

SPAUN SVN 231 F Amplifier

Universal building block for antenna installations

In many reception systems for individual use a combination of satellite and terrestrial antennas are used. Theoretically, it is possible to use separate cables for satellite and terrestrial TV but it is not very practical. Usually, a signal combiner is used up there beneath the roof. We connect the LNB output and the terrestrial antenna output to it. The combiner has only one output to which we hook up one cable. Now we have both signals: satellite and terrestrial in one cable. The signals do not interfere with each other because they occupy different frequency bands: 47-862 MHz (terrestrial TV) and 950-2150 MHz (satellite IF).

TELE
satellite
AWARD 02-03/2010

SPAUN SVN 231 F
Excellent amplifier/combiner with excellent specifications



950 ... 2200 MHz SAT / SAT + Terr. DC 18 V ↑

47 ... 862 MHz Terr. DC 18 V ↓

SPAUN™ **SVN 231 F**
Art.Nr.: 814118

SAT-ZF-Verstärker in Splitband-Technik / Inline-Verstärker
SAT IF Amplifier in Splitband Technology / Inline-Amplifier

| | |
|---|--|
| Eingänge Inputs | 1 x Terr. 47 ... 862 MHz 1 x SAT 950 ... 2200 MHz |
| Ausgänge Outputs | 1 x 47 ... 2200 MHz |
| Verstärkung Terr. Gain Terr. | 20 dB |
| Verstärkung SAT. Gain SAT. | 30 dB |
| Max. Ausgangspegel Max. output level: 47 ... 862 MHz 60 dB IMA, EN 50083-3 950 ... 2200 MHz 35 dB IMA, EN 50083-3 | 105 dBµV 111 dBµV |
| Netzanschluß U- Mains supply U- | 100 ... 240 V / 47-63 Hz |
| Leistungsaufnahme Power consumption | < 15 W |
| Max. Stromabgabe Max. power output | 18 V / 400 mA |

| | | |
|--------|---|----------------------|
| DISEqC | 1 | DC SAT + OUT |
| | 2 | DC Terr. |
| | 3 | DC SAT + OUT + Terr. |

Bitte beachten Sie hierzu auch die Betriebsanleitung. Please refer to the manual for further details.

A Zwei Eingänge SAT sep. & Terr. sep.
Two inputs SAT sep. & Terr. sep.
B Ein Eingang SAT & Terr.
One input SAT & Terr.

Pegel | Level -10 dB Terr.



Made in Germany



Ausgang | Output
DC 18 V ↓ 47 ... 2200 MHz

A simple passive combiner would add unnecessary and unwanted signal attenuation. Therefore, it is much wiser to use an active device – SAT IF/ Terrestrial TV amplifier. The well known German manufacturer of distribution equipment SPAUN Electronic offers a very interesting product of this kind. We decided to check the performance of SVN 231 F Amplifier.

Features

The device is contained in typical SPAUN enclosure with nice looking blue plastic part and perfectly finished aluminum covers. The workmanship, as always with SPAUN distribution equipment, is excellent.

You can mount SVN 231 F on the wall with 4 screws but remember that this device must be placed indoor rather than in the open air. In most cases, it will be right below the roof where the cables from the satellite and terrestrial antennas enter the building. Of course, you will need the mains supply (100~240V 47~63Hz) to power the amplifier. Power consumption is less than 18 W.

As a SAT-IF amplifier with active terrestrial feed, SVN 231 F has 2 inputs: one to connect an LNB, and the other to connect a terrestrial signal. Speaking of LNB, this can be Ku-Band or C-Band LNB – it does not matter. Both kinds of LNB's deliver the output signal in the frequency range: 950-2150 MHz. As to the terrestrial signal, it can be the output of a single antenna or the output of several terrestrial antennas connected together with branching filters.

SVN 231 F provides separate gain adjustment for satellite and terrestrial signals. Satellite signal can be amplified by 20~30 dB and terrestrial by 10~20 dB. So, in both cases, the gain adjustment range is 10 dB. An interesting feature is the adjustable equalizer embedded in the satellite path. Thanks to it, you can reduce the gain for lower frequencies of the IF band. In this way, you compensate for the cable losses which are less for lower frequencies than for higher frequencies. According to the specifications, the adjustment range is from 0 to -12 dB at the lower end of IF frequency range (at 950 MHz).

Additionally, SVN 231 F allows you to power the devices installed in the terrestrial input (like antenna amplifier or active antenna), satellite input, and even insert the DC voltage to its output cable. Using the switch "DiSeqC-1-2-3" you can select the option you need in your installation. In our test circuit

we used DC power generated by SVN 231 F to supply active terrestrial antenna and it worked perfectly. The switch was set to position 2. In this position, 18 V DC (up to 400 mA) was provided on the terrestrial input and the satellite input repeated the voltage and 22 kHz signal present at the SVN 231 F output and generated by our satellite receiver.

You can use SVN 231 F to amplify and combine satellite and terrestrial signals and insert them into one cable but it can be also used as an in-line amplifier amplifying the already combined satellite/terrestrial signal. In such case you use the satellite input of SVN 231 F and set the switch A-B to position B.

Performance

Satellite amplifier performance was the first to be tested. We used the real world signal from HOTBIRD satellite on 13° East and measured its level at the input of SVN 231 F and at

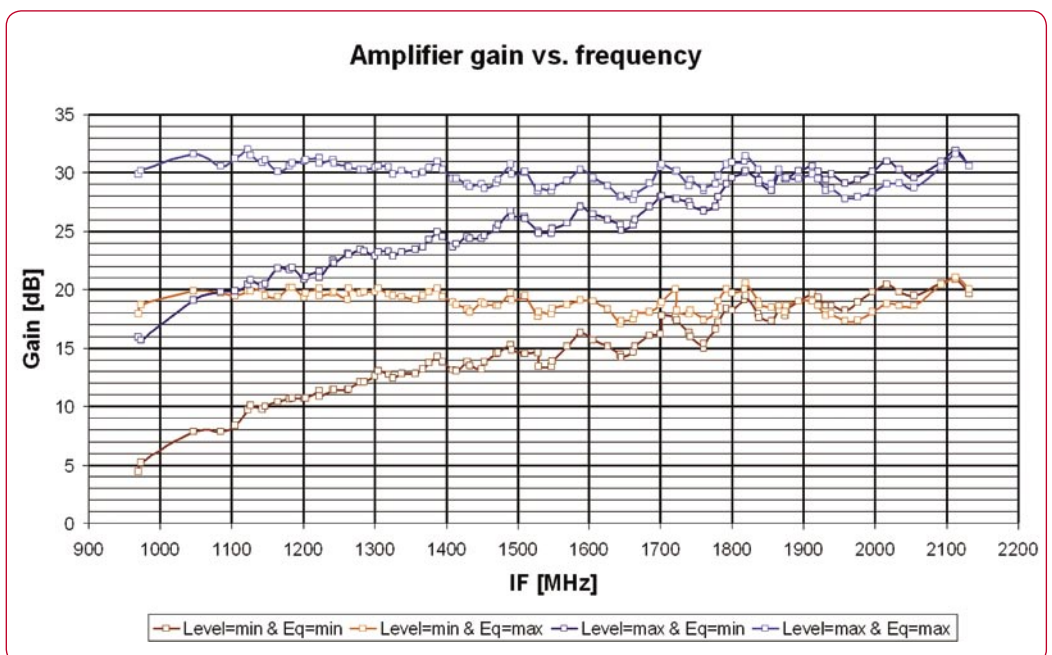
its output for minimum and maximum settings of the gain (level) and slope (equalizer) controls. We used practically every satellite transponder, so the number of the test frequencies was really impressive. You can see the results in the "Amplifier gain vs. frequency" graph.

The actual gain matches perfectly the specs: 20 dB at the level control set to minimum and 30 dB when the level control is set to maximum. The gain is pretty flat over the entire IF range.

The IF is the signal at the output of Ku-Band or C-band LNB. It starts at 950 MHz and ends at 2150 MHz.

As mentioned before, the equalizer control allows you to compensate for the losses of the cable. According to the spec it should adjust the gain at the lowest frequency from 0 to -12 dB. Our measurements revealed that the adjustment range is even higher, from 0 to -14 dB.

Amplifier gain vs. frequency





We are happy to inform you that practically there was no change in the signal quality between the output and the input. The differences of MER parameters were for example: 13.0 dB vs. 13.2 dB. This means that the internal noise of the SVN 231 F is so low that it does not spoil carrier-to-noise ratio at all.

After measuring the satellite signal, we also tried the terrestrial input. Again we used the real signal of analog terrestrial TV. The results are shown in the "Terrestrial signal gain" graph. Pretty like with the satellite signal, also here the actual gain was almost

exactly equal to the specification: 20 dB for maximum settings and 10 dB for minimum settings of the terrestrial level control.

Finally, we decided to measure the DVB-T multiplex available in our location. The difference of the results versus the specification was mere 0.2 dB. It is a big pleasure to measure a device whose actual performance matches that closely its specifications!

SVN 231 F is an excellent building block for antenna installations. It offers high and adjustable gain both for satellite and terrestrial signals.

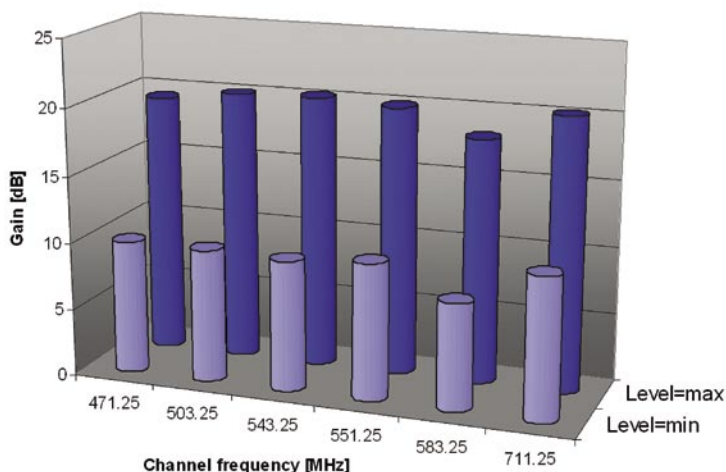
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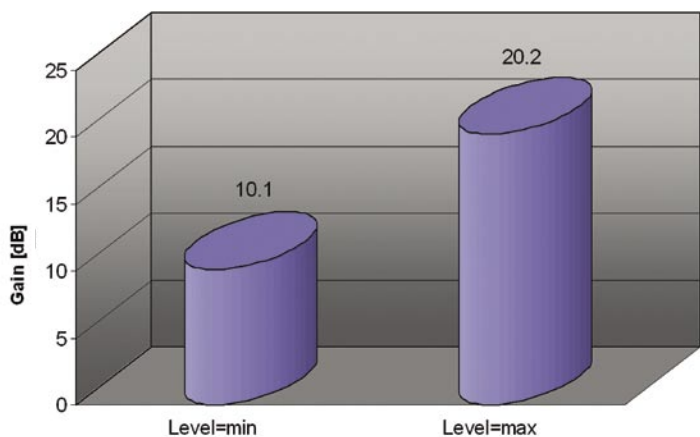
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Available online starting from **29 January 2010**

Terrestrial signal gain



DVB-T signal gain



Expert Opinion



Jacek Pawlowski
TELE-satellite
Test Center
Poland

- + Very flat gain over the entire band
- Adjustable gain for satellite and terrestrial signals
- Adjustable equalizer for cable losses compensation
- Very low internal noise
- Actual performance matches or exceeds the specification
- Low power consumption
- Very good workmanship
- Can be used as an amplifier / signal combiner (SAT + Terr.) as well as an in-line amplifier

- None

TECHNICAL DATA

| | |
|---------------------------|---|
| Manufacturer | SPAUN Electronic, Byk-Gulden-Str. 22, D-78224 Singen, Germany |
| Internet | www.spaun.com |
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| Phone | +49 - 7731 - 8673-0 |
| Fax | +49 - 7731 - 8673-17 |
| Model | SVN 231 F |
| Function | SAT-IF/Terrestrial TV amplifier |
| Inputs | Sat: 1 (950...2200 MHz) Terr.: 1 (47...862 MHz) |
| Outputs | 1 (47... 2200 MHz) |
| Gain SAT-IF | 30 dB |
| Gain Terr. | 20 dB |
| Level adjustment range | 0...-10 dB |
| Slope correction range | 0...-12 dB |
| Mains power supply | 100...240V / 47...63Hz |
| Power consumption | <18W |
| Ambient temperature range | -20...+50 °C |
| Dimensions | 250 x 190 x 77 mm |