Empowered by Innovation

NEC

DTL-20 Series
Low/Medium-Power Digital VHF TV Transmitter

NEC Corporation
http://www.nec.com/global/prod/nw/broadcast/

Introducing a new member to the digital TV transmitter family

NEC's state-of the-art transmitter sets the standard for the industry, with its compact, innovative design.

The product of many years of experience

NEC leads the industry in high-power solid-state transmitters. Now we have taken the next step — employing highly advanced signal processing technology and design techniques that enhance reliability. We have successfully developed low-power digital TV transmitting equipment that otherwise maintains the characteristics and superior performance of our highly popular high-power transmitters. The DTL-20 Series extends NEC's impressive lineup from low- to medium-power operation.

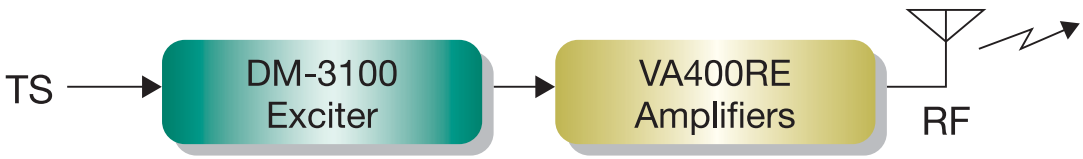
Perpetual innovation

The DTL-20 Series' frequency-agile design is highlighted by a synthesized local oscillator that covers the entire VHF band III, making channel-specific components unnecessary. All DTL-20 transmitters are produced from, and supported by, one common set of modules, enhancing cost-effectiveness from purchase to installation and support. Yet another advantage offered by the DTL-20 Series is its incorporation of an N+1 common standby system configuration, free of channel-specific components.

DTL-20 series feature

Transmitter

The DTL-20 series transmitter directly converts standard TS input signals into an RF output with a power range of 250W to 2.0kW. This capability enables the transmitter to help bridge the digital TV coverage gap, and represents a significant step toward the ideal digital audio network.



Single Exciter, (available for Dual Exciter,N+1 System)

Amplifier module VA400RE

With high reliable LDMOS which is also used to the PA of High Power TX

Individual cooling by fan for power amplifier

- Can be easily replaced during operation
- Can be equipped in 19inch Rack since no need of blower

Wide band for All Band III without readjustment

Compact design

Mounted in a single rack (W 600 x H 2100 x D 800) power up to 2kW output

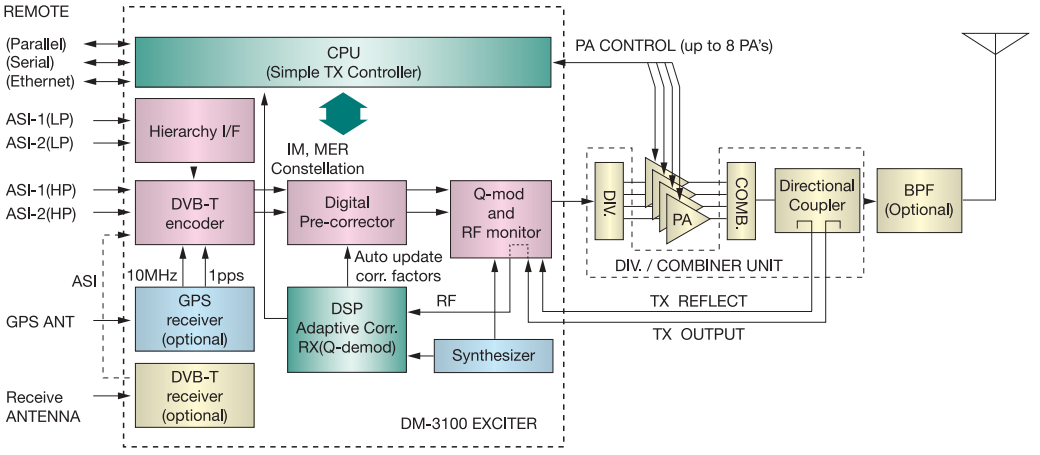
Easy maintenance

MER, IM, signal analysis without test equipment

Supports DVB-T/T2, ISDB-T/Tb, ATSC digital TV standards

The latest in digital broadcasting technologies

Transmitter Standard Configuration (DVB-T)



Exciter

The compact DM-3100 Series Exciter is packed with NEC' s state-of-the-art technology. A synthesizer tuned to all VHF-band signals enables all-band direct conversion to a RF output. Higher or lower bit rates are modified to usable bit rates fro flexible bit-rate adaptability. A truly impressive characteristics of the DM-3100 Series Digital Exciter is its ability to work in conjunction with other NEC transmitters as a signal processor – which greatly reduces the necessity for spare units while simplifying maintenance.

By changing the exciter to NEC's DM-4200A Digital Exciter, the DTL-20 Series is able to broadcast in DVB-T2.

DM-3100 Exciter

Adaptive Digital Corrector (ADC)

The ADC automatically generates correction factors of non-linearity distortion and updates the correction table without interrupting program service. Optimum signal quality and service coverage are maintained, protected from the effects of ambient temperature, aging and other factors. The ADC can be used to generate the correction factor for preset correction.
Furthermore, the ADC is capable of analyzing feedback signals from the TX output, including intermodulation level and MER. And automatic adjustment of the IMP/MER values greatly reduces the time required for maintenance.

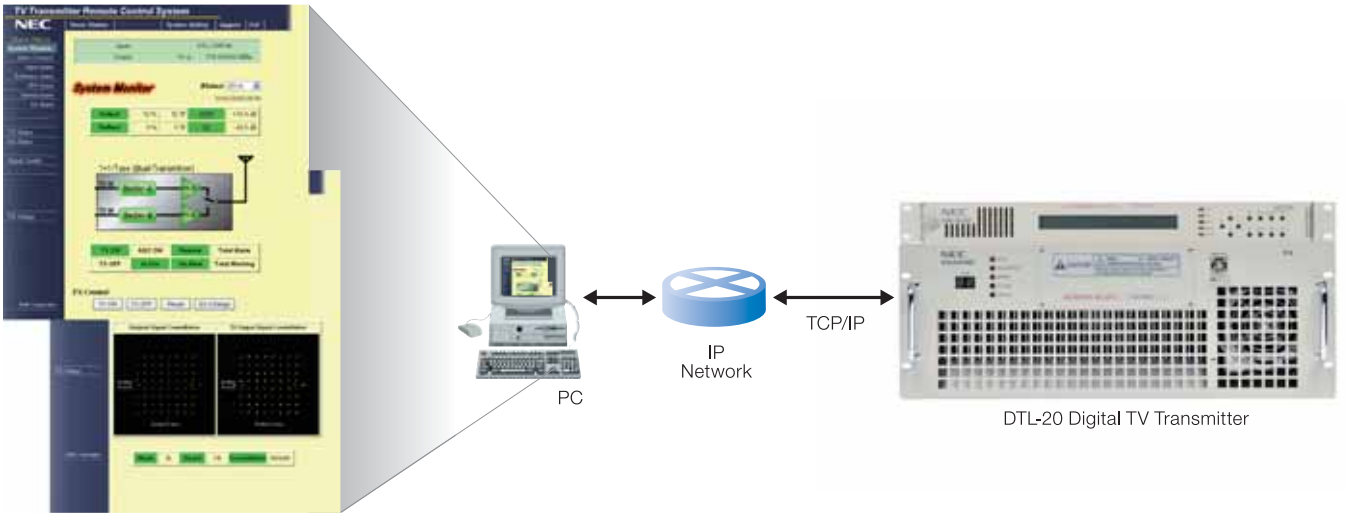
Power Amplifier (PA)

The DTL-20 Series' power amplifier employs LDMOS (Lateral Diffused Metal Oxide Semiconductors) output devices. The highly efficient broadband solid-state amplifier offers high linearity and superior reliability of new developed PA — VA400RE (300W). The amplifier features wideband capability, covering VHF band frequencies from 170–240 MHz, while keeping gain levels constant. A cooling system and power supply module are integrated into the unit. Furthermore, protection and monitoring circuits are built-in.

300W VA400RE Power Amplifier

Remote Control/Monitoring

The DM-3100 exciter is equipped with an IP network interface which allows the checking of signal quality via a we browser. High-level, cost efficient maintenance is possible as special measurement equipment is not required.



Sample View of
TX Status Monitoring

DTL-20 Series Lineup

DTL-20/ 1 2 3

1 : Output Power

Type	Output Power
R25	250W
R5	500W
R75	750W
1R0	1000W
1R25	1250W
1R5	1500W
1R75	1750W
2R0	2000W

2 : Configuration

S : Single Transmitter with Single Drive
PE : Single Transmitter with Single Drive
P : Single Transmitter with Dual Drive and Multiple PAs

3 : Transmitter Type

Nil : Standard Transmitter

Specifications and Performance

INPUT	
ASI Input	4 x DVB ASI ,270Mbps, Serial 75Ω BNC (2 for HP, 2for LP)
Reference	10MHz, 0dBm ±3dB, 50Ω BNC (N/A when internal GPS receiver exists)
1pps Input (GPS ANT Input)	1Hz, TTL level, 50Ω BNC (when optional internal GPS receiver is employed, this input is used for GPS ANT input, 50Ω TNC-female)

REMOTE CONTROL	
Remote	Parallel: status/alarm/command; Serial: RS-485, 15 pin HD-D-sub female
RS-232C	RS-232C, 9 pin D-sub male
Ethernet	TCP/IP, 10/100BASE-T, RJ-45 UDP/IP for SNMP

OUTPUT	
RF OUT	Band ||| , 170-240MHz 50Ω N female : 250W (PA) 50Ω 7/16 DIN female: 250W(N) to 2.0kW 50Ω 1-5/8" EIA-UF: with Filter & Rack option (without output BPF) IMP ≦ -36dB, MER ≧ 32dB Exciter output: +10dBm, 50Ω BNC Frequency stability: ≦ ±1x10^{-7}day@+25℃ (without external reference)
RF Monitor	More than 0dBm, 50Ω BNC
Local Monitor	Center frequency of RF output, 0dBm, CW, 50Ω BNC

Other	
Power Supply	380/400/415V, 3 phases, 4 wires as standard, Also possible to operate with single phase, 220/230/240V or 200/208/220/230V, 3 phases, 3 wires as standard.
Voltage Fluctuation	±15%
Power Supply Frequency	50/60Hz ±5%
Ambient Temperature	0° to +45°
Relative Humidity	≦ 90%

Dimensions & Weight

Component		Size WxDxH (mm)	Weight (kg)
Exciter	DM-3100	480 ×520 ×44 (1U)	6.5
TX CONTROL	HPC-1427	480 ×572 ×44 (1U)	4.8
PA	VA400RE	480 ×500 ×170 (4U)	21

DTL-20 Series Low/Medium-Power Digital VHF TV Transmitter

Specifications

Output	Model Name	Equipment Composition				Power Supply	Rack
		Exciter	Exciter switch	PA	TX CONTROL		
250W	DTL-20/R25S	1	–	1	1*1	380V / 400V / 415V, 3-phase 4-wire (220V / 230V / 240V single phase)	Option
	DTL-20/R25PE	2	1				
500W	DTL-20/R5S	1	–	2			Option
	DTL-20/R5P	2	1				
750W	DTL-20/R75S	1	–	3			1
	DTL-20/R75P	2	1				
1000W	DTL-20/1R0S	1	–	4			1
	DTL-20/1R0P	2	1				
1250W	DTL-20/1R25S	1	–	5			1
	DTL-20/1R25P	2	1				
1750W	DTL-20/1R75S	1	–	6			1
	DTL-20/1R75P	2	1				
2000W	DTL-20/2R0S	1	–	7			1
	DTL-20/2R3P	2	1				
2600W	DTL-20/2R6S	1	–	8			1
	DTL-20/2R6P	2	1				

<Note>
*1) Use if DVB-T2 or ISDB-T configuration.

ISO 9000 Series
ISO 9001 JMI-0119
NEC Broadcast and Video

ISO 14001
JQA-E-90066
NEC

Safety precautions

To install, make connections and operate this product, please carefully read and observe instructions, precautions and recommendations in our instruction manuals.

● The colours in this brochure may differ from those of the actual unit. Designs and specifications of this product is subject to change without prior notice.

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