



GT 01W Tangram with GT22 Edge-Decoder (IP to FM)



GT 01 *WISI Tangram chassis*

GT22C WISI Tangram FM module



Features:

The GT22C module is part of the Tangram product portfolio.

WISI Tangram is an FPGA technology based Headend for use in FTTx and HFC networks. The Tangram platform shows very high density and is highly flexible for all kinds of networks.

- Gigabit Ethernet MPEG-TS to analogue FM- Decoder
- MPEG decoding
- Up to 8x FM outputs (SD)
- Test ports for the output signal
- Outstanding signal parameters by direct digital modulation
- User friendly configuration via standard Webbrowser
- Low electrical power consumption

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Document Revision Information

Date finished	Document Rev.	GT22 SW Version	Description	Name
22.12.2011	0.1- 0.9	0.9	Versions for Pre-GT	PK , a2b
22.08.2012	1.0	1.0	Adapted for GT in PP	HP,KD
04.09.2012	1.1-1.3	1.0	WISI doc. design, Updates	KD
11.09.2012	1.4-1.47	1.0	GT11 TDG Updates	KD
06.11.2012	1.48-1.49	1.1	Module Updates	KD
03.12.2012	1.50-1.51	1.1	TDG Inputs, Updates	KD
01.03.2013	1.52	1.2	LUA removed, Updates	KD



1 Safety instructions

1.1 ESD protection

This product contains electrostatic sensitive devices. These devices can be damaged or effectively destroyed by electrostatic discharge (ESD) during unpacking, installation, removal, storage, or shipment if incorrectly handled. Please note that discharge might go unnoticed by a user. Always take normal static precautions when handling the equipment!

2 Technical data / Mechanical overview

2.1 GT22C Module Front view



RF Test-output 1
(-20 dB)

RF output 1

RJ45 control
port for module

RF Test-output 2
(-20 dB)

RF output 2

GT22C module view (RF output 2 not used)

For best performance please always terminate the Test-output 1 ($z = 75 \text{ Ohms}$).

3 Installation, configuration and maintenance

3.1 Module installation

The GTxx modules are single function modules. The modules are hot-swappable and can be plugged into the chassis from the back. On the front side there are the switch modules plus the power supplies and the removable fan tray behind the panel.

The physical Installation of GTxx modules, Power supplies & Fan modules into Tangram GT01 chassis is described in detail in the GT01 & GTxx Installation Quick Guides, please refer to them in case you have to put or remove a module.



Quick Guide

GT 01W Tangram Basic unit



CE

412 919 a



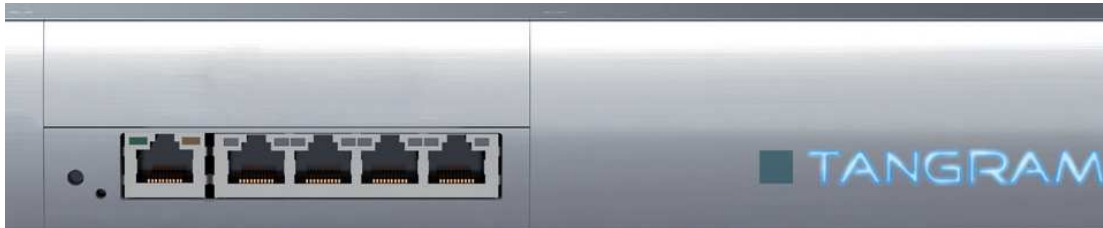
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3.2 Tangram Front IP Ports

3.2.1 IP / Ethernet Ports at the Front of Tangram

Tangram has up to 9x GigE ports at the front side, 5x RJ-45 100/1000T with GT11 and optionally additional 4x SFP ports with GT12 at the upside position (Slot 8).



Tangram with GT11 Switch module (Slot 7)



Tangram equipped with GT11 & GT12 Switch modules

The numbering on Tangram is always from down to up and from left to right, the first lower Port on GT11 left is determined for out-of-band Management.

GT11 Port Group-Member settings:

	RJ 45	RJ 45	RJ 45	RJ 45	RJ 45
Port :	MAN	1	2	3	4
Group ID:		A ▾	B ▾	C ▾	D ▾

Cancel Save

Port numbering on GT11 & GT12

GT12 Port Group-Member settings:

	RJ 45	RJ 45	RJ 45	RJ 45
Port :	1	2	3	4
Group ID:	E ▾	E ▾	E ▾	E ▾

Cancel Save



3.3 Tangram RF / Video Modules Slots

RF Modules and Ports at the Rear of Tangram

3.3.1 Chassis slots GT01

Tangram has up to 6 module slots on the rear side.



Tangram rear view (Example)



The numbering on Tangram modules is always from down to up and from left to right, the first lower Module on the left (seen from the back) is the first, second is above.

3.3.2 GT22 Modules ports



RF Test-output 1
(-20 dB)

RF output 1

RJ45 control
port for module

RF Test-output 2
(-20 dB)

RF output 2

GT22 module view

The numbering of Ports on the RF modules is again from left to right, starting with the Test-point of the first and only RF output for FM. To get best level detection accuracy please always terminate the Testpoint with the 75 Ohms terminator delivered or comparable.

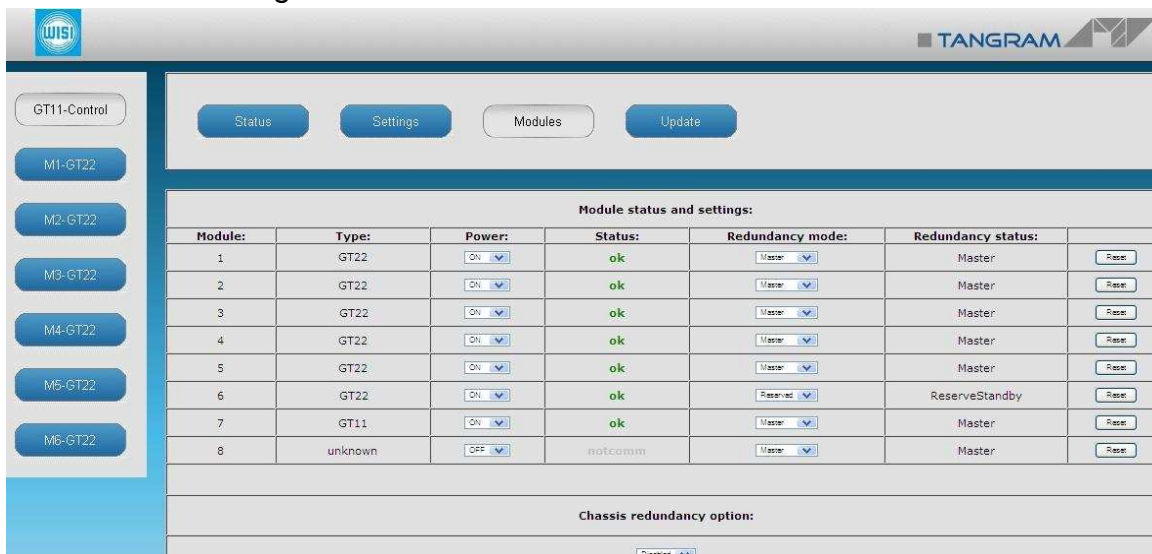


3.4 Configuration of Tangram

3.4.1 Connecting to the Tangram Web UI (GUI)

Connecting with web browser

Use a standard web browser on your computer to connect by typing the IP address of the Tangram in the address field.



Supported web browsers

The Tangram web interface is verified for Firefox version 9 and higher. Other web browsers might work, too - but the functionality cannot be guaranteed.

General information about the web interface structure

The web UI is designed to get a logical structure for the user/ installer, and an overview of the device via the side tabs and module details via the top tabs.

The main **SETTINGS** tab contains setting about the switch such as Networking, Headend System Management, Operation Mode, Common Interface, SW and Entitlement Upgrade, Maintenance, and Log. The CAM menu, if available, is also displayed in the Common Interface menu under the **SETTINGS** tab.

The main interface while managing services within the modules is the **SERVICE MANAGEMENT** tab. Here, you will have an overview of the configured inputs and outputs, and you will also manage the service selection and decryption.

Before you start managing the services on the modules, you should add and configure the inputs and configure the outputs in their respective tabs.



3.4.2 Connecting to the default Management IP address:

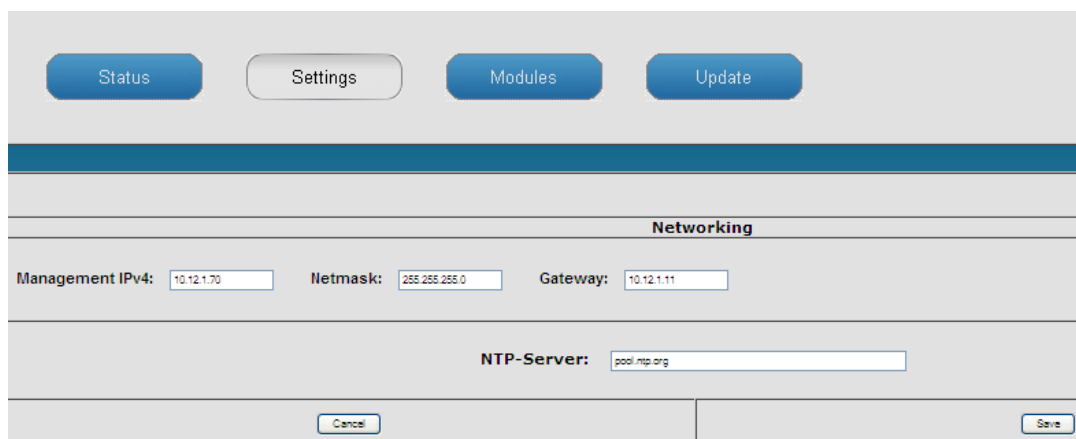
The Tangram default IP address on the left front management port is 192.168.1.20 (GT11 SW rel. <0.8.1.5 : 192.168.0.11)



To access the Tangram Web- Interface please set the IP address on your PC or Network adaptor to an address in the same address subnet & use same network mask.

3.4.3 SETTINGS Tab: Changing the IP address to your own Network

It is recommended to change the IP to an unique IP address in your network. Please change the IP address under SETTINGS / NETWORKING.



Please always remove completely & newly configure Network- Addresses, the Netmask plus the default gateway. A known NTP Server source can be used for the time of day sync. When you are finished with your changes please press the "Save" button.



3.5 Tangram GT11 / 12 Switch modules / Main Control Page

3.5.1 Main Status GT11- Control

On the Tangram GT11-Control Status Tab you can monitor overall stats like Alarms, Fans, Power, Temperature, Serial Number and main SW- Version of Tangram .

Module identification

Tangram
GT11 Switch
S/N : 0490112041200002
Hardware : 01.01.01.00
Firmware : 00.09.01.05

Status

Chassis :	
Temperature:	34.0 C (high = +80.0 C, hyst = +75.0 C)
Fans:	
Fan 1:	7620 RPM (min = 4500 RPM)
Fan 2:	7560 RPM (min = 4500 RPM)
Fan 3:	10920 RPM (min = 4500 RPM)
Fan 4:	7560 RPM (min = 4500 RPM)
Fan 5:	7620 RPM (min = 4500 RPM)
Fan 6:	7740 RPM (min = 4500 RPM)
Fan 7:	10740 RPM (min = 4500 RPM)
Fan 8:	7620 RPM (min = 4500 RPM)
Powersupply:	
Voltage internal:	+12.00 V (crit min = +11.22 V, min = +11.52 V) +0.00 V (crit min = +11.22 V, min = +11.52 V) ALARM
Voltage external:	+12.00 V +11.82 V
Voltage ORing:	+17.74 V +0.00 V
Temperature:	+36.4 C (low = -25.5 C, high = +85.3 C) +24.8 C (low = -25.5 C, high = +85.3 C)
Power:	220.00 W 220.00 W
Current:	+12.13 A (crit min = +0.00 A, min = +0.00 A) +0.00 A (crit min = +0.00 A, min = +0.00 A)

In the left field you can see the GT Modules / Slots identified by the Chassis.

3.5.2 Maintenance: Future GT11 main updates / upgrades

In future there may be additional functionality added to Tangram.

Firmware- Update or Upgrade for the main switch are applied via the Maintenance Tab.

IP- Adresses set & Group membership survive a Main Firmware Update as long not stated differently in the release notes.

Firmware Update

File to upload:



3.6 Tangram GT11 / 12 internal Switch / Control tab

3.6.1 Modules tab

Module:	Type:	Power:	Status:	Redundancy mode:	Redundancy status:	
1	GT22	ON	ok	Master	Master	Reset
2	GT22	ON	ok	Master	Master	Reset
3	GT22	ON	ok	Master	Master	Reset
4	GT22	ON	ok	Master	Master	Reset
5	GT22	ON	ok	Master	Master	Reset
6	GT22	ON	ok	Reserved	ReserveStandby	Reset
7	GT11	ON	ok	Master	Master	Reset
8	unknown	OFF	notcomm	Master	Master	Reset

On the Tangram GT11 Control Tab you can maintain the modules:

In the left field there are the Modules / Slots identified by the Chassis / Switch.

3.6.2 Module Status and Settings

You can check and set the Modules on the Modules tab. You can switch them on /off and can reset them remotely. Additionally you can configure Module Redundancy (n+1):

3.6.3 n+1 Module Redundancy

You can check and set the Modules Redundancy mode of a module by choosing the Redundancy mode (Master or Reserved) within that 'Modules' Tab column.

A module which should be secured has to be in 'Master' mode, the module which should take the redundancy in case one of the Master modules fails has to be set to 'Reserved'. There is no mixing of different module types allowed / possible to apply Module redundancy. If a problem is detected on a "Master" module the power is automatically switched off and the 'Reserved' module is activated simultaneously with the Master config.

To revert the redundancy you have to switch on Power again for the replaced Module by hand in this tab. The reserved module will go to reserved mode again and switch off its own outputs when the new Module comes up again.

3.6.4 Module Redundancy status

You can see the Status of Module redundancy within the Redundancy status column.



3.7 Tangram Front IP Port Groups

3.7.1 IP / Ethernet Ports Groups (using internal VLAN IDs)

There are **Port Groups** to easily distribute video traffic of above 1 Gbit:

GT11/ 12 reserved Groups (VIDs 10 & 16)

- GT11 MGMT Port 0: Connection to GT switch and module web UI.
Internal Management net uses VID=16: internal use reserved.

- Internal Streaming net I (VID=10) is connected to GT modules slot 1 to 6

Default Port Group Member settings from factory (This are only factory defaults and not applicable for Tangram Chassis already customized and configured):

GT11 internal Jumper J2 not set (default1):

- GT11 Port 1 to 4: Connection to GT streaming net A (VID=2)
- GT12 Port 1 to 4: Connection to GT streaming net E (VID=6)
- Streaming net A (VID=2) is connected to GT modules slot 1 to 6.
- Streaming net E (VID=6) is connected to GT modules slot 1 to 6, too

GT11 Port Group-Member settings:

	RJ 45	RJ 45	RJ 45	RJ 45	RJ 45
Port :	MAN	1	2	3	4
Group ID:		A	B	C	D

Cancel Save

GT12 Port Group-Member settings:

	RJ 45	RJ 45	RJ 45	RJ 45
Port :	1	2	3	4
Group ID:	E	E	E	E

Cancel Save

GT11 & 12 Port Group- Member settings in the Main Setting Tabs

GT11 internal Jumper J2 set (default2):

- GT11 Port 1: Connection to GT streaming net A (VID=2)
 - GT11 Port 2: Connection to GT streaming net B (VID=3)
 - GT11 Port 3: Connection to GT streaming net C (VID=4)
 - GT11 Port 4: Connection to GT streaming net D (VID=5)
 - GT12 Port 1: Connection to GT streaming net E (VID=6)
 - GT12 Port 2: Connection to GT streaming net F (VID=7)
 - GT12 Port 3: Connection to GT streaming net G (VID=8)
 - GT12 Port 4: Connection to GT streaming net H (VID=9)
- Streaming net A (VID=2) is connected to GT modules slot 1 and 2.
 - Streaming net B (VID=3) is connected to GT modules slot 3 and 4.
 - Streaming net C (VID=4) is connected to GT modules slot 5.
 - Streaming net D (VID=5) is connected to GT modules slot 6.
 - Streaming net E (VID=6) is connected to GT modules slot 1 and 2.
 - Streaming net F (VID=7) is connected to GT modules slot 3 and 4.
 - Streaming net G (VID=8) is connected to GT modules slot 5.
 - Streaming net H (VID=9) is connected to GT modules slot 6.



3.8 Configuration of Modules

3.8.1 Connecting to the Modules:

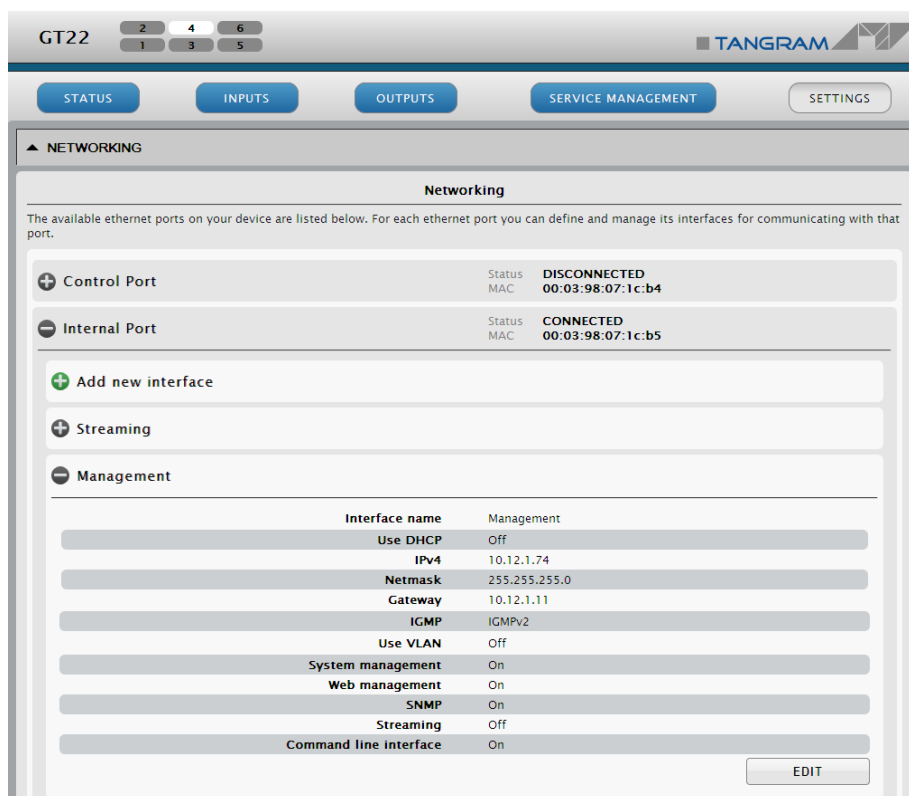
The Tangram modules GT2x can be accessed through the front management port by just choosing the module on the left column in the Web UI.

(to access all modules with the same Management IP- address through the Switch please make sure that the IP ports 80 to 86 are opened with your Firewalls)

3.8.2 Adding additional IP addresses to the modules (optional)

As an option you can put an unique IP management address to every module available through the Switch Management Port (e.g. Main address +1,+2, etc.). This can be used e.g. to get SNMP- traps directly from the Modules.

You can edit the IP address of a Module under SETTINGS / NETWORKING. Please always remove & newly configure network- address, the netmask plus the default gateway. If you don't want to specify put in 0.0.0.0 as gateway address.



(as an further alternative or to recover a problem you may use the backup control port on the back of module with default address 192.168.1.20 netmask 255.255.255.0. Use again a standard web browser to connect by typing the IP address in the address field.)

If the address setting is unknown or lost you can recover on the module control port by using the WISI / a2b IP Supporter tool - you can download it from the WISI portal.



3.9 Tangram & SW options

3.9.1 Connect to WISI portal & activating the output Modules:

The Tangram modules GT2x (not the chassis itself and GT11) must be registered at the WISI portal & activated through an entitlement file when they are shipped with the factory default setup. You can get / download that from WISI Web-Portal:

The WISI Tangram portal

Portal URL: <http://tangramconnect.tv>

Connect to the Tangram portal using the URL: <http://tangramconnect.tv>

(in case tangramconnect.tv is down / not available temporarily you can use <http://chameleonconnect.tv> in the meantime which offers the same functionality and data.

3.9.2 Serial- number / Linking to the Modules:

The Tangram module to be activated can be accessed through the main management by just choosing the module on the left column. Please copy / write down the Serial Number out of the Status tab of the module to be activated.

3.9.3 Requesting access to the tangramconnect.tv portal

If you do not have yet a password for access to the portal, please click the [Request access to Tangram portal](#) link.

3.9.4 Login to the tangramconnect.tv

Enter your e-mail address and password, and click Login. Only with the first module you have to register once for the Portal. Then after some time to generate your account or if you have forgotten your password & clicked the [Reset password](#) link, an e-mail will be sent to the entered e-mail address. The e-mail contains a hyper-link that you should follow to confirm the request for a new password.



3.10 Registering Tangram modules to the WISI Tangram portal

If you do not have yet a password for access to the portal, please refer to chapter 3.9.3

3.10.1 Registering modules

Please copy / write down the Serial Number out of the Status tab of the module to be activated

Register new Tangram

Serial number:	<input type="text"/>
Module name:	<input type="text"/>
Firmware version:	<input type="text"/>
Vendor:	<input type="text"/>
Description:	<input type="text"/>
<input type="button" value="Register"/>	

3.10.2 Downloading SW options

(entitlement file) to your PC

Go to the tab My Tangrams & enter the serial number of your Tangram module.

[My Tangram list](#)

Click the **Register Tangram** tab to start registering the Tangram GT2x module.

Enter the Serial number of your module. Optionally, also enter Module name, Vendor, and Description (these fields are intended for your own use, to be able to track and maintain your installed base). The fields for SLA status and SW options are filled out automatically from the information stored in the WISI Unit Data Base. Click the **Register** button to register the Tangram.

Go to the tab **My Tangrams**, and click the serial number for the module to download SW options (entitlement file) for. In the Edit Tangram view, click Download file. Save the file to your computer

After login & choosing Register Tangram tab number for the module to download SW options (entitlement file). In the Edit Tangram view, click Download file.

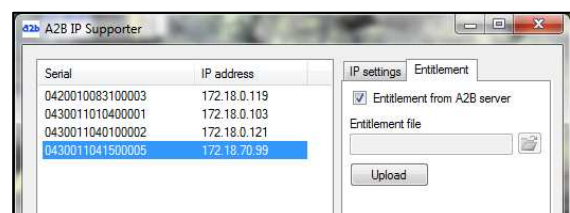
3.10.3 Uploading SW options (entitlement file) to your Tangram module GT2x

(via Tangram Web GUI)

Under **SETTINGS / SOFTWARE AND ENTITLEMENT UPGRADE**, browse for the entitlement file you previously downloaded to your computer. Click Upload, and reboot the module when the upload is ready.

3.10.4 Using the IP Supporter Tool

With the Tangram connected to your computer, and your computer connected to Internet, you can upload the entitlement file directly. Select your Tangram GT2x module, and check the Entitlement from WISI / a2b server, and click Upload.

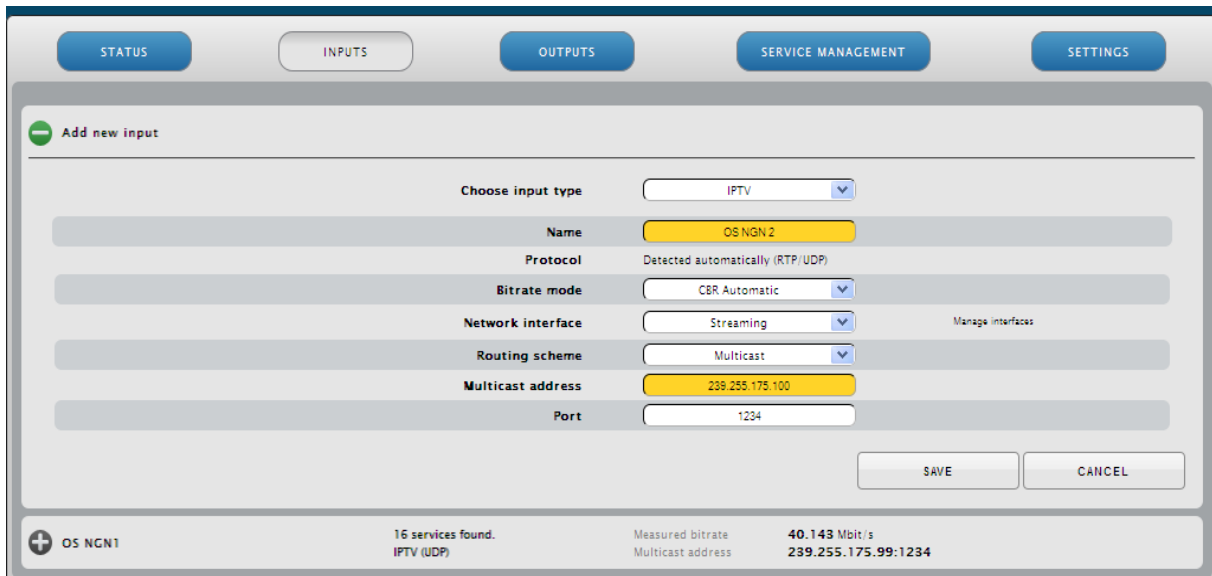


3.11 Configuring Inputs

3.11.1 Defining / adding inputs

Add input

1. Click the INPUTS tab, and *Add new input*.
2. Type or select the appropriate parameters and settings.
3. Click the SAVE button.



The screenshot shows the 'Add new input' configuration form. At the top, there are navigation tabs: STATUS, INPUTS (selected), OUTPUTS, SERVICE MANAGEMENT, and SETTINGS. The form has a title 'Add new input' with a minus icon. The configuration fields are as follows:

Choose input type	IPTV	
Name	OS NGN 2	
Protocol	Detected automatically (RTP/UDP)	
Bitrate mode	CBR Automatic	
Network interface	Streaming	Manage interfaces
Routing scheme	Multicast	
Multicast address	239.255.175.100	
Port	1234	

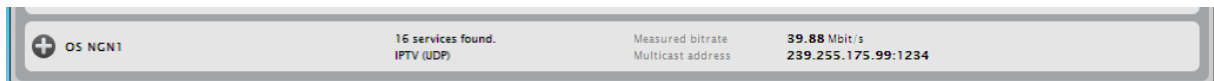
At the bottom right of the form are 'SAVE' and 'CANCEL' buttons. Below the form, a status bar shows the following information:

+ OS NGN1	16 services found. IPTV (UDP)	Measured bitrate Multicast address	40.143 Mbit/s 239.255.175.99:1234
-----------	----------------------------------	---------------------------------------	--------------------------------------

Status information

After clicking *Save*, the status of the input will be shown.

The status includes information about the interface (tuner etc.), and about services found.



The screenshot shows the status bar for the configured input. It contains the following information:

+ OS NGN1	16 services found. IPTV (UDP)	Measured bitrate Multicast address	39.88 Mbit/s 239.255.175.99:1234
-----------	----------------------------------	---------------------------------------	-------------------------------------

Add more inputs

Re-iterate the “Add input” process.

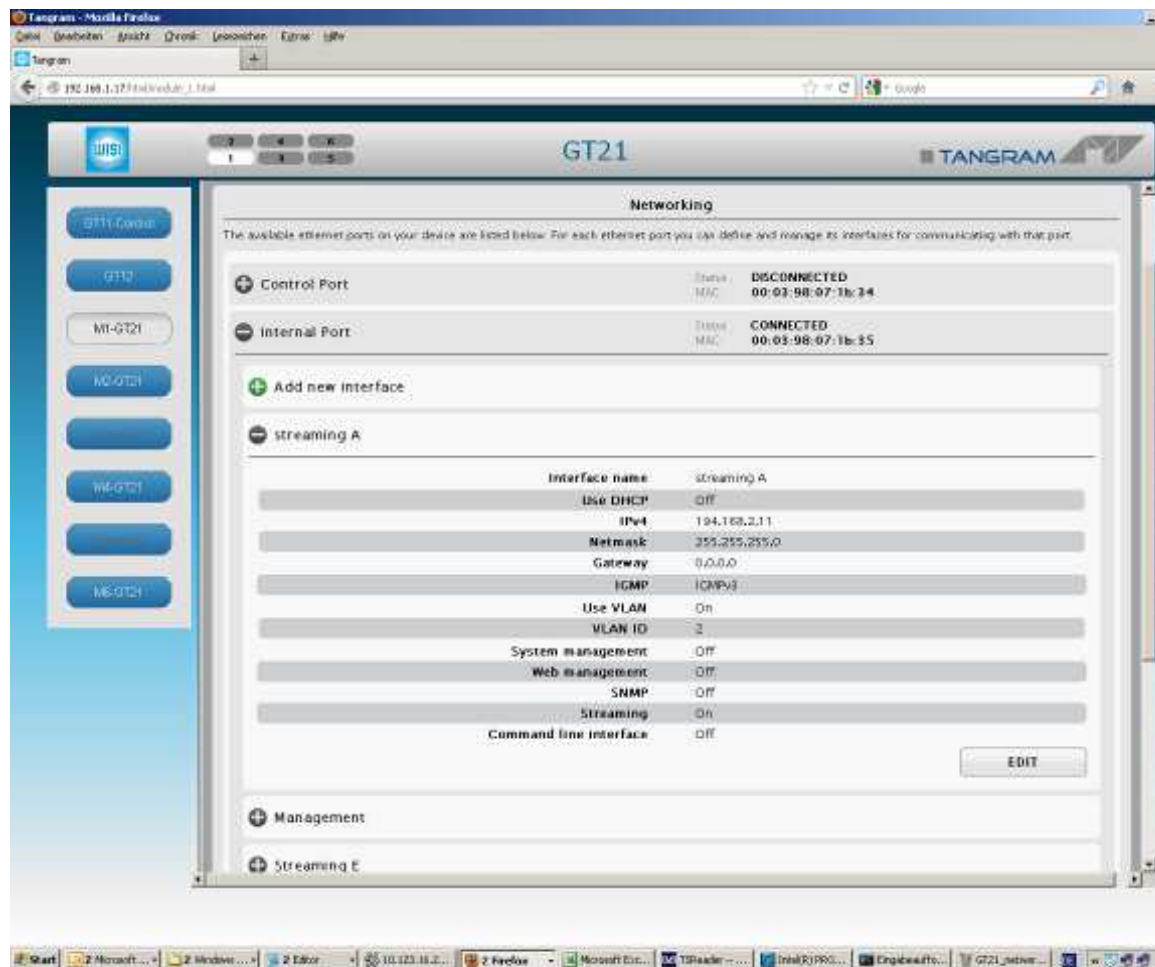
3.11.2 Configure Input paths & Input redundancy

IGMP & Redundant Inputs

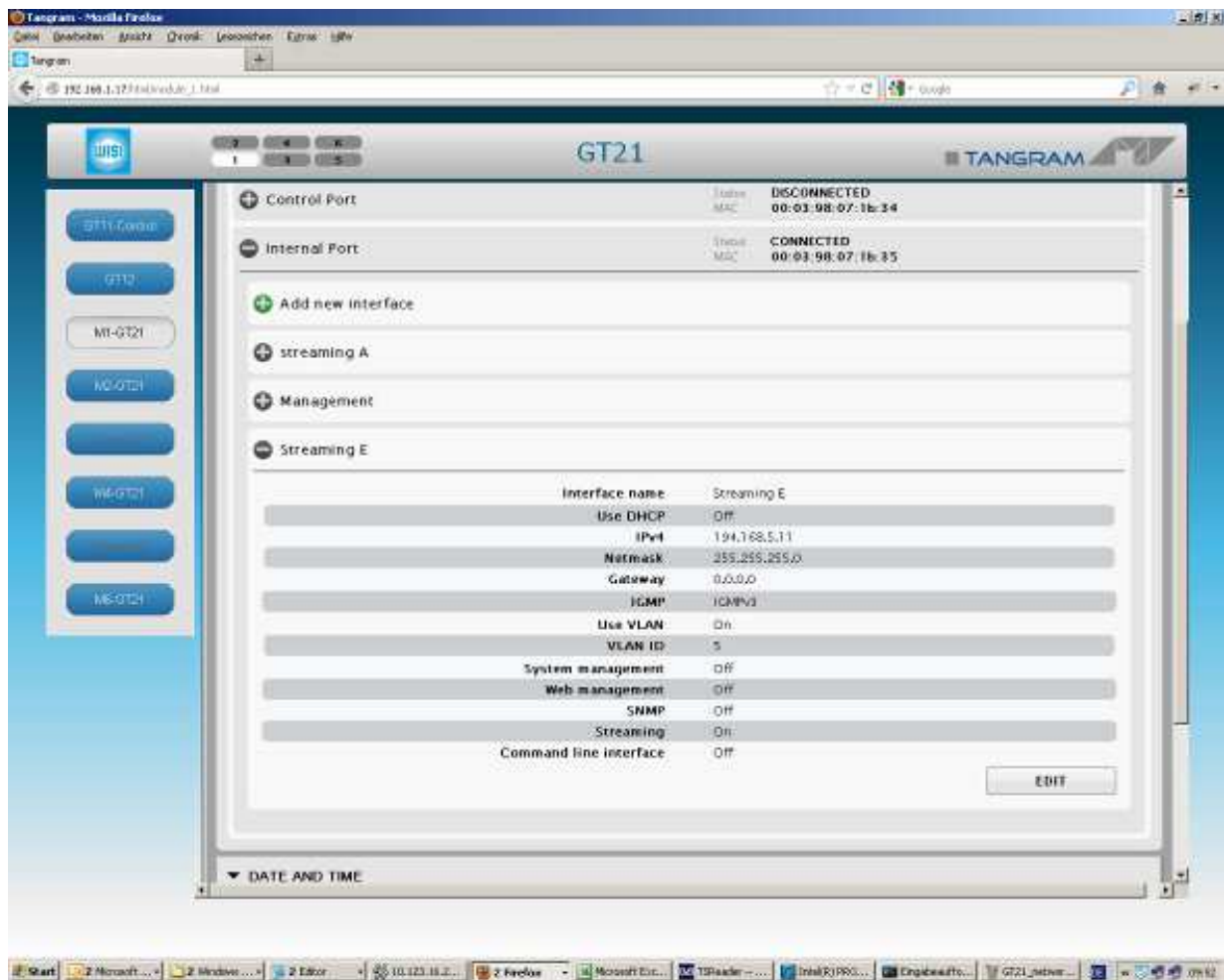
The Edge modules of Tangram request the IP multicasts over the IGMPv2 or v3 protocol on routers / switches.

For each IP multicast address a Primary and Secondary source (IGMPv3) or destination address and optionally an A- and B-path path for redundancy can be configured. A and B and even more sources (C,D,E ...) can be configured on the WISI Tangram integrated switch and afterwards chosen on the Tangram modules via the internal streaming net (Net A-> VID2 = VLAN ID 2, see 3.7.1).

The Tangram switch has 4 x 1 GbE RJ45 to supply up to 4 Gb / s multicast e.g. over one path distributed to 4 internal VLANs and another 4 x 1 GbE SFPs with the optional GT12 for the supply of multicast over secondary and additional paths.



Alternative Streaming paths – GT21 example Streaming primary path using VID2



Alternative Streaming paths – GT21 example redundant Streaming path using VID5= E

3.11.3 Redundant Input Sources

Alternative Inputs

The Tangram modules searches for a valid input signal always in the following order:

Primary -> Alternative 1 -> Alternative 2 -> Alternative 3

- Search for a valid input signal starts always with the logical input position 'Primary'
- GTxx module checks during Latency Time (3sec) the input signal.
- if a valid signal is detected within Latency Time -> 'operation completed' and new logical input position is found.
- if a valid signal is not detected within Latency Time -> switching to next logical input position.



This process continues until a valid input signal is detected. The “Linger time” (=waiting period) is the time the Tangram GTxx module waits with a detected signal failure at the current logical input position in order to decide whether action is needed (t >Linger time, then switch to next alternative) **or** only a brief interruption of signal has appeared at the entrance and no action is needed, to prevent continuous input flapping.

OS DVB-C1		0 services found. IPTV	Measured bitrate 0 Mbit/s Multicast address 239.255.175.99:1234
Name	OS DVB-C1		
Protocol	N/A		
Bitrate mode	CBR Automatic		
Network interface	Streaming		
Routing scheme	Multicast		
Multicast address	239.255.175.99		
Port	1234		
Source address	0.0.0.0		
Active configuration	Primary		
Linger time	0		
Latency	0		
<input type="button" value="EDIT"/>			
<input type="button" value="+ Add alternative configuration"/>			
TWO			
Priority	TWO		
Network interface	<input type="text" value="Streaming"/>	<input type="button" value="Manage interfaces"/>	
Routing scheme	<input type="text" value="Multicast"/>		
Multicast address	<input type="text" value="239.255.175.100"/>		
Port	<input type="text" value="1234"/>		
<input type="button" value="REMOVE"/>		<input type="button" value="SAVE"/> <input type="button" value="CANCEL"/>	

Alternative Streaming address – example: redundant Input source

3.12 Configure FM outputs

3.12.1 Add FM output

1. Click the OUTPUTS tab, and choose FM output 1...8.
2. Select the output by clicking on the +
3. Click on EDIT and type or select parameters & settings.

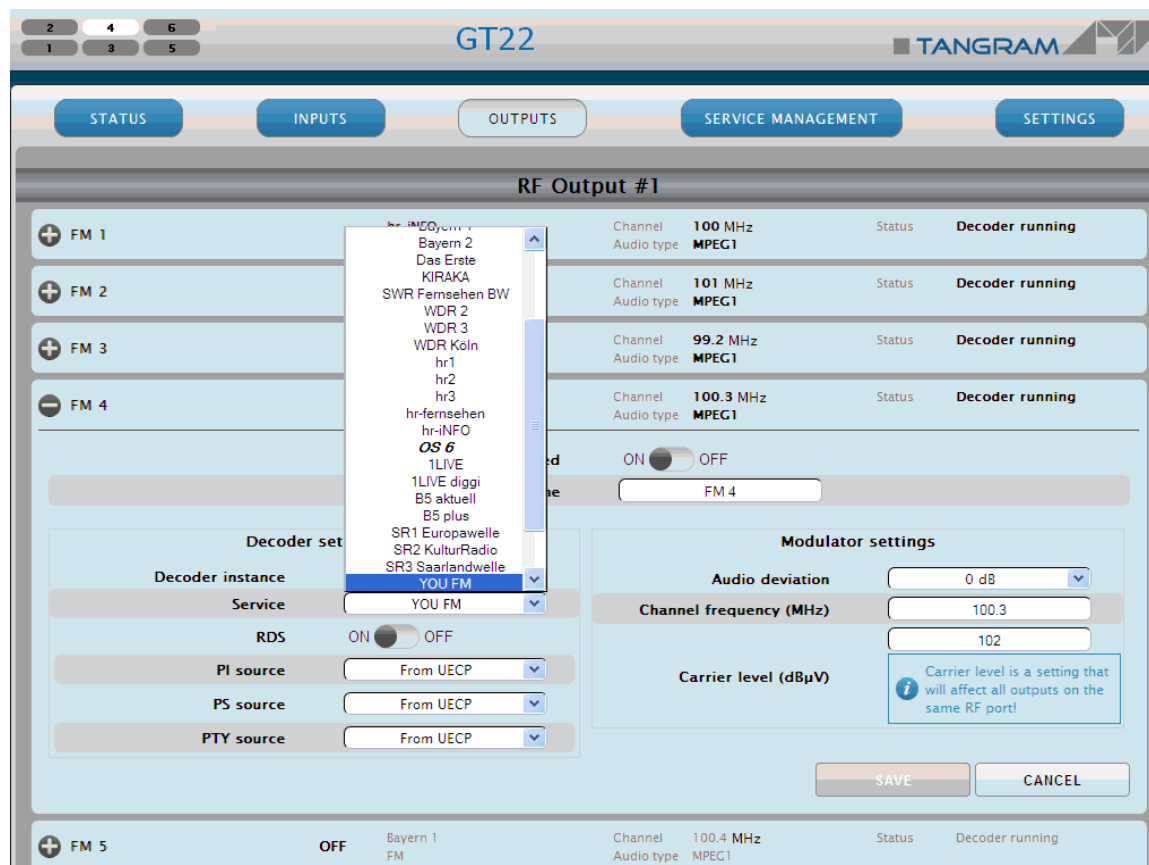


3.12.2 Add more FM outputs

Re-iterate the “Add FM output” process

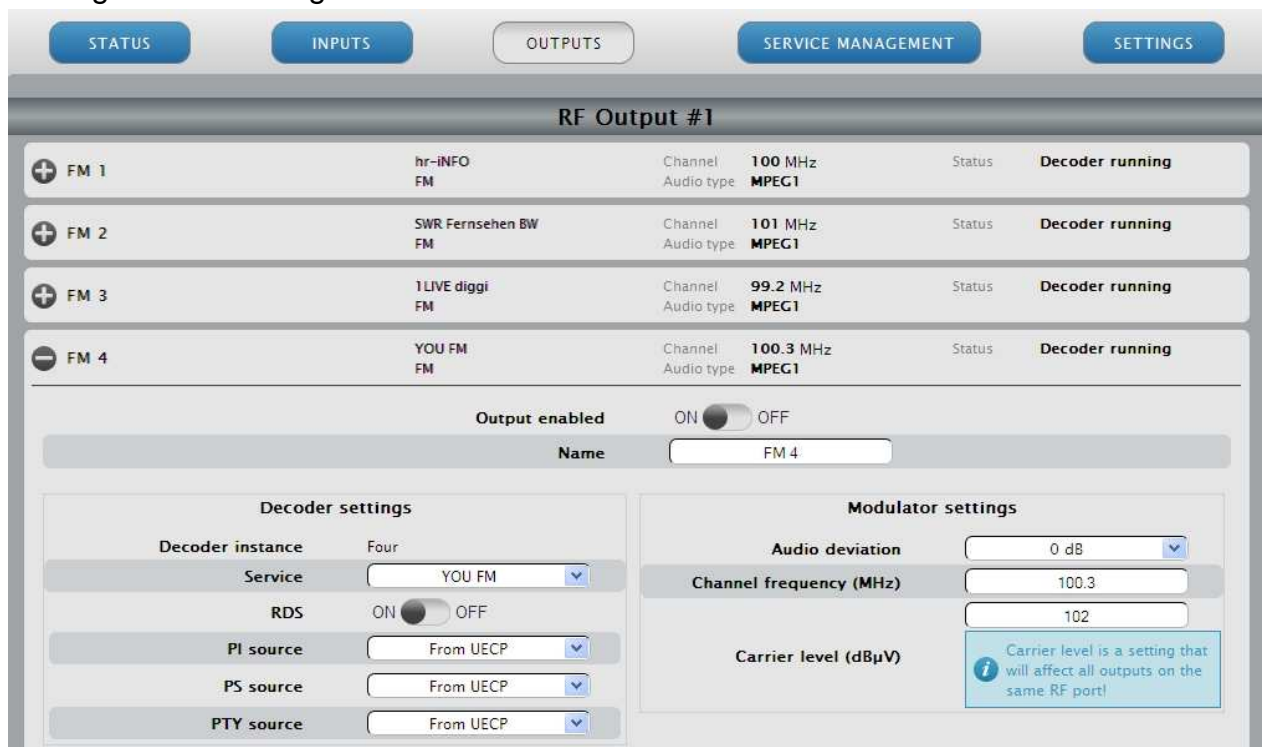
3.12.3 Edge Decoder adjustments

- Give a name for the output
- Select decoder instance (“One”, “Two”,)
- Select the service in the Services drop down list.



3.12.3 Configure FM outputs (cont.)

- Select the service in the **Services** drop down list
- Enter output frequency and output level
- Optional: for RDS signalling, select the PI, PS and PTY sources, and enter the values if using manual settings.



When you use the manual settings, you can find the PID number

in the Service Management -> see 3.13.1 ,

on the input side, when expanding to service level.

For subtitle language, you can select language from the drop

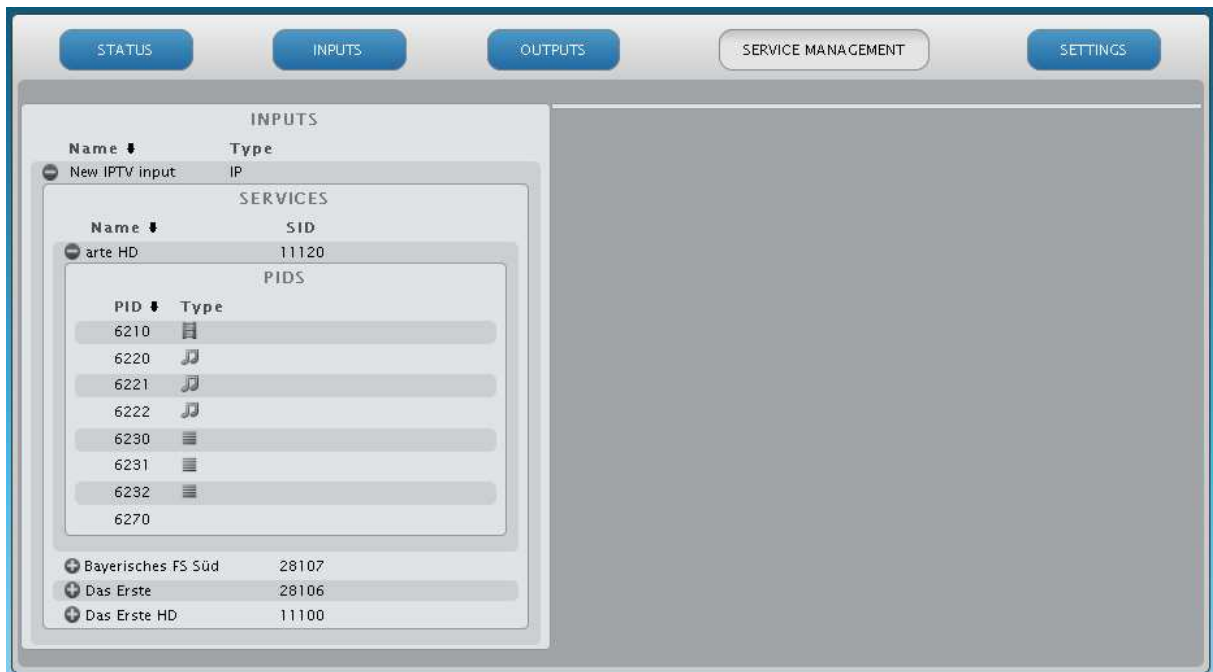
down list, or enter the ISO 639-2 code.



3.13.1 Service management

Click on the SERVICE MANAGEMENT tab to see available inputs and outputs.

Service IDs and PIDS of received Input services are shown and can be checked.

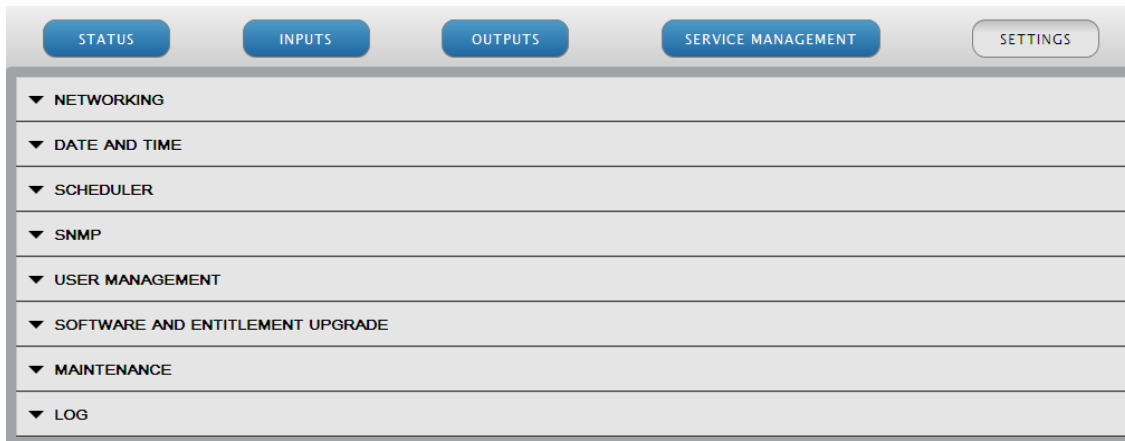


Service IDs shown in the Module SERVICE MANAGEMENT

The INPUTs and their PIDs are shown starting from INPUT 0 to INPUT n, depending on how many Inputs are configured and received.

3.14 Managing the Tangram modules

Under **SETTINGS tab** - module specific settings are managed:

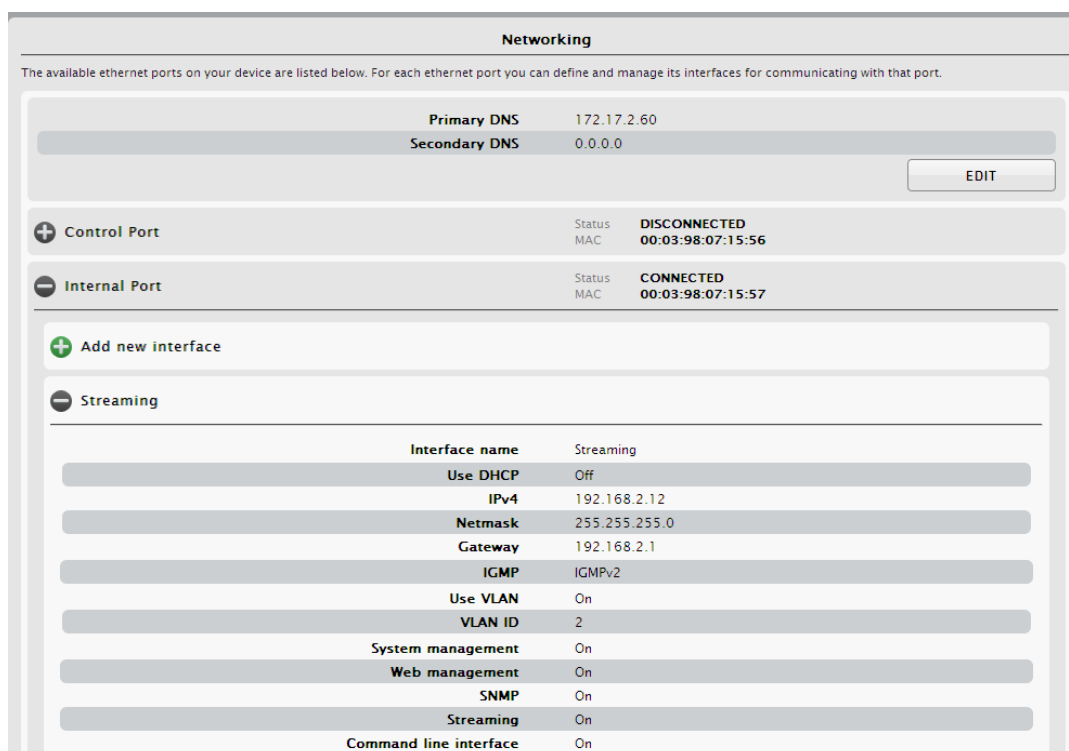


NETWORKING

Networking settings for defining and configuring IP interfaces, and for setting the capabilities for the defined IP interfaces.

Note: Every Tangram module has an extra IP port on the Tangram back for separate 10/100 Ethernet management (“Control Port”, default IP 192.168.1.20/24), the module internal GigE port is switched through GT11 switch for streaming & main management.

There are no IP addresses defined for the GigE streaming per default and they have to be set accordingly to customer network.



Example of Networking setup



Managing the Tangram modules

3.14.1 Add and configure Network interfaces

1. Click on NETWORKING in the **SETTINGS** tab
2. Click Add new interface
3. Type a name for the interface
4. Enter the IPv4 address, the Netmask and the Gateway
5. Select the capabilities needed for the interface (e.g. Streaming)

(Defaults work best in the majority of installations - Please don't change the internal VLAN + System/Web Management settings if you aren't sure, you may lose connection to the module)

6. Click SAVE

The screenshot shows a web-based configuration interface for an 'Internal Port'. At the top right, the status is 'CONNECTED' with a MAC address of '00:03:98:07:1f:98'. Below this is a '+ Add new interface' button. A section titled '- Streaming' is expanded, showing a configuration table for a 'Streaming Interface'.

Setting	Value
Interface name	Streaming Interface
Use DHCP	OFF
IPv4	192.168.2.20
Netmask	255.255.255.0
Gateway	0.0.0.0
Use VLAN	OFF
VLAN ID	2
System management	OFF
Web management	OFF
SNMP	OFF
Streaming	OFF
Command line interface	OFF

At the bottom of the configuration section are three buttons: 'REMOVE', 'SAVE', and 'CANCEL'. Below the configuration section is a '+ Management' button.

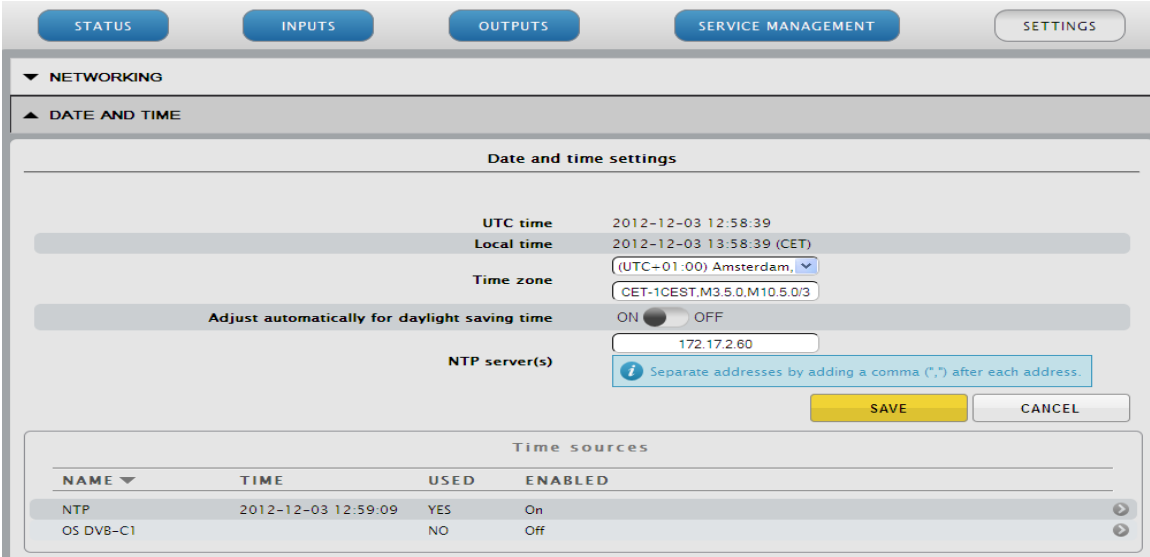
Managing the Tangram modules

3.14.2 Setting up DATE AND TIME

To synchronize Tangram modules with a time source you can either use NTP protocol through the IP interfaces or Time information delivered by the received MPTS- Streams.

1. Click on DATE AND TIME in the **SETTINGS** tab
2. Click EDIT
3. Select the Time zone, automatic or manual daylight saving time and the reachable NTP servers (separated by adding a comma after each address)
4. Click SAVE
5. If no NTP is available/ configured a Stream source including that information can be used to synchronize the date & time of Tangram modules

(Note: NTP servers can be connected from the modules external or internal GigE ports and switched through GT11 switch. There are no IP addresses defined for the internal Interface for NTP use per default and they and gateways have to be set for every module accordingly to customer management network.)



The screenshot shows the 'DATE AND TIME' settings page. At the top, there are tabs for STATUS, INPUTS, OUTPUTS, SERVICE MANAGEMENT, and SETTINGS. The 'DATE AND TIME' section is expanded, showing 'Date and time settings'. It includes fields for UTC time (2012-12-03 12:58:39), Local time (2012-12-03 13:58:39 (CET)), Time zone (UTC+01:00 Amsterdam), and a toggle for 'Adjust automatically for daylight saving time' (OFF). The NTP server(s) field contains '172.17.2.60' and a tooltip提示: 'Separate addresses by adding a comma (",") after each address.' Below the settings are 'SAVE' and 'CANCEL' buttons. At the bottom, there is a 'Time sources' table.

NAME	TIME	USED	ENABLED
NTP	2012-12-03 12:59:09	YES	On
05 DVB-C1		NO	Off

Example of a Date & time setting using a NTP server



Managing the Tangram modules

3.14.3 SNMP, Simple Network Management Protocol / Traps

With the **SNMP tab** – SNMP(v2) specific settings like alarm Traps are managed:

SNMP can be used for monitoring alarms (traps/notifications) or to read (Get) or write (Set) information from/ to a Tangram module. To use SNMP, you can use a NMS (Network Management System) that is connected to Tangram.

External Monitoring of Tangram using SNMP

SNMP settings can be edited for defining and configuring SNMP interface, and for setting the Agent port (=UDP listen port) , the community strings (read & set “passwords”, defaults are “public” & “private”) and the Trap destination port and receiver address of the NMS.

The SNMP agent has to be enabled for every module.

Note: Module Traps are sent from the modules external or internal GigE ports and switched through GT11 switch. There are no IP addresses defined for the internal Interface for SNMP per default and they have to be set for every module accordingly to customer management network.

SNMP	
Enable agent	On
Agent port	161
Agent community read string	public
Agent community write string	private
Enable traps	On
Traps address	172.17.2.60
Traps port	162
Traps community string	public
Traps SNMP Version	SNMPv2c

Example of SNMP Network setup

MIB, MIB structure and NMS integration: Please ask WISI support or your WISI representative for the most recent MIB- Definition files for Tangram.

Managing the Tangram modules


3.14.4 USER MANAGEMENT

Account Management for User authentication & access to the modules

The USER MANAGEMENT allows settings of user authentication for the module UI.

You can add users, and create passwords for each user:

Adding a user and password

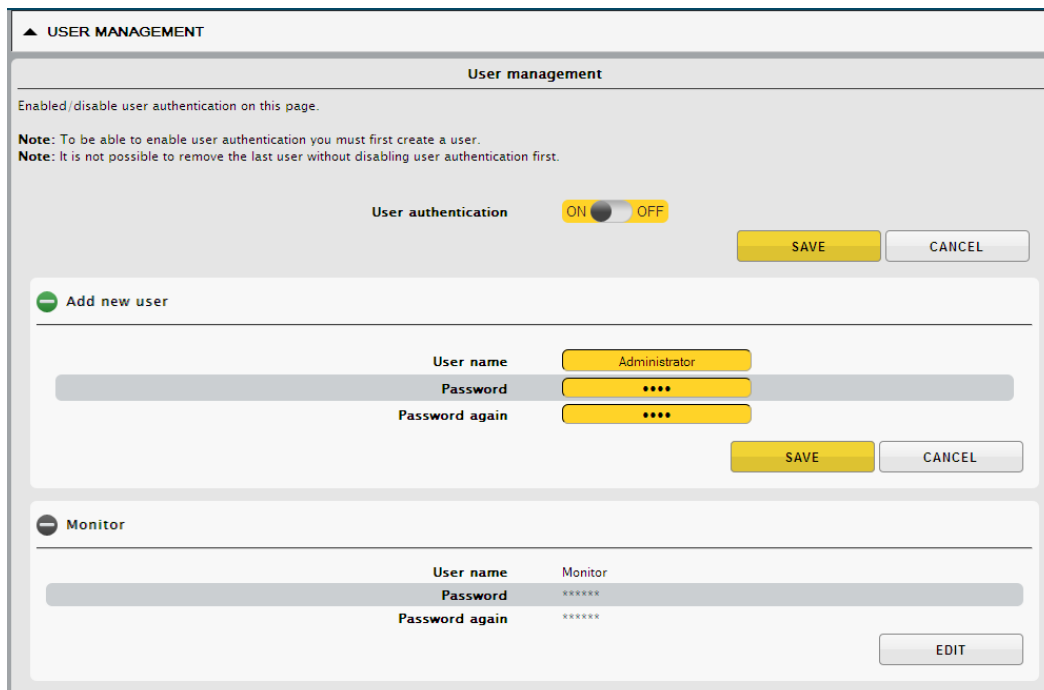
- Click Add new user, or the green plus 
- Enter a user name & Enter a password
- Confirm the password by entering it again (There is a warning if they are not the same)
- Click SAVE

Enabling password control

- Select User authentication ON
- Click SAVE

The web UI will respond with a “Authentication Required” from now where you should enter user name and password

Note: Make sure not to loose your user accounts and passwords! Factory reset will be needed to recover!



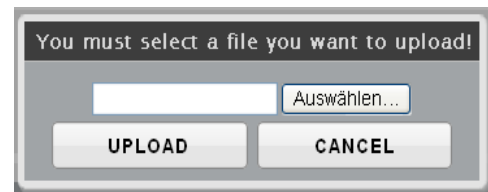
The screenshot shows the 'USER MANAGEMENT' interface. At the top, there is a toggle for 'User authentication' set to 'ON'. Below this, there are two sections for user management. The first section, 'Add new user', has a green plus icon and contains input fields for 'User name' (filled with 'Administrator'), 'Password' (masked with '****'), and 'Password again' (masked with '****'). The second section, 'Monitor', has a minus icon and contains input fields for 'User name' (filled with 'Monitor'), 'Password' (masked with '*****'), and 'Password again' (masked with '*****'). Both sections have 'SAVE' and 'CANCEL' buttons.

Example of User management setup

Managing the Tangram module

3.14.6 Module Software and SW options (Entitlement)

If a module is shipped from factory it has no License / Entitlement for operation. Both FW and SW options are uploaded via SOFTWARE AND ENTITLEMENT UPGRADE in the **SETTINGS** tab. Additionally, there is status information available about the running software version, and if a new software is uploaded, also about the latest uploaded (not yet running) software version.



Uploading software options / Entitlement

- Click **UPLOAD**. Click “Browse” in the pop-up to browse for the software options file (*.ent) for this specific Tangram module

Note: The SW options file will have the format <serial number>.ent. If you need to, you can download the entitlement file from the Tangramconnect.tv portal or please ask your WISI representative

- Locate the software options file on your PC, and select it
- Click the Upload button



Uploading new Firmware

- Click **UPLOAD**. Click “Browse” in the pop-up, and select the software file (*.bin file) to be uploaded from your PC
- Click the Upload button
- Wait for the upload complete message before rebooting the module

- Reboot the module in your maintenance window

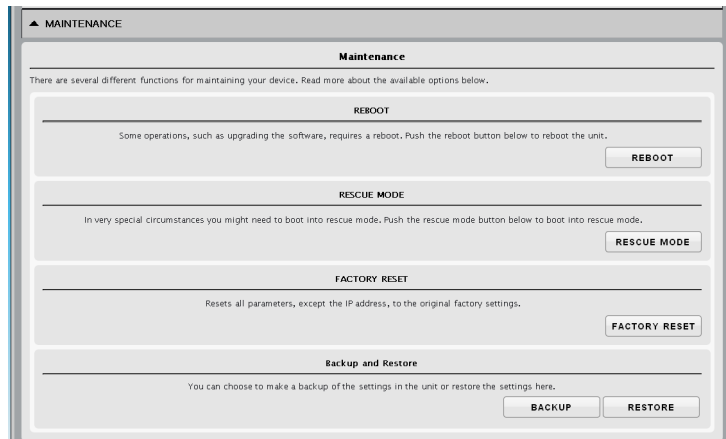
Managing the Tangram module

3.14.7 Module maintenance

Module maintenance functions

are available within the

Maintenance tab:

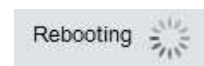


Reboot of the module

Some operations, such as upgrading the software, require a reboot to get it active.

Click the **Reboot** button to reboot the unit.

During the rebooting process, “Rebooting” will be shown.

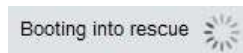


After rebooting, the web GUI will go automatically to the **STATUS** tab.

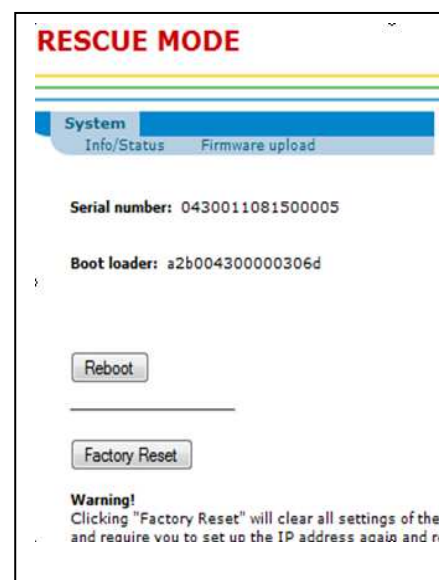
Rescue mode

In very special circumstances you might need to boot into rescue mode. If you are sure push the **Rescue mode** button to boot into rescue mode.

During the rebooting process, Booting into rescue will be shown.



In the rescue mode, you can access basic functionality via web interface, and upload new software and software options. In some cases you may have to connect via the backside control port to get access again.



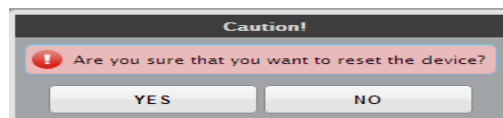
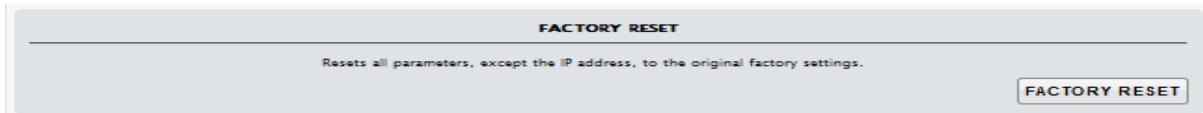
Returning to normal mode

Click the **Reboot** button in the rescue mode to return to normal mode. *Note:* re-enter the IP address of your Tangram in the address field of you browser to access the normal mode web GUI.

3.14.8 Factory reset & Backup / Restore

Factory reset

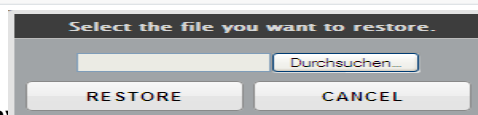
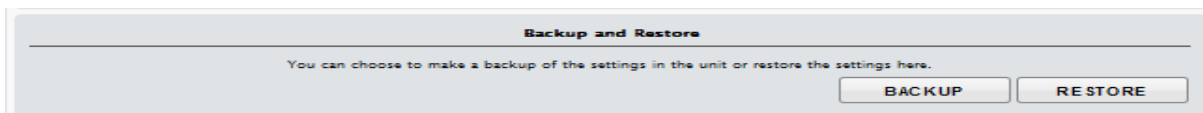
The Tangram module can be reset to the same status as when delivered from the factory. Go to the SETTINGS tab, and MAINTENANCE.



Factory reset from the rescue interface

There is a factory reset button in the rescue mode UI.

WARNING! Factory reset from the rescue mode will remove all settings, remove the entitlement file enabling the SW options, and will reset the IP address to the default.



Backup and restore (saving & restoring configuration)

The backup and restore functionality gives you the possibility to save the complete configuration of a Tangram / module to your PC. The stored config file is in readable xml format.

The backup file can be used for e.g. copying /clone configurations between different installations, or keeping a possibility to upload back the original configuration to a module after a change.

4. GT22 Module Status Information

The **STATUS** tab gives a general overview over the Tangram module. This page is also the starting page for the Module UI.



MODULE IDENTIFICATION	
Serial	0520112072500001
Hardware revision	1000
Name	FM
Location	NGN
Description	GT22C
<input type="button" value="EDIT"/>	

CONFIGURATION	
Software version	1.1
Software options	GT22HW

STATUS	
Uptime	28s
Temperature	33.5 °C

SERVICE LICENSE AGREEMENT (SLA)	
Registered	Yes
Expires	2013-07-30

MODULE IDENTIFICATION

Serial number and the HW version is shown. Further, there are three editable fields; Name, Location and Description. Choosing **EDIT** below the box enables you to save your own selected information about this Tangram module.

CONFIGURATION

The configuration box shows you the Operation mode, the Software version, and the enabled SW options. A warning will be shown if no operation mode is selected.

STATUS

Uptime (from last reboot), and current module temperature.

SERVICE LICENCE AGREEMENT

Shows if the Tangram is registered at the WISI portal, and the expiry date of the service level agreement.



5. GT22 Module LEDs & Alarms

5.1 GT22 master board

The GT22 master has 2 status LEDs. LED1 is located between RF1-TP and RF1, LED2 is located between (unused) RF2-TP and RF2. Both LEDs are bi-colour (green and red). Switching on both green and red results in a yellow /orange tone color.

5.5.1 Status LED states

The following LED states are supported by software. Not all states are used.

- Off
- Red
- Red blinking (250 ms off, 250 ms on)
- Red flashing (875 ms off, 125 ms on)
- Green
- Green blinking
- Green flashing
- Yellow
- Yellow blinking
- Yellow flashing
- Alternating (red / green)

LED blinking: (250 ms off, 250 ms on)

LED flashing: (875 ms off, 125 ms on)

LED alternating: 250 ms red, 250 ms green



5.5.2 Status LED indication

LED1	LED2	Description
Off	Off	No power supply
Yellow	Yellow	Board has power, no software running (e.g. empty flash)
Red	Red	Bootloader started or rescue bootloader start complete
Off	Red	Bootloader failed to boot into firmware/rescue bootloader, board stopped
Red blinking	Red blinking	Rescue bootloader started
Green blinking	Red blinking	Rescue bootloader FPGA booting
Red flashing	Red	Rescue bootloader secret function: Reset board
Green flashing	Red	Rescue bootloader secret function: Clean config
Yellow blinking	Yellow blinking	Firmware started
Green blinking	Yellow blinking	Firmware FPGA booting
Alternate	Off	Automatic update of slave board CPU1 active
Off	Alternate	Automatic update of slave board CPU2 active
Green	Green	Firmware start complete



6. Support and further information

For further information and help, please contact our support organisations:

E-mail: support_headend@wisi.de

Telephone: +49 (0)7233 / 66-621

User manual and installation guide updates

Updates to the user manual and the installation guide are available at the Website www.wisi.de and through the tangramconnect Portal.



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