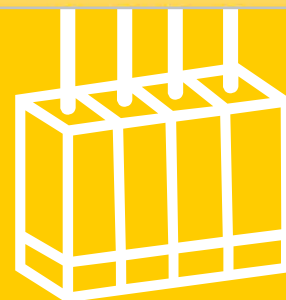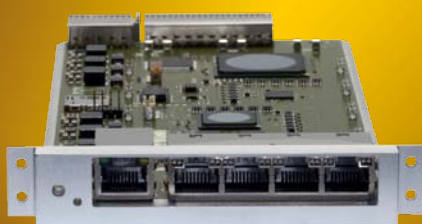# TANGRAM

High Density Video
Processing Platform

WISI

excellence in digital …

WISI TANGRAM Video Platform

The WISI TANGRAM Video Platform is a high density digital TV Headend for contribution of digital TV via IP Networks and end to end IPTV solutions such as On Demand TV, Connected TV and OTT (Over The Top) Web TV.

The platform is highly customizable and offers advanced DVB stream processing in a small footprint 1 RU chassis concept.

The TANGRAM chassis can be equipped with 6 + 1 modules and comes with an integrated GigE switch.

The six rear loaded modules have different functionalities, and can perform all necessary signal processing functions.

The TANGRAM platform can be used in a central or distributed Headend architecture and provides the following processing functions in a central location:

DVB-IP Gateway for DVB-S/S2, -C, -T, -T2, Descrambling, Remultiplexing, Scrambling, PSI/SI-Processing and Modulation.

In a decentralized architecture with regional Hubs, the modulation is done in the hub site and the aggregated digital TV streams are transported via an IP network and are terminated in Edge-QAMs, -COFDMs, -PALs and -FMs for re-modulation and transmission in HFC networks.

A high capacity switching module implements two major functions of the WISI TANGRAM Video Platform. Firstly, it operates as a configurable switching unit for audio/video streaming via Gigabit Ethernet. Secondly, it provides the management interface for controlling the entire TANGRAM unit. TANGRAM supports Unicast and Multicast SPTS/MPTS traffic, including IGMP and FEC.

The TANGRAM chassis can optionally be equipped with two load sharing redundant power supplies (DC or AC) and contains high performance monitored fans for cooling. Modules, fans and power supplies are hot swappable.

The TANGRAM product portfolio is composed of the modules mentioned in the table on the right.

General features:

- Customizable headend architecture for CATV & IPTV
- Advanced DVB stream processing
- Small footprint in 1RU chassis
- 6+1 modules
- Hot swappable fan tray
- Fully redundant concept (1+1, n+1)
- Switch + passive backplane
- Optionally Scrambling + MUX function
- High density, high quality, high performance, high flexibility
- Edge modulation QAM, COFDM, PAL, FM
- DVB-Gateway, acquisition, aggregation
- DVB-CI interfaces for service descrambling
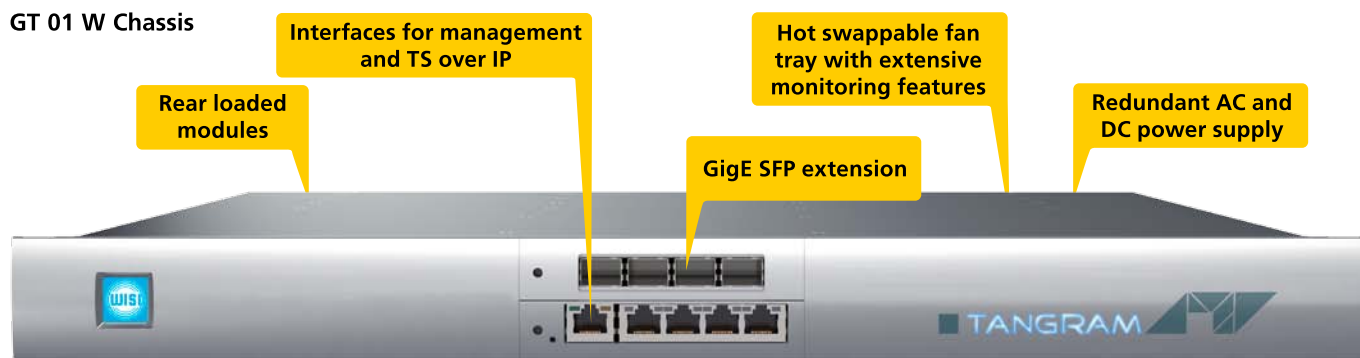- RJ45 + SFP interfaces (optionally with GT 12)

Tangram Video Platform Components:

GT 01 W	19" 1 RU chassis with backplane, 1 power supply (48 VDC or 230 VAC), fan tray and integrated GigE switch (GT 11)
GT 12 W	Switch extension board SFP
GT 21 W	IP to PAL, 6 PAL channels out on 2 RF ports
GT 22 C	IP to FM, 8 FM channels out on 1 RF port
GT 23 W	IP to QAM, 8 QAM channels out on 2 RF ports, with remux and scrambling
GT 24 W	Edge COFDM module, Multiplexing & scrambling, supports 2k & 8k carriers, COFDM modulation for DVB-T receivers, up to 48 COFDM channels per 1 RU (2k-mode)
GT 31 W	Input DVB-S/S2/T/T2/C frontend with 4 independent tuners
GT 32 W	Input ASI frontend with 4 independent ports
GT 42 W	CI module with 4 CAM slots
GT 55 W 0048	Additional power supply 48 VDC
GT 55 W 0230	Additional power supply 230 VAC

System Overview

GT 01 W Chassis

Rear loaded modules

Interfaces for management and TS over IP

GigE SFP extension

Hot swappable fan tray with extensive monitoring features

Redundant AC and DC power supply

Redundant AC and DC power supply

Rear loaded modules

Any module in any slot

GT 11 W GigE Switch module (included with GT 01)
· Operates as a configurable switching unit for
  audio/video streaming via Gigabit Ethernet.
· Provides the management interface for controlling

Streaming interface
· Standard   1000BASE-T, 100BASE-TX
· Data format   Unicast/Multicast SPTS/MPTS
· Encapsulation   MPEG-TS over UDP/RTP

Management interface
· Standard   1000Base-T, 100Base-TX
· Protocol   SNMP, HTTP
· User Interface   Webserver/HTML

Extension modules

GT 12 W	Switch extention board with 4 SFP slots Provides optical or electrical access Provides port and service redundancy
GT 42 W	Descrambling module Module with 4 CI-slots Support of Multi Channel Decryption (MCD) Decryption of MPEG-2 & MPEG-4 streams
GT 55 W 0048	Additional power supply 48 VDC for redundancy

GT 55 W 0230	Additional power supply 230 VAC for redundancy
GT 31 W/GT 32 W	Multi Transport Stream reception for DVB signals
GT 31 W	up to 6 × 4 DVB-S/-S2/-T/-T2/-C inputs
GT 32 W	up to 6 × 4 ASI inputs, Gigabit Ethernet output for MPTS and SPTS, Teletext and EPG data handling Web browser user interface Separate management port

Extension modules

GT 21 W

Edge PAL module
Full PAL-B/G, PAL-D/K, SECAM support
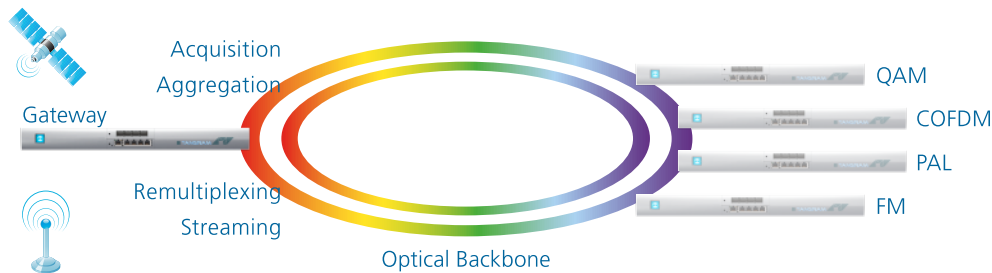Analogue Stereo and NICAM

GT 22 C

36 PAL channels per 1 RU
Edge FM module
Full MPEG-1/2 audio decoding
Digital FM modulation
RDS insertion
48 FM channels per 1 RU

GT 23 W

Edge QAM module
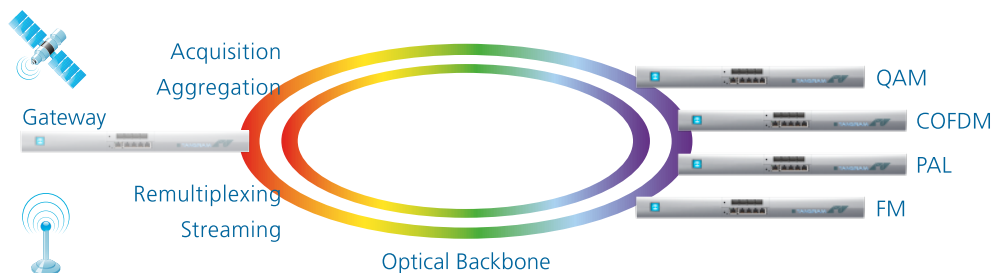Multiplexing & scrambling
DVB-C

GT 24 W

48 QAM channels per 1 RU
Edge COFDM module
Multiplexing & scrambling
supports 2k & 8k carriers
COFDM modulation for DVB-T receivers
up to 48 COFDM channels per 1 RU
(2k-mode)

System applications

DVB-IP Gateway

Acquisition
Aggregation

Gateway

Remultiplexing
Streaming

Optical Backbone

QAM
COFDM
PAL
FM

Edge processing

Acquisition
Aggregation

Gateway

Remultiplexing
Streaming

Optical Backbone

QAM
COFDM
PAL
FM

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