

# Terrestrial/Cable TV-Channel Processing Equipment

## TPC110

REF. 3843

## TPC010

REF. 3842 (Digital)  
REF. 3651 (Analogic)



- Usable as channel converters (output channel different to input channel) or processors (output channel is the same as input channel)
- Output signal with very low phase noise
- Very clean wideband spectrum

	TPC-110	TPC-010 (digital)	TPC-010 (analogic)
Type of application channel	Digital	Digital	Analogic
Remote mode	Yes		No
Standard / TV System		DVB-T, DVB-C	B/G, D/K, I, L
Frequency band of input channel	MHz	45 – 862	
Selectable output channel located between	MHz	45 – 862	
Frequency selection steps	MHz	0,500	0,250
Input level (AGC: 40 dB, manual adjustment for L-system channels)	dB $\mu$ V	40 – 80	50 – 90
Selectable tuning offset	KHz	$\pm$ 125/250/375//500	
Noise figure	dB	< 9 (input level < 70 dB $\mu$ V)	
Bandwidth of SAW filtering at -3 dB	MHz	6,875 (for 7 MHz channels), 7,850 (for 8 MHz channels)	
Selectivity for 7 MHz channels	dB	> 9 (fc $\pm$ 3,75 MHz), > 70 (fc $\pm$ 4,75 MHz)	
Selectivity for 8 MHz channels	dB	> 18 (fc $\pm$ 4,25 MHz), > 70 (fc $\pm$ 5,25 MHz)	
Image rejection	dB	> 70	
Adjustable output level	dB $\mu$ V	55 – 70	6 – 80
Output loop-through loss	dB	1,1 (typ.), 1,4 (max.)	
Absolute group delay	$\mu$ s	2 (typ.)	
Group delay variation	ns	< $\pm$ 40	
Spurious in band	dBc	< -58	
Phase noise of output channel (@ 1 KHz)	dBc/Hz	< -92 (processor use), < -80 (converter use)	
Broadband noise ( $\Delta$ B=5MHz)	dBc	< -75	
Supply voltage	V <sub>DC</sub>	+12	
Consumption	mA	590	540
Operating temperature	°C	0 – +45	
Input RF connector type		1x female F	
Output RF connector type		2x female F	
DC connector type		banana socket	
Programming interface		RS-232/DB-9	
IKUSUP bus connector	(2x) base 4 pines		-
Dimensions	mm	230 x 195 x 32	

Each module is packed with:

- 1 F plug bridge, 64 mm length, for output coupling line.
- 1 DC plug bridge, 53 mm length, for connection of +12 V<sub>dc</sub> voltage.

## TPC HEADENDS

- Double heterodyne conversion in the 45-862 MHz frequency range. IF SAW filtering.
- Agile Processing Modules, usable either as channel converters (output channel is different to input channel) or as channel processors (output channel is the same as input channel). Specific models for digital channel or analogue channel. Adjacent channel operation at input and output.
- A TPC headend includes:
  - As many TPC Processing Modules as channels to be converted or processed.
  - One HPA Amplifier that amplifies the sum of the combined output channels from the processors.
  - One or more CFP Power Supplies.
  - One or more Rack-Frames or wall-fixing Base-Plates. The base-plates can be joined horizontally.
  - Usually, housing units for the base-plates.
  - If the headend is large, one or more AMX-400 combiners.

The TPC headends provide a multichannel signal whose level is appropriate to feed the distribution network. An extension input at the HPA amplifier allows easy coupling of the wideband 47-862 MHz signal provided by another existing headend.

## FUNCTIONAL DESCRIPTION OF THE TPC PROCESSORS

In a TPC module can be distinguished three main sections:

- a) "Input Channel → IF" conversion. Includes a delayed AGC circuitry that operates in the 50-90 dBμV (analog) or 40-80 dBμV (digital) input level ranges.
- b) IF filtering. A double SAW filter is used, what provides very high selectivity (>70 dB at ±5.25 MHz from the centre for 8MHz-wide channels).
- c) "IF → Output Channel" conversion. The output level can be adjusted between 65 and 80 dBμV.

Range includes two models, TPC-110 and TPC-010, the former for digital channel and the later either for digital channel or analogue channel, as indicated in the order. Both are locally programmed with the SPI-300. The TPC-110 can be furthermore programmed and monitored remotely if an HMS control unit is installed in the headend.

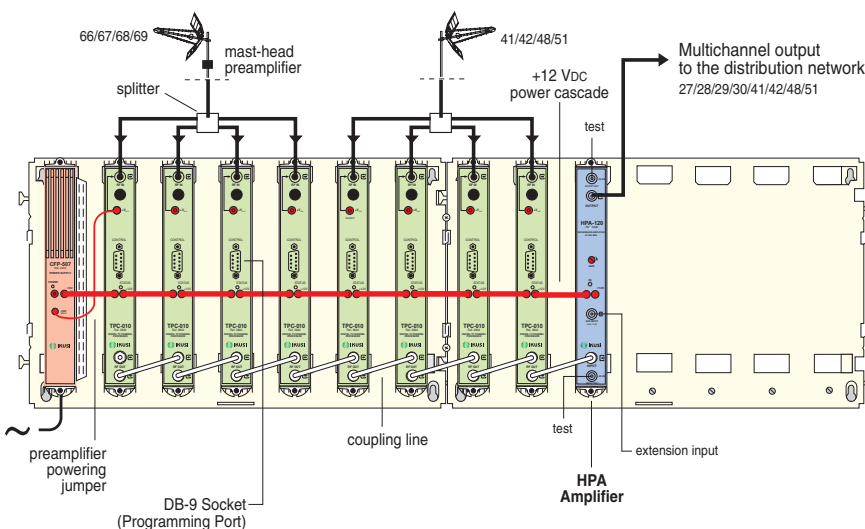
Programming of a TPC processor involves the following selections and settings:

- Input Frequency. Is the central frequency for digital channel and the picture carrier for analogue channel.
- Tuning Offset. Applicable when a strong adjacent channel interferes with the channel being processed.
- AGC on/off. The automatic gain control must be switched off for system L analogue channels.
- Manual Gain Control, only if the AGC function has been disabled.
- IF Bandwidth. Two options: 7 or 8 MHz.
- Output Frequency. Same indications stated above for input frequency.
- RF output level. 15 dB adjustable.

The output signal has very low phase noise and very clean wideband spectrum. On the other hand, a very low broadband noise floor (< -75 dBc) permits using multiple processors in a headend with very little deterioration of the CNR.

## CABLING OF TPC HEADENDS

The TPC modules have 1 F input port and 2 directionally coupled (loop-through) F output ports. Antenna or cable network signal is fed to the modules through splitters. On the output side a channel coupling line is installed by using the supplied F bridges; the sum of the combined channels is then connected to the drive amplifier —the HPA module or an external wideband amplifier— which then feeds the distribution network. For power connection, each module has two DC banana sockets that allow to build a +12 Vdc cascade. A third banana socket is available to connect the power for an optional mast-head preamplifier.



— Example of «TPC» headend for conversion of four digital channels and processing of other four ones. Contains 8 TPC-010 Processors, 1 Amplifier and 1 Power Supply, all fixed on 2 horizontally joined Base-plates.

