



# MAGIC DABMUX *plus*

## Ensemble Multiplexer

### Training

Version: 3.200 (19 November 2021)

Bernhard Seiz



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# General

- **General**
  - Hardware
  - Features
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# Front



- DAB Ensemble Multiplexer
- 2 multicolour LEDs (Power and Status)
- TFT colour display (320x240 Pixel) for status and basic configuration
- Keypad and combination knob

# Rear



- Redundant power supply
  - Integrated wide range PSU with power switch AC 100 - 230V +/-10V, 30 W power input
  - Connection for an external PSU DC 12 V, 30 W
- Module slot
- RST, B1, B2
  - Reset- and Boot Mode switches
- SD-Card slot
  - To restore the Firmware
- 2x USB 2.0
  - For future applications
- 3 LAN Interfaces
  - System control exclusively via LAN1
- Fan

# Optional E1 Module



- 1 x ETI Input, BNC, asymmetric, G.703/G.704
- 1 x ETI Output, BNC, asymmetric, G.703/G.704
- 1 x Clock Input 2.048 MHz/10 MHz, BNC, TTL
- Bypass-Relay (ETI-Input → ETI-Output)



# Optional LAN Module



- Two additional 10/100 Mbit/s Ethernet-interfaces
  - 3 IP-Addresses can be configured for each interface
  - VLAN Support
  - Quality of Service Support

# Properties

- DSP-based DAB Ensemble-Multiplexer
- Requires 1U in 19" Racks, Depth: 23 cm
  - Can be installed in a 19" rack without any space in between
- 3 x TI high performance DSPs
- 3 x Gigabit-Ethernet Interfaces
  - 3 IP-Addresses can be configured for each interface
  - VLAN Support
  - Quality of Service Support
- TI-RTOS operating system by Texas Instruments



# Features (1)

- DAB Ensemble Multiplexer
  - According to ETSI EN 300 401 Version 2.1.1
  - Synchronisation via NTP
- 25 x Integrated PAD-Insertter
  - Supported Services:
    - Dynamic Label, Dynamic Label Plus
    - SlideShow, Categorized SlideShow
  - Feed: FTP, HTTP API
- 4 x Integrated NPAD-Insertter
  - Supported Services:
    - SlideShow, SPI (EPG), TPEG
    - Journaline® (Fraunhofer Licence already acquired, Implementation in 2022)
    - Simplified insertion of Station-Logos (SPI)
  - Feed: FTP, HTTP API, UDP, TCP
- Announcement Support & Switching
  - Interface: HTTP API, UECP (only TA)
- Service Linking und Linkage Actuator Support
  - Interface: HTTP API, FTP
- TII (MNSC)
- Non-disruptive configuration
  - Manual
  - Scheduler
  - HTTP API
  - DAB System Manager
- Input protocols
  - AVTMUX (Secure Streaming)
  - 4 x EDI (Sub-Channel extraction)
  - NPAD (UDP/TCP)
- Output protocols
  - 4 x EDI (ETI) (Simulcast or Multicast)

# Features (2)

- Audio

- Up to 25 external Audio-Encoders can be connected.
- Data rates: 16 kbit/s – 192 kbit/s

- Control Software

- HTML5 Web-Interface
- Modern GUI

- 4 Login Levels

- DAB System Manager
- Administrator
- Operator
- Gast

- Monitoring

- Web-Interface
- SNMP v1, v2c
- EMBER+

# Optional Features

- Audio

- Up to 14 internal DAB+ Audio-Encoders
- Data Rates: 16 kbit/s – 192 kbit/s
- Input via AES67 (PCM) or Web-Stream (MP3, FLAC)
- Monitoring Decoder (encoded / original)
- Synchronisation via PTP possible

- Output protocols

- 1x E1
  - G.703 ETI NI
  - G.704 ETI NA 5376
  - G.704 ETI NA 5592
  - Synchronisation via external clock input possible

- Cable Upgrade

- Cable input from DAB Ensembles

- Emergency Warning Break-In Upgrade

- Emergency announcements in all programs without configuration

- Switch Redundancy Upgrade

- Two-way delivery to the transmitter network

- Redundancy+ Upgrade

- 1-way delivery to the transmitter network

- Control and monitoring

- DAB System Manager



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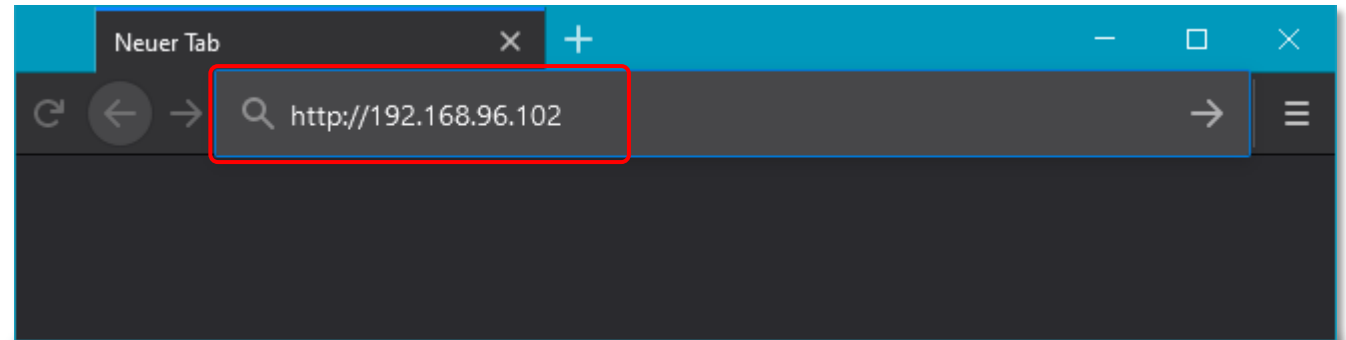
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# Web-Interface

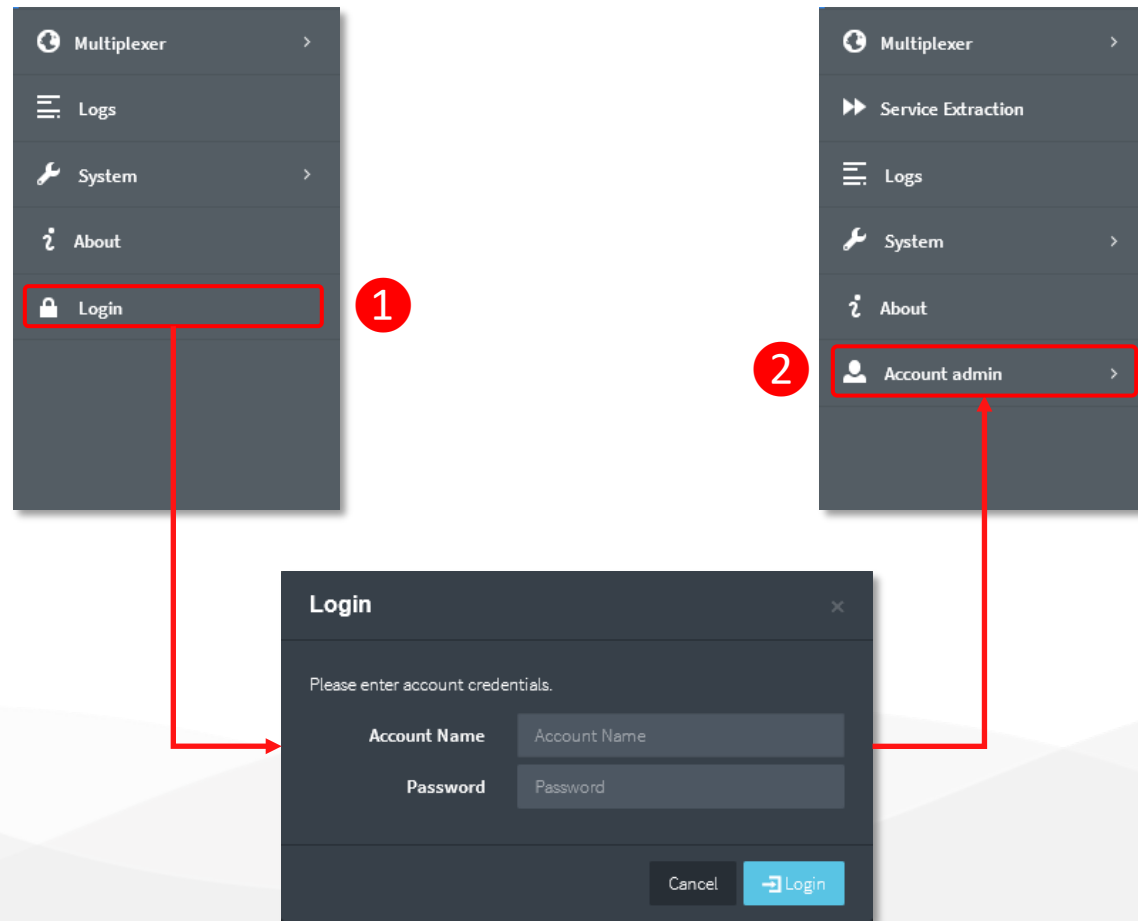
- General
  - Hardware
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  - System
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  - Redundancy
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  - Troubleshooting
- Support

# Web-Interface

- Der Multiplexer is controlled and configured via LAN-Interface 1.
- Enter the IP-Address into a Web-Browser, that supports HTML5.
- The Standard-IP-Parameters are:
  - IP Address:  
192.168.96.102
  - Subnet Mask:  
255.255.255.0
  - Standard-Gateway:  
192.168.96.1



# Login



# Login

- As soon as the connection is established, you are automatically logged in as “guest”  
①.
  - The guest account allows to view the system status and parts of the settings.
  - To change the configuration, you must log in as “admin”.
  - After one hour of inactivity, the admin is logged out automatically and logged in as guest again.
- The operator can reload Ensembles, switch the AES67 monitoring output and force redundancy mode.
  - An Operator is not logged out automatically.

- The standard login information are:

- Admin

- Account name: admin
- Password: avtWH\_WP

- Operator

- Account name: operator
- Password: avt91NP

- Guest

- Account name: guest
- Password: -

- When using the DAB System Manager

- Account name: dabmanager
- Password: avtMgr





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# Status

- General
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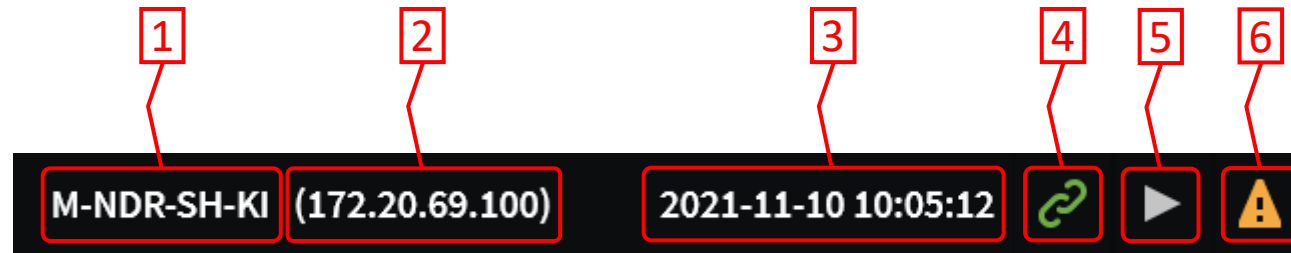


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# Status System

- General
  - Hardware
  - Features
- Web-Interface
- **Status**
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - Transmitter
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# System



1. System name
2. Management IP-Address of the system
3. Current system time
4. Connection of the web interface to the system

5. Multiplexer status
  - ||: Waiting for synchronisation
  - ▶: Synchronisation completed
6. System Monitor  
Click for Details.



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# Status System Monitor

- General
  - Hardware
  - Features
- Web-Interface
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- Settings
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# System Monitor (1)

STATUS

Warning

LAST

Critical

Maintenance

Warning

NTP

PTP

Multiplexer

EDI Output

ETI Output

AES67 Input

Web Stream Input

Redundancy Link

Audio Silence

PAD

Hardware

E1

E1 Transceiver

E1 Signal

G.704 Sync

G.704 AIS

G.704 Local N

G.704 Local D

G.704 Remote N

G.704 Remote D

E1 Output Open

E1 Output Shorted

E1 External Clock

ETI

ETI Framing

LAN 1

IP 172.20.69.100

TX: 1.28 MBit/s / RX: 2.73 MBit/s

1000 MBit/s Full-Duplex

LAN 2

IP 172.20.69.101

TX: 0.00 kBit/s / RX: 0.00 kBit/s

1000 MBit/s Full-Duplex

LAN 3

IP 172.20.69.102

TX: 3.54 MBit/s / RX: 6.80 MBit/s

100 MBit/s Full-Duplex

Reset Counter

Last Reset 2021-11-11 16:59:25

INFORMATION

System Uptime

01h 12m 55s

Core Workloads:

72% / 21% / 40%

Temperatures:

41°C / 30°C / 35°C / 33°C

Redundant Power Supply

CLOCK SOURCE

NTP ( 172.20.215.2 )

EMBER+ CONSUMERS

CONNECTED USERS

172.20.215.2: **admin**

# System Monitor (2)

- STATUS

Current system status

- CRITICAL  
The current alarm is relevant for transmission and listeners.
- MAINTENANCE  
The current alarm is **not** relevant for transmission and listeners.
- WARNING
- OK

- LAST

Occurrence of the different system states since the last reset of the counters.

- CRITICAL
- MAINTENANCE
- WARINING

# System Monitor (3)

- Alarms from

- Clock- and Time generators
- Inputs
- Applications
- Outputs
- E1
- Hardware
- Redundant PSU

- Ethernet

- Link
- Duplex
- Speed
- Data rates

- System information

- Processor load
- Temperature
- Uptime

- Clock source

- Ember+ Consumer

- Connected Computers

- Reset of all counters

- Button RESET COUNTER
- Time stamp




# System Monitor (4)

 : Warnings are present.

 : All is OK.

 : Critical Warnings are present.

 : The component is OK.

 : Warning, non-critical.

 : The component is impaired and critical.

 : The component is currently OK, but warnings were present since the last counter reset.

 : The component is currently inactive.

 : The components status is still unknown.



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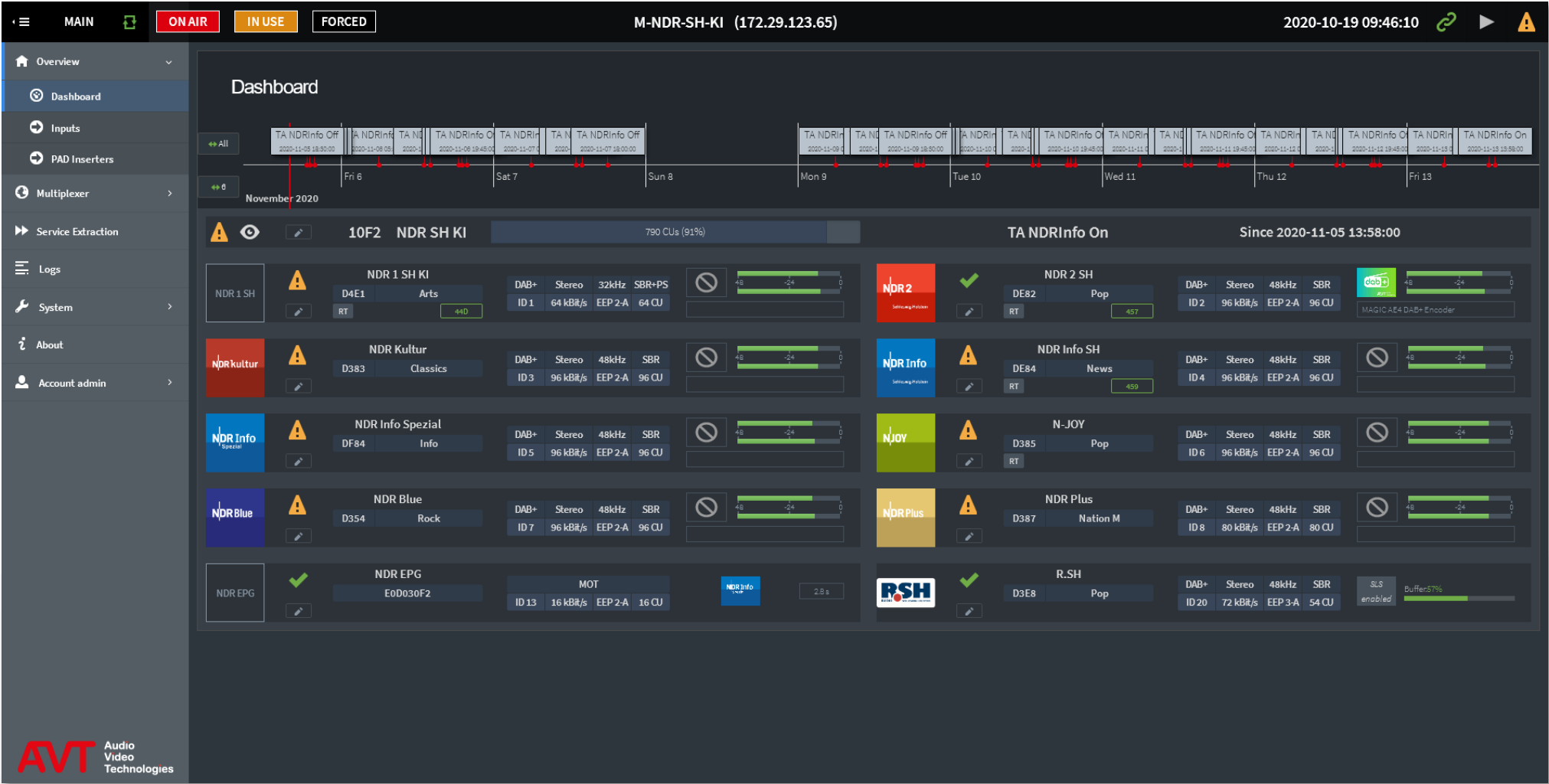


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# Status Dashboard

- General
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# Dashboard (1)



## Dashboard (2)

- The DASHBOARD displays the active ON AIR Multiplex.
- An overview of scheduled reconfigurations, the Ensemble which is ON AIR and the dedicated services is available.
- Use the edit Sie die Edit-buttons , to jump to the respective configuration page. To do this, you must be logged in as an administrator.
- Details about the individual elements of the dashboard can be found on the following pages.

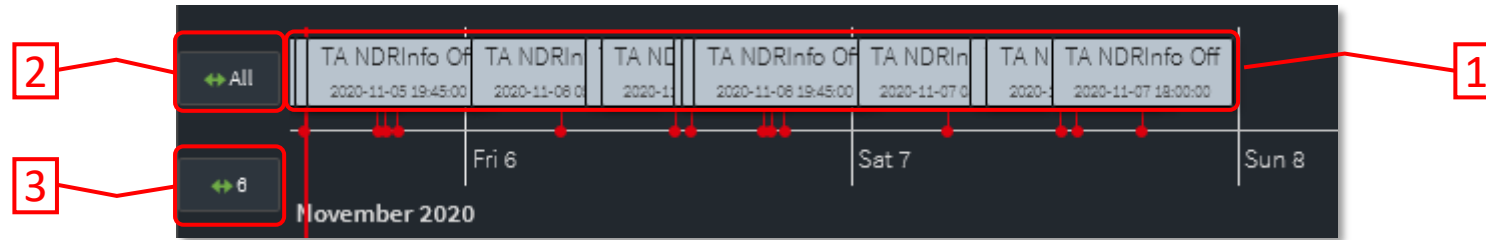
# Dashboard – Ensemble Status



1. Sum status of the ensemble  
Hover the cursor over the icon for additional details.
2. Click for a visual representation of the ensembles and its components
3. Jump to the configuration of the ensemble.

4. Ensemble Identifier
5. Ensemble Label
6. Capacity Unit – load
7. Name of the Ensemble-configuration
8. Time at which the configuration was activated.

# Dashboard – Scheduler



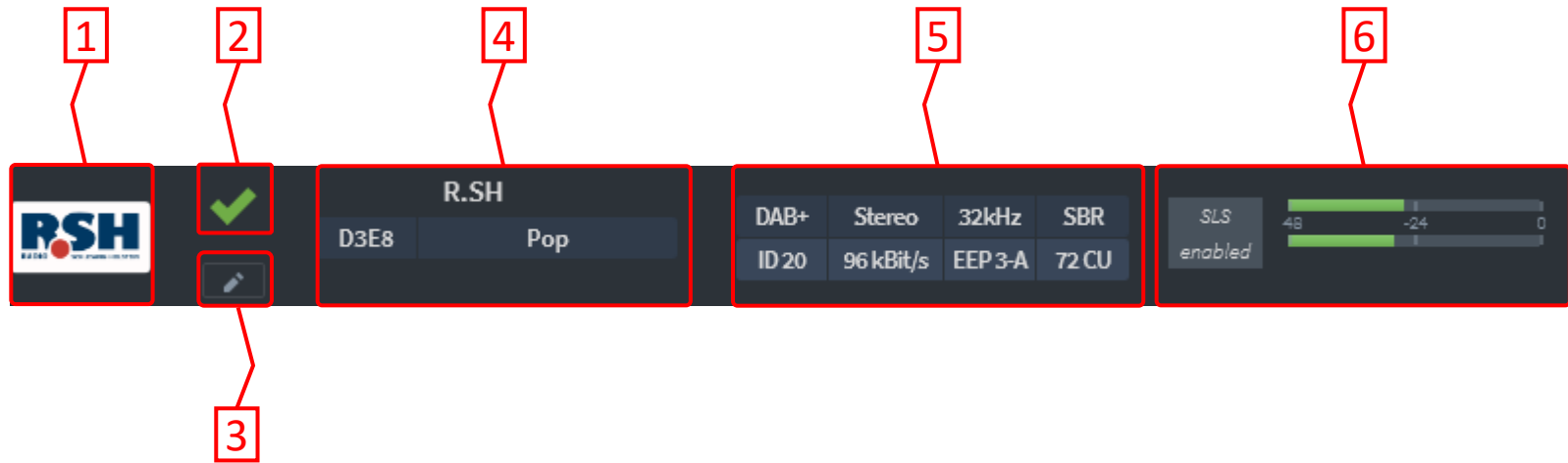
The Timeline shows scheduled reconfigurations.

The timeline can be moved in both directions with the left mouse button.

The mouse scroll wheel can be used to zoom in and out.

1. Scheduled Reconfigurations
2. Click to zoom onto all reconfigurations.
3. Click to zoom onto the next six reconfigurations.

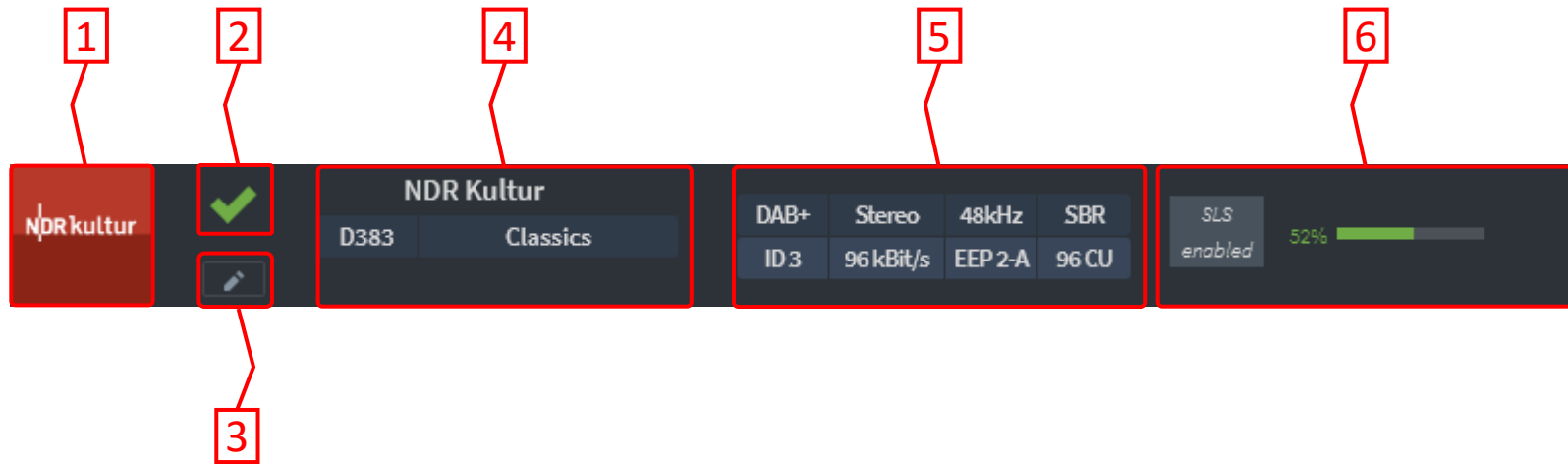
# Dashboard – Service Status – AVTMUX



1. Station logo
2. Program status  
Hover the cursor over the icon for additional details.
3. Button for jumping to the configuration of the program.
4. Program information  
Service Label, Service ID, Genre, Announcements, Linkage Set
5. Audio-Parameter  
Codec, Mode, Sampling Rate, Algorithm, Sub-Channel ID, Data Rate, Error Protection, CU-Requirement
6. Program content  
SlideShow Signalling, Audio level

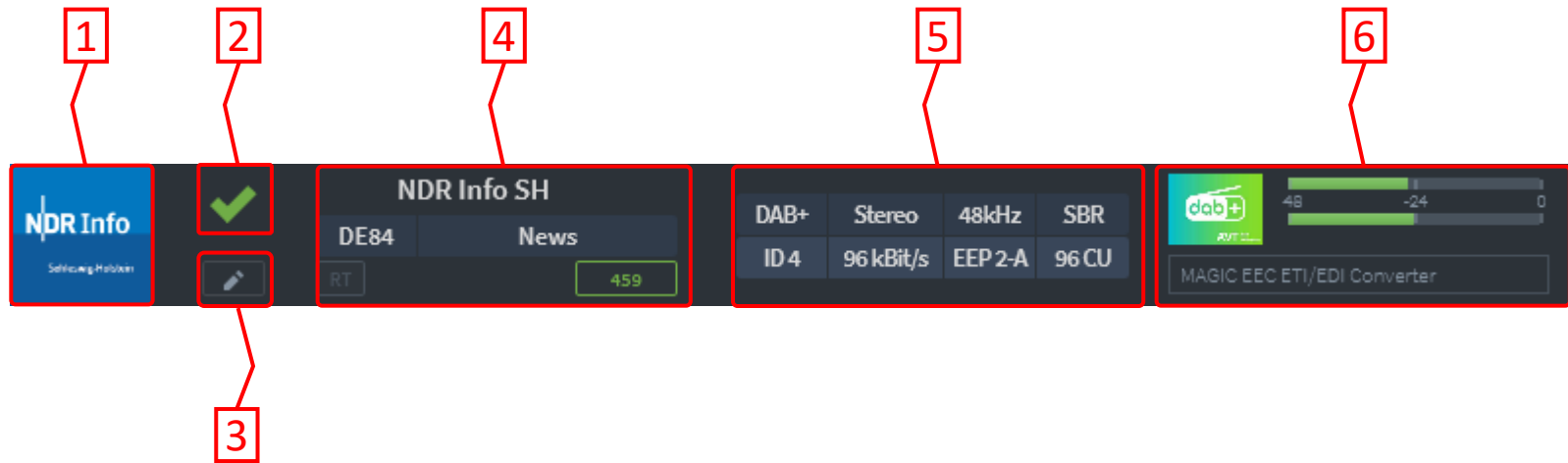


# Dashboard – Service Status – EDI



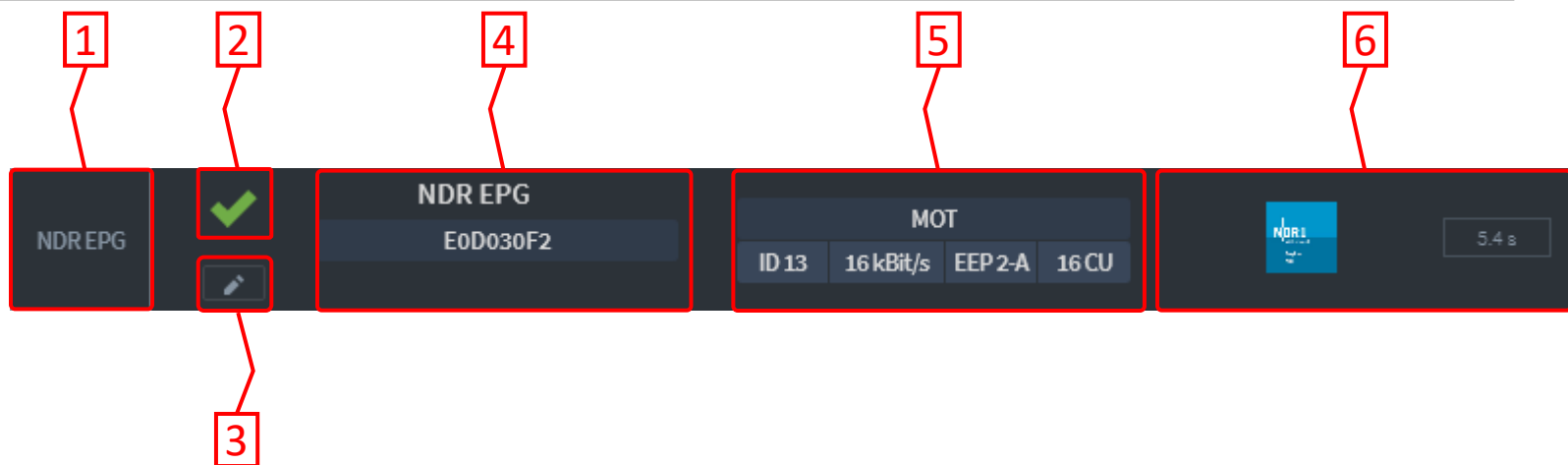
1. Station logo
2. Program status  
Hover the cursor over the icon for additional details.
3. Button for jumping to the configuration of the program.
4. Program information  
Service Label, Service ID, Genre, Announcements, Linkage Set
5. Audio-Parameter  
Codec, Mode, Sampling Rate, Algorithm, Sub-Channel ID, Data Rate, Error Protection, CU-Requirement
6. Program content  
SlideShow Signalling, Audio level

# Dashboard – Service Status – Integrated Encoder



1. Station logo
2. Program status  
Hover the cursor over the icon for additional details.
3. Button for jumping to the configuration of the program.
4. Program information  
Service Label, Service ID, Genre, Announcements, Linkage Set
5. Audio-Parameter  
Codec, Mode, Sampling Rate, Algorithm, Sub-Channel ID, Data Rate, Error Protection, CU-Requirement
6. Program content  
Currently transmitted SlideShow Icon  
Currently transmitted Dynamic Label, Audio Level

# Dashboard – Service Status – NPAD SPI



1. Station logo
2. Program status  
Hover the cursor over the icon for additional details.
3. Button for jumping to the configuration of the program.
4. Program information  
Service Label, Service ID, Genre, Announcements, Linkage Set
5. Audio-Parameter  
Codec, Mode, Sampling Rate, Algorithm, Sub-Channel ID, Data Rate, Error Protection, CU-Requirement
6. Program content  
Currently transmitted file, Transmission duration



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# Status

## Inputs

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  - Transmitter
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- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Inputs (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.29.123.65)

2020-10-19 09:46:10

Overview

Dashboard

Inputs

PAD Inserters

Multiplexer

Service Extraction

Logs

System

About

Account admin

Inputs

Incoming data connections

Used in the On Air Ensemble

N-JOY

L

-48

-36

-24

-12

0

R

NDR 2 SH

L

-48

-36

-24

-12

0

R

NDR Info SH

L

-48

-36

-24

-12

0

R

NDR Kultur

L

-48

-36

-24

-12

0

R

NDR EPG

1.7 s

Not used in the On Air Ensemble

NDR Plus

L

-48

-36

-24

-12

0

R

NDR 1 SH KIEL

L

-48

-36

-24

-12

0

R

Local Encoder

Channel 1

Input Stream

NDR SH KI@AES67-1.DHD.AVT

Audio

Channel 1

Silence Detection

-48 dBFS

Threshold

Silence Detection Interval

60 sec

NDR Blue

L

-48

-36

-24

-12

0

R

NDR Info Spezial

L

-48

-36

-24

-12

0

R

EXTERN R.SH

Buffer 57 %

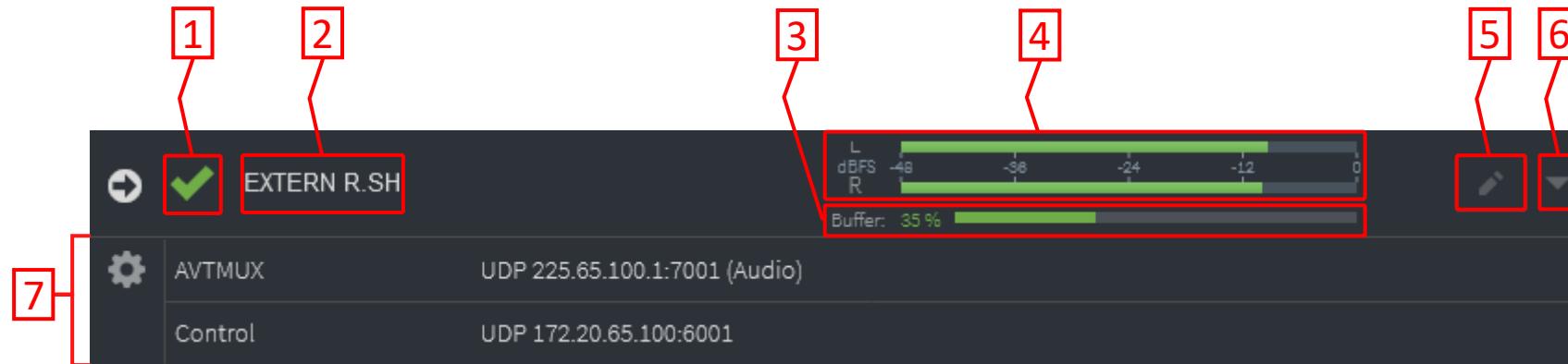
AVT

Audio  
Video  
Technologies

## Inputs (2)

- The Tab INPUTS offers an overview of all Inputs.  
During configuration, the term CONTENT INPUT is used.
- The upper section USED IN THE ON AIR ENSEMBLE shows all inputs, that are used in the active Ensemble-Configuration.
- The lower section NOT USED IN THE ON AIR ENSEMBLE shows all inputs, that are currently not used.  
With a reconfiguration these can be activated.
- With the arrow symbol [ ▼ ] a program or service section can be expanded to show more information.

# Inputs – Details – AVTMUX

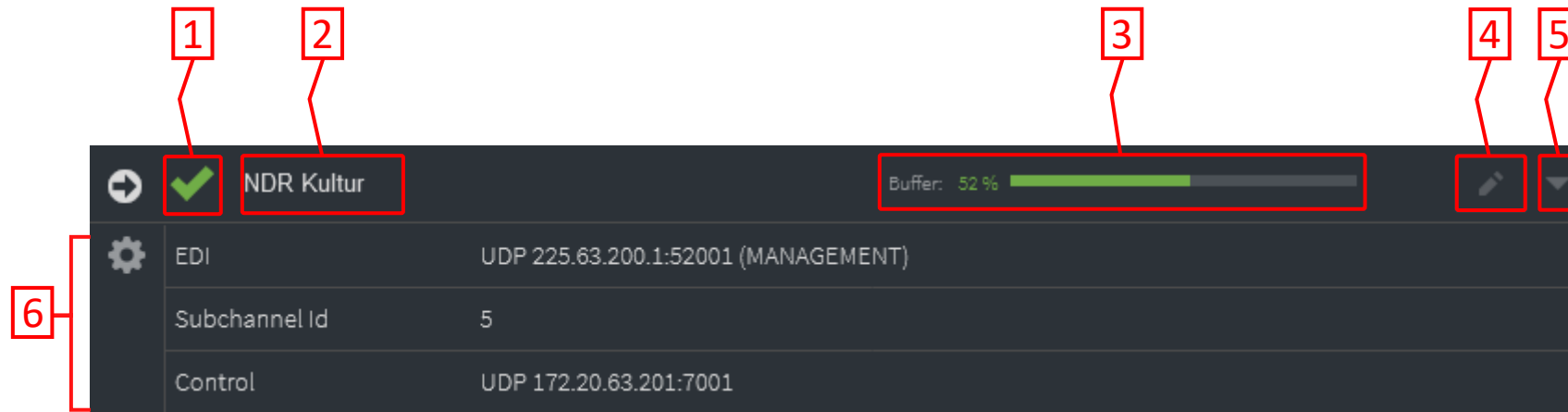


- 1. Status**  
Hover the cursor over the symbol for more details.
- 2. Name**
- 3. Level of the input buffer**  
In case of clock deviation between source and multiplexer the effects are visible here.

- 4. Audio level of the encoder**
- 5. Button to jump to the input configuration.**
- 6. Expand and collapse detailed view.**
- 7. Input details**



# Inputs – Details – EDI



1. Status  
Hover the cursor over the symbol for more details.
2. Name
3. Level of the input buffer  
In case of clock deviation between source and multiplexer the effects are visible here.

4. Button to jump to the input configuration.
5. Expand and collapse detailed view.
6. Input details

# Inputs – Details – Integrated Encoder (1)

The screenshot displays the 'Inputs – Details – Integrated Encoder (1)' configuration window. The interface includes a top status bar and a main configuration table. Red boxes and numbers 1 through 7 highlight specific UI elements:

- 1**: A green checkmark icon in the top status bar.
- 2**: The text 'NDR 1 SH KIEL' in the top status bar.
- 3**: A level meter showing L and R channels with dBFS values (-48, -36, -24, -12) in the top status bar.
- 4**: A speaker icon in the top status bar.
- 5**: An edit icon in the top status bar.
- 6**: A dropdown arrow icon in the top status bar.
- 7**: A bracket on the left side of the configuration table, indicating the table area.

Local Encoder	Channel 1
Audio Input Source	AES67
Input Stream	DanteUSB-BSEIZ : 2
Audio	Channel 1
Silence Detection Threshold	-48 dBFS
Silence Detection Interval	60 sec

# Inputs – Details – Integrated Encoder (2)

## 1. Status

Hover the cursor over the symbol for more details.

## 2. Name

## 3. Audio level

## 4. Click to output this program to the monitoring decoder.

## 5. Button to jump to the input configuration.

## 6. Expand and collapse detailed view.

## 7. Input details

# Inputs – Details – NPAD SPI (1)

The screenshot displays the configuration page for NPAD SPI (1). The interface includes a top header bar with a status indicator (1), a title 'NDR EPG' (2), a thumbnail (3), a duration '5.3 s' (4), and edit (5) and delete (6) icons. A settings gear icon (7) is on the left. The main content area shows configuration details for 'NPAD FTP' on 'Channel 1', including 'Packet Address' (1) and 'User Application' (SPI (EPG)). A 'Statistics' section (8) is also present, containing a refresh icon and a table of transmission metrics.

Statistics	
Number of Transmitted Files	983
Last Transmission Time	5.3 s (e0_d4e1_128x128_2.png)
Transmission Times: Avg./Min./Max.	2.0 s / 0.4 s / 15.5 s (2021-11-10 11:08:03)
Files In Carousel	37
Carousel Transmission Time	81.2 s

# Inputs – Details – NPAD SPI (2)

## 1. Status

Hover the cursor over the symbol for more details.

## 2. Name

## 3. Currently transmitted file

## 4. Transmission time

## 5. Button to jump to the input configuration.

## 6. Expand and collapse detailed view.

## 7. Input details

## 8. Transmission statistics:

- [↺] Reset statistics
- Number of transmitted files
- Transmission duration of last file and file name
- Transmission duration: Average / Min. / Max. with time stamp
- Number of files in the carousel that are transferred in loop.
- Transfer duration of all files of the carousel.



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# Status

## PAD Inserters

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# PAD Inserters (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 15:43:15

Overview

Dashboard

Inputs

PAD Inserters

Multiplexer

Service Extraction

Logs

System

About

Account admin

PAD Inserters

Integrated Data Encoders

NDR 1 SH KIEL

MAGIC DABMUX Go RF RM Ensemble Multiplexer

AVT

5.0 s

Slide Show Statistics

Number of Transmitted Files2433

Last Transmission Time5.0 s (image.jpg)

Transmission Times: Avg./Min./Max.4.7 s / 4.2 s / 5.8 s (2021-11-10 14:01:21)

Configured Minimum Display Time10.0 s

Number of Files1

NDR 2 SH

MAGIC DABMUX Go RF RM Ensemble Multiplexer

AVT

5.0 s

PAD 3

MAGIC DABMUX Go RF RM Ensemble Multiplexer

AVT

13.0 s

NDR Info Spezial

MAGIC DABMUX Go RF RM Ensemble Multiplexer

AVT

5.8 s

NDR Blue

MAGIC DABMUX Go RF RM Ensemble Multiplexer

AVT

5.4 s

NDR Info SH

MAGIC DABMUX Go RF RM Ensemble Multiplexer

AVT

5.0 s

N-JOY

MAGIC DABMUX Go RF RM Ensemble Multiplexer

AVT

5.0 s

NDR Plus

MAGIC DABMUX Go RF RM Ensemble Multiplexer

AVT

5.0 s

AVT

Audio Video Technologies

## PAD Inserters (2)

- The tab PAD INSERTERS offers an overview about keying in program associated data.
- With the arrow symbol [ ▼ ] an inserter can be expanded to show more information.



# PAD Inserters – Details (1)

1 2 3 4 5 6 7

8

**Slide Show Statistics**

Number of Transmitted Files	2433
Last Transmission Time	5.0 s (image.jpg)
Transmission Times: Avg./Min./Max.	4.7 s / 4.2 s / 5.8 s (2021-11-10 14:01:21)
Configured Minimum Display Time	10.0 s
Number of Files	1

# PAD Inserters – Details (2)

1. Status
2. Name
3. Currently transmitted Dynamic Label
4. Currently transmitted SlideShow image
5. Transmission time of the last images
6. Jump to configuration.
7. Expand and collapse detailed view.

## 8. Transmission statistics:

- [↺] Reset statistics
- Number of transmitted files
- Transmission duration of last file and file name
- Transmission duration: Average / Min. / Max. with time stamp

Attention: The maximum transfer duration must be below the configured minimum display duration so that the SlideShow can be displayed correctly on the end devices. If this is not the case, it will be displayed in **red**.

- Configured minimum display duration
- Number of files



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# Settings System

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# System (1)

The screenshot displays the AVT System Settings web interface. At the top, a status bar includes a hamburger menu, 'MAIN' status, 'ON AIR' (red), 'IN USE' (orange), and 'FORCED' (grey) buttons. The system identifier 'M-NDR-SH-KI (172.20.69.100)' and the timestamp '2021-11-10 10:04:12' are also present, along with a share icon and a warning triangle.

The left sidebar contains a navigation menu with the following items: Overview, Multiplexer, Service Extraction, Logs, System (selected), Settings, Transmitters, Redundancy, Import, Export, Firmware Update, Registration, Restart Device, About, and Account admin.

The main content area is titled 'System Settings'. It features a left-hand sub-menu with icons for System, Network, Time, EDI Output, E1 Output, FTP Server, NPAD Inserters, PAD Inserters, AES67, SNMP, and Ember+. The 'System' sub-menu is active, showing the following settings:

- System Name:** M-NDR-SH-KI
- Enable Power Supply Alarm:** ☐
- Redundancy:**
  - Enable Evaluation of PAD Alarms:** ☐ (The PAD alarms have an effect on the automatic redundancy switching)
  - Enable N + 1 Multiplexer Redundancy:** ☐ (This mux will be able to backup several other Multiplexers)

At the top right of the settings area, there are buttons for 'Discard Changes' and 'Apply Changes'. The AVT Audio Video Technologies logo is located in the bottom left corner of the interface.

# System (2)

- **SYSTEM NAME:**

- The name is displayed in the title bar of the web interface and in the DAB System Manager.

- **ENABLE POWER SUPPLY ALARM:**

- Activate the alarm if both internal and external power supplies are connected.

- **ENABLE EVALUATION OF PAD ALARMS:**

- Activate the function if the redundancy switching should also react in case of PAD alarms.

- **ENABLE N+1 MULTIPLEXER REDUNDANZ:**

- Activate the function if this multiplexer is used as a backup system for multiple multiplexers.



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# Settings

## Network

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Network (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:04:14

Overview

Multiplexer

Service Extraction

Logs

System

Settings

Transmitters

Redundancy

Import

Export

Firmware Update

Registration

Restart Device

About

Account admin

System

Network

Time

EDI Output

E1 Output

FTP Server

NPAD Inserters

PAD Inserters

AES67

SNMP

Ember+

System Settings

Discard Changes

Apply Changes

Network

LAN 1

Network 1

Network 2

Network 3

Management Network

Name

MANAGEMENT

IP Address

172.20.69.100

Subnet Mask

255.255.0.0

Gateway

172.20.1.1

VLAN Id

0

LAN 2

Network 1

Network 2

Network 3

Name

EDI Input

IP Address

172.20.69.101

Subnet Mask

255.255.0.0

Gateway

172.20.1.1

VLAN Id

0

LAN 3

Network 1

Network 2

Network 3

DNS Servers

Name

AES67

IP Address

172.20.69.102

Subnet Mask

255.255.0.0

Gateway

172.20.1.1

VLAN Id

0

DNS Servers

172.20.1.1

# Network (2)

- The system has three physical network interfaces..
- On each physical network interface, 3 virtual LAN-Interfaces can be configured.
- Each virtual LAN-Interface is defined by:
  - NAME
  - IP-ADRESSE
  - SUBNETZMASKE
  - GATEWAY
  - VLAN-ID
- Only NETWORK 1 on LAN 1 can be used for system control.
- DNS Server configuration on LAN 3 for Web-Streams
- **Attention:** Changes in the network configuration only take effect once the system is restarted.





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# Settings

## Time

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Time (1)

⌵

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:04:18

🔗▶⚠

🏠 Overview

🕒 Multiplexer

▶▶ Service Extraction

☰ Logs

🔧 System

⚙️ Settings

📡 Transmitters

🔄 Redundancy

📶 Import

📶 Export

🏠 Firmware Update

🔑 Registration

🔌 Restart Device

ℹ️ About

👤 Account admin

System Settings

🗑️ Discard Changes

✅ Apply Changes

🔧 System

↔️ Network

🕒 Time

➡️ EDI Output

➡️ E1 Output

🖨️ FTP Server

🖼️ NPAD Inserters

🖼️ PAD Inserters

🔊 AES67

🔊 SNMP

🔊 Ember+

🕒 Time

Clock Source

NTP

Time Source

NTP

NTP Server 1

172.20.215.2

Port

123

NTP Server 2

Port

123

Output before time synchronisation

OFF/Mute

Max mute delay (sec)

20

Timezone

Europe/Amsterdam,Berlin,Bratislava,Brussels,Budapest,Copenhagen,Luxembourg,Madrid,Malta,Oslo,Paris,Prague,Rome,Stockholm,Vatican,Zurich

CET-1CEST,M3.5.0,M10.5.0/3

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# Time (2)

- For the system to function correctly, an NTP server must always be available to keep the system time up to date.
- The preferred clock source can be set under CLOCK SOURCE. If this clock source is down, the system switches to the following clock sources in descending order depending on availability:
  - E1 External Clock
  - PTP
  - E1 Recovered Clock
  - NTP

- CLOCK SOURCE
  - NTP
  - E1 Recovered Clock (E1 Module Option)
  - External Clock (E1 Module Option)
  - PTP (AES67 Option)
- EXTERNAL CLOCK FREQUENCY
  - 10 MHz
  - 2.048 MHz
- TIME SOURCE
  - NTP

# Time (3)

- NTP SERVER 1 (Primary NTP-Server)
  - IP Address
  - Port
- NTP SERVER 2 (Secondary NTP-Server)
  - IP Address
  - Port
- OUTPUT BEFORE TIME SYNCHRONISATION  
Select which signal is output from the multiplexer when the system is not (yet) synchronized to the clock source.
  - OFF/MUTE: The output remains off

- OFF / MUTE UNTIL TIMEOUT: The output remains off for a certain timespan.
- ON (NULL TIST) AFTER PARTIAL SYNC OR TIMEOUT: The output is activated immediately. A NULL TIST is signalled.
- MUTE TIMEOUT (sec):
  - Defines the waiting time for OFF / MUTE UNTIL TIMEOUT mode
- TIME ZONE
  - Time zone selection
  - The POSIX-String can also be configured directly



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# Settings

## EDI Output

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
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- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# EDI Output (1)

⌵

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:04:21

🔗

▶

⚠

🏠 Overview

🕒 Multiplexer

▶▶ Service Extraction

☰ Logs

🔧 System

⚙ Settings

📡 Transmitters

🔄 Redundancy

📶 Import

📶 Export

🔧 Firmware Update

🔑 Registration

🔌 Restart Device

📖 About

👤 Account admin

System Settings

Discard Changes

Apply Changes

🔧 System

↔ Network

🕒 Time

➡ EDI Output

➡ E1 Output

📁 FTP Server

🖼 NPAD Inserters

🖼 PAD Inserters

🔊 AES67

🔊 SNMP

🔊 Ember+

➡ EDI Output

LI Delay500ms (Max. network delay)Set the LI Delay to 0 to signal a NULL TIST

DCP Spread Interval24ms per DAB frame

FEC Level1

MTU1472

Reset To Default

Destination 1☒225.69.100.151001MANAGEMENT

Destination 2☐

Destination 3☐

Destination 4☐

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# EDI Output (2)

- **LI DELAY:** Maximum time delay in the transmitting network.
- **DCP SPREAD INTERVAL:** Time spread of the packets of a DAB frame.  
The smaller the value, the more the sending of the packets of a DAB frame approaches a burst. The larger the value, the more the packets of two DAB frames overlap. This allows the error protection to better correct potential burst errors.
- **FEC LEVEL:** Error protection level 0-3  
A higher level provides more protection against packet loss, but requires a higher bandwidth (approx. 35% for FEC level 3). The value directly indicates how many packets can be corrected. But: The higher the value, the more packets are generated..
- **MTU:** Maximum size of UDP payload in bytes
- **DESTINATIONS 1 – 4:** The EDI data stream can be sent to up to 4 destinations.  
For each destination must be set:
  - Network
  - IP Address (Unicast or Multicast)
  - Port



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# Settings

## E1 Output

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support



# E1 Output (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:04:28

Overview

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Service Extraction

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Firmware Update

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About

Account admin

System Settings

System

Network

Time

EDI Output

E1 Output

FTP Server

NPAD Inserters

PAD Inserters

AES67

SNMP

Ember+

E1 Output

Enable☒

ETI Format

G.704 NA 5592

G.704 Frame Format

Double Frame

Discard Changes

Apply Changes

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# E1 Output (2)

- ENABLE: Activates the output of the ETI-Signals via the optional ETI-Module.
- ETI FORMAT
  - G.703 NI
  - G.704 NA 5592
  - G.704 NA 5376
- G.704 FRAME FORMAT
  - Double Frame
  - CRC4 Multi Frame



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# Settings

## FTP Server

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# FTP Server (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:04:31

Overview

Multiplexer

Service Extraction

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Redundancy

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Firmware Update

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Apply Changes

System

Network

Time

EDI Output

E1 Output

FTP Server

NPAD Inserters

PAD Inserters

AES67

SNMP

Ember+

FTP Server

Enabled☒

Port21

First Passive Port31900

Number Of Passive Ports10

Reset To Default

FTP API

LSN FTP Userapilsn

FTP and API Password

.....

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# FTP Server (2)

- **ENABLE:** Activates the internal FTP-Server.
- **PORT:** Port to connect to the FTP server.
- **FIRST PASSIVE PORT:** First port for data transmission to the FTP-Server.
- **NUMBER OF PASSIVE PORTS:** Number of Ports for data transmission to the FTP-Server.
- **FTP API:** Data and commands can be transferred to the system either via FTP or via an HTTP API.
  - **LSN FTP USER:** Login details to the FTP server to switch linkage sets.
  - **FTP AND API PASSWORD:** Password for the LSN FTP USER and access to the system via HTTP API.



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# Settings

## NPAD Inserters

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# NPAD Inserters (1)

⌵

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:04:33

🔗▶⚠

🏠 Overview

🕒 Multiplexer

▶▶ Service Extraction

☰ Logs

🔧 System

⚙️ Settings

📶 Transmitters

🔄 Redundancy

📶 Import

📶 Export

🏠 Firmware Update

🔑 Registration

🔌 Restart Device

📖 About

👤 Account admin

System Settings

🔧 System

🔄 Network

🕒 Time

➡ EDI Output

➡ E1 Output

🖨️ FTP Server

🖼️ NPAD Inserters

🖼️ PAD Inserters

🔊 AES67

🔊 SNMP

🔊 Ember+

🖼️ NPAD Inserters

NPAD Inserter 1 Data Provision

FTP Usernpad1FTP and API Password.....👁

NPAD Inserter 2 Data Provision

FTP Usernpad2FTP and API Password.....👁

NPAD Inserter 3 Data Provision

FTP Usernpad3FTP and API Password.....👁

NPAD Inserter 4 Data Provision

FTP Usernpad4FTP and API Password.....👁

🚫 Discard Changes

✅ Apply Changes

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# NPAD Inserters (2)

- NPAD Inserters 1 – 4
  - Configure individual login details to the FTP-Server for each NPAD Inserter.





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# Settings

## PAD Inserters

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# PAD Inserters (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:04:37

Overview

Multiplexer

Service Extraction

Logs

System

Settings

Transmitters

Redundancy

Import

Export

Firmware Update

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Restart Device

About

Account admin

System

Network

Time

EDI Output

E1 Output

FTP Server

NPAD Inserters

PAD Inserters

AES67

SNMP

Ember+

System Settings

Discard Changes

Apply Changes

PAD Inserters

General				FTP and API Access		Slide Show		Dynamic Labels				
Enable PAD	Auto (10%)	Data Rate (Bit/s)	Const. Rate	User	Password	Min. Display Time (sec)	Provision Alarm (sec)	Display Time (sec)	Provision Alarm (sec)	Input Format	Output Format	UECP
<input checked="" type="checkbox"/> NDR 1 SH KIEL	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad1	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR 2 SH	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad2	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> Local Enc. 3	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad3	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR Info SH	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad4	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR Info Spezial	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad5	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> N-JOY	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad6	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR Blue	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad7	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR Plus	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad8	.....	10	30	5	60	UTF-8	EBU	
<input type="checkbox"/> Local Enc. 9												
<input type="checkbox"/> AVTMUX-LAN2 MC												
<input type="checkbox"/> Inserter 11												
<input type="checkbox"/> Inserter 12												

# PAD Inserters (2)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 15:47:33

Overview

Multiplexer

Service Extraction

Logs

System

Settings

Transmitters

Redundancy

Import

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Firmware Update

Registration

Restart Device

About

Account admin

System

Network

Time

EDI Output

E1 Output

FTP Server

NPAD Inserters

PAD Inserters

AES67

SNMP

Ember+

System Settings

Discard Changes

Apply Changes

PAD Inserters

General				FTP and API Access		Slide Show		Dynamic Labels				
Enable PAD	Auto (10%)	Data Rate (Bit/s)	Const. Rate	User	Password	Min. Display Time (sec)	Provision Alarm (sec)	Display Time (sec)	Provision Alarm (sec)	Input Format	Output Format	UECP
<input checked="" type="checkbox"/> NDR 1 SH KIEL	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad1	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR 2 SH	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad2	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> Local Enc. 3	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad3	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR Info SH	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad4	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR Info Spezial	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad5	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> N-JOY	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad6	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR Blue	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad7	.....	10	30	5	60	UTF-8	EBU	
<input checked="" type="checkbox"/> NDR Plus	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	pad8	.....	10	30	5	60	UTF-8	EBU	
<input type="checkbox"/> Local Enc. 9												
<input type="checkbox"/> AVTMUX LAN2 MC												
<input checked="" type="checkbox"/> EXTERN R.SH		Frame Size 30		Port 20011		30	0	20	0	UTF-8	EBU	
<input type="checkbox"/> Inserter 12												

# PAD Inserters (3)

- The system offers 25 PAD Inserters for the up to 25 programs.
- Depending on the number of licenced internal encoders, the first PAD Inserters are reserved for these programs.
- The basic parameters can all be found on one page. Click on [UECP] on the far right to switch to the second page. There you can configure the input via UECP.
- Settings:
  - GENERAL
    - ENABLE PAD  
Configure a readable name for the PAD inserter. A name is specified here for the inserters reserved for internal encoders.

- Integrated Encoders
  - AUTO (10%)  
Sets the PAD data rate to 10% of the Sub-Channel data rate automatically.
  - DATA RATE (BIT/S)  
Configure the PAD data rate manually.
- External Encoders
  - Frame Size
  - Port
- CONST. RATE  
Enable padding of the PAD channel in the audio frame to ensure a constant PAD data rate. This avoids fluctuations in audio quality.
- FTP AND API ACCESS  
Configure credentials for playback via FTP or HTTP API
  - USER
  - PASSWORD

# PAD Inserters (4)

- SLIDE SHOW

- MIN. DISPLAY TIME (SEC)

- Configure, how long an image is shown at the receiver.

- PROVISION ALARM (SEC)

- Configure, when an alarm is signalled in case of a missing input.

- DYNAMIC LABELS

- DISPLAY TIME (SEC)

- Configure, how long a text is shown at the receiver.

- PROVISION ALARM (SEC)

- Configure, when an alarm is signalled in case of a missing input.

- INPUT FORMAT

- Tell the inserter which character set the input files use.

- EBU

- UTF-8

- LATIN1

- OUTPUT FORMAT

- Configure which character set to use when formatting the texts.

- EBU

- UCS-2

- UFT-8

# PAD Inserters (5)

- UECF

- VIA UECF

- Activate the input via UECF instead of FTP.

- NETWORK

- PORT

- MULTICAST GROUP ADDRESS

- DATA FILTER

- DATA FILTER

- Activate the filtering of the UECF files while processing of incoming packages.

- ENCODER

- SITE

- PSN



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# Settings

## AES67

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# AES67 (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:05:12

Overview

Multiplexer

Service Extraction

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EDI Output

E1 Output

FTP Server

NPAD Inserters

PAD Inserters

AES67

SNMP

Ember+

System Settings

Discard Changes

Apply Changes

AES67

PTP Settings

PTP Domain0

PTP QoS (DSCP)46

Stream Destinations for Monitoring

Enable Stream	Name	Auto	IP Address	Port	RTP QoS (DSCP)	Coding	Enable Channel	Encoder	Mode
<input checked="" type="checkbox"/>	Stream 1	<input checked="" type="checkbox"/>	239.31.69.102	5004	0	PCM 16	<input checked="" type="checkbox"/> Channel 1	1	Original
							<input checked="" type="checkbox"/> Channel 2	2	Original
<input checked="" type="checkbox"/>	Stream 2	<input checked="" type="checkbox"/>	239.32.69.102	5004	0	PCM 16	<input checked="" type="checkbox"/> Channel 1	3	Coded
							<input checked="" type="checkbox"/> Channel 2	4	Original

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# AES67 (2)

- PTP SETTINGS

- PTP DOMAIN
- PTP QOS (DSCP)

Recommended values are suggested:

- Expedited Forwarding / High Priority
- Assured Forwarding Class4: AF41
- Assured Forwarding Class3: AF31
- Default Forwarding / Best Effort

- STREAM DESTINATIONS FOR MONITORING

- ENABLE STREAM

Activate the data stream

- NAME

Configure a name which will be used by the Session Announcement Signalling (SAP).

- AUTO

Sets parts of the IP-address automatically.

- IP ADDRESS

- PORT

- RTP QOS (DSCP)

- CODING

- PCM 16
- PCM 24

- ENABLE CHANNEL

Activate/Deactivate the second stereo-channel

- ENCODER

Configure, which internal Encoder shall be monitored.

- MODE

Configure, if the input signal of the encoder or the re-decoded signal shall be output.

- ORIGINAL
- CODED



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# Settings

## SNMP

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# SNMP (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 10:05:24

Overview

Multiplexer

Service Extraction

Logs

System

Settings

Transmitters

Redundancy

Import

Export

Firmware Update

Registration

Restart Device

About

Account admin

System Settings

Discard Changes

Apply Changes

System

Network

Time

EDI Output

E1 Output

FTP Server

NPAD Inserters

PAD Inserters

AES67

SNMP

Ember+

SNMP

Enabled

General

Managers

Traps

SNMP Version

v2c

Port

161

System Description

Read Community

public

System Contact

Trap Community

public

System Location

Trap Settings

Send All Traps At Startup

Send Traps Immediately After Enabling

Category A Alias

Category B Alias

Category C Alias

Category D Alias

Get SNMP MIB Files

AVT

Audio Video Technologies

# SNMP (2)

- GENERAL: Settings of the SNMP agent
  - ENABLE
  - SNMP VERSION
  - SYSTEM DESCRIPTION
  - SYSTEM CONTACT
  - SYSTEM LOCATION
  - PORT
  - READ COMMUNITY
  - TRAP COMMUNITY
  - SEND ALL TRAPS AT STARTUP
  - SEND TRAPS IMMEDIATELY AFTER ENABLING
  - CATEGORY A – D ALIAS
- MANAGERS: The Multiplexer can send Traps to up to four network management systems.

- Network
- IP-address
- Port

## ■ TRAPS

- For better overview, the Traps are divided into the areas:
  - SNMP
  - STATUS
  - HARDWARE
  - E1
  - MULTIPLEXER
- Each Trap can be individually (de-)activated and assigned to a category.
- The MIB files can be downloaded from the GENERAL page below using the GET SNMP MIB FILES button.



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# Settings

## Ember+

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - **System**
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Ember+ (1)

The screenshot displays the AVT Ember+ web interface. At the top, a status bar includes a hamburger menu, 'MAIN', status indicators 'ON AIR' (red), 'IN USE' (orange), and 'FORCED' (grey), the device identifier 'M-NDR-SH-KI (172.20.69.100)', and a timestamp '2021-11-10 10:05:28' with a refresh icon and a warning triangle.

The left sidebar contains a navigation menu with the following items: Overview, Multiplexer, Service Extraction, Logs, System (selected), Settings (highlighted in blue), Transmitters, Redundancy, Import, Export, Firmware Update, Registration, Restart Device, About, and Account admin.

The main content area is titled 'System Settings'. It features a left-hand list of settings categories: System, Network, Time, EDI Output, E1 Output, FTP Server, NPAD Inserters, PAD Inserters, AES67, SNMP, and Ember+ (selected). The 'Ember+' settings are displayed in a table:

Ember+	
Enabled	<input checked="" type="checkbox"/>
Network	MANAGEMENT
Port	9000

At the top right of the settings area are two buttons: 'Discard Changes' and 'Apply Changes'. The AVT Audio Video Technologies logo is located in the bottom left corner of the interface.

# Ember+ (2)

- The system can provide status information via Ember+ and acts as an Ember+ provider.
  - The Ember+ Provider provides all information in an Ember+ tree.
  - The information can be accessed via an Ember+ Consumer.
- Settings:
    - ENABLE
    - NETWORK
    - PORT



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# Settings

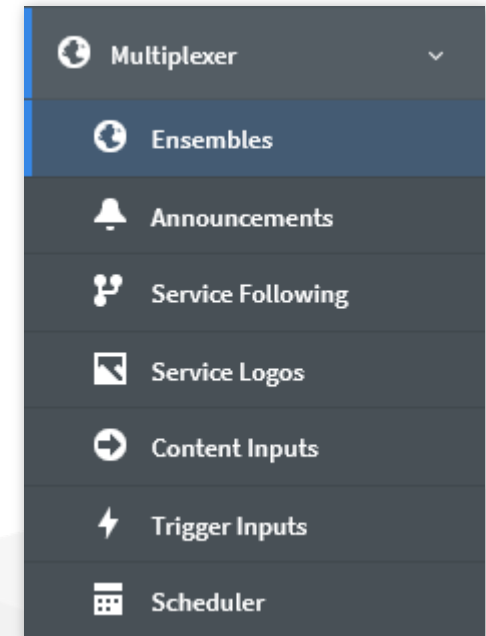
## Multiplexer

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - **Multiplexer**
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support



# Multiplexer Settings (1)

- **CONTENT INPUTS**  
Configure inputs that serve as sources for audio and data sub-channels.
- **ENSEMBLES**  
Define ensembles configurations with the included services, components and sub-channels. Link inputs (CONTENT INPUTS).
- **SCHEDULER**  
Configure when preconfigured ensemble configurations are activated on a scheduled basis.



# Multiplexer Settings (2)

- **TRIGGER INPUTS**

Configure inputs that serve as triggers for announcements in addition to the HTTP API.

- **ANNOUNCEMENTS**

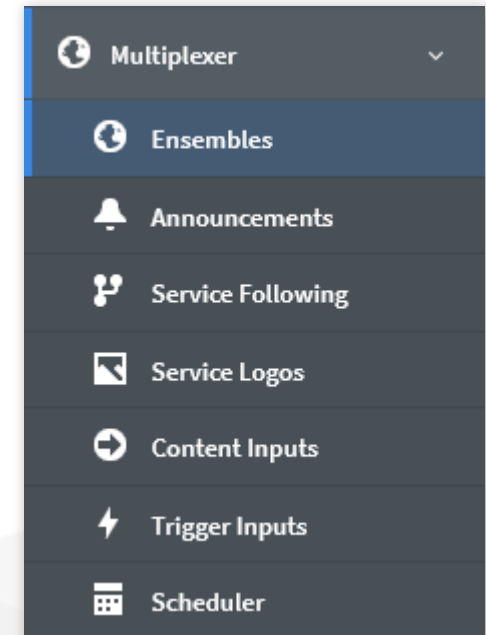
Configure clusters, their switching triggers and the sub-channel containing the announcements. Define how the programs should respond to announcements.

- **SERVICE FOLLOWING**

Configure on which alternative ways (DAB, FM) a receiver can receive your ensemble or individual programs of it.

- **SERVICE LOGOS**

Automatically generate SPI(EPG) signaling that contains only station logos.





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# Settings

## Content Inputs

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - **Multiplexer**
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Content Inputs (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 16:46:10

Overview

Multiplexer

Ensembles

Announcements

Service Following

Service Logos

Content Inputs

Trigger Inputs

Scheduler

Service Extraction

Logs

System

About

Account admin

Multiplexer

New Input

Delete Input

Integrated Encoders

N-JOY | Integr. Enc. 6 | AES67 | TF-USB-Music-1 : 2, Ch 1

NDR 1 SH KIEL | Integr. Enc. 1 | AES67 | DanteUSB-BSEIZ : 2, Ch 1

NDR 2 SH | Integr. Enc. 2 | Web Stream | http://stream.mp3

NDR Blue | Integr. Enc. 7 | AES67 | DanteUSB-BSEIZ : 2, Ch 1

NDR Info SH | Integr. Enc. 4 | AES67 | DanteUSB-BSEIZ : 2, Ch 1

NDR Info Spezial | Integr. Enc. 5 | AES67 | DanteUSB-BSEIZ : 2, Ch 1

NDR Plus | Integr. Enc. 8 | AES67 | DanteUSB-BSEIZ : 2, Ch 1

AVTMUX Encoder Inputs

EXTERN R.SH | AVTMUX 225.65.100.1:7001 (Audio)

EDI Inputs

NDR Kultur | EDI 225.63.200.1:52001 (MANAGEMENT) Subch 5

NPAD FTP Inserters

NDR EPG | NPAD FTP 1

Input Setup

This Input is ON AIR

Cancel

Apply

Name

N-JOY

Type

Integrated Encoder

Exclude From Critical Alarming

Encoder Channel

6

Audio Input Source

AES67

AES67 Stream Name

TF-USB-Music-1 : 2 (239.1.75.111:5004, 1 Stereo Channel)

Stereo Channel

1

Silence Detection Threshold

-48

dBFS (-60..-20 dBFS)

Silence Detection Interval

60

sec (30..120 seconds)

Information

1 Ensemble uses this Input

ON AIR NDR: NDR SH KI

N-JOY | D385 | 96 kBit/s

AVT

Audio  
Video  
Technologies

## Content Inputs (2)

- At the top you find the action bar
  - NEW INPUT  
Adds a new input.
  - DELETE INPUT  
Deletes the selected input.
- On the left side is a list of all already configured inputs.
- Click an element to edit it.
- On the right side are the configuration parameters of the currently selected element.

# Content Inputs (3)

## INPUT SETUP

- NAME
- TYPE
  - AVTMUX  
External Audio-Encoder fed via AVTMUX-Protocol.
  - EDI  
External Audio-Encoder fed via EDI-Protocol.
  - INTEGRATED ENCODER  
Local on-device audio encoder that subscribes to an AES67 or web stream as an Audio source.

- NPAD FTP/UDP/TCP  
Input for a data service.
- EXCLUDE FROM CRITICAL ALARMING  
If activated, an alarm of this input does not lead to a critical system state, thus, no redundancy switching to the backup multiplexer.

- INFORMATION  
Additional information are displayed here, e.g., which ensembles or services this input is linked to.



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# Settings

## Ensembles

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - **Multiplexer**
  - Service-Extraction
  - Transmitter
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- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

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About

Account admin

M-NDR-SH-KI (172.20.69.100)

2021-11-10 20:29:06

Multiplexer

Discard Changes

Apply Changes

New Ensemble

Delete Ensemble

ON AIR

ON AIR

NDR

NDR TA Info OFF

ON AIR

NDR SH KI

10F2

856CUs (99 %)

NDR 1 SH KI

D4E1

Oldies

NDR 2 SH

DE82

Pop

NDR Kultur

D383

Classics

NDR Info SH

DE84

News

NDR Info Spezial

DF84

Info

N-JOY

D385

Pop

NDR Blue

D354

Rock

NDR Plus

D387

Nation M

NDR EPG

E0D030F2

R.SH

D3E8

Pop

Ensemble Setup

Cancel

Apply

Name

NDR

ens-01

Label

NDR SH KI

NDR SH

Country

Germany (E0-1)

Eid

1

0F2

Emergency Break-In Replacement Sources

Trigger

Undefined

Information

1 Scheduler Event activating this Ensemble:

2021-11-10 18:00:00 → NDR

**AVT** Audio  
Video  
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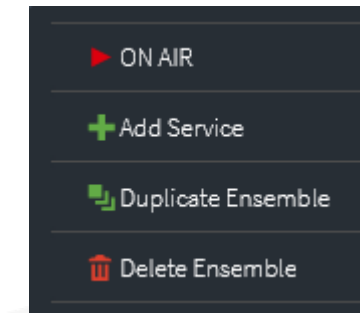
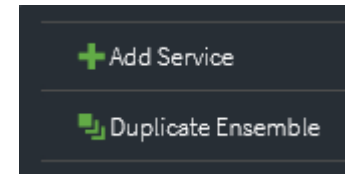
# Ensembles (2)

- At the top you find a row of tabs for the already defined ensemble configurations.
- Click a configuration to edit it.
- The currently broadcasted configuration is marked with an ON AIR symbol and always located on the left.
- Above you find the action bar :
  - NEW ENSEMBLE  
Adding a configuration.
  - DELETE ENSEMBLE  
Delete the selected configuration.
  - ON AIR  
Activate the selected configuration.
- On the left side the ensemble is displayed hierarchically.
- Click an element, to edit it.
- On the right side you find the configuration parameters for the currently selected element.

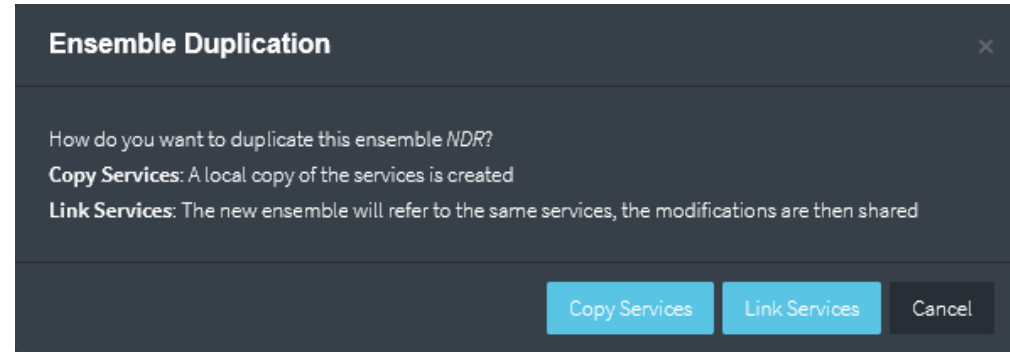
# Ensembles (3)

Click the context menu **1** to perform further actions.

- ADD SERVICE  
Adding another program.
- DUPLICATE ENSEMBLE  
Copying of the ensemble configuration.
- ON AIR  
Activating the ensemble configuration.
- DELETE ENSEMBLE  
Deleting the ensemble configuration.  
The ON AIR configuration cannot be deleted!



# Ensembles (4)



## Copying of an ensemble configuration

- COPY SERVICES

New programs (services) are created with the same configuration parameters.

- LINK SERVICES

The new ensemble will be linked to the already existing programs (services).

If a program is linked to several ensembles, then changes to it will affect all linked ensembles.

# Ensembles (5)

## ENSEMBLE SETUP

- NAME  
Descriptive name of the ensemble configuration for internal use.
- LABEL  
Ensemble-Name
- SHORT LABEL
- COUNTRY
- Eld: Ensemble Identifier

## ■ INFORMATION

Additional information about the Ensemble configuration is displayed here, e.g., whether scheduled actions are planned in the scheduler.

## ■ TRIGGER

See Emergency Warning Break-In Upgrade

# Emergency Warning Break-In Upgrade

- Simultaneous replacement of all program contents without reconfiguration.
- Alarm Announcement Signalling
- Requires an Audio-Encoder as source of the emergency announcement.
- Configure
  - an input (CONTENT INPUT) for the emergency announcement.
  - a TRIGGER INPUT for activating the emergency announcement.
  - the linking with the Ensemble.

The screenshot displays the 'Ensemble Setup' window with the following configuration:

Ensemble Setup				Cancel	Apply
Name	NDR	ens-01			
Label	NDR SH KI	NDR SH			
Country	Germany (E0-1)	Eid	1 0F2		
Emergency Break-In Replacement Sources					
Trigger	Emergency Trigger				
DAB+	Emergency Audio				
DAB 48kHz	Undefined				
DAB 24kHz	Undefined				
Information					
1 Scheduler Event activating this Ensemble:					
2021-11-10 18:00:00 → NDR					

# Services (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 16:46:01

Overview

Multiplexer

Ensembles

Announcements

Service Following

Service Logos

Content Inputs

Trigger Inputs

Scheduler

Service Extraction

Logs

System

About

Account admin

Multiplexer

New Ensemble

Delete Ensemble

ON AIR

ON AIR

NDR

ON AIR

NDR SH KI

10F2

856CUs (99 %)

NDR 1 SH KI

D4E1

Oldies

[Primary]

DAB+

Stereo

48kHz

SBR

96 kBit/s

EEP 2-A

96 CUs

NDR 2 SH

DE82

Pop

NDR Kultur

D383

Classics

NDR Info SH

DE84

News

NDR Info Spezial

DF84

Info

N-JOY

D385

Pop

NDR Blue

D354

Rock

NDR Plus

D387

Nation M

NDR EPG

E0D030F2

R.SH

D3E8

Pop

Service Setup

This Service is ON AIR

Label

NDR 1 SH KI

NDR 1 SH

serv-d4e1

Country

Germany (D) (E0-D)

SId

D

4E1

PTy

Oldies Music

Dynamic

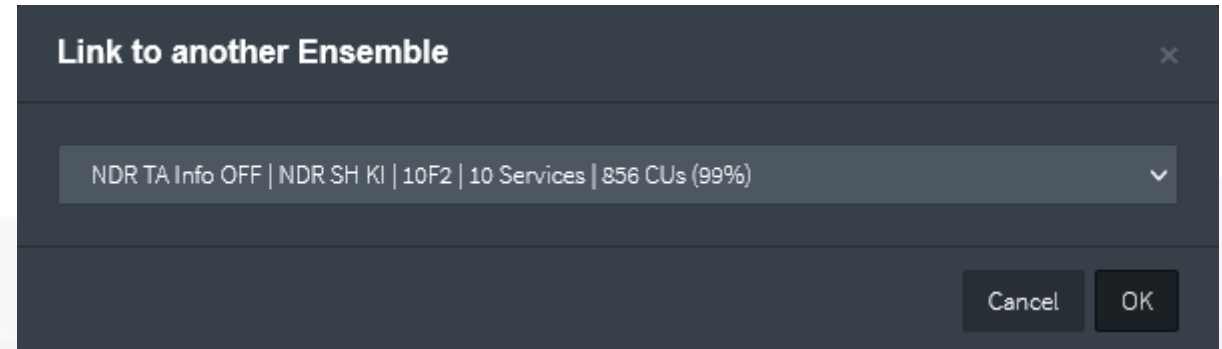
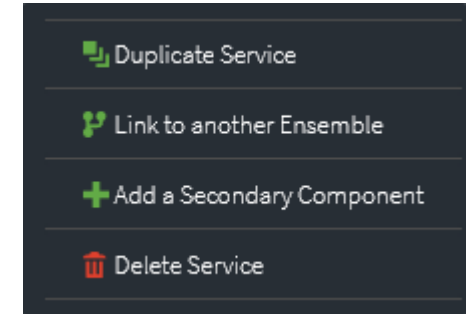
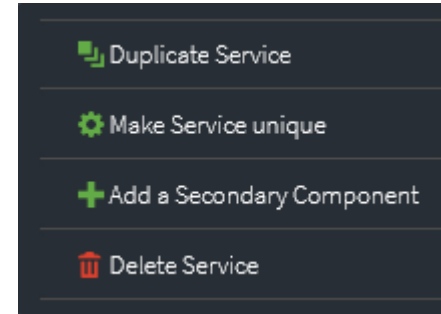
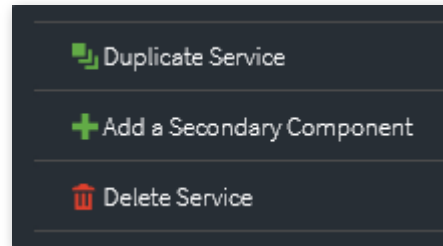
AVT

Audio  
Video  
Technologies

# Services (2)

Click the context menu ① to perform further actions.

- **DUPLICATE SERVICE**  
Copying of the program.
- **ADD A SECONDARY COMPONENT**  
Adding another component.
- **DELETE SERVICE**  
Deleting the selected program.
- **LINK TO ANOTHER ENSEMBLE**  
Linking the program with another ensemble.
- **MAKE SERVICE UNIQUE**  
Replace the program's link to the ensemble with a copy..



# Services (3)

## SERVICE SETUP

- LABEL  
Program Name
- SHORT LABEL
- COUNTRY
- SId: Service Identifier
- PTy: Programme Type

## ■ DYNAMIC

Enable dynamic PTy to set it via the HTTP API.

## ■ INFORMATION

Additional information about the program is displayed here, e.g. whether the program is also used in another ensemble.



# Sub-Channel & Component (1)

The screenshot displays the AVT Multiplexer interface. The top navigation bar includes a menu icon, 'MAIN', status buttons 'ON AIR' (red), 'IN USE' (orange), and 'FORCED' (grey), the system identifier 'M-NDR-SH-KI (172.20.69.100)', and the timestamp '2021-11-10 16:46:03' with connection and warning icons.

The left sidebar contains the following menu items: Overview, Multiplexer (selected), Ensembles, Announcements, Service Following, Service Logos, Content Inputs, Trigger Inputs, Scheduler, Service Extraction, Logs, System, About, and Account admin.

The main area is titled 'Multiplexer' and features a '+ New Ensemble' button, 'Delete Ensemble', and 'ON AIR' status. Below this, a list of ensembles is shown. The first ensemble, 'NDR 1 SH KI', is highlighted with a red box and a red circle containing the number '1'. Its details are: D4E1, Oldies, 856CUs (99 %). The second ensemble, '[Primary]', is highlighted with a yellow box and shows details: DAB+, Stereo, 48kHz, SBR, 96 kBit/s, EEP 2-A, 96 CUs. Other ensembles listed include NDR 2 SH (DE82, Pop), NDR Kultur (D383, Classics), NDR Info SH (DE84, News), NDR Info Spezial (DF84, Info), N-JOY (D385, Pop), NDR Blue (D354, Rock), NDR Plus (D387, Nation M), NDR EPG (E0D030F2), and R.SH (D3E8, Pop).

On the right, the 'Component and Subchannel Setup' panel is open, showing 'Subchannel Settings' and 'Component Settings'. A red banner at the top right of this panel states 'This Service is ON AIR'.

**Subchannel Settings:**

- Bitrate: 96 kBit/s
- Protection Level: EEP 2-A
- Subchannel Id: 1

**Component Settings:**

- Content: DAB+ (AAC), DAB (Layer II), Packet Data
- Audio Codec: 32 kHz, 48 kHz, Stereo, Mono, SBR, PS
- PAD: DLS, SLS
- Language (optional): Not provided

**Input Source:**

- Main Input: NDR 1 SH KI EL
- Backup Input: Undefined

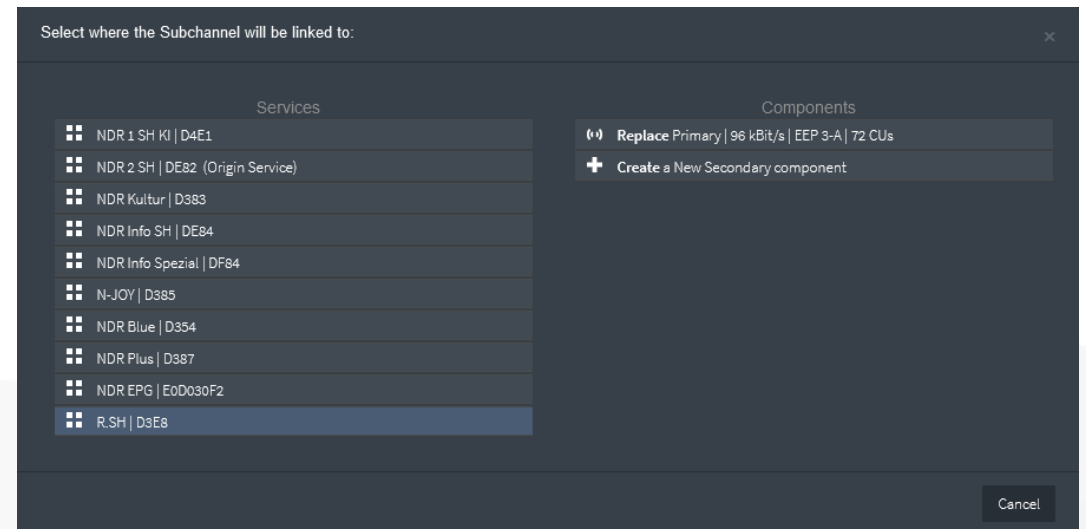
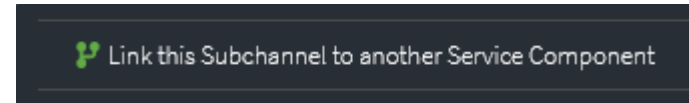
The AVT Audio Video Technologies logo is in the bottom left corner.

# Sub-Channel & Component (2)

Click the context menu **1** to perform further actions.

- LINK THIS SUBHCHANNEL TO ANOTHER SERVICE COMPONENT

Link a sub-channel with several program components.



# Sub-Channel & Component (3)

## SUB-CHANNEL SETTINGS

- BITRATE (including PAD)
- PROTECTION LEVEL
- SUB-CHANNEL ID
- INFORMATION

Additional information about the sub-channel is displayed here. For example, whether it is also used in another component.

# Sub-Channel & Component (4)

## COMPONENT SETTINGS

- **CONTENT:** Audio or data
  - DAB+ (AAC)
  - DAB (LAYER II)
  - PACKET DATA
- **AUDIO CODEC**  
Sampling Rate, Audio-Mode, etc.

- **PAD (DAB+ / DAB)**  
(de-)activation of SlideShow Signalling.
- **USER APPLICATION (PACKET DATA)**  
Selection of application (SPI, TPEG).
- **LANGUAGE (optional)**  
Language of the component.

# Sub-Channel & Component (5)

## INPUT SOURCE

- MAIN INPUT  
Link with input (Content Input)
- BACKUP INPUT  
For redundant inputs, another input can be linked here. The priority is lower than that of the MAIN INPUT.

## ■ INFORMATION

Additional information about the program is displayed here, e.g. whether the program is also used in another ensemble.



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# Settings Scheduler

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - **Multiplexer**
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Scheduler (1)

⋮

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Redundancy

Import

Multiplex Config

System Settings

Export

Firmware Update

Registration

AVT Audio Video Technologies

M-NDR-SH-KI (172.20.69.100)

2021-11-10 22:58:08

⌂

⏮

⚠

Multiplexer Configuration Modified

Discard Changes

Apply Changes

+ New Event

Delete Event

Delete Expired Events

⌚ Every Week At 13:58:00 (Mon/Tue/Wed/Thu/Fri/Sat) → TA NDRInfo On

⌚ Every Week At 18:59:00 (Mon/Tue/Wed/Thu/Fri) → TA NDRInfo On

⌚ Every Week At 05:55:00 (Mon/Tue/Wed/Thu/Fri) → TA NDRInfo On

⌚ Every Week At 05:55:00 (Sat) → TA NDRInfo On

⌚ Every Week At 13:00:00 (Mon/Tue/Wed/Thu/Fri/Sat) → TA NDRInfo Off

⌚ Every Week At 18:30:00 (Mon/Tue/Wed/Thu/Fri) → TA NDRInfo Off

⌚ Every Week At 19:45:00 (Mon/Tue/Wed/Thu/Fri) → TA NDRInfo Off

⌚ Every Week At 18:00:00 (Sat) → TA NDRInfo Off

Scheduler Event Setup

Cancel

Apply

Type

Every Week at given Days and Time

Days

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Time

13 h 58 m 00 s

Ensemble

TA NDRInfo On | NDR SH KI | 10F2 | 11 Services | 854 CUs (99%)

✎

👁

AVT Audio Video Technologies

107

# Scheduler (2)

- By using the SCHEDULER, ensembles can be activated once or recurrent.
- Re-configurations can be executed maximum every 6s.
- At the top you find the action bar
  - NEW EVENT  
Adding an event.
  - DELETE INPUT  
Deleting the selected event.
  - DELETE EXPIRED EVENTS  
Deleting all events gone by.

## SCHEDULER EVENT SETUP

- TYPE: There are several modes available:
  - At a fixed 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
- DAYS
  - On certain days of the week
  - On certain days of the month
- DATE
- TIME
- ENSEMBLE  
Ensemble-configuration that shall be activated.





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# Settings

## Trigger Inputs

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - **Multiplexer**
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Trigger Inputs (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 19:47:40

Overview

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About

Account admin

Multiplexer

New Trigger Input

Delete Trigger Input

Emergency Trigger | UECP

TA N-JOY | UECP

TA NDR 1 | UECP

TA NDR 2 | UECP

TA NDR Info | UECP

Trigger Input Setup

Name

TA NDR Info

Type

UECP

Network

MANAGEMENT

UECP Port

11004

Multicast Group Address

UECP Data

Encoder

0

Site

0

PSN

0

Delay

2

s

AVT

Audio  
Video  
Technologies

# Trigger Inputs (2)

- Trigger Inputs are used for
  - Announcements
  - Emergency Warning Break-In
- At the top you find the action bar.
  - NEW TRIGGER INPUT  
Adding a new trigger-input
  - DELETE INPUT  
Deleting the selected trigger-input.

- On the left side is a list of all already configured triggers.
- Click an element to edit it.
- On the right side are configuration parameters of the currently selected element.

# Trigger Inputs (3)

## TRIGGER INPUT SETUP

- NAME
- TYPE
  - UECF
- NETWORK
- UECF PORT
- MULTICAST GROUP ADDRESS (optional)

## ■ UECF DATA:

- ENCODER
- SITE
- PSN

## ■ DELAY

Set how long the interpretation of UECF packets should be delayed. This is useful to match different propagation times of UECF signaling and audio content for announcement signaling..



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# Settings

## Announcements

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - **Multiplexer**
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Announcements (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 17:12:45

Overview

Multiplexer

Ensembles

Announcements

Service Following

Service Logos

Content Inputs

Trigger Inputs

Scheduler

Service Extraction

Logs

System

About

Account admin

Multiplexer

Discard Changes

Apply Changes

ON AIR

NDR

Announcements Setup

Cancel

Apply

Announcement Switches

New Cluster

Cluster	ASu Trigger	Type	ASw Trigger Input	Subchannel	Unique Id
ALARM					
1		RT	Road Traffic Flash	TA NDR 1   UECF	NDR 1 SH KI: NDR 1 SH KIEL
2		RT	Road Traffic Flash	TA NDR 2   UECF	NDR 2 SH: NDR 2 SH
3		RT	Road Traffic Flash	TA NDR Info   UECF	NDR Info SH: NDR Info SH
4		RT	Road Traffic Flash	TA N-JOY   UECF	N-JOY: N-JOY

Announcement Support

Service	Clusters	Types
NDR 1 SH KI	1 2 3 4	RT
NDR 2 SH	1 2 3 4	RT
NDR Kultur	1 2 3 4	
NDR Info SH	1 2 3 4	RT
NDR Info Spezial	1 2 3 4	

# Announcements (2)

- At the top you find a row of tabs for the already defined ensemble configurations.
- Click an ensemble to edit the Announcements for it.
- In the upper section, the announcements are created.
  - An announcement is of a certain (TYPE) and transported in a SUB-CHANNEL.
  - An announcement may be activated either via UECP-Package (ASW TRIGGER INPUT) or via HTTP API (UNIQUE ID).
  - An announcement is signalled with the help of a (CLUSTER).
  - A group (CLUSTER) can potentially include multiple announcements.
- In the lower section it is specified how the programs of the ensemble shall react to announcements.
  - Here the programs are assigned to the announcements by assigning them to a group (CLUSTER).

# Announcements (3)

## ANNOUNCEMETN SWITCHES

- NEW CLUSTER

Creates a new Cluster.

- Click the context menu ① to add an announcement (SWITCH) to a cluster.

- SWITCH

- TYPE: Type of the announcement

For the predefined cluster ALARM, no type can be selected.

- Sub-Channel

Sub-Channel that transports the announcement.

- ASW TRIGGER INPUT: UECP Trigger-input used for triggering the announcement (TA-Flag).

- ASU TRIGGER: Activates the interpretation of the TP flag of the UECP packets to disable the signaling of the announcement support for this announcement.

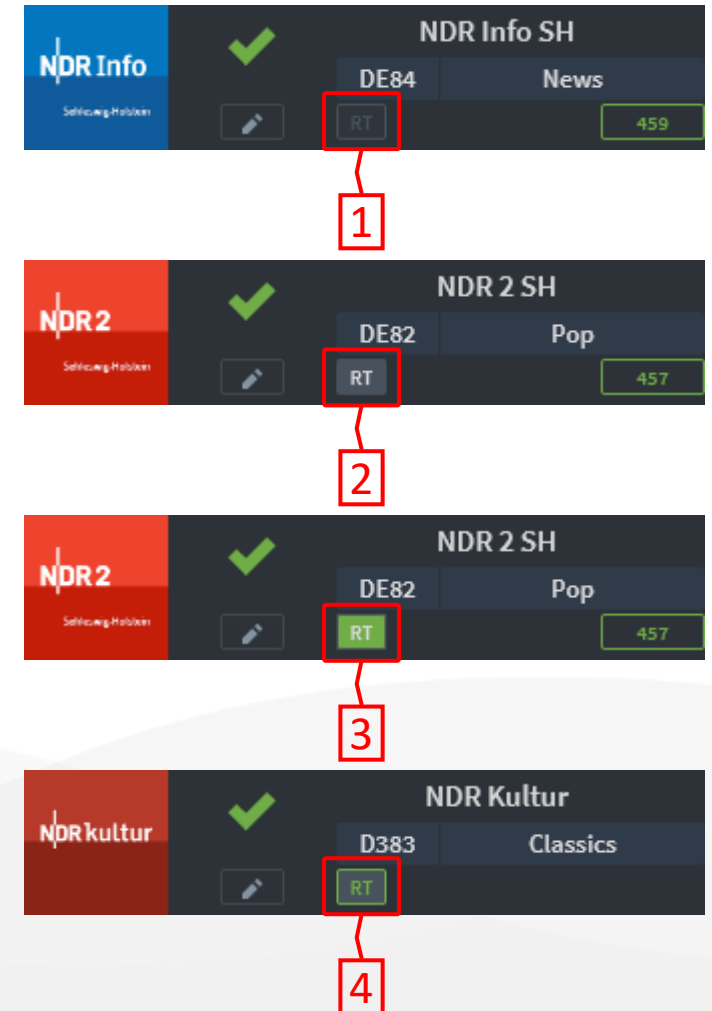
- UNIQUE ID: Unique identifier to perform the de-/activation of the announcement via HTTP API.



# Announcements (4)

## ANNOUNCEMENT SUPPORT

- Check fields in the displayed matrix to assign programs to one or more clusters.
- The program linked to the sub-channel of the announcement is assigned automatically.
- Once a program is assigned to a cluster, a status for the announcement is displayed in the dashboard.
  1. Announcement deactivated (TP-Flag)
  2. Announcement inactive
  3. Announcement active  
On this program the announcement is running.
  4. Announcement active  
From this program the receiver switches to the program on which the announcement is running.





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# Settings

## Service Following

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - **Multiplexer**
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Service Following (1)

The screenshot displays the AVT Multiplexer web interface. The top navigation bar includes a hamburger menu, 'MAIN', status buttons 'ON AIR' (red), 'IN USE' (orange), and 'FORCED' (grey), the system identifier 'M-NDR-SH-KI (172.20.69.100)', and the timestamp '2021-11-10 17:13:02' with a play button and a warning icon.

The left sidebar contains the following menu items: Overview, Multiplexer (selected), Ensembles, Announcements, Service Following, Service Logos, Content Inputs, Trigger Inputs, Scheduler, Service Extraction, Logs, System, About, and Account admin.

The main content area is titled 'Multiplexer' and features a 'Service Following Setup' section. This section includes a 'Service Following Setup' header with 'Cancel' and 'Apply' buttons, and a 'Service Following Setup' sub-header. Below this, the 'Ensemble' section shows 'NDR SH KI' with a '10F2' button and '856CUs (99 %)' status. The 'Services' section displays a list of services under the heading 'NDR 1 SH KI' with 'D4E1' and 'Oldies' buttons. The services are organized into 'LSN 44C Hard Link' and 'LSN 44D Hard Link' sections, each with a 'DAB Links' button. The services listed are:

- Ensemble 114B - Service D7E1
- Ensemble 10F2 - Service D4E1
- Ensemble 1179 - Service D6E1
- Ensemble 1156 - Service D5E1
- Ensemble 1189 - Service D8E1
- RDS 0xD3E1
- RDS 0xD7E1
- RDS 0xD4E1
- RDS 0xD6E1
- RDS 0xD5E1
- RDS 0xD8E1

Each service entry includes an information icon (i), a status icon (red), and a dropdown arrow. The interface also shows '3 Linkage Sets' and '22 Entries'.

The AVT Audio Video Technologies logo is visible in the bottom left corner of the interface.

## Service Following (2)

- SERVICE FOLLOWING provides the possibility to signal information where a receiver can switch to if the reception of the current program is interrupted.
- Configure frequencies/channels on which the complete ensemble can also be received.
- Configure switching recommendations for individual programs.

# Service Following (3)

- Switching recommendations are stored in a LINKAGE SET.
- Multiple linkage sets can be created for each program.
- A linkage set can contain several entries.
- A linkage set can be either SOFT LINK or HARD LINK :
  - HARD LINK  
A hard link refers to another program that broadcasts the same content. A switch of the terminal device happens unnoticed for the listener.
  - SOFT LINK  
A soft link refers to a similar program e.g. of the same channel group.
- For each program Several linkage sets can be created. However, only one linkage set can be active at a time.
- Linkage sets can be dynamically enabled/disabled via HTTP API or FTP (Linkage Actuator).



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# Settings

## Service Logos

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - **Multiplexer**
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Service Logos (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-11 10:30:38

Overview

Multiplexer

Ensembles

Announcements

Service Following

Service Logos

Content Inputs

Trigger Inputs

Scheduler

Service Extraction

Logs

System

About

Account admin

Multiplexer

Service Logos Setup

ON AIR NDR NDR TA Info OFF

SPI Service: NDR EPG E0D030F2 16 kBit/s Estimated Carousel Time 90 sec 36 logos 120.3 KB

NDR 1 SH KI D4E1 Oldies 4 logos 35.4 KB

NDR Kultur D383 Classics

NDR Info Spezial DF84 Info

NDR Blue D354 Rock

R.SH D3E8 Pop

NDR 2 SH DE82 Pop

NDR Info SH DE84 News

N-JOY D385 Pop

NDR Plus D387 Nation M

AVT Audio Video Technologies

# Service Logos (2)

- Each logo should be deposited in all sizes specified by the DAB standard.
    - 32x32 Pixel
    - 112x32 Pixel
    - 128x128 Pixel
    - 320x240 Pixel
  - The files must be inserted in PNG format.
  - Click on a program to view more details.
- Click the context menu **1** to add a program logo or to delete all logos.
    - You can also drag and drop all four logos of a program to add them to the program.
  - If you move the cursor over a logo, a trash can icon appears. With this you can delete a logo.
  - To transport the logos, a CONTENT INPUT of type NPAD FTP and a corresponding service must be created for it.





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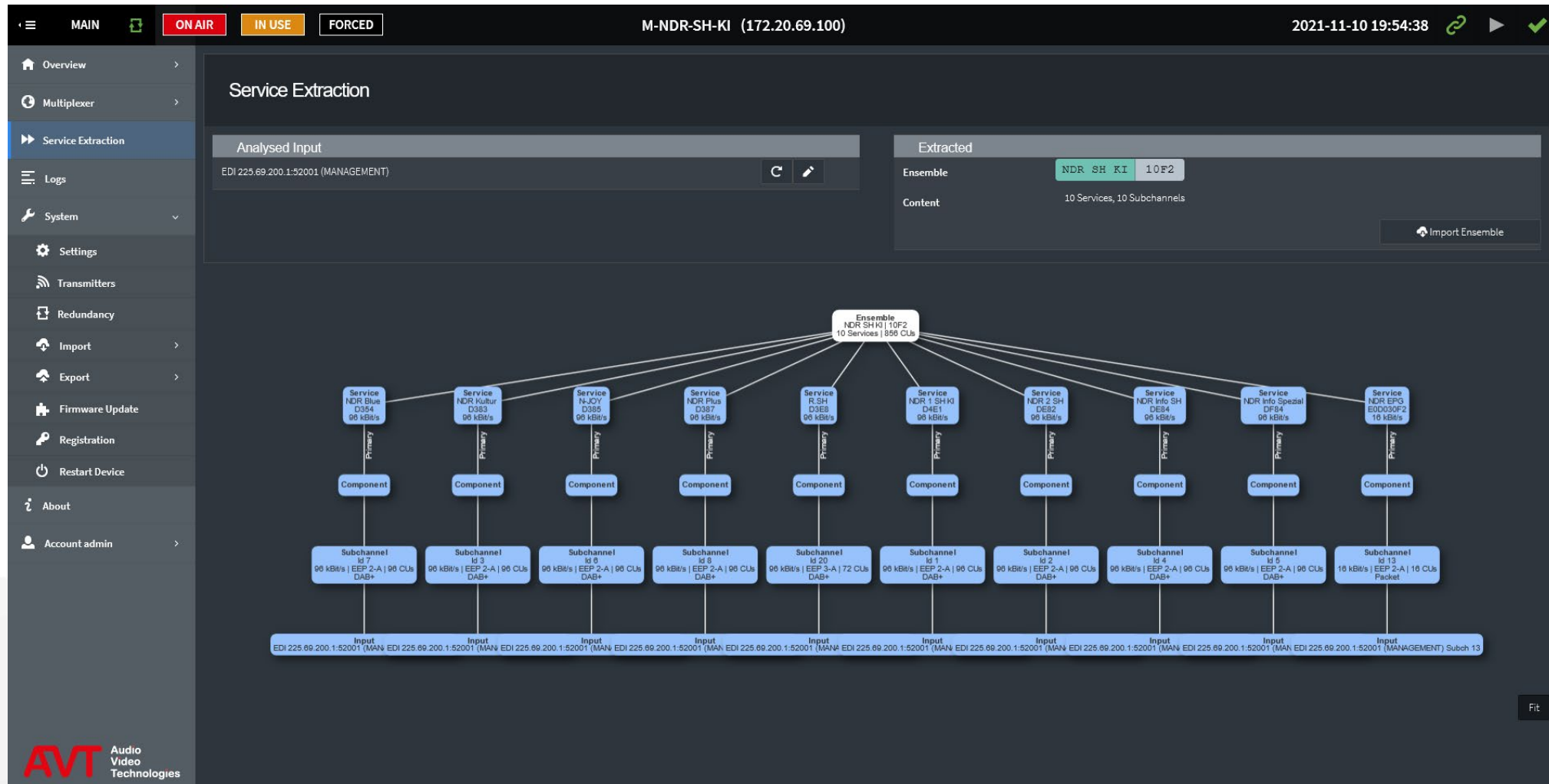
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# Settings

## Service Extraction

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - **Service-Extraction**
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Service Extraction (1)



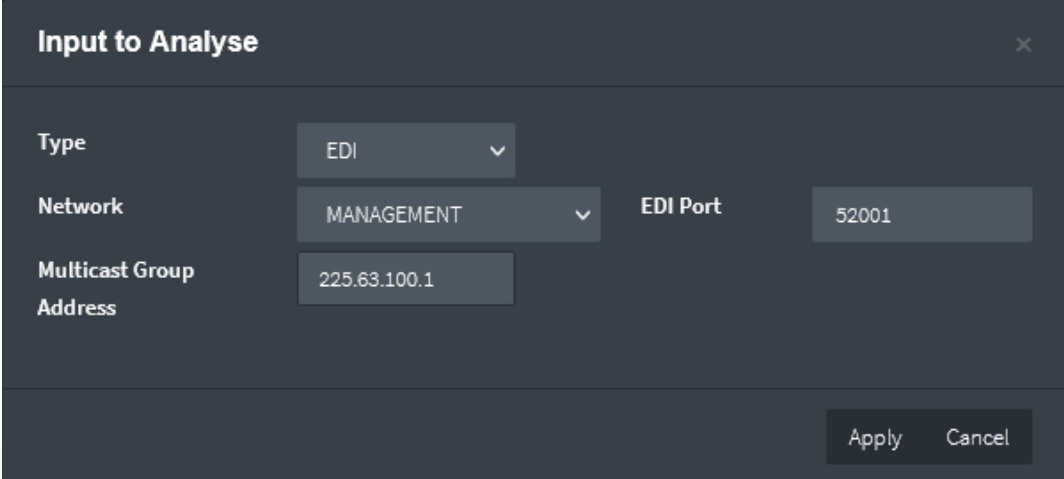
## Service Extraction (2)

- With SERVICE EXTRACTION, input EDI data streams can be analyzed and saved directly as ensemble configurations.
- Facilitation when creating external program feeds.
- First analyze a supplied EDI stream.
- After analysis, a visualization of the generated ensemble configuration is displayed.
- Import the generated ensemble configuration.

# Service Extraction (3)

## INPUT TO ANALYSE

- TYPE  
Currently only EDI is supported.
- NETWORK
- EDI PORT
- MULTICAST GROUP ADDRESS



The screenshot shows a dark-themed dialog box titled "Input to Analyse" with a close button (X) in the top right corner. The dialog contains four input fields arranged in two rows. The first row has "Type" set to "EDI" (with a dropdown arrow) and "EDI Port" set to "52001". The second row has "Network" set to "MANAGEMENT" (with a dropdown arrow) and "Multicast Group Address" set to "225.63.100.1". At the bottom right, there are "Apply" and "Cancel" buttons.

Field	Value
Type	EDI
Network	MANAGEMENT
EDI Port	52001
Multicast Group Address	225.63.100.1

# Service Extraction (4)

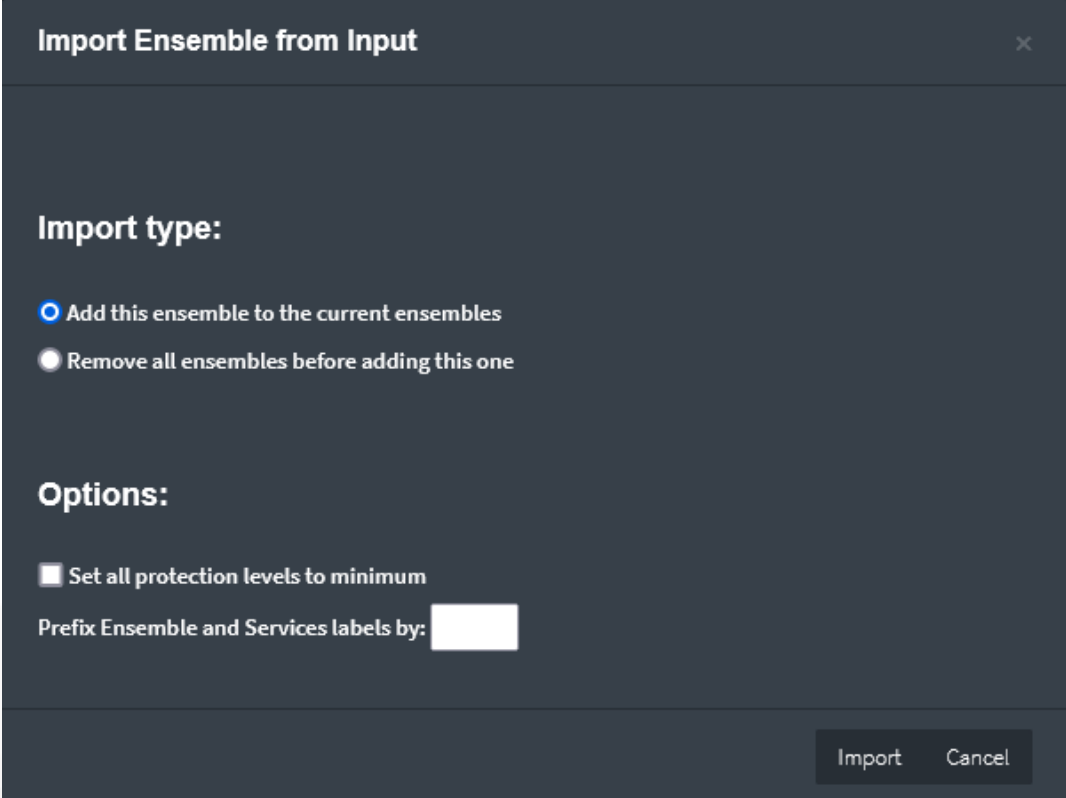
## IMPORT ENSEMBLE FROM INPUT

### ■ IMPORT TYPE

Select here if the created ensemble configuration should be added to the current ones or if all others should be removed beforehand.

### ■ OPTIONS

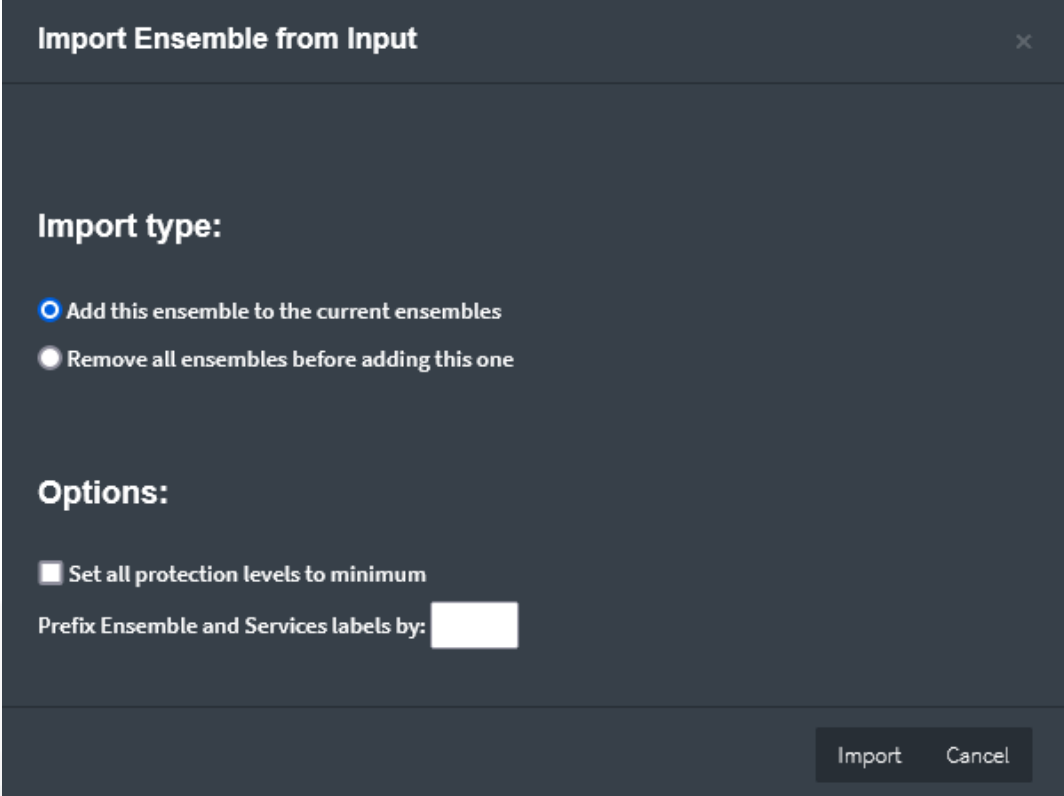
See CABLE UPGRADE



The screenshot shows a dark-themed dialog box titled "Import Ensemble from Input" with a close button (X) in the top right corner. The dialog is divided into two main sections: "Import type:" and "Options:". Under "Import type:", there are two radio button options: "Add this ensemble to the current ensembles" (which is selected) and "Remove all ensembles before adding this one". Under "Options:", there is a checkbox labeled "Set all protection levels to minimum" which is currently unchecked. Below this, there is a text label "Prefix Ensemble and Services labels by:" followed by a small, empty white rectangular input field. At the bottom right of the dialog, there are two buttons: "Import" and "Cancel".

# Cable Upgrade

- Advanced Import of Ensemble-Configurations during SERVICE EXTRACTION
- OPTIONS
  - SET ALL PROTECTION LEVELS TO MINIMUM  
Adjustment of the protection level of all sub-channels to a minimum in order to save as many capacity units as possible.
  - PREFIX ENSEMBLE AND SERVICE LABELS BY  
Add a prefix to the ensemble name and all program names.



The screenshot shows a dark-themed dialog box titled "Import Ensemble from Input" with a close button (X) in the top right corner. The dialog is divided into two main sections: "Import type:" and "Options:". Under "Import type:", there are two radio button options: "Add this ensemble to the current ensembles" (which is selected) and "Remove all ensembles before adding this one". Under "Options:", there is a checkbox labeled "Set all protection levels to minimum" which is currently unchecked. Below this, there is a text label "Prefix Ensemble and Services labels by:" followed by an empty white text input field. At the bottom right of the dialog, there are two buttons: "Import" and "Cancel".



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# Settings

## Transmitter

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - **Transmitter**
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Transmitter (1)

- Central configuration of parameters of the transmitter sites for the Single Frequency Network (SFN).
- The information is transported via the MNSC channel.
- The Transmitter Identification Information (TII) are obsolete with version 2.1.1 of the DAB standard (ETSI EN 300 401). They were transported in FIG 0/22.



# Transmitter (2)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.20.69.100)

2021-11-10 19:53:08

Overview

Multiplexer

Service Extraction

Logs

System

Settings

Transmitters

Redundancy

Import

Export

Firmware Update

Registration

Restart Device

About

Account admin

Transmitter Information

(Signalled in MNSC)

+ Add Transmitter

- Del Transmitter

Name	Main Id	Sub Id	Address	Control Flags	Offset Delay
Tholey	5	6	4	0	56
Felsberg	2	3	5	0	34

Showing 1 to 2 of 2 entries

Transmitter Info

Cancel

Apply

Name	Tholey
Main Id	5
Sub Id	6
Address	4
Control Flags	0
Offset Delay	56

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Audio  
Video  
Technologies

# Transmitter (3)

- At the top you will find the action bar
  - ADD TRANSMITTER  
Add a transmitter.
  - DEL TRANSMITTER  
Delete a transmitter.
- On the left side there is a list of all already configured transmitters.
- Click an element to edit it.
- On the right side you find the configuration parameters of the currently selected element.

# Transmitter (4)

## TRANSMITTER INFO

- NAME  
Internal identifier for the transmitter.
- The other parameters are defined in
  - ETI Standard (ETS 300 799)
  - DAB Standard (ETSI EN 300 401)
- MAIN ID
- SUB ID
- ADDRESS
- CONTROL FLAGS
- OFFSET DELAY in [μs]

Transmitter Info		Cancel	Apply
Name	Tholey		
Main Id	5	⬆️⬆️	
Sub Id	6	⬆️⬆️	
Address	4	⬆️⬆️	
Control Flags	0	⬆️⬆️	
Offset Delay	56	⬆️⬆️	



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# Settings

## Redundancy

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - **Redundancy**
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Redundancy

- Replacing the multiplexer configuration:
  - CONTENT INPUTS
  - ENSEMBLES
  - SCHEDULER
  - TRIGGER INPUTS
  - ANNOUNCEMENTS
  - SERVICE FOLLOWING
  - SERVICE LOGOS
- Replacing the status information

- Different scenarios are supported:
  - 1+1 Redundancy  
Two devices operate in a redundancy network.  
Additional features possible:
    - Switch Redundancy -> Switch Redundancy Upgrade
    - 1-way redundancy -> 1-Way Redundancy Upgrade
  - N+1 redundancy  
Multiple devices share one BACKUP device.

# Switch Redundancy

- Switch redundancy upgrade required!
- Additional replacement of the generated ensemble via EDI.
- Both devices select between their own ensemble multiplex and the one generated by the partner system.
- 2-way delivery to the transmitter network  
The outputs of both devices are fed to the transmitter network.

# 1-way redundancy (1)

- Switch redundancy upgrade required!
- 1-way redundancy upgrade required!
- 2-way delivery to the transmitter network  
Only the output of one device is fed to the transmitter network.
- The MAIN device decides which of the two generated ensemble multiplexes is delivered to the transmitter network.

# 1-way redundancy (2)

## ■ IP/EDI

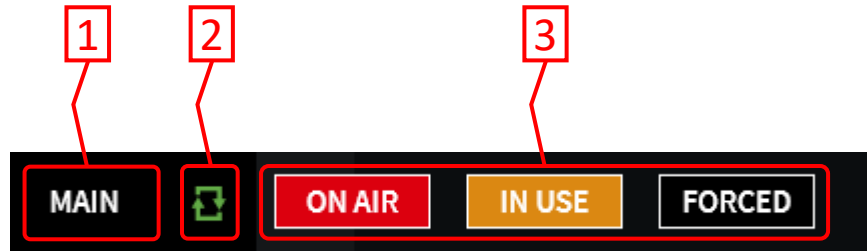
- The EDI data stream must be delivered with a multicast address.
- The output of the BACKUP device is switched off.
- The BACKUP device monitors the data stream of the MAIN device.
- For uninterrupted protection, the BACKUP device only sends IP packets itself in the event of missing IP packets from the MAIN device.

## ■ E1/ETI (E1 Module Upgrade)

- The output of the BACKUP device is connected to the input of the MAIN device.
- The MAIN device switches to the ensemble of the BACKUP device without interruption in the event of non-critical local alarms.
- The MAIN device switches to the ensemble of the BACKUP device with a short interruption (E1 bypass relay) in the event of critical local alarms or power failure.



# Redundancy – Status

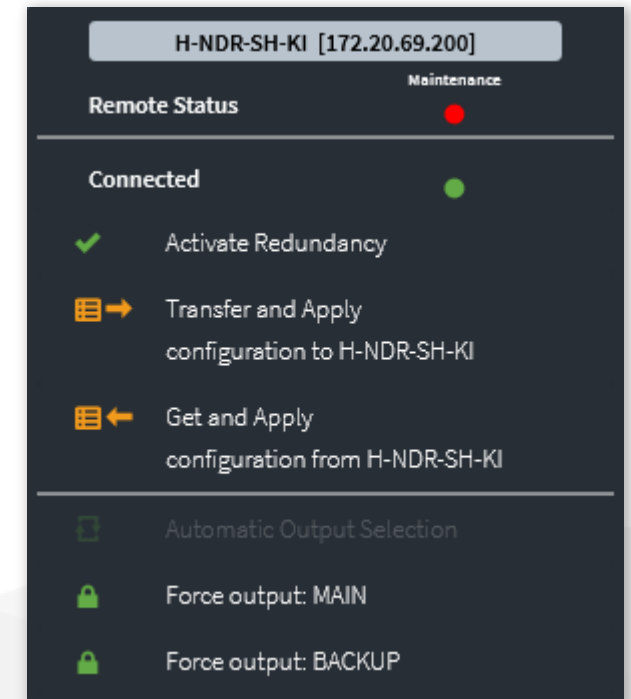


1. Modus
2. Context menu
3. 1-way status
  - ON AIR  
The output signal of this device is delivered to the transmitter network.

- IN USE  
This device is in the signal path of the output signal (E1)
- FORCED  
The output signal was set manually.

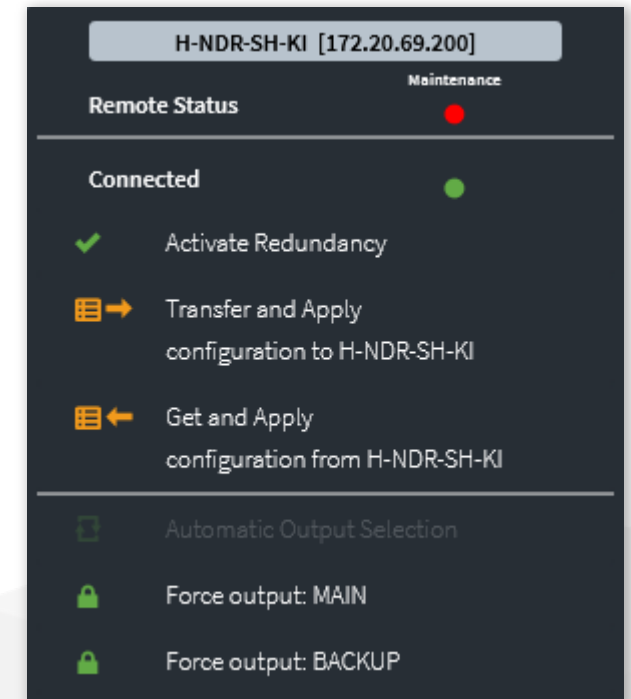
# Redundancy – Context menu (1)

- Name and IP-address of the partner.
- REMOTE STATUS  
System status of the partner.
- CONNECTED  
Status of the communication between both systems.
- ACTIVATE REDUNDANCY
  - Alignment of the multiplexer configuration is inactive.
  - Activation of the alignment.
- DEACTIVATE REDUNDANCY
  - Alignment of the multiplexer configuration is active.
  - Deactivation of the alignment.



# Redundancy - Context menu(2)

- TRANSFER AND APPLY CONFIGURATION  
Transfer and activate multiplexer configuration to the partner.
- GET AND APPLY CONFIGURATION  
Get and activate multiplexer configuration from partner.
- Manual selection of the output signal:
  - AUTOMATIC OUTPUT SELECTION
  - FORCE OUTPUT: MAIN
  - FORCE OUTPUT: BACKUP



# Redundancy – Configuration (1)

⋮

Overview >

Multiplexer >

Service Extraction >

Logs >

System ▾

Settings

Transmitters

Redundancy

Import >

Export >

Firmware Update




Registration

Restart Device

About

Account admin >

M-NDR-SH-KI (172.20.69.100)

2021-11-11 16:59:43   

Multiplexer Redundancy

+ Add a Multiplexer

Operating mode: Not defined

Redundant Multiplexer	Input IP Offsets	Redundancy Status
Name [IP Address]		Connected

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# Redundancy – Configuration (2)

- At the top you will find the action bar
  - ADD MULTIPLEXER  
Add a multiplexer.
- Below is a list of all multiplexers already configured.
  - 1+1 Redundancy: Only one entry.
  - N+1 Redundancy: Potentially multiple entries.

# Redundancy – Configuration (3)

New Redundancy Link

IP Address

172.20.69.200

http Port

80

Network

MANAGEMENT

Synchronisation Mode

Main

Backup

Equal Roles

1-Way Redundancy

☒

Switch Redundancy

☒

Main EDI Output (this device)

229.69.100.1

Port

60001

Network

MANAGEMENT

Backup EDI Output (other device)

229.69.200.1

Port

60002

Network

MANAGEMENT

Offset Inputs IP

☒

Input IP Offset

0

0

0

0

i

Input Port Offset

0

i

Control IP Offset

0

0

0

0

i

Control Port Offset

0

i

Apply

Cancel

# Redundancy - Configuration (4)

## NEW REDUNDANCY LINK

- IP ADDRESS
- PORT
- NETWORK
- SYNCHRONISATION MODE
  - MAIN  
Changes to Ensemble configurations can only be made on the MAIN device.

- BACKUP  
Changes to the Ensemble configuration are taken over by the MAIN device.
- EQUAL  
Changes to the ensemble configuration can be made on both devices.

# Redundancy - Configuration (5)

- 1-WAY REDUNDANCY  
Enable 1-way redundancy
- SWITCH REDUNDANCY  
Enable switch redundancy
  - Configure due EDI data streams for exchange

- MAIN EDI OUTPUT (THIS DEVICE)
- PORT
- NETWORK
- BACKUP EDI OUTPUT (OTHER DEVICE)
- PORT
- NETWORK



# Redundancy - Configuration (6)

- **OFFSET INPUTS IP**

- MAIN and BACKUP device may use different schemes of IP addresses and ports on the inputs (CONTENT INPUTS)

- When comparing the ensemble configuration, the differences between the two schemes can be configured here
- IP ADDRESS
- PORT
- CONTROL IP ADDRESS
- CONTROL PORT



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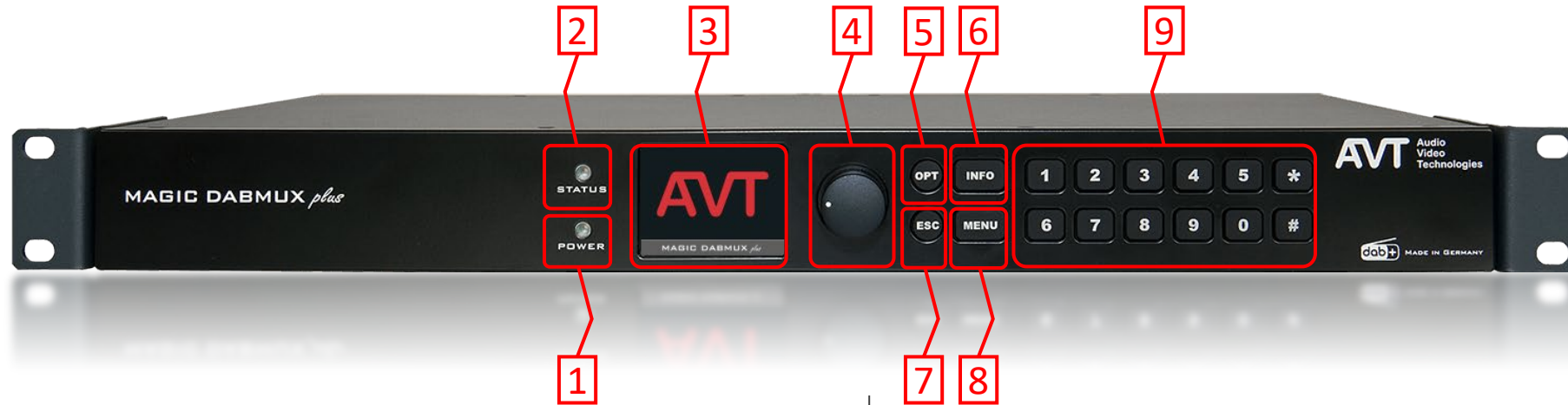


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# Front Display

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- **Front-Display**
- System
  - Maintenance
  - Troubleshooting
- Support

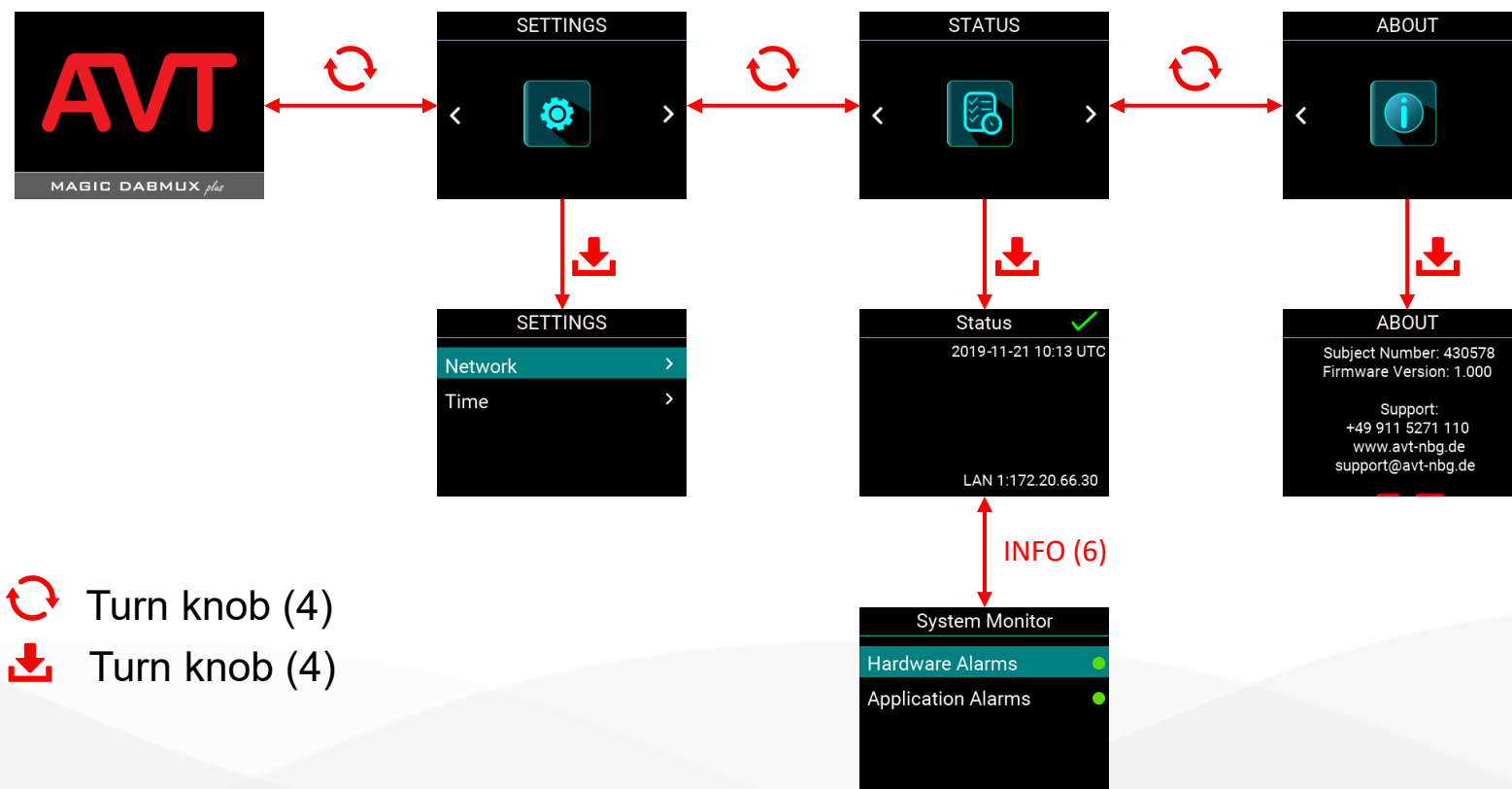
# System controls



1. power LED
2. Status LED
3. TFT screen
4. Rotary pushbutton (scroll / confirm)
5. OPT (Options)

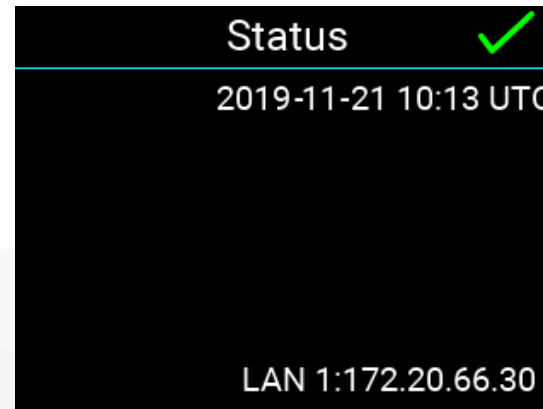
6. INFO (Direct access to the system status)
7. ESC (back)
8. MENU (Direct access to the settings)
9. Numeric keypad

# Menu structure



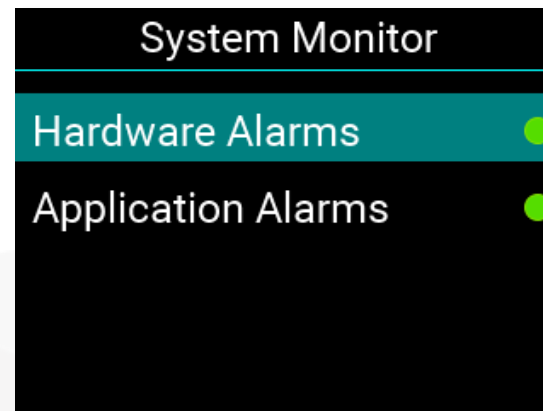
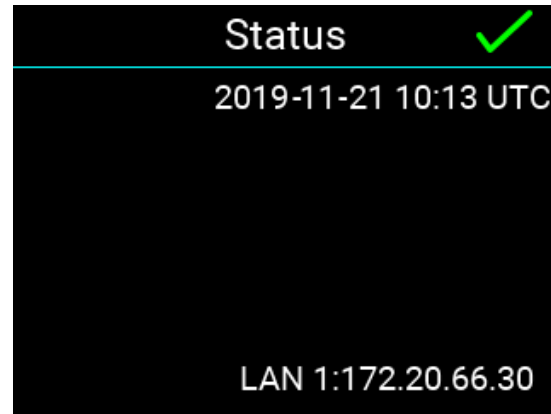
# Start-up screen

- During start-up, the system displays a splash screen with the AVT LOGO and the product name.
- After a few seconds, the STATUS screen will be displayed automatically



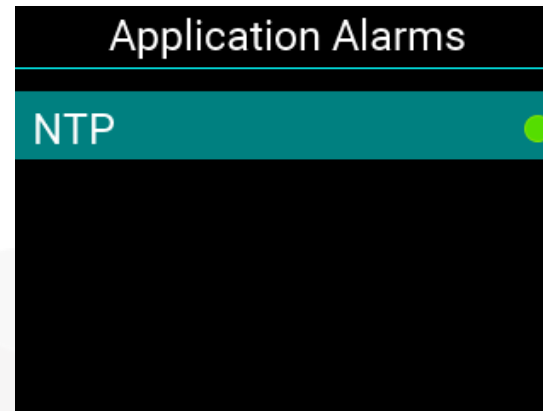
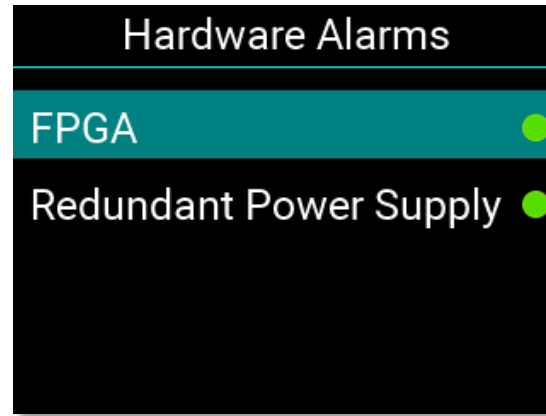
# Status

- To access the STATUS screen directly, press the INFO button.
- Press the INFO button again to enter the SYSTEM MONITOR.
  - A green LED indicates that everything is in order.
  - A blue LED indicates that an alarm has occurred but is no longer active.
  - A red LED indicates that an alarm is currently active.



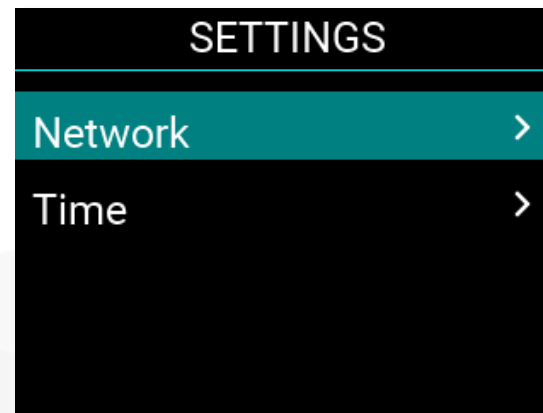
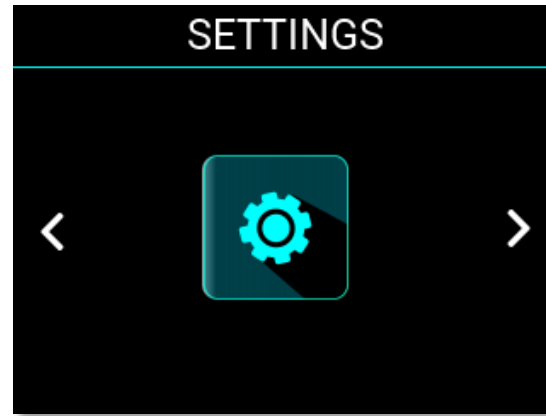
# Alarms

- Click an entry in the System Monitor to view more details:
- **HARDWARE ALARMS:** The firmware cannot access parts of the hardware or one of the power supplies has failed.
- **APPLICATION ALARMS:** The system has detected problems with data processing.



# Settings

- Via the MENU-button the system settings can also be accessed directly.





# Network Settings

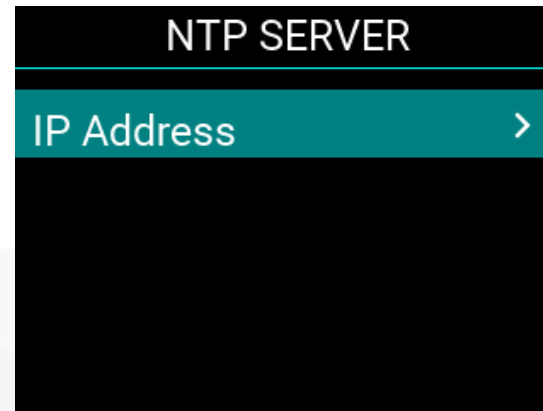
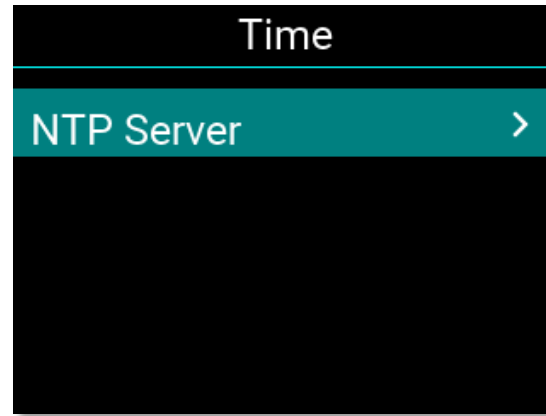
- Enter the NETWORK settings to change the IP ADDRESS, SUBNET MASK, and GATEWAY of LAN INTERFACE 1 of the system.
  - Enter the IP address using the numeric keypad.
  - Turn the push/turn control (4) to scroll to the next section of the IP address.
  - Press the rotary-push button (4) to save the value.
  - Press ESC to cancel the entry.

Network	
IP Address	>
Subnet Mask	>
Gateway	>

IP Address
172.20.66. <u>30</u>

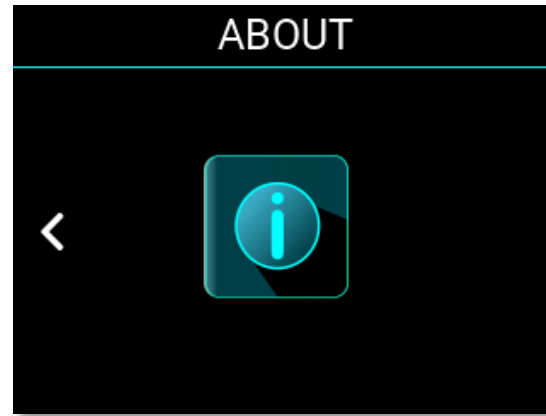
# Time Settings

- The IP address of the NTP server is set in the TIME menu.



# About

- The firmware version and contact information are displayed under ABOUT.





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# Maintenance

## System Logs

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Logs (1)

BACKUP

ON AIR

IN USE

FORCED

H-NDR-SH-KI (172.20.69.200)

2021-11-11 19:51:12

Overview

Dashboard

Inputs

PAD Inserters

Multiplexer

Service Extraction

Logs

System

About

Account admin

Logs

Alarms Info Advanced Alarms/Info Pending Finished

Show All entries

Search:

Start / End	Period	This System State	This System	Other System State	Other System	Alarm Level	Info	Origin
Today 19:48:52	48m 35s 679ms	Maintenance		Maintenance		Warning	Clock Deviation	
Today 19:36:40	264ms	Maintenance		Maintenance		Error	Stream OK	Emergency Audio
Today 19:36:40	1m 44s 927ms	Maintenance		Maintenance		Error	No Stream	Emergency Audio
Today 19:34:55	14s 64ms	Maintenance		Maintenance		Undefined	Content OK	NDR Kultur
Today 19:34:55	13s 969ms	Maintenance		Maintenance		Error	Stream OK	NDR Kultur
Today 19:34:55	14s 113ms	Maintenance		Maintenance		Error	Stream OK	Emergency Audio
Today 19:34:41	40m 38s 497ms	Maintenance		Maintenance		Undefined	No Content	NDR Kultur
Today 19:34:41	40m 38s 520ms	Maintenance		Maintenance		Error	No Stream	NDR Kultur
Today 19:34:41	15m 6s 119ms	Maintenance		Maintenance		Error	No Stream	Emergency Audio
Today 19:31:02	1m 0s 34ms	Maintenance		Maintenance		Warning	Reception OK	NDR Plus
Today 19:31:02	1m 0s 34ms	Maintenance		Maintenance		Warning	Buffer OK	NDR Plus
Today 19:31:02	1m 0s 33ms	Maintenance		Maintenance		Warning	Reception OK	NDR 1 SH KIEL
Today 19:31:02	1m 0s 33ms	Maintenance		Maintenance		Warning	Buffer OK	NDR 1 SH KIEL
Today 19:31:02	1m 0s 33ms	Maintenance		Maintenance		Warning	Reception OK	NDR Info SH
Today 19:31:02	1m 0s 33ms	Maintenance		Maintenance		Warning	Buffer OK	NDR Info SH
Today 19:31:02	1m 0s 33ms	Maintenance		Maintenance		Warning	Reception OK	NDR Info Spezial

Showing 1 to 2,130 of 2,130 entries (filtered from 3,097 total entries)

Export to Excel Copy to Clipboard

Individual events Refresh (Last refresh: 2021-11-11 19:50:54)

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## Logs (2)

- The system logs all events in an internal log file.
- Filter the view by categories, modules, level, time.
- Export using the buttons at the bottom of the screen.
- Click REFRESH to refresh the view.
- The logs are lost when the system is rebooted or powered off.



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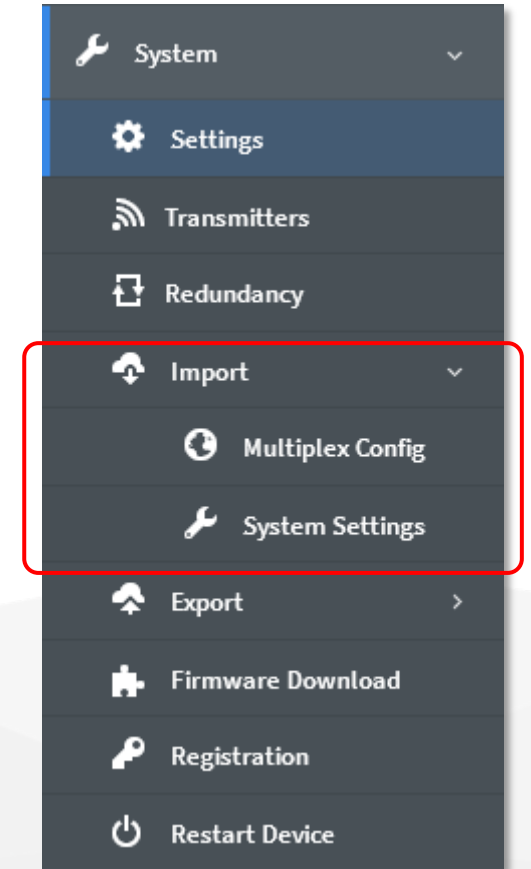
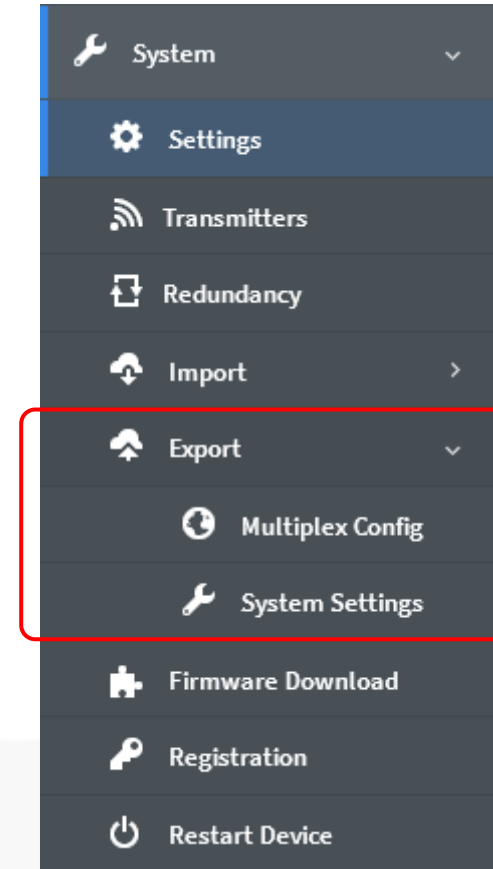
# Maintenance

## Import & Export

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Import & Export

- The system settings can be saved under SYSTEM - EXPORT.
- Under SYSTEM - IMPORT, backups can be restored to the system beforehand.
- A distinction is made between system settings and the multiplexer configuration.







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# Maintenance

## Firmware Update

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# Firmware Update (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.29.123.65)

2020-10-19 09:46:10

Overview

Multiplexer

Service Extraction

Logs

System

Settings

Transmitters

Redundancy

Import

Export

Firmware Download

Registration

Restart Device

About

Account admin

Firmware Download

Load new firmware to the device

Current Firmware Version 2.002 (Build 5020)

Uploaded 2.003 Build 5040

1. Step: Select & Copy

Selects the firmware file to copy to the system.

✓ DABMUXplus\_2.003.5040\_Release.ssw - 9.39 MB - Successfully copied into the system.

Select File

2. Step: Write & Restart

Writes the firmware into the flash memory and restarts the device.

⚠ Do not switch-off or restart the device during writing.

Write File

Restart Device

AVT

Audio  
Video  
Technologies

# Firmware Update (2)

The firmware is updated in three stages:

- **SELECT FILE**

Select the firmware file in the file system. The web interface checks the file and loads it into a RAM of the system.

- **WRITE FILE**

Writes the firmware into the permanent memory.

**During writing the system must not be restarted or switched off!**

- **RESTART DEVICE**

Restarts the system to activate the firmware.



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# Maintenance Information

- General
  - Hardware
  - Features
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  - System
  - Multiplexer
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- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support

# System Registration (1)

MAIN

ON AIR

IN USE

FORCED

M-NDR-SH-KI (172.29.123.65)

2020-10-19 09:46:10

Overview

Multiplexer

Service Extraction

Logs

System

Settings

Transmitters

Redundancy

Import

Export

Firmware Download

Registration

Restart Device

About

Account admin

System Registration

Device Information

Hardware Platform	MAGIC DABMUX plus
Software Application	MAGIC DABMUX plus
Software Version	2.002 (Build 5020)
MAC Address LAN 1	78-04-73-2A-5E-90
MAC Address LAN 2	78-04-73-69-8E-60
MAC Address LAN 3	78-04-73-69-FC-97
Main Board	
Subject Number	450175
Factory Number	20/19/1059
Year	2020
Hardware Version	1.00
Module Slot	
Subject Number	470100
Factory Number	20/19/1695
Year	2020
Hardware Version	2.01

Features

Redundant Power Supply	✓
E1 Output	1
E1 Input	1
EDI Outputs Destinations	4

Hardware Options

E1 Module	✓
LAN Module	✗

Software Options

MAGIC DABMUX plus	✓
ETI/EDI Switch Redundancy Upgrade	✓
ETI/EDI 1-Way Redundancy Upgrade	✓
DAB System Manager	✓
Cable Upgrade	✗
Emergency Warning Break-In Upgrade	✗
Integrated Encoders	10
Monitoring Decoders	2
AES67 Stereo Input Channels	10

Password

Submit

Restart the device to enable changes

Restart Device

# System Registration (2)

- System information

- Serial number
- MAC addresses
- Module slot

- Features

Features supported by the system depending on hardware and software options.

- Hardware options

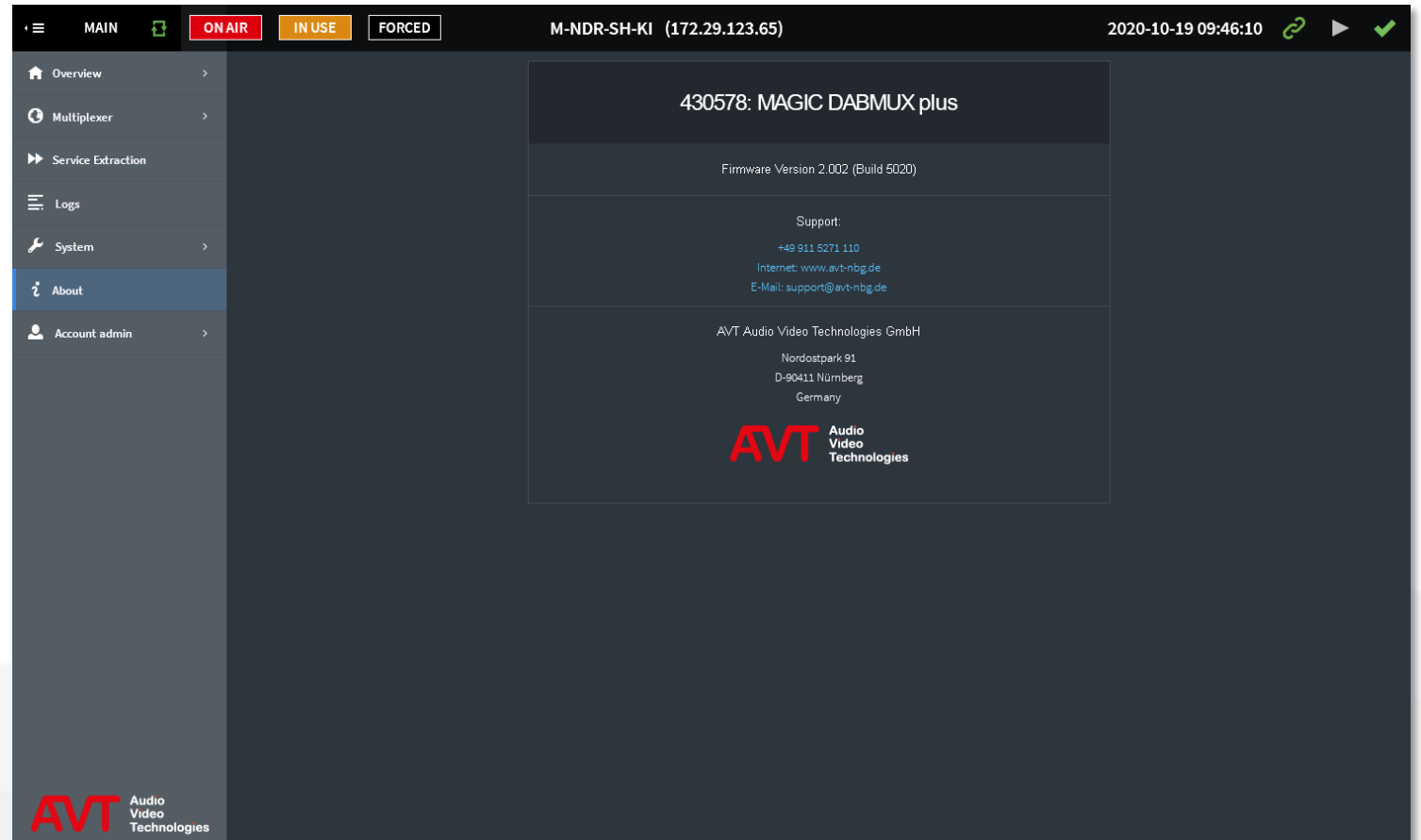
Available modules

- Software options

- Available and activated unlocks
- PASSWORD  
Enter a license password to unlock new functions.

# About

- Firmware version
- Contact information





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# Troubleshooting

## Recovery from SD-Card

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support



# Recovery from SD card (1)

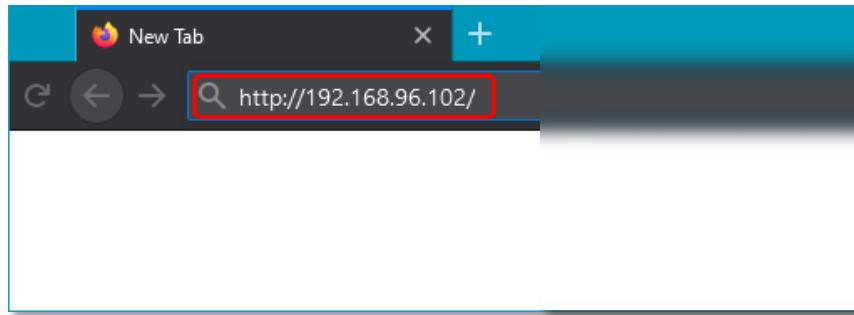


# Recovery from SD card (2)

- If updating the bootloader or firmware via the web interface fails, you can alternatively update the system via an SD card.
- Contact support for the recovery files.
- The recovery files are provided as a zip archive.
- Unpack the archive onto an SDHC card.
- Turn off the system.
- Insert the SD card into the slot (1).
- Press the RST button (2) on the back of the system with a paper clip for at least 12 seconds.

The system will boot from the SD card.

# Recovery from SD card (3)



## MAGIC DABMUX plus

Version: 1.950.2334

### Update

- Firmware** Updates the firmware via the website.
- Boot Loader** Updates the boot loader via the website.
- Recovery** Updates the boot loader and the firmware from SD card.

### Tools

- Software Options
- Restart Device
- Load Factory Settings
- Format File System

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# Recovery from SD card(4)

- Once the system is booted, the flash memory of the system needs to be programmed with the bootloader and firmware from the SD card via the website.
- Use LAN 1 to connect to the system.
- The system uses the configured IP address. If readout fails, the factory setting (192.168.96.102) is used.
- Enter the IP address in a web browser that supports HTML5.
- Click RECOVERY in the UPDATE section of the web interface.

If firmware recovery via SD card failed before, you can click FORMAT FILE SYSTEM first to clear the system completely. **Attention! All settings will be lost.**

# Recovery from SD card(5)

## MAGIC DABMUX plus

Version: 1.950.2334

Back

### Recovery

Updates the boot loader and the firmware from SD card.

Do not switch-off or restart the device during the operation!

Please do not close this site. Allow at least one minute for the device to complete the operation!

Start

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## MAGIC DABMUX plus

Version: 1.950.2334

Back

### Recovery

Updates the boot loader and the firmware from SD card.

Do not switch-off or restart the device during the operation!

Please do not close this site. Allow at least one minute for the device to complete the operation!

Start

#### Result:

Updating the boot loader and the firmware was successful!

The device has to be restarted to have the changes applied.

Restart Device

The device is going to restart now!

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# Recovery from SD card(6)

- Click START to transfer the recovery files and program the system flash memory.
    - For technical reasons, the website does not display a progress bar.
    - An estimate of the time required is given.
    - When the process is complete, the result is displayed with a colour background:
      - GREEN: Success
      - RED: Error
- You can repeat the entire process again. In addition, click FORMAT FILE SYSTEM before going to the RECOVERY page. **Attention! All settings will be deleted.**



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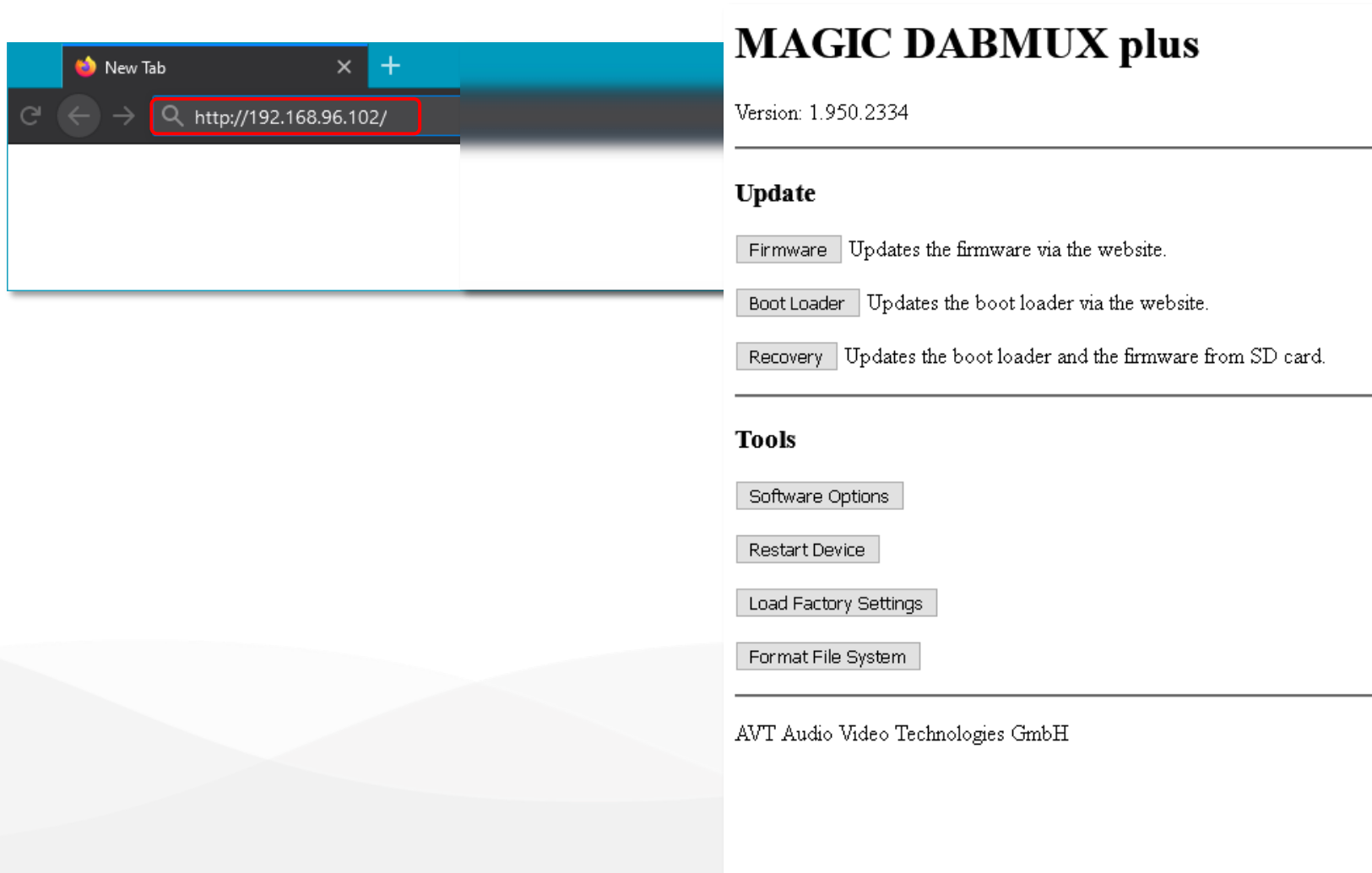
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# Troubleshooting

## Emergency Web Interface

- General
  - Hardware
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- Support

# Emergency Web Interface (1)





# Emergency Web Interface (2)

- If the default web interface cannot be loaded, an emergency web interface is displayed.  
This is only accessible via the interface LAN1.
- The system uses the configured IP address. If readout fails, the factory setting (192.168.96.102) is used.
- Enter the IP address in a web browser that supports HTML5.
- The web interface displays:
  - The firmware version of the system.
  - Functions to UPDATE the system.
  - A TOOLS section to
    - Activate software options.
    - Reboot the system.
    - Reset the system to factory settings.
    - Format the file system of the system.

# Bootloader Update (1)

## MAGIC DABMUX plus

Version: 1.950.2334

[Back](#)

### Boot Loader Update

Updates the boot loader via the website.

#### 1. Select & Copy

The file is copied to the working memory of the system.

Select the boot loader file:

[Browse...](#) No file selected.

[Copy](#)

Please do not close this site. Allow at least one minute for the device to complete the operation!

**Result:** Please copy a boot loader file first!

#### 2. Write & Restart

The file is written to the flash memory of the system.

Please copy a boot loader file in step 1 first!

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## MAGIC DABMUX plus

Version: 1.950.2334

[Back](#)

### Firmware Update

Updates the firmware via the website.

#### 1. Select & Copy

The file is copied to the working memory of the system.

Select the firmware file:

[Browse...](#) No file selected.

[Copy](#)

Please do not close this site. Allow at least one minute for the device to complete the operation!

**Result:** Successful! Version: 1.950.2334

#### 2. Write & Restart

The file is written to the flash memory of the system.

[Write](#)

Do not switch-off or restart the device during writing!

Please do not close this site. Allow at least one minute for the device to complete the operation!

**Result:** Successful!

The device has to be restarted to have the changes applied.

[Restart Device](#)

The device is going to restart now!

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# Bootloader Update (2)

- Click BOOT LOADER UPDATE and follow the instructions on the web interface step by step:
  - Click BROWSE and select the bootloader file emux.boot.Release.ssw.
  - COPY transfers the file to the system.
  - WRITE writes the bootloader to the flash memory of the system.
  - For technical reasons, the website does not display a progress bar.
  - An estimate of the time required is given.
  - When the process is complete, the result is displayed with a colour background:
    - RED: Error
    - GREEN: Success
- Click RESTART DEVICE to activate the boot loader.

# Firmware Update (1)

## MAGIC DABMUX plus

Version: 1.950.2334

[Back](#)

### Firmware Update

Updates the firmware via the website.

#### 1. Select & Copy

The file is copied to the working memory of the system.

Select the firmware file:

[Browse...](#) No file selected.

[Copy](#)

Please do not close this site. Allow at least one minute for the device to complete the operation!

**Result:** Please copy a firmware file first!

#### 2. Write & Restart

The file is written to the flash memory of the system.

Please copy a firmware file in step 1 first!

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## MAGIC DABMUX plus

Version: 1.950.2334

[Back](#)

### Firmware Update

Updates the firmware via the website.

#### 1. Select & Copy

The file is copied to the working memory of the system.

Select the firmware file:

[Browse...](#) No file selected.

[Copy](#)

Please do not close this site. Allow at least one minute for the device to complete the operation!

**Result:** Successful! Version: 1.950.2334

#### 2. Write & Restart

The file is written to the flash memory of the system.

[Write](#)

Do not switch-off or restart the device during writing!

Please do not close this site. Allow at least one minute for the device to complete the operation!

**Result:** Successful

The device has to be restarted to have the changes applied.

[Restart Device](#)

The device is going to restart now!

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# Firmware Update (2)

- Click FIRMWARE UPDATE and follow the instructions on the web interface step by step:
  - Click BROWSE and select the firmware file dabmuxplus.Release.ssw.
  - COPY transfers the file to the system.
  - WRITE writes the bootloader to the flash memory of the system.
  - For technical reasons, the website does not display a progress bar.
  - An estimate of the time required is given.
  - When the process is complete, the result is displayed with a colour background:
    - RED: Error
    - GREEN: Success
  - Click RESTART DEVICE to activate the boot loader.

**MAGIC DABMUX plus**

Version: 1.950.2334

Back

**Software Options**

Enter a password to enable a software option.

Password:

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**MAGIC DABMUX plus**

Version: 1.950.2334

Back

**Load Factory Settings**

The device is reset to factory defaults.

Attention!!! The device configuration will be deleted!

After a restart, the device can be reached at 192.168.96.102/24.

**Do you really want to load factory settings?**

**MAGIC DABMUX plus**

Version: 1.950.2334

Back

**Restart Device**

**Do you really want to restart the device?**

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**MAGIC DABMUX plus**

Version: 1.950.2334

Back

**Format File System**

Attention!!! All files including the firmware and the device configuration will be deleted!

After a restart, the device can be reached at 192.168.96.102/24.

**Do you really want to format the file system?**

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# Tools (2)

- Click on SOFTWARE OPTIONS to unlock new features.
  - AVT Audio Video Technologies provides you with a password to unlock software options on the system.
  - Enter the password and click SUBMIT.
  - A short message is displayed on the website whether the password has been accepted or not.
  - Check the installed software options via the front display of the system.
- Click RESTART DEVICE to restart the system.
  - You will be asked for confirmation.
- Click LOAD FACTORY SETTINGS to reset the system to factory default settings.
  - You will be asked for confirmation.
- Click FORMAT FILE SYSTEM to format the file system of the system.
  - All files including firmware and configuration will be deleted.
  - You will be asked for confirmation.



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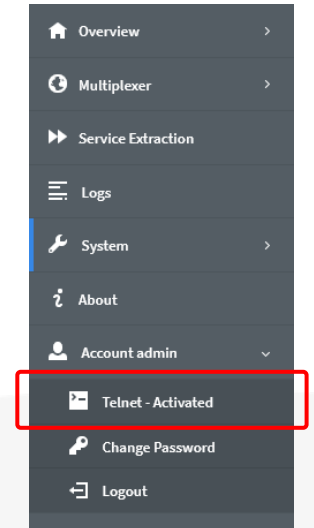
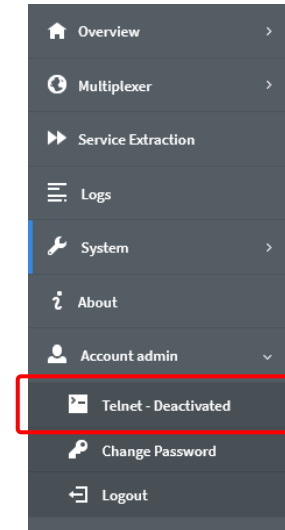
# Support

- General
  - Hardware
  - Features
- Web-Interface
- Status
- Settings
  - System
  - Multiplexer
  - Service-Extraction
  - Transmitter
  - Redundancy
- Front-Display
- System
  - Maintenance
  - Troubleshooting
- Support



# Console

- Use only when requested by our support!
- The system offers TELNET to read out operating data.
- By default, Telnet is disabled.
- The login menu of the administrator shows the current state.
- Activation
  - Administrator Login Menu  
Press TELNET - DEACTIVATED
  - Front display
  - Pressing the # key on the front keypad 3 times quickly
- Deactivation
  - 10 minutes of inactivity
  - Administrator Login Menu  
Press TELNET - ACTIVATED





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# Support

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A modern, multi-story office building with a glass facade and a prominent white AVT logo on the roof. The building is partially obscured by a large, semi-transparent red geometric shape on the right side. The sky is blue with scattered white clouds. A tree is visible in the foreground, partially behind the building.

# AVT

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Video  
Technologies

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