



# Specifications

## Technical Specification

### Common Features

- Stand-alone monitoring receiver for reception analysis and content verification
- Fully compliant to DAB standards family (ETSI EN 300 401)
- DAB Mode I, II, III & IV
- VHF Band III
- Field proven demodulator
- Browser based configuration and services decoding. No installation of software necessary.
- Proven long term stability
- Extendible to work with RFmonitor / RFarchiver network for long-term monitoring and content archiving

### RF-Frontend

- Input frequency range 168-240 MHz
- 1452-1492 MHz (optional)
- Input level -100 dBm to 0 dBm
- IIP3 -15 dBm typ.
- Noise figure 2.2 dB
- DAB Decoder
- Full ensemble decoding
- Decoding status
- Display of all services
- Audio decoding of a single service
- Full ensemble EDI output to Ethernet
- DCP/EDI output via Ethernet (including multicast support)

### Advanced GUI

- The RF-DAB graphical user interface (GUI) is designed to provide the full experience of a modern and professional measurement device:
- State-of-the-art HTML5 technology
- No software / plug-in installation necessary
- Same browser based advanced GUI remotely and locally (if available)
- Touchscreen and mouse capability
- Adapts to different screen sizes
- Either four window view or full screen display of diagrams

### Front Panel Signaling

- LCD display with status information and IP address
- LED status

### Remote Control

- Full remote control via Ethernet
- Browser-based user interface

### Alarm System (optional)

- Two-step alarm system with warning and alarm level
- Both thresholds configurable
- Most of RF measurements and content information parameters can be configured
- Alarm signalling to SNMP

### Front panel signalling

- LED status (red, orange, green)
- LCD display with status information and IP address

### Interfaces

- Antenna 50 Ohm BNC (N optional)
- 2 Ethernet
- USB
- 10 MHz ref. input 3 - 4.5 V TTL, BNC
- HDMI / Displayport (optional)
- Digital/analog audio output (optional)
- Internal GPS (optional)
- External GPS input 10 MHz, 1 pps, NMEA (optional)
- ETI in / out (optional)

### Power Supply AC Input

- Auto-sensing supply, 87VAC to 240VAC, 47-63 Hz, internal fuse
- Power consumption: 15 W
- Case: Industrial 19" 1RU, rack mountable
- Dimensions: 420 (483) x 220 x 44mm
- Weight: 2 kg
- Operating temperature: 0 - 40°C
- Humidity: 20 - 80% non-condensing

### Mechanical

- Aluminum extrusion front bezel
- Industrial 19" 1RU, rack mountable
- 420 (483) x 250 x 44 mm
- Weight: 5.5 kg
- Operating temperature: 0 - 45°C
- Humidity: 20 - 80% non-condensing

## Options

### RF Measurements (RFM)

- High quality measurements on various stages of the reception and decoding chain:
- Spectrum
- QAM constellation
- Channel impulse response
- RF input power
- Frequency offset
- SNR
- MER
- TII decoding
- BER (MSC, FIC) before Viterbi
- BER (Audio, FIB) after Viterbi

### Advanced Application Decoder (AAD)

- Integrated audio and data decoding, licensed by Fraunhofer IIS:
- Parallel full ensemble decoding and access of all audio and data services
- Browser-based selection and decoding of audio and data services
- Audio decoding: MPEG-1 Audio Layer 2 (DABclassic), HE AAC v2 (DAB+), each incl. MPEG Surround
- Optional: DMB-Audio
- Display of audio related information, e.g. audio rate, sampling rate, mode
- Streaming of selected audio service to remote PC
- Download of selected audio service in original Format and wave
- Service information (Service label, Ensemble label, Service country, Program Type)
- Dynamic Label und DL+, Intellitext
- Journaline®
- MOT Slideshow, MOT Broadcast Website
- TPEG (text based)
- EPG/SPI
- PAD and NPAD, primary und secondary services
- Statistical information of each service

### Local GUI and Audio (LGA)

- Displayport / HDMI touch screen can be attached locally
- Local digital (SPDIF) and analog (3.5TRS) audio output

### Ball Receiver (BAL)

- 2 AES/EBU XLR outputs
- 2 selectable audio services
- Requires AAD option

### Alarm System (ALM)

- Flexible, built-in alarm system with the following features:
- Two-step system (warning & alarm)
- Both thresholds configurable
- Measurements and content parameters, e.g. MER, input level, BER, single stream data rate
- Alarm and status signaling via SNMP

### Field Measurements (FIM)

- This package provides a comprehensive tool set for mobile field measurements:
- Delivery with USB GPS mouse
- Integration of external GPS information into rgps tag
- 12VDC input in addition to VAC
- Recording of measurements and IQ to file
- Live DCP/UDP output of measurements
- Requires RFM option

### EDI Input (EDI)

- DCP/EDI input via Ethernet
- Either RF frontend or EDI input can be used
- Requires AAD option

### ETI (G.703/704) (ETI)

- ETI input hardware interface
- ETI output hardware interface

### Mask Measurement (MAM)

- $\pm 3$  MHz spectrum mask compliance measurement according to ETSI EN 302077
- $\pm 1$  dB power level measurement
- Crest factor measurement

### Synchronization (SYN)

- SFN synchronization monitoring
- Detection of offsets of more than 1 second
- If present, detection based on DAB absolute time stamp
- Detection based on NTP
- Internal or external GPS module capability

### 3 day logging / analysis (LOG)

- All RF measurements and content information are logged for 3 days
- Display of parameter over time
- Export of all measurements and content information incl. audio as wav/MP3
- Playback of audio and data services at selected point of time
- Writing of selected tags (e.g. audio frame error, SNR, MER, field strength) in Open Geospatial Consortium KML/KMZ format
- Classification of tag values in meaningful level ranges including legend generation
- Import to Google Earth possible
- ETI Analyzer (EAN)
- The ETI Analyzer option parses STI/ETI/EDI content and displays the following information in detail:
- Service structure (services, service components and data application signaling)
- MSC layout (position within MSC, protection level)
- Announcement information (when was which announcement signaled)
- Service linking information (which alternatives are signaled for which service; what dynamic changes are made to the service linking)
- Dynamic PTy information
- List of all FIGs
- MNASC information