

# Cascade™

## Repeater



### Operation

Cascade™ is a software-defined repeater that has been engineered for IP-networked radio solutions with coverage, dependability, and easy management. Cascade has built-in diagnostics, alarms and logging capability; and allows for system parameters to be monitored, configured and upgraded remotely over IP. With P25 CAI, analog and mixed mode capabilities standard; Cascade is the perfect choice for affordable and scalable, conventional public safety radio systems.

#### Key Features:

- Rack space efficient – 2 x 100W radios occupy only 4RU
- Includes linear amplifier(s), adjustable from 10-100W RF output
- Supports P25 digital, analog narrowband and mixed mode operations
- Built-in IP-based remote configuration and remote site monitoring
- Built-in logging and alarming, with user-definable automated failure mitigation behaviors
- Built-in testing and calibration functionality
- Supports open standard P25 IP Protocols
- Meets or exceeds industry standard regulatory guidelines for performance in a public safety LMR system

### Unit Components

#### Transceiver (TRx)

- A full duplex software controlled transceiver
- TRx receives, processes and transmits low-powered RF signals to the Power Amplifier
- TRx provides a web interface for remote programing, monitoring and diagnostics
- Fault conditions and diagnostics are monitored and reported to the UI and front-panel LEDs

#### Power Amplifier (PA)

- A 100W RMS RF linear amplifier provides the final stage RF amplification
- Software-controlled variable-gain amplifier with an output power range of 10 to 100W (40 to 50dBm) in 1W steps
- Fault conditions and diagnostics are monitored and reported to the UI and the front-panel LEDs

#### 48VDC Power Supply (PSU)

- DC-DC providing efficiency above 94.5%
- Delivers up to 2x16.7A output current with 48V output
- Operating temperature range: -30°C to 60°C
- Requires DC power input providing -40VDC to -60VDC

#### Subrack

- The Subrack houses and distributes power to all of the Cascade modules
- The Front Interface Board facilitates module communication with an operating temperature range of -30°C to 60°C

### Technical Specifications

- Frequency Band: 148-174MHz
- Carrier Frequency Stability:  $\leq \pm 0.5\text{ppm}$
- Switching Range: Full Band
- Duty Cycle: 100%
- Operating Voltage (Nominal): 48VDC
- Operating Temperature: -30 to 60 °C
- Carrier Frequency Stability:  $\leq \pm 0.5\text{ppm}$

#### Standby Current @48V

- Single Channel: <0.8A
- Dual Channel: <1.6A

### Single Channel Current @48V

- 100W Avg: <7.5A
- 10W Avg: <3A

### Dual Channel Current @48V

- 100W Avg: <15A
- 10W Avg: <6A

### Weight

- Metric: 20.4 kg
- Imperial: 45 lbs

### Dual Channel Weight

- Metric: 27.6 kg
- Imperial: 61 lbs

### Dimensions

- W x H x D (Metric): 48.64 x 17.60 x 54.40 cm
- W x H x D (Imperial): 19.15 x 6.93 x 21.42 in

### VHF Receiver

- Reference Sensitivity:  $\leq -120\text{dBm}$
- Adjacent Channel Rejection:  $\geq 60\text{dB}$
- Bit Error Rate Floor (P25):  $\leq 0.1\%$
- Audio Distortion (Analog):  $\leq 2\%$
- Receiver Port Connector: SMA
- Blocking Rejection:  $\geq 100\text{dB}$
- Intermodulation Rejection:  $\geq -80\text{dB}$
- Spurious Response Rejection:  $\geq -90\text{dB}$
- Conducted Spurious Output Power:  $\leq -95\text{dBm}$

### VHF Transmitter

- RF Output Power: 100W
- Adjacent Channel Power Ratio:  $\geq 67\text{dB}$
- Modulation Fidelity (P25):  $\leq 2\%$
- Audio Distortion (Analog):  $\leq 3\%$
- Transmitter Port Connector: N
- Intermodulation Attenuation:  $\geq 70\text{dB}$
- Unwanted Emissions - Conducted Spurs:  $\geq 90\text{dBc}$
- VSWR Protection: Any (with fold-back)

### Regulatory Information

#### FCC ID

- H4JCASC165B

#### IC ID

- 142A-CASC156B

#### Emissions Designators

- 11K0F3E
- 8K10F1D
- 8K70D1E
- 8K70D1D
- 8K70D1W
- 8K10F1E
- 8K10F1W

**ZETRON**

ZETRON AMERICAS  
PO Box 97004,  
Redmond, WA USA  
98073-9704  
(P) +1 425 820 6363  
(F) +1 425 820 7031  
(E) zetron@zetron.com  
www.zetron.com

ZETRON EMEA  
27-29 Campbell Court,  
Bramley, Hampshire  
RG26 5EG, United Kingdom  
(P) +44 1256 880663  
(F) +44 1256 880491  
(E) uk@zetron.com

ZETRON ASIA PACIFIC  
PO Box 3045, Stafford Mail  
Centre, Stafford QLD 4053,  
Australia  
(P) +61 7 3856 4888  
(F) +61 7 3356 6877  
(E) au@zetron.com



The Power to Respond™

©Zetron, a Codan Company. All rights reserved. Zetron and the Zetron logo are registered trademarks, and Cascade is a trademark of Zetron, a Codan Company. All other trademarks are properties of their respective owners. See Zetron price list for option pricing. Specifications subject to change without notice.

005-1504A