Cable TV QAM-QAM Regeneration Equipment

CGT100

REF. 4074

■ Transparent digital transmodulation (QAM → QAM) with Transport Stream processing.

■ Regeneration of the Cable TV QAM modulated carriers.

■ Complete channel processing from the input to the output.

		CGT-100
Transport Stream (TS) processing		Yes
Input Section (QAM)		
Standard		EN 300 429
Input channel located between	MHz	174 – 230 y 470 – 862
Bandwidth	MHz	8
Input level	dBm	-64 – -20 (64QAM modulation)
Input modulation format		16QPSK, 32QAM, 64QAM, 128QAM, 256QAM
Input symbol rate	MS/s	1,5 – 6,9
Input loop-through gain	dB	0,5 (±1)
QAM Re-modulation section		
Data processing		EN 300 429
Selectable modulation scheme		16QPSK, 32QAM, 64QAM, 128QAM, 256QAM
Modulation Error Ratio (MER)	dB	> 40 (typ.)
Output symbol rate	MS/s	1 – 8
Selectable Roll-Off factor	%	12, 13, 15
Output Section (QAM)		
Output channel selectable between	MHz	47 – 862
Frequency stability	ppm	±25
Adjustable output level	dBμV	65 – 80
Output loop-through loss	dB	1,1
Spurious in band	dBc	< -55
Broadband noise (ΔB=5 MHz)	dBc	< -75
General		
Supply Voltage	V_{DC}	+12
Consumption	mA	600
Operating temperature	ºC	0 – +45
Input RF connector type		(2x) female F
Output RF connector type		(2x) female F
DC connector type		banana socket
Programming interface		RS-232/DB-9
IKUSUP bus connector		(2x) 4-pin socket
Dimensions	mm	230 x 195 x 32

Each module is packed with:
- 2 F plug bridges, 64 mm length, for input tap line and output coupling line.
- 1 DC plug bridge, 53 mm length, for connection of +12 V_{DC} voltage.

CGT HEADENDS

- Digital Transmodulation (QAM → QAM) with Transport Stream Processing. Regenerates the QAM modulated carriers by correcting the errors arisen in the data stream along the cable network. Carrier frequencies (from 47 to 862 MHz) and modulation scheme (16 to 256QAM) of the errorless regenerated QAM signals can be set equal or different to those of the QAM incoming signals.
- A CGT headend includes:
  - As many CGT Regenerators as QAM channels to be regenerated.
  - One HPA Amplifier that amplifies the sum of the combined output QAM channels from the regenerators.
  - 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 CGT headends provide a QAM 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 CGT REGENERATORS

A CGT regenerator carries out the complete channel processing from the input to the output:

- tunes a QAM modulated RF carrier in the 47-862 MHz band,
- demodulates this carrier,
- corrects errors of data stream,
- processes the transport stream, and
- re-modulates the errorless data signal on a QAM channel that is selectable within the 47-862 MHz frequency range.

Programming of the module involves the following selections and settings:

- Central Input Frequency (250 kHz steps)
- Input Symbol Rate (0.001 MS/s steps)
- Input Modulation Scheme (16, 32, 64, 128 or 256QAM)
- Central Output Frequency (250 kHz steps)
- Output Modulation Scheme (16, 32, 64, 128 or 256QAM)
- Roll-Off factor ("half Nyquist filter")
- RF output level
- Output Symbol Rate
- Optional

SIMPLE CABLING OF THE CGT HEADENDS

The CGT regenerators feature two directionally coupled input and output ports. Incoming QAM signal can therefore be directly fed into the input port of the first module, which in turn passes it through the coupler to the next and so forth. On the output side, the same procedure is repeated which forms the channel coupling. The sum of the combined channels is turn connected in the same way 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 V$_{DC}$ cascade.

Local programming is carried out with the SPI-300 unit, which is connected to each module individually. In order to perform NIT adaptation, the IKUSUP bus must be installed; the last module at the right end of the IKUSUP cascade carries out this adaptation. Programming and control can be performed remotely if an HMS unit has been installed in the headend.
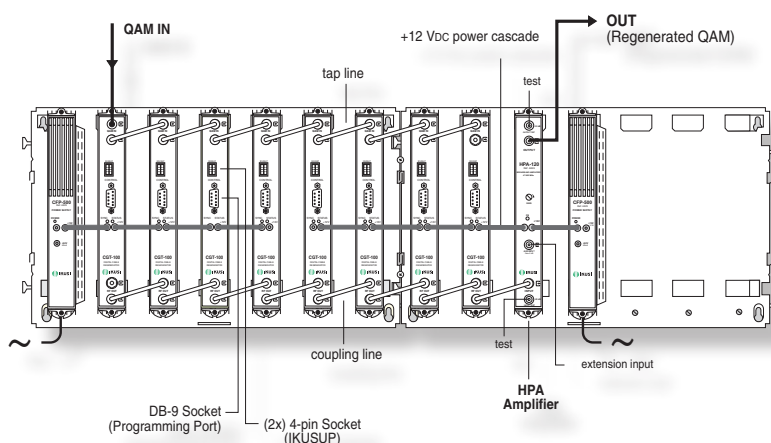
— **Example of CGT headend for eight QAM modulated channels.**