

# COBALT

## COBALT A-5000

### Fully Featured FM Amplifier

A-5000 Amplifier



C-10 Exciter (Not Included)



Optional Dual Exciter (Not Included)



With Single or Dual Exciters

Datasheet and Specifications

Specifications are subject to change without notice

## 5kW FM Fully Featured Transmitter System

**COBALT C-10 Exciter**  
(Optional: Dual Exciter)



**A-5000 Amplifier**



- Hot-swappable power supplies
- Backup (redundant) power supply included with the amplifier
- Hot-swappable fans

## FEATURES

- Full-band tuner from 87.5 to 108 MHz
- Efficiency exceeding 70% with amplifiers featuring hot-swappable power supplies and automatic power control
- One C-10 solid-state exciter with DDS modulation. Optional dual exciter
- One 5000W RF power amplifier with a 7/8" EIA RF output connector, with an optional EIA 1-5/8" adapter.
- Total output power of 5000W
- Designed for 24/7 continuous operation
- Comprehensive protection: high ROE, overload, overcurrent, and overheating
- Transmitter compliant with IEC, ETSI, CCIR, and FCC (including FCC Part 73 LPFM and IC Canada)
- Supports mono and stereo transmission with direct-synthesized digital modulation
- Integrated 4-band audio processor with ITU-R BS412.9 limiter
- UECP-compatible dynamic RDS encoder
- MPX digital (AES192)
- Audio error switching, silence detection, and audio player USB backup and/or internal memory
- Two stream inputs (Shoutcast/Icecast)
- GPS Synchronization for SFN Operation
- RGB display on the front panel with full system monitoring
- Remote control via Ethernet HTTPS and SNMP (v1/v2c/v3)
- Web Audio Monitoring and Control

## Options

- MicroMPX
- MicroMPX SFN
- 2wcom MOIN IP Codec
- 6-band audio processor
- FM tuner

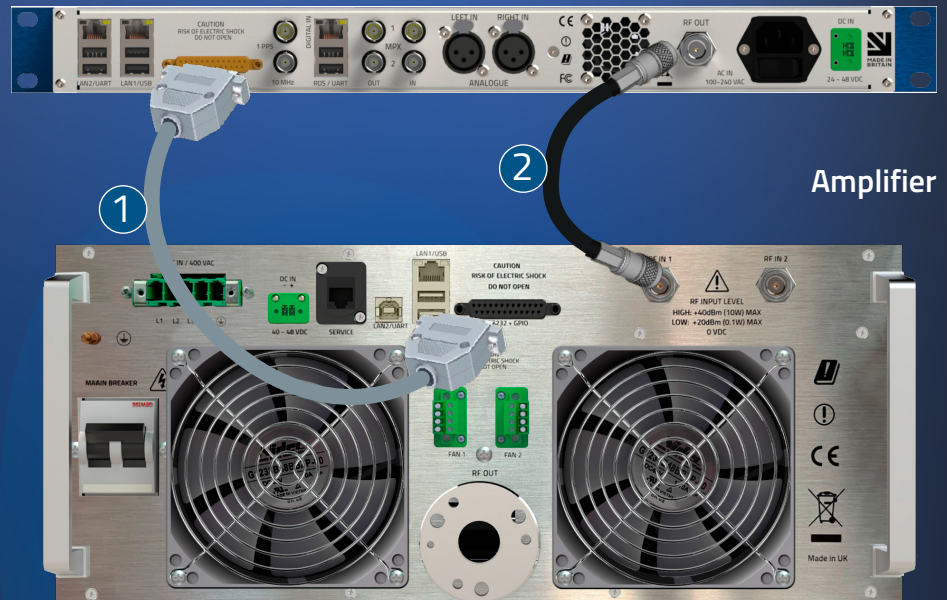
## Data & RF Connection Diagram

### Configuration with Single Exciter

Exciter

**1 DATA CONNECTION:**  
COMMUNICATION BETWEEN THE EXCITER AND THE AMPLIFIER  
(NOTE: IN THE CASE OF A DUAL-EXCITER CONFIGURATION, PLEASE PAY CLOSE ATTENTION TO THE IDENTIFICATION LABEL ON EACH CONNECTOR)

**2 RF CONNECTION**  
RF POWER SUPPLY TO THE AMPLIFIER  
(NOTE: SET THE RF OUT OF THE EXCITER TO 1W OR 2W. NO ADDITIONAL POWER IS REQUIRED AT THE AMPLIFIER INPUT.)

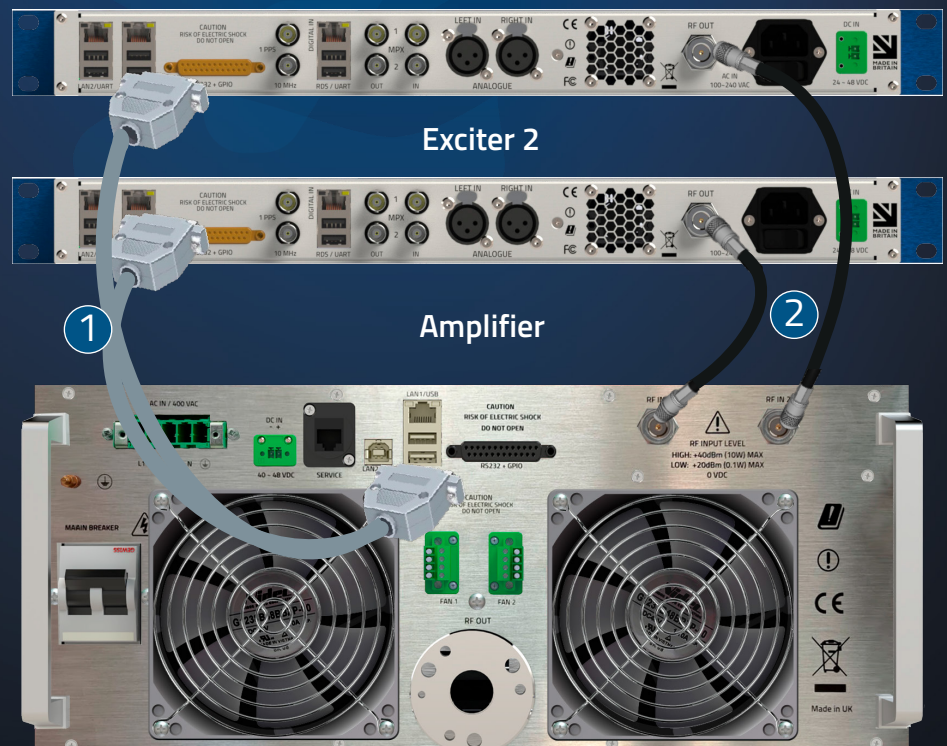


### Configuration with Dual Exciters

Exciter 1

**1 RF CONNECTION**  
COMMUNICATION BETWEEN THE EXCITER AND THE AMPLIFIER  
(NOTE: IN THE CASE OF A DUAL-EXCITER CONFIGURATION, PLEASE PAY CLOSE ATTENTION TO THE IDENTIFICATION LABEL ON EACH CONNECTOR)

**2 RF CONNECTION**  
RF POWER SUPPLY TO THE AMPLIFIER  
(NOTE: SET THE RF OUT OF THE EXCITER TO 1W OR 2W. NO ADDITIONAL POWER IS REQUIRED AT THE AMPLIFIER INPUT.)



## Cobalt A-5000 Specifications

### GENERAL

Output Power (W)	5000W adjustable
Efficiency	Up to 78%
RF Output connector	7/8 EIA, 50ohm
Input Power	110-264 VAC Single phase or 208/400VAC Three phase 47-63Hz
Dimensions WxDxH (inch)	19 x 24 x 4RU (7")
Dimensions WxDxH (cm)	48.3 x 60 x 17.8
Weight	38kg / 84lb

### PREAMP

Power Stability	$\leq \pm 0.25\text{dB}$
Asynchronous/AM noise	$\leq -60\text{dB}$
Synchronous AM s/n ratio	$\leq -60\text{dB}$
RF Harmonic and Spurious suppression AM s/n ratio	Meets ETSI requirements
VSWR operation	Fully protected against gradual or sudden VSWR condition at 1.35:1

### RF INPUTS

High mode is default, low mode is factory fitted option.

RF1	N type 23dBm to 40dBm, nominal 30dBm (200mW to 10W, nominal 1W) Low mode input range is 3dBm to 20dBm, nominal 10dBm (2mW to 100mW, nominal 10mW) Automatic input gain adjustment
-----	--

RF2	N type 23dBm to 40dBm, nominal 30dBm (200mW to 10W, nominal 1W ) Low mode input range is 3dBm to 20dBm, nominal 10dBm (2mW to 100mW, nominal 10mW) Automatic input gain adjustment
-----	---

### POWER SUPPLIES

Type	Hot swappable
Number of Power Supplies	3 Standard 1 additional Power Supplied fitted as an option at the Factory

Optional 1-5/8" Adapter

### ENVIRONMENTAL

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

## Cobalt C-10 Exciter Specifications

### GENERAL

Output Power (W)	15
Range (W)	1-15
RF Output connector	N-Type (Female)
Input ACV @ 50/60Hz	100-240 (277 North America only)
Power Connector	IEC 13A filtered
Power consumption	~50W @ max power
AC-RF efficiency typ	~30%
Dimensions WxDxH (inch)	19 x 15 x 1RU (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 $\pm$ 1 ppm or $\pm$ 150Hz
Frequency Stability	range with internal 10MHz clock reference
FM Modulation Range Capability	75kHz default, 100% modulation user adjustable up to 105kHz 140%, maximum 300kHz

### RF

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

### STEREO ENCODER

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

### MONO PERFORMANCE

Frequency response	20Hz - 15kHz $\pm$ 0.02dB
Pre-emphasis	0, 50 or 75 $\mu$ s
Mono SNR	$\geq$ 100dB, with 75us de-emphasis
Mono THD+N	$\leq$ 0.002% analogue input, $\leq$ 0.001% AES input, with 75us de-emphasis

### ANALOGUE AUDIO PERFORMANCE

Frequency response	10Hz-53kHz $\pm$ 0.03dB 53kHz-70kHz $\pm$ 0.3dB
FM SNR	$\geq$ 90dB, with 75us de-emphasis
THD+N	$\leq$ 0.003% with 75us de-emphasis

### DIGITAL

Frequency response	0-90kHz $\pm$ 0.005dB
FM SNR THD+N	$\geq$ 100dB, with 75us de-emphasis $\leq$ 0.001% with 75us de-emphasis

### AUDIO INPUTS

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

### AUDIO OUTPUT

Headphones Out	14" (6.3mm) female stereo socket software adjustable volume minimum load impedance 16 $\Omega$
----------------	--

### WIDEBAND INPUTS

Analogue MPX	BNC, 10k $\Omega$ impedance, level adjustable 0-12dBu AES/EBU via RJ45 per StudioHUB+ level -20-0dBFS, sampling rate 192kHz left channel
Digital MPX	
Analogue RDS	BNC, 10k $\Omega$ impedance, level adjustable from 0.1-10Vpp

### WIDEBAND OUTPUTS

Analogue MPX	BNC, 10 $\Omega$ impedance, level adjustable 0-12dBu
Analogue Pilot	BNC, 10 $\Omega$ impedance, level adjustable 0-12dBu

### RDS GENERATOR

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

### WIDEBAND INPUTS

10MHz input	BNC, 50 $\Omega$ terminated
1PPS input	BNC, 50 $\Omega$ terminated
RF sample output	SMA, 50 $\Omega$ , -30dBc
UART over USB	USB-B, system control
USB	USB 2 x USB-A, storage & FW upgrade
Ethernet	1 x RJ45
RS232	DB25 shared connector, system control
Interlock/ External RF Off	GPIO DB25 shared connector, 8 x output & 8 x input, all optically isolated
Analogue voltage output	DB25 shared connector, programmable logic/polarity DB25 shared connector, 4-channel 0-5V range

### ENVIRONMENTAL

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

# AQUABROADCAST

Aqua Broadcast was formed by a diverse and experienced team of people with extensive Broadcast and electronics experience. We love Broadcast just as much as you do, and we saw the need to do things differently to all our competitors.

With an international presence and offering multi-lingual staff, Aqua Broadcast has positioned itself as a dynamic and innovative company, driven by its passion for Broadcast and Studio products.

Our strategically located offices worldwide mean you are never out of touch due to time zones. Sales and support are available round the clock. Whether it's a phone call, or email we are always with you every step of the way.

At our core are our customers. We focus on designing and building products for engineers and station owners who demand reliability, ease of use, with cutting-edge design and features. Listening to customer's ideas, feedback and success stories allows us to build products that are feature rich, reliable as well as easy to use.

For details of your local dealer or Distributor, please refer to our [website](#) or contact us. The purchaser will be responsible for all import taxes, customs, duties, freight costs and insurance.

## Warranty Information

At Aqua Broadcast Ltd, we are devoted to building the highest quality products and the never-ending pursuit of providing a better experience to our customers.

Our warranty statements are a continued commitment to providing reliable solutions with our technologies. All Aqua Broadcast Ltd benefit from a 2 year Manufacturer's Warranty. Further information on the Warranty can be seen in each products user manual, or by contacting us.

 Aqua Broadcast Ltd  
Unit 7, First Quarter  
Blenheim Road  
Epsom  
KT19 9QN  
United Kingdom  
 Tel: +44 203 411 0387  
 [www.aquabroadcast.co.uk](http://www.aquabroadcast.co.uk)  
 [info@aquabroadcast.co.uk](mailto:info@aquabroadcast.co.uk)

