



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



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 RF output 1
(-20 dB)

RF1 RJ45 control
port for module

RF Test-output 2 RF output 2
(-20 dB)

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



412 919 a



Operating instructions

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

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

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



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.

Module:	Type:	Power:	Status:	Redundancy mode:	Redundancy status:	Reset
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]

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)

The screenshot shows the 'Modules' tab of the Tangram Web-Interface. On the left sidebar, there are buttons for GT11-Control, M1-GT22, M2-GT22, M3-GT22, M4-GT22, M5-GT22, and M6-GT22. The main area has tabs for Status, Settings, Modules (which is selected), and Update. Below these tabs is a table titled 'Module status and settings' with 8 rows. The table columns are: Module, Type, Power, Status, Redundancy mode, Redundancy status, and a Reset button. The data in the table is as follows:

Module	Type	Power	Status	Redundancy mode	Redundancy status	Reset
1	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
2	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
3	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
4	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
5	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
6	GT22	ON	ok	Reserved	ReserveStandby	<input type="button" value="Reset"/>
7	GT11	ON	ok	Master	Master	<input type="button" value="Reset"/>
8	unknown	OFF	notcomm	Master	Master	<input type="button" value="Reset"/>

Below the table is a section titled 'Chassis redundancy option:' with a dropdown menu set to 'Disabled'.

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.

The screenshot shows the 'Settings' tab of the Tangram Web-Interface. At the top are tabs for Status, Settings (selected), Modules, and Update. Below these is a 'Networking' section. It contains fields for Management IPv4 (10.12.1.70), Netmask (255.255.255.0), and Gateway (10.12.1.11). There is also a field for NTP-Server (pool.ntp.org). At the bottom are 'Cancel' and 'Save' buttons.

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 .

The screenshot shows the 'Status' tab selected in the top navigation bar. On the left, a vertical sidebar lists slots M1-GT21 through M6-GT21. The main content area displays 'Module identification' information for slot M1-GT21, including the model (Tangram GT11 Switch), serial number (S/N : 0490112041200002), hardware version (Hardware : 01.01.01.00), and firmware version (Firmware : 00.08.01.05). Below this is a 'Status' section containing a table with various system parameters:

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.

The screenshot shows the 'Maintenance' tab selected in the top navigation bar. The main content area is titled 'Firmware Update'. It includes a 'File to upload:' input field with a 'Durchsuchen...' browse button and an 'Upload' button below it.



3.6 Tangram GT11 / 12 internal Switch / Control tab

3.6.1 Modules tab

Module status and settings:						
Module:	Type:	Power:	Status:	Redundancy mode:	Redundancy status:	Reset
1	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
2	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
3	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
4	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
5	GT22	ON	ok	Master	Master	<input type="button" value="Reset"/>
6	GT22	ON	ok	Reserved	ReserveStandby	<input type="button" value="Reset"/>
7	GT11	ON	ok	Master	Master	<input type="button" value="Reset"/>
8	unknown	OFF	notcomm	Master	Master	<input type="button" value="Reset"/>

Chassis redundancy option:

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. Additional 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				
Port :	MAN	1	2	3	4
Group ID:		A	B	C	D

GT12 Port Group-Member settings:				
	RJ 45	RJ 45	RJ 45	RJ 45
Port :	1	2	3	4
Group ID:	E	E	E	E

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.

The screenshot shows the WISI Web UI for a GT22 module. The top navigation bar includes buttons for STATUS, INPUTS, OUTPUTS, SERVICE MANAGEMENT, and SETTINGS. The SETTINGS menu is open, showing the NETWORKING section. The Networking page displays two types of ports: Control Port and Internal Port. The Control Port is currently disconnected (Status: DISCONNECTED, MAC: 00:03:98:07:1c:b4). The Internal Port is connected (Status: CONNECTED, MAC: 00:03:98:07:1c:b5). Below these, there are sections for adding new interfaces, streaming, and management. The management section contains fields for Interface name (Management), Use DHCP (Off), IPv4 (10.12.1.74), Netmask (255.255.255.0), Gateway (10.12.1.11), IGMP (IGMPv2), Use VLAN (Off), System management (On), Web management (On), SNMP (On), Streaming (Off), and Command line interface (On). An 'EDIT' button is located at the bottom right of the management table.

(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 a 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://www.wisiconnect.tv>

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

(in case [wisiconnect.tv](http://www.wisiconnect.tv) is down / not available temporary 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 [wisiconnect.tv](http://www.wisiconnect.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 [wisiconnect.tv](http://www.wisiconnect.tv) portal

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:
Module name:
Firmware version:
Vendor:
Description:

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.

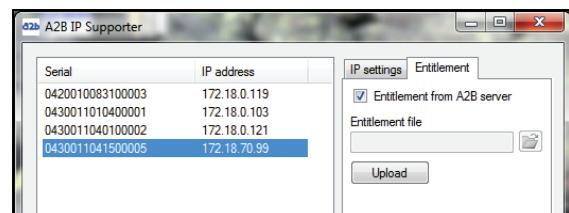
3.10.3 Uploading SW options (entitlement file) to your Tangram module GT2x

(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' dialog. At the top, there are tabs for STATUS, INPUTS (which is selected), OUTPUTS, SERVICE MANAGEMENT, and SETTINGS. Below the tabs, a green circular icon with a minus sign and the text 'Add new input' is visible. The main form contains the following fields:

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

At the bottom right of the dialog are 'SAVE' and 'CANCEL' buttons. Below the dialog, a status bar displays:

+ OS NGN1 16 services found. IPTV (UDP) Measured bitrate 40.143 Mbit/s
Multicast address 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 information for the 'OS NGN1' input. It includes the following details:

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

Add more inputs

Re-iterate the “Add input” process.

3.11.2 Configure Input paths & Input redundancy

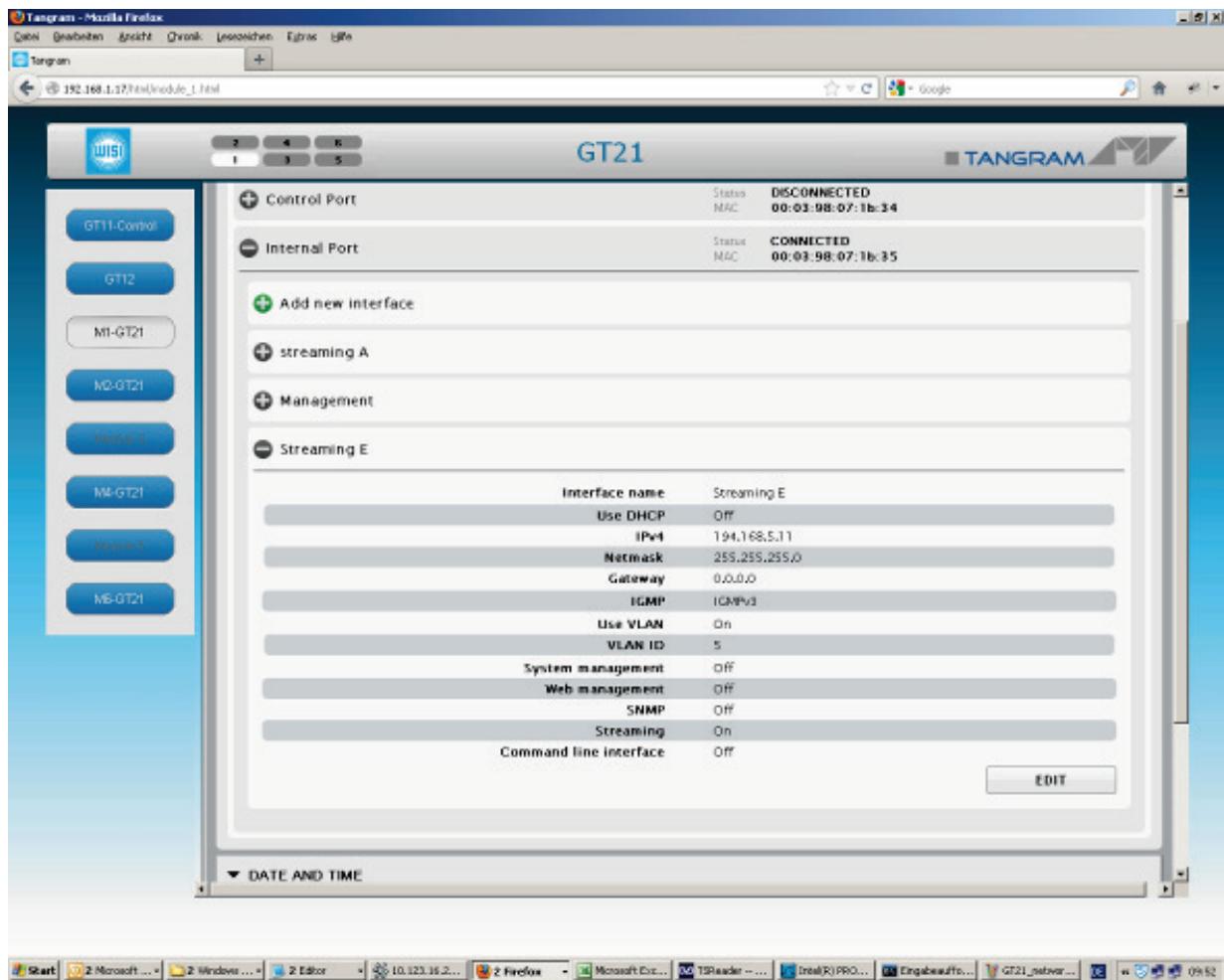
IGMP & Redundant Inputs

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 search 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																						
<table><tr><td>Name</td><td>OS DVB-C1</td></tr><tr><td>Protocol</td><td>N/A</td></tr><tr><td>Bitrate mode</td><td>CBR Automatic</td></tr><tr><td>Network interface</td><td>Streaming</td></tr><tr><td>Routing scheme</td><td>Multicast</td></tr><tr><td>Multicast address</td><td>239.255.175.99</td></tr><tr><td>Port</td><td>1234</td></tr><tr><td>Source address</td><td>0.0.0.0</td></tr><tr><td>Active configuration</td><td>Primary</td></tr><tr><td>Linger time</td><td>0</td></tr><tr><td>Latency</td><td>0</td></tr></table>			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
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																							
EDIT																								
+ Add alternative configuration																								
TWO																								
<table><tr><td>Priority</td><td>TWO</td></tr><tr><td>Network interface</td><td>Streaming</td></tr><tr><td>Routing scheme</td><td>Multicast</td></tr><tr><td>Multicast address</td><td>239.255.175.100</td></tr><tr><td>Port</td><td>1234</td></tr></table>			Priority	TWO	Network interface	Streaming	Routing scheme	Multicast	Multicast address	239.255.175.100	Port	1234												
Priority	TWO																							
Network interface	Streaming																							
Routing scheme	Multicast																							
Multicast address	239.255.175.100																							
Port	1234																							
REMOVE																								
SAVE 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.

Service	Channel	Frequency	Type	Status	Decoder running
hr-iINFO FM	Channel	100 MHz	MPEG1		
SWR Fernsehen BW FM	Channel	101 MHz	MPEG1		
1LIVE diggi FM	Channel	99.2 MHz	MPEG1		
YOU FM FM	Channel	100.3 MHz	MPEG1		

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.

NAME	TYPE
Herbrid 1022SH	Twcc

NAME	SID
AHE-E-BALT-TV	4875
MTA INTL	4884

PID	TYPE	LANGUAGES
1004	eng	
1104	eng	
1204	eng	
1304	eng	
1404	fra	
1504	deu	
1604	spa	
1704	ben	

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.



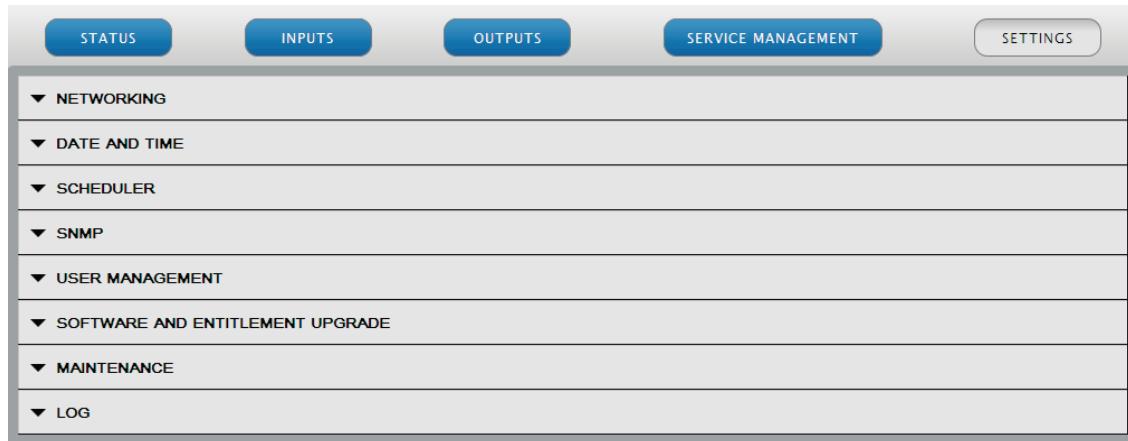
Service IDs shown in the Module SERVICE MANAGEMENT

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.

Networking	
The available ethernet ports on your device are listed below. For each ethernet port you can define and manage its interfaces for communicating with that port.	
Primary DNS	172.17.2.60
Secondary DNS	0.0.0.0
Control Port	
Status	DISCONNECTED
MAC	00:03:98:07:15:56
Internal Port	
Status	CONNECTED
MAC	00:03:98:07:15:57
Add new interface	
Streaming	
Interface name	Streaming
Use DHCP	Off
IPv4	192.168.2.12
Netmask	255.255.255.0
Gateway	192.168.2.1
IGMP	IGMPv2
Use VLAN	On
VLAN ID	2
System management	On
Web management	On
SNMP	On
Streaming	On
Command line interface	On

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 loose connection to the module

6. Click SAVE

Internal Port		Status	CONNECTED
		MAC	00:03:98:07:1f:98
+ Add new interface			
Streaming			
Interface name	Streaming Interface		
Use DHCP	ON <input checked="" type="checkbox"/>	OFF <input type="checkbox"/>	
IPv4	192.168.2.20		
Netmask	255.255.255.0		
Gateway	0.0.0.0		
Use VLAN	ON <input checked="" type="checkbox"/>	OFF <input type="checkbox"/>	
VLAN ID	2		
System management	ON <input checked="" type="checkbox"/>	OFF <input type="checkbox"/>	
Web management	ON <input checked="" type="checkbox"/>	OFF <input type="checkbox"/>	
SNMP	ON <input checked="" type="checkbox"/>	OFF <input type="checkbox"/>	
Streaming	ON <input checked="" type="checkbox"/>	OFF <input type="checkbox"/>	
Command line interface	ON <input checked="" type="checkbox"/>	OFF <input type="checkbox"/>	
REMOVE	SAVE		CANCEL
Management			



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' configuration page. At the top, there are tabs for STATUS, INPUTS, OUTPUTS, SERVICE MANAGEMENT, and SETTINGS. The SETTINGS tab is active. Below the tabs, there are sections for NETWORKING and DATE AND TIME. The DATE AND TIME section contains 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 an 'Adjust automatically for daylight saving time' toggle switch (ON). An NTP server field contains the IP address 172.17.2.60. A note says 'Separate addresses by adding a comma (",") after each address.' At the bottom are 'SAVE' and 'CANCEL' buttons. Below this, a 'Time sources' table lists two entries: 'NTP' (used, enabled) and 'OS DVB-C1' (not used, disabled).

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

Example of a Date & time setting using a NTP server



Managing the Tangram modules

3.14.3 Time scheduling of Output Channels

Click on the Module SETTINGS tab and choose the SCHEDULER

Existing tasks are shown and new ones can be added:

The screenshot shows the 'SETTINGS' tab selected in the top navigation bar. Under the 'SCHEDULER' section, there is a 'Schedules' heading with a note: 'Adding a task will make the lua script provided to trigger once a day at the given time.' A button labeled '+ Add new task' is visible. The sidebar on the left lists other configuration sections: NETWORKING, DATE AND TIME, SCHEDULER, SNMP, SOFTWARE AND ENTITLEMENT UPGRADE, MAINTENANCE, and LOG.

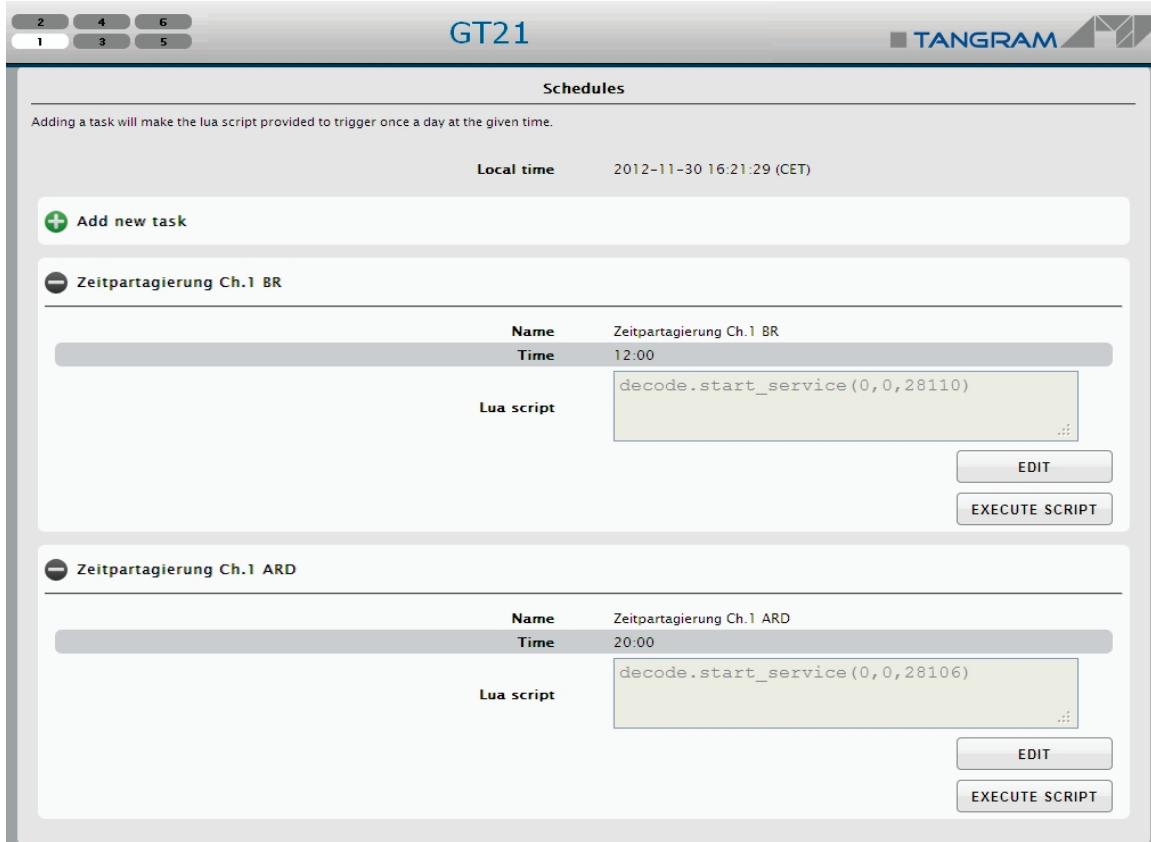
Check first, that the time is set correctly (-> Settings: Date & Time) on the module and choose a Name for the scheduling action to be programmed:

The screenshot shows the 'SETTINGS' tab selected. In the 'SCHEDULER' section, a new task is being configured. The 'Name' field contains 'Zeitpartagierung Ch.1'. The 'Time' field is set to '12:00'. Below these fields is a 'Lua script' input area, which is currently empty. At the bottom right are 'SAVE' and 'CANCEL' buttons.

Managing the Tangram modules

3.14.3 Time scheduling (cont.)

After choosing the Time of day and the action to be executed click the “SAVE” button to apply
 (Example picture is GT21 but works for GT22 identical:



Time schedules are programmed via “Lua” Script commands:

The script command consists of:

decode.start_service(<decode_instance>,<input_instance>,<service_id>)

where the variables stand for:

<decode_instance> = Instance of Decoder, starting with 0 (= "Instance One")

<input_instance> = Inputstream no, starting with 0, -> see 3.13.3

<service_id> = Service-ID (SID) of the program

The command can be tested & executed with "EXECUTE SCRIPT" button!



Managing the Tangram modules

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 sended 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.

The screenshot shows the WISI Tangram configuration interface with the following details:

- Top Navigation:** STATUS, INPUTS, OUTPUTS, SERVICE MANAGEMENT, SETTINGS.
- Left Sidebar:** ▼ NETWORKING, ▼ DATE AND TIME, ▼ SCHEDULER, ▲ SNMP (highlighted).
- SNMP Tab Content:**

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

EDIT button.
- Bottom Sidebar:** ▼ USER MANAGEMENT, ▼ SOFTWARE AND ENTITLEMENT UPGRADE, ▼ MAINTENANCE, ▼ LOG.

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

2.4.4.1 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 lose your user accounts and passwords! Factory reset will be needed to recover!

The screenshot shows the 'User management' page with the following details:

- User authentication:** A toggle switch is set to **ON**.
- Add new user:** A form with fields:
 - User name:** Administrator
 - Password:** ****
 - Password again:** ****
- Buttons:** **SAVE** (yellow) and **CANCEL** (grey).
- Monitor:** Another user entry with:
 - User name:** Monitor
 - Password:** *****
 - Password again:** *****
- Buttons:** **EDIT** (grey).

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.

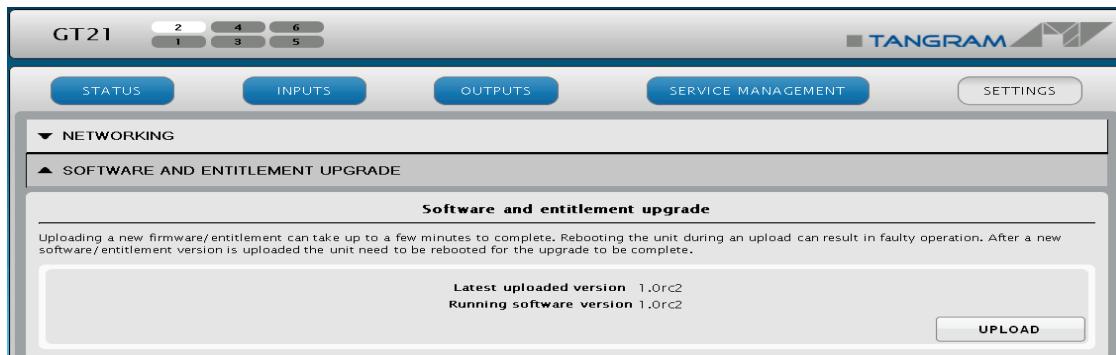


Uploading software options / Entitlement

- 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 wisiconnect.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:

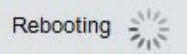
The screenshot shows the 'MAINTENANCE' section of the web interface. It includes sections for 'REBOOT', 'RESCUE MODE', 'FACTORY RESET', and 'Backup and Restore'. Each section contains descriptive text and a corresponding button.

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.

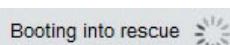


After rebooting, the web GUI will go automatically to the **STATUS** tab.

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.

The screenshot shows the 'RESCUE MODE' screen. It features tabs for 'System', 'Info/Status', and 'Firmware upload'. Below the tabs, there are fields for 'Serial number' (0430011081500005) and 'Boot loader' (a2b004300000306). At the bottom, there are 'Reboot' and 'Factory Reset' buttons. A warning message states: "Warning! Clicking 'Factory Reset' will clear all settings of the and require you to set up the IP address again and re".

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 your 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.

Before you Click on FACTORY RESET please always do a backup of your last configuration as described below ! It may help you to save time & effort to get back to your original setup.



Factory reset from the rescue interface

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

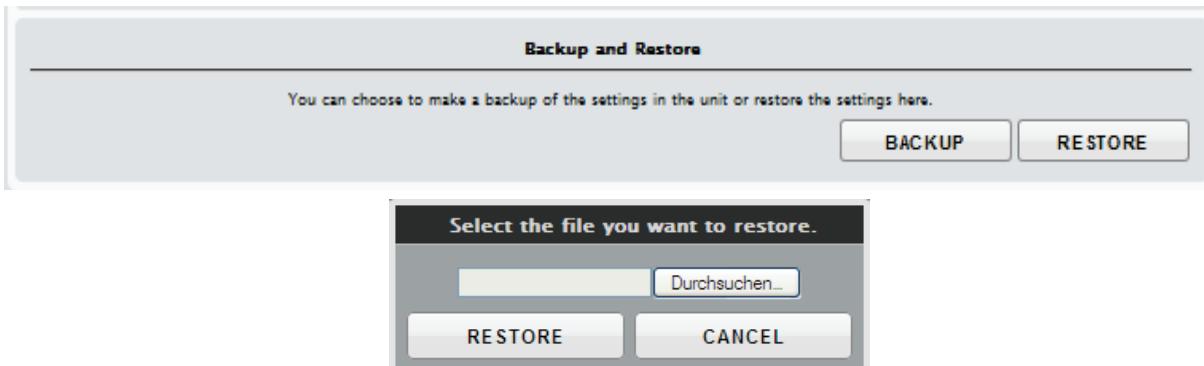
WARNING! Factory reset from the rescue mode will remove all settings, remove the entitlement file enabling the SW options, and will reset the IP address to the default.



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.

GT22 **TANGRAM**

STATUS **INPUTS** **OUTPUTS** **SERVICE MANAGEMENT** **SETTINGS**

MODULE IDENTIFICATION

Serial	0520112072500001
Hardware revision	1000
Name	FM
Location	NGN
Description	GT22C

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.

New revision GT22 master board will have an further green internal 'heartbeat' LED3 on board. The firmware uses this LED to indicate it's heartbeat.

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	LED3	Description
Off	Off	Off	No power supply
Yellow	Yellow	Off	Board has power, no software running (e.g. empty flash)
Red	Red	Off	Bootloader started or rescue bootloader start complete
Off	Red	Off	Bootloader failed to boot into firmware/rescue bootloader, board stopped
Red blinking	Red blinking	Off	Rescue bootloader started
Green blinking	Red blinking	Off	Rescue bootloader FPGA booting
Red flashing	Red	Off	Rescue bootloader secret function: Reset board
Green flashing	Red	Off	Rescue bootloader secret function: Clean config
Yellow blinking	Yellow blinking	Off	Firmware started
Green blinking	Yellow blinking	Off	Firmware FPGA booting
Alternate	Off	Off	Automatic update of slave board CPU1 active
Off	Alternate	Off	Automatic update of slave board CPU2 active
Green	Green	Green blinking	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 WISI portal.



Operating instructions



WISI Communications GmbH & Co. KG
Empfangs- und Verteiltechnik
Wilhelm-Sihl-Straße 5-7
75223 Niefern-Oeschelbronn, Germany
Tel.: +49 7233 - 66-292, Fax: 66-320,
E-mail: info@wisi.de, <http://www.wisi.de>

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