WOLF

ULTRA-ADVANCED FM MEASUREMENT SYSTEM

MULTIFUNCTIONAL FM STATION
MONITOR AND DECODER

- Large set of measurements
- Complete alarms management SNMP
- Precision reference tone generator
- High Quality MPX decoder
- RDS / RBDS decoder & monitor
- Integrated FM tuner
- MPX & audio changeover
- Integrated Web Server
- Integrated SNMP agent
- Support for UECP, HTTP, TFTP protocols

AXEL TECHNOLOGY

WOLF

WOLF is a comprehensive and multifunctional FM station monitor and decoder.
It analyzes analog and digital audio signals and monitors / decodes MPX composite signals.
Furthermore, with an integrated FM tuner, it analyzes aired signals in the FM band.
A dedicated module monitors and decodes RDS / RBDS services.

WOLF is able to perform the largest precise range of measurements.
Among the others, measurements include Rms audio power, audio Peak, Pilot level, RDS level, instantaneous deviation peak, ITU-BS412 power, Peak, level and power on FM signal.

Measurement results are accessible via SNMP protocol and via the integrated WEB Server in the form of ordinary HTML pages.
This means, results can be accessible on any Browser, included last generation mobile phones and PDA.
Each unit comes also with a dedicated Pc Control software, to be used to configure units for their work.

WOLF-REF

WOLF

OVERVIEW:

WOLF can operate in two different ways.

When running in 'stand-alone' mode, **WOLF** unit continuously compares each actual measurement result with a pre-defined range of accepted values and triggers alarms in various forms (contact closures, SNMP traps, etc) in case of some value mismatching.
Thanks to its integrated changeover stages, it can also swap inputs (either audio - analog or digital - or MPX) in order to keep the system running.

When operating in 'Master/Slave' mode, each Slave unit compares instantaneously local measures with the ones performed by the Master unit at the head of the network.
In this way, the whole STL link is efficiently monitored.

WOLF come s with 3 Break-Out Boxes.
One allow analog audio In/Out on standard 3-pin XLR connectors; another one allows digital AES/EBU in/out on standard 3-pin XLR connectors and the last one adds more flexibility to MPX input stage.

THE WOLF FAMILY

WOLF-REF: Automatic digital "Reference"measurement and monitoring system for FM Networks, REF version has to be installed at the head of the network). It allows balanced analog and digital AES/EBU inputs. Associated to **WOLF** units it allows automatic test and comparative measurements on the network.

WOLF: Automatic digital measurement and monitoring system for FM Networks on balanced analog and digital AES/EBU and MPX/RDS signals. Automatic changeover, RDS filter, alerts management, display of all measured data. 2 RU.

*with respective optional BreakOut Boxes

BREAK-OUT BOXES

The **WOLF** system allows synchronized measurement between one unit located at the head of the network (the **WOLF-REF**) and **WOLF** units installed at each transmitter site (**WOLF**).

One or more **WOLF-REF** units perform given sets of measures in repeated time slots. Those data are then delivered to each WOLF unit along with audio program.

At each transmitter site, **REF**'s measures will be compared to locally-performed ones and alarms will be sent to the Centralized Control Room via SNMP or contact closure, according to the system configuration.

The **WOLF** can also act as stand-alone unit.
It offers the widest connection capability. An analog audio source, a digital audio source, two MPX signals and a FM antenna can be connected as well.

Its serial Port can be used for equipment configuration and for UECP stream as well. Measures will be accessible via Ethernet Lan port on HTTP and SNMP protocol.

Three optional BreakOut Boxes perform all necessary switching between Main and Back-Up signal in case of failure and can be used as distribution amplifier for the same signals.

CONTROL FROM ANYWHERE:

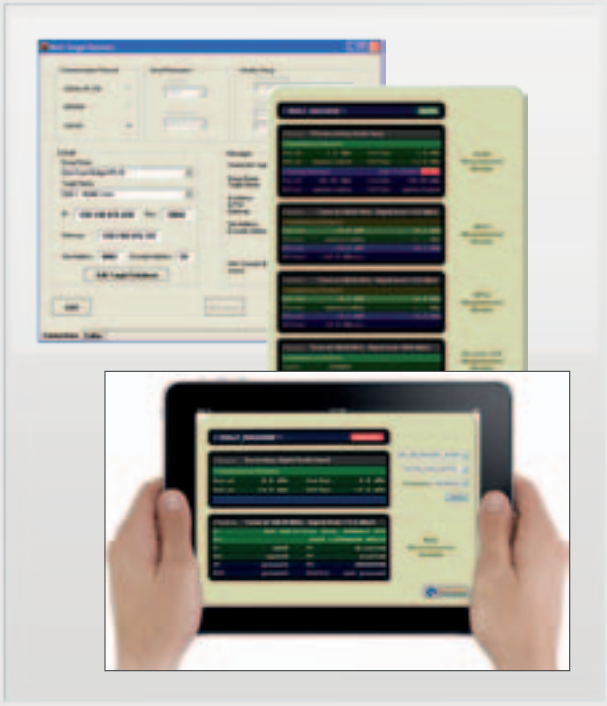
All measurement results are made available on the integrated Web Server.

By connecting to each unit via Lan, measure data are displayed in real time on any Pc, Notebook, Smartphone and tablet as a standard Web page.
The same results are also available via SNMP protocol.

Whenever **WOLF** unit runs in 'stand-alone' mode (i.e. without a Reference unit at the head of the network), the same Web interfaces allows to set-up ranges for valid measures.

Dedicated software tools allow set-up of address and general configuration of each **WOLF** unit.
WOLF's configuration can be achieved in a textual way as well, using a simple ASCII interface.

In addition to HTTP and SNMP, **WOLF** supports also UECP protocol for RDS programming and TFTP protocol for file transfer.



CONTROL FROM ANYWHERE

A PERFECT MEASUREMENT INSTRUMENT:

Using state-of-art, high-speed DSP technology, **WOLF** ensures the best performance in measurement field.

Its digital architecture guarantees long term reliability and easy firmware updates.

Analog audio inputs are sampled at 114 KHz and the dynamic range of AD converter reaches 110 dB.

Audio measures exceed 0.1 dB precision, while their dynamic range is as high as 85 dB.

MPX sources are measured on a full 59 KHz band with a 0.1 dB precision and a 82 dB dynamic range.

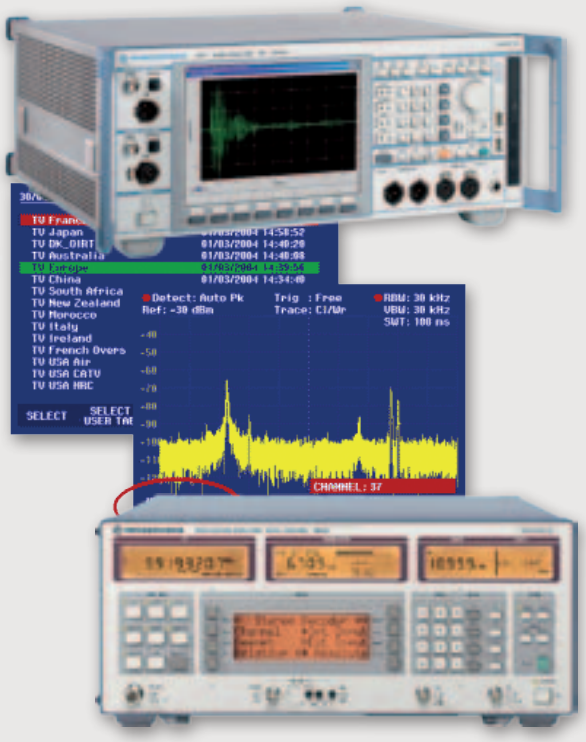
The built-in MPX decoder offers over 58 dB separation and a very selective filtering assures always perfect measure even with RDS or SCA components mixed into.

WOLF performs over 100 different measurements, that can be applied to each available source: digital/audio signals, MPX signal and in-band Fm modulation.

Measure range includes: Pilot deviation, MPX deviation, pilot level, Rds signal level, Rds signal quality and decoding of major Rds services, Rms value of decoded Left / Right channels… and many more.

A full set of Alarm can be generated, according to lack or 'down/upper-threshold' status of each measured parameter.

WOLF also offers full capability to 'mask' each single alarm whenever operator doesn't need to be warned in some specific case.



A PERFECT MEASUREMENT INSTRUMENT

WOLF TECHNICAL SPECIFICATIONS

GENERAL SYSTEM PARAMETERS

Dimensions:	2 rack unit, 352x483x44 mm
AC Rate:	230 / 115 Vac 50/60 Hz +-10%
Operating temp. range:	-5 to +50 °C

INPUT & OUTPUT

ANALOG AUDIO INPUT

Conversion:	24 bit Sigma-Delta (114 KHz Sample Rate)
Connector Type:	XLR female el. Balanced – EMI –suppressed
AD Dynam. Range:	108 dB RMS (110dB A weighted)
Impedance:	600 Ohm / 10K Ohm
Input Modes:	Stereo, Mono L+R, Mono L, Mono

DIGITAL AUDIO INPUT MEASURES

Connector Type:	XLR female & optical tos/link
Formats:	AES3/EBU, IEC60958, EIAJCP1201
Input Rates:	44.1 / 48 / 64 / 88.2 / 96 KHz
Resolution:	24 bit
Input Modes:	Stereo, Mono L+R, Mono L, Mono R

ANALOG AUDIO REFERENCE OUTPUT

Conversion:	24 bit Sigma-Delta (114KHz Sample Rate)
Connector Type:	XLR male el. Balanced - EMI -suppressed
Nominal Level:	From +15dBu to –10dBu (0.1dBu step)
Source Impedance:	10 Ohm
Load impedance:	600 Ohm or greater
Distortion:	0.01% TDH+NOISE (0.0dBu @ 1KHz)

DIGITAL AUDIO REFERENCE OUTPUT

Connector Type:	XLR male & optical tos/link
Formats:	AES3/EBU, IEC60958, EIAJCP1201
Sample Rates:	44.1/48/64/88.2/96KHz
Output Level:	From 0.0 dBFs To –25.0dBFs (0.1dBFs Step)
Resolution:	24 bit
Distorsion:	0.001% TDH+NOISE (-10.0dBFs@ 1KHz)

AUDIO MEASUREMENT

Assignable sources:	PRIMARY AUDIO, BACK-UP AUDIO, PRIMARY DIGITAL AUDIO, BACK-UP DIGITAL AUDIO
Simultaneous measurements:	Rms power (integration time 300 msec), Rms power (on a given period), Peak (with 500 ms Hold time), Peak (on a given period)
Rms Inputs Band:	20 Hz to 20 KHz
Input Ripple:	0.05 dB
Nominal reference Levels:	From -6.0dBu to +13.0dBu
Typical measurement dynamic in respect of ref levels:	-85 dB (+6dB Reference)
Precision :	0.1dB (reading resolution 0.01dB)

MPX

MPX INPUT 1 & 2

Conversion:	24 bit Sigma-Delta (108Khz Sample Rate)
Connector Type:	BNC floating over chassis, EMI suppressed
Impedance:	600 Ohm/ 10K Ohm

MPX MEASURES

Asssegnable sources:	Mpx1, Mpx2, internal Tuner or external Tuner
Parallel measurements:	Pilot level, RDS level, instantaneous deviation peak, signal power in accordance to ITU B412 normative
MPX input band:	59 KHz
MPX input ripple:	0.002dB
Nominal operative ref levels:	from -6.0dBu to +13.0dBu
Typ. measurements dynamic in respect to ref level:	-80dB
Precision:	0.1dB (reading resolution 0.01dB)

STEREO MPX DECODER

Assignable sources:	Mpx1, Mpx2, internal Tuner or external Tuner
Decoding type:	Digital, on DSP
Separation (Base Band input):	58dB between 500Hz and 8KHz. Higher than 45dB in the whole band
Separation (with integrated Tuner):	Better than 40 dB between 800 and 3 KHz, 35dB between 100Hz and 12KHz.
Pilot lock:	< 300msec
De-emphasis:	50uSec and 75uSec, available on decoded signal
Precision:	0.1dB ; reading on WEB and SNMP with 0.01dB resolution

INTEGRATED TUNER MODULE

Frequency Range:	87.50 MHz - 108.00 MHz (step 50 KHz)
Antenna Input Impendance:	50 Ohm
Sensitivity:	25 dBuV (60dBuV- 100dBuV for optiomal reception)
S/N:	68 dB (15KHz, Mono, Deemphasis 50uSec, Ref Mod 75Khz)
S/N:	62 dB (15KHz, Mono, Deemphasis off, Ref Mod 75Khz)
S/N:	60 dB (15Khz Single stereo channel, Deemphasis 50uSec, Ref Mod 75Khz)
TDH+N (Mono, 50uSec):	400Hz (0.3%), 1KHz (0.3%), 5KHz (0.8%), 7KHz (1.0%), 10kHz (0.1%), 15KHz (0.1%)
TDH+N (Stereo, 50uSec):	400Hz (0.6%), 1KHz (0.6%), 5KHz (1.6%), 7KHz (2.0%), 10kHz (0.1%), 15KHz (0.1%)
Available Measurements:	Peak, level and power on FM signal, RDS data decoding

TELEMETRY INTERFACE

Input:	8 Bit Digital / 8 Analog Multiplexed (10Bit AD)
Output:	8 Bit Digital / 2 Analog (8 bit DA)
Type:	Digital Optoinsulated / Analog Balanced
Connector:	Sub-D 25 pin

REMOTE COMPUTER INTERFACE

Protocols:	UECP, SNMP, HTTP, TFTP
Web Server:	integrated
Serial Ports:	2 x RS-232, 2400 Baud – 38400 Baud
Ethernet interface:	Static IP 10/100Mbits Interface (option)
Rem. Ctrl software:	Dedicated, for Win 2000, XP

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Overview

Wolf 2MS is a FM monitoring system designed for FM air signal monitoring purpose.
Wolf 2MS allows the broadcaster to receive simultaneously up to two frequencies thanks to the internal double tuner. The two tuners are each other independent and they can operate in two ways: *continuously reception* or *bandscan*.

 Ask for a quote

- Features

- Real Time measurement for FM networks
- Double FM Tuner
- Configurable bandscan for each FM tuner
- Embedded web server for worldwide consultation
- Double Audio over-IP streaming for monitoring
- Signal analysis modules: RF, MPX, AUDIO and RDS
- Double RDS decoder with group sequence decoding
- SNMP and HTTP web interface and FTP supported
- Double Ethernet ports and double USB interfaces
- Logical full dual internal structure: the equipment can be logically seen as two independent FM monitors and streamers
- Front LCD display and front panel headphone output