

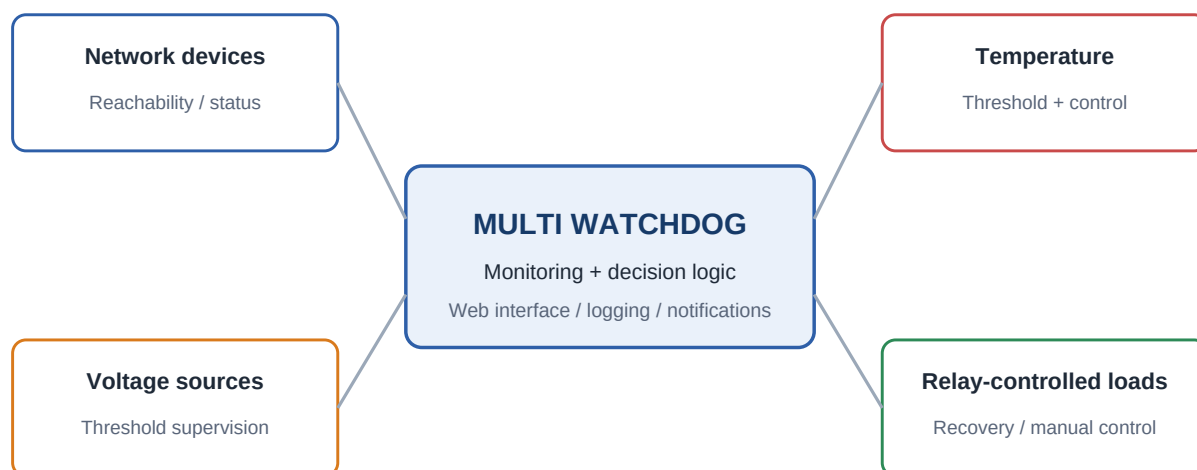


MULTI WATCHDOG

Network, power, temperature and remote recovery supervision

Multi Watchdog by Kostet is a compact supervision and recovery system for unattended or difficult-to-access installations. It combines network reachability monitoring, power and battery supervision, temperature monitoring, relay control, serial interfaces, event history and notification functions in one browser-managed system.

Designed for applications where simply detecting a fault is not enough: Multi Watchdog can also take controlled recovery action.



One system, several layers of supervision

Multi Watchdog is intended for remote technical sites, communications equipment, network infrastructure, power systems, battery-backed installations and other systems where availability matters. Monitoring channels can be used purely for observation or combined with relay-controlled recovery actions.

Network supervision

Monitor configured hosts or IP endpoints. State changes can be reported and logged, and selected channels can initiate a controlled recovery cycle after repeated failures.

Relay control and recovery

Eight relay-capable channels can be used for automatic recovery or direct operator control. Recovery timing is configurable and can be inhibited when a local network-link fault would make a restart inappropriate.

Additional monitoring-only channels

Up to eight additional channels can supervise network endpoints without controlling relays. This separates visibility from power-control responsibilities where required.

Voltage supervision

Four analog voltage channels support labels, calibration, upper and lower thresholds, delay handling and relay override rules. Voltage conditions can force selected loads off and hold them off for a defined minimum time.

Temperature supervision

Up to four temperature channels can be named and monitored with configurable thresholds. Temperature conditions can be associated with heating or cooling relay actions and reporting.

Battery status

A dedicated battery view can use a selected voltage source to present battery state, configured chemistry and cell count, state-of-charge indication and a 48-hour trend graph.

CONTROL PHILOSOPHY

The system is built around explicit states, configurable delays and deterministic recovery actions. This helps avoid unnecessary power cycling due to transient faults while still allowing unattended installations to recover from genuine equipment failures.



Controlled recovery instead of blind rebooting

A watchdog should not create a second fault while trying to solve the first. Multi Watchdog therefore combines monitoring with context-aware inhibition, timers and operator visibility.

Function	Purpose
Configurable startup hold-off	Prevents immediate recovery decisions while network infrastructure and monitored equipment are still starting.
Repeated-failure decision	Recovery can be based on sustained non-response rather than a single missed check.
Local-link-aware suppression	A relay channel can suppress automatic recovery while the local network link is down, avoiding pointless equipment cycling.
Manual control	Relay-capable channels can be operated directly from the web interface when automatic monitoring is not desired.
Voltage override	Low or abnormal supply voltage can override normal relay state and keep selected loads off until recovery criteria are satisfied.
Temperature action	Temperature thresholds can be associated with heating or cooling control outputs.
Serial configuration	RS232 and RS485 interface settings are managed from the system and applied in a controlled manner.

Flexible channel model

Relay-capable and monitoring-only channels can coexist in the same installation. This allows Multi Watchdog to supervise more equipment than it directly controls, while keeping power-control actions limited to the devices where automatic recovery is appropriate.

Event-driven visibility

State changes can be recorded in the Event log and selected events can generate email notifications. Labels for channels, voltage sources and temperature sensors make notifications and history understandable without requiring the operator to remember channel numbers.

Browser-based operation

Routine operation and configuration are performed through the built-in web interface. The interface provides a single operational view of monitoring, recovery, environmental conditions, logs and system settings.

Control

Live relay status, network status, recovery state and active voltage/temperature overrides.

Monitoring

Configuration and status for relay-capable and monitoring-only network channels.

Voltage monitoring

Live values, labels, calibration, thresholds, delays and relay forced-off rules.

Battery status

Battery source selection, chemistry/cell configuration, state-of-charge indication and 48-hour trend.

Temperature

Sensor assignment, labels, thresholds, reporting options and heating/cooling relay associations.

Serial

RS232 and RS485 configuration.

Event log

Operational history for state changes, recovery actions and system events.

Files

Local file management for service and maintenance functions.

Configuration

System and configuration status information.

Firmware upgrade

Managed software update workflow with validation and visible upload/install progress.

REMOTE-SITE FRIENDLY

The normal operator interface is self-contained and does not depend on an external web server. Authentication, event history and update functions are integrated so the system can be maintained as a standalone site controller.

Typical applications

Multi Watchdog is deliberately general-purpose. The same system can be configured for communications equipment, IT infrastructure, power and battery systems, technical shelters, measurement systems and other unattended installations.

Remote communications sites

Supervise routers, radio equipment, modems, links and auxiliary devices. Recover selected equipment automatically while leaving other devices monitoring-only.

Battery-backed systems

Monitor supply and battery voltage, present battery trend information and disconnect selected loads if voltage drops below safe limits.

Technical shelters and cabinets

Combine equipment reachability with temperature supervision and heating/cooling control.

Laboratory and test installations

Use manual relay control, voltage monitoring, event history and network observation as a compact supervisory layer.

Distributed infrastructure

Provide local autonomous recovery at sites where a central management system may lose connectivity precisely when recovery is needed.

Custom OEM / project integration

The platform-independent functional architecture can be adapted to project-specific I/O, control logic, reporting and enclosure requirements.

Why Multi Watchdog?

- Combines **network, voltage, battery and temperature supervision** in one system.
- Supports both **automatic recovery** and **monitoring-only** channels.
- Uses **configurable delays and inhibition rules** rather than simplistic immediate reboot logic.
- Provides **browser-based operation, event history and email notification** for remote maintenance.
- Can be adapted to different installations without exposing the underlying implementation platform to the operator.

Capability summary

Area	Multi Watchdog capability
Network monitoring	8 relay-capable monitored channels + 8 monitoring-only channels
Relay control	8 independent control/recovery channels
Voltage monitoring	4 analog voltage channels with calibration, thresholds, delay and relay override rules
Temperature	Up to 4 monitored temperature channels with thresholds and heating/cooling control association
Battery supervision	Selectable voltage source, chemistry/cell configuration, SOC indication and 48-hour trend
Serial interfaces	Configurable RS232 and RS485 functions
Notifications	Selectable email reporting for monitored state changes and events
Event history	Persistent operational log accessible from the web interface
User interface	Integrated browser-based control and configuration
Maintenance	Integrated file management, configuration status and validated software upgrade workflow

ENGINEERING BY KOSTET

Multi Watchdog is an example of Kostet's practical engineering approach: combine measurement, supervision and control so that a remote installation does not merely report failures but can respond to them in a controlled, observable and configurable way.

For project adaptation, integration or further information:

Kostet Consulting

kostet.se

