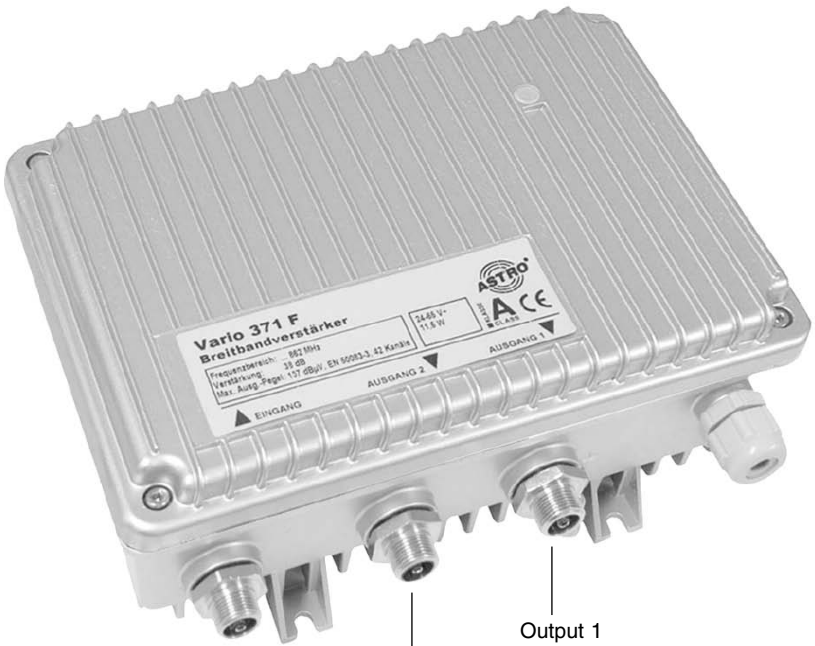
Vario - Series

Operating Instructions



CE

The amplifiers of the Vario – Series are CE certified and comply with all relevant EN standards!
Changes and printing errors reserved. Version 07/2005

Content

Pictographs and safety information

Pictographs are icons with specific meanings. The following pictographs are used in the installation and operating instructions:

Warns about situations in which there is danger of lethal injury due to hazardous electrical voltage and non-compliance with these instructions.

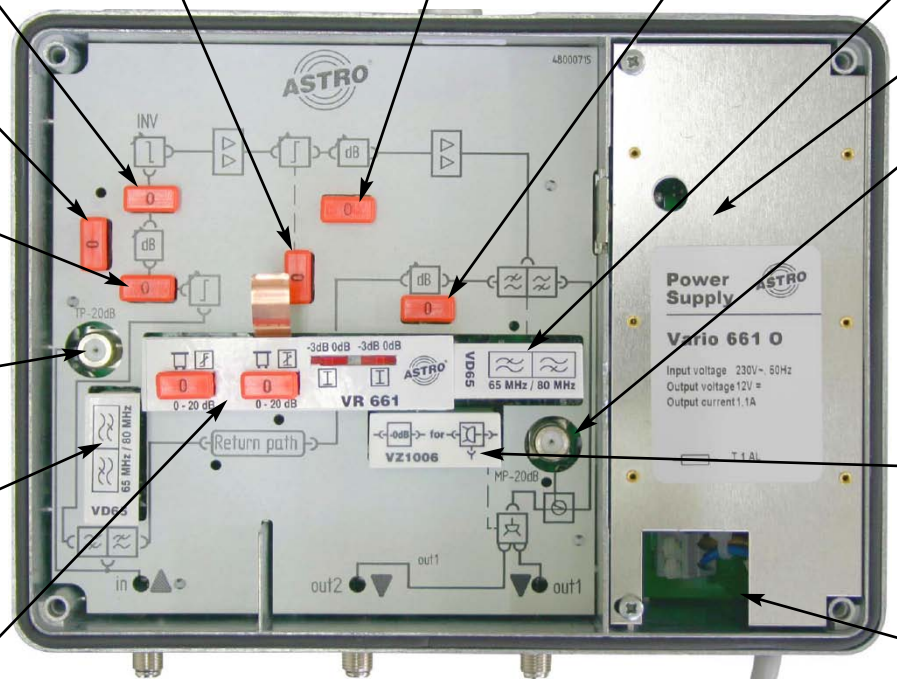
Recycling: All of our packaging materials (packaging, identification sheet, plastic foil and bag) are fully recyclable.

English: Electronic equipment is not household waste – in accordance with directive 200/96/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 27th January 2003 on used electrical and electronic equipment, it must be disposed of properly. At the end of its service life, take this unit for disposal at a relevant official collection point.

Francaise: Les appareils électroniques doivent pas être mis dans la poubelle de la maison, mais doivent être recycles correctement selon la directive 200/96/EG DU PARLAMENT ET DU CONSEIL EUROPEEN du 27 janvier 2003 concernant les appareils électroniques et électriques usages. Nous vous prions de metre cet appareil á la fin de son utilisation dans un emlacement prévu pour son recyclage.

Hollands: Elektronische appareten behoren niet in het huisvuilmaar moeten – volgens richtlijn 200/96/EG VAN HET EUROPESE PARLAMENT EN DE RAAD d.d. 27 januari 2003 met betrekking tot opgebruikte elektrische en elektronische appareten op de juiste manier worden weggegooid. Geef dit apparaat aan het eind van zijn gebruiksduur af bij de daarvoor bedoelde openbare verzamelpunten.

With optional components assembled Vario 661 O:
Figure of **Vario 661 F** differs by existing plug-in fuses and different power supply.



Inverted input equalizer
0 – 10 dB
in 0,5 dB – steps

Interstage equalizer
0 - 12 dB in
0,5 dB – steps

Interstage attenuation
0–10 dB
in 0,5 dB – steps

Return path input
attenuation 0 – 20 dB in
0,5 dB – steps

2 diplex filter
VD 33 or VD 65 or
zero cards VZ 1001

Input attenuation
0 – 10 dB in
0,5 dB – steps

Power supply

Output measurement point
– 20 dB
directional coupler

Input equalizer
0 – 18 dB in
0,5 dB – steps

Zero card
for only one output:
VZ 1006
Splitter 2-way:
VZ 1007
Taps:
VZ 1012 (-10 dB)
VZ 1013 (-15 dB)
VZ 1014 (-20 dB)

Input measurement point
– 20 dB
bi-directional

2 diplex filter
VD 33 or VD 65 or
zero cards VZ 1001

Fuse 1 A for power supply

Return path amplifier
VR 411, VR 561, VR 661 or
VR 761 Passive return path
2 x VZ 1001

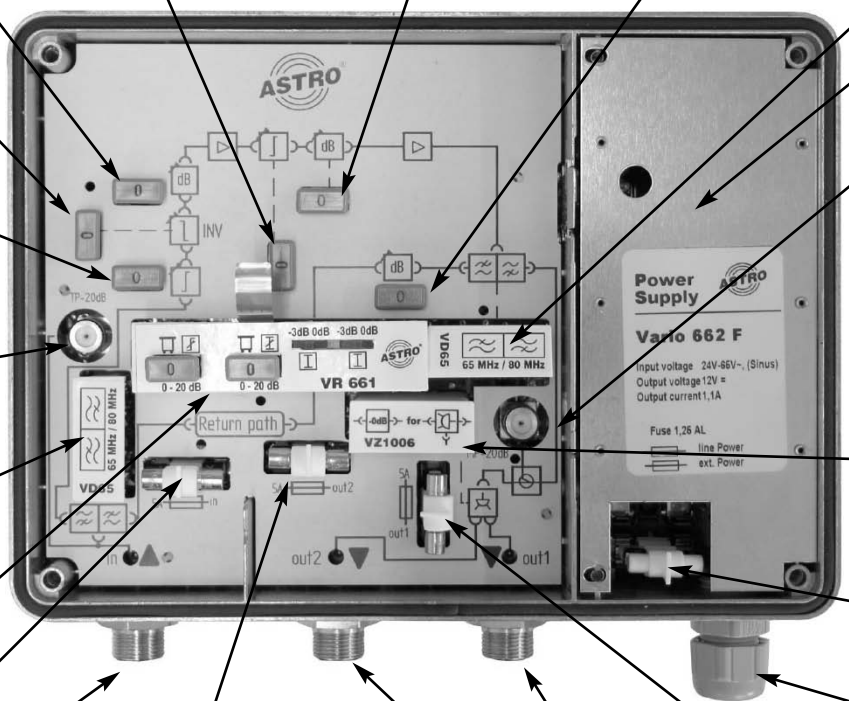
Input

Output 2

Output 1

Mains cable

With optional components assembled Vario 662 F:
Figure of **main board** is identical with **Vario 561 F** and **371 F**. Local powered types differ by not existing plug-in fuses and different power supply.



Input attenuation
0 – 20 dB in
0,5 dB – steps

Interstage equalizer
0 - 10 dB in
0,5 dB – steps

Interstage attenuation
0–10 dB
in 0,5 dB – steps

Return path
input attenuation 0 – 20 dB
in 0,5 dB – steps

2 diplex filter
VD 33 or VD 65 or
zero cards VZ 1001

Inverted input equalizer
0 – 10 dB
in 0,5 dB – steps

Power supply

Input equalizer
0 – 18 dB in
0,5 dB – steps

Output measurement point
– 20 dB
directional coupler

Input measurement point
– 20 dB
bi-directional

Zero card
for only one output:
VZ 1006
Splitter 2-way:
VZ 1007
Taps:
VZ 1012 (-10 dB)
VZ 1013 (-15 dB)
VZ 1014 (-20 dB)

2 diplex filter
VD 33 or VD 65 or
zero cards VZ 1001

Fuse 1,25 A for power supply

Return path amplifier
VR 411, VR 561, VR 661 or
VR 761 Passive return path
2 x VZ 1001

Cable insertion
supply voltage
24 – 65 V (if not supplied
via Coax cable)

Fuse 5 A for Input

Input

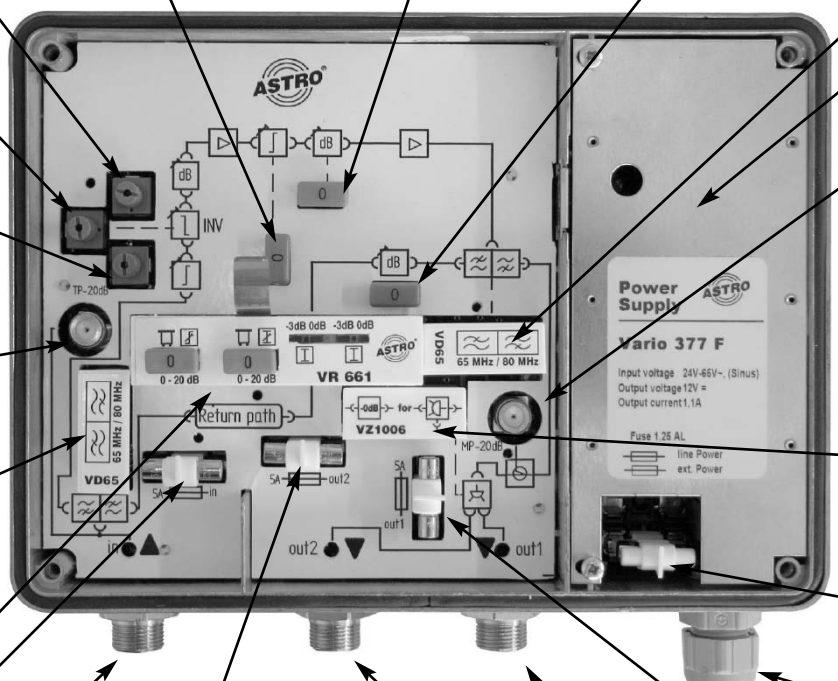
Fuse 5 A for Out 2

Output 2

Output 1

Fuse 5 A for Out 1

With optional components assembled Vario 377 F:
Local powered types differ by not existing plug-in fuses and different power supply.



input attenuation
0 – 20 dB
with potentiometer

Interstage equalizer
0 - 10 dB in
0,5 dB – steps

Interstage attenuation
0–7 dB
in 0,5 dB – steps

Return path
input attenuation 0 – 20 dB
in 0,5 dB – steps

2 diplex filter
VD 33 or VD 65 or
zero cards VZ 1001

Inverted input equalizer
0 – 10 dB
with potentiometer

Power supply

Output measurement point
– 20 dB
directional coupler

Input equalizer
0 – 18 dB
with potentiometer

Input measurement point
– 20 dB
bi-directional

Zero card
for only one output:
VZ 1006
Splitter 2-way:
VZ 1007
Taps:
VZ 1012 (-10 dB)
VZ 1013 (-15 dB)
VZ 1014 (-20 dB)

2 diplex filter
VD 33 or VD 65 or
zero cards VZ 1001

Return path amplifier
VR 411, VR 561, VR 661 or
VR 761 Passive return path
2 x VZ 1001

Fuse 1,25 A for power supply

Cable insertion
supply voltage
24 – 65 V (if not supplied
via Coax cable)

Fuse 5 A for Input

Input

Fuse 5 A for Out 2

Output 2

Output 1

Fuse 5 A for Out 1

Vario – Series Broadband Amplifier

Security advices

The device with the international protection class **IP 54** gives protection against damaging depositing of dust, protection against contact and the amplifiers are splash-proof.

If there is condensation, you have to wait until the device has been dried completely.

According to the **minimum distances** there have to be 20 cm of space over and under the device. This is especially important if several devices are mounted on top of each other.

The **allowed ambient temperature** is -15 to +55°C. The installation must only be done in rooms, which keep the allowed ambient temperature even if the climatic conditions change.

Warning: If the device is installed in an attic, you have to pay special attention on the ambient temperature. Mounting on flammable materials as wood or synthetic materials is not allowed.

Opening the housing: Only after disconnecting the mains plug or disconnecting the remote power. Attention at maintaining the power supply. Risk of electrical shock caused by loaded components even after disconnecting the mains.

Description

The amplifiers of the Vario – Series are local- or remote-powered broadband amplifiers. The separation of the frequency ranges (upstream / downstream) is variable due to pluggable filters. The return path can be activated with the diplex filters VD 33 or VD 65 and different active return path modules or passive with the zero cards VZ 1001. The amplifiers of the Vario – Series are equipped with MMIC line amplifier with GaAs – technology in the input. The output is also equipped with a GaAs – amplifier. This is why these amplifiers have a wide dynamic range with low power consumption. Thanks to the possibility of equalizing or Interstage equalizing (-slope) the arriving and outgoing cable attenuation the maximum output level and linearity can be improved. There is also the possibility to plug an Interstage attenuation, parallel to the Interstage slope. The exact data can be found on pages 10 – 15. This allows an extremely variable amplification with only a little changed noise factor. The amplifiers of the Vario – Series have two outputs, which can be activated by plugging different slitters or taps.

The amplifiers of the Vario – Series are a future – proof, adaptable amplifier concept for multi-media networks

- Gain 37 dB / 36 dB / 35,5 dB depending of type
- Amplifiers available with pluggable pads or variable attenuation
- Temperature compensated
- All return path amplifiers interruption-free
- Spread investment costs by upgrading with diplex filters and return-path modules as and when needed

Forward path

The amplifiers of the Vario – Series are equipped in the input either with pads or with variable attenuation. An input equalizer makes possible the correction of outgoing cable attenuation, an inverted input equalizer the correction of incoming cable attenuation. There is also an attenuator for the input level. So the prestage signal can be optimized. Interstage slope and attenuation can be plugged in with pads. You can find the values for the different types of amplifiers in the lists of technical data.

Return Path

For the transmitting of return path signals the amplifier has to be configured as follows:

- Exchange of zero cards in the input and output by two diplex filters VD 33 or VD 65
- For a passive return path plug in both zero cards from input and output in both slots for the return path
- For an active return path insert the interruption-free return path modules VR 411, VR 561, VR 661 or VR 761

Measurement outputs

The amplifiers of the VARIO – Series are equipped with two measurement outputs. The measurement output for the input signal is bi-directional (- 20 dB), this means forward and return path can be measured. The output signal is measured via directional coupler (- 20 dB).

Basic equipment (delivery state) of the Vario - Series

The delivery state of the Vario – Series amplifiers is configured just for the forward path transmission:

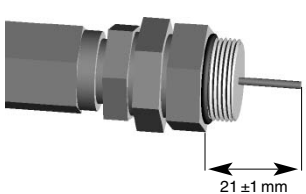
Zero cards in the slots for the optional diplex filters
(Warning: no selection of frequencies < 47 MHz)
Upper frequency range 862 MHz
Return path not assembled
0 dB – Pads plugged in

Mounting

Mounting only on vertical, flat and inflammable surfaces
Input and outputs must point to the ground
Do not mount in alcoves
Provide for good ventilation
Keep the allowed ambient temperature
Keep space over and below the devices
Mount the devices according European standard EN 50083-1
The network has to be grounded even if the device will be dismounted

Warning!

To avoid damaging the broadband amplifier of the Vario – Series, the inner connector of the cable has to be shortened to 21 +/- 1 mm



Putting into operation

After connecting the coax cable and the operational voltage the device is ready to use and the level can be adjusted.

Level adjustment

Adjust the output level with attenuation pads
Adjust the slope of the gain with the interstage slope

Malfunction

If the device does not work as requested,
we propose the following controls:

- Check the power supply and the fuses
- Check the connecting of the coax cables
  (for example interruption or short-circuit into the plugs)
- Measure the input level
  (disturbances may appear at too low or too high input level)

Maintaining

As far as all instructions are followed and the device is used as agreed, there is no need for special maintaining. Before opening the housing the powering voltage has to be disconnected!

Repairs must be done according to the standard DIN VDE 0701, part 1 and 200! If necessary the device has to be sent to ASTRO with an exact description of the malfunction.

Remote powering (only F – type)

Using the pluggable fuses, the remote powering can be configured as needed:

- Remote powering via input
- Remote powering via output 1
- Remote powering via output 2
- Loop through of the remote powering
- Feeding the remote power via additional clamp

To activate the respective remote powering the delivered fuses have to be plugged in. The positioning of the fuses can be seen on the pages 4 – 6.

The following table can be used as help for detemining the maximum number of cascadable remote powered Vario - Amplifiers. The maximum feed-through current is 5 A.
Current consumption of a single amplifier including return path module depending on remote voltage:

Type		Vario 662 F	Vario 661 F	Vario 561 F	Vario 371 F
24 V remote volt.	[A]	≤ 1	≤ 1	≤ 0,9	≤ 0,64
40 V remote volt.	[A]	≤ 0,6	≤ 0,6	≤ 0,53	≤ 0,39
65 V remote volt.	[A]	≤ 0,4	≤ 0,4	≤ 0,35	≤ 0,26

Type		**Vario 662 F**	**Vario 662 O**
Order no.		217 662	217 660
Forward path			
Gain	[dB]	35,5 ±0,8	35,5 ±0,8
Linearity	[dB]	± 0,8	± 0,8
Frequency range	[MHz]	47–862	
Output level (linear) **EN 50083-3, 42 channels**, **(linear)** for **CTBA** / **CSOA** ≥ **60 dB** **7 dB Slope** for 60dB **KMA** /60dB **IMA$_2$** EN 50083-5 / 4.2	 [dBµV] [dBµV] [dBµV]	 112 / 114 114 / 115 129/125	 112 / 114 114 / 115 129/125
10 dB Slope for **CTBA** / **CSOA** ≥ **60 dB** **7 dB Interstage** f. **CTBA** / **CSOA** ≥ **60 dB** **7 dB Interstage** & **10 dB Slope**	[dBµV] [dBµV] [dBµV]	114 / 115* 112 / 112 113 / 113	114 / 115* 112 / 112 113 / 112
Noise figure	[dB]	4,5 typ. 5 >800 MHz	4,5 typ. 4,8 >800 MHz
Attenuation input	[dB]	0 – 20 in 0,5 dB-steps	
Equalizer input **Base of equalizer**	[dB] (MHz)	0 – 20 in 0,5 dB-steps 862	
Inverse Equalizer input **Base of inverse equalizer**	[dB] (MHz)	0 – 10 in 0,5 dB-steps 47	
Attenuation Interstage **Interstageslope** **Base of Interstageslope**	[dB] [dB] (MHz)	0 – 7 in 0,5 dB-steps 0 – 10 in 0,5 dB-steps 862	
Testpoints, Input (bidirektional) **Output** (**directional coupler**)	[dB] [dB]	20 ±2 (47/80-862 MHz) 20 ±1 (5-862 MHz)	
Return loss **Input, Output and Testpoint**	 [dB]	 ≥ 18 (from 40 MHz -1,5 dB/octave)	

* without band I

Type		**Vario 662 F**	**Vario 662 O**
Backward range			
Frequency range	(MHz)	5 – 65 or 5 – 33	
Gain		Dependant on returnpath	
Diplexfilter	(MHz)	5 – 33 / 47 – 862 (VD 33) 5 – 65 / 80 – 862 (VD 65)	
Common data			
Feed-through current	[A]	5	—
Supply voltage	[V~]	24 – 65	230
Current without/with return path		13 W / 15,5 W	24 VA / 29 VA
Impedance	[Ω]	75	
amb.-Temperatur	[°C]	- 15 …+ 55	
Dimensions (wxhxd)	[mm]	204x73x150	
Weight	[kg]	ca. 2,7	
Electr. safety class		IP 54 nach EN 60 529	

With variable attenuation and equalizer

Type		**Vario 667 F**	**Vario 667 O**
Order no.		217 667	217 666
Forward path			
Gain	[dB]	34,5 ±1,0	35,5 ±1,0
Linearity	[dB]	± 1,0	± 1,0
Frequency range	[MHz]	47–862	
Output level (linear) **EN 50083-3, 42 channels, (linear)** for **CTBA** / **CSOA** ≥ **60 dB** **7 dB Slope** for 60dB **KMA** /60dB **IMA$_2$** EN 50083-5 / 4.2	 [dBµV] [dBµV] [dBµV]	 112 / 114 114 / 115 129/125	 112 / 114 114 / 115 129/125
10 dB Slope for **CTBA** / **CSOA** ≥ **60 dB** **7 dB Interstage** f. **CTBA** / **CSOA** ≥ **60 dB** **7 dB Interstage** & **10 dB Slope**	[dBµV] [dBµV] [dBµV]	114 / 115* 112 / 112 113 / 113	114 / 115* 112 / 112 113 / 112
Noise figure	[dB]	5,0 typ. 5 >800 MHz	5,0 typ. 4,8 >800 MHz
Attenuation input	[dB]	0 – 20 in 0,5 dB-steps	
Equalizer input **Base of equalizer**	[dB] (MHz)	0 – 20 in 0,5 dB-steps 862	
Inverse Equalizer input **Base of inverse equalizer**	[dB] (MHz)	0 – 10 in 0,5 dB-steps 47	
Attenuation Interstage **Interstageslope** **Base of Interstageslope**	[dB] [dB] (MHz)	0 – 7 in 0,5 dB-steps 0 – 10 in 0,5 dB-steps 862	
Testpoints, Input (bidirektional) **Output** (**directional coupler**)	[dB] [dB]	20 ±2 (47/80-862 MHz) 20 ±1 (5-862 MHz)	
Return loss **Input, Output and Testpoint**	 [dB]	 ≥ 18 (from 40 MHz -1,5 dB/octave)	

* without band I

Type		**Vario 667 F**	**Vario 667 O**
Backward range			
Frequency range	(MHz)	5 – 65 or 5 – 33	
Gain		Dependant on returnpath	
Diplexfilter	(MHz)	5 – 33 / 47 – 862 (VD 33) 5 – 65 / 80 – 862 (VD 65)	
Common data			
Feed-through current	[A]	5	—
Supply voltage	[V~]	24 – 65	230
Current **without/with return path**		13 W / 15,5 W	24 VA / 29 VA
Impedance	[Ω]	75	
amb.-Temperatur	[°C]	- 15 …+ 55	
Dimensions (wxhxd)	[mm]	204x73x150	
Weight	[kg]	ca. 2,7	
Electr. safety class		IP 54 nach EN 60 529	

Type		**Vario 661 F**	**Vario 661 O**
Order no.		217 651	217 650
Forward path			
Gain	[dB]	35 ±0,7	36 ±0,7
Linearity	[dB]	± 1	± 1
Frequency range	[MHz]	47–862	
Output level (linear) **EN 50083-3, 42 channels, (linear)** for **CTBA** / **CSOA** ≥ **60 dB** **7 dB Slope** for 60dB **KMA** /60dB **IMA$_2$** EN 50083-5 / 4.2	 [dBµV] [dBµV] [dBµV]	 112 / 114 115 / 115 129/125	 112 / 114 115 / 115 129/125
10 dB Slope for **CTBA** / **CSOA** ≥ **60 dB** **10 dB Interstage** f. **CTBA** / **CSOA** ≥ **60 dB** **12 dB Interstage** & **10 dB Slope**	[dBµV] [dBµV] [dBµV]	115 / 115* 112 / 114 114 / 113*	115 / 115* 113 / 114 114 / 113*
Noise figure	[dB]	4,5 typ., 5,3 >600 MHz	
Attenuation input	[dB]	0 – 10 in 0,5 dB-steps	
Equalizer input **Base of equalizer**	[dB] (MHz)	0 – 18 in 0,5 dB-steps 862	
Inverse Equalizer input **Base of inverse equalizer**	[dB] (MHz)	0 – 10 in 0,5 dB-steps 47	
Attenuation Interstage **Interstageslope** **Base of Interstageslope**	[dB] [dB] (MHz)	0 – 10 in 0,5 dB-steps 0 – 10 in 0,5 dB-steps 862	
Testpoints, Input (bidirektional) returnpath, forwardpath **Output** (**directional coupler**)	 [dB] [dB]	 20 ±1,5 20 ±0,5	
Return loss **Input, Output and Testpoint**	[dB]	≥ 18 (from 40 MHz -1,5 dB/octave)	

* without band I

Type		**Vario 661 F**	**Vario 661 O**
Backward range			
Frequency range	(MHz)	5 – 65 or 5 – 33	
Gain		Dependant on returnpath	
Diplexfilter	(MHz)	5 – 33 / 47 – 862 (VD 33) 5 – 65 / 80 – 862 (VD 65)	
Common data			
Feed-through current	[A]	5	—
Supply voltage	[V~]	24 – 65	230
Current **without/with return path**		15 W / 18 W	29 VA / 33 VA
Impedance	[Ω]	75	
amb.-Temperatur	[°C]	-15 …+55	
Dimensions (wxhxd)	[mm]	204x73x150	
Weight	[kg]	ca. 2,7	
Electr. safety class		IP 54 nach EN 60 529	

Type		**Vario 371 F**	**Vario 371 O**	**Vario 561 F**	**Vario 561 O**
Order no.		217 372	217 370	217 571	217 570
Forward path					
Gain	[dB]	37 ±0,8	37 ±0,8	36 ±0,8	36,5 ±0,8
Linearity	[dB]	±0,8	±0,8	±0,8	±0,8
Frequency range	[MHz]	47–862			
Output level (linear) EN 50083-3**, 42 channels**, **(linear)** for **CTBA** / **CSOA** ≥60 dB **7 dB Slope** for 60dB **KMA** / 60dB **IMA$_2$** EN 50083-5 / 4.2	 [dBµV] [dBµV] [dBµV]	 107 / 109 109 / 111 122 / 121		 110 / 112 112 / 113 126 / 123	
10 dB Slope for **CTBA** / **CSOA** ≥**60 dB** **10 dB Interstage** f. **CTBA** / **CSOA** ≥**60 dB** **10 dB Interstage** & **10 dB Slope**	[dBµV] [dBµV] [dBµV]	109 / 111 107 / 108 108 / 108		112 / 113 110 / 111 (7 dB Interstage) 111 / 111 (7 dB Interstage +10 dB Slope)	
Noise figure >800 MHz	[dB]	4,5 typ. 5	4,5 typ. 4,8	4,5 typ. 5	4,5 typ. 4,8
Attenuation input	[dB]	0 – 20 in 0,5 dB-steps			
Equalizer input **Base of equalizer**	[dB] (MHz)	0 – 20 in 0,5 dB-steps 862			
Inverse Equalizer input **Base of inverse equalizer**	[dB] (MHz)	0 – 10 in 0,5 dB-steps 47			
Attenuation Interstage **Interstageslope** **Base of Interstageslope**	[dB] [dB] (MHz)	0 – 10 in 0,5 dB-steps 0 – 10 in 0,5 dB-steps 862		0 – 7 in 0,5 dB-steps 0 – 10 in 0,5 dB-steps 862	
Testpoints, Input (bidirektional) **Output** (directional coupler)	[dB] [dB]	20 ± 2 (47/80-862 MHz) 20 ± 1 (5-862 MHz)			
Return loss **Input, Output and Testpoint**	[dB]	≥ 18 (from 40 MHz -1,5 dB/octave)			

VARIO 371 F

Type		**Vario 371 F**	**Vario 371 O**	**Vario 561 F**	**Vario 561 O**
Backward range					
Frequency range	(MHz)	5 – 65 or 5 – 33			
Gain		Dependant on returnpath			
Diplexfilter	(MHz)	5 – 33 / 47 – 862 (VD 33) 5 – 65 / 80 – 862 (VD 65)			
Common data					
Feed-through current	[A]	5	—	5	—
Supply voltage	[V~]	24 – 65	230	24 – 65	230
Current without/with return path		9 W / 11,5 W	18 VA / 24 VA	12 W / 14,5 W	24 VA / 28 VA
Impedance	[Ω]	75			
amb.-Temperatur	[°C]	- 15 …+ 55			
Dimensions (wxhxd)	[mm]	204x73x150			
Weight	[kg]	ca. 2,7			
Electr. safety class		IP 54 nach EN 60 529			

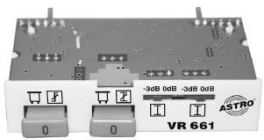
Type		**Vario 377 F**	**Vario 377 O**	**Vario 567 F**	**Vario 567 O**
Order no.		217 377	217 376	217 577	217 576
Forward path					
Gain	[dB]	36 ±1,0	36 ±1,0	35,0 ±1,0	35,0 ±1,0
Linearity	[dB]	± 1	± 1	± 1	± 1
Frequency range	[MHz]	47–862			
Output level (linear) EN 50083-3**, 42 channels**, **(linear)** for **CTBA** / **CSOA** ≥ 60 dB **7 dB Slope** for 60dB **KMA** / 60dB **IMA$_2$** EN 50083-5 / 4.2	 [dBµV] [dBµV] [dBµV]	 107 / 109 109 / 111 122 / 121		 110 / 112 112 / 113 126 / 123	
10 dB Slope for **CTBA** / **CSOA** ≥ **60 dB** **10 dB Interstage** f. **CTBA** / **CSOA** ≥ **60 dB** **10 dB Interstage** & **10 dB Slope**	[dBµV] [dBµV] [dBµV]	109 / 111 107 / 108 108 / 108		112 / 113 110 / 111 (7 dB Interstage) 111 / 111 (7 dB Interstage +10 dB Slope)	
Noise figure >800 MHz	[dB]	5 typ. 5,5	5 typ. 5,5	5 typ. 5,5	5 typ. 5,5
Attenuation input	[dB]	0 – 20			
Equalizer input **Base of equalizer**	[dB] (MHz)	0 – 20 862			
Inverse Equalizer input **Base of inverse equalizer**	[dB] (MHz)	0 – 7 47			
Attenuation Interstage **Interstageslope** **Base of Interstageslope**	[dB] [dB] (MHz)	0 – 10 in 0,5 dB-steps 0 – 10 in 0,5 dB-steps 862		0 – 7 in 0,5 dB-steps 0 – 10 in 0,5 dB-steps 862	
Testpoints, Input (bidirektional) **Output** (directional coupler)	[dB] [dB]	20 ± 2 (47/80-862 MHz) 20 ± 1 (5-862 MHz)			
Return loss **Input, Output and Testpoint**	[dB]	≥ 18 (from 40 MHz -1,5 dB/octave)			

Type		**Vario 377 F**	**Vario 377 O**	**Vario 567 F**	**Vario 567 O**
Backward range					
Frequency range	(MHz)	5 – 65 or 5 – 33			
Gain		Dependant on returnpath			
Diplexfilter	(MHz)	5 – 33 / 47 – 862 (VD 33) 5 – 65 / 80 – 862 (VD 65)			
Common data					
Feed-through current	[A]	5	—	5	—
Supply voltage	[V~]	24 – 65	230	24 – 65	230
Current without/with return path		9 W / 11,5 W	18 VA / 24 VA	12 W / 14,5 W	24 VA / 28 VA
Impedance	[Ω]	75			
amb.-Temperatur	[°C]	- 15 …+ 55			
Dimensions (wxhxd)	[mm]	204x73x150			
Weight	[kg]	ca. 2,7			
Electr. safety class		IP 54 nach EN 60 529			

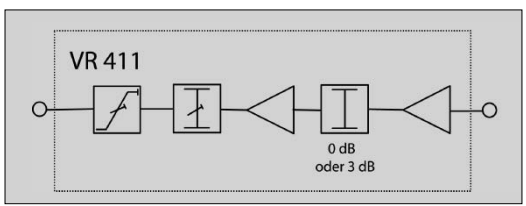
VR... Return path amp.with attenuation and equalizer

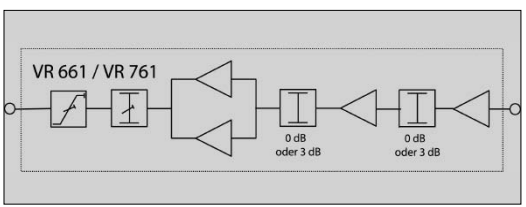
All modules are interruption-free, attenuation and equalizing at the output are variable. Furthermore the gain can be configured interstage using the included switches.

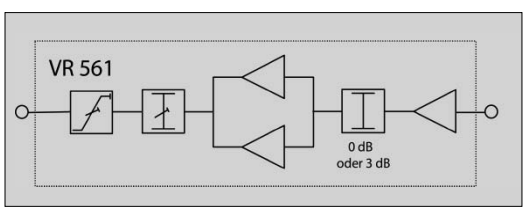
Type		VR 411	VR 561	VR 661	VR 761
Order no.		216 411	216 561	216 661	216 761
Frequencyrange return path		[MHz]	5–65	5–65	5–65 5–65
Gain	[dB]	14 / 11	20 / 17	27 / 24 / 21	32 / 29 / 26
Output level 60dB IMA_2	[dBµV]	105	115	115	115
Attenuation / equalizer		Pad	Pad	Pad	Pad



VR 661







VARIO… accessories

Plug-in cards available for Vario amplifier extension and tuning.

VZ 1007

VZ 1001

Type	Order no.	Value
Splitter 2-way (5 – 862 MHz)		
VZ 1007	416 002	
Taps		
VZ 1012	416 006	– 10 dB
VZ 1013	416 007	– 15 dB
VZ 1014	416 008	– 20 dB
Diplexfilter (Packing unit 2 pieces)		
VD 33	216 653	5–33 MHz
VD 65	216 652	5–65 MHz
Zero cards		
VZ 1001	216 278	for passive return path (Packing unit 2 pieces)
VZ 1006	416001	for one input instead of output tap

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