



**FREEWAVE**

Long-range industrial  
IoT connectivity with an

**INTELLIGENT  
EDGE**

Remote operations run smarter  
with **FreeWave**.



As a 25-year leader in long-range industrial M2M wireless solutions, FreeWave has helped thousands of customers achieve reliable connectivity for data telemetry and command and control in some of the most challenging, remote, and rugged environments in the world.

Now, as the rapid proliferation of 'smart' industrial devices in the field continues, organizations across the oil and gas, government and defense, agriculture, utilities, manufacturing, and smart city markets face new requirements. The Industrial Internet of Things (IIoT) is making vast new realms of operational data available, even from extreme edge environments, but they cannot be readily accessed and acted upon using the traditional approaches of centralized data processing and network polling.

**That's why FreeWave has infused our rugged, ultra-reliable radios with edge computing capabilities, delivering an ecosystem of solutions evolved for IIoT and ready to transform your operations, today.**





# Why FreeWave?

## Unmatched Expertise in Edge Operations

FreeWave has been connecting the industrial edge since our very start, and we know what it takes to overcome challenges inherent in these harsh environments.

## Future-Ready Technology to Solve Operational Problems

Our robust and flexible portfolio gives you multiple ways to address network challenges and capitalize on IIoT opportunities—today and well into the future.

## Responsive and Knowledgeable Customer Support

We are a partner first and foremost, committed to delivering best-in-class service and value-added insights that make operational impact.





# Edge Evolved.

FreeWave has brought together our proven M2M wireless solutions with expanded capabilities to capture and process operational data in the field, right where it is produced. By distributing to the edge, you can **optimize bandwidth and mitigate lags in decision-making caused by latency** – deriving more value from more data, more quickly, without overburdening your network.

This gives you a future-ready platform to collect, analyze, and act on rich IIoT insights in a rapid, real-time, autonomous way – all built upon the low-power, rugged design foundation that has kept our industrial radios running without fail in the toughest outdoor environments for decades.

**Wherever you are in your journey to the edge, FreeWave has the solutions to keep you moving forward.**



## Edge Computing

FreeWave's IIoT edge solutions take the industrial-grade products for which we are known and infuses them with the **IQ** intelligence that operations need to gain a new edge over the competition.

The **IQ** Application Environment is a Linux-based platform to deploy and run industrial applications. **IQ** is delivered through FreeWave's Zum family of products, including the C1D2-certified ZumIQ™ Edge Computer and the ZumLink™ IQ Edge Intelligent Radio, which provides compute power, storage, and wireless communications links all in a single, hardened hardware product.



### The FreeWave Difference

- **Made to Modernize:** adds a smart layer to enrich your existing infrastructure
- **Open Source Platform:** ensures you are not tied to proprietary protocols and processes
- **Future-Proof:** **IQ** on our ZumLink radios can be turned on immediately or over time



## Edge Connectivity

Infused with 25 years of RF innovation, our wireless radios enable ultra-reliable data transfer for telemetry and command and control in challenging, noisy environments and over 60+ mile distances.

FreeWave's radios utilize Frequency Hopping Spread Spectrum (FHSS) technology to offer an inherently cybersecure, long-range wireless alternative to expensive Wi-Fi bandwidth, fiber, or cellular. They deliver industrial-grade performance to support virtually any M2M, SCADA, or IIoT application used today or in future operations.



### The FreeWave Difference

- **Wide Operating Temperatures:** ranging from -40°C to +85°C
- **Low Power:** industry-leading low power consumption
- **Safe for Hazardous Locations:** Class I, Division 2 certified
- **Superior RF Range:** specifically designed for challenging RF environments



### The FreeWave Difference

- **CSWaP Advantage:** ideal for integration into unmanned systems
- **Military-Grade Security:** AES and FIPS 140-2 encryption options available
- **TDMA Protocol:** enhanced version of Point-to-Multipoint communications available



## Command and Control

A long-time leader providing military-grade wireless solutions for the government and defense market, FreeWave's radios are used to power a range of intelligent unmanned platforms.

Our board-level radios provide a Cost, Size, Weight, and Power (CSWaP) advantage with their small, lightweight form factor, industry-leading low power consumption, and low integration costs. Added **IQ** compute power onboard enables real-time decision making at the edge or device level.



## Edge Sensing

FreeWave also offers solutions to interface with a wide variety of sensors deployed in industrial and critical infrastructure settings.

Our wireless modular endpoints, managed by an integrated gateway, are easy to configure and enable data transmission not feasible with conduit.



### The FreeWave Difference

- **Safe:** C1D1 and C1D2 certified
- **Flexible:** Compatible with any sensors
- **Efficient:** Battery and solar powered



# From module to board to enclosure.



FreeWave offers a robust portfolio of edge connectivity, edge computing, and edge sensing solutions for both OEMs and end users.

Our wireless radios are ideal for integration in networks that demand extremely reliable link performance and support long-range, low-power M2M communications. Our ruggedized **IQ**-infused ZumLink radios and ZumIQ Edge Computer provide a secure home to collect, process, and transmit data with mission-critical dependability in harsh outdoor operating conditions.

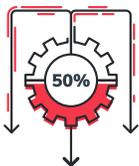
With a complete and flexible offering, we first understand your operational challenges and then recommend the products optimized to those unique requirements.

## Portfolio Highlights

- **Multiple Frequencies:** 455MHz, 900MHz, 1.3GHz, 1.4GHz, 2.4GHz
- **Flexible Interfaces:** Serial and/or Ethernet
- **High Security:** Including 128 & 256-bit AES and FIPS-2 encryption options

## Real ROI is within reach.

Edge intelligence opens new possibilities to solve your operational challenges and act on transformative opportunities. FreeWave's platform maximizes your potential to achieve:



**50% reduction in equipment downtime via preventative maintenance**



**10-20% less production waste via early detection of suboptimal operations**



**10-40% savings in maintenance costs via proactive, predictive analysis**

These are just a few of the ways you can apply edge applications to make a step change in operational performance.

# Your Intelligent Edge is closer than you think.

With FreeWave as your partner, IIoT is not a far-off vision but a near-term reality.

Every edge environment, from oilfields to solar farms to military theaters, holds untapped efficiency and performance gains – and they can only be accessed by pushing intelligence to where those operations are taking place. **FreeWave holds the key to unlocking that potential, fast.**

## Build on What You Have

Our edge intelligent solutions are built to rapidly enhance your existing infrastructure and devices – providing a route to rapid modernization at a fraction of the time and cost to replace legacy equipment.

## Gain Programmability

Our open source platform ensures you are not tied to proprietary protocols or processes, and allows for secure “plug-and-play” scalability as your number of connected assets grows.

## Future-Proof Your Operations Today

You will immediately gain expanded capabilities for high-fidelity data capture, analysis, control, and automation via a single IIoT platform that is easily scaled as your edge computing needs evolve.

## Where is FreeWave?

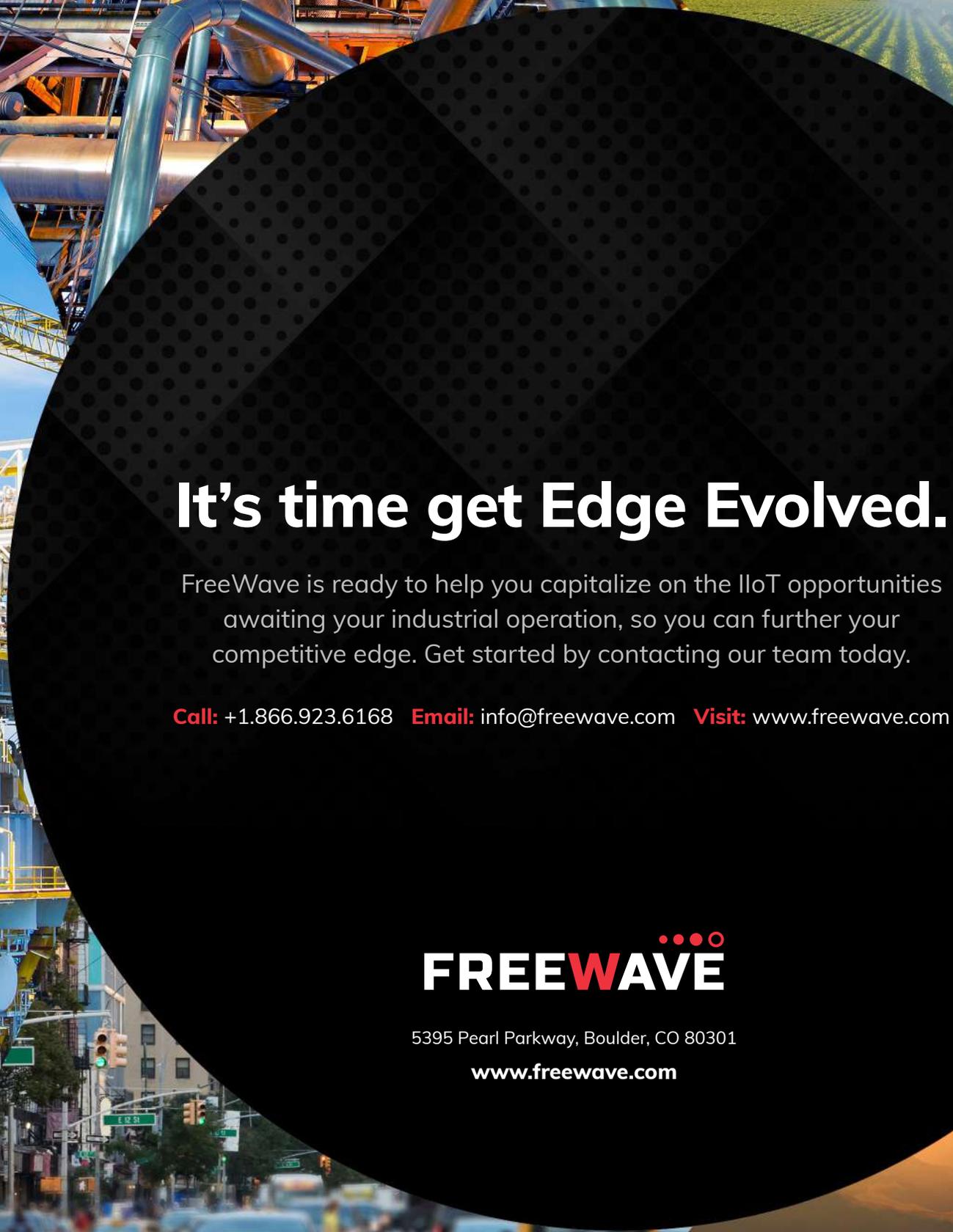
**Everywhere remote operations run.** With deployments in over 32 countries, our products are used by end users and OEMs alike to connect, control, and optimize machines and processes in ways that enable smarter actions, significant efficiency gains, and immediate cost savings.

## Samplings of the applications we enable include:

- Drones with TDMA capability
- Unmanned / autonomous ground vehicles
- Unmanned military robotics and vessels
- Robotics communications on factory lines
- Precision tracking, steering, and guidance
- Network diagnostic tools
- Network security
- Smart sensing and response
- Environmental monitoring
- Telemetry and real-time analytics
- Predictive and preventative maintenance
- Smart process optimization
- Remote site automation

While we have millions of products operating globally, all are American-made in FreeWave's world-class manufacturing facility located in Boulder, CO.





# It's time get Edge Evolved.

FreeWave is ready to help you capitalize on the IIoT opportunities awaiting your industrial operation, so you can further your competitive edge. Get started by contacting our team today.

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