

DYNAMIC™ SIGNALS

BRINGING MODERN CYBERSECURITY TO LOCAL TRAFFIC SIGNAL CONTROL



OVERVIEW

Dynamic Signals is the first traffic signal controller software designed with security at its core. Built on the proven logic of Q-Free's industry-leading MAXTIME software, it sets a new benchmark for secure, reliable signal operations. With encrypted, authenticated communications, Dynamic Signals delivers the cybersecurity your agency needs, the protection your IT department expects, and the advanced traffic control functionality your engineers trust.

Unlike legacy firmware reliant on inefficient or insecure protocols like SNMP, Dynamic Signals is purpose-built to meet modern cybersecurity expectations. Leveraging web sockets and HTTPS for end-to-end encryption, it enables secure API communication across connected infrastructure—exceeding both current and proposed industry standards.

Dynamic Signals integrates seamlessly with Q-Free's Kinetic Mobility ATMS platform, offering an end-to-end solution for secure signal operations. Kinetic users also benefit from centralized user management and federated authentication, ensuring alignment with agency-wide IT policies.

Beyond traditional standards-based interoperability, Dynamic Signals advances secure, open integrations with a modern API framework—future-proofing traffic management for connected and autonomous networks.

BENEFITS

- Built-in encryption and authentication eliminating vulnerabilities tied to legacy protocols
- An ongoing commitment to maintaining the highest levels of security
- Intuitive web-based user interface and menu structure
- Review and analyze past signal operations to troubleshoot issues with our unique playback feature
- Seamlessly upgrade software remotely or onsite without putting signals into flash
- Centralized user management with federated authentication



Meaningful
cybersecurity



Best-in-class signal
control functionality



Simplified central
user management



Encrypted and
authenticated

SECURITY-FIRST TRAFFIC CONTROL

Legacy traffic signal software relies on insecure communications protocols that leave critical infrastructure vulnerable to cyber threats. Dynamic Signals is the first traffic signal control software to go beyond traditional industry standards and prioritize cybersecurity from the ground up.

- End-to-End Encryption – Uses encrypted web sockets instead of legacy SNMP protocols to enable secure, bank-level encrypted communications.
- Secure Remote Access – Encrypted web-based interface eliminates security risks tied to traditional remote logins.
- Access Control & User Management – Integrates with Q-Free's Kinetic Mobility platform for centralized authentication and user federation.

INDUSTRY-LEADING FEATURES

- Intuitive and advanced user logic programming
- On-board web server (no proprietary database editor)
- Monitor and modify timing directly from Windows and Apple-based computers, tablets, or smart phones
- ATSPM-driven report dashboards and status replay
- Store and switch between hundreds of timing databases
- Automated software updates through an all-red via network or USB

ADVANCED OPERATIONS & CONFIGURATIONS

Perform a variety of advanced programming out of the box.

- Peer-to-peer (P2P) communications
- Single-point urban interchange (SPUI)
- Continuous flow intersections (CFI)
- Diverging diamond interchange (DDI)
- Compound intersections with multiple approaches
- Transit signal priority and light rail transit (TSP/LRT)
- Predictive arrival/departure adjustments
- HAWK/pedestrian hybrid beacons
- Preemption routing
- Queue responsive

STANDARD FEATURES

- Built for any ATC-compliant Linux OS
- 40 phases
- 128 independently-programmable timing patterns
- 20 user configurable ring and barrier sequences
- Up to 16 rings per sequence
- 16 preemption routines
- 16 prioritizers for TSP, freight priority, and more
- Status replay
- Rapid transition times with user-override min/max limits using critical path transition algorithm
- Advanced overlap types:
 - Pedestrian
 - Flashing yellow or flashing red arrow (FYA/FRA)
 - Thru FYA with conflicting pedestrian (prevents “yellow trap” scenarios)
 - FYA for right turns with conflicting pedestrian
 - Protected/permissive Canadian operation
 - Light rail bar indications
 - Custom programming
- Master/subordinate closed-loop operation
- Innovative phase configuration options including but not limited to:
 - Advanced walk (lead pedestrian interval)
 - Conditional advanced walk
 - Walk extensions
 - Red clear extensions
 - Conditional phase re service
 - Advance warning beacons
 - Dynamic max
 - Rest in red

