

## X BAND SUBSYSTEMS

“Providing integrated circuit solutions up to 110 GHz”



### Advanced Surface Mount Technologies & Packaging Solutions



VectraWave is a solution provider for integrated electronic in high frequency microwaves and optoelectronic for telecommunications over radio or optical fiber, in the field of civil, security, military market. VectraWave is an independent company, delivering “OEM” and proprietary Integrated Circuits and System In Package or Multi-Chip-Modules improving performances and costs of communication system equipment, by offering components based on SiGe, GaAs, micro-electronics and packaging advanced technologies.

**Smart Amplifiers, Integrated Circuits, Systems  
for Microwave, RF and Lightwave Equipements**





**VWA 0000103 AA  
VWA 0000103 AB  
VWA0000108 AA**

**X to Ka-Band  
Up and Down Converters**

**Description**

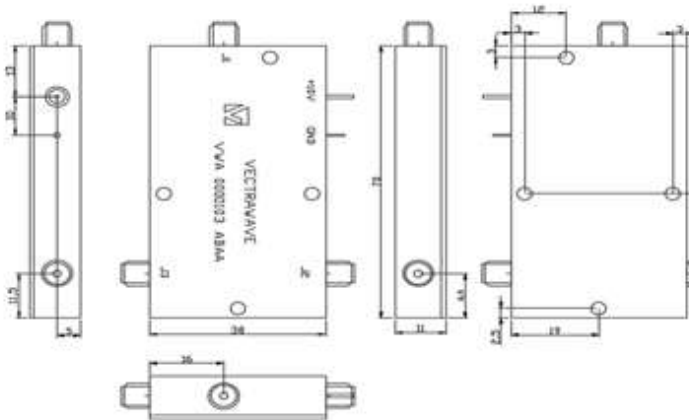
Into a standard SMA packaging, this module exists in 3 versions (see functional block diagrams):

- Up converter
- Up-converter with IF doubler
- Down-converter.

**Main Features**

- SMA connectors
- Applications over X and Ka-Band
- RF & LO : 6 to 18 GHz
- IF : DC to 3 GHz (dependent on filter)
- Thermal compensation inside
- Bias regulation inside

**Mechanical dimensions**



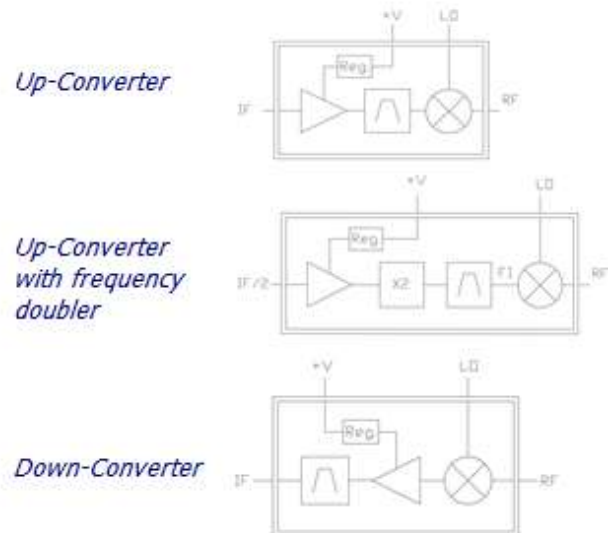
**Ordering information**

Product code	
VWA 0000103 AA	Up-Converter
VWA 0000103 AB	Up-Converter with x2
VWA 0000108 AA	Down-Converter

**Ordering information**

Product code	
VWA 0000103 AA	Up-Converter
VWA 0000103 AB	Up-Converter with x2
VWA 0000108 AA	Down-Converter

**Functional Block Diagrams**



Smart Amplifiers, Integrated Circuits, Systems  
for Microwave, RF and Lightwave Equipements







VWA 0000106 AA  
 VWA 0000107 AA  
 VWA 0000507 AA  
 VWA0000506 AA

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**DELAY LINES**

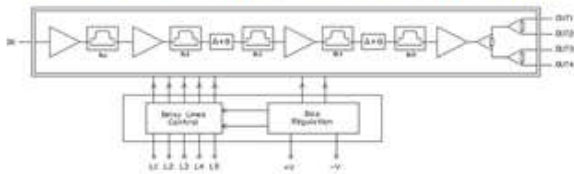
**Description**

The 4 and 5 delay lines units (LSB=45ps) exist in two versions: with a 4 ways combiner or with a 4 ways divider. Amplifiers inside offset the losses.

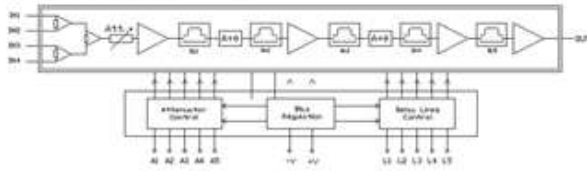
Units with combiner integrate also a 5 bits attenuator (LSB=1dB). Power divider and power combiner are balanced in amplitude (<0.5dB) and phase (<5°).

**Functional Block Diagrams**

**VWA 0000507 AA / VWA 0000106 AA**



**VWA 0000506 AA**



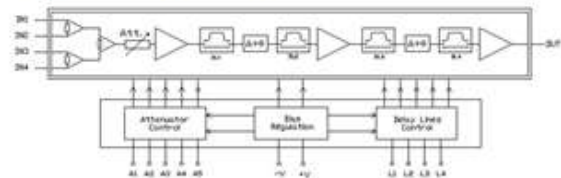
**Main Features**

- K connectors
- Applications over X-band
- Thermal compensation inside
- Bias regulation inside
- TTL compatible control
- Combiner or divider inside
- 5 bits attenuator inside (unit with combiner)

**Ordering information**

Product code	
VWA 0000106 AAAA	4 bits delay line & divider
VWA 0000107 AAAA	Combiner & 4 bits delay line
VWA 0000506 AAAA	Combiner & 5 bits delay line
VWA 0000507 AAAA	5 bits delay line & divider

**VWA 0000107 AA**



VWA 0000105 AA

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**RF Dispatcher**

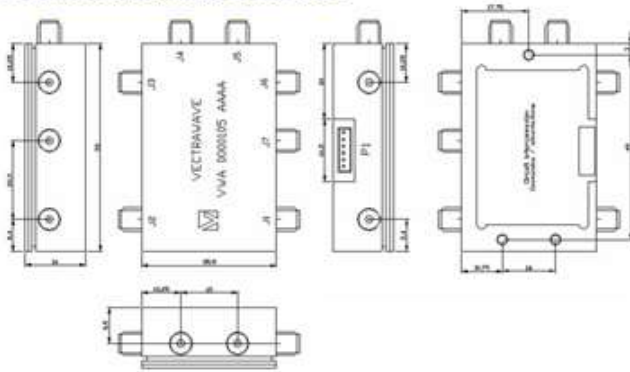
**Main Features**

- K connectors
- Applications over X and Ku frequency range
- Thermal compensation inside
- Bias regulation inside
- TTL compatible control

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**Mechanical dimensions:**

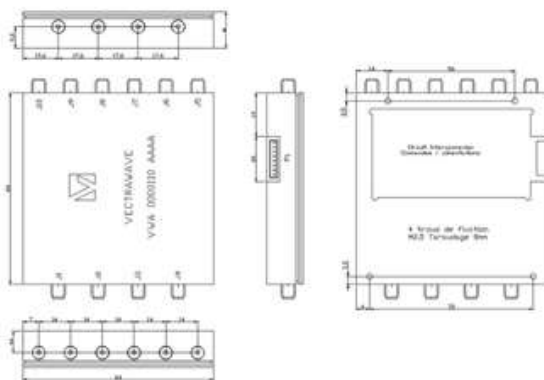


**Description**

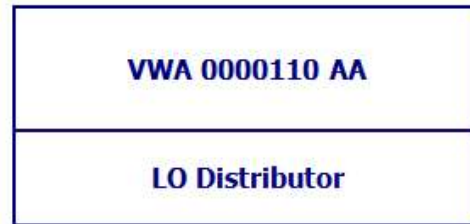
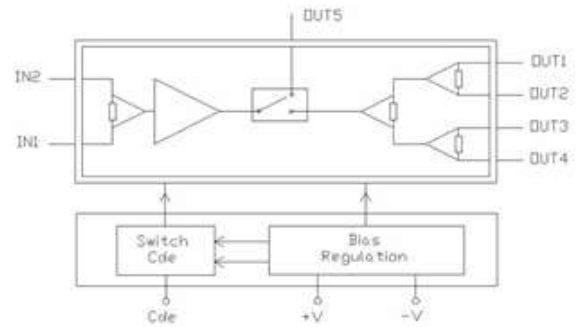
This module allows choosing one Local Oscillator (LO) among 4. A filtering of each oscillator is included.

Isolation > 60dBc between frequencies. 6 equivalent outputs available: OUT 1 to 6 (+10dBm).

**Mechanical dimensions**



**Functional Block Diagrams**



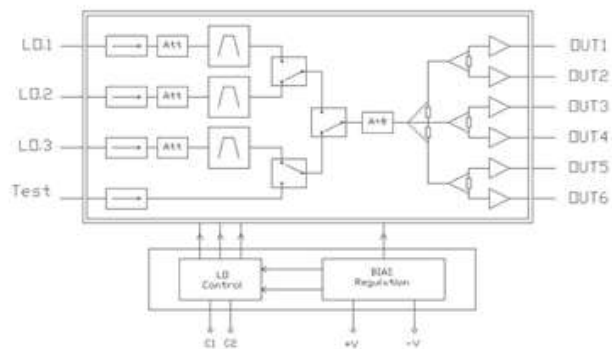
**Main Features**

- K connectors
- Applications over X and Ka frequency range
- Thermal compensation inside
- Bias regulation inside
- TTL compatible control

**Ordering information**

Product code
VWA 0000110 AA

**Functional Block Diagram**



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**VWA-0000109-AA**

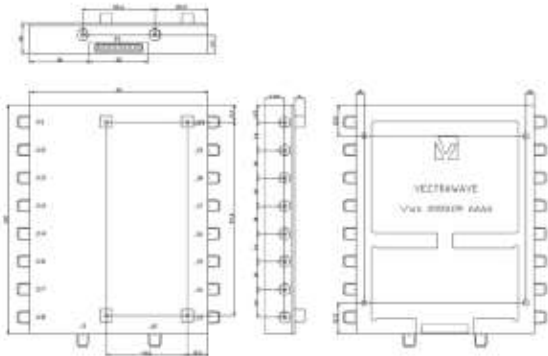
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**2 to 16 X-band  
RF Divider / Combiner - MCM**

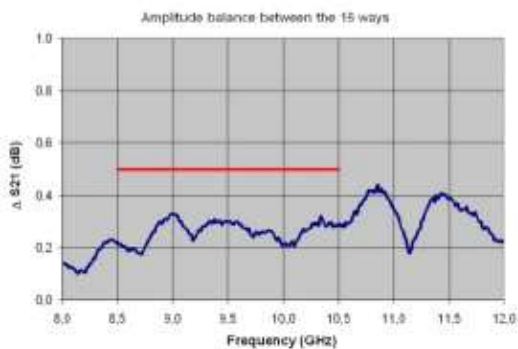
**Description**

This module is a 2 to 16 divider/combiner.  
 A switch allows to choose between the 2 accesses.  
 A 5 bits attenuator is present on each of the 2 accesses.  
 The 16 ways are balanced in amplitude and phase.  
 Please contact us for more information. We will be happy to adapt this product to your need.

**Mechanical dimensions**



**Typical performances**



**Features**

- K connectors
- Applications over X and Ka frequency range
- Bias regulation inside
- TTL compatible control

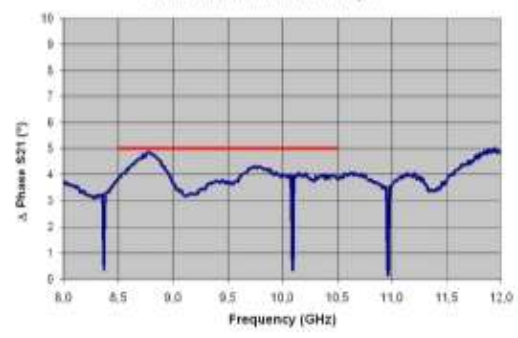
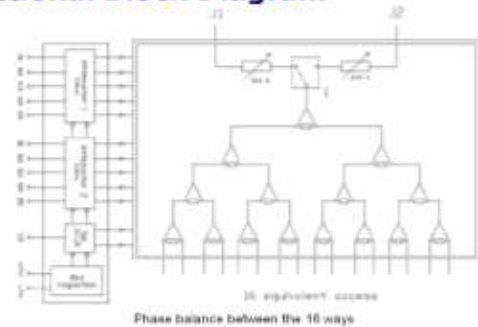
**Applications**

- Commercial and Military Radar
- Electronic Warfare

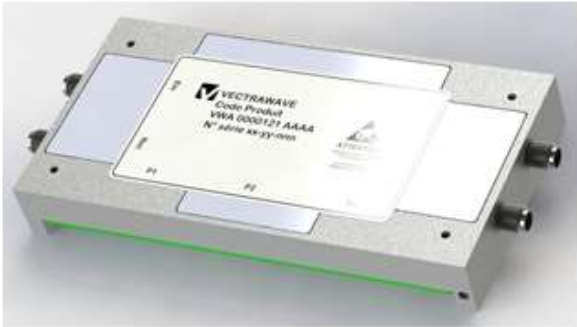
**Ordering information**

<b>Product code</b>
VWA 0000109 AA

**Functional Block Diagram**



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<b>VWA 0000121 AA</b>
<b>T/R Module</b>

**Description**

This module can be customized into Ku-band. Output power up to 10W can be provided.

Broadband application: possibility to cover all the 8-12 GHz bandwidth.

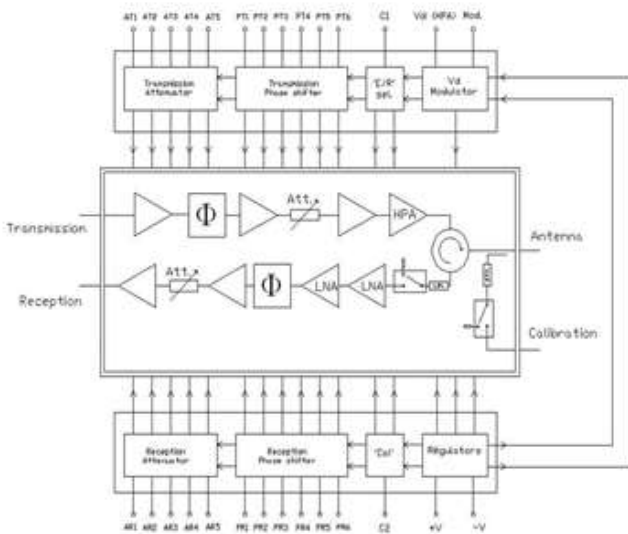
Separate 5 bits attenuator (1dB LSB) and 6 bits phase shifter (5.6° LSB) in reception and in transmission.

Limiter and switch protection during transmission. About 40dB gain in transmission and in reception.

**Main Features**

- K connectors
- Applications over X band frequency range
- Bias regulation inside
- TTL control for HPA drain supply inside
- TTL control : attenuators and phase shifters
- LNA protection against high power in reception
- Antenna output VSWR better than -14dB.
- Transmission and reception calibration access available

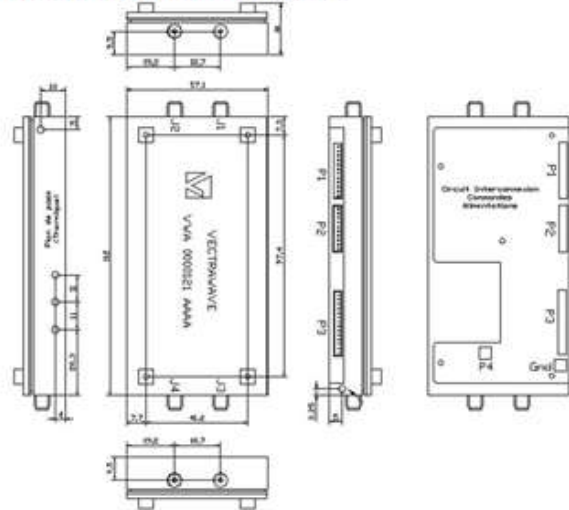
**Functional Block Diagram**



**Ordering information**

<b>Product code</b>
VWA 0000121 AAAA

**Mechanical dimensions**

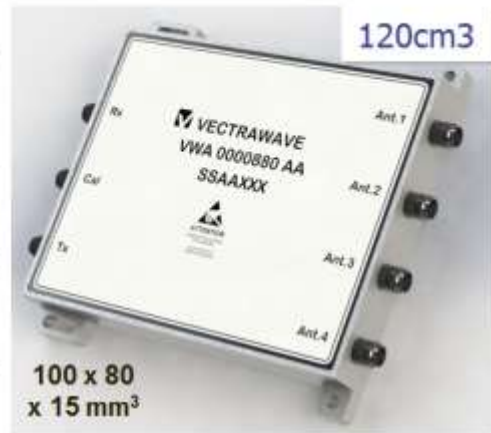
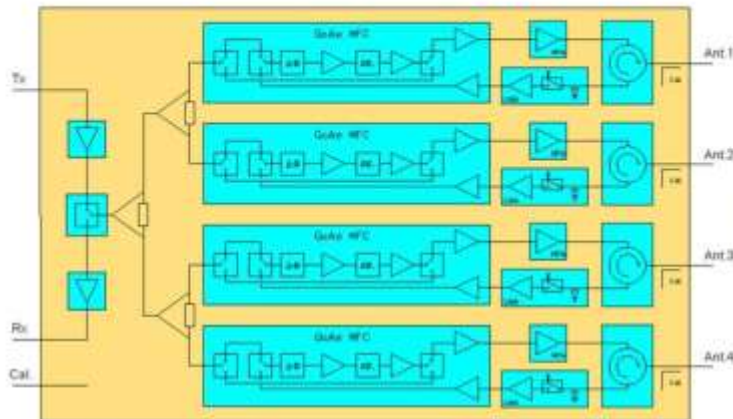


**SMALL FORM FACTOR PACKAGING SOLUTION  
FOR TR MODULE CAN BE PROVIDED ON REQUEST**

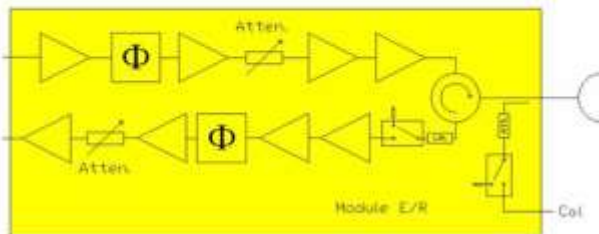
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**Quadri-module (MFC based )**



**Single Module (DAT & DPS)**



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