



TL1-6T 10mW FM translator module incorporating 6 separate FM translators with 6 way splitter and combiner with break-in audio facility

The Tn6 System provides a flexible and cost effective solution for re-broadcasting VHF FM radio channels into Road or Rail tunnels. The heart of the Tn6 system is the TL1-6T, six channel, VHF FM Translator module. with "On frequency" capability.

The TL1-6T, six channel VHF FM Translator module, incorporates a six way RF input splitter, six separate VHF FM translator modules and a 6 way RF output combiner all conveniently packaged in a 1U rack mount case. The unit has a single RF input and a single RF output (BNC's). A (BNC) balanced audio input is provided for the Break-in audio facility (BIF) function, distributed to all channels simultaneously via an external contact command.



LA-100LD-25 25W linear amplifier in 4U module, Class A 87.5-108MHz

The TL1-6T or multiples thereof, provide the drive to a wideband VHF FM linear amplifier driving "leaky feeder" coaxial cables that allows multi-channel transmission into Road or Rail tunnels. If more than six channels are required, additional TL1-6T modules can be used with external splitters and combiners to increase the number of channels required.

Linear amplifiers in the range includes; 8W (RMS), 25W (RMS), 50W (RMS) or 100W (RMS)..

See back page for examples of system configuration utilizing combinations of the Tn6 modules.

Other related equipment that can be offered for designing a tunnel Re-broadcast system:

- In-tunnel signal quality monitoring with remote reporting.
- Remote monitoring and equipment status reporting.
- Wide band RF to Fibre optic modulator/demodulator for distribution to "in-tunnel" amplifiers.
- Multi-channel filters for coupling GSM, TETRA and UHF Radio into the radiating cable.



LA-100LD-100 100W linear amplifier in 5U module, Class A 87.5-108MHz

Linear RF Amplifier Range:

- LA-25LD** 12W Linear amplifier 2U module, single LDMOS device
- LA-100LD-25** 25W Linear amplifier 4U module, 2x LDMOS device, 200VA PSU
- LA-100LD-50** 50W Linear amplifier 5U module, 2x LDMOS device, 450VA PSU
- LA-100LD-100** 100W Linear amplifier 5U module, 4x LDMOS device, 680VA PSU



LA2-100 MK3 25W linear amplifier in 5U module, Class A 87.5-108MHz, packaged for in-tunnel use

Features

Single or multiple tunnel outputs

Audio break-in facility (BIF) switched to all channels

Receive/Transmit "on frequency" capability

100 kHz base-band to re-broadcast RDS & SCA sub-carriers



LA-25LD 12W linear amplifier module, Class A 87.5-108MHz

TECHNICAL SPECIFICATIONS

TL1-6T TRANSLATOR SPECIFICATIONS (6 channels)

Frequency range	87.5MHz to 108 MHz (F3E/F8E)
RF output power	-3dBm to -15dBm per channel (adjustable)
Harmonics and Intermod	≤ -60dBc
Dual Synthesizers	Tx (modulator) and Rx (local oscillator)
Frequency increments	50 kHz (via DIL switches)
Frequency deviation	+/- 75 kHz peak
RF input connector	BNC (female) 50 Ohm (unbalanced)
RF output connector	BNC (female) 50 Ohm (unbalanced)
BIF Audio input	10dBm maximum (adjustable)
BIF connector	BNC (female) 40k ohms (balanced)
BIF frequency response	30Hz to 8 kHz pre-emphasised
BIF audio distortion	≤ 0.25%
Operating RF input level	-60dBm to -20dBm (per channel)
Stereo S/N ratio	≥ 65dB (50uS de-emphasis)
Stereo Distortion	≤ 0.5% (40Hz to 15 kHz)
Stereo separation	≥ 45dB (40Hz to 15 kHz)

POWER SUPPLY

Type	Dual SMPS +15V @ 1 Amp each
Protection	Over-Temp/voltage/current
AC power input	110V to 230V full range 50/60Hz
EMC rating	Compliant with CISPR 22 class B
Mains consumption	25VA nominal

PHYSICAL / ENVIRONMENTAL / TELEMETRY

Operating temperature	-5°C to +45°C <90% Humidity
Dimensions (mm)	485W x 420D x 44H (1U)
Weight	3kg (approximately)
Summary alarm	Voltage free, with s/c or o/c contact
BIF command	s/c to ground to enable BIF

LINEAR VHF RF POWER AMPLIFIER SPEC'S (100W, 50W, 25W versions & 12W version)

RF SPECIFICATIONS	100W, 50W, 25W & 12W versions
Operational bandwidth	87.5MHz to 108MHz
RF Output power	≥ 100W, 50W, 25W / 12W (RMS)
3 rd order Intermodulation	≤ -50dBc (12 x 2W) 25W version only
3 rd order Intermodulation	≤ -50dBc (12 x 1W) 25W version only
3 rd order Intermodulation	≤ -50dBc (6 x 1W) 12W version only
Harmonics	≤ -60dBc
Input/Output Return loss	≥ 25dB

PHYSICAL / ENVIRONMENTAL / PSU / TELEMETRY

Dimensions (LA2-100 MKII -25)	485W x 320D x 222H (5U) mm
Dimensions (LA-100LD-25)	485W x 412D x 176H (4U) mm
Dimensions (LA-100LD-50)	485W x 412D x 220H (5U) mm
Dimensions (LA-100LD-100)	485W x 412D x 222H (5U) mm
Dimensions (LA-25LD)	485W x 20D x 88H (2U) mm

Weight	18kg (50-100W), 16kg (25W) & 5kg (8W)
Operating temperature	-5°C to +45°C <90% Humidity
A/C Mains consumption	480VA (100W), 240VA (50W), 145VA (25W) & 85VA (12W)
Summary alarm	Voltage free, with s/c or o/c contact
Alarms/voltages monitored	Low current, Fwd, Refl and Temp'
Telemetry RF Enable	s/c contact to disable RF

HIGHER POWER RF AMPLIFIERS

LA-100LD-50	50W linear RF amplifier (2 Stage LDMOS, 240VA PSU)
LA-100LD-100	100W linear RF Amplifier (4 Stage LDMOS, 480VA PSU)

