

FALCON 50 FM

DIGITAL AUDIO PROCESSOR



FIRST CLASS AUDIO PROCESSING

- Analog and digital stereo I/O
- High performance stereo generator
- Bass enhancer + 3 bands EQ
- Dual composite outputs
- ITU-compliant MPX power control
- 50 factory presets + 50 user-definable
- Widest range of processing controls
- Improved peak limiting system
- Day-part automation
- Remote control via serial, USB & IP

FALCON 50 FM

Falcon 50 FM is Axel Technology's top-of-range digital audio processor for FM. With its 6-band processing design, it features the most up-to-date architecture and technologies.

FALCON 50 FM shapes your sound according to your needs.

It is well known that all broadcasters want to use their bandwidth completely, obtaining the greatest impact while still remaining in control of on-air deviation.

No matter of what the requirements are, **FALCON 50 FM** answers to the challenge, delivering consistent performance in the widest variety of artistic environments.

Under the lid, **FALCON 50 FM** reveals a powerful engine made of 6-Band core, a 2-band AGC stage, Stereo Enhancer, Super Bass Enhancer, Brilliance circuits, 3-band parametric equalizer, a superb MPX Stereo Generator.



Falcon50 FM

CLARITY OF SOUND :

FALCON 50's high-quality hardware design and software algorithms produce a detailed, crystal clear sound on any speaker system, always preserving original audio signature.

NEAR ZERO LATENCY

FALCON 50 features one of the shortest latency in its category, as low as 4 msec, thus allowing talent in the studio to listen to the live on air feed without any annoying delay.

Comfortable listening appreciated by anyone...

BEST VOICE PROCESSING

A dedicated processing section boosts presence of voice, delivering a soft, silky sounding effect.

Vocals are always on top of the mix, making lyrics comfortably audible.

Each instrument and vocalist gains dominium of its own space.

EXTREME DENSITY & BASS

FALCON 50 delivers full impact sound at the highest volume density preserving original audio detail, identity and mood.

The dedicated 'Bass Enhancer' stage delivers a strong and effective 'drum punch' for a deep musical emotion.



FALCON 50 FM

STEREO ENHANCER

Built-in Stereo Enhancer adds life and sparkle to any sound material.

By sensing and processing differences between left and right channels, stereo image is largely widened for an improved separation and surround sensation.

MULTIPLE CONTROL MODES:

FALCON 50 includes a wide range of control capabilities.

Two USB ports, an Ethernet port, a standard RS232 port (supporting any Dial-Up or GSM modem as well) let You control Yr **FALCON 50** from anywhere, anytime.

In addition, 6 opto GPI ports and 2 opto GPO ports give easy and direct access to many functions and warnings.

A dedicated Pc software comes free of charge with **FALCON 50**, giving total control over all processing parameters.

Features include user rights management with five security levels from guest to admin.

Selective file import and export of a single preset as well as the whole set of curves plus the general equipment configuration and status.

A free of charge, light version of the remote software for PDA is included, allowing easy and comfortable management of the current on-air curve, especially with the **FALCON 50** 'blind' version, suitable for installation at remote transmitter sites.

I/O CONNECTIVITY AND SYSTEM INTEGRATION:

FALCON 50 is designed to fit in perfectly in any broadcasting chain system.

Whether signal management contains analog, digital or both formats, **FALCON 50** provides multiple and redundant connectivity.

Both analog and digital AES/EBU stereo inputs and outputs enable the **FALCON 50** connect to almost any audio source and load gear.

32/44.1/48/64/88.2/96KHz sample rate are fully supported in the digital domain.

Input section features an automatic audio changeover to keep You always on the air.

Furthermore, input stage design assures plenty of headroom for all applications.

Output stage provides two MPX outputs to feed at the same time two FM transmitters or links, while the HD digital output is used to connect to DAB or HD Radio transmitters.

An headphone socket is available on the front panel, for easy monitoring of signal tapped at the output of main processing steps.



SOFTWARE INTERFACE



FALCON 50 FM REAR



FALCON 50 FM BLIND

FALCON 50 TECHNICAL SPECIFICATIONS

GENERAL			
Dimensions:	3 rack unit, 352x483x132 mm		
AC Rate:	230/115 Vac 50/60 Hz +-10%		
Operating temp. range:	-5 to +50 °C		
COMMUNICATION			
COMPUTER INTERFACE			
Modem	Any dial-up modem - either GSM or Pots - can be connected to Serial Port for remote control		
Serial Port:	1 Standard RS-232 opto-isolated, 38400 Baud		
TCP/IP Ethernet:	RJ45 connector for 10-100 Mbps networks using CAT5 cabling		
Universal Serial Bus (USB):	Two opto-isolated USB 2.0 ports (front + rear) - B type		
Pc Control Software:	Dedicated, running on Windows XP SP2 or Windows 2000 Pro SP4. PDA software included		
REMOTE CONTROL - GPI/O INTERFACE		AUX IN (1,2, AND 3)	
I/O:	6 opto Inputs + 2 opto outputs	Connector Type:	floating BNC, EMI suppr.
Connector:	SubD 25 pin, EMI suppressed	Level:	-20 or 0 dB Gain
		Impedance:	10 KΩ

AUDIO PROCESSOR

SYSTEM PERFORMANCE

Frequency Response:	30 Hz - 15 KHz (-0.1 dB) - Analog Processing Chain
Sample Rate:	Depending on processing being performed, from 47.5 to 760 KHz
Total System Distortion:	0.008% - (0.005% at 1 KHz)
Output Noise:	The Falcon 50's noise floor, in bypass mode, is primarily governed by the dynamic range of CS8420 digital rate converter, which has a specified Dynamic Range of 126 dB
Stereo CrossTalk:	>-80 dB (from 30 Hz to 15 KHz)

6-BAND PROCESS

Band controls:	Crossover Frequency & slope, coupling. L/R Linkage 0 to 100%
AGC Main controls:	Drive, Gate Thr., Attack & Release Speed, Idle Compression & Speed
General Multiband Conrols:	Gate Thr., Attack & Release Speed, Agc Coupling, Solo for each Band

SOUND ENHANCING

Stereo Enhancer:	Band, Depth, Fx Lim & Drive
Super Bass:	On/Off, Bass Type & Drive
Brilliance:	On/Off & Level
Speech Detector:	Automatic, 9 operating modes

INPUT & OUTPUT

ANALOG AUDIO INPUT

Connectors:	Two EMI-suppressed XLR female. 600 Ohm / 10 KOhm impedance, jumper sel.
Input Configuration:	Stereo / Mono / L+R / Mono R / Mono L. Flat, 50 microsec or 75 microsec pre-emphasis sel.
Additional input controls:	Swap L/R; Phase Inversion channel Left / Right, Phase Rotator, 30 Hz High Pass Filter
Nominal Input Level:	adjustable from -10.0 dBu to 15.0 dBu; +24 dBu max
Input Signal-to-Noise :	112 dB (A weighted)

DIGITAL AUDIO INPUT

Connector Type:	XLR female & optical tos/link. XLR transformer balanced & floating. 110 Ohm impedance
Input Configuration:	Stereo / Mono L+R / Mono R / Mono L. Flat, 50 or 75 microsec pre-emphasis
Additional input controls:	Swap L/R; Phase Inversion channel Left/Right, Phase Rotator, 30 Hz High Pass Filter
Formats:	AES3/EBU / & Spdif
Input Rates:	32/44.1/48/64/88.2/96 KHz with automatic selection and jitter correction, 16/20/24 bit res.
Nominal Level adj:	From 0.0 dBFs to -25 dBFs (0.1 dBu step)
Dynamic Range:	125 dB (Typ), 122 dB (Min)

PROCESS ARCHITECTURE

Min. Processing Delay:	As low as technically possible: max 4 msec for all processing curves
Number of Presets:	50 Factory Presets + 50 User Presets
Preset Memory type:	Non volatile memory, factory presets protected against accidental deletion
Preset Import / Export:	Import / export from and to a file, either in groups or individually
Wizard procedure controls:	Density, Compression, Equalization, Expansion

2-BAND AGC STAGE

Band controls:	Crossover Frequency & slope, coupling. L/R Linkage 0 to 100%
AGC Main controls:	Drive, Gate Thr., Attack & Release Speed, Idle Compression & Speed

PARAMETRIC EQUALIZER

Low & Hi controls:	On/Off, Gain & Slope
Mid Range Filter controls:	On/Off, Gain & Width

ANALOG AUDIO OUTPUT

Connectors:	Two, EMI-suppressed XLR-male. Balanced or unbalanced. 600 Ohm
Configuration:	Stereo. Flat or pre-emphasized (50 or 75 microsec). +-3 microsec pre-emphasis correction
Output Level:	(100% peak mod.): adj -5 dBu to + 20 dBu peak, into 600 Ohms load, 120% Peak Mod. allowed
Stereo CrossTalk:	>-70 dB, 20 Hz - 15 Hz
Signal-To-Noise:	>100 dB (A Weighted Full Range)
Distortion:	0.005% THD, 20 Hz - 15 Hz
Hardware bypass:	Internal relays connect to respective analog audio input in the event AC Power drops

DIGITAL AUDIO OUTPUT

Connector Type:	XLR male & otical tos/link. 110 Ohm impedance
Formats / Configuration:	AES3/EBU, flat or pre-emphasized (50 or 75 usec)
Sample Rates:	32/44.1/48/64/88.2/96 KHz internal or synchr. to audio or SYNC input. 16/20/24 bit
Output Level:	From 0.0 dBFs to -25.0 dBFs (0.1 dBFs Step)

MPX (STEREO) CODING

Pilot Frequency:	19 KHz +- 1 Hz
Pilot Injection:	Adj from -14.0 dB to -26.0 dB (5% to 20%) - 0.1 dB step - Ref. to 100% Mod.
Pilot Phase:	Adjustable +- 12 deg. (1 deg. step)
Pilot THD + Noise:	0.06% (THD 0.005%)
Stability:	+/-10 ppm (-5 to +55 °C)
Power Limiter:	Adj from -1.0 dB to +12 dB according to ITU/R BS.412 normative
S/N:	>85 dB (on 60 KHz bandwidth)
Distortion:	<=0.02% THD (Bypass mode, de-emphasized, referenced to 100% modulation, unweighted)
Stereo Separation:	Greater than 70 dB, 30 Hz - 15 KHz
Linear Crosstalk:	<-80 dB, main channel to sub-channel or sub-channel to main channel (ref. to 100% modulation)
Pilot Protection:	<=-65 dB relative to 10% pilot injection, +-500 Hz
Crosstalk M to S / S to M:	70 dB
38 KHz suppress.:	>80 dB
Pre-emphasis:	50uS, 75uS (+-3 uS adjust)
RDS Protection:	-55 dB at 56 KHz; -65 dB at 57 KHz (Mpx clipper disabled)
Sine Wave Generator:	Feeds each output for test. 30,100,400 Hz, 1,5,10,15 KHz; 0 to 120% of mod. L=R, L=-R, L, R

MPX & SYNC OUTPUTS

Mpx Connectors:	Two BNC, floating, EMI suppr.
Mpx Levels:	-6.0 dBm to +12 dBm, 0.1 dB step;
Mpx Level Controls:	independent for each output
Mpx Load Impedance:	600 Ohm or greater
Sync-Out Connector Type:	floating BNC, EMI suppressed
Sync-Out Level:	TTL-level 19 KHz Pilot Ref. Out

Pictures and technical specs in this leaflet are provided for information purpose only and are subject to change without further notification (Ver. 3.1)



DIGITAL AUDIO PROCESSOR

Overview

FALCON 3i is the most cost effective and high performing equipment combining Digital Audio Processor, Stereo Generator and RDS Encoder.

The all-in-one solution designed for FM broadcasting, WebRadio and Satellite stations.

FALCON 3i delivers a great sound, loud and clear, thanks to the 4-band architecture, the dual band AGCs, 3-band equalizer, speech detector, and 4 limiters.

The control of each audio parameter allows the broadcaster to achieve a unique tailored sound that before could be achieved only with the most expensive audio processors.

The built-in digital Stereo Generator assures an extremely precise MPX Signal.

The RDS Encoder (*optional*) is compliant to UECP SPB490, provides 2 DataSet with a wide range of static services, including Radio Text.

FALCON 3i features full connectivity with analogue and digital AES/EBU inputs and outputs (over XLR connectors) and 2 independent MPX outputs, USB, GPI and serial ports.

The hardware bypass circuit is always included to guarantee the presence of audio and continuity of audio programs.



User's manual



Ask for a quote

- [Features](#)

- 4-Band digital stereo audio processor
- Analog and aes/ebu input and output over XLR
- 2 MPX outputs and 2 aux inputs
- Stereo generator with MPX clipper
- Digital RDS encoder, 2 dataset (*optional*)
- AGC, brilliance control, speech detector, 3-band eq
- USB, serial, 4 GP in - 4 GP out
- Front headphone output
- Hardware bypass



ADVANCED AUDIO PROCESSOR

Overview

FALCON VS is the high performing digital audio processor combining also the Stereo Generator and the RDS Encoder. Itâ€™s the all-in-one solution designed for FM broadcasting, WebRadio and Satellite stations.


FALCON VS provides a great outstanding sound, thanks to the powerful DPSs, 5-band architecture, the dual band AGCs, 3-band equalizer, stereo enhancer, speech detector and 4 limiters. The control of each audio parameter allows the broadcaster to design its favorite audio preset to get a unique branded sound.

The optional LAN port with the built-in Web Server allow to take the control of the processor and tune the audio from anywhere.

The built-in digital Stereo Generator assures an extremely precise MPX Signal.

The RDS Encoder (optional) is compliant to UECP SPB490, provides 2 DataSet with a wide range of static services, including Radio Text.

FALCON VS features a full connection/connectivity with analogue and digital I/O (over XLR connectors) and 2 independent MPX outputs, USB, GPI and serial ports. The hardware bypass circuit is always included to guarantee the presence of audio and continuity of audio programs.

 User's manual



Ask for a quote

- [Features](#)

- 5-Band Digital Audio Processor
- AES/EBU and analog I/O Over XLR
- Automatic audio input changeover
- 2 composite outputs and 2 AUX inputs
- Stereo Generator with composite Clipper
- Mpx Power Control - ITU-R BS.412
- Digital RDS Encoder, 2 Dataset
- Multiband AGC, Speech Detector, 3-Band EQ, Stereo Enhancer
- Brilliance Control, Expander and Superbass enhancer
- Usb, Serial, 4 GPIIn-4 GPOut
- Front headphone output
- Hardware bypass



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The features available on the Audio Processor are multiple and fully customizable: 5-band compression control, dual-band AGC, a 3-band

EQ and brightness control.

The parameterized Stereo Enhancer command provides to the radio station sound a spacing effect and large stereo horizon openings. The *Expander* control allows to minimize backgrounds and unwanted noises, while the *Overdrive* and *SuperBass* deal to make an important sound at low and medium-low frequencies, creating an impressive sensation of loudness.

The phases control of monophonic audio, gives the sound of the human voice a more natural and pleasant listening, while the final limiter drive maximizes the presence of sound.

FALCON VS makes the sound of any single broadcaster unique without creating an artificial sound.

The soundprint of each channel can be created from one of ten preset audio files already on **FALCON VS**, from rock to classical, country, talk show, or preset audio while preserving the original sound; it enhances features and unique details.

It can also recall a preset by the logic state on the port or protocol GPIn ASCII serial / ethernet (on OPT).

The internal RDS encoder -available as an option-, provides two DataSet, each with a wide range of services including 60 static programmable PS messages, 16 RadioText messages, Alternative Frequency (AF) to receive the best frequency as a function of 'coverage area' and Traffic Program (TP) / Traffic Announcement (TA) to listen to traffic information and functions such as EON, M/S, DI, CT, PI, PTY, PIN.

The switching between the DataSet can occur by serial commands, GPIO or TCP/IP from a radio automation system.

The RDS encoder complies with UECP SPB490.

The connectivity of **FALCON VS** is complete and manifold.

The rear panel features balanced XLR connectors for the connection of the inputs and outputs, in analog and digital AES / EBU.

As regards the MPX part there are two outputs individually buffered and independent for the signal MPX+RDS, plus two additional inputs AUX (SCA) with different functionalities.

For remote connections there are an Ethernet TCP/IP (as option) a RS232 serial port, a USB port and a connection port GP In and GP Out to optocouplers and open collector representing the operating states and alarms.

FALCON VS can be controlled remotely via Windows-based client software or through a common http thanks to the web server (*on option*).

Universal power supply 90-264Vac 47-63Hz included to operate worldwide. Falcon VS occupies 1 19" unit.



BROADCAST AUDIO PROCESSOR

Overview

FALCON XT is the top class digital audio processor that also features Stereo Generator and RDS Encoder. It is the full optional and most prestigious equipment designed for those broadcasters that really want to get the best with no compromise.

FALCON XT assures the top quality performance and exclusive audio.

It features powerful DPSs, 5-band architecture, the dual band AGCs, 3-band equalizer, stereo enhancer, speech detector and 4 limiters. The comprehensive and accurate control of each audio parameter allows to shape perfectly the audio to broadcast unique and exceptional branded sound.

The LAN port and the built-in Web Server allows to take the control of the processor and tune the audio from anywhere.

The built-in digital Stereo Generator assures an extremely precise MPX Signal.

The RDS Encoder (*optional*) is compliant to UECP SPB490, provides 2 DataSet with a wide range of static services, including Radio Text.

FALCON XT features a full connectivity with analogue and digital I/O (over XLR connectors) and 2 independent MPX outputs, USB, GPI and serial ports.

The hardware bypass circuit is always included to guarantee the presence of audio and continuity of audio programs.



User's manual



Ask for a quote

- [Features](#)

- 5-Band Digital Audio Processor
- Analog and AES/EBU input and output over XLR
- Automatic Audio Input Changeover
- 2 composite outputs and 2 AUX inputs
- Mpx Power Control - ITU-R BS.412
- Digital RDS Encoder, 2 Dataset
- Multiband AGC, Speech Detector, 3-Band Eq, Stereo Enhancer, Limiter Lookahead
- Brilliance Control, Expander, Overdrive, Superbass Harmonizer
- Ethernet, Usb, 2 Serials Rs232, GPIIn/GPOut
- Gps Interface, NTP, SNMP Agent
- Management via Web Page
- Front headphone output
- Hardware bypass



FALCON XT provides the broadcaster even more demanding, extremely sophisticated audio features and high-level standard: 5-band control compression, dual-band power AGC, three-band EQ and Brightness control. The Stereo Enhancer parameterized command provide to the radio station sound, the spacing effect and large stereo horizon openings. The control of the phases of mono audio signals, makes the voice sound more natural, the *Expander* control allows to minimize the background or unwanted noise, while the *Overdrive* and the *SuperBass* dealing to make the sound more important on low and very low frequencies, creating an impressive effect of loudness. In addition, the *SuperBass Harmonizer* controls the distortion of the bass sound/low frequency, compared to their clipping, creating a sound impact unmistakable, increasing the energy transmitted by the low frequency and making listening much more pleasant than other audio processors. The two distinct Final Limiter drives, one broadband and one dedicated only to low frequencies, maximize the presence of the sound, always maintaining a pleasant audio listening. **FALCON XT** makes the sound of any single broadcaster unique without creating an artificial sound.

The soundprint of each broadcaster can be created from one of ten preset audio files already on **FALCON XT**, from rock to classical, country, talk show, or preset audio while preserving the original sound, enhance the *character* and the unique details. It is possible to recall a preset using ASCII protocol serial / ethernet port or via GPIIn logic state.

The internal RDS encoder available as an option, provides two DataSet, each with a wide range of services including static programmable PS 60 messages, 16 RadioText messages, Alternative Frequency (AF) to receive the best frequency as a function of 'coverage area', the Traffic Program (TP) / Traffic Announcement (TA) to listen to traffic information and functions such as EON, M/S, DI, CT, PI, PTY, PIN. The switching between the DataSet can occur by serial commands, GPIO or TCP/IP from a radio automation system. The RDS encoder complies with UECP SPB490.

The connectivity of **FALCON XT** is complete and manifold. The rear panel contains XLR connectors for connection of the inputs and outputs in analog and digital AES/EBU. As regards the part MPX are available two outputs individually buffered and independent for the signal MPX+RDS, plus two additional inputs AUX (SCA) with different functionality. An AUX input (SCA) expressly intended use of external RDS encoder, while a second input is able to switch the audio from another processor MPX to create a subnet managed by the automation system. All outputs are equipped with hardware bypass in case of fault of the apparatus.

For remote connections are available an Ethernet TCP/IP port, a RS232 serial port, a USB port and a connection port GPIO with optocouplers and open collector representing the operating states and alarms.

FALCON XT can be controlled remotely via Windows-based client software or through a common http pages thanks to the web server. Universal power supply 90-264Vac 47-63Hz to operate in any region of the world Falcon XT occupies 1 19" rack unit.