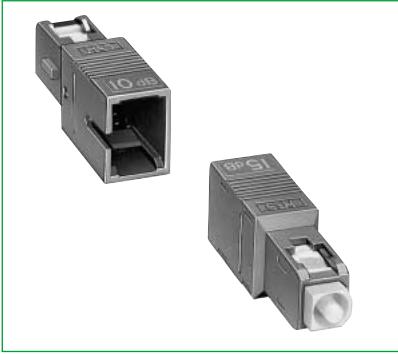
**HSC - AT 1 S - A 03 S**

① ② ③ ④ ⑤ ⑥ ⑦

① Series name: H S C ...Applicable to JIS C 5973 (F04) H R F C ...Applicable to JIS C 5970 (F01)	⑥ Attenuation : 02..... 2dB 03..... 3dB 05..... 5dB 07..... 7dB 10.....10dB 15.....15dB 20.....20dB 25.....25dB 30.....30dB
② Indicates an attenuator.	⑦ Attenuation tolerance : S.....±1dB A.....±1.5dB B.....±2dB
③ Specification : 1...Split sleeve made of copper alloy 4...Split sleeve made of zirconia 5...Copper alloy sleeve, cost effective type 8...Zirconia sleeve, cost effective type	
④ Polishing : S...PC polishing (≥22 dB) K...AdPC polishing (≥40 dB) TS...angled physical contact polishing (≥60 dB)	
⑤ Optical fiber : A...SM-9.5/125 B...GI-50/125 B...Doped fiber	

## Product Specifications List

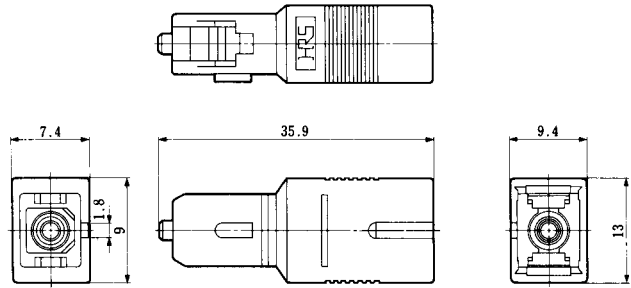
### SC-type Attenuators



HRS No.	Product Number	Attenuation	Split Sleeve Specification	Reflection Attenuation	Notes
CL820-0075-0-01	HSC-AT1S-B05A(01)	5dB	Copper alloy	≥22dB	GI-50/125
CL820-0076-2-01	HSC-AT1S-B10A(01)	10dB			
CL820-0077-5-01	HSC-AT1S-B15A(01)	15dB			
CL820-0078-8-01	HSC-AT1S-B20A(01)	20dB			
CL820-0094-4	HSC-AT4S-B05A	5dB	Zirconia	≥22dB	GI-50/125
CL820-0095-7	HSC-AT4S-B10A	10dB			
CL820-0096-0	HSC-AT4S-B15A	15dB			
CL820-0097-2	HSC-AT4S-B20A	20dB			
CL820-0093-1	HSC-AT1S-A03S	3dB	Copper alloy	≥22dB	SM-9.5/125
CL820-0071-9-01	HSC-AT1S-A05A(01)	5dB			
CL820-0072-1-01	HSC-AT1S-A10A(01)	10dB			
CL820-0073-4-01	HSC-AT1S-A15A(01)	15dB			
CL820-0092-9	HSC-AT1S-A20A(01)	20dB			
CL820-0074-7-01	HSC-AT1K-A03S	3dB			
CL820-0079-0	HSC-AT1K-A05A	5dB			
CL820-0080-0	HSC-AT1K-A10A	10dB			
CL820-0081-2	HSC-AT1K-A15A	15dB	Zirconia	≥40dB	SM-9.5/125
CL820-0082-5	HSC-AT1K-A20A	20dB			
CL820-0054-0	HSC-AT4S-A05A	5dB			
CL820-0055-2	HSC-AT4S-A10A	10dB			
CL820-0056-5	HSC-AT4S-A15A	15dB			
CL820-0057-8	HSC-AT4S-A20A	20dB			
CL820-0083-8	HSC-AT4K-A05A	5dB			
CL820-0084-0	HSC-AT4K-A10A	10dB			
CL820-0085-3	HSC-AT4K-A15A	15dB	≥60dB	SM-9.5/125	
CL820-0086-6	HSC-AT4K-A20A	20dB			
CL820-0087-9	HSC-AT4TS-A02S	2dB			
CL820-0088-1	HSC-AT4TS-A05S	5dB			
CL820-0089-4	HSC-AT4TS-A07S	7dB	≥60dB	SM-9.5/125	
CL820-0090-3	HSC-AT4TS-A10S	10dB			

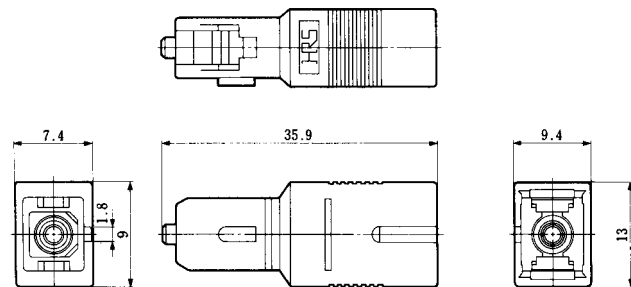
NOTE : Allowable power: 10 mW

## ●VA-type SC-type Attenuators (maximum permitted power 10mW)



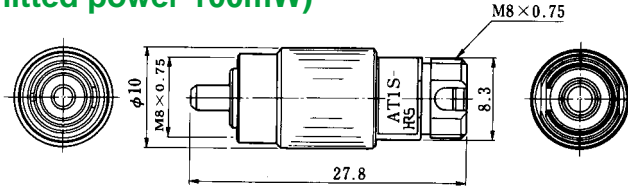
HRS No.	Product Number	Attenuation	Split Sleeve Specification	Reflection Attenuation	Notes	
CL820-3022-0	HSC-AT5S-B05A	5dB	Copper alloy	$\geq 22\text{dB}$	GI-50/125	
CL820-3023-2	HSC-AT5S-B10A	10dB				
CL820-3024-5	HSC-AT5S-B15A	15dB				
CL820-3025-8	HSC-AT5S-B20A	20dB				
CL820-3026-0	HSC-AT5S-A03S	3dB			$\geq 40\text{dB}$	SM-9.5/125
CL820-3005-0	HSC-AT5S-A05A	5dB				
CL820-3006-3	HSC-AT5S-A10A	10dB				
CL820-3007-6	HSC-AT5S-A15A	15dB				
CL820-3008-9	HSC-AT5S-A20A	20dB				
CL820-3017-0	HSC-AT5K-A03S	3dB				
CL820-3018-2	HSC-AT5K-A05S	5dB				
CL820-3019-5	HSC-AT5K-A10S	10dB				
CL820-3020-4	HSC-AT5K-A15S	15dB		Zirconia		
CL820-3021-7	HSC-AT5K-A20S	20dB				
CL820-3001-0	HSC-AT5K-A05A	5dB				
CL820-3002-2	HSC-AT5K-A10A	10dB				
CL820-3003-5	HSC-AT5K-A15A	15dB				
CL820-3004-8	HSC-AT5K-A20A	20dB				
CL820-3009-1	HSC-AT8S-A05A	5dB				
CL820-3010-0	HSC-AT8S-A10A	10dB				
CL820-3011-3	HSC-AT8S-A15A	15dB	$\geq 20\text{dB}$			
CL820-3012-6	HSC-AT8S-A20A	20dB	$\geq 40\text{dB}$			
CL820-3013-9	HSC-AT8K-A05A	5dB				
CL820-3014-1	HSC-AT8K-A10A	10dB				
CL820-3015-4	HSC-AT8K-A15A	15dB				
CL820-3016-7	HSC-AT8K-A20A	20dB				

## ●highpower SC-type Attenuators ( maximum permitted power 100mW)



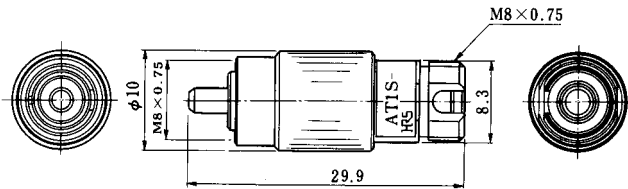
HRS No.	Product Number	Attenuation	Split Sleeve Specification	Reflection Attenuation	Notes
CL820-1001-9	HSC-AT4K-DF03S	3dB	Zirconia	$\geq 40\text{dB}$	doped singlemode fiber
CL820-1002-1	HSC-AT4K-DF05A	5dB			
CL820-1003-4	HSC-AT4K-DF10A	10dB			
CL820-1004-7	HSC-AT4K-DF15A	15dB			
CL820-1005-0	HSC-AT4K-DF20A	20dB			
CL820-1006-2	HSC-AT4K-DF25A	25dB			
CL820-1007-5	HSC-AT4K-DF30B	30dB			

●FC-type Attenuators (maximum permitted power 100mW)



HRS No.	Product Number	Attenuation	Polishing form	Split Sleeve Specification	Reflection Attenuation	Notes		
820-0063-0	HRFC-AT1S-B05A	5dB	PC	IV22	10	GI-50/125		
820-0064-3	HRFC-AT1S-B10A	10dB						
820-0065-6	HRFC-AT1S-B15A	15dB						
820-0066-9	HRFC-AT1S-B20A	20dB						
820-0058-0	HRFC-AT1S-A05A	5dB				AdPC	IV40	SM-9.5/125
820-0060-2	HRFC-AT1S-A10A	10dB						
820-0061-5	HRFC-AT1S-A15A	15dB						
820-0062-8	HRFC-AT1S-A20A	20dB						
820-0067-1	HRFC-AT1K-A05A	5dB						
820-0068-4	HRFC-AT1K-A10A	10dB						
820-0069-7	HRFC-AT1K-A15A	15dB						
820-0070-6	HRFC-AT1K-A20A	20dB						

●VA-type FC-type Attenuators (maximum permitted power 10mW)



HRS No.	Product Number	Attenuation	Split Sleeve Specification	Reflection Attenuation	Notes
CL820-5000-8	HRFC-AT5S-A05A	5dB	Copper alloy	≥22dB	SM-9.5/125
CL820-5001-0	HRFC-AT5S-A10A	10dB			
CL820-5002-3	HRFC-AT5S-A15A	15dB			
CL820-5003-6	HRFC-AT5S-A20A	20dB			
CL820-5004-9	HRFC-AT5K-A05S	5dB		IV40	
CL820-5005-1	HRFC-AT5K-A10S	10dB			
CL820-5006-4	HRFC-AT5K-A15S	15dB			
CL820-5007-7	HRFC-AT5K-A20S	20dB			
CL820-5008-0	HRFC-AT5K-A05A	5dB			
CL820-5009-2	HRFC-AT5K-A10A	10dB			
CL820-5010-1	HRFC-AT5K-A15A	15dB			
CL820-5011-4	HRFC-AT5K-A20A	20dB			

