

**2003**

**WAVEGUIDE COMPONENTS  
FOR WIRELESS APPLICATION**



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**This Catalogue presents a range of Elmika's products for wireless applications. Should your requirements not be met by the products shown herein please contact our sales office to discuss your needs.**

Elmika warrants each product of its manufacture to be free from defects in material and workmanship.

Elmika reserves the right to make changes in the design of its products without reference and without any obligation to make the same alterations on products previously purchased.

Elmika reserves the right to change any specifications or withdraw any product noted herein without prior notice.

Directional Couplers

Features

- High directivity
- Minimum coupling variation
- Low VSWR



Description

The DC-1XE/Y and DC-2XE/Y directional couplers are designed for extraction or introduction of RF power flow in a transmission line without distortion of other characteristics. The directional couplers are available in 6, 10, 15, 20 dB coupling values and 30, 35 dB directivities.

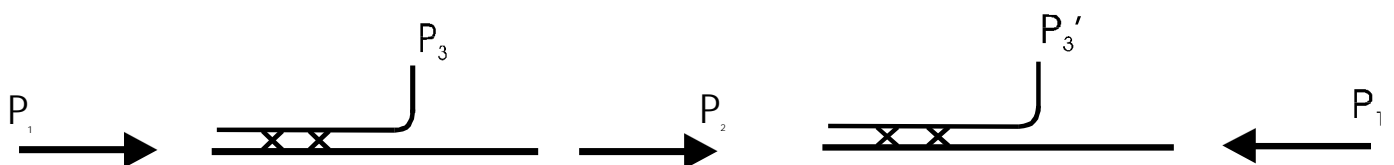
Specifications

Model	Waveguide Size	Frequency GHz	Insertion loss, dB	Main line VSWR	Secondary line VSWR	Coupling Flatness, dB
DC-Z20E/Y	WR-62	12.40 - 18.00	0.7	1.1	1.15	±0.7
DC-Z12E/Y	WR- 42	17.70 - 26.50	0.7	1.1	1.15	±0.7
DC-Z08E/Y	WR- 28	26.50 -40.00	0.7	1.1	1.15	±0.7

Coupling value =  $-10 \log_{10} (P_3/P_1)$ .

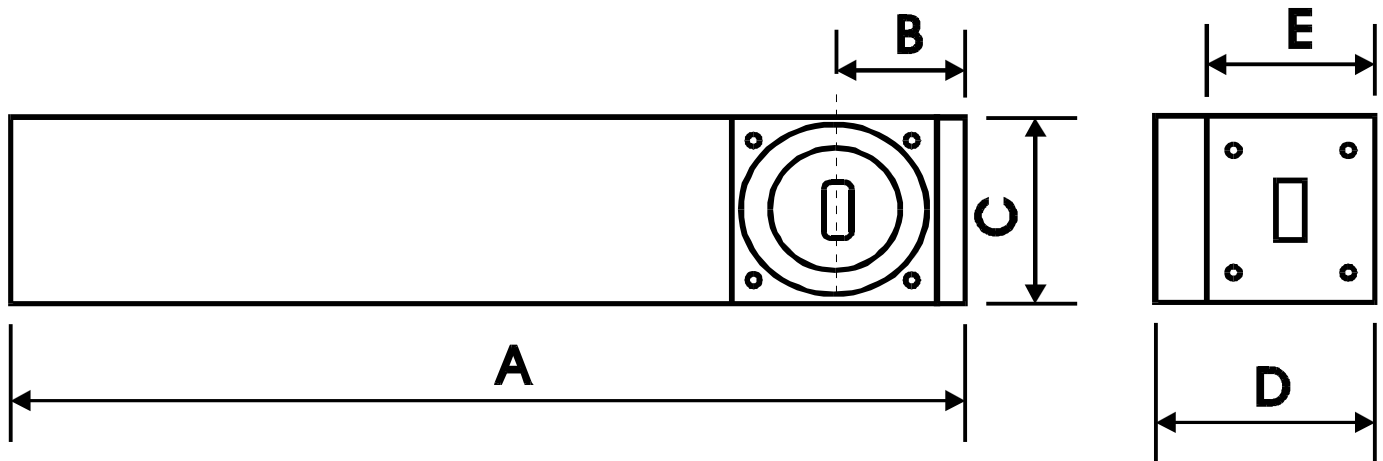
Insertion loss =  $-10 \log_{10} ((P_2+P_3)/P_1)$ .

Directivity =  $10 \log_{10} (P_3/P_3')$ .



**Directional Couplers**

**Outline Drawing**



**Mechanical Specifications**

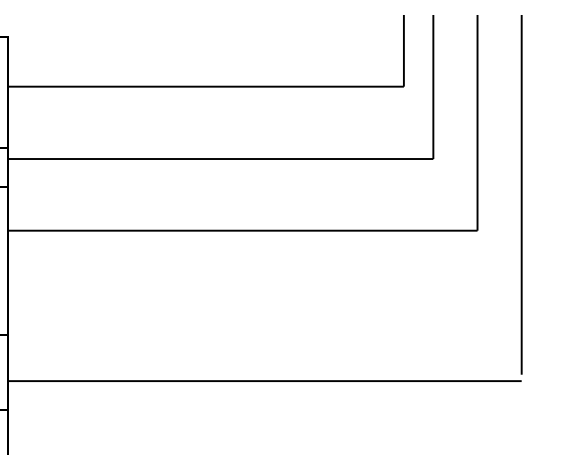
Model	A, mm	B, mm	C, mm	D, mm	E, mm
DC-Z20E/Y	152	22.95	34	47	33
DC-Z12E/Y	126	23.17	23	35	22
DC-Z08E/Y	127	22.78	20	34	19

**Ordering information**

**Model number**

**DC-ZXE/Y - P - F**

Directivity:	<b>1</b> 30dB <b>2</b> 35dB
Model number	
Coupling value:	<b>6</b> 6dB <b>10</b> 10dB <b>15</b> 15dB <b>20</b> 20dB
Finish code:	S=Silver plated G=Gold plated
Flange type:	1=Choke 2=Cover 3=nonstandard (by order)
Waveguide material:	Brass
Flange material:	Copper



# Magic Tee Hybrid Couplers

## Features

- Low insertion losses
- Excellent matching/high isolation
- Low power split disbalance

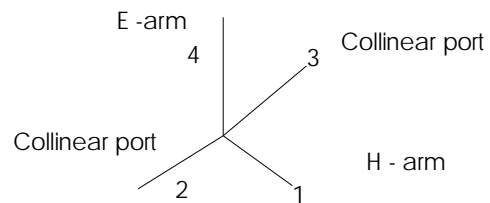


## Description

The **MHTXE** Magic Tee Hybrid Couplers for millimeter waves are matched power dividers for variety of applications. These couplers are four-port transmission line components with port configuration as it is shown in figure. Isolation for E-to-H-arms is 30dB minimum. Balance is  $\pm 0.5$  dB. VSWR is of 1,5 to 2,0 max.

## Specifications

Model	Waveguide Size	Frequency range, GHz
MTH20E	WR- 62	12.40 - 18.00
MTH12E	WR- 42	17.70 - 26.50
MTH08E	WR- 28	26.50 - 40.00

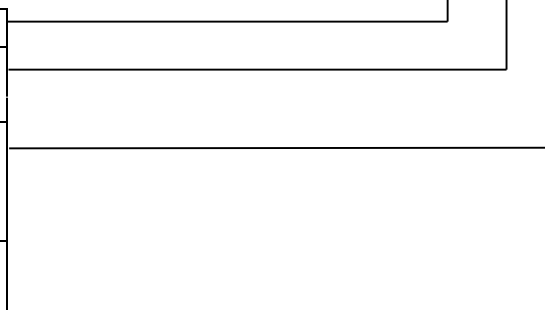


## Ordering information

### Model number

**MTHXE- P- F**

Waveguide size	
Finish code: S=Silver plated G= Gold plated	
Flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
Waveguide material : Brass	
Flange material : Copper	



# Fixed Attenuators

## Features

- Small size
- Full waveguide bandwidth

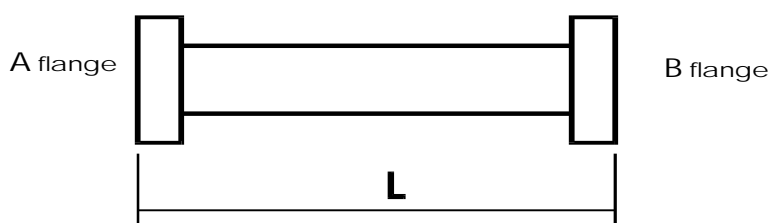


## Description

The **AFXE** Fixed Attenuators are designed for measurement purposes. The attenuator consists of the waveguide section with resistive plate in the waveguide channel. Finish is Silver. Every attenuator is supplied together with test report and quality certificate. Another waveguide sizes are available on request.

## Specifications

Model	Waveguide Size	Frequency GHz	VSWR	Power Rating, W (max)	Attenuation Value, dB
AF12E	WR- 42	17.70 - 26.50	1.15	0.5	20
AF08E	WR- 28	26.50 - 40.00	1.15	0.5	20

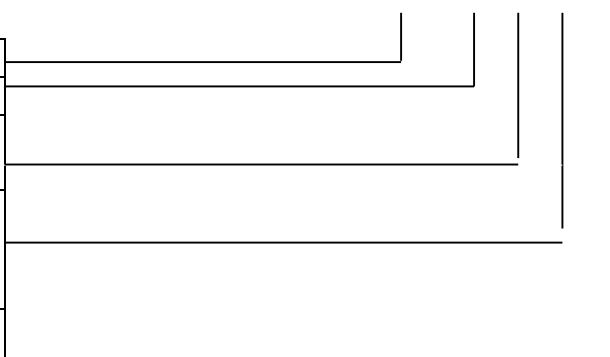


## Ordering information

### Model number

**AFXE - L - P - A - B**

Model number	
Dimensions (mm)	
Finish code: S=Silver plated G= Gold plated	
A flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
B flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
Waveguide material : Brass Flange material : Copper	



# Level Set Attenuators

## Features

- Wide attenuation range
- Low VSWR
- Low insertion loss
- Full waveguide bandwidth



## Description

The **LSAXE** attenuators are designed for level adjustment of signal in waveguide. The level of attenuation is set by rotation of the frame. The units are small, compact attenuating devices providing a wide range of attenuation from 0 to 30 dB.

## Specifications

Model	Waveguide size	Frequency range, GHz	VSWR (max)	Attenuation, dB	Insertion loss, dB
LSA42E	WR- 42	18.00-26.50	1.15	0 - 30	0.5
LSA28E	WR- 28	26.50-40.00	1.15	0 - 30	0.5
LSA22E	WR- 22	33.00-50.00	1.15	0 - 30	0.5

## Ordering information

### Model number

**LSAXE - P - F**

Waveguide size	
Finish code: G=Gold plated S=Silver plated	
Flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
Waveguide material : Brass Flange material : Copper	

# Direct Reading Attenuators

## Features

- High resolution
- High accuracy
- Wide attenuation range



## Description

The **DAXE** series direct reading attenuators are of the rotary-vane type. The value of attenuation is determined by the angle of rotation of the resistive film with respect to the waveguide and thus is independent on frequency.

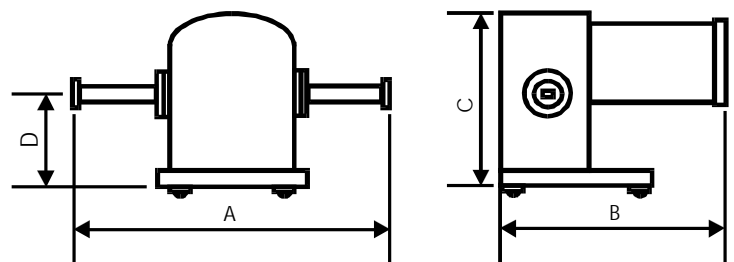
## Specifications

Model	Waveguide size	Frequency range, GHz	VSWR (max)	Attenuation accuracy, %	Insertion loss, dB
DA42E	WR- 42	18.00-26.50	1.15	$\pm 0.2\text{dB}$ for $A=0\div 10\text{dB}$ ; $\pm 0.02 \cdot A$ for $A=10\div 50\text{dB}$ ; $\pm [1+0.05 \cdot A(A-50)]\text{dB}$ for $A=50\div 60\text{dB}$ , where A is attenuation in dB.	0.5
DA28E	WR- 28	26.50-40.00	1.15		1
DA22E	WR- 22	33.00-50.00	1.15		1

## Mechanical Specifications

Model	A, mm	B, mm	C, mm	D, mm
DA42E	200	158	108.6	51
DA28E	251	148	96.5	52

## Outline drawing



## Ordering information

### Model number

**DAXE- F- P**

Waveguide size	_____ _____ _____
Flange type: 1=Cover 2=Choke 3=nonstandard (by order)	
Finish code: S=Silver plated G= Gold plated	
Flange material: Copper	_____



**E-Plane Bends**

**Features**

- Precision flange
- Low VSWR
- Low Losses



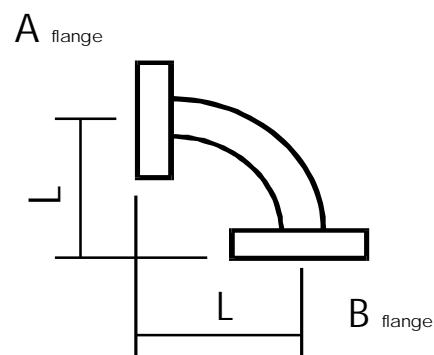
**Description**

E-Plane Bends are essential parts of every waveguide systems. E-Plane formed bends are available in 15°, 30°, 45°, 90° angle configurations. Maximum VSWR is 1.15. Special sizes and combinations are available on request.

**Specifications**

Model	Waveguide Size	Frequency GHz
BW20E/E	WR- 62	12.40 - 18.00
BW12E/E	WR- 42	17.70 - 26.50
BW08E/E	WR- 28	26.50 - 40.00

**Outline drawing**

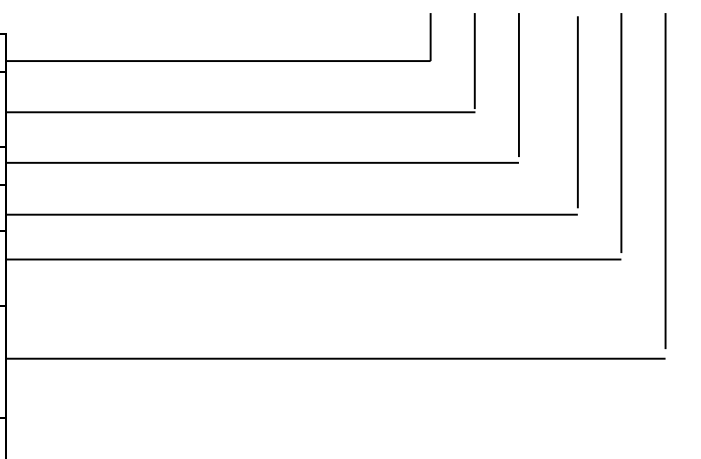


**Ordering information**

**Model number**

**BWXE/ E - L - D - P- A - B**

Model number	
Bend plane: E=E-plane H=H-plane	
Dimensions (mm)	
Degrees 90°, 45°, 30°, 15°, (and others)	
Finish code: S=Silver plated G=Gold plated	
A flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
B flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
Waveguide material : Brass Flange material : Copper	



# H-Plane Bend

## Features

- Precision flange
- Low VSWR
- Low Losses



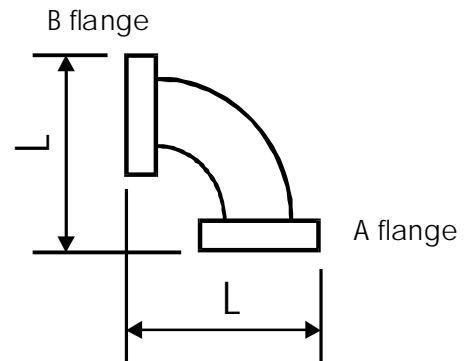
## Description

H-Plane Bends are designed to provide more variety for waveguide network configurations. The bends are available in copper or brass. Maximum VSWR is 1.15. Special sizes and combinations are available on request.

## Specifications

Model	Waveguide Size	Frequency GHz
BW20E/H	WR- 62	12.40 - 18.00
BW12E/H	WR- 42	17.70 - 26.50
BW08E/H	WR- 28	26.50 - 40.00

## Outline drawing

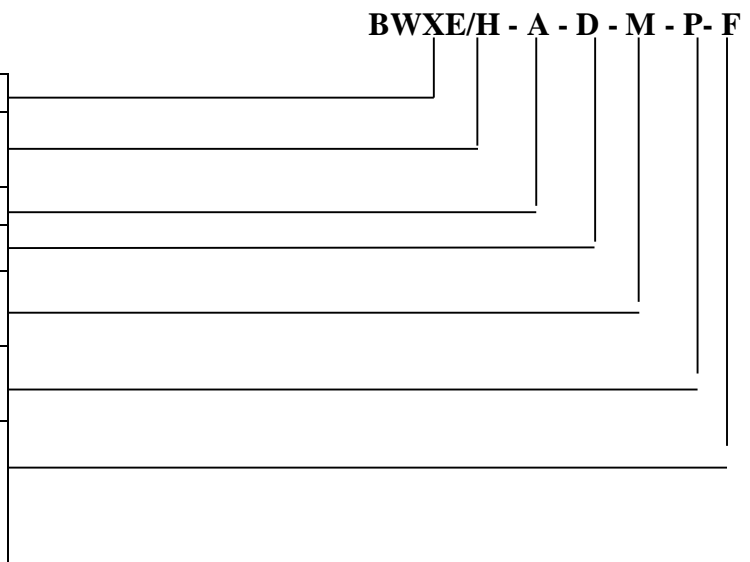


## Ordering information

### Model number

**BW**XE/H - **A** - **D** - **M** - **P** - **F**

Model number	
Bend plane	E=E-plane H=H-plane
Dimensions (mm)	
Degrees	90°, 45°, 30°, 15°, (and others)
Material code:	B=brass C=copper
Finish code:	S=Silver plated G= Gold plated
Flange type:	R=round S=square N=nonstandard, special



# Straight Sections

## Features

- Precision flange
- Low VSWR
- Low Losses



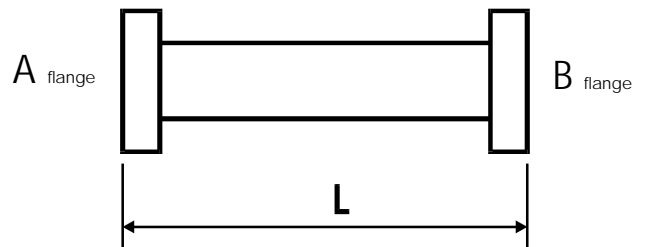
## Description

Straight sections are used to make connections between components in waveguide systems. Lengths and combinations are available on special order. VSWR is 1.05max over a full waveguide frequency band.

## Specifications

Model	Waveguide Size	Frequency GHz
SW20E	WR- 62	12.40 - 18.00
SW12E	WR- 42	17.70 - 26.50
SW08E	WR- 28	26.50 - 40.00

## Outline drawing



## Ordering information

### Model number

**SWXE - L - P - A - B**

Model number	
Dimensions (mm)	
Finish code: S= Silver plated G= Gold plated	
A flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
B flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
Waveguide material : Brass Flange material : Copper	

# Twists

## Features

- Precision flange
- Low VSWR



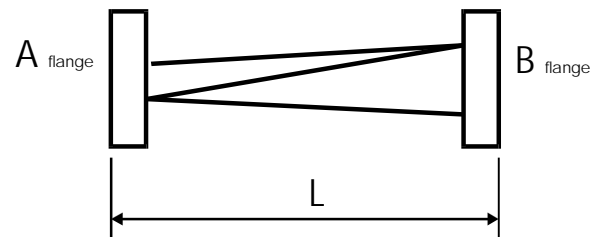
## Description

Twists of 90° and 45° are used for changing the polarization in a network. Twists with different angles and combinations of bends are available on special order. The max VSWR is less than 1.10 over the full frequency range.

## Specifications

Model	Waveguide Size	Frequency GHz
TW20E	WR- 62	12.40 - 18.00
TW12E	WR- 42	17.70 - 26.50
TW08E	WR- 28	26.50 - 40.00

## Outline drawing

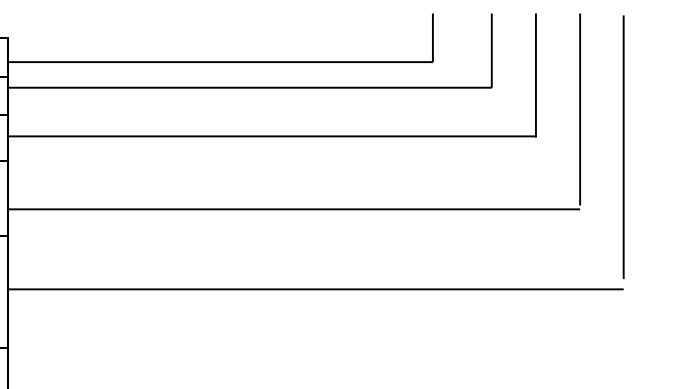


## Ordering information

### Model number

**TWXE - L- D- P- A - B**

Model number	
Dimensions (mm)	
Twist angle 90°, 45°, (and others)	
Finish code: S= Silver plated G= Gold plated	
A flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
B flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
Waveguide material : Brass	
Flange material : Copper	



# Terminations

## Features

- Low VSWR
- Compact size
- Full waveguide bandwidth



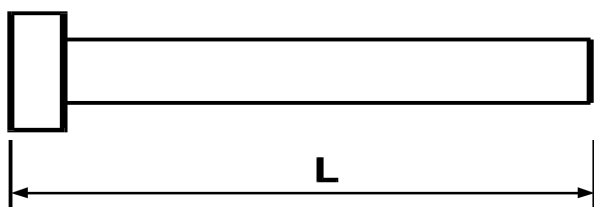
## Description

The **MTXE** series terminations contains tapered absorbers within waveguide sections. The VSWR is 1.03 maximum.

## Specifications

Model	Waveguide Size	Frequency GHz	Average power, W (max)	Dimension L, mm	VSWR
MT62E	WR- 62	12.40 - 18.00	0.3	91	1.03
MT42E	WR- 42	17.70 - 26.50	0.3	72	1.03
MT28E	WR- 28	26.50 - 40.00	0.2	51	1.03

## Outline drawing



## Ordering information

### Model number

**MTXE - P - A**

Waveguide size	
Finish code: S= Silver plated G= Gold plated	
Flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
Waveguide material : Brass Flange material : Copper	

# Clamps

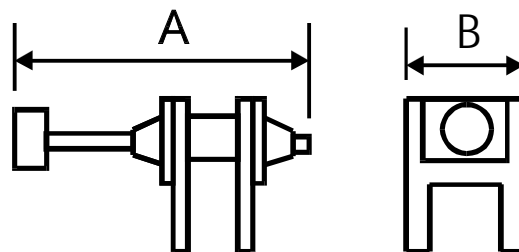


## Features

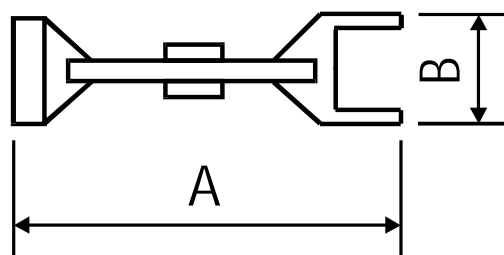
- Small size
- Easy to use
- All clamps have connecting pins in a delivery kit

## Specifications

Model	Waveguide Size	A, mm	B, mm
CLB42E	WR- 42	55	27
CLB28E	WR- 28	55	23



Model	Waveguide Size	A, mm	B, mm
CLA62E	WR- 62	113	40
CLA42E	WR- 42	76	26
CLA28E	WR- 28	76	23



## Ordering information

### Model number

CLA(B)XE - F

Waveguide size	
Waveguide's flange type: 1=Choke 2=Cover 3=nonstandard (by order)	
Clamp material : Aluminum	

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## ABOUT US

“ELMIKA” Joint Stock Company was established in the 1993 by Research and Development Institute “ELITA”, which was producing radio measurement equipment. Before this time “ELMIKA” was a microwave technology division of this institute. The part of private capital in “ELMIKA” is 100 percent.

Our background comes from 1949, when in Vilnius was established a plant Nr. 555. Today “ELMIKA” is a research, development and manufacturing company, which works in the area of microwave and mm-wave measuring instruments and communications’ equipment.

We manufacture sweep generators, scalar and vector network analyzers, power attenuation devices, VSWR, and frequency measurement instruments. "Elmika" also produces waveguides and waveguide components for measurement instruments.

At present, "Elmika" has about 70 employees, approximately 60% of whom are degreed scientists and engineers.

"Elmika" provides integration and test services to match individual customers’ needs. Complete turnkey systems including installation services are offered. Communication systems, as well as custom sub-systems and components are designed, developed, and manufactured with schedules controlled to satisfy the customers' needs. Our engineering staff welcomes your special requirements and the opportunity to serve you. Please call, or come visit us!

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City.....State..... Zip.....Country.....

Quantity	Model Nr.	Description	Dealers remarks

Please, give outline details or sketch of any non-standard requirements or any additional information relating to your order.

Please, photocopy and fax back.