BROADCAST AUDIO PROCESSOR
Falcon XT

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HIGHLIGHTS

1. 5-Band Digital Audio Processor
2. Analog and AES/EBU input and output over XLR
3. Automatic Audio Input Changeover
4. 2 composite outputs and 2 AUX inputs
5. Mpx Power Control - ITU-R BS.412
6. Digital RDS Encoder, 2 Dataset
7. Multiband AGC, Speech Detector, 3-Band Eq, Stereo Enhancer, Limiter Lookahead
8. Brilliance Control, Expander, Overdrive, Superbass Harmonizer
9. Ethernet, Usb, 2 Serials Rs232, GPIn/GPOut
10. Gps Interface, NTP, SNMP Agent
11. Management via Web Page
12. Front headphone output
13. Hardware bypass

MAIN DESCRIPTION

Falcon XT is a Digital Audio Processor, a Stereo Generator and an RDS encoder, all in a single device, specifically designed for the market of broadcast FM radio, Web Radio and Satellite.

Falcon XT audio processor is based on a DSP dedicated technology, with a 5-band audio processing architecture. The Stereo Generator is fully digital and can create a perfect Multiplex signal. Falcon XT, can be completed with a RDS Encoder, DSP-based and fully digital. Falcon XT allows to create your own soundprint, unique and unmistakable.

Be recognized today in the crowded world of broadcasters in FM, DVB-T or in the boundless world of the web has now become very complicated, in a market where competition does not forgive mistakes. If the broadcaster does not want to have the same soundprint of all radio stations, Falcon XT is the tools that stand out in this tangle of media.

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

STEREO GENERATOR
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 GPIn logic state.

The Composite Clipper installed in the Stereo Generator provides the highest level of modulation, while the 'MPX Power Control allows to use the processor in full compliance with the ITU-R BS.412 about a density reduction while maintaining the same level of deviation. In order to calibrate and set up correctly the audio network, a digital tone generator with variable sample frequency and amplitude is available on Analog, Digital and MPX outputs.

FRONT PANEL
The Falcon XT front panel has two large LCD diplays. The first LCD shows the whole process input and output from the audio processor, including the amount of intervention on each single compressor band, the limiter of 'multiband, AGC and input and output levels of audio sources analog, digital and MPX. The second display shows all Falcon XT parameters such as preset on the air, RDS station name, GPIn and GP Out status. Again on the front panel there is an headphone output the audio process monitoring introduced by the Falcon XT. It is now simple to hear the difference between the original audio and the processed one.

RDS ENCODER
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.

REMOTE CONNECTION
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.

APPLICATIONS

- RADIO BROADCASTING FM/WEB/SAT
- RECORDING ROOMS
- LEVEL CONTROL BY STL
- MASTER CONTROL ROOM
- OB VAN / S.N.G

ORDERING INFORMATION

CODE#	MODEL	COMMERCIAL DESCRIPTION	NOTES
A106360000	FALCON 3i	Digital FM Audio Processor 4-Band with MPX stereo generator, Analog, Digital and MPX Input and Output. Double MPX Out. AGC, Equalizer and Speech Detector, Final Limiter Drive, Brilliance Control. 4 GPIn and 4 GPOut, Serial Rs232 and USB port. Remote control Software.	
A106370000	FALCON VS	Digital FM Audio Processor 5-Band, MPX stereo generator, Multiband AGC, Stereo Enhancer, Brilliance control, Limiter LookAhead, Expander, Overdrive. Audio changeover, I/O Analog, Digital and MPX. Double MPX Outs. MPX Split. 4 GPIn and 4 GPOut, USB and Serial port. Remote control software.	
A106380000	FALCON XT	Digital FM Audio Processor 5-Band, MPX stereo generator, AGC Multiband, SuperBass, Stereo Enhancer, Overdrive, Brilliance Control, Limiter LookAhead, Audio changeover, IN/OUT analog, digital and MPX.MPX Split. Ethernet. Web Server. SNMP Agent, GPS interface. 4GPIn and 4GPOut. Remote control Software.	

AVAILABLE OPTION

CODE#	MODEL	COMMERCIAL DESCRIPTION	NOTES
A106360300	F-RDS	Digital RDS/RBDS encoder. Static services generation: 60 PS programmable messages for each DataSet. RadioText, Alternative Frequency (AF), Traffic Program (TP), Traffic Announcement (TA), EON, M/S, CT, PI, PTY, PIN. 2 interchangeable DataSet via remote control. Compliant with UECP SPB490.	Available on all Falcon audio processors.
A106370300	F_VS-LAN	Optional Ethernet port for LAN connection (TCP/IP and UDP) and Rs232 (Parser ASCII). Option available only on Falcon VS.	Option available only on Falcon VS

TECHNICAL SPECS

GENERAL	VALUE
Dimension	434x351x44mm (1 rack unit)
AC Rate	230Vac / 110Vac 50 Hz / 60 Hz 30VA
Type of power supply	Switching power supply
Processing architecture	Fully digital, based on DSP 24bit/100Mhz. Signal processing is performed by phase linear filter
Weight	≈ 3 Kg
Operating Temperature	-5°C / +50°C
ANALOG INPUT MODULE	
A/D Conversion	24bit Sigma-Delta Conversion (Crystal CS4272)
Connectors:	XLR, female - Electronically balanced
AD Clipping Point	+20.0dBu
Nominal Operating Level:	From –12.0dBu to +12.0dBu (0.1dBu Step)
Line Impedance	10 kΩ (Electronically balanced selectable) EMI – suppressed
Distortion:	less than 0.01% TDH+NOISE (0.0dBu 1Khz)
AD Dynamic Range:	108 dB RMS (110 dB A weighted)
Input Modes:	Stereo, Mono (Left), Mono (Right), Mono (Left+Right)
DIGITAL INPUT MODULE	
Connectors:	XLR, female – Electronically balanced
Format	AES3/EBU
Sample rates	32 kHz / 44.1 kHz / 48 kHz / 64 kHz / 88.2 kHz / 96 kHz with src and jitter correction
Operative Nominal level:	From 0.0 dBFs to -24dBFs (0.1 dBu step)
Dynamic Range:	125 dB (Typ), 122 dB (Min)
Distortion	less than 0.01% TDH+NOISE (0.0dBu 1Khz)
Input Modes:	Stereo, Mono (Left), Mono (Right), Mono (Left+Right)
ANALOG OUTPUT MODULE	
D/A Conversion	24bit Sigma-Delta Conversion (Crystal CS4272)
Connectors	XLR, male - Electronically balanced
Output Level	-12.0dBu to +14.0dBu (0.1dBu Step) – Max (+19dBu)
Source Impedance	10 Ω
Load Impendance	600 Ω or greater
Distorsion	Less than 0.01% TDH+NOISE (0.0dBu @ 1Khz)
DIGITAL OUTPUT MODULE	
Connectors:	XLR, Male – Electronically balanced
Format	AES3/EBU
Sample rates	32 kHz / 44.1 kHz / 48 kHz / 64 kHz / 88.2 kHz / 96 kHz with src and jitter correction
Resolution	16 bit – 20 bit – 24 bit
Operative Nominal level:	From 0.0 dBFs to -24dBFs (0.1 dBu step)
Dynamic Range:	125 dB (Typ), 122 dB (Min)
Distortion	less than 0.01% TDH+NOISE (0.0dBu 1Khz)
Input Modes:	Stereo, Mono (Left), Mono (Right), Mono (Left+Right)
REMOTE INTERFACE	
Digital Inputs GPIn	4x GP In optocoupled
Digital Outputs GPOut	4x GP Out Open Collector optoisolated
Serial Interface	1x RS-232 Serial protocol ports EMI filtered
USB	1x Universal Serial Bus port – B type EMI filtered
Ethernet Port and Parser ASCII protocol	Optional ethernet port, over RJ45 connector with web server interface.

COMPARISON TABLE

General Features	Falcon 3i	Falcon VS	Falcon XT	Notes
Price List / MSRP				
Audio processor band management	4	5	5	
Audio process architecture	24Bit-120Mhz DSP-Based audio process			
Stereo Generator – MPX Encoder	✓	✓	✓	
RDS Encoder	optional	optional	optional	
Input and Output				
Analog XLR In/Out	✓	✓	✓	
Digital AES/EBU XLR In/Out	✓	✓	✓	
2 BNC MPX Out and 2 BNC AUX IN	✓	✓	✓	
Hardware bypass I/O XLR/XLR–BNC/BNC	✓	✓	✓	
MPX Split Mode	✓	✓	✓	
Audio Management				
Band management	4	5	5	
3-Band Equalizer	✓	✓	✓	
Remote preset changer	✓	✓	✓	
Final Limiter Drive	✓	✓	✓	
Test tone generator	✓	✓	✓	
Brilliance control	✓	✓	✓	
Double band AGC (LO/HI)	✓	✓	✓	
AGC control	✓	✓	✓	
AGC power control	-	✓	✓	
Audio Fault input changeover	-	✓	✓	
MPX ITU-R BS.412 Control	-	✓	✓	
Stereo Enhancer	-	✓	✓	
Limiter LookAhead mode	-	✓	✓	
Expander (noise reduction)	-	✓	✓	
Overdrive power control	-	✓	✓	
Super Bass control	-	✓	✓	
Super Bass Harmonizer	-	-	✓	
Final Main Band Limiter Drive	-	-	✓	
Final Low Band Limiter drive	-	-	✓	
Preset clock-based manager	-	-	✓	
Remote Control				
GPIO Connector – Type	SubD 15p HD - 4x GP In opto coupled, 4x GP Out Open Collector opto isolated			
USB	1x USB – B Type EMI Filtered			
Serial	1x Rs232 EMI Filtered			
Software Remoter	✓	✓	✓	
Ethernet Port /Web Server	-	optional	✓	
Parser ASCII protocol via TCP/IP UDP/IP	-	optional	✓	