

UPC3000 Specification

Issue 1, November 2008

Synopsys

The UPC3000 represents a new concept in Uplink Power Control.

Satellite uplink stations, mainly for radio and TV broadcasting, use uplink power control to compensate for sporadic but sometimes severe atmospheric losses due to rain, ice and/or snow in the satellite path. Several systems have been used over the years with variable, mixed success. The ideal Uplink Power Control System should be fast, reliable, simple and avoid unwanted saturation of transmitting earth station HPAs and satellite on board equipment.

Novella SatComs pioneered a novel simple approach for the uplink power control task using the real time accurate measurement of a satellite beacon level to control a variable gain amplifier placed in the uplink signal path. The resulting combination of the highly successful UPC300 and the long established B355/B356 range of beacon tracking receivers is based on the principle that each 1dB of loss on the downlink will be compensated by an additional 1dB gain on the uplink, and it became a best selling system due to great simplicity, reliability and ease of commissioning and installation. Provision was made for the user to limit the amount of adjustment in order to prevent HPA saturation.

The UPC3000 combines in a single 1U chassis Novella's best selling stand alone UPC300 uplink power controller and the high performance compact tracking receiver. This new product provides a fast, simple, reliable, out of the box solution for uplink power control.

Brief description

The UPC3000 contains 1 to 10 (defined at the time of order) variable gain amplifiers, to be inserted in the uplink signal path. They compensate the uplink power for changes in atmospheric path losses. The path loss is measured by the internal beacon receiver (engine is the same as in the B30 series of compact tracking receivers) whose DC output is conditioned to control the variable gain amplifiers.

The maximum level of compensation is adjustable in 2dB steps from 2 to 10dB. If beacon fade exceeds the preset value the amplifier gains are held to prevent overdriving of the HPA. A bypass switch allows the compensation to be removed, in this mode the gain of the unit is unitary, 0dB.

If the beacon signal is lost the UPC300 reverts to bypass mode.

Up to 10 variable gain amplifiers may be fitted internally. These may be rated at IF, 50 to 180 MHz, or L-band, 950 to 2,150 MHz, depending on earth station architecture.

The UPC3000 is usually fitted with an L-band tracking receiver, 940 to 1,750MHz or 940 to 2,150MHz. Versions with S, C, Ku or Ka-band interface are also available.



Outline specification

1. UPC section

| | |
|--|---|
| Input range, uplink signal paths amplifiers: | 50 to 180 MHz or 950 to 2150 MHz |
| Number of Inputs / Outputs: | 1 to 10 |
| Compensation Range: | Front panel switchable from 2 to 10dB in 2dB steps |
| Compensation Ratio: | 1dB drop of beacon level increases gain by 1dB |
| | Option: 1dB drop increases gain by 1.2dB, or other value |
| Input/Output Return Loss: | 15dB typical |
| Output 1dB compression point: | > +5dBm. |
| Front panel controls and indicators: | Compensation range (2, 4, 6, 8 and 10dB) Bypass / Auto Alarm LED - Red Beacon too High - Orange Beacon too Low - Orange |

2. Beacon receiver section

| | | |
|-----------|---------------------------------------|------------------------------------|
| RF input: | 940 to 2,150MHz or 940 to 1,750MHz | |
| | S-band option: | 2.0 to 2.4GHz model UPC3400 |
| | C-band option: | 3.4 to 4.2GHz model UPC3500 |
| | C-band option, IndiaSat: | 4.5 to 4.8GHz model UPC3510 |
| | X-band option: | 7.25 to 7.75GHz model UPC3600 |
| | Ku-band option, full band: | 10.7 to 12.75GHz model UPC3700 |
| | Ku-band option, band 1: | 10.95 to 11.7GHz model UPC3701 |
| | Ku-band option, band 2: | 11.7 to 12.2GHz model UPC3702 |
| | Ku-band option, band 3: | 12.25GHz to 12.75GHz model UPC3703 |
| | Ku-band option, LO band: | 10.7 to 11.7GHz model UPC3704 |
| | Ku-band option, HI band: | 11.7 to 12,75GHz model UPC3705 |
| | Ka-band option: | any 1GHz segment from 18 to 30GHz |

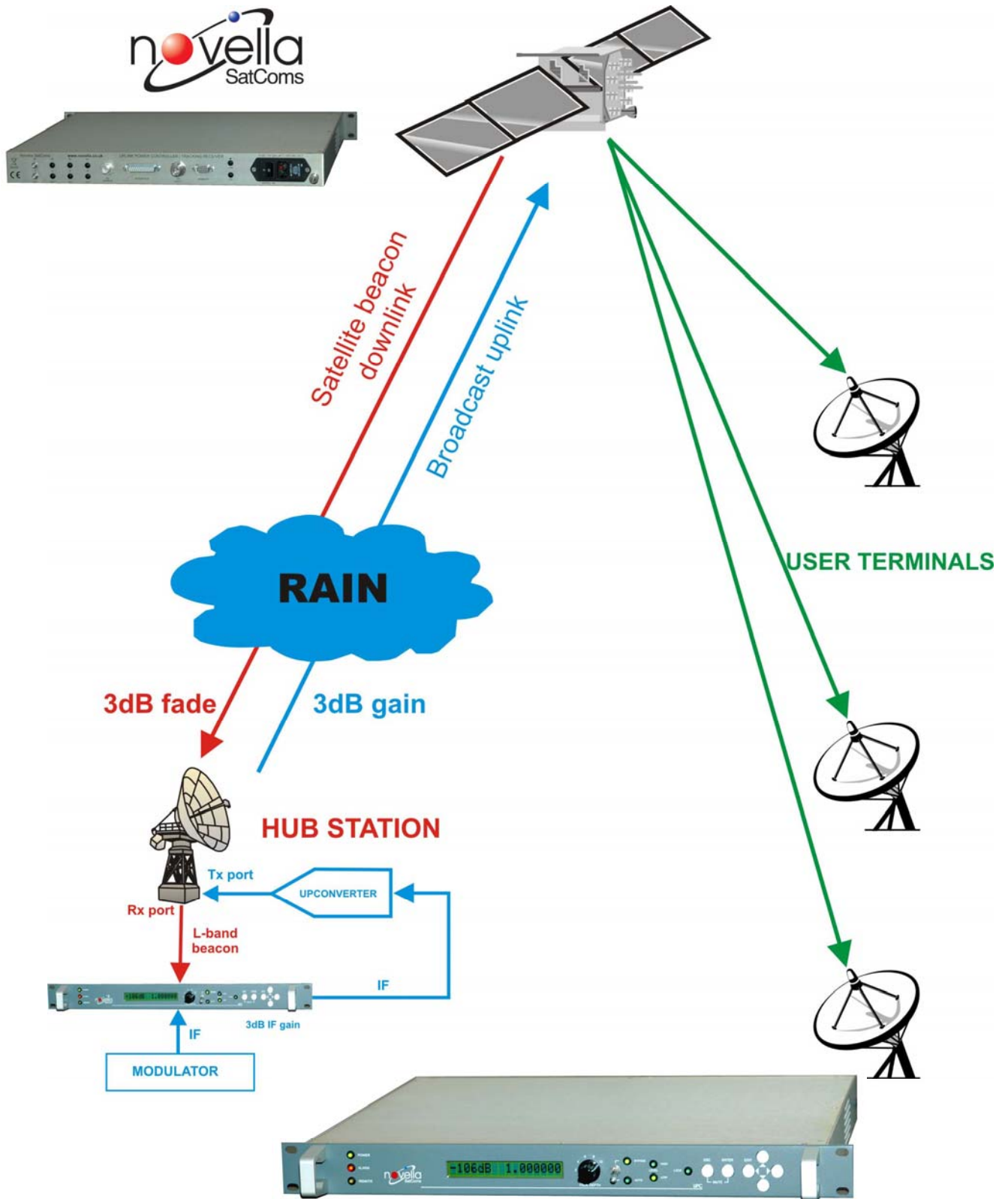
| | |
|--------------|--|
| DC output: | $\pm 10V$, 2db/V slope |
| | Note: Although this voltage is externally available, it is used internally and its settings must not be changed after initial setup. |
| Synthesiser: | 10kHz step |

3. General

| | |
|--|---|
| Power input: | - IEC power connector, - 115V/230V $\pm 10\%$ ac, - 50/60Hz $\pm 10\%$, 20VA max |
| Mechanical: | - 1U 19" standard chassis, 400mm |
| Interface, D-type 25-way female: | - Summary alarm - Beacon receiver DC output |
| Temperature: | - 0° to 50°C operating - -40° to 85°C storage |
| Humidity: | - 0 to 90% operating (non-condensing) - 0 to 95% storage |
| Serial interface, D-type 9-way female: | - RS232 or RS422/RS485 serial interface |
| | Option: - Ethernet interface, network serial port emulator, or SNMP and web browser interface. |

For further information contact:

Novella SatComs Limited
Kerry House, Kerry Garth
Horsforth, Leeds, LS18 4TL, UK
Tel: +44-113-258-0880
www.novella.co.uk
novella@novella.co.uk



UPC3000 UPLINK POWER CONTROLLER