

K-Sync



KONGSBERG



Hydroacoustic synchronisation system

Coordinated operation

Operating multiple echo sounders on the same platform introduces the risk of acoustic interference, which can reduce data quality and limit system performance.

K-Sync addresses this by coordinating the transmission timing of all connected systems, enabling simultaneous operation while maintaining data integrity and survey efficiency.

System-level synchronization across platforms

The K-Sync system provides centralized control of transmission timing across a wide range of hydroacoustic systems.

It supports both KONGSBERG and third-party echo sounders, enabling consistent synchronization across mixed installations.

Echo sounders can be operated individually or organized into groups, allowing flexible scheduling strategies adapted to survey requirements.

Optimized transmission timing

The system continuously controls trigger timing based on system configuration and feedback signals from connected echo sounders.

This ensures that systems which may interfere acoustically are separated in time, while compatible systems can operate simultaneously.

Key capabilities

- Synchronization of up to 16 echo sounders
- Flexible grouping and sequencing of systems
- Support for external, fixed, or calculated trigger sources
- Integration of feedback signals (ready-to-transmit and transmitting)
- Signal-level diagnostics for verification and troubleshooting
- Optional depth input for adaptive timing in varying operating conditions

Resulting in:

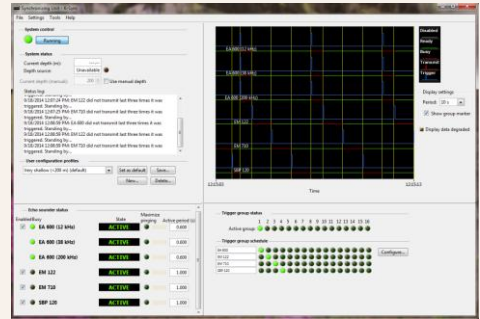
- Reduced acoustic interference
- Improved data quality
- Efficient use of systems
- Faster surveys

System architecture

The K-Sync system consists of the K-Sync Hub, providing real-time control of synchronization and trigger signals, and the K-Sync Harmony application, used for configuration and monitoring.

The application runs on a standard Windows-based workstation - KONGSBERG recommends the Hydrographic Workstation (HWS) - connected to the K-Sync Hub via a network interface.

The network connection is also used for optional data interfaces, such as depth input.



How the K-Sync system works

The K-Sync system controls the transmission timing of connected echo sounders by coordinating trigger signals based on system configuration and feedback from each system.

At the core of the system is the K-Sync Hub, which manages all real-time synchronization. Each connected echo sounder is interfaced through a dedicated trigger output and optional feedback inputs. The trigger output defines when the echo sounder shall transmit, while feedback signals provide information about system readiness and transmission activity.

For each echo sounder, the following signals may be used:

- Trigger: initiates transmission
- Ready-to-transmit: indicates that the system is prepared for the next transmit cycle
- Transmitting: indicates that transmission has started

Based on this information, the K-Sync Hub continuously evaluates the state of each system and determines when the next trigger can be issued. Systems can be grouped to transmit simultaneously or separated in time to avoid acoustic interference.

The timing of each transmission cycle is dynamically adjusted based on system configuration and feedback, ensuring that systems which may interfere are not triggered concurrently, while compatible systems can operate at the same time.

The K-Sync Harmony application is used to configure system behavior and monitor operation. Once configuration is complete, the K-Sync Hub operates independently and maintains synchronization without requiring continuous interaction with the application.