

# SERIES SMB SUBMINIATURE CONNECTORS

## Description

The SUHNER subminiature connectors Series SMB, SMC, SMS have the same basic design. They only differ with regard to their coupling mechanism. SUHNER SMB subminiature connectors are suitable for applications from DC up to 4 GHz. The SMB series also features types available with low mating forces (typ. 20N/4.5 lbs).

### Coupling mechanism:

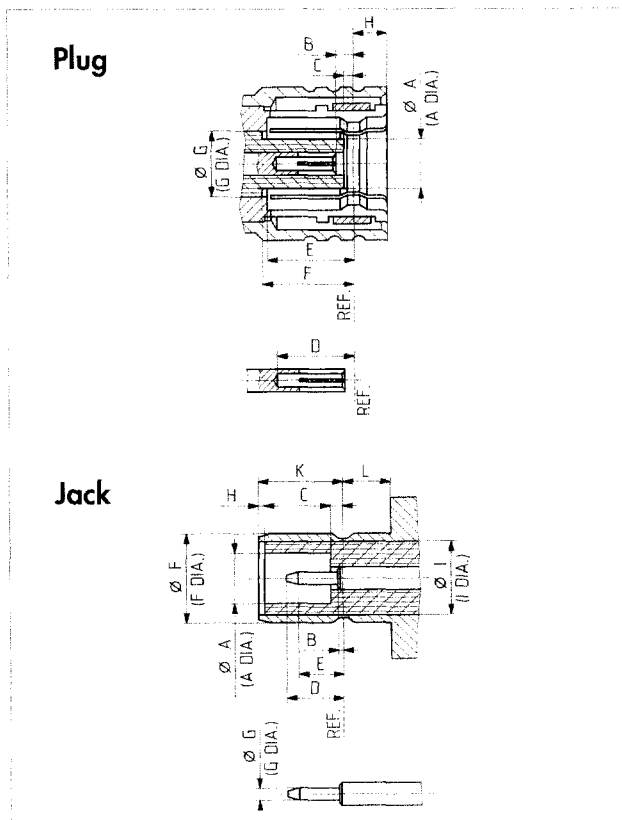
The SMB snap-on mechanism provides a fast and reliable connection for applications with high packing density.

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SMB  
SMC, SMS

## Interface Dimensions



## Interface Dimensions in mm / inches

	Plug		Jack	
	min.	max.	min.	max.
A	—	2.06/.081	2.08/.082	—
B	0.18/.007	0.94/.037	—	0.18/.007
C	0.18/.007	—	—	0.18/.007
D	2.97/.117	—	—	2.97/.117
E	3.58/.141	—	1.32/.052	—
F	3.58/.141	—	3.66/.144	3.71/.146
G	3.05/.120 nom.		0.48/.019	0.53/.021
H	—	1.63/.064	0.00/.000	—
I	—	—	3.05/.120 nom.	
K	—	—	3.33/.131	3.58/.141
L	—	—	1.65/.065	—

**Note:** SUHNER SMB jacks are intermateable with SUHNER SMS plugs.

These products are mentioned in the List of Preferred Products of CECC/MUAHAG.

## Standards

MIL-C-39012 SMB,  
 Interface MIL-STD-348A/311  
 IEC 169-10  
 CECC 22130  
 BS 9210 N 0007 SMB  
 NFC 93562 series KMC

## Technical Data

ELECTRICAL DATA CABLE DIELECTRIC DIAMETER	REQUIREMENTS 0.87 MM / .034 IN.	REQUIREMENTS 1.5 MM / .059 IN.
	Impedance	
Frequency range		DC ... 4 GHz (see also Appendix page 436)
VSWR		see table below
Insertion loss		see Appendix page 437
RF-leakage (measured at 1 GHz)		≥ 55 dB
Dielectric withstanding voltage (at sea level)	750 V rms, 50 Hz	1000 V rms, 50 Hz
Working voltage (at sea level) – unmated	≤ 250 V rms, 50 Hz	≤ 335 V rms, 50 Hz
Working voltage (at sea level) – unmated	≤ 350 V DC	≤ 450 V DC
Insulation resistance		≥ 10 <sup>4</sup> MΩ
Contact resistance		
– centre contact		≤ 6 mΩ
– outer contact		≤ 1 mΩ

TYPICAL VSWR CONNECTOR TYPE	FREQUENCY RANGE			CABLE GROUP
	1 GHz	2.5 GHz	4 GHz	
straight connectors	1.08	1.13	1.18	Y3, Y11
	1.10	1.25	1.38	U1
	1.04	1.07	1.10	U2, U4
right angle connectors	1.05	1.06	1.09	Y3, Y11
	1.07	1.17	1.25	U1
	1.05	1.10	1.13	U2, U4

Other connectors and cables on request

MECHANICAL DATA	REQUIREMENTS
Engagement force	8 N ... 63 N / 1.8 lbs ... 14.2 lbs
Disengagement force	8 N ... 63 N / 1.8 lbs ... 14.2 lbs
Contact captivation	$\geq 18$ N / 4.0 lbs
Cable retention force <sup>1)</sup>	see pages 36 – 41
Durability (matings)	$\geq 500$

1) value considers maximum load of the cables without irreversible variations of specifications.

ENVIRONMENTAL DATA	TEST CONDITIONS
Temperature range	$-65^{\circ}\text{C} \dots +165^{\circ}\text{C}$ / $-85^{\circ}\text{F} \dots +329^{\circ}\text{F}$
Climatic category acc. to IEC	55 / 155 / 21
Thermal shock	MIL-STD-202, Method 107, Condition C
Moisture resistance	MIL-STD-202, Method 106
Corrosion	Saltspray test acc. to MIL-STD-202, Method 101, Condition B
Vibration	MIL-STD-202, Method 204, Condition D

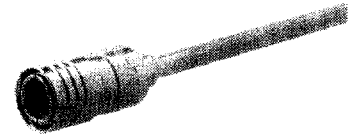
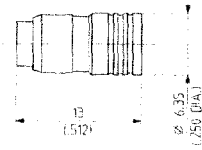
MATERIAL DATA			
CONNECTOR PART	STANDARDS	MATERIAL	PLATING
Bodies, pin contact	QQ-B-626	brass	gold, SUCOPLATE <sup>®</sup>
Socket contact	QQ-C-530	beryllium-copper, hardened	gold
Crimp ferrule (SUHNER <sup>®</sup> crimp)	SUHNER <sup>®</sup> specification	copper	gold, SUCOPLATE <sup>®</sup>
Springs and washers	QQ-C-530	beryllium-copper, hardened	gold, SUCOPLATE <sup>®</sup>
Insulators	ASTM-D-1457, BS 4271 Grade B	PTFE	
Gaskets (SUHNER <sup>®</sup> pressure-sleeve)	ASTM-E-1418 PS 1	silicone rubber	

Some connectors may have a specification that differs from the above mentioned data.

# Connectors for Semi-Rigid Cables

## straight plug

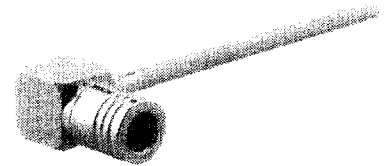
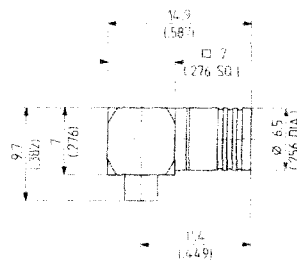
- > cable entry soldered
- > centre contact crimp or soldered



SUHNER TYPE	Ident. no.	Cable group (example)	Crimp insert	Assembly instruction	Weight	Notes
11 SMB-50-2-13	• 543362	Y3, Y11 (EZ 86)	1	9002	2.00 g / .070 oz.	

## right angle cable plug

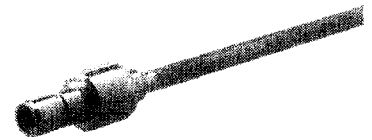
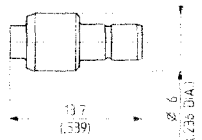
- > cable entry soldered
- > centre contact soldered



SUHNER TYPE	Ident. no.	Cable group (example)	Crimp insert	Assembly instruction	Weight	Notes
16 SMB-50-2-23	• 644079	Y3, Y11 (EZ 86)		9160	4.00 g / .140 oz.	

## straight jack

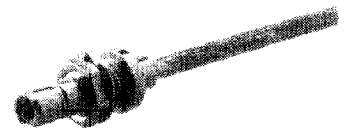
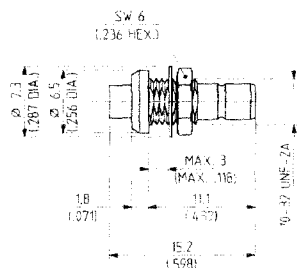
- > cable entry soldered
- > centre contact crimp or soldered



SUHNER TYPE	Ident. no.	Cable group (example)	Crimp insert	Assembly instruction	Weight	Notes
21 SMB-50-2-13	• 543425	Y3, Y11 (EZ 86)	1	9002	1.30 g / .046 oz.	

## bulkhead jack

- > cable entry soldered
- > centre contact crimp or soldered



SUHNER TYPE	Ident. no.	Cable group (example)	Crimp insert	Assembly instruction	Weight	Notes
24 SMB-50-2-13	640822	Y3, Y11 (EZ 86)	1	9002	1.40 g / .049 oz.	

• centre contact captivated

cable groups see page 36

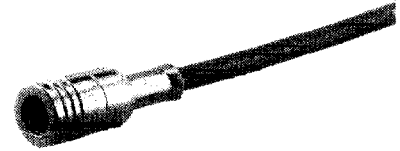
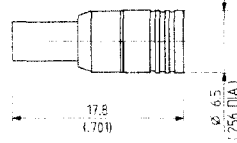
assembly tools see page 403

mounting holes see page 441

# Connectors for Flexible Cables

## straight plugs

> SUHNER® full crimp



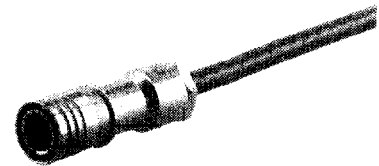
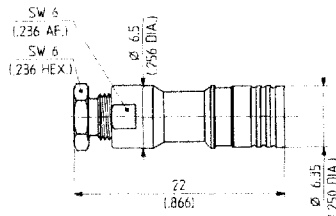
SMB

SUHNER TYPE	Ident. no.	Cable group (example)	MIL M 39012/	Crimp insert	Assembly instruction	Weight	Notes
11 SMB-50-1-10	640177	U1 (RG 178 B/U)		1/2 A	3077	2.30 g/.081 oz.	
11 SMB-50-1-40	648050	U1 (RG 178 B/U)		1/2 A	3077	2.30 g/.081 oz.	*
11 SMB-50-2-10/111●	640183	U2 (RG 316/U)	67B0009	1/2 A	3077	2.30 g/.081 oz.	
11 SMB-50-2-40 ●	648051	U2 (RG 316/U)		1/2 A	3077	2.30 g/.081 oz.	*
11 SMB-50-2-11/111●	543361	U4 (K 02252 D)		1/2 A	3077	2.30 g/.081 oz.	
11 SMB-50-2-41 ●	648052	U4 (K 02252 D)		1/2 A	3077	2.90 g/.102 oz.	*

\* preferred type; reduced engagement/disengagement force (typ. 20 N/4.5 lbs)

> SUHNER® pressure-sleeve

> centre contact soldered



SUHNER TYPE	Ident. no.	Cable group (example)	MIL M 39012/	Assembly instruction	Weight	Notes
11 SMB-50-1-6 ●	640176	U1 (RG 178 B/U)	67-0003	3041	2.90 g/.102 oz.	
11 SMB-50-2-5 ●	640179	U2 (RG 316/U)	67-0004	3041	2.90 g/.102 oz.	

● centre contact captivated

## right angle plugs

> SUHNER<sup>®</sup> full crimp

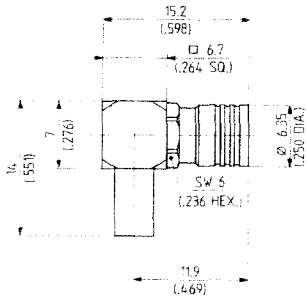


Fig. 1

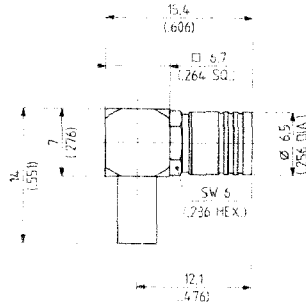
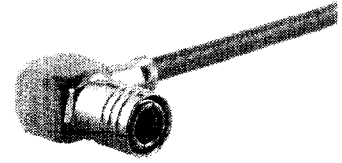


Fig. 2



SUHNER TYPE	Ident. no.	Cable group (example)	MIL M 39012/	Crimp insert	Assembly instruction	Weight	Fig.	Notes
16 SMB-50-1-10	543788	U1 (RG 178 B/U)		1/2 A	3096	4.00 g/.140 oz.	1	
16 SMB-50-1-40	648053	U1 (RG 178 B/U)		1/2 A	3096	4.00 g/.140 oz.	2	*
16 SMB-50-2-10/111●	543789	U2 (RG 316/U)	69B0009	1/2 A	3096	4.00 g/.140 oz.	1	
16 SMB-50-2-40 ●	648054	U2 (RG 316/U)		1/2 A	3096	4.00 g/.140 oz.	2	*
16 SMB-50-2-11/111●	640837	U4 (K 02252 D)		1/2 A	3096	4.00 g/.140 oz.	1	
16 SMB-50-2-41 ●	648055	U4 (K 02252 D)		1/2 A	3096	4.00 g/.140 oz.	2	*

\* preferred type; reduced engagement;/disengagement force (typ. 20 N/4.5 lbs.)

● centre contact captivated

- > cable entry crimp
- > centre contact soldered

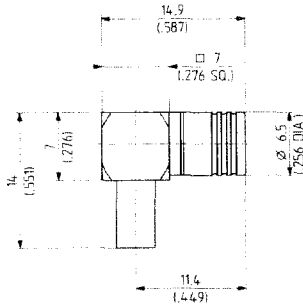


Fig. 1

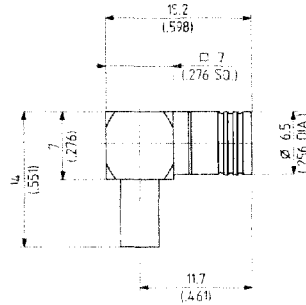
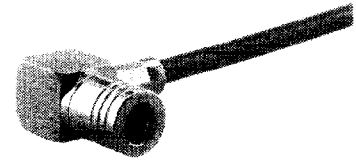


Fig. 2

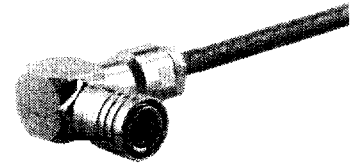
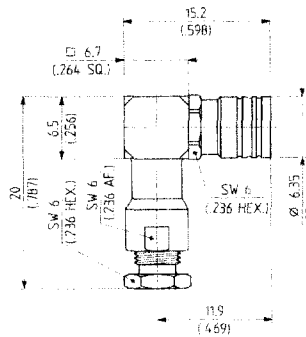


SMB

SUHNER TYPE	Ident. no.	Cable group (example)	Crimp insert	Assembly instruction	Weight	Fig.	Notes
16 SMB-50-1-20	● 643948	U1 (RG 178 B/U)	A	9157	4.00 g/.140 oz.	1	
16 SMB-50-1-50	● 648056	U1 (RG 178 B/U)	A	9157	4.00 g/.140 oz.	2	preferred type; *
16 SMB-50-2-20	● 643946	U2 (RG 316/U)	A	9157	4.00 g/.140 oz.	1	
16 SMB-50-2-50	● 648057	U2 (RG 316/U)	A	9157	4.00 g/.140 oz.	2	preferred type; *
16 SMB-50-2-21	● 643947	U4 (K 02252 D)	A	9157	4.00 g/.140 oz.	1	
16 SMB-50-2-51	● 648058	U4 (K 02252 D)	A	9157	4.00 g/.140 oz.	2	preferred type; *

\* reduced engagement/disengagement force (typ. 20 N/4.5 lbs.)

- > SUHNER<sup>®</sup> pressure-sleeve
- > centre contact soldered

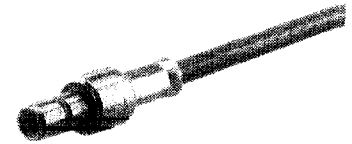
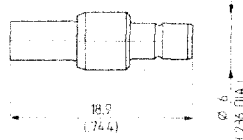


SUHNER TYPE	Ident. no.	Cable group (example)	MIL M 39012/	Assembly instruction	Weight	Notes
16 SMB-50-2-5	● 640190	U2 (RG 316/U)	69-0004	3039	5.20 g/.182 oz.	replaces UG-1457/U

- centre contact captivated

## straight jacks

> SUHNER® full crimp

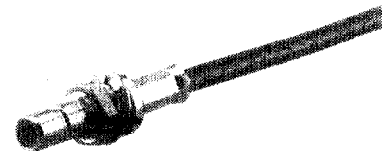
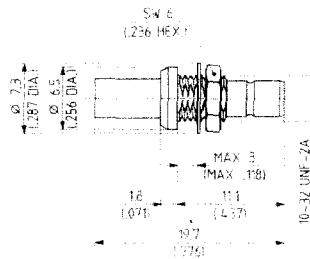


SUHNER TYPE	Ident. no.	Cable group (example)	MIL M 39012/	Crimp insert	Assembly instruction	Weight	Notes
21 SMB-50-1-10	543424	U1 (RG 178 B/U)		1/2 A	3077	1.60 g/.056 oz.	
21 SMB-50-2-10	• 640205	U2 (RG 316/U)	68B0009	1/2 A	3077	1.60 g/.056 oz.	
21 SMB-50-2-11	• 642407	U4 (K 02252 D)		1/2 A	3077	1.60 g/.056 oz.	

## bulkhead jacks

> SUHNER® full crimp

> rear mounting



SUHNER TYPE	Ident. no.	Cable group (example)	MIL M 39012/	Crimp insert	Assembly instruction	Weight	Notes
24 SMB-50-1-10/111	543631	U1 (RG 178 B/U)		1/2 A	3077	1.70 g/.060 oz.	
24 SMB-50-1-10/133	642799	U1 (RG 178 B/U)		1/2 A	3077	1.70 g/.060 oz.	SUCOPLATE®
24 SMB-50-2-10/111	• 640219	U2 (RG 316/U)	70B0009	1/2 A	3077	1.70 g/.060 oz.	
24 SMB-50-2-10/133	• 642538	U2 (RG 316/U)		1/2 A	3077	1.70 g/.065 oz.	SUCOPLATE™
24 SMB-50-2-11/111	• 641257	U4 (K 02252 D)		1/2 A	3077	1.70 g/.060 oz.	
24 SMB-50-2-11/133	• 642602	U4 (K 02252 D)		1/2 A	3077	1.70 g/.060 oz.	SUCOPLATE™

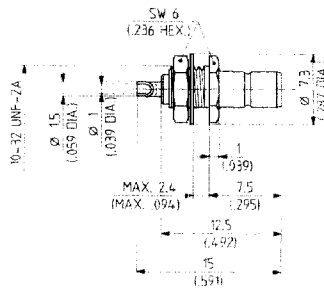
mounting hole Mt. 11

• centre contact captivated

# Receptacles with Solder End

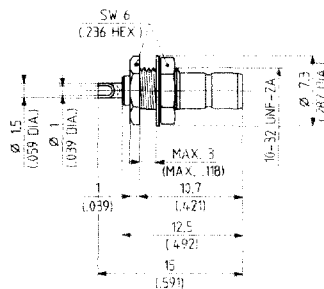
## receptacles, female

- > bulkhead mounted
- > front mounting
- > suitable for insulated mounting
- > insulating washers see page 425



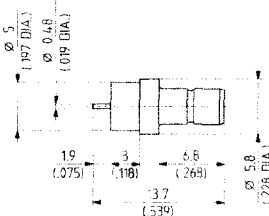
SUHNER TYPE	Ident. no.	MIL M 39012/	Mounting hole	Weight	Notes
22 SMB-50-0-2	• 640206	71-0002	ML 11	1.10 g/.039 oz.	

- > bulkhead mounted
- > rear mounting
- > suitable for insulated mounting
- > insulating washers see page 425



SUHNER TYPE	Ident. no.	MIL M 39012/	Mounting hole	Weight	Notes
22 SMB-50-0-3	• 640207	71-0001	ML 11	1.10 g/.039 oz.	replaces UG-1455/U

- > bulkhead mounted
- > hermetically sealed
- > suited for microstrip-circuits for direct soldering

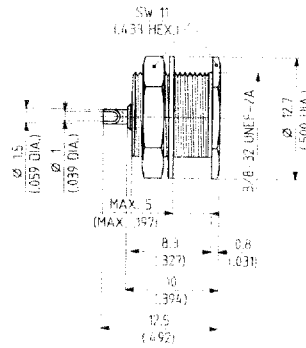


SUHNER TYPE	Ident. no.	VSWR	DC...3 GHz	3 ...4 GHz	Mounting hole	Weight	Leak rate
22 SMB-50-0-5	• 640209	≤ 1.2	≤ 1.4	ML 90	0.90 g/.032 oz.	≤ 10 <sup>-8</sup> Torr. l./sec. (atm cc/s)	

soldering temperature 250°C/482°F max.

- centre contact captivated

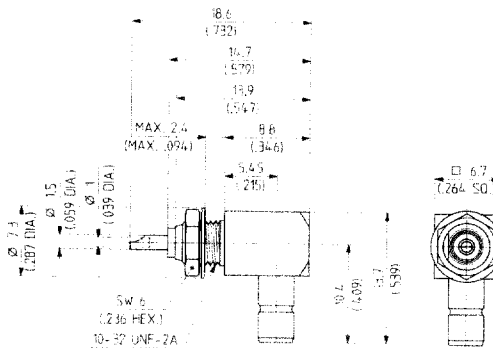
- > bulkhead mounted
- > non protrusive
- > front mounting



SUHNER TYPE	Ident. no.	Mounting hole	Weight	Notes
22 SMB-50-0-11	● 640210	ML 2	3.60 g/ 126 oz.	

### right angle receptacle, female

- > bulkhead mounted



SUHNER TYPE	Ident. no.	Mounting hole	Weight	Notes
27 SMB-50-0-1	● 640220	ML 11	3.50 g/ 123 oz.	

- centre contact captivated

# PCB Connectors

## straight PCB plugs

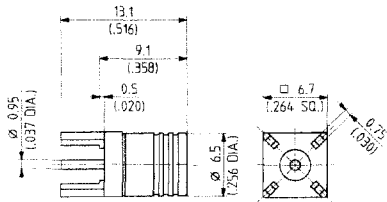


Fig. 1

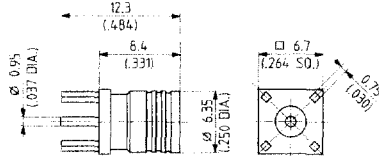


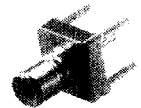
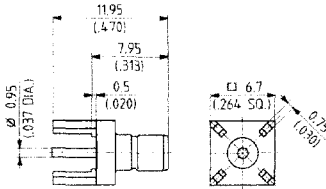
Fig. 2



SMB

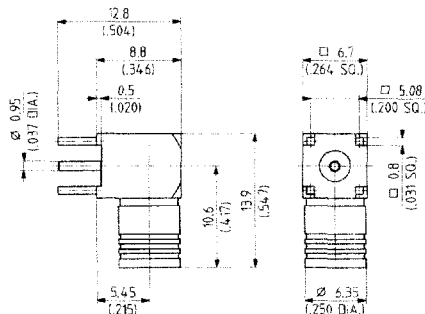
SUHNER TYPE	Ident. no.	Plating	Mounting hole	Weight	Fig.	Notes
81 SMB-50-0-1/111 ●	640231	gold	ML 15	1.50 g/.053 oz.	1	
81 SMB-50-0-1/133 ●	641480	SUCOPLATE®	ML 15	1.50 g/.053 oz.	1	
81 SMB-50-0-2 ●	645777	gold	ML 15	1.50 g/.053 oz.	2	without stand-offs

## straight PCB jacks



SUHNER TYPE	Ident. no.	Plating	Mounting hole	Weight	Notes
82 SMB-50-0-1/111 ●	640232	gold	ML 15	0.80 g/.028 oz.	
82 SMB-50-0-1/133 ●	641492	SUCOPLATE®	ML 15	0.80 g/.028 oz.	

## right angle PCB plug



SUHNER TYPE	Ident. no.	Plating	Mounting hole	Weight	Notes
84 SMB-50-0-1 ●	640234	gold	ML 15	3.70 g/.130 oz.	

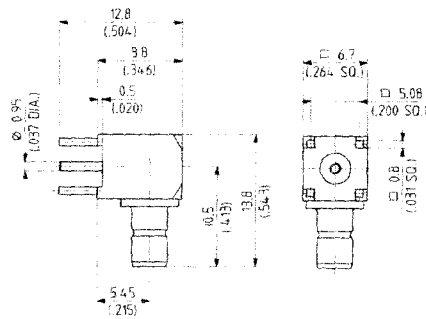
● centre contact captivated

cable groups see pages 36

assembly tools see page 403

mounting holes see page 441

## right angle PCB jacks

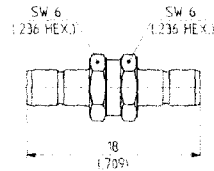


SUHNER TYPE	Ident. no.	Plating	Mounting hole	Weight	Notes
85 SMB-50-0-1/111 •	640235		M1.5	3.00 g/.105 oz.	
85 SMB-50-0-1/133 •	641270	SUCOPLATE™	M1.5	3.00 g/.105 oz.	

## Adaptors Within-Series

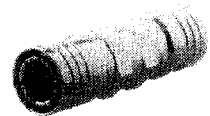
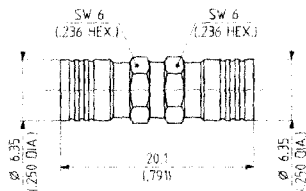
### straight adaptors

> jack to jack



SUHNER TYPE	Ident. no.	VSWR DC-4GHz	Weight	Notes
31 SMB-50-0-1 •	640221	$1.03 + 0.08 \cdot f$ (f=GHz)	1.80 g/.063 oz.	

> plug to plug



SUHNER TYPE	Ident. no.	VSWR DC-1.5 GHz	1.5-4 GHz	Weight	Notes
32 SMB-50-0-1 •	640222	$1.03 + 0.18 \cdot f$	$\leq 1.3$	3.20 g/.112 oz.	

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- > bulkhead mounted
- > jack to jack

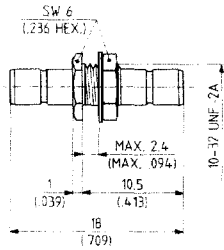


Fig. 1

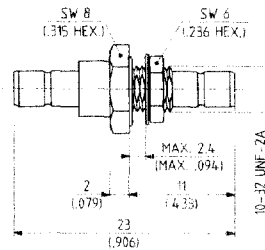


Fig. 2



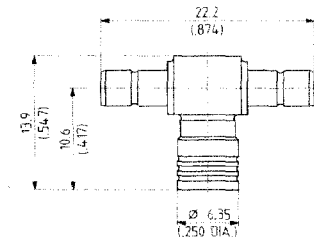
SUHNER TYPE	Ident. no.	VSWR		Mounting hole	Weight	Fig.	Notes
		DC-2 GHz	2-4 GHz				
34 SMB-50-0-2	640224	1.04+0.10·f	≤ 1.24	ML 11	1.40 g/.049 oz.	1	
34 SMB-50-0-3	641380	1.04+0.13·f	≤ 1.30	ML 11	1.40 g/.049 oz.	2	hermetically sealed*

\* leak rate  $10^{-6}$  Torr l/sec. (atm cc/s) max.

## T-adaptors

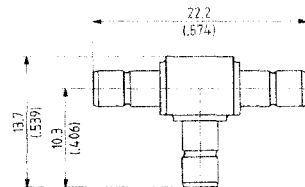
50 Ω nominal impedance. These connectors are non-matched 3 db dividers for LF applications. VSWR ≥ 2.0 when terminated with 50 Ω.

- > 1 plug, 2 jacks



SUHNER TYPE	Ident. no.	Weight	Notes
43 SMB-50-0-2	640226	3.70 g/.130 oz.	

- > 3 jacks



SUHNER TYPE	Ident. no.	Weight	Notes
46 SMB-50-0-2	640228	3.10 g/.109 oz.	

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# Terminations

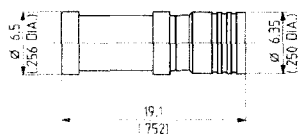


Fig. 1

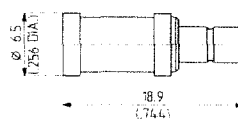
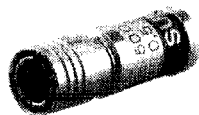


Fig. 2



SUHNER TYPE	Ident. no.	VSWR		Interface	Impedance	Power	Weight	Fig.
		DC-2 GHz	2-4 GHz					
65 SMB-50-0-1	● 550111	≤ 1.1	≤ 1.4	plug	50 Ω + 1 Ω	0.5 Watt*	2.90 g/. 102 oz.	1
65 SMB-50-0-31	● 640230	≤ 1.1	≤ 1.4	jack	50 Ω + 1 Ω	0.5 Watt*	2.10 g/. 074 oz.	2

\* at max. 30°C/86°F ambient temperature, derated linearly to zero watt at 130°C/266°F ambient temperature

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