

DTL-10 Series

Low/Medium-Power UHF Digital TV Transmitter



Features

- 4 types of amplifier module, DLP30 DLP60 DLP120 and DLP240 are available
- High reliable LDMOS which is also used to HighPower PA
- Compact design
 - Mounted in a single rack (W 570 x H 2100 x D 800) power up to 1.6kW output
- Individual cooling by fan for power amplifier
 - Can be easily replaced during operation
 - Can be equipped in 19inch Rack since no need of blower
- Easy maintenance
 - MER, IM, signal analysis without test equipment
- Wide band for All Band IV/V without readjustment

Expansion of our digital TV transmitter family

Once again, NEC 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've taken the next step — employing highly advanced signal processing technology and design techniques that enhance reliability. We've 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-10 Series extends NEC's impressive lineup from low- to high-power operation.

Perpetual innovation

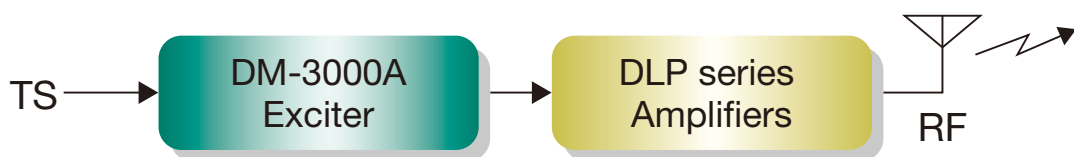
No need for channel-specific components

The DTL-10 Series' frequency-agile design is highlighted by a synthesized local oscillator that covers the entire UHF band, making channel-specific components unnecessary. All DTL-10 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-10 Series is its incorporation of an N+1 common standby system configuration, free of channel-specific components.

DTL-10 series lineup

Transmitter

The DTL-10 series transmitter directly converts standard TS input signals into an RF output with a power range of 30W to 1.6kW. This capability enables the transmitter to help bridge the digital TV coverage gap, and represents a significant step toward the ideal digital television network.



Single Exciter, Dual Exciter, N+1 system

Re-Transmitter

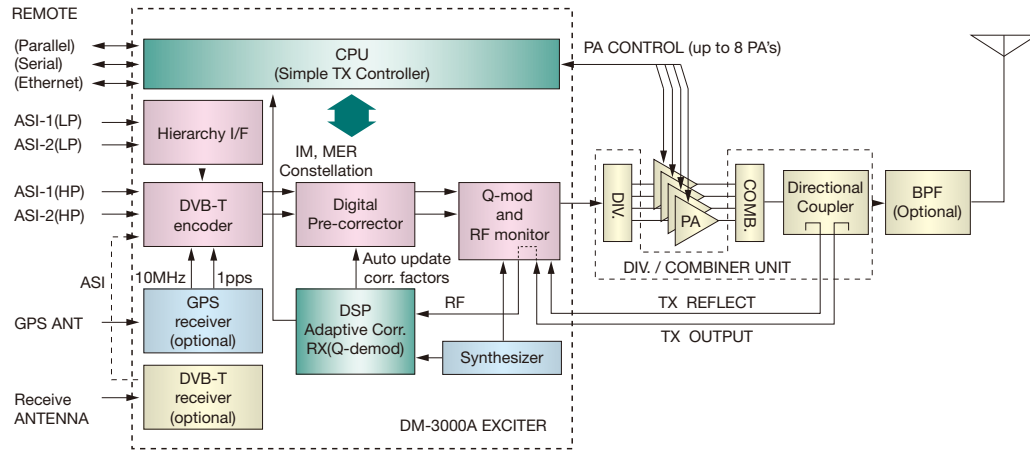
The re-transmitter features error correction during demodulation of off-air broadcast input signals. These signals are then remodulated onto a different frequency, making a multi-frequency network possible.



Single Exciter, Dual Exciter

The latest in digital broadcasting technologies

Transmitter Standard Configuration



Exciter

The compact DM-3000 Series Digital Exciter is packed with NEC's state-of-the-art technology. A synthesizer tuned to all UHF-band signals enables all-band direct conversion to a RF output. Higher or lower bit rates are modified to usable bit rates for flexible bit-rate adaptability. Using the MIP created by the SFN adapter, seamless ASI switching can be performed. A truly impressive characteristic of the DM-3000 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.

NEC's newly developed DM-4000A Digital Exciter enables DVB-T2 operation.



Note: Optional items of DM-3000A EXCITER is as follows:

- (1) Option GPS [Integrated GPS receiver board]
- (2) Option RX [Integrated DVB-T receiver for re-transmitter system]

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 is installable from the front of the exciter and 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, MER value and other graphical data. And automatic adjustment of the IMP/MER values greatly reduces the time required for maintenance.

DTL-10 Series Low/Medium-Power UHF Digital TV Transmitter

Power Amplifier (PA)

The DTL-10 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, along with four PA configurations — DLP30 (30W), DLP60 (60W), DLP120 (120W) and DLP240 (240W). Each amplifier features wideband capability, covering UHF band frequencies from 470 – 862MHz, 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.



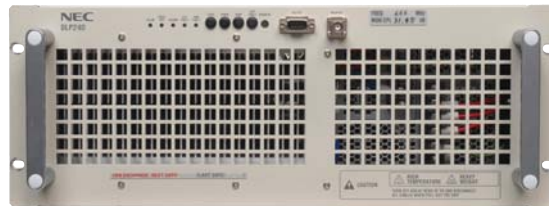
30W output amplifier (DLP30)



60W output amplifier (DLP60)



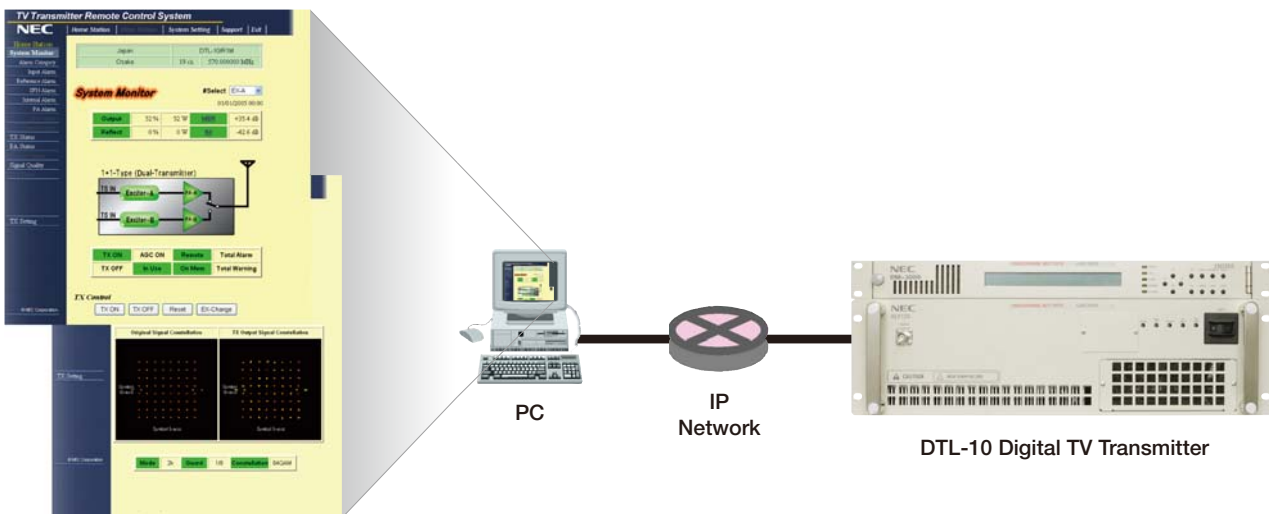
120W output amplifier (DLP120)



240W output amplifier (DLP240)

Remote Control/Monitoring

The DM-3000 exciter is equipped with an IP network interface which allows the checking of signal quality via a web browser. High-level, cost-efficient maintenance is possible as special measurement equipment is not required.



Sample View of TX Status Monitoring

DTL-10 Series Lineup

DTL-10/ a a a b b c d

a a a : Output Power b b : Configuration

Power	Type
30W	R03
50W	R05
100W	R1
200W	R2
300W	R3
400W	R4
600W	R6
800W	R8
1kW	1R0
1.2kW	1R2
1.4kW	1R4
1.6kW	1R6

S: Single Transmitter with Single Drive
PE: Single Transmitter with Dual Drive and Single PA
P: Single Transmitter with Dual Drive and Multiple PAs
M: Dual Transmitters with Passive Reserve Operation

c : PA Type (below 400W)

Nil: Standard Transmitter
N: Using DLP240

d : Transmitter Type

Nil: Standard Transmitter
R: Re-transmitter

Specifications and Performance

INPUT	
ASI Input	4 x DVB ASI, 270Mbps Serial 75Ω BNC (2 for HP, 2 for 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)
DVB-T RF Signal (for Re-transmitter)	RF: Band III, IV, V, -20dBm to -75dBm, 50Ω BNC (there are two RF inputs for antenna diversity type)

OUTPUT	
RF OUT	50Ω N female: 30W/50W/100W/200W 50Ω 7/16 DIN female: 200W(N) to 1.6kW 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 (without external reference)
RF Monitor	More than 0dBm, 50Ω BNC
Local Monitor	Center frequency of RF output, 0dBm, CW, 50Ω BNC

REMOTE CONTROL	
Remote	Parallel: status/alarm/command; serial: RS485, 15pin HD-D-sub female
RS-232C	RS232C, 9pin D-sub male
Ethernet	TCP/IP 100BASE-TX/10BASE-T UDP/IP for SNMP

OTHERS	
Power Supply	200/208/220/230V, single-phase, 3-wire AC mains of DLP240 PA is 3 phases, 4 wire as standard, also possible to operate with single phase
Voltage Fluctuation	±15%
Power Supply Frequency	50/60Hz ±2%
Ambient Temperature	0° to +45°
Relative Humidity	≤ 90%

Dimensions & Weight

Component		Size WxDxH (mm)	Weight (kg)
Exciter	DM-3000A	480 x 520 x 44 (1U)	Approx 8
PA	DLP30	480 x 500 x 88.1 (2U)	13
	DLP60	480 x 500 x 132.6 (3U)	16
	DLP120		18
	DLP240	480 x 500 x 170 (4U)	29

DTL-10 Series Low/Medium-Power UHF Digital TV Transmitter

Specification

Output Power*1	Model Name	Equipment Composition						D/C	Power Supply*2	Rack*3
		DM-3000A Exciter	Exciter Switch	TRPA						
				DLP30	DLP60	DLP120	DLP240			
30W	DTL-10/R03S	1		1				200V, Single-Phase	—	
	DTL-10/R03PE	2	1	1				200V, Single-Phase	—	
	DTL-10/R03M	1 x 2		1 x 2				200V, Single-Phase	19-inch Rack	
50W	DTL-10/R05S	1			1			200V, Single-Phase	—	
	DTL-10/R05P	2	1	2			1	200V, Single-Phase	—	
	DTL-10/R05PE	2	1		1			200V, Single-Phase	—	
	DTL-10/R05M	1 x 2			1 x 2			200V, Single-Phase	19-inch Rack	
100W	DTL-10/R1S	1				1		200V, Single-Phase	—	
	DTL-10/R1P	2	1		2		1	200V, Single-Phase	—	
	DTL-10/R1PE	2	1			1		200V, Single-Phase	—	
	DTL-10/R1M	1 x 2				1 x 2		200V, Single-Phase	19-inch Rack	
200W	DTL-10/R2S	1				2	1	200V, Single-Phase	—	
	DTL-10/R2SN	1					1	400V, 3-Phase	—	
	DTL-10/R2P	2	1			2	1	200V, Single-Phase	—	
	DTL-10/R2M	1 x 2				2 x 2	2	200V, Single-Phase	19-inch Rack	
400W	DTL-10/R4S	1				4	1	200V, Single-Phase	—	
	DTL-10/R4SN	1					1	400V, 3-Phase	—	
	DTL-10/R4P	2	1			4	1	200V, Single-Phase	—	
	DTL-10/R4PN	2	1				1	400V, 3-Phase	—	
	DTL-10/R4M	1 x 2				4 x 2	2	200V, Single-Phase	19-inch Rack	
600W	DTL-10/R6S	1					1	400V, 3-Phase	19-inch Rack	
	DTL-10/R6P	2	1				1	400V, 3-Phase	19-inch Rack	
800W	DTL-10/R8S	1					1	400V, 3-Phase	19-inch Rack	
	DTL-10/R8P	2	1				1	400V, 3-Phase	19-inch Rack	
1kW	DTL-10/1R0S	1					1	400V, 3-Phase	19-inch Rack	
	DTL-10/1R0P	2	1				1	400V, 3-Phase	19-inch Rack	
1.2kW	DTL-10/1R2S	1					1	400V, 3-Phase	19-inch Rack	
	DTL-10/1R2P	2	1				1	400V, 3-Phase	19-inch Rack	
1.4kW	DTL-10/1R4S	1					1	400V, 3-Phase	19-inch Rack	
	DTL-10/1R4P	2	1				1	400V, 3-Phase	19-inch Rack	
1.6kW	DTL-10/1R6S	1					1	400V, 3-Phase	19-inch Rack	
	DTL-10/1R6P	2	1				1	400V, 3-Phase	19-inch Rack	

<Note>

- *1) Output power level before reaching output filter.
- *2) AC mains of DLP240 PA is 3 phases, 4 wire as standard, also possible to operate with single phase
- *3) BPF and rack are optional items.

•Other optional items

- (1) Option GPS ANT [GPS antenna, RF cable and mount accessories]
- (2) Option RACK [19inch Cabinet Rack (Size: W570xD730xH2,100mm) with ACB Panel]
- (3) Option RACK PANEL [Door panel and exhaust fan for RACK to reduce acoustic noise]

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.

**NEC Corporation
International Sales Division
Broadcast and Video Systems**

7-1, Shiba 5-chome, Minato-ku, Tokyo,
108-8001, Japan
Tel: +81-3-3798-5463
Fax: +81-3-3798-8476

**NEC Europe Ltd.
Network Solutions Division**

NEC House, 1 Victoria Road, London
W3 6BL, United Kingdom
Tel: +44-(0)20-8993-8111
Fax: +44-(0)20-8752-3735

NEC India Pvt. Limited

7th Floor, Ashoka Estate
24 Barakhamba Road, New Delhi - 110 001
Tel: +91-(0)11-2331-3633
Fax: +91-(0)11-2332-4259

NEC de Colombia S.A.

Carrera 9 No. 80 – 32
Bogotá, D.C. – Colombia
Tel: +57-1-644-5600
Fax: +57-1-644-5648