



ACTIVE IF SPLITTER/COMBINER

UHP-IFS



GENERAL DESCRIPTION AND INSTALLATION GUIDE

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ACRONYMS AND ABBREVIATIONS

BUC	Block Up-Converter (BUC) is used in the transmission (uplink) of satellite signals. It converts a band (or "block") of frequencies from a lower frequency to a higher frequency.
ETSI	The European Telecommunications Standards Institute (ETSI) is an independent, non-profit, standardization organization in the telecommunications industry (equipment makers and network operators) in Europe, with worldwide projection.
IFL	Connection from the indoor equipment (modem/router) to the outdoor equipment at the antenna normally involves two inter-facility (IFL) cables.
LNB	Low-noise block converter is the receiving converter installed at satellite antenna.
Local oscillator	Oscillator built into RF block converter (BUC or LNB). Value of LO is usually written on block enclosure or in datasheet.
ODU	Out-Door Unit
RF level	Absolute RF level of entire signal (carrier + adjacent carriers) expressed in dBm.
SW	Software
Terminal	Earth Stations (usually VSAT) operated under management of network HUB
VSAT	Very Small Aperture Terminal – satellite earth station with small-size antenna

INTRODUCTION

This document presents a general description of the UHP-IFS Active IF Splitter/Combiner and is intended for familiarization with the product capabilities and specifications.

Required level of qualification

This manual is intended for engineering personnel operating satellite networks. Such specialists should have adequate educational credentials in the field of electronics and sufficient experience in RF satellite systems.

Document version and applicability

UHP-IFS Active IF Splitter/Combiner is a standalone product that can be used with UHP routers or any other satellite systems. This manual is applicable to all UHP-IFS Active IF Splitter/Combiner products with hardware revision 2 or higher. When ordering this document, please specify its ID: [UHP.IFS.2.EN].

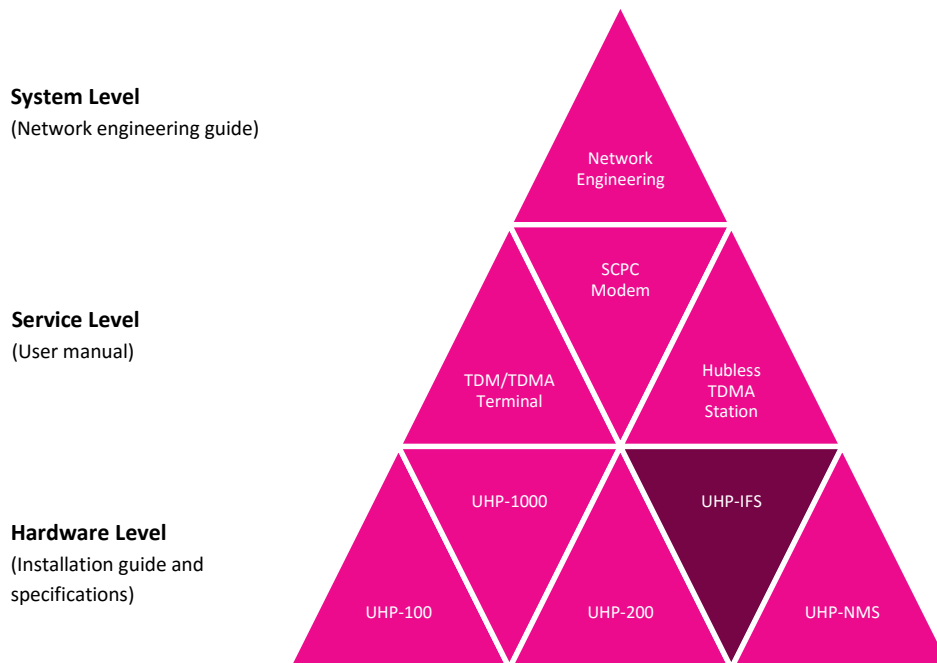


Figure 1 Structure of UHP Manuals

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1. GENERAL DESCRIPTION

1.1 System overview

UHP-IFS product is designed for splitting and combining IF signals with power compensation (lossless). It also allows injecting DC power and 10 MHz reference signal for RFU equipment, usually comprising of BUC and LNB. UHP-IFS can work simultaneously as an active 8-ports splitter, 4-ports active combiner, and passive coupler for 2 ports.

Technical characteristics are given in the appropriate product specification sheets.

1.2 Labeling and sealing

The product is marked with the unique Serial Number on the rear panel of the router case.

The warranty seals are located at the junction of the two parts of the case. Product warranty will automatically void if such labels have been removed, modified or damaged.

1.3 Packaging and content

UHP-IFS Active Splitter/Combiner is supplied in a cardboard box with dimensions 530 x 105 x 70 (L x W x H) mm. It is recommended to keep the original packaging throughout the entire period of operation. The basic package includes:

1. UHP-IFS Active Splitter/Combiner
2. Universal mounts in a 19 "rack

It is recommended to keep original packaging throughout the entire lifetime. Conservation, storage and transportation of the terminal must be in original packaging.

1.4 Description and principles of operation

UHP-IFS Active Splitter/Combiner is a 1U compact chassis that can be mounted in a standard 19 "rack. The UHP-IFS includes the following main components:

- Active combiner 1 x 4 (ports TX1 – TX4)
- Active splitter 1 x 8 (ports RX1 – RX8)
- Passive TAP 1 x 2 (two ports TX MON)
- POWER LED (red)
- Universal mounting for a 19 "rack with support of different angles
- EXT DC LEDs (green)
- EXT DC connectors

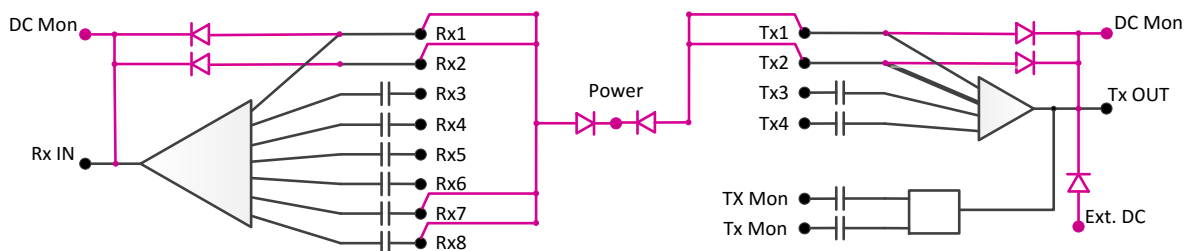


Figure 2 UHP-IFS structure

1.4.1 Active combiner

Ports TX1 - TX4 are purposed for combination of L-band radio signals into the composite interface TX OUT. Built-in amplifier compensates losses of the combiner. In addition, the TX1 and TX2 ports of the combiner can pass to the

TX OUT port 10 MHz reference frequency and up to 48VDC power. This power source can also be used to power the UHP-IFS device itself.

1.4.2 TX MON

The TX ports of UHP-IFS can be used as a TAP to control the aggregate signals on the TX output (with power loss of about 20dB). These ports can be used for synchronization of UHP IC controllers with the Hub (HB controller). The ports do not provide transmission of 10 MHz reference signals and DC power.



Figure 3 UHP-IFS router – interface view

1.4.3 Active splitter

The aggregate RX port of UHP-IFS is normally connected to a LNB and distributes the received signal between the ports RX1-RX8. The splitter is equipped with an amplifier that ensures lossless splitting of the signals.

The ports RX1 and RX2 can be used to pass to the LNB 10 MHz reference signal and DC power. This power source can also be used to power the UHP-IFS itself. Alternatively, the ports RX7 and RX8 can be used to power the UHP-IFS system; however this DC signal will not be passed to the RX input.

1.4.4 POWER LED

This LED indicates availability of the power for UHP-IFS that can be extracted from one (or several) ports: TX1; TX2; RX1; RX2; RX7; RX8; EXT DC. The voltage of 6-48V DC is sufficient. The UHP-IFS consumes less than 3 watts.

1.4.5 EXT DC LED

This LED indicates availability of DC voltage on the EXT DC input.

1.4.6 DC MON

These LEDs indicate availability of DC voltage on RX and TX ports respectively.

2. OPERATIONS

2.1 Operational limits

Table 1 Operational limits

#	Parameter	Limit values	
		Min	Max
1	UHP-IFS power	6	48V
2	Power consumption	-	3W
3	Electric current on the TX OUT	0	3A
4	Voltage on the TX OUT	0	48VDC
5	Electric current on the RX OUT	0	3A
6	Voltage on the RX OUT	0	48VDC
7	Temperature range	0 ⁰ C	+40 ⁰ C
8	Relative humidity (25 ⁰ C)	0%	90%
9	Atmospheric pressure (mm Hg)	720	770
10	Mechanical effects (acceleration value with an amplitude not exceeding 1.25 mm): - in the range 0,5 – 15 Hz: - in the range 15-40 Hz: - in the range 40-300 Hz:		2,45 m/s 5,88 m/s 14,7 m/s

2.2 Preparation for use

2.2.1 Unpacking

Before opening the packaging please check a safety of transport container. If there is any visible damage of packaging you should keep it as long as the delivered equipment will be properly tested.

Unpack the router in the following order:

1. Extract from a cardboard box the router and the power cord.
2. Store all packing materials for further storage or shipment of equipment.
3. Check equipment for the presence of any possible damage resulting from transportation.

2.2.2 Installation

UHP-IFS Active Splitter/Combiner can be mounted in a 19" rack (usually on its back side) with use of universal mounting brackets. The UHP-IFS allows installation with different angle to simplify cable layout and maintenance.

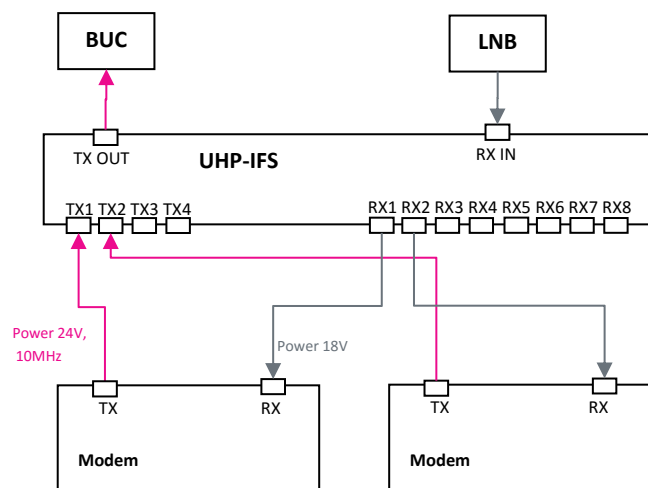


Figure 4 Standard interconnection of the UHP-IFS

2.2.3 Connecting to external devices

All wire connections must be performed before powering up the UHP-IFS system. IF cable connectors should be screwed to the UHP-IFS without use of any mechanical instruments. Please, avoid excessive force when connecting IF cables.

Typically, the UHP-IFS is connected to individual RF frequency equipment (ODU). In such configuration the TX output of the UHP-IFS is connected to the BUC. The signal from the LNB can be fed to the RX input. The TX and RX ports of UHP-IFS can be used to connect different satellite equipment (see Figure 4).

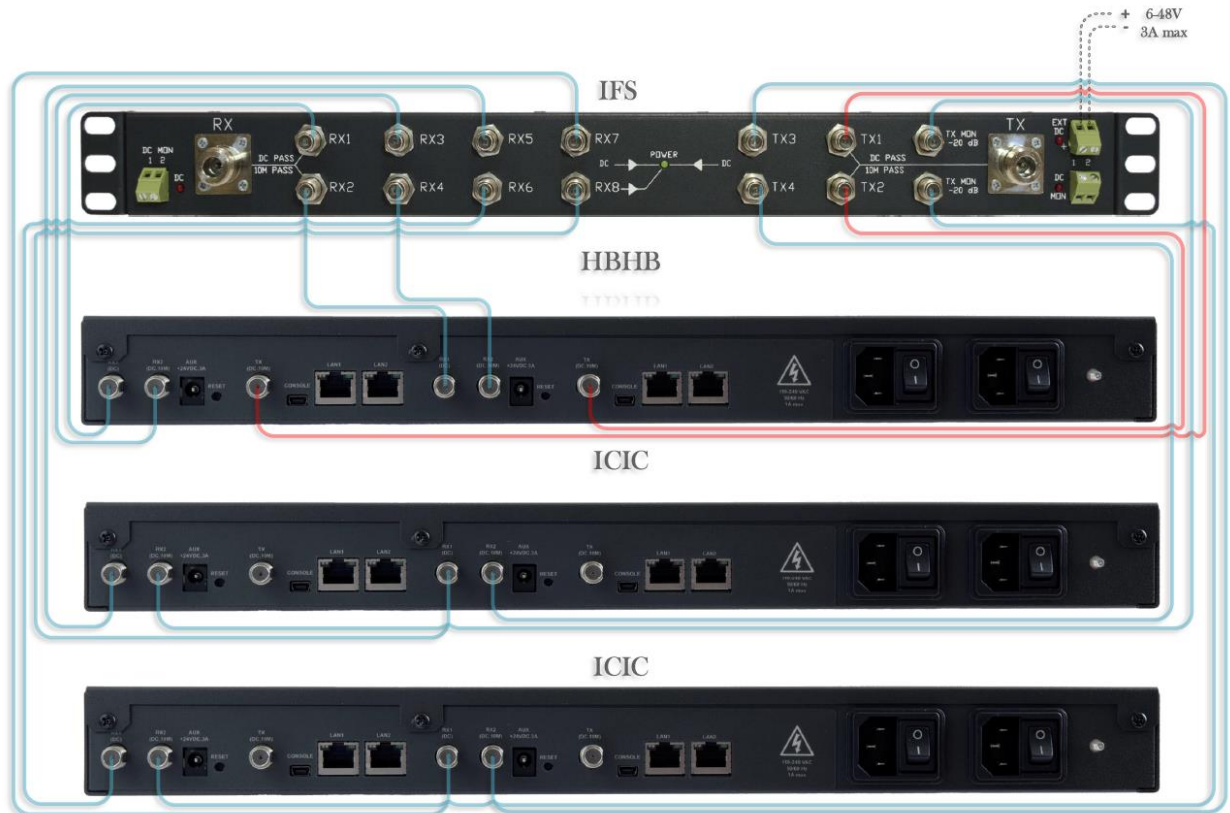


Figure 5 Connection diagram of UHP Redundant HUB

3. OPERATIONS

UHP-IFS system belongs to the class of unattended equipment and during its operation does not require any special staff exploitation. The tasks of operational staff are limited to the following:

- Availability of sufficient DC power and proper grounding.
- Cables connected to the device must not suffer any significant impact on the connectors. All connectors must be properly attached and secured.

3.1 Powering off

To power the UHP-IFS system off all the power sources should be deactivated.

3.2 Safety instructions for operations

- ☞ Connect and disconnect any cables only when device is powered off;
- ☞ Clean the device by dry cloth, do not use liquid wipes or cleaners;
- ☞ Do not try to repair the device and not use it for other purposes;
- ☞ There no serviceable components inside, opening a case is not permitted;
- ☞ Servicing by qualified personnel only;

3.3 Actions in case of fire

In case of fire or any smoke of the device please immediately power off the device and if necessary, use extinguishing tools that are intended for electrical circuits.

4. TROUBLESHOOTING

Table 2 Troubleshooting guide

Symptoms	Possible reasons	Actions
UHP-IFS doesn't work, POWER LED is off	No DC power	Check or replace DC power sources
	Insufficient power level	Measure DC voltage and ensure that it complies with minimal requirement
	Device failure	Contact your nearest dealer or service center for advanced support
POWER LED is on, but UHP-IFS doesn't work	Insufficient power level	Measure DC voltage and ensure that it complies with minimal requirement
	Device failure	Contact your nearest dealer or service center for advanced support

5. STORAGE, TRANSPORTATION AND DISPOSAL

Storage and transportation of UHP-IFS devices must be performed in original packaging. Equipment can be stored and transported in pallet with height not more than 10 devices.

Storage and transportation should comply with the following conditions:

- - humidity is not more than $(80 \pm 3)\%$ at a temperature $(25 \pm 2)^\circ\text{C}$;
- - limiting low temperature of storage $(\text{minus } 40 \pm 2)^\circ\text{C}$;
- - limiting high temperature of storage $(50 \pm 2)^\circ\text{C}$.
- - atmospheric pressure $720 \div 770$ mm. Hg.

Utilization of UHP-IFS equipment must be in accordance with the rules for disposal of industrial or consumer electronics in accordance with applicable law.