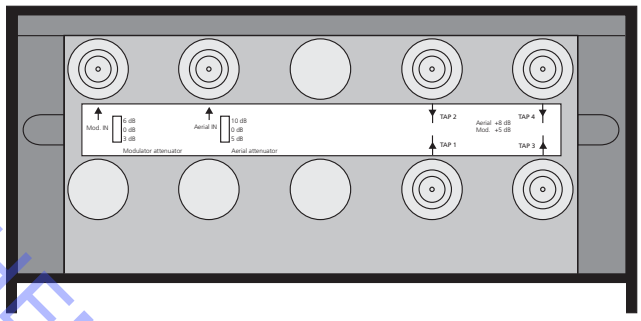

RF Link Amplifier

BANG & OLUFSEN

Contents

Your notes

Your notes

Introduction

The number of TV channels in the customer's home has increased significantly and it has therefore been decided to introduce a new RF modulator in future BeoVisions. The reason for this is the wish to ensure optimal picture quality in link rooms.
By using the new modulator in the BeoVisions together with the RF link amplifier, the customer achieves superior picture quality in both main and link room.
As the new modulator is distributing only internal signals from for instance DVD, satellite etc. on the RF output, it is necessary to combine the modulated signal with the channels from the aerial or cable network by means of the RF Link Amplifier which is developed specifically to support the new modulator.

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Technical Training

RF Link Amplifier

Your notes

The RF Link Amplifier - two types available

Two types of the RF Link Amplifier are available.

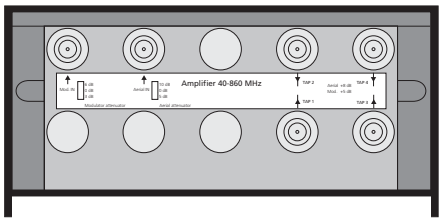
Type 4052
Frequency range: 40 - 860 MHz
Part No.: 1405266.

Type 4053
With return path. The return path is intended for Set-top Boxes which have return communication with the distributor of the programmes - for instance pay-per-view.
Frequency rage: 5 - 65 MHz / 87 - 860 MHz
Part No.: 1405366.

Note!
If the aerial or cable network signal contains frequencies in Band I (5 - 80 MHz) the RF Link Amplifier with return path (4053) cannot be used, because these frequencies are used for the return communication.

Your notes

RF Link Amplifier

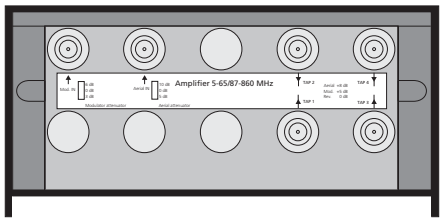


Type 4052

- Part No.: 1405266
- Frequency range
  – 40 - 860 MHz

Type 4053

- Part No.: 1405366
  – With return path
- Frequency range
  – 5 - 65 MHz / 87 - 860 MHz



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Connections

Your notes

RF Link Amplifier

MOD IN
For the connection of the RF signal from the system modulator in the main room TV.

MOD IN Attenuator
Attenuator for the RF signal from the system modulator. Is default set to 0 dB.

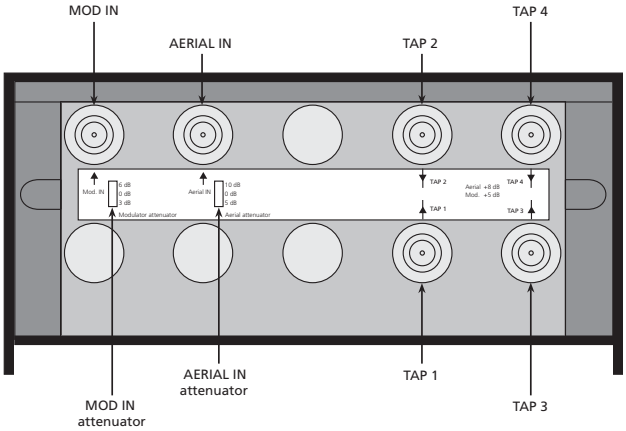
Aerial IN
For the connection of a local aerial or a cable network.

Aerial IN Attenuator
Attenuator for the RF signal from a local aerial or a cable network. Is default set to 0 dB.

TAP 1 - 4
For the connection of the RF signal to the main room TV and link room TVs - directly or via a VTR, a HDR or a Set-top Box.

Your notes

Connections



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Galvanic Isolator

Galvanic Isolator

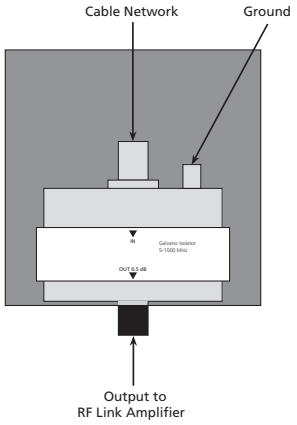
To avoid ground loops or other electrical potential differences the Galvanic Isolator must always be used when the RF Link Amplifier is connected to a cable network.

Through pass frequency: 5 - 1000 MHz
Attenuation: 0.5 dB
Part No.: 8039004.

Your notes

Your notes

Galvanic Isolator



- Must always be used in cable networks
- Through pass frequency – 5 -1,000 MHz
- Attenuation – 0.5 dB
- Part No.: 8039004

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Local aerial connection

RF Link Amplifier - Type 4052

In this setup the RF Link Amplifier type 4052 is used.
The aerial is connected to the Aerial IN TAP and the RF signal - from the system modulator on the main room TV - is connected to MOD IN.
The coaxial cable is connected directly - or via a VTR, a HDR or a Set-top Box - from one of the outputs TAPs (1 - 4) to the aerial input on the main room TV. The remaining three output TAPs are free for connecting link room TVs.

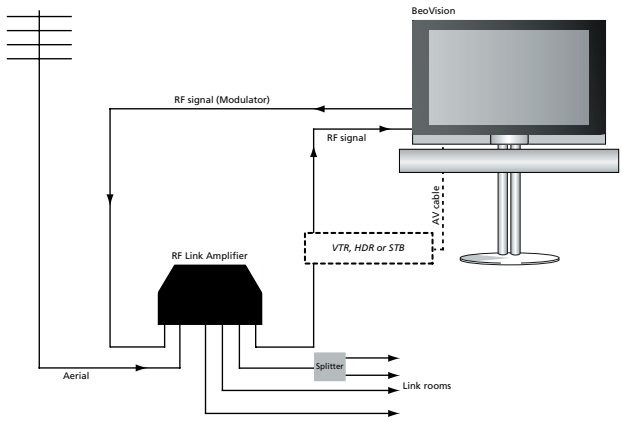
More than three video link rooms

If connection of more than three video link rooms is required, RF shielded splitters can be used.
To be sure to have an adequate output, the splitters must not have more than two outputs. A splitter with more than two outputs may damp the signal too much. Alternatively an additional RF Link Amplifier may be used.

Your notes

Your notes

Local aerial connection



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Cable network connection

Your notes

RF Link Amplifier - Type 4052

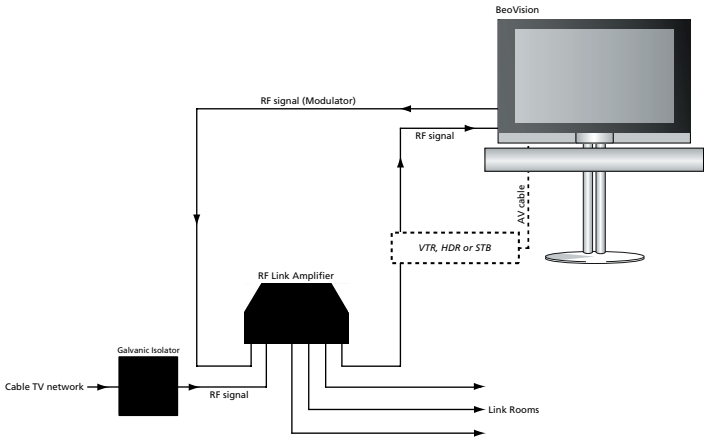
In this setup the RF Link Amplifier type 4052 is used.
The cable network is connected to the Aerial IN TAP via the Galvanic Isolator.
The RF signal - from the system modulator in the main room TV - is connected to MOD IN.
The coaxial cable is connected directly - or via a VTR, a HDR or a Set-top Box - from one of the outputs TAPs (1 - 4) to the aerial input on the main room TV.
The remaining three output TAPs is free for connecting link room TVs.
If connection of more than three video link rooms is required, RF shielded splitters with maximum two outputs can be used. Alternatively an additional RF Link Amplifier may be used.

Note!

When the RF Link Amplifier is used in connection with a cable network the Galvanic Isolator must always be inserted between the cable network outlet and the RF Link Amplifier. This is necessary to avoid ground loops and other electrical potential differences.

Your notes

Cable network connection



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Cable network connection with return path

Your notes

RF Link Amplifier - Type 4053

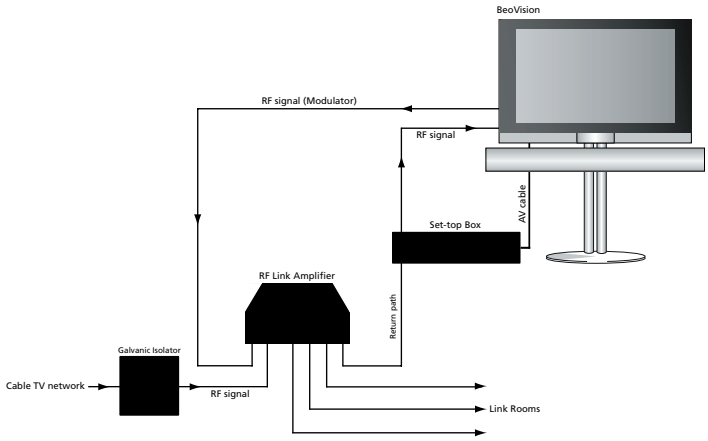
In this setup the RF Link Amplifier type 4053 is used because a return path is required.
The return path is intended for Set-top Boxes which have return communication with the programme distributor.
The cable network is connected to the Aerial IN TAP - via the Galvanic Isolator - and the RF signal from the system modulator on the main room TV is connected to MOD IN.
From one of the outputs TAPs (1 - 4) the coaxial cable is connected to the Set-top Box and looped through to the aerial input on the main room TV.
The return communication takes place via the TAP to which the Set-top Box is connected.
The remaining three output TAPs are free for connecting link room TVs.
If connection of more than three video link rooms is required, RF shielded splitters with maximum two outputs can be used. Alternatively an additional RF Link Amplifier may be used.

Note!

When the RF Link Amplifier is used in connection with a cable network the Galvanic Isolator must always be inserted between the cable network outlet and the RF Link Amplifier. This is necessary to avoid ground loops and other electrical potential differences.

Your notes

Cable network connection with return path



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Converting to a new setup

The old setup

The aerial / cable network signal and the signals from the internal sources from the TV, such as DVD, Satellite etc. are distributed via the RF modulator in BeoVision Avant DVD.
To be sure to have an adequate signal in the video link rooms an X-brand RF amplifier is used with a splitter for connection of the coaxial cables to the video link rooms.

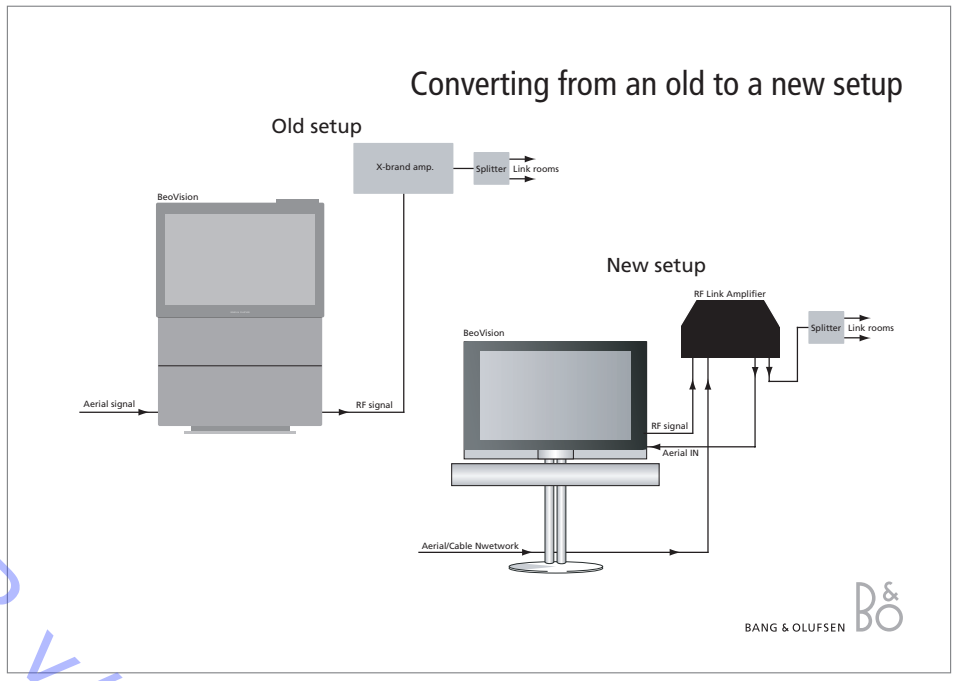
The new setup

The RF Link Amplifier replaces the X-brand amplifier.
The aerial / cable network signal is connected to AERIAL IN on the RF Link Amplifier and the RF modulator signal is connected to MOD IN. One of the output TAPs is connected to the aerial input on the BeoVision with a coaxial cable.
One of the other outputs is used for connecting the splitter. If the splitter is not RF shielded it is recommend to replace it with an RF shielded type.

Note!
It is recommended always to use the RF Link Amplifier when a BeoVision distributing RF signals to link room TVs is replaced with a new BeoVision.

Your notes

Your notes



Adjustments

Your notes

Link frequency

The link frequency is adjusted on the main room TV. The link frequency is default set to 599 MHz (Ch. 37).

- Check that the link frequency 599 MHz (Ch. 37) is on a free channel without disturbances from other channels.
- Check that the channel below the link frequency channel is free (Ch. 36) without disturbances from other channels.

If channels 37 and 36 are not available the link frequency must be adjusted to another free link frequency channel where the channel below is free too. Both channels must be without disturbances.

Interference/noise

If interference/noise occurs on the link frequency channel the aerial attenuator must be adjusted. Start with -5 dB and afterwards -10 dB, if necessary. This is mainly necessary in cable networks with a signal strength > 68 dBµV, but it may vary from cable network to cable network.

Note!

If the signal strength from the aerial/cable network is so weak that interference occurs in the TV picture, it may be necessary to adjust the modulator attenuator.

If interference/noise remains on the link frequency or the TV signal strength is getting too weak after the adjustment of the attenuator, a notch filter must be mounted instead of adjusting the modulator attenuator.

A channel-tuned notch filter or an adjustable notch filter can be used. The most appropriate filter is an adjustable notch filter.

- 1) Connect the adjustable notch filter to the output from the RF modulator.
- 2) Turn to the modulator frequency on either the main room TV or the link room TV.
- 3) Adjust to the weakest signal possible (snow) on the link frequency.
- 3) Move the adjustable notch filter and mount it on the AERIAL IN instead.

Your notes

Adjustments

Link frequency:

- Adjusted on the main room TV
  – Default set to 599 MHz - Ch. 37
- Ch. 37 and Ch. 36 must be free and without disturbances from other channels
- Adjust to a free link frequency channel where the channel below is also free. Both channels must be without disturbances

Interference / noise in the picture:

- Adjust the AERIAL attenuator and/or use an adjustable notch filter
- The modulator attenuator is only to be adjusted if interference occurs in the TV picture because of a weak aerial/network signal

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Technical specifications

Type 4052

Gain

- Aerial -> TAP1 - 4

40 - 118 MHz	119 - 860 MHz
7.0 dB (±1.5 dB)	8.0 dB (±1.5 dB)

- Modulator -> TAP1 - 4

40 - 118 MHz	119 - 860 MHz
4.0 dB (±1.5 dB)	5.0 dB (±1.5 dB)

Attenuators

- Aerial	0 / 5 / 10 dB
- Modulator	0 / 3 / 6 dB)

Minimum input

- 60 dB/µV

Maximum input

- 86 dB/µV

Maximum output

- 100 dB/µV (40 - 860 MHz)

Mains voltage

- 230 V~/ 50Hz

Cable lengths:

RF modulator to MOD IN	30 meters
Aerial/cable network to AERIAL IN	30 meters
TAP1/TAP2/TAP3/TAP4 to product	30 meters

Your notes

Your notes

Technical specifications - Type 4052

Gain - Aerial – TAP1 - 4	40 - 118 MHz 7.0 dB (±1.5 dB)	119 - 860 MHz 8.0 dB (±1.5 dB)
Gain - Modulator – TAP1 - 4	40 - 118 MHz 4.0 dB (±1.5 dB)	119 - 860 MHz 5.0 dB (±1.5 dB)
Attenuator aerial	0 / 5 / 10 dB	
Attenuator modulator	0 / 3 / 6 dB)	
Minimum input	60 dB/µV	
Maximum input	86 dB/µV	
Maximum output	100 dB/µV (40 - 860 MHz)	
Mains voltage	230 V~/ 50 Hz	

Cable lengths:

RF modulator to MOD IN	30 meters
Aerial/cable network to AERIAL IN	30 meters
TAP1/TAP2/TAP3/TAP4 to product	30 meters

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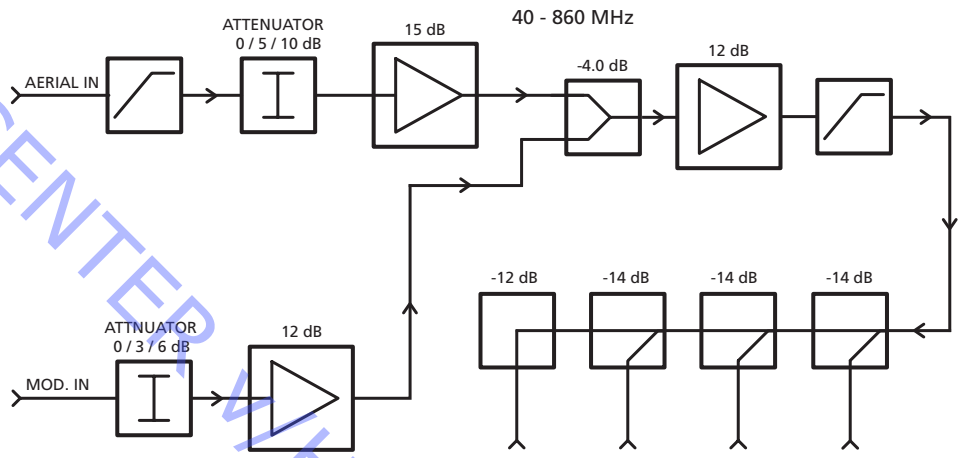
Block diagram - Type 4052

Your notes

Type 4052 - Frequency range 40 - 860 MHz

First the aerial / cable network input signal from the AERIAL IN input - 40 - 860 MHz - is passing a high-pass filter. The high-pass filter allows only frequencies higher than 27 MHz to pass. This is to prevent disturbances from walkie-talkies.
The signal is then led through an attenuator which makes it possible to attenuate the signal by -5 dB or by -10 dB.
After the attenuator a 15 dB amplifier follows.
From the output of the amplifier the signal is led to a combiner where it is combined with the signal from the RF modulator input - MOD IN.
The modulator signal is first led through an attenuator which makes it possible to attenuate the signal by -3 dB or by -6 dB.
After the attenuator a 12 dB amplifier follows.
From the output of the amplifier the signal is led to the combiner where it is combined with the aerial / cable network signal from the AERIAL IN input. The combiner reduces the signals by -4 dB.
The combined signal is led to a 12 dB amplifier and from the output on the amplifier the signal is led to a high-pass filter allowing frequencies from 87 MHz to 860 MHz to pass through.
From the output of the high-pass filter the signal is supplied to the four outputs - TAP 1, TAP 2, TAP 3 and TAP 4.

Type 4052



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Technical specifications

Your notes

Type 4053

Gain

- Aerial -> TAP1 - 4

87 - 118 MHz	119 - 860 MHz
7.0 dB (±1.5 dB)	8.0 dB (±1.5 dB)

- Modulator -> TAP1 - 4

87 - 118 MHz	119 - 860 MHz
4.0 dB (±1.5 dB)	5.0 dB (±1.5 dB)

- Return path

5 - 60 MHz	60 - 65 MHz
0.0 (±1.5 dB)	-1.0 dB (±1.5 dB)

Attenuators

- Aerial	0 / 5 / 10 dB
- Modulator	0 / 3 / 6 dB)

Minimum input

- 60 dB/µV

Maximum input

- 86 dB/µV

Maximum output

- 100 dB/µV (40 - 860 MHz)

Mains voltage

- 230 V~/ 50 Hz

Cable lengths:

RF modulator to MOD IN	30 meters
Cable network to AERIAL IN	30 meters
TAP1/TAP2/TAP3/TAP4 to product	30 meters

Your notes

Technical specifications - Type 4053

Gain - Aerial – TAP1 - 4	87 - 118 MHz 7.0 dB (±1.5 dB)	119 - 860 MHz 8.0 dB (±1.5 db)
Gain - Modulator – TAP1 - 4	87 - 118 MHz 4.0 dB (±1.5 dB)	119 - 860 MHz 5.0 dB (±1.5 dB)
Attenuator aerial	0 / 5 / 10 dB	
Attenuator modulator	0 / 3 / 6 dB	
Gain - Return path	5 - 60 MHz 0.0 (±1.5 dB)	60 - 65 MHz -1.0 dB (±1.5 dB)
Minimum input	60 dB/µV	
Maximum input	86 dB/µV	
Maximum output	100 dB/µV (87 - 860 MHz)	
Mains voltage	230 V~ / 50 Hz	

Maximum cable lengths:

RF modulator to MOD IN	30 meters
Cable network to AERIAL IN	30 meters
TAP1/TAP2/TAP3/TAP4 to product	30 meters

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Block diagram - Type 4053

Your notes

Type 4053 - Frequency range 5 - 65 MHz / 87 - 860 MHz

First the cable network input signal from the AERIAL IN input - 87 - 860 MHz - is passing a high-pass filter. The high-pass filter allows only frequencies higher than 27 MHz to pass. This is to prevent disturbances from walkie-talkies.
The signal is then led through an attenuator which makes it possible to attenuate the signal by -5 dB or by -10 dB.
After the attenuator a 15 dB amplifier follows.
From the output of the amplifier the signal is led to a combiner where it is combined with the signal from the RF modulator input - MOD IN.
The modulator signal is first led through an attenuator which makes it possible to attenuate the signal by -3 dB or by -6 dB.
After the attenuator a 12 dB amplifier follows.
From the output of the amplifier the signal is led to the combiner where it is combined with the cable network signal from the AERIAL IN input.
The combiner reduces the signals by -4 dB.
The combined signal is led to a 12 dB amplifier and from the output of the amplifier the signal is led to a high-pass filter allowing frequencies from 87 MHz to 860 MHz to pass through.
From the output of the high-pass filter the signal is supplied to the four outputs - TAP 1, TAP 2, TAP 3 and TAP 4.

Return path - 5 - 65 MHz

The Set-top Box can be connected to any of the four output TAPs, because they all have the return path possibility.
The signal - from the Set-top Box - is led through a low-pass filter allowing only frequencies from 5 MHz to 65 MHz to pass through.
From the output of the low-pass filter the signal is led to a 15 dB amplifier and amplified before it is sent to another low-pass filter, also allowing only frequencies from 5 MHz to 65 MHz to pass.
From the low-pass filter the return path signal is led to the cable network input - AERIAL IN - and then returned to the programme distributor via the cable network.

Type 4053