

Made by engineers, for engineers



C-50

Fully Featured FM Transmitter

Datasheet and Specifications

COBALT C-50

FULLY FEATURED FM TRANSMITTER

The COBALT C-50 is a robust 50W FM Broadcast Transmitter, boasting FCC part 73 LPFM and IC certifications. Its exceptional audio quality and clear sound from the Direct to Channel Digital technology with minimal manipulation, maintains audio integrity.

Operating on a fully customized LINUX OS system, this transmitter features a low-distortion modulator available across all COBALT FM Transmitter models. Input and output options include Analog, AES/EBU, Digital MPX (AES192), Ethernet, USB, GPIO, GPS Sync with built-in SFN capabilities.

Tailored for applications like Community Radio Gap-filling and scenarios, or as an exciter requiring high-quality audio, the COBALT C-50 ensures market-leading sound. It comes equipped with a built-in 4-band Audio Processor, featuring Bass enhancement, Pilot protection, Wide AGC, and a range of expertly designed modern presets for an impressive start.

The modern design with its Ultra-clear RGB display and Intuitive Joystick controls with Haptic feedback and silicon buttons allow for swift setup, ensuring you get on the air in no time.

The advanced communication package includes an intuitive web interface and remote control via Ethernet (https). Full SNMP v1, v2c, and v3 management, with the ability to send emails, alerts, and remotely monitor audio, provide confidence with global control from any device with a web browser.

An advanced automations package enables settings changes based on conditions, SNMP, GPI, or through the scheduler function – all built into the system.

Audio monitoring is a new function that lets you stream confidence audio monitoring back to any web enabled device. Simply log in to your Cobalt Transmitter, and easily listen to audio from any source or the audio that's being processed prior to entering the PA going on-air. This is great so you can hear what your market is listening to. Change the source to the Analog, Digital or a test tone and listen to that too. Great for checking in on Audio coming in from an STL or direct out of your mixer. If you have the optional Tuner or MicroMPX in your Cobalt, those too can also be monitored.

A Shoutcast / Icecast stream input is now included as standard, acting as a primary or back-up audio input.

With the highest AC efficiency, a compact design, and reduced weight, the COBALT C-50 ensures low transportation costs and stands as the model with the lowest total cost of ownership in its class.





STANDARD FEATURES

- | | |
|---|---|
| Direct to Digital Synthesized modulation | Digital MPX (AES192) |
| FCC Part 73 Certified for LPFM, IC Certification for Canada | Ethernet Control with HTTPS |
| Linux OS | SNMP v1, v2c, v3 |
| RGB Screen | Advanced Automations and configurations |
| 4 Band Audio Processor | Scheduler |
| Audio confidence monitoring by web browser | Audio Failover and Silence Detection |
| Dynamic, UECP Compliant RDS Encoder | Backup Audio player via USB |
| ITU-R BS412.9 Limiter | Shoutcast / Icecast Stream input |
| GPS Sync for SFN | |

OPTIONS

- | | |
|--------------|---|
| MicroMPX | 2wcom MOIN CODEC |
| MicroMPX SFN | 6 Band Audio Processor |
| Tuner | 48V DC Power input (Full RF power is available) |

GENERAL

Output Power (W)	50
Range (W)	5-50
RF Output connector	N-Type (Female)
Input ACV @ 50/60Hz	100-240
Power Connector	IEC 13A filtered
Power supplies	1
Dimensions WxDxH (inch)	19x15x1RU (1.75")
Dimensions WxDxH (cm)	48.3 x 38 x 4.45
Weight	3.7kg / 8.14lb

MODULATOR

Transmitter type	Solid-state FM Stereo transmitter
Modulator	Direct-to-channel (DDS)
RF Output Frequency Range	VHF Band II, 87-108MHz
RF Frequency Steps	100kHz
Frequency Stability	±1 ppm or ±150Hz range with internal 10MHz clock reference. 75kHz default, 100% modulation user adjustable up to 105kHz, 140%, maximum 300kHz
FM Modulation Range Capability	

RF

Power Stability	≤ ± 0.25dB
Asynchronous/AM noise	≤ -60dB
Synchronous AM s/n ratio	≤ -60dB
RF Harmonic and Spurious Suppression	Meets ETSI requirements
VSWR operation	Fully protected against gradual or sudden VSWR condition Proportional power reduction from VSWR 1.5:1

STEREO ENCODER

Performance	400Hz/1kHz test tones at modulation level ≤75kHz
Modes	Stereo, Mono L+R, Mono L, Mono R
Frequency response	20Hz-15kHz ±0.02dB
Pre-emphasis	0, 50 or 75µs
Pilot tone	19kHz, adjustable level 0-12%
Subcarriers suppression	≤ -70dB
Stereo Suppression	≥75dB AES/EBU input
Stereo SNR	≥70dB Analogue input
Stereo THD+N	≥80dB with 75us de-emphasis
Crosstalk	≥75dB without de-emphasis both inputs<0.03% ≥70dB, between L+R and L-R due to channel matching, both inputs

MONO PERFORMANCE

Frequency response	20Hz - 15kHz ±0.02dB
Pre-emphasis	0, 50 or 75 µs
Mono SNR	≥100dB, with 75us de-emphasis
Mono THD+N	≤0.002% analogue input, ≤0.001% AES input, with 75us de-emphasis

ANALOGUE AUDIO PERFORMANCE

Frequency response	10Hz-53kHz ±0.03dB 53kHz-70kHz ±0.3dB
FM SNR	≥90dB, with 75us de-emphasis
THD+N	≤0.003% with 75us de-emphasis

DIGITAL

Frequency response
FM SNR
THD+N

0-90kHz ± 0.005 dB
 ≥ 100 dB, with 75us de-emphasis
 $\leq 0.001\%$ with 75us de-emphasis

AUDIO INPUTS

Analogue
Digital

2 x XLR female, 10k Ω impedance, level adjustable 0-24dBu
AES/EBU via RJ45 per StudioHUB+, Level adjustable
-20-0dBFS, sampling rates 32-192kHz

AUDIO OUTPUT

Headphones Out

14" (6.3mm) female stereo socket software adjustable
volume
minimum load impedance 16 Ω

WIDEBAND INPUTS

Analogue MPX
Digital MPX

BNC, 10k Ω impedance, level adjustable 0-12dBu
AES/EBU via RJ45 per StudioHUB+ level -20-0dBFS,
sampling rate 192kHz left channel

Analogue RDS

BNC, 10k Ω impedance, level adjustable from 0.1-10Vpp

WIDEBAND OUTPUTS

Analogue MPX
Analogue Pilot

BNC, 10 Ω impedance, level adjustable 0-12dBu
BNC, 10 Ω impedance, level adjustable 0-12dBu

RDS GENERATOR

Type
Protocols
Ports

Fully Dynamic RDS/RDS2/RBDS Generator
ASCII commands, UECP protocol and X-Command Multi-
port, UART over USB-B & Ethernet

WIDEBAND INPUTS

10MHz input
1PPS input
RF sample output
UART over USB
USB
Ethernet
RS232

Interlock/ External RF Off
Analogue voltage output

BNC, 50 Ω terminated
BNC, 50 Ω terminated
SMA, 50 Ω , -30dBc
USB-B, system control
USB 2 x USB-A, storage & FW upgrade
1 x RJ45
DB25 shared connector, system control GPIO DB25 shared
connector, 8 x output & 8 x input, all optically isolated
DB25 shared connector, programmable logic/polarity
DB25 shared connector, 4-channel 0-5V range

ENVIRONMENTAL

Altitude
Temperature range
Humidity

15,000 ft / 4,420m AMSL
0 to +45°C working. -10 to +50°C storage
95% @ 35°C, non-condensing

AQUABROADCAST

At Aqua Broadcast, we are on a mission to revolutionize the world of FM transmitters and broadcast audio. With a deep commitment to innovation and excellence, we specialize in creating high-quality, cutting-edge products that set new standards in the industry.

Founded with a vision to seamlessly blend cutting-edge technology with dynamic content, we specialize in delivering high-quality products. Our award-winning COBALT range of Fully Featured FM Transmitters have set a new standard with its custom Linux operating system.

Aqua Broadcast is shaping its own future, for you, our customers. Our transmitters are equipped with cutting-edge network security features, offering broadcasters peace of mind in an increasingly connected world. As we continue to develop new solutions, we aim to anticipate the future of broadcasting and deliver products that exceed expectations—helping our customers not just meet their goals but shape the future of broadcasting itself.

At Aqua Broadcast, we live by the mantra: “Made by engineers, for engineers.” With a team of highly skilled engineers and industry professionals boasting over 100 years of cumulative experience, we understand the technical challenges and demands faced by broadcasters. Our staff is driven by a passion for engineering excellence and a deep understanding of the intricacies of broadcast technology. Every product we create is designed with the precision and quality that only seasoned engineers can deliver.

We are not just a product manufacturer; we are a trusted partner for broadcasters across the globe. Our commitment to supporting our clients goes beyond just selling a product. We take the time to understand each station's unique needs, offering tailored solutions and providing ongoing support to help them achieve their goals. Whether it's ensuring smooth broadcasts, optimizing performance, or delivering custom-built features, Aqua Broadcast is always there to ensure your success.

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