

MAGIC DABMUX Go RF RM

DAB Multiplexer

Quick Guide

Version: 1.200 (30 October 2019)

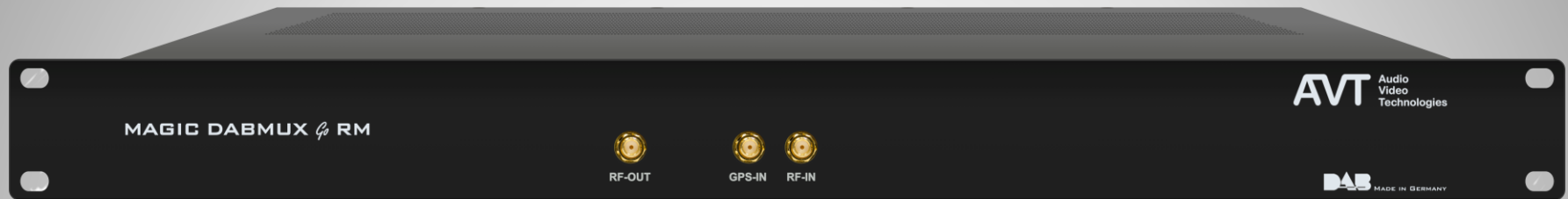
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- Overview
 - Hardware
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- Web Interface
 - Overview
 - General Configuration
 - Ensemble Configuration
 - Service Extraction
 - Maintenance
- Software Options
 - DABMUXplus SW Upgrade
 - Cable Upgrade
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- Support

Content

MAGIC DABMUX Go RF RM

Overview



- DAB/DAB+ Ensemble Multiplexer
 - DSP-based ensemble multiplexer
 - 19" x 1U system with integrated wide-range power supply (100 - 230V AC +/-10V AC)
 - RF output for the connection to an amplifier/antenna
 - RF input is not in operation
 - GPS input for the connection of a GPS antenna

Hardware - Front



- LAN interface

- connection to DAB audio encoders
- Connection to DAB ensemble MUX (EDI format)
- connection to DAB transmitters (EDI format)
- Web interface
- SNMP

- 4 x LEDs

- CLK: static red: when GPS or NTP signals faulty
green flashing: when NTP ok and GPS faulty
switched off: NTP and GPS are ok.

- INF: static orange: indicates an alarm without confirmation
flashing orange: indicates an existing alarm
switched off: no alarm
- TX: flashing yellow: indicates RF output signal or EDI output signal
switched off: indicates error
- RX: flashing yellow: indicates input data signals from the DAB Encoders or EDI signals from Ensemble MUX
switched off: indicates error

Hardware – Back (1)



- B1: Press at power on for factory reset
- B2: Press at power on for boot loader start
- RST: Reset of the system
- 12 V DC/15W for plug-in power supply

Hardware – Back (2)

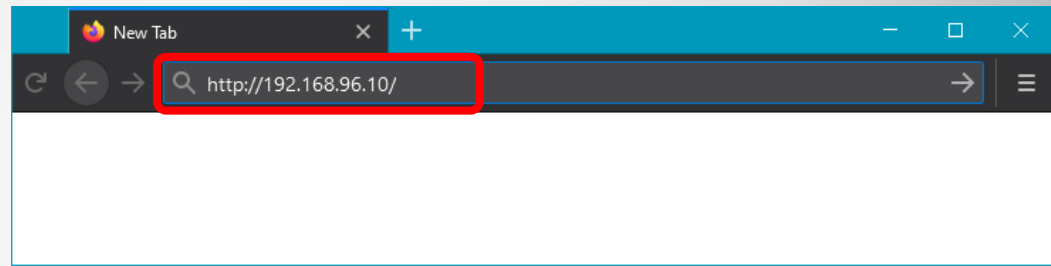
- DAB Ensemble Multiplexer
 - According to ETSI EN 300 401 Version 2.1.1
 - Manual or scheduled reconfiguration
 - NPAD
 - Creation of service information
- Input Protocols
 - AVTMUX with Secure Streaming
 - 2 x EDI (Sub Channel Extraction)
- Output Protocols
 - EDI (ETI)
- Audio Services
 - Max. 20 audio encoders can be connected
 - Data rates: 16-kbps up to 192-kbps
 - SBR, PS
- RF output
 - Modulated RF signal for the connection to a power amplifier
 - For one transmitter
 - Synchronisation via integrated GPS receiver
- Control software
 - Web interface

Features

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Web Interface

- Enter the IP address of the *MAGIC DABMUX Go* in a modern Web Browser which supports HTML5.
- The default IP address of the device is 192.168.96.102.



Web Interface

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Overview

- The DASHBOARD shows the ON AIR Multiplex.
- It provides an overview of scheduled reconfigurations, the ensemble on air and its services.
- Use the Expand Icons (1) to show or hide details.
- Use the Edit Icons (2) to jump to the respective configuration page.

The screenshot displays the 'MAGIC DABMUX Go (172.20.66.40)' interface. At the top, it shows the date and time '30.10.2019, 11:15:18' and a 'Status: OK' indicator. The main area is divided into a timeline at the top showing 'AVT Ensemble' blocks for November and December 2019. Below this, the 'AVT Ensemble' details are shown, including 'D001' with '336 CUs (39%)'. The interface lists several services: 'AVT Radio 1' (Buffer: 52%), 'AVT Radio 2' (D002 Info), 'AVT Radio 3' (D003 Pop), 'AVT Radio 4' (D004 Classics), and 'Service Logos' (E0D0D000). Red boxes and numbers highlight specific icons: a red box with '1' points to an expand icon on the 'AVT Radio 1' service, and a red box with '2' points to an edit icon on the 'AVT Ensemble' header.

Dashboard

- The INPUT page shows the ON AIR Multiplex.
- It provides an overview of all inputs used in the ensemble currently ON AIR.
- Use the Expand Icons (1) to show or hide details.
- Use the Edit Icons (2) to jump to the respective configuration page.

MAGIC DABMUX Go (172.20.66.40) 31.10.2019, 10:20:47

Inputs

Incoming data connections

Used in the On Air Ensemble

Radio	EDI	Subchannel ID	Control	Buffer
AVT Radio 1	UDP unicast:50101	0	UDP 172.20.67.100:6101	72 %
AVT Radio 2	UDP unicast:50101	1	UDP 172.20.67.100:6102	72 %
AVT Radio 3	UDP unicast:50101	2	UDP 172.20.67.100:6103	72 %
AVT Radio 4	UDP unicast:50101	3	UDP 172.20.67.100:6104	72 %

SPI Service Logos

AVT 1 2.5 s

Statistics	Value
Number of Transmitted Files	25298
Last Transmission Time	2.5 s (e0_d001_112x32_1.png)
Transmission Times: Avg./Min./Max.	1.3 s / 0.0 s / 7.2 s
Files In Carousel	4
Carousel Transmission Time	14.5 s

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Inputs

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General Configuration

- The device has one physical LAN interface and provides three logical network interfaces.
- Each network interface is defined by:
 - IP ADDRESS
 - SUBNET MASK
 - GATEWAY
 - VLAN ID
- Any changes to the network configuration take effect after restarting the device.

The screenshot shows the 'System Settings' page for 'MAGIC DABMUX Go (172.20.66.40)' on '30.10.2019, 09:28:52'. The 'Network' settings are displayed, showing three logical networks: Network 1 (Management Network), Network 2, and Network 3. The configuration table is as follows:

	Network 1	Network 2	Network 3
IP Address	172.20.66.40	10.0.80.112	10.1.5.14
Subnet Mask	255.255.0.0	255.255.254.0	255.255.255.224
Gateway	172.20.1.1	10.0.80.1	10.1.5.1
VLAN Id	0	36	1005

Important notice: The device needs to be restarted to have the Network changes actually effective.

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Network

- **CLOCK SOURCE**

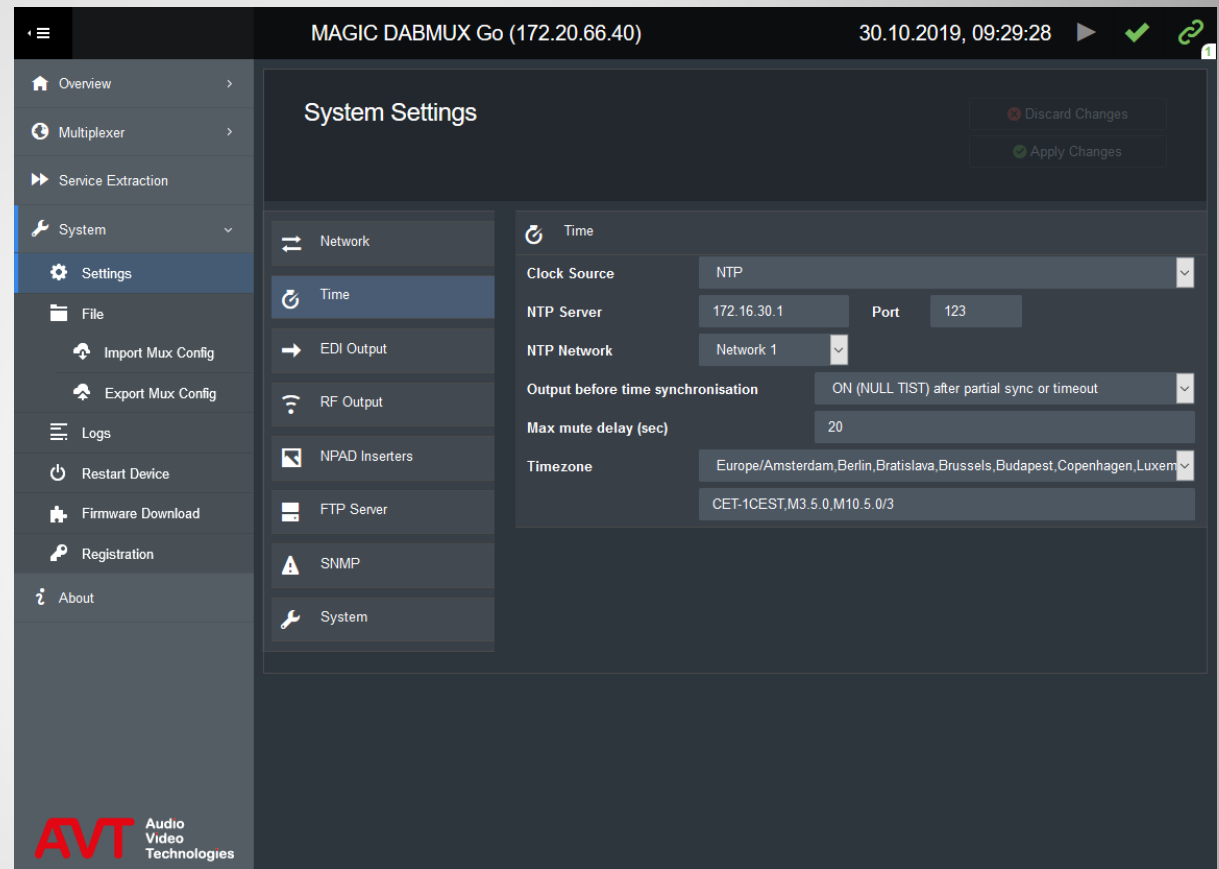
- NTP
- GPS

- If NTP is selected:
NTP server IP address
and Port

- **OUTPUT BEFORE TIME SYNCHRONISATION**
defines the signal being
output if the system clock
is out of sync to the clock
source:

- OFF/MUTE
- OFF / MUTE UNTIL
TIMEOUT
- ON (NULL TIST)

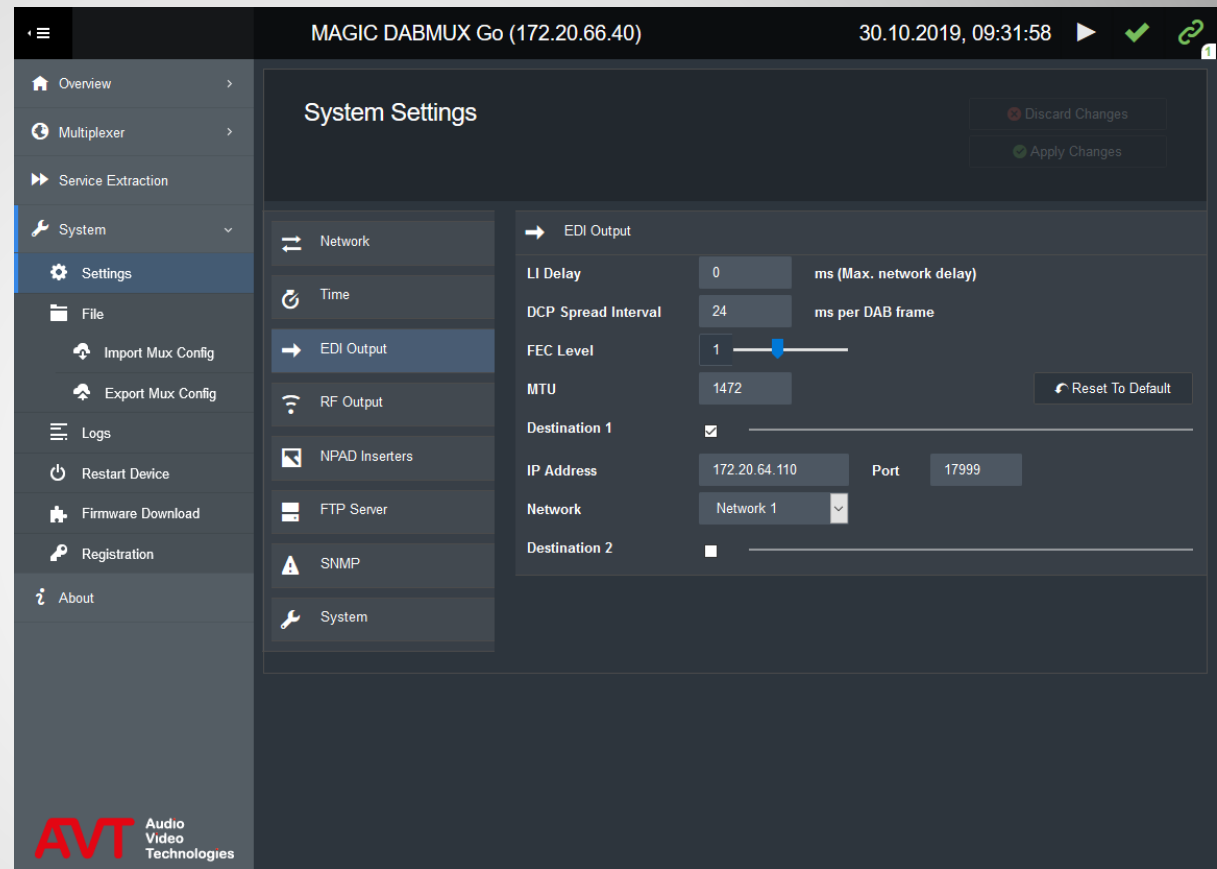
- **TIME ZONE**



Time

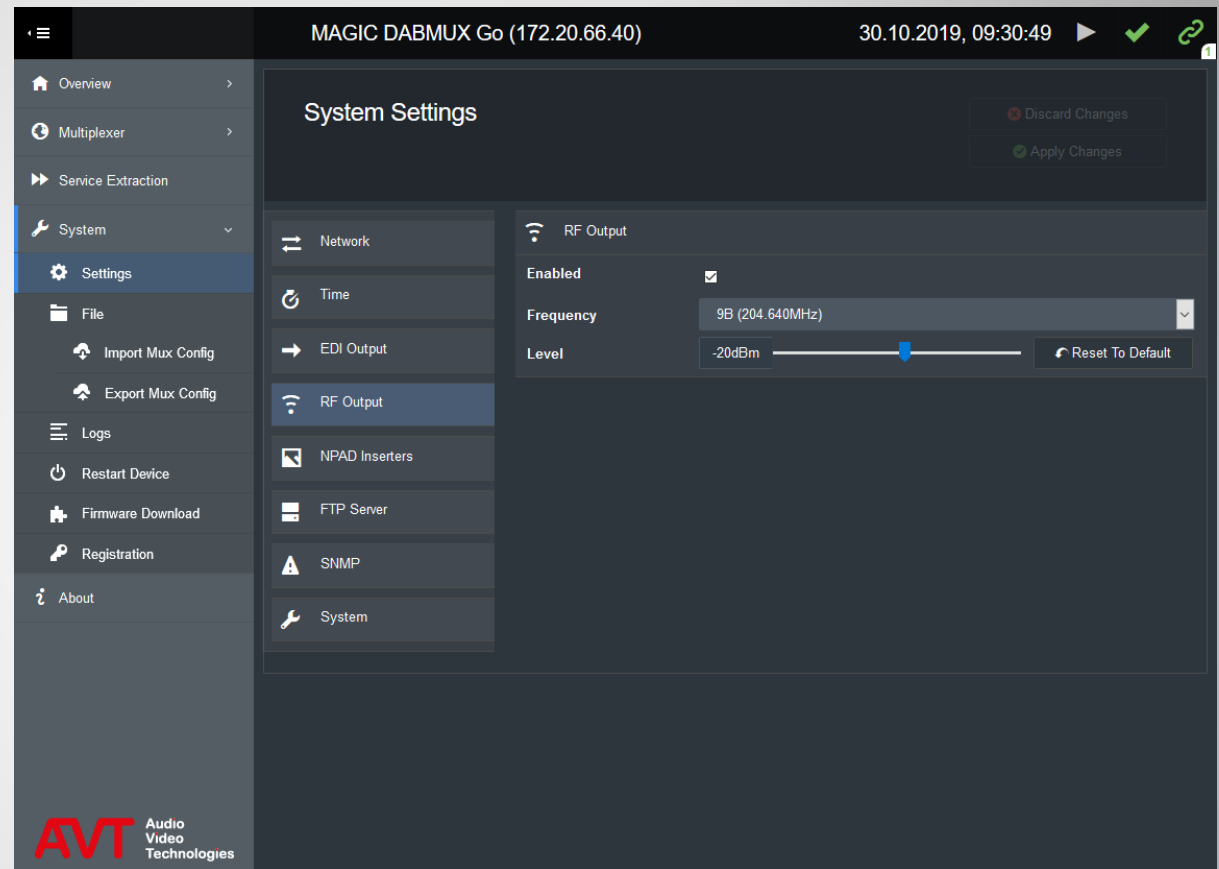
- EDI Output

- Define up to two destinations.
- Enter IP address and Port of each destination (multicast or unicast IP address)
- EDI parameter



EDI Output

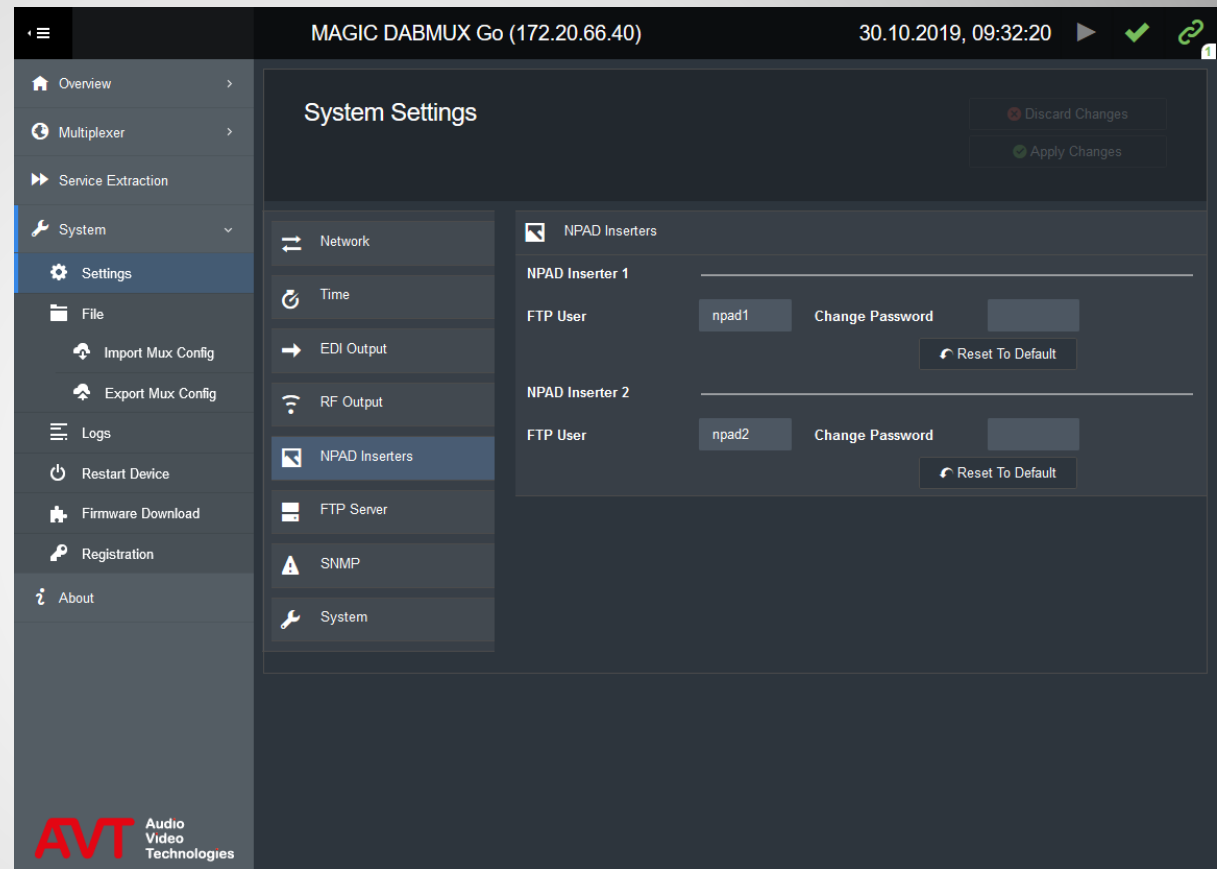
- RF Output
 - Frequency and level



RF Output

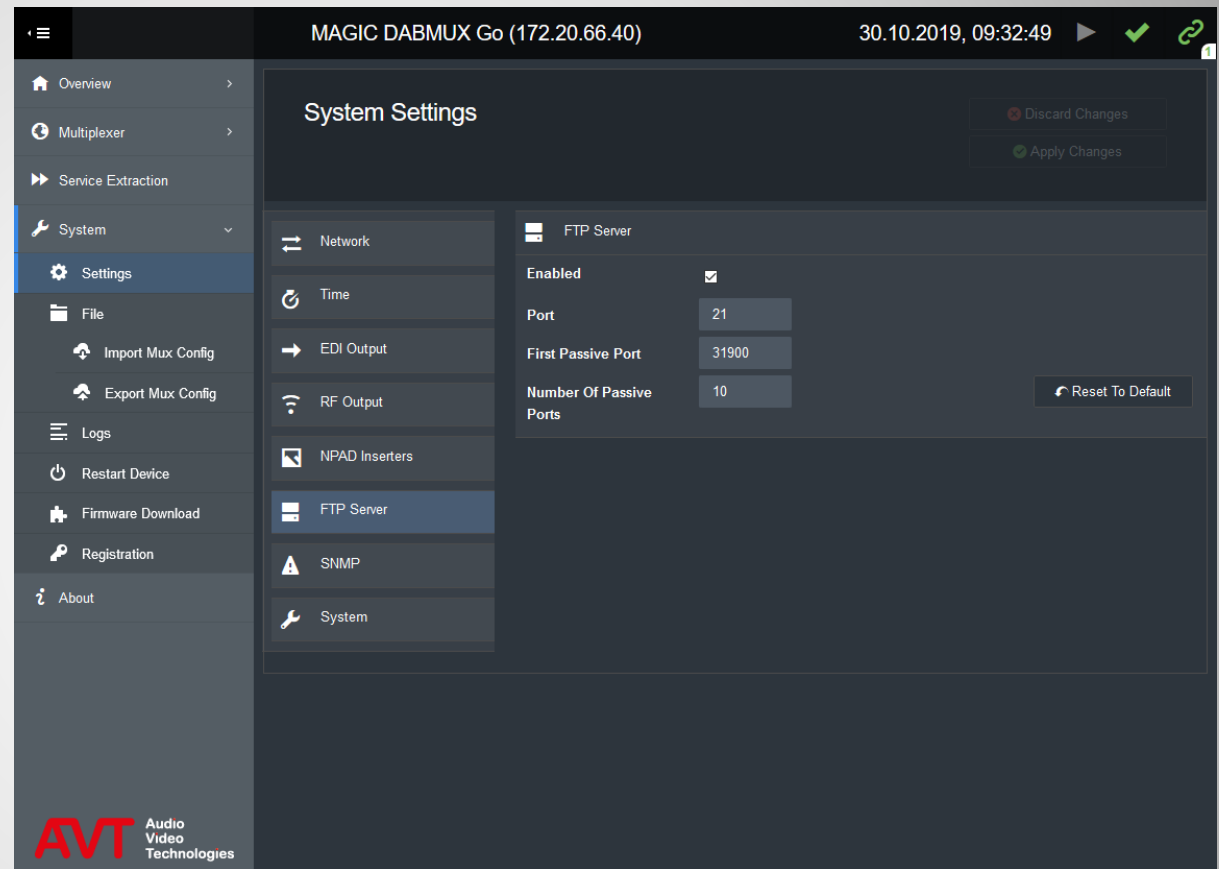
- NPAD Inserters

- Configure the FTP access credentials to the *DABMUX Go's* FTP server.



NPAD Inserters

- FTP Server
 - Setup the *DABMUX Go*'s internal FTP server.

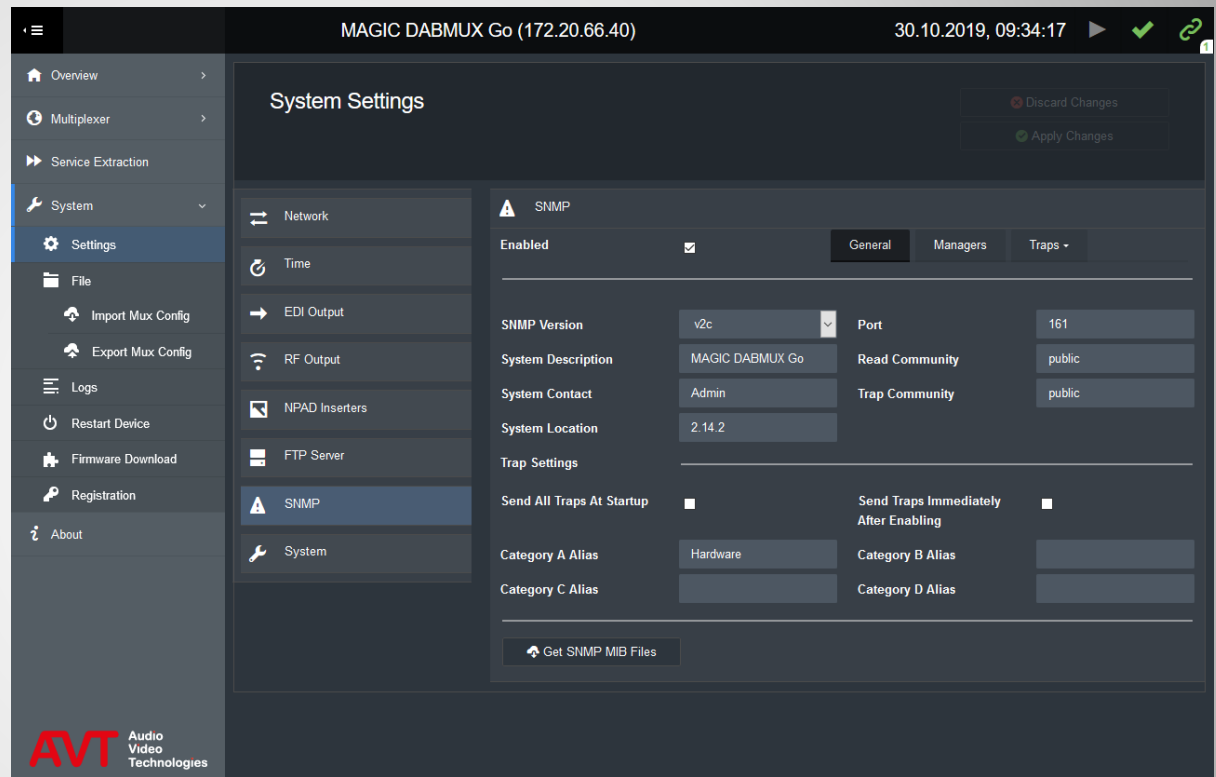


FTP Server

- **SNMP**

- **GENERAL:** Setup the SNMP agent.
- **MANAGERS:** Enter up to 4 Network Management Systems.
- **TRAPS:** Enable Traps for each event individually and group events into categories.

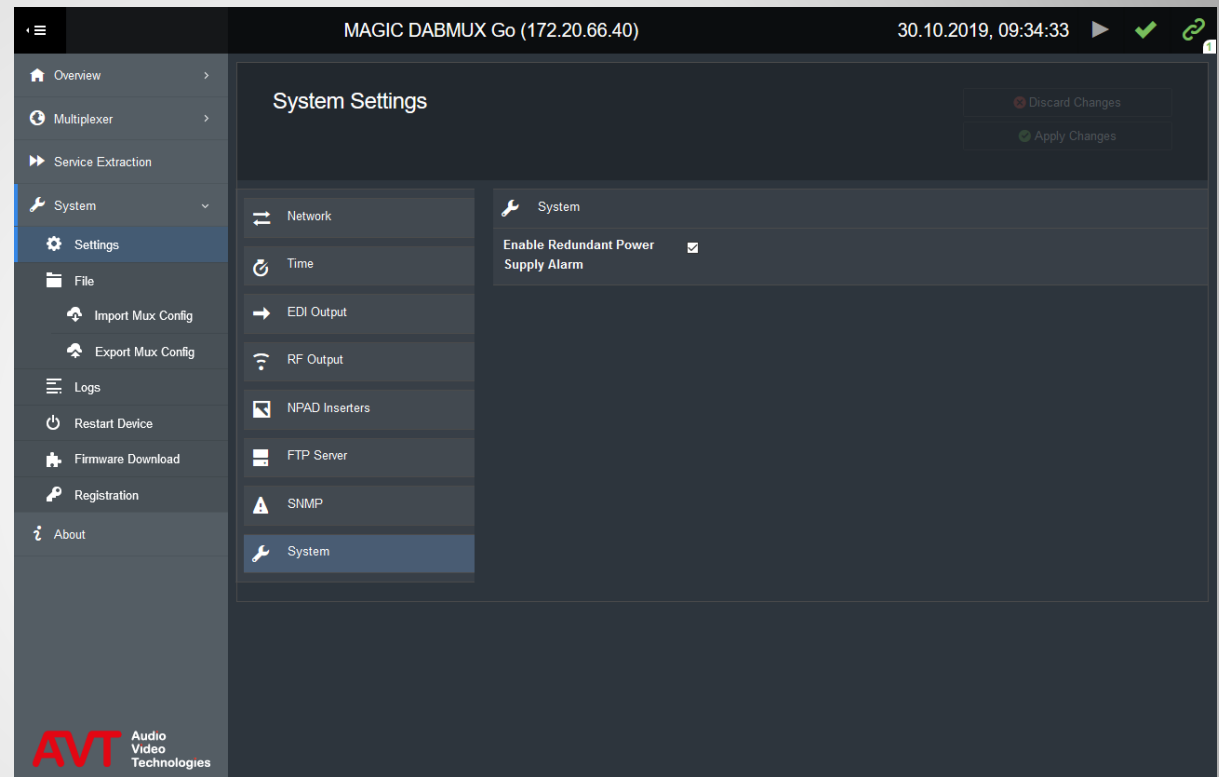
- Download the MIB files via the **GET SNMP MIB FILES** button at the bottom.



SNMP

- SYSTEM

- Enable redundant power supply alarm.



System

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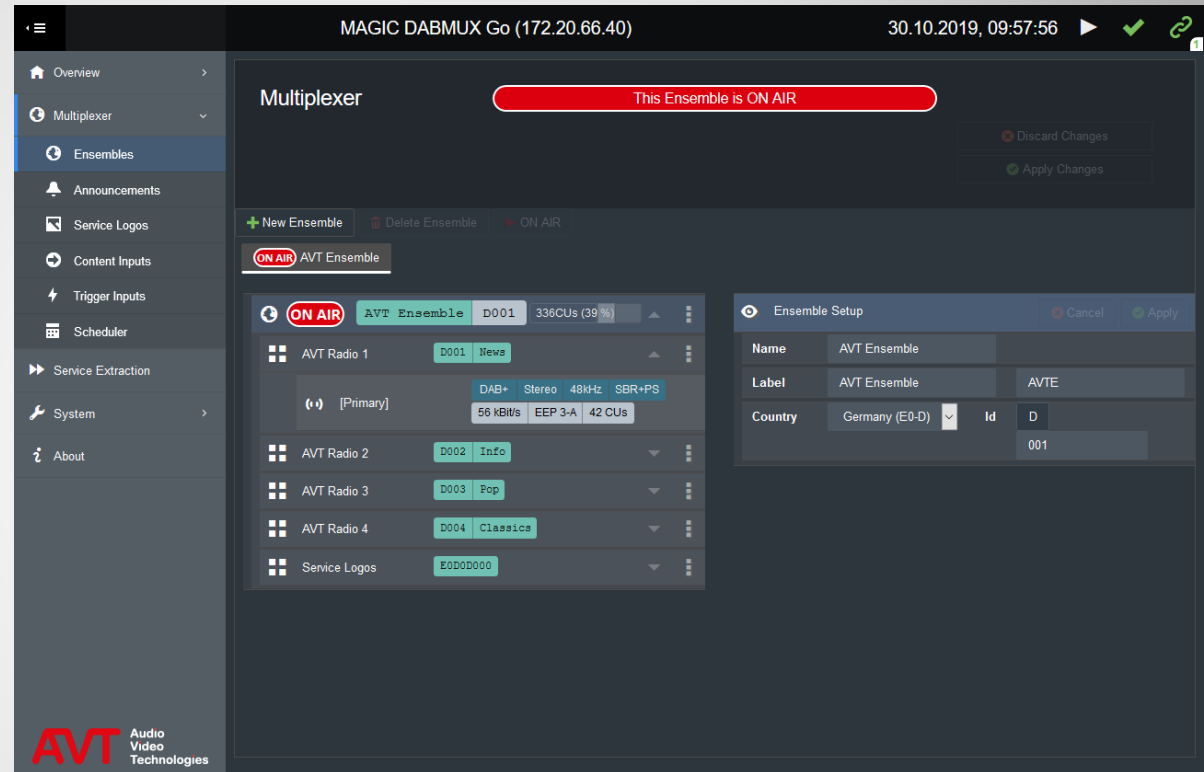
Ensemble Configuration

- Configure ensembles in the ENSEMBLES window of the MULTIPLEXER menu.

- NEW ENSEMBLE: Add an ensemble.
- DELETE ENSEMBLE: Delete the selected ensemble.
- ON AIR: Activate the selected ensemble.

- Ensemble Setup

- Name: name of the ensemble
- Long Label: Full name of the ensemble
- Short Label: Short name of the ensemble
- Country: Country where the multiplexer is installed
- Id: ensemble Id



Ensembles

- Service Setup

- Long Label:
Name of the program
- Short Label:
Short name of the program
- Country:
Country where the multiplexer is installed
- Id
Service Id
- PTy
Program type

MAGIC DABMUX Go (172.20.66.40) 30.10.2019, 12:54:58

Multiplexer **This Service is ON AIR**

Discard Changes
Apply Changes

+ New Ensemble Delete Ensemble ON AIR

ON AIR AVT Ensemble New Ensemble

ON AIR AVT Ensemble D001 338CUs (39%)

AVT Radio 1 D001 News
[Primary] DAB+ Stereo 48kHz SBR+PS
56 kBits EEP 3-A 42 CUs

AVT Radio 2 D002 Info

AVT Radio 3 D003 Pop

AVT Radio 4 D004 Classics

Service Logos E0D0D00

Service Setup Cancel Apply

Label AVT Radio 1 AVTR1

Country Germany (E0-D) Id D
001

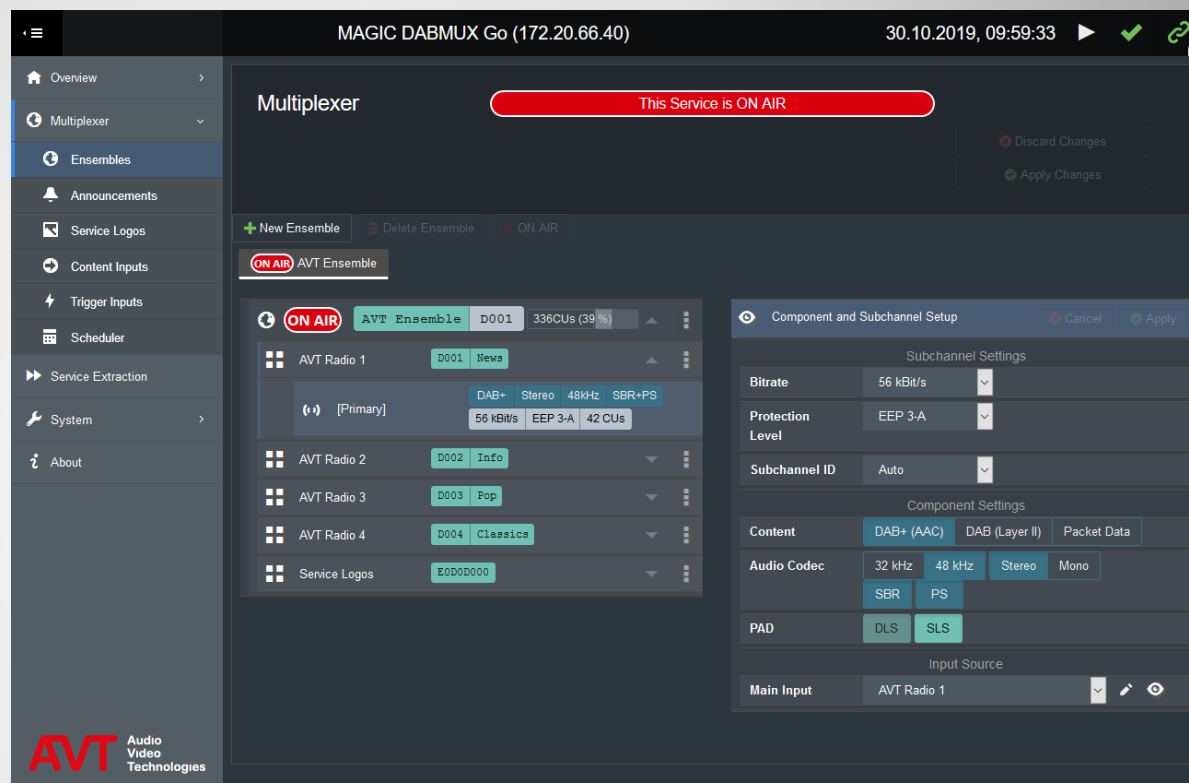
PTy News

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Ensemble - Services

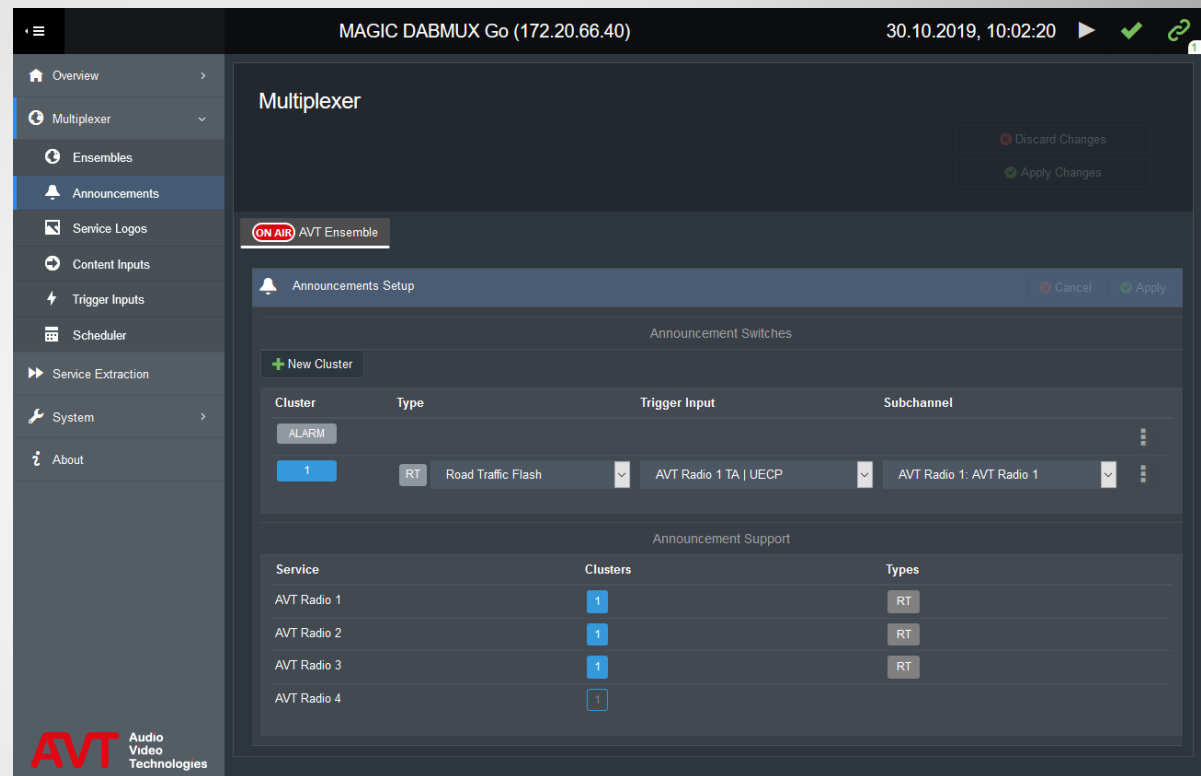
- Component and Subchannel Setup

- Content:
 - DAB+ (AAC)
 - DAB (Layer II)
 - Packet Data
- Audio Codec:
 - Sampling frequency
 - Stereo or Mono
 - SBR or PS (DAB+ only)
- PAD
 - DLS: Dynamic Label
 - SLS: Slideshow
- Bitrate/ Port:
 - Bitrate of the audio codec incl. PAD
 - Protection level
 - Subchannel ID
- Main Input:
 - source for the main input



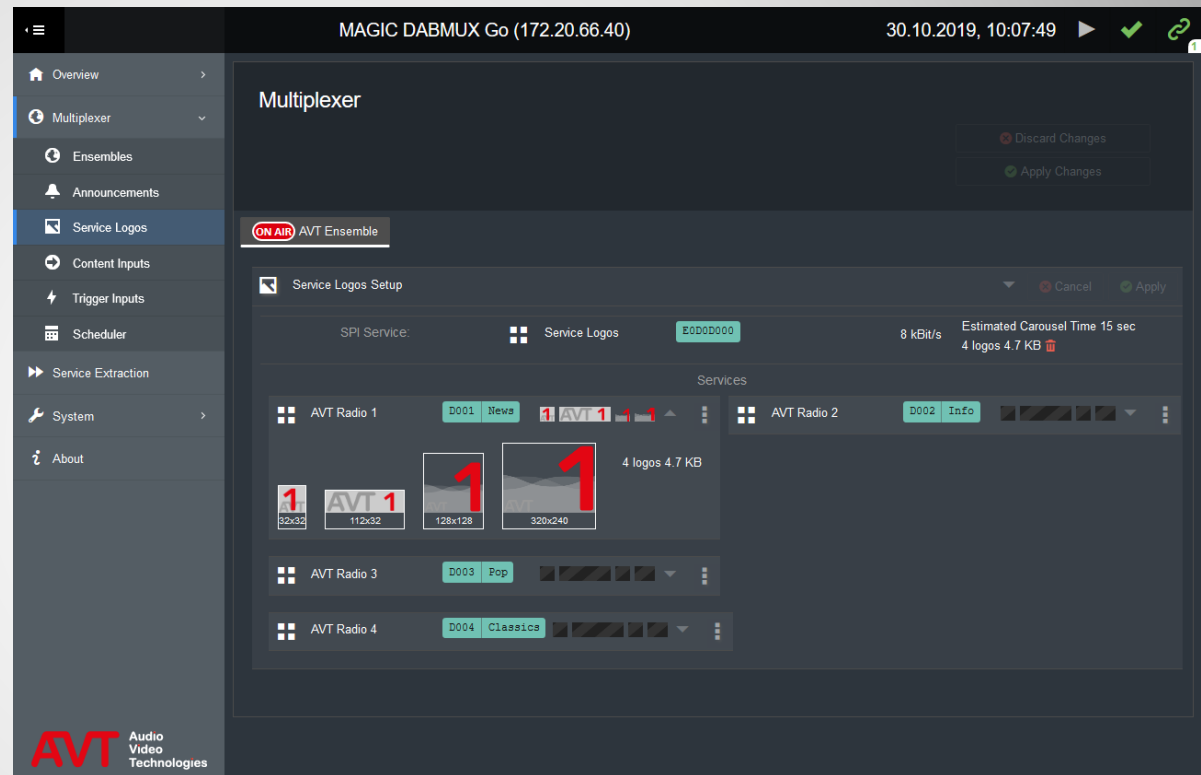
Ensemble - Components and Subchannels

- **NEW CLUSTER:**
Create a new cluster
- **ADD A SWITCH** by clicking the three dots at the right.
- A switch consists of
 - TYPE
 - TRIGGER INPUT
 - SUBCHANNEL
- **ANNOUNCEMENT SUPPORT:** Assign announcements to services.



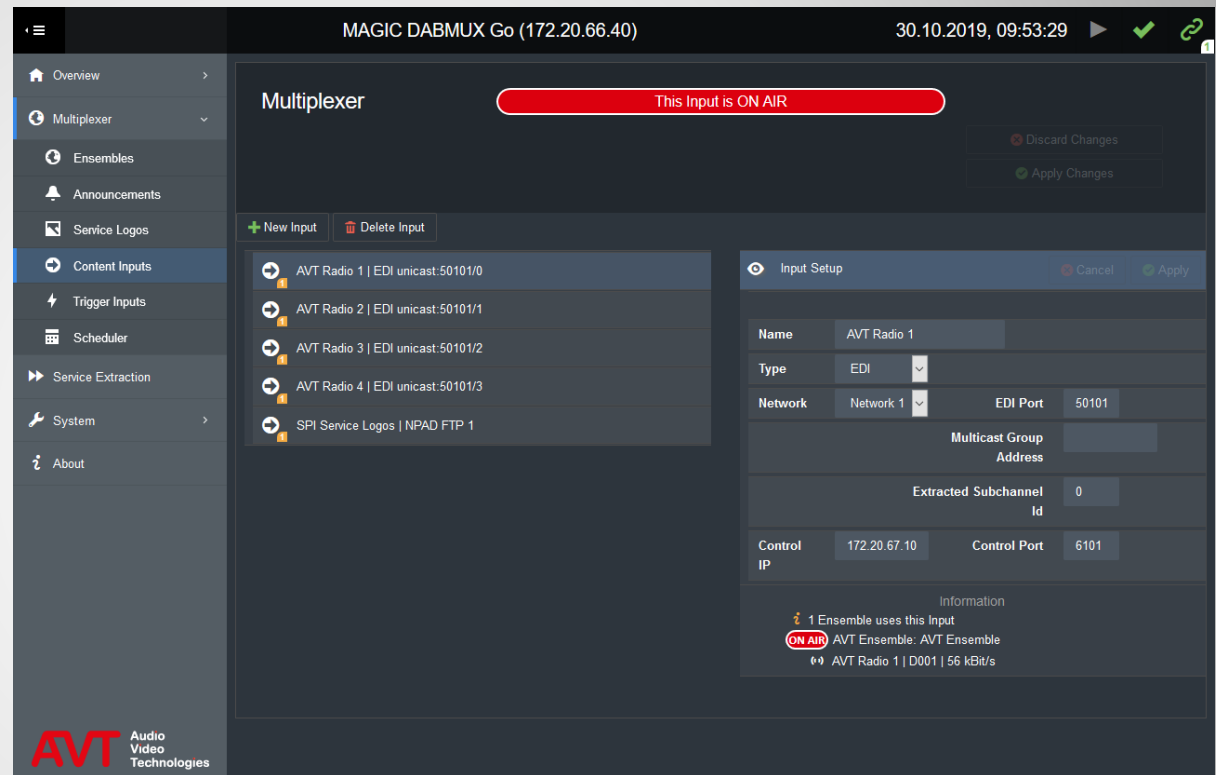
Announcements

- Logo sizes defined by the DAB standard are:
 - 32x32 pixels
 - 112x32 pixels
 - 128x128 pixels
 - 320x240 pixels
- Files in PNG format.
- Add logos via the three dot menu on the right of each service or drag and drop the files all at once on the service.



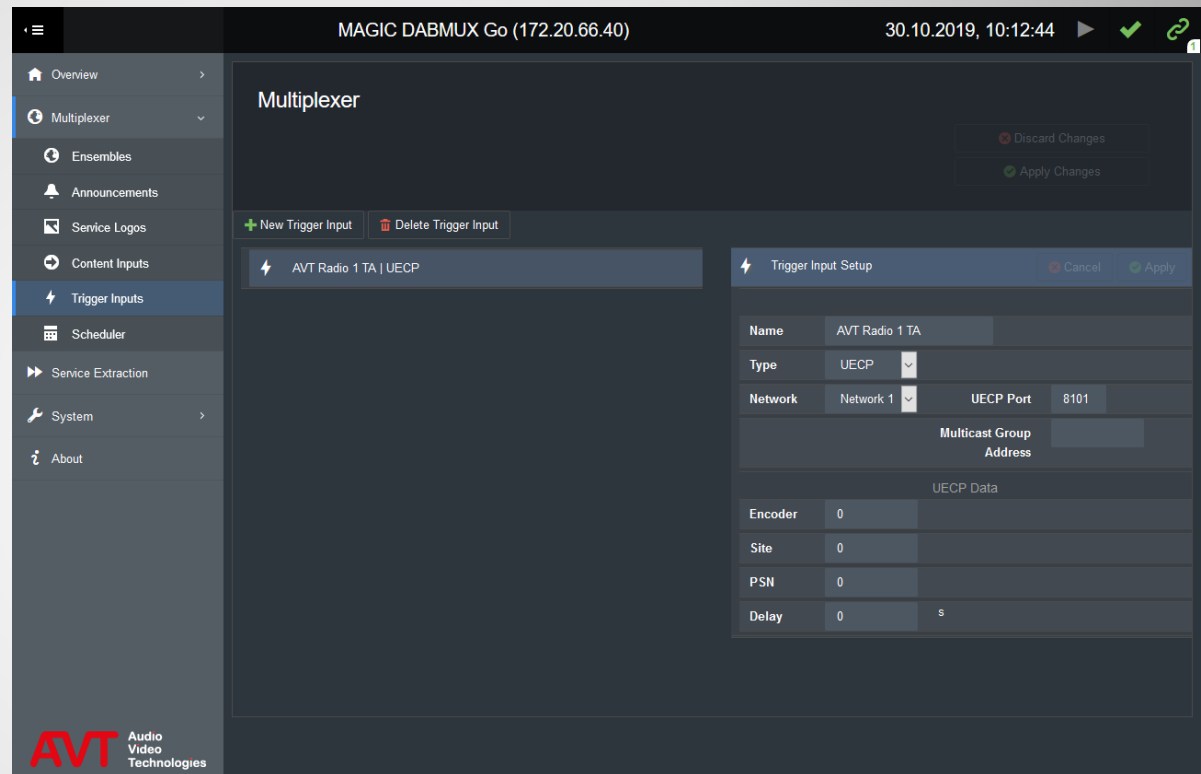
Service Logos

- NEW INPUT
- INPUT SETUP
 - NAME: Name of the audio codec
 - TYPE: Protocol of encoder and multiplexer
 - EDI
 - AVTMUX
 - CONTROL IP: IP address of the encoder.
 - AUDIO PORT: Audio port of the encoder.
 - CONTROL PORT: Control port of the encoder.
 - MULTICAST GROUP ADDRESS: optional.



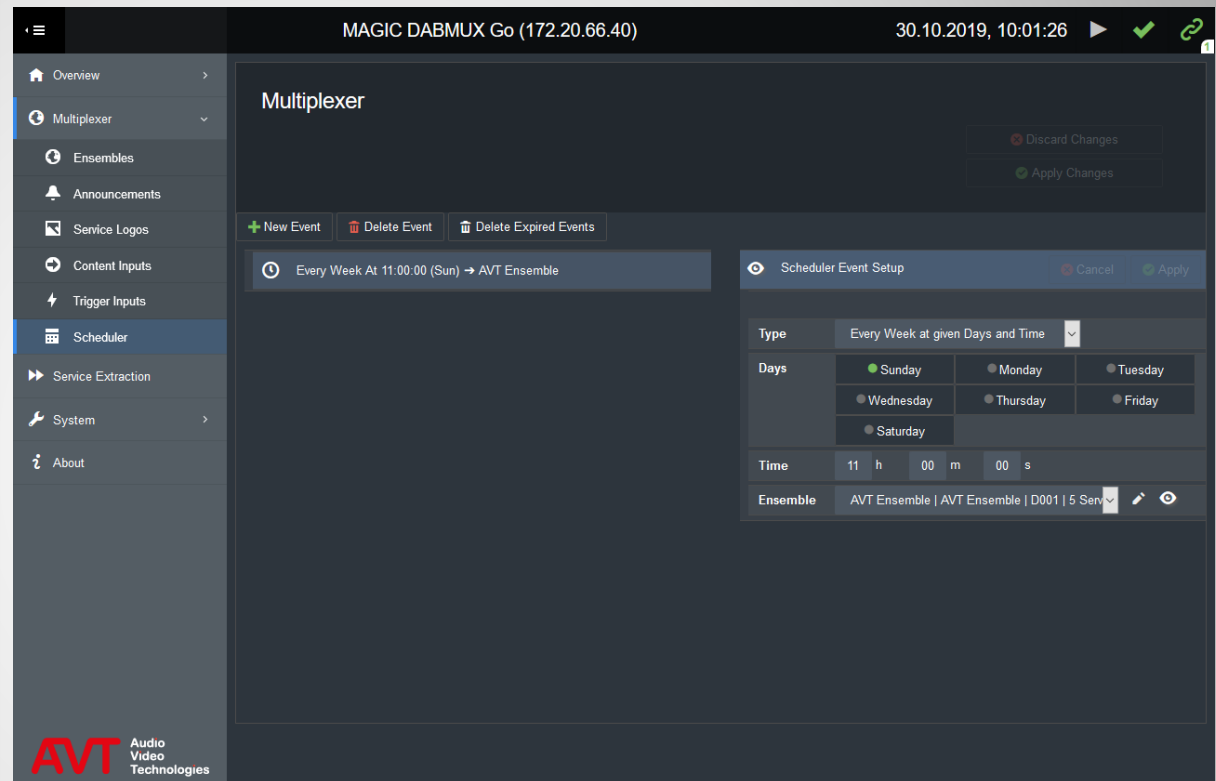
Content Inputs

- NEW TRIGGER INPUT
- TRIGGER INPUT SETUP
 - NAME: Name of the trigger.
 - TYPE: Protocol
 - UECP
 - NETWORK: Network interface for UECP.
 - UECP PORT
 - MULTICAST GROUP ADDRESS: optional.
 - UECP DATA:
 - ENCODER
 - SITE
 - PSN
 - DELAY



Trigger Inputs

- NEW EVENT
- SCHEDULER EVENT SETUP:
 - TYPE
 - At a given Date and Time
 - Every Month at given Days and Time
 - Every Week at given Days and Time
 - Every Day at a given Time
 - Every Hour at a given Time
 - Never
 - DATE: Day/Month/Year
 - TIME: h/m/s
 - ENSEMBLE: Name of the ensemble to activate.



Scheduler

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Service Extraction

- Click the EDIT icon to analyse an input stream.
- Enter the stream details in the INPUT TO ANALYSE window.
- After a few seconds the streams content is displayed as a diagram in the lower part of the screen.
- Click IMPORT ENSEMBLE to adopt the whole input stream as a new ensemble.

The screenshot displays the AVT Service Extraction interface. At the top, the title bar reads 'MAGIC DABMUX Go (172.20.66.40)'. The main window is titled 'Service Extraction' and shows an 'Analysed Input' of 'EDI unicast:50101'. An 'Input to Analyse' dialog box is open, showing 'Type' as 'EDI', 'Network' as 'Network 1', and 'EDI Port' as '50101'. A red arrow points to the 'EDIT' icon (a pencil) in the 'Analysed Input' row. Below the dialog, the 'Extracted' section shows the ensemble 'MAGIC AE4 DAB+ D001' with '4 Services, 4 Subchannels'. An 'Import Ensemble' button is visible. The lower part of the screen features a hierarchical diagram of the ensemble structure:

- Ensemble: MAGIC AE4 DAB+ D001 (4 Services | 384 Cls)
 - Service Channel 1: D001 (128 kBit/s)
 - Component
 - Subchannel: ID Audio | 128 kBit/s | EEP 3-A | 96 Cls | DAB+
 - Input: EDI unicast:50101/0
 - Service Channel 2: D002 (128 kBit/s)
 - Component
 - Subchannel: ID Audio | 128 kBit/s | EEP 3-A | 96 Cls | DAB+
 - Input: EDI unicast:50101/1
 - Service Channel 3: D003 (128 kBit/s)
 - Component
 - Subchannel: ID Audio | 128 kBit/s | EEP 3-A | 96 Cls | DAB+
 - Input: EDI unicast:50101/2
 - Service Channel 4: D004 (128 kBit/s)
 - Component
 - Subchannel: ID Audio | 128 kBit/s | EEP 3-A | 96 Cls | DAB+
 - Input: EDI unicast:50101/3

The AVT Audio Video Technologies logo is in the bottom left corner, and a 'Fit' button is in the bottom right corner.

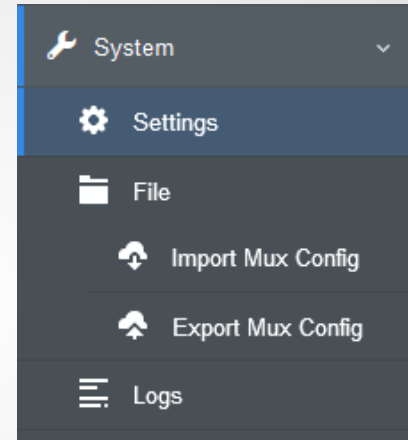
Service Extraction

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Maintenance

- FILE

- IMPORT MUX CONFIG:
Restore the ensemble configuration from an external file.
- EXPORT MUX CONFIG:
Backup the ensemble configuration to an external file.



Import / Export Mux Config

- LOGS: The device logs all events in an internal log file.
- Filter the view by Categories, a subchannel or event types.
- Export the log to an Excel file or the clipboard.
- Click REFRESH to update the view.
- Logs are lost when the device restarts or is switched off.

MAGIC DABMUX Go (172.20.66.40) 30.10.2019, 10:46:47

Logs

Start / End	Category	Event	Info
01/01/2010 01:00:00.411	System	Start	Software Version "1.800.2052"
14/10/2019 17:41:07.718	Application	Start	
14/10/2019 17:41:07.720	Application	Config	
14/10/2019 17:41:07.839	Rx Stream	No Content	UDP 239.0.67.40:26740
14/10/2019 17:41:08.630 (<1s)			
14/10/2019 17:41:07.839	Rx Stream	No Content	UDP 239.0.67.40:26740
14/10/2019 17:41:07.839	Rx Stream	No Content	UDP 239.0.67.40:26740
14/10/2019 17:41:07.839	Rx Stream	No Content	UDP 239.0.67.40:26740
14/10/2019 17:41:08.630 (<1s)			
14/10/2019 17:41:07.839	Rx Stream	No Content	UDP 239.0.67.40:26740
14/10/2019 17:41:08.630 (<1s)			
14/10/2019 17:41:07.934	Rx Stream	Overflow	UDP 239.0.67.40:26740
14/10/2019 17:41:07.934	Rx Stream	Overflow	UDP 239.0.67.40:26740
14/10/2019 17:41:07.934	Rx Stream	Overflow	UDP 239.0.67.40:26740
14/10/2019 17:41:07.934	Rx Stream	Overflow	UDP 239.0.67.40:26740
14/10/2019 17:41:10.238	Reconfiguration	Change	Ensemble: DEMO AE4
14/10/2019 17:41:10.240	Subchannel	No Content	Subchannel 0, Affected service(s): AE4 CH 1
30/10/2019 08:06:15.154 (375h 25m 5s)			

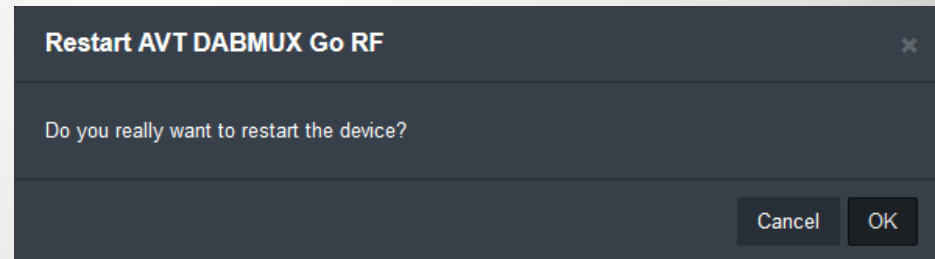
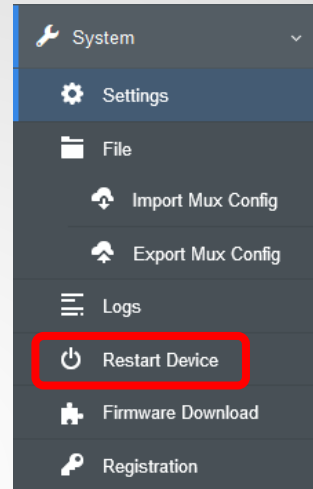
Showing 1 to 139 of 139 entries (filtered from 183 total entries)

Export to Excel Copy to Clipboard Refresh

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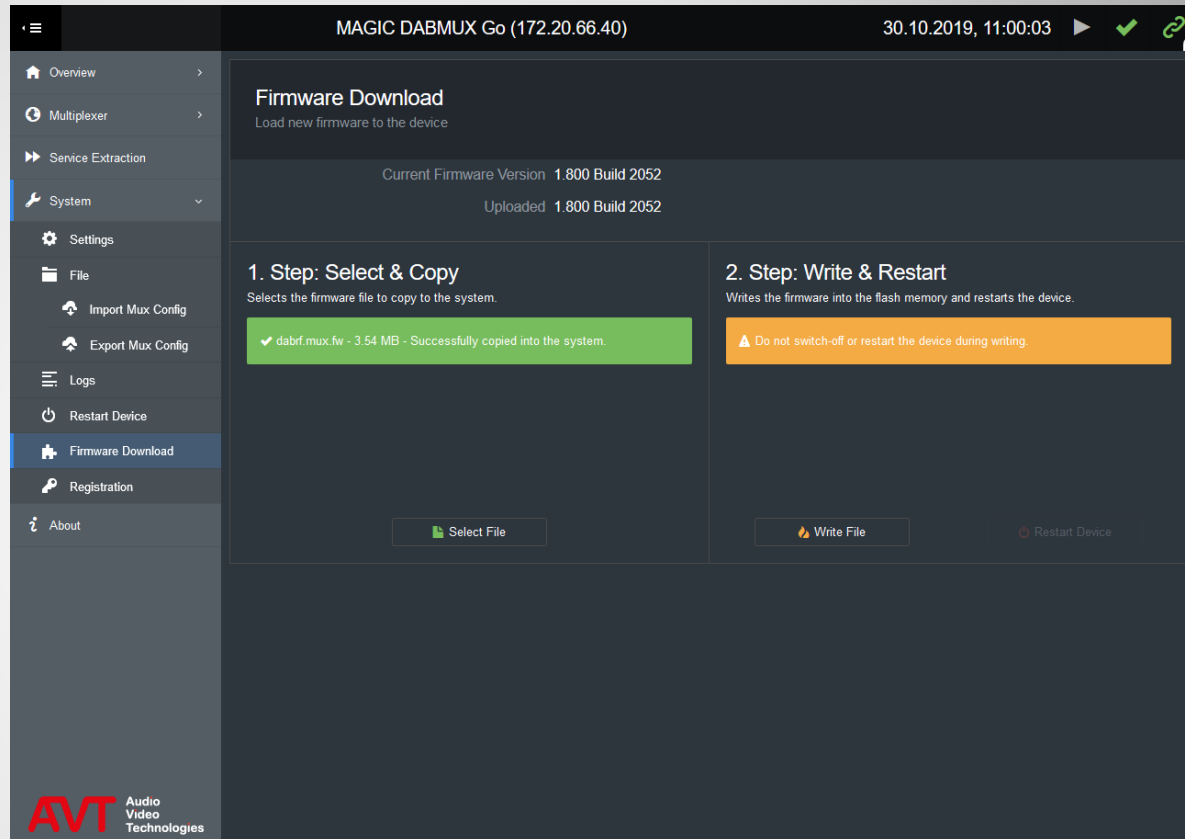
Logs

- You may restart the device via web interface.
- You will be prompted to confirm the restart.



Restart Device

- Updating the firmware is a 3-step process:
 - **SELECT FILE:** Copy the file to the device
 - **WRITE FILE:** Writes the firmware to the permanent memory. **Do not restart or switch-off the device during writing!**
 - **RESTART DEVICE:** Click Restart device to make the device boot the new firmware.



Firmware Download

- The SYSTEM REGISTRATION shows information about:
- Hardware
- Software
- Available and installed Software Options
- Features supported by this device according to hardware and installed software options.



System Registration

- The ABOUT screen displays the firmware version and contact information.



About

MAGIC DABMUX Go RF RM

Software Options

- Available with Software Version 1.800
 - Input streams: 4 x EDI incl. Automatic service extraction.
 - Output streams: 4 x EDI (ETI), simulcast.
 - 4 x integrated NPAD inserters.
- Coming soon:
 - Automatic Encoder and Multiplexer redundancy.
 - Supports Service Linking, dynamic linkage set activation.
 - Integrated PAD inserter: SLS (Slideshow), DLS (Dynamic Label).
 - Connection of up to 25 external Encoders (automatic redundancy).

DABMUXplus SW Upgrade

- Additional operating mode for cable network providers.
- Allows
 - reformatting of the EDI output signal.
 - Changing the protection level.
 - Changing the service label.

Cable Upgrade

- Simultaneous replacement of all programs.
- DAB Alarm Announcement Signaling.
- Requires DAB+ Encoder as Emergency Audio Source.

Emergency Warning Break-In Upgrade

MAGIC DABMUX Go RF RM

Support

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Support