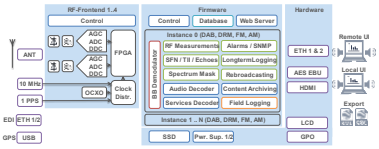
Product Line FM Monitoring Receiver RF-FM

Overview

RF-FM is a professional FM monitoring receiver for transmitter, content and field monitoring. Its modular design enables flexible configuration for various specific applications. It can be combined with DAB and/or DRM decoding if desired.



Key Features

- Field proven FM/RDS demodulator
- Extensive RF measurements
- Up to 4 RF inputs in parallel
- Parallel FM/RDS decoding
- Browser-based HTML5 user interface with remote audio and data streaming
- Parallel FM/DRM/DAB support

Applications

- Transmitter monitoring
- RF measurements monitoring
- Content verification and monitoring
- Relay (ball) reception, e.g. for FM
- Geo-referenced field measurements
- Long-term logging and analysis
- Fulfils legal requirements for broadcast archiving

Basic Software Features

Common Features

- Stand-alone monitoring receiver for reception analysis and content verification
- NTP synchronization
- Field proven demodulator
- Browser based configuration and services decoding. No installation of software necessary.
- Multi-decoder configuration possible
- Proven long-term stability
- Firmware update via remote GUI
- Extendible to work with RFarchiver for long-term content logging
- Compliant to ITU-R SM.1268-5

FM Decoder

- Decoding status
- Display of services
- Audio decoding of a single service
- Streaming of audio as AAC
- Full ensemble ADI (audio/RDS) output to Ethernet
- DCP/ADI output via Ethernet (including multicast support)

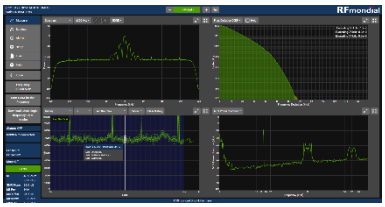
Remote Control

- Full remote control via Ethernet
- Browser-based user interface
- MQTT API
- SNMP (Get, Set, Treewalk)
- Control via DCP/UDP

Advanced GUI

The advanced 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
- HTTPS capable
- Same browser based advanced GUI remotely and locally (if available)
- Touchscreen and mouse capability
- Adapts to different screen sizes



Hardware

RF-Frontend DRM-FM

Parameter	Value
Input frequency range	Band II: 87 - 108 MHz
Max. input level	+0 dBm
Max. input level for optimal decoding	-15 dBm
Noise figure	2.2 dB

Front Panel Signaling

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

Interfaces

- Antenna 50 Ohm, SMA connector
- 1 Ethernet & 1 Ethernet (optional)
- USB
- 10 MHz input, max. 5V, SMA
- Displayport / HDMI (optional)
- Digital audio output AES/EBU XLR (optional)
- GNSS input NMEA (optional)

Power Supply Input

- Auto-sensing supply, 100 VAC to 240 VAC, 50-60 Hz
- DC input (optional)
- Redundant power supply (optional)

Mechanical

- Aluminum extrusion front bezel
- Industrial 19“ 1RU, rack mountable
- 420 (483) x 250 x 44 mm
- Weight: 5.5 kg
- Operating temperature: 0 – 50°C
- Humidity: 20 – 80% non-condensing

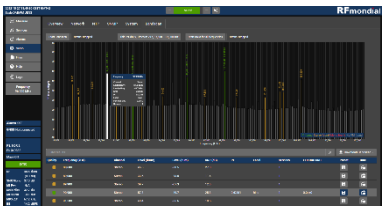
Options

RF Measurements (RFM)

Either four window view or full screen display of diagrams.

Relevant measurement values are available on SNMP and MQTT.

A comprehensive bandscan is implemented.



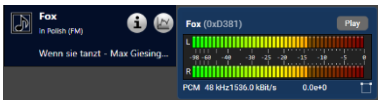
High quality measurements on various stages of the reception and decoding chain:

- Spectrum and spectrum waterfall
- RF input power (storable offset)
- Frequency offset
- SNR Mono / SNR Pilot
- Baseband power
- Modulation index
- MPX power spectrum
- MPX frequency deviation CCDF, maximum, 65/75/77kHz probability
- Error rate of synchronization, and RDS CRC

RDS decoding of:

- PS,PI,RT,TA,CT,TP,PTY,AF,DI,MS
- With the ALM option comprehensive monitoring of RDS is possible

Advanced Application Decoder (AAD)



The option AAD enhances the device with an integrated professional audio and data services decoder, based on Fraunhofer technology:

- Multi-user, browser-based decoding of all audio and data services
- Display of audio level and RDS
- Streaming of selected audio service in AAC/WAV format
- Storage of RT for the last 7 days
- Announcements
- Statistical information
- Relevant audio and data parameter are available on SNMP

Local GUI and Audio (LGA)

The option LGA enhances the device for local monitoring via a connected touchscreen and one digital AES/EBU XLS audio outputs:

- Displayport / HDMI output
- Touch functionality via USB
- Local AES/EBU XLR audio output
- Requires ET2 option

Alarm System (ALM)

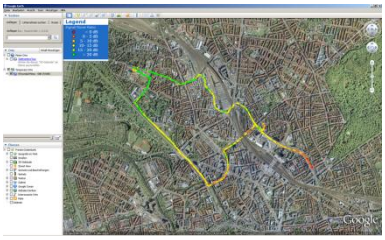
The option ALM enhances the receiver to a flexible, multi-level, built-in alarm system:

- Configurable thresholds
- Measurements/content parameters, e.g. SNR, input level, FER RDS CRC, audio level, announcements, frequency deviation exceeding 75kHz, MPX power
- Alarm and status signalling via SNMP and MQTT

Field Measurements (FIM)

The option FIM provides a comprehensive tool set for mobile field measurements:

- Delivery with USB GPS mouse
- 12VDC input in addition to VAC
- Recording of geo-referenced measurements to file
- Live DCP/UDP output of measurements
- Export of selected tags (e.g. audio frame error, MER, field strength) in KML and CSV format
- Import to Google Earth possible
- Requires RFM option, excludes RPS



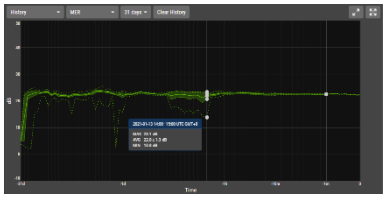
Mask Measurement (MAM)

- Spectrum mask compliance

Long-term logging / analysis (LOG)

The option LOG provides all RF measurements and content information to be logged for 31 days:

- Display of measurements and statistics over time
- Time interval extension possible



IQ file logging / playback (IQF)

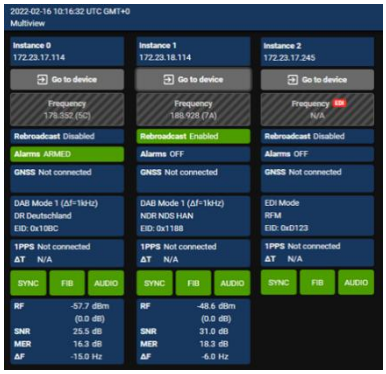
The option IQF provides RF input signal logging to IQ file as well as baseband file replay:

- Logging of baseband IQ to file
- Playback of baseband IQ files with all analysis possibilities
- Input and output streaming of IQ via UDP
- Playback of arbitrary sample-rate baseband WAV-files
- Extended storage (optional)

Multi Instance Operation (MIx)

The option Mix enhances the device to be able to operate more than one demodulation instance in parallel. Depending on the frontend, various configurations are possible:

- Input to instance can be RF or IP/DCP
- Demodulation can be DAB, DRM, FM, AM
- Independent advanced GUI, alarm system and SNMP per instance
- Summarizing multi-view
- Shared hardware and system related functionalities



Digital output option (DOO)

- The option DOO provides feeding decoded data services to UDP and/or TCP for external processing (e.g. for an external SSR-receiver).
- Requires AAD option.

Second Network Interface (ET2)

- The option ET2 adds a separate circuit board with a second network, and an XLR AES/EBU output interface
- Add second physical network interface (100Mb/s)
- LGA is necessary to use the XLR output

Redundant power supply (RPS)

The option RPS comprises two fully internal redundant power supplies with automatic switchover and monitoring:

- Add second internal AC power supply with dedicated AC input port
- Power supply status monitoring and alarm
- Excludes FIM option

General Purpose Outputs (GPO)

This option adds general purpose outputs to the device:

- 15 pin SUB-D connector
- Outputs freely configurable in the alarm system
- Requires ALM option

Archiver (ARC)

The archiver functionality is an uncomplicated solution to fulfil the logging task of your broadcasting content in a fully digital manner.

- Digital storage of DCP streams (ADI) for a configurable time frame
- Independent of operating system: usage of WebAudio and Javascript
- Easy remote access: access to live and historical data is available from any location
- Access: direct access to each second as well as live access
- Download: Download of DCP streams, download of selected audio service as wave- or MP3-file
- Length of archiving period (max. 90 days) is configurable

Ordering Information

RF-FM:
Basic FM receiver

Option RFM:
RF Measurements

Option AAD:
Advanced Application Decoder

Option LGA:
Local GUI and Audio Output

Option ALM:
Alarm System and SNMP Informs

Option FIM:
Field Measurements

Option MAM:
Mask Measurement

Option LOG:
Long-term logging & analysis

Option IQF:
Logging/playback to/from IQ file

Option MIx:
Multi Instance Operation

Option DOO:
Digital output option

Option ET2:
Second Network Interface

Option RPS:
Redundant power supply

Option GPO:
General Purpose Outputs

Option ARC:
Archiver functionality