Baseband Converters ☐
Network Adapters ☑

NN6-1161RFL

DVB-T / DVB-H
Professional Terrestrial Modulator
with [1400-1700MHz] RF output

Enabling "TV on Mobile" Roll-Out

- *All DVB-T modes supported* ☑
- *Full DVB-H support (optional)* ☑
- *RF (1.4-1.7 GHz) outputs* ☑
- *Redundant inputs (2x2 ASI in)* ☑
- *SFN and hierarchical support* ☑
- *Controlling SW (Windows, Linux)* ☑
- *USB2.0 input (optional)* ☑
- *Fault relay alarm* ☑

- *High performance modulator* ☑
- *Rich connectivity and I/Os* ☑
- *Compact and robust* ☑
- *19" rack mountable* ☑

www.enensys.com

Designed & packaged for the following applications:

1. ***BROADCAST TRANSMISSION / TRIALS***
2. ***DVB-T or DVB-H RECEIVERS R&D***
3. ***TEST & VALIDATION***
4. ***DEMONSTRATION & ROADSHOWS***

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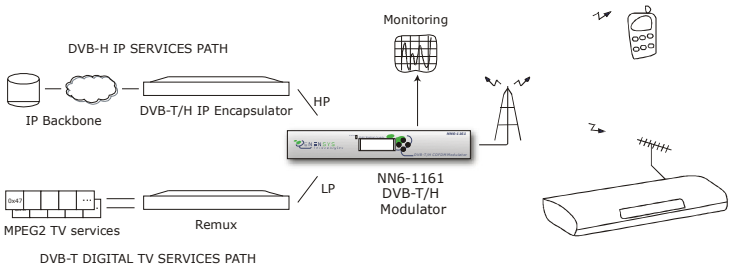
NN6-1161RFL
DVB-T/H Modulator

❶ BROADCAST

Full DVB-T and DVB-H functionalities

SFN mode supported
Hierarchical mode supported



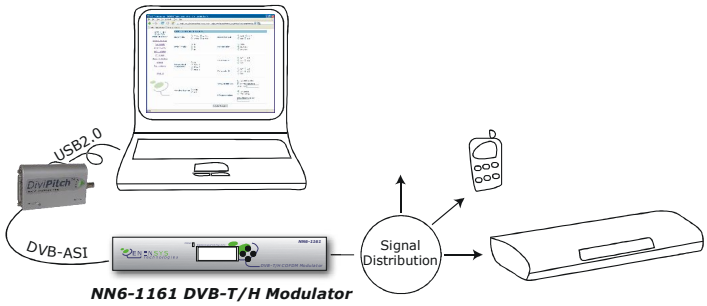
Designed for Broadcast Transmitters

Full set of high end functionalities

❷ DEVELOPMENT

Covers all DVB-H and DVB-T modulations

Modulation schemes from any countries can be simulated in your labs



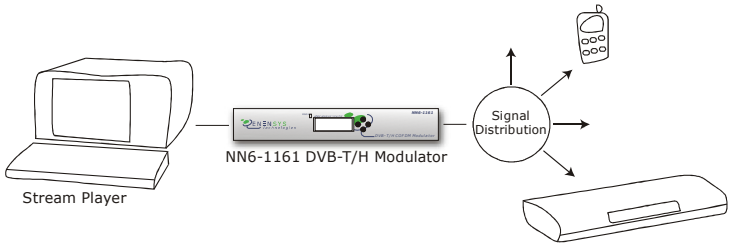
Compact and handy

Immediate deployment over development areas

❸ TEST & VALIDATION

In-situ production testing

Easy configuration profile setup & switch
PRBS generation to output an RF signal without any MPEG TS player needed



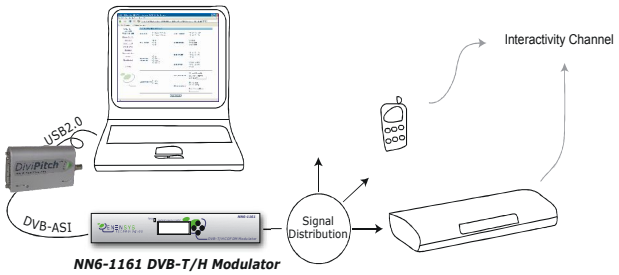
QA tests

Ideal for validation test campaign
Covers any encountered broadcasting requirement

❹ DEMONSTRATION

Demos can be carried out anywhere

Same dimensions as a laptop



Smart design

Docking point for Kensington secure attachment

... FEATURING

RF output formats (integrated up-converter)

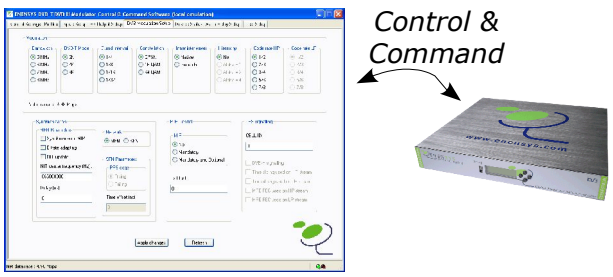
Rich connectivity

Embedded TCP/IP server for remote operation

Modulation profiles easy load/save

Alarm generation to HW relay

19'' 1RU rack mount kit



Control & Command software
(Linux, Windows)

ENENSYS Technologies

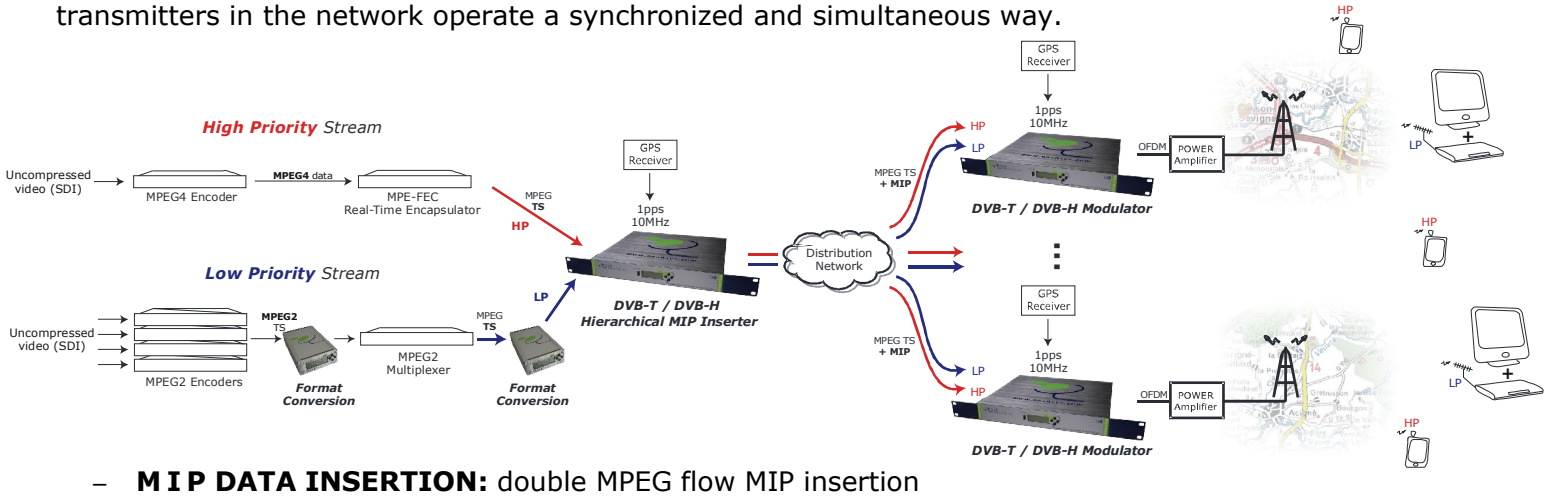
NN6-1161
DVB-T/H Modulator

RELATED PRODUCTS

➲ Hierarchical MIP Inserter

Megaframe **I**nitialization **P**acket = facility for frequency planning (DVB-T, DVB-H). MIP insertion enables the optimization of available spectrum band by implementing Single Frequency Networks (SFN).

NN6-MIP Hierarchical MIP Inserter ensures an homogeneous SFN network setup by making all transmitters in the network operate a synchronized and simultaneous way.



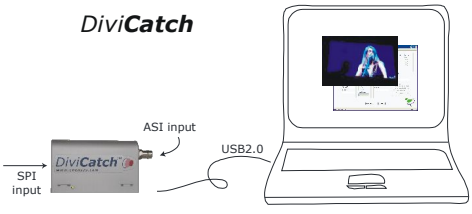
- **M I P DATA INSERTION:** double MPEG flow MIP insertion
- **CONTROL**: adds signaling means in TS to control remote transmitters
- **SYNCHRONIZATION:** inserts additional information marks MPEG2 TS (based on GPS)
- **TS PROCESSING**: adapts bit rate according to provided external reference and recalculates PCRs

➲ USB2 Adapter for ASI, LVDS or TTL

ENENSYS Technologies also proposes a range of USB2 adapters for MPEG2 Transport Stream. *Divi**Pitch*** and *Divi**Catch*** products open your desk- or laptops to real-time MPEG2 stream playing, recording or analysis. Both DVB-ASI and/or DVB-SPI formats are supported.

Pocket sized, delivered with dedicated software: *THE solution for easy **traveling, roadshows, demos, development...***

*Divi**Catch***

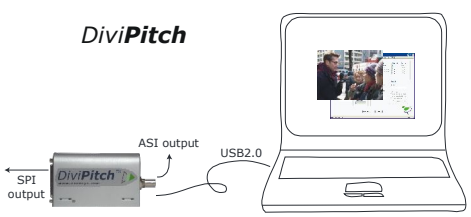


Stream Recorder
catches full Transport Streams

Stream Analyzer
DVB real-time analysis
DVB-H analysis option

Stream Monitor
monitor AV services in the TS
MPEG4/H264 decoding

*Divi**Pitch***



Stream Player
seamless loop mode,
segment play mode
play-list support

Stream Monitor
off-line analysis of stream to play
verify stream contents before playing

Product bundle
*Divi**Pitch** with ASI output is proposed in NN6-1161 modulator product as an option, offering an additional USB2 input connector on rear panel of the modulator.*
*(**NN6-USB2ASI option**)*

NN6-1161RFL
DVB-T/H Modulator

TECHNICAL SPECIFICATIONS

INPUTS	
MPEG TS inputs	4x ASI inputs on BNC connectors (75Ω adapted)
	Bit rate: from 5Mbps to 30Mbps
	188/204 bytes + burst/continuous mode supported
	Hierarchical mode supported (High & Low priority)
	2 redundant inputs per priority
	Seamless switching (SFN mode) in less than 1 second
	Automatic TS adaptation (PCR time restamping)
	MIP extraction
	NIT update with current parameters
Clock & Synchronization	Internal TCXO (0.5 ppm)
	10 Mhz and 1PPS GPS compatible external references for SFN operation mode support
	10MHz input on BNC connector (50 Ω adapted)
	Auto synchronization on data and 10MHz generation

OUTPUTS	
Modulated outputs	DVB-T or DVB-T/H according to option
	NN6-1161RFL: 2xRF agile & filtered outputs (50 ohms)
	1.4 Ghz to 1.7 Ghz band
	Output level: -10 dBm (main), -30dBm (monitoring)
	Attenuation possible from 0 to 10dB (step 1dB)
	2k, 8k FFT sizes (4k with DVB-H option)
	5, 6, 7, 8 Mhz channel bandwidth
	¼ to 1/32 settable guard interval
	½ to 7/8 settable code rates (HP & LP)
	QPSK, 16QAM or 64QAM constellation
	Hierarchical parameter in alpha 1/2/4
	TPS Signalization (incl DVB-H ones with DVB-H option)
	MFN/SFN modes of network operation
	Optional Digital linear & non-linear Pre-correction
Integrated Up-Converter	Agile RF filtered output (VHF band III & UHF band IV & V)
Electrical specifications	MER > 38 dB
	Extremely low phase noise clock
	Shoulder & Out of Band Rejection > 50 dB
	Internal frequency stability: 0.5 ppm
	Output level stability: ± 0.5 dB
	Return loss > 10 dB
	Harmonics & spurious > 55 dB
	Output level stability: ± 1 dB

SPECIAL FEATURES	
Test modes	Useful modes for testing & measurement - Null symbol insertion (mega frame level) - Cancellation of 251 central carriers - Insertion of 23-bits PRBS in place of ASI input

ALARM / STATUS	
Alarms	1x alarm output (Jack 3.5mm: dry relay) Can be connected to Dry relay / SNMP module
	Compatible with alarm manager systems
Status led	3 levels state indicator on front panel

MECHANICAL	
Dimensions (whd)	330 x 44 x 273 (in millimeters) 13 x 1,73 x 10,7 (in inches)
Weight	4.5 kg (9.9 lb)
Power	90-240 VAC on IEC connector, 40W

GENERAL	
User Interface	LCD and buttons on front panel
Rack mount kit	19'' mounting kit (1RU height)
Control & Monitoring	10/100baseT Ethernet interface Embedded TCP/IP server Control & Command application (Windows)
	Modulator setup can be saved/retrieved as No limitation in number of profiles

ORDERING CODES	
NN6-1161RFL	DVB-T modulator, RF agile output within L band
NN6-DVB-H	DVB-H option to address mobile receivers
NN6-USB2ASI	USB2 to ASI adapter with TS playing SW
NN6-DPC	Digital IPre-Correction (linear, non-linear)
NN6-1161AMP	20 dB internal amplification on main output
NN6-SNMP	SNMP alarm management module

About ENENSYS Technologies:

ENENSYS Technologies proposes a large range of Digital TV interfaces surely meet your interoperability needs in the broadcast field. With its Baseband Converters line, ENENSYS Technologies provides solutions to interface MPEG2 DVB or ATSC baseband signals over DVB-ASI, M2S, M2P, DVB-SPI (LVDS, TTL), RS-422, SSI, SMPTE-310... ENENSYS' Network Adapters product line definitely is broadcasting networks oriented (DVB-T / DVB-H, QPSK, QAM...) and also aims at interfacing MPEG2 equipments with IT networks (USB2, Gigabit Ethernet...)

320 mm / 12 inches

PLUG ORDERING CODE	
NN6-1161RFLEU	EU plug
NN6-1161RFLUK	UK plug
NN6-1161RFLUS	US plug

Xx= RF, IF or IQ

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