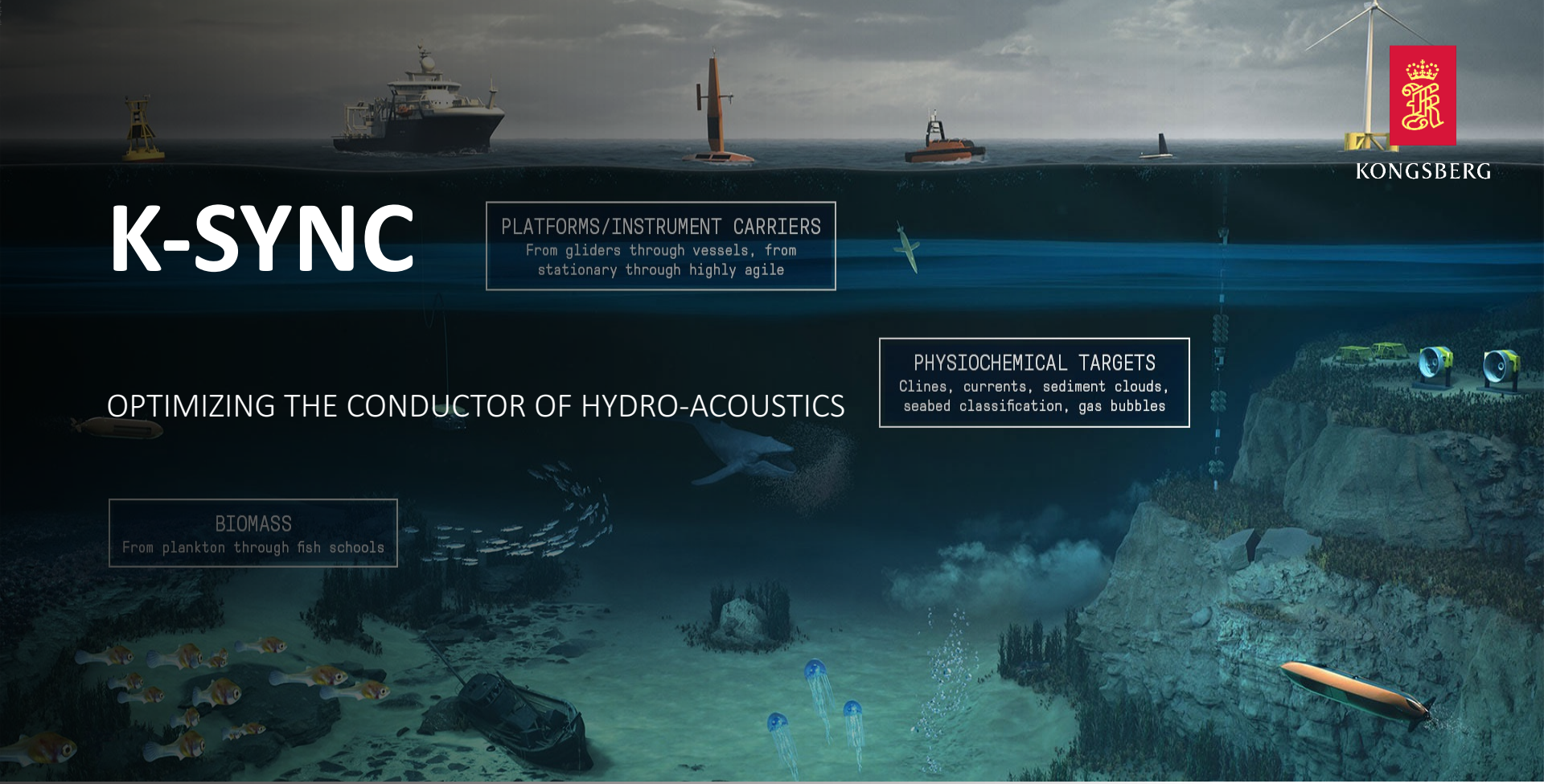
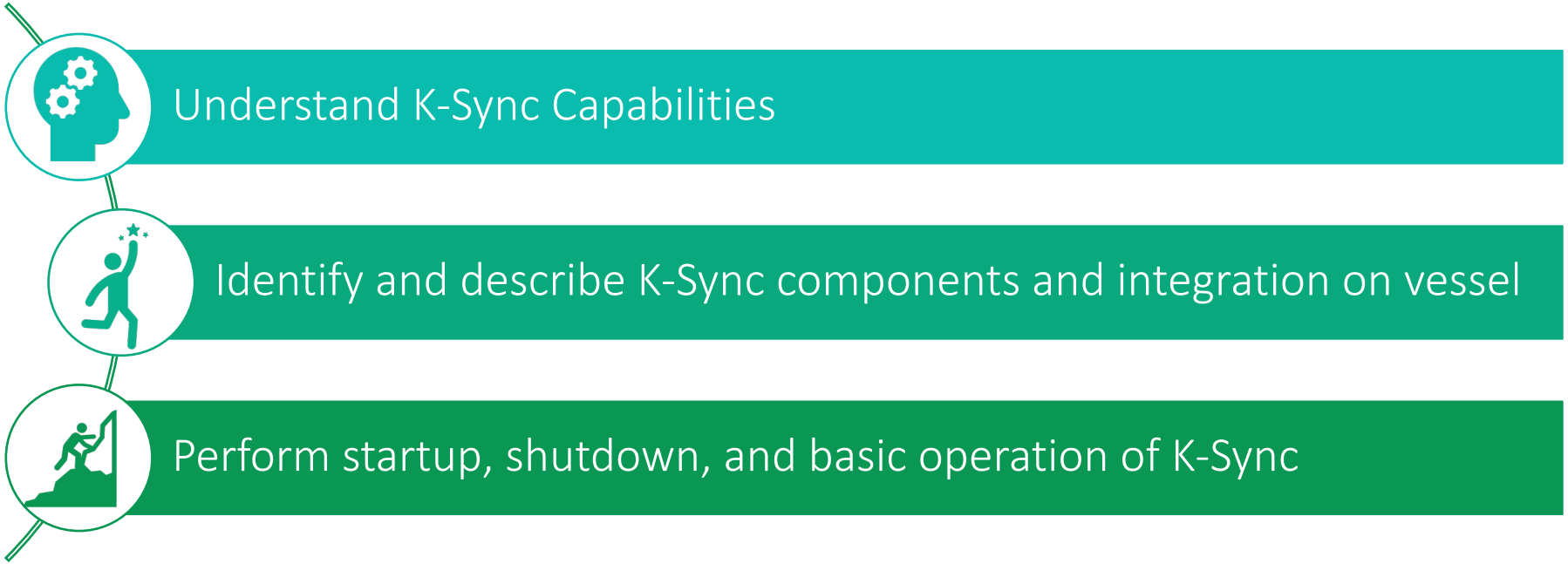


1

System Overview

Course Objectives

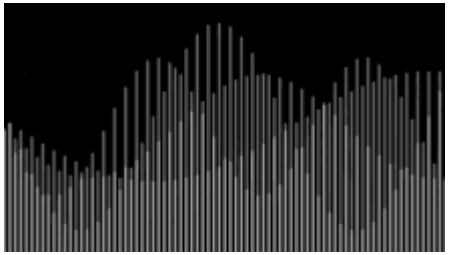


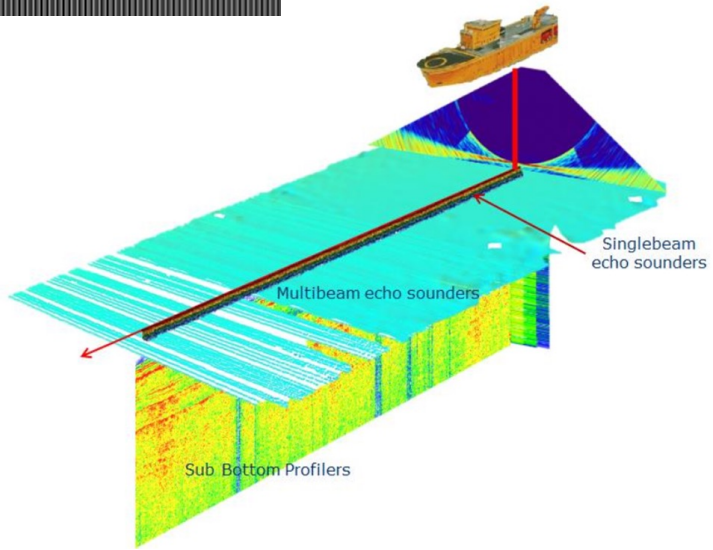
System Overview

- K-Sync controls pinging of each echosounder with real-time trigger display.
- Avoids interference from echosounders with similar frequencies or harmonics that will cause bad data collection.
- K-Sync receives ready signals from echosounders
- Supports up to 16 groups in real time or manual depth input
- Trigger from external input, calculated or fixed time

The Problem

EQUIPMENT	FREQUENCY
Sub Bottom Profiler	0.5-30 kHz
HiPAP	20-30 kHz
EM124	10.5-13.5 kHz
EM304/MKII	26-34/20-32 kHz
EM712	40-100 kHz
EM2040	200-400 kHz
EK80	18-333 kHz
ADCPs	38 – 300 kHz
ME 70	70 kHz



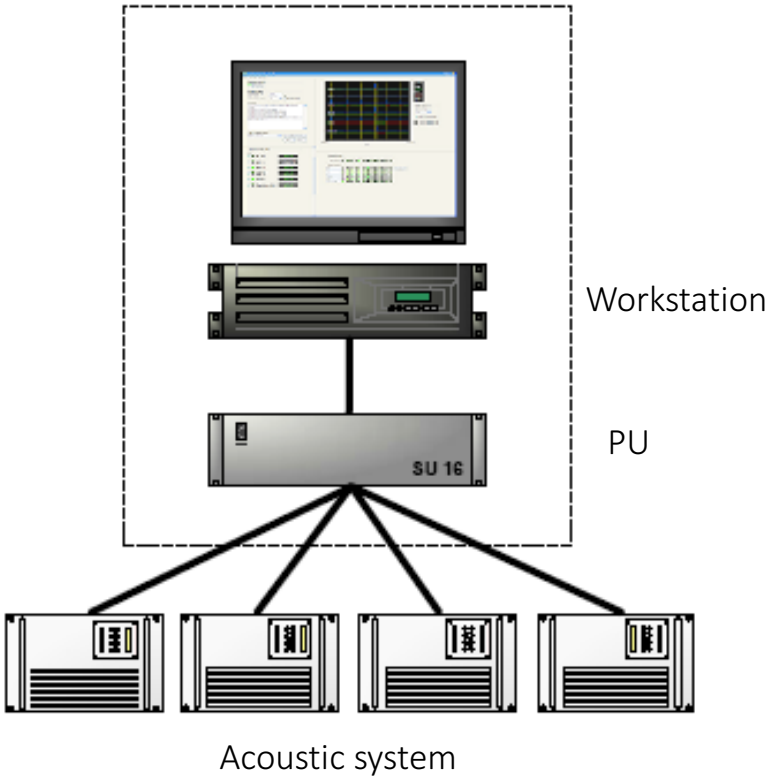


The Solution

Synchronization

Synchronize your systems together!

Note: Using a K-SYNC unit with several active acoustic systems will slow down ping rate and reduce the data density on the sensors involved.

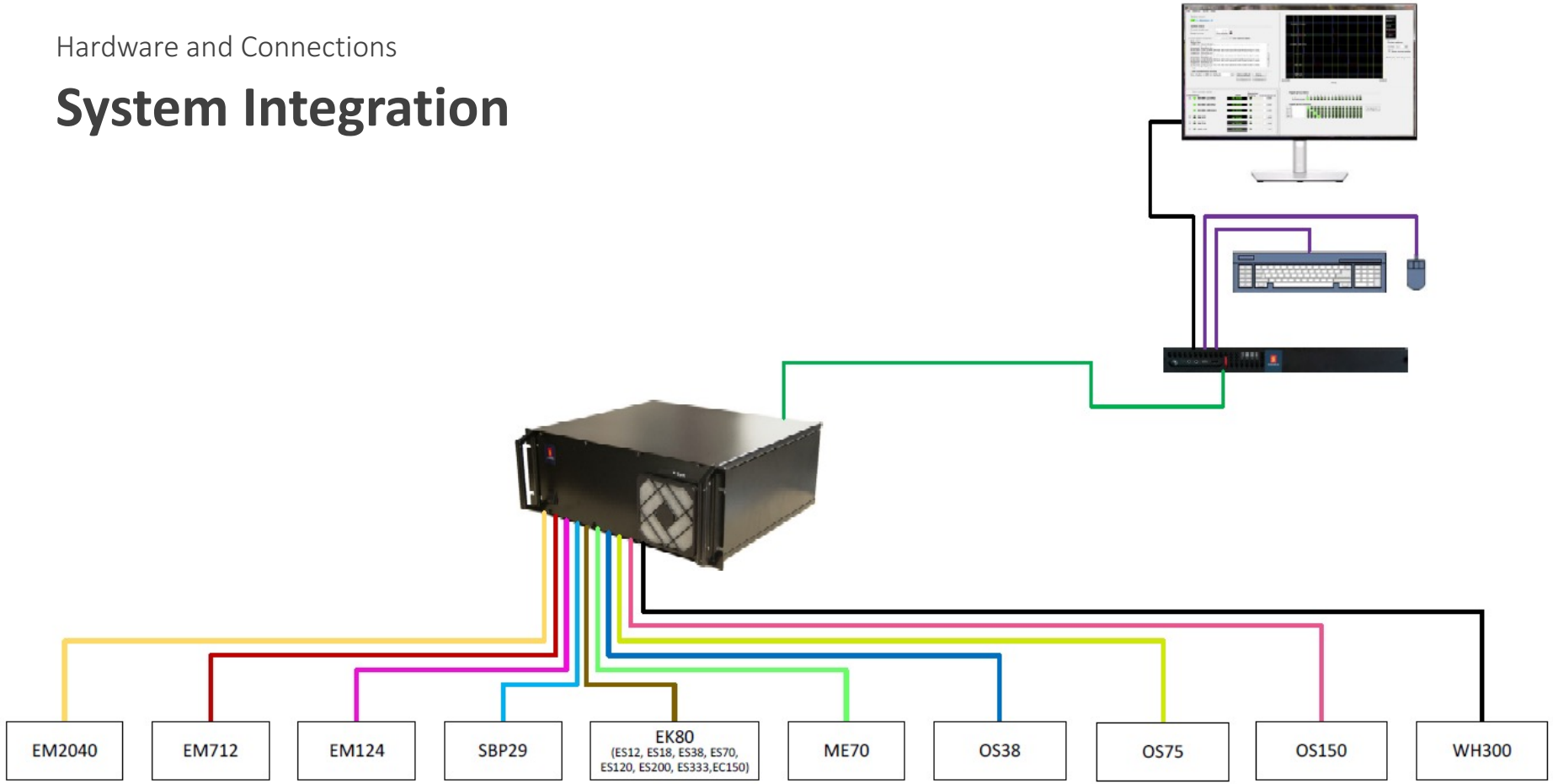


2

Hardware and Connections

Hardware and Connections

System Integration

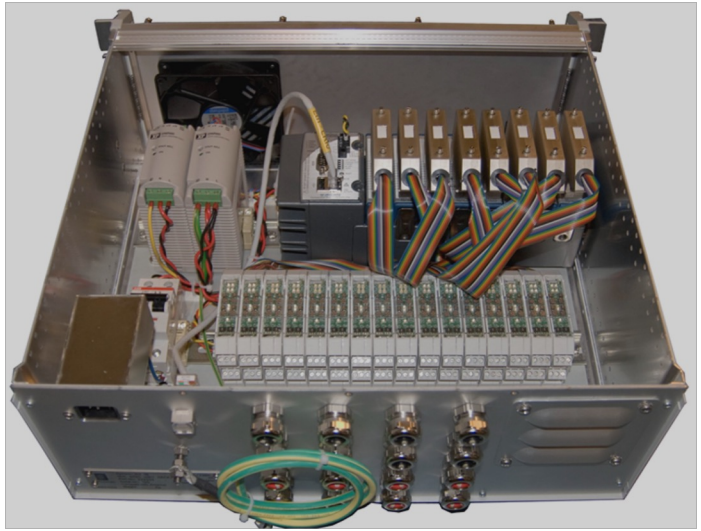


Processing Units (PU)

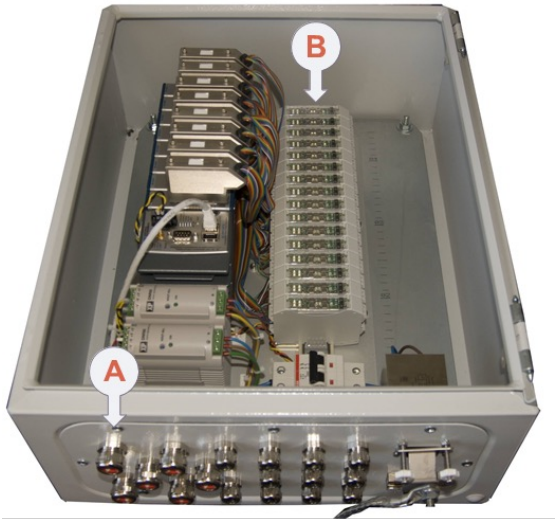
19-Inch rack-mounted K-SYNC PU

1K-SYNC PU for wall-mount

PU Internal Components



19-Inch rack-mounted K-SYNC PU



1K-SYNC PU for wall-mount

A Power

B 16 modules for interfacing with different acoustic systems

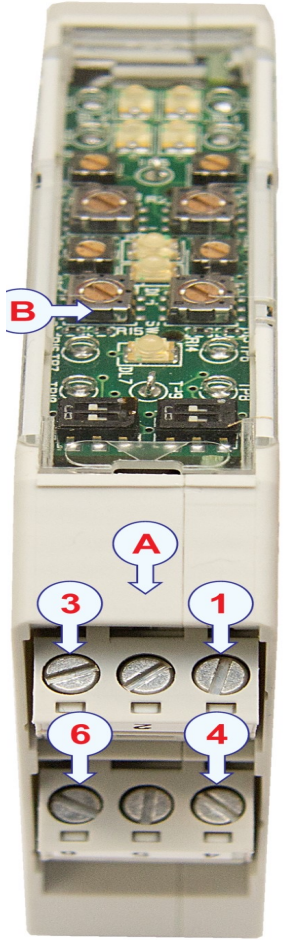
Modules

There are 16 Modules to connect

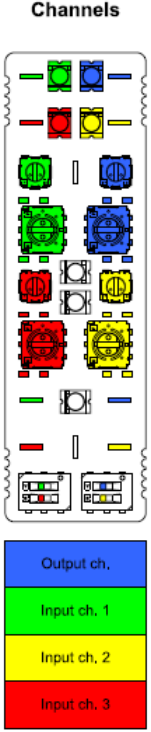
A – Wire terminal connections

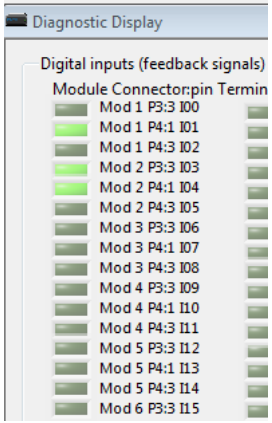
1 through 6 as indicated by the arrows

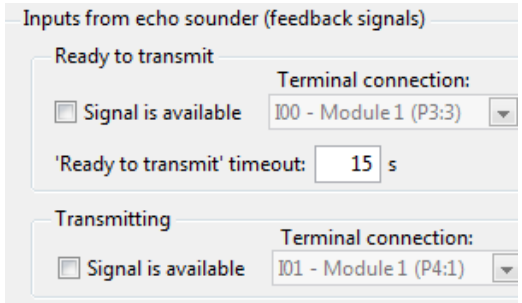
B – Configuration board

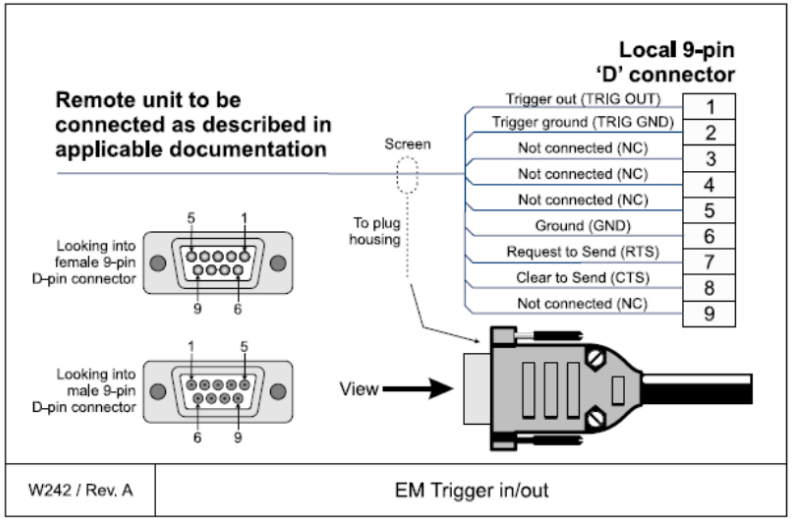


Module Connections





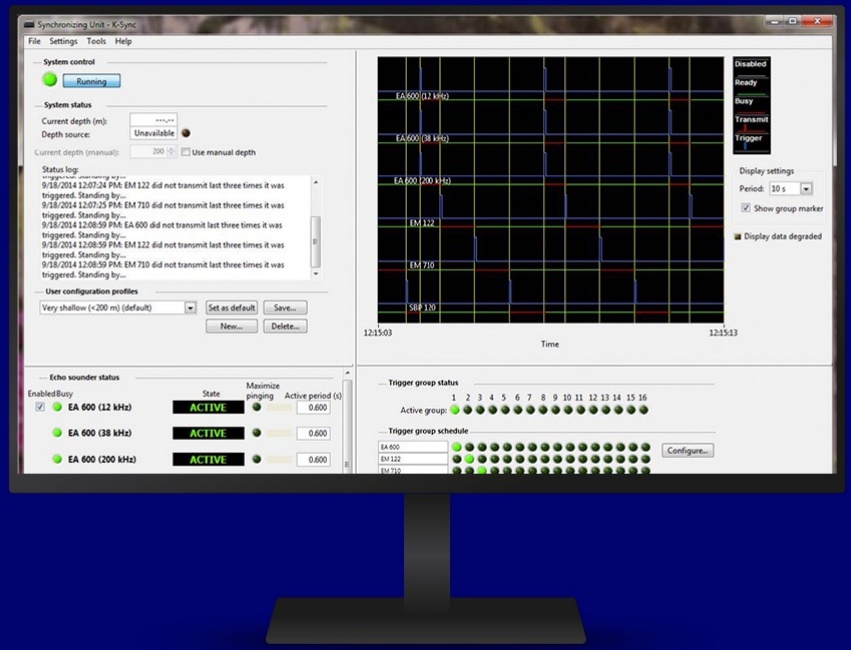




K-SYNC		EM 122 / EM 302 / EM 710 BSP RIO BOARD TRIG IN/OUT
Pin. no	**Signal / Type**	**Pin no.**
1	Trig out→ / RS232	8
2	←Gnd	6
3	←CTS (Clear to send) / RS232	7
4	←Trig in / TTL	1
5	←Gnd	6

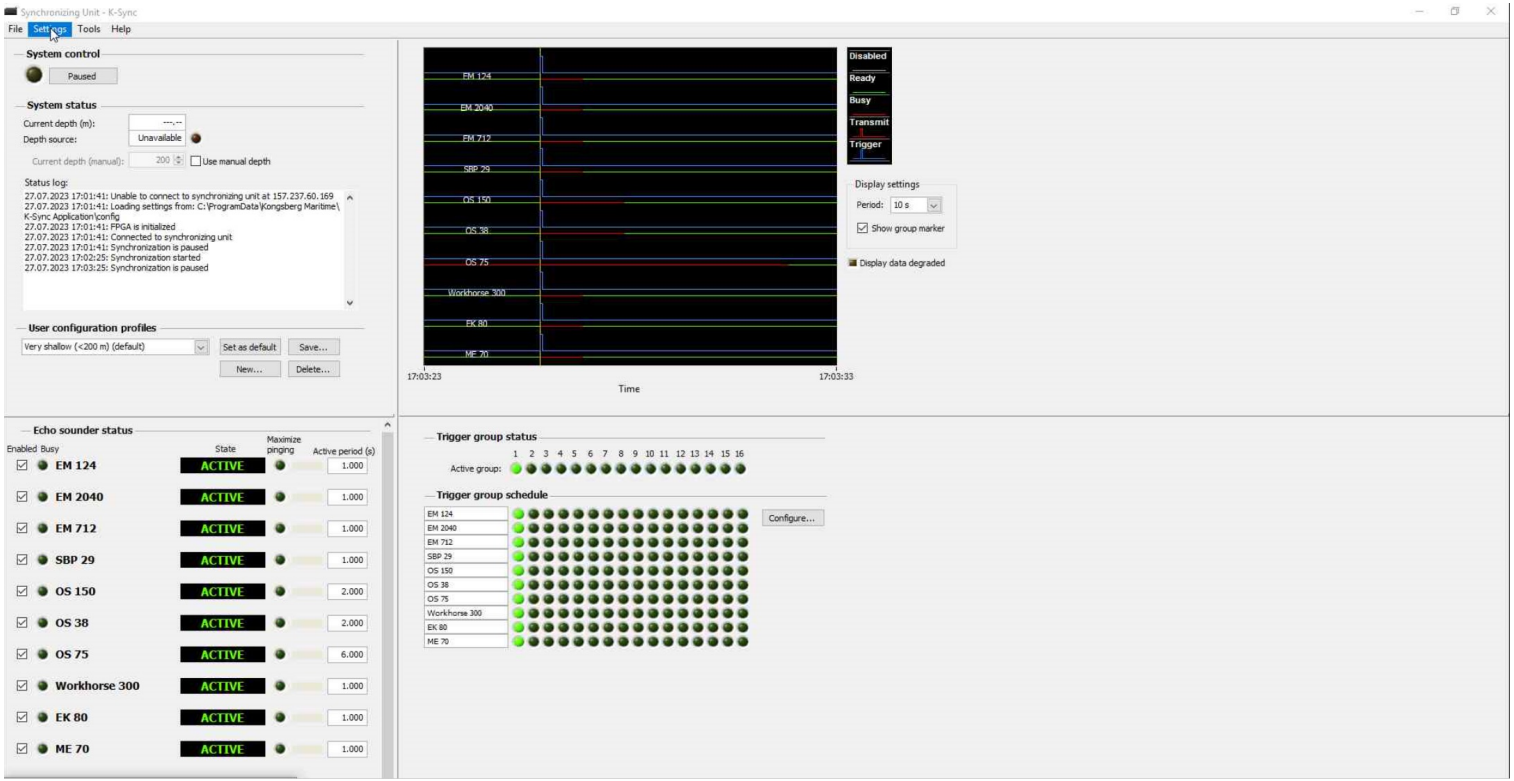
3

Software Overview

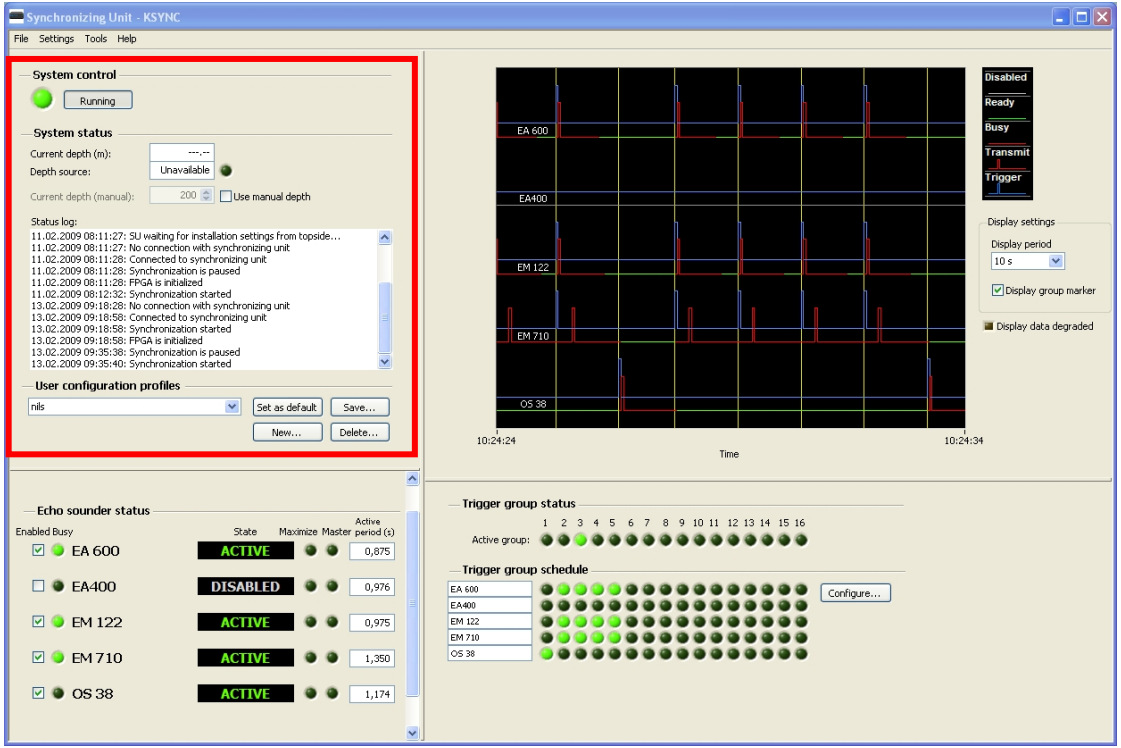


KONGSBERG

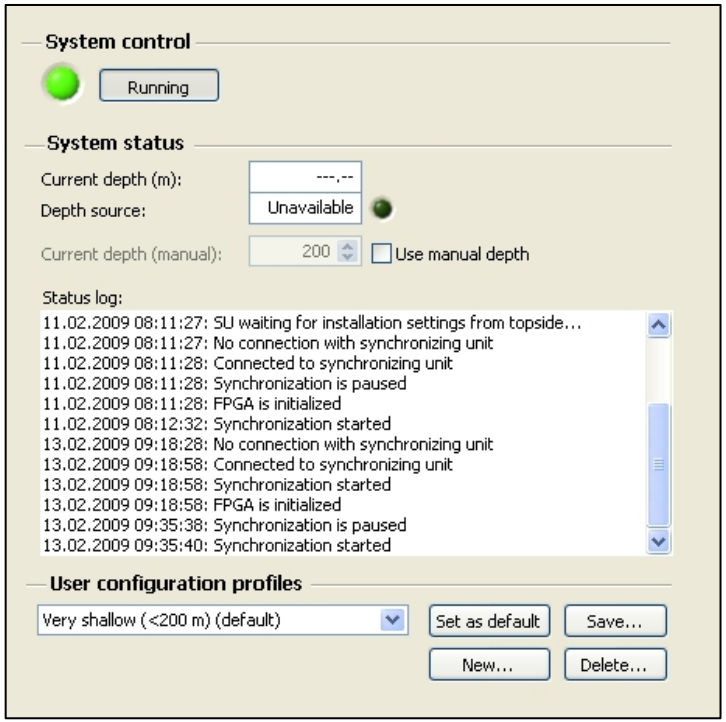
Software Overview

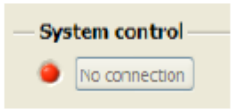
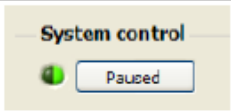
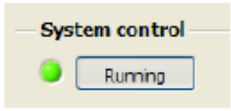


Synchronizing Unit Operation

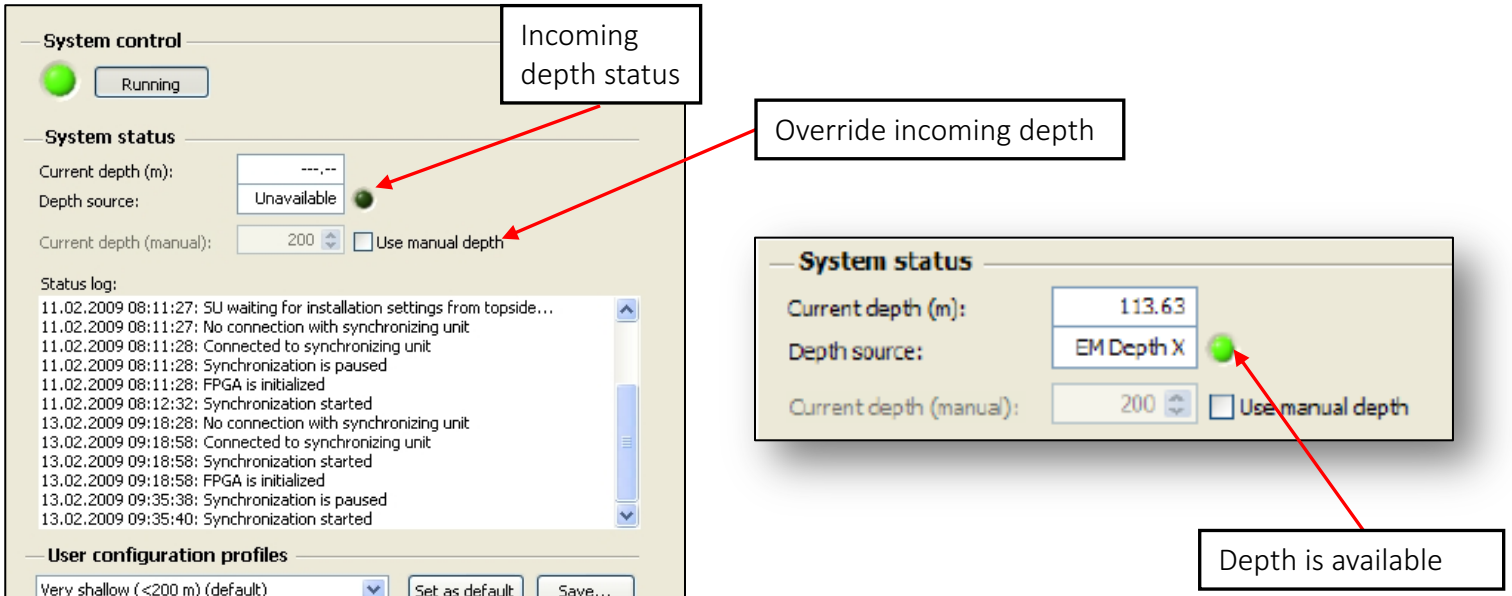


System Control

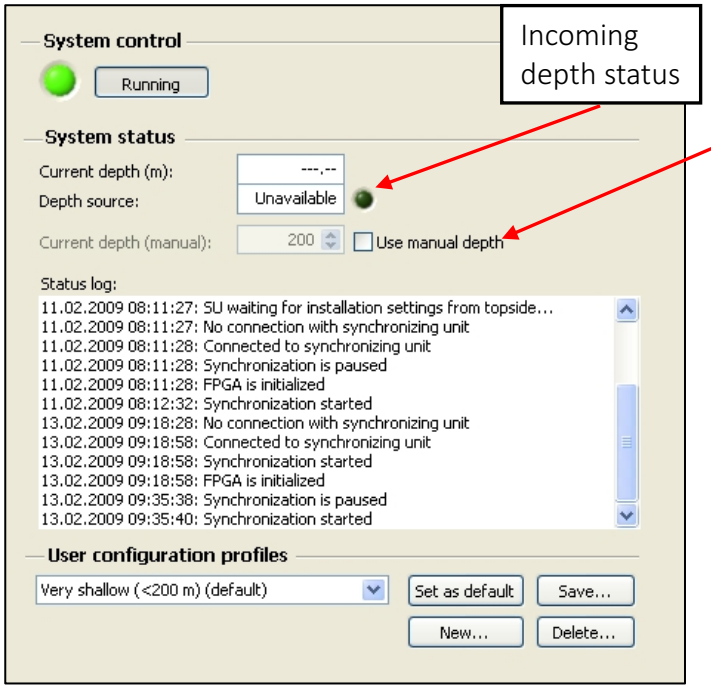


System control	System state	Description of state
 (LED is red)	Not connected	SU application has not yet connected to the Synchronizing Unit. Status in the user interface is not updating and is grayed out.
 (LED is green and blinking)	Paused	Synchronization is paused (green LED is blinking). Trigger display updates current signal levels and echo sounder states, but no echo sounder is being triggered by Synchronizing Unit. Clicking button will go to *running* state.
 (LED is green)	Running	System is running and all enabled and scheduled echo sounders are being triggered. Clicking button will go to *paused* state.

System Status

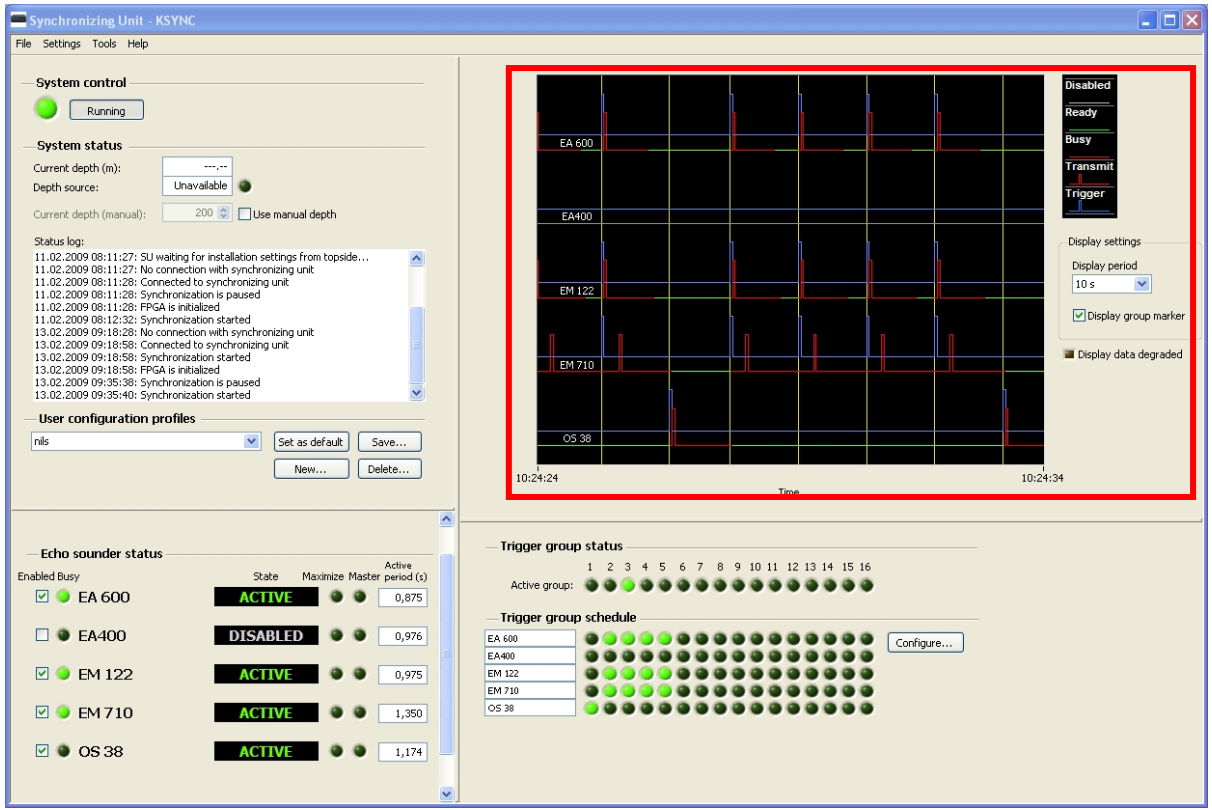


System Status

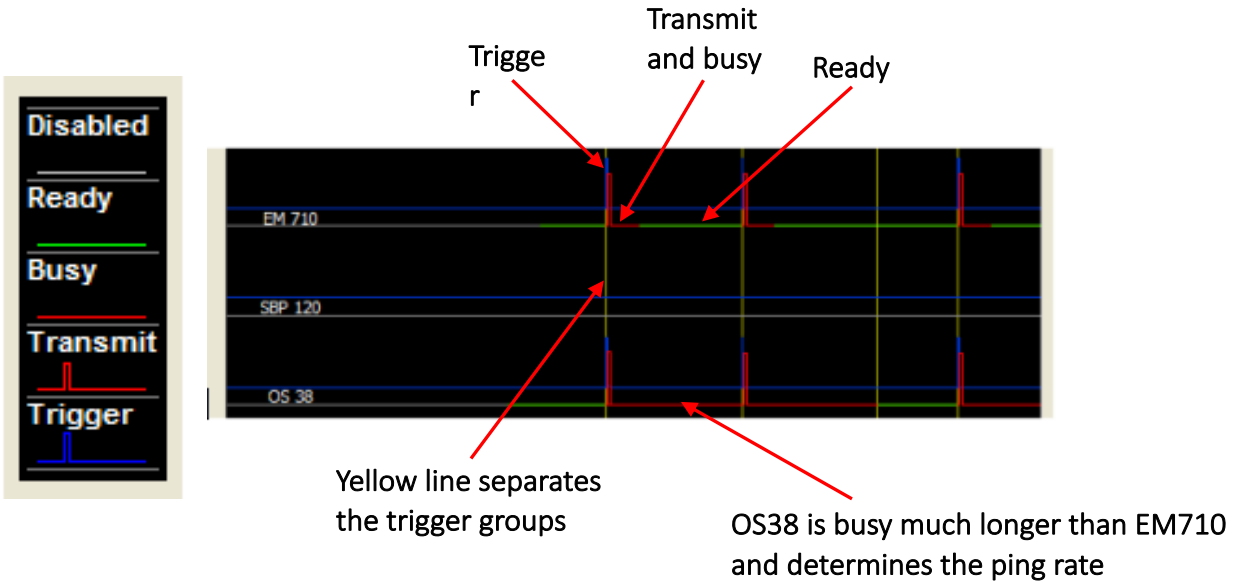


Note: Sometimes manual depth is best when doing pelagic sampling in deep water.

Activity Display

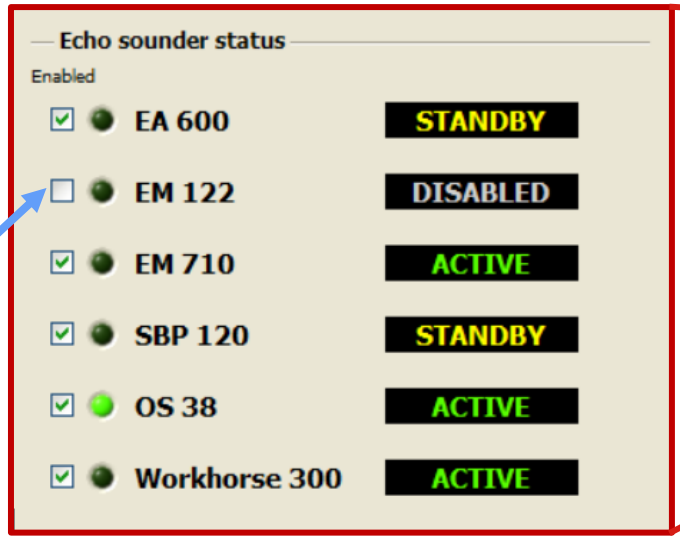


Realtime Trigger Display



Note: The displayed pulses are indicators. They do NOT reflect active high/low settings

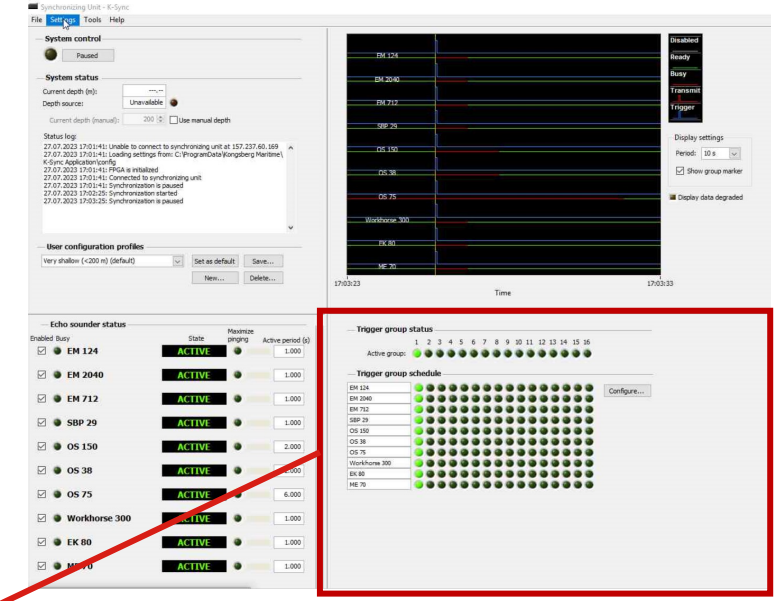
Echo Sounder Status



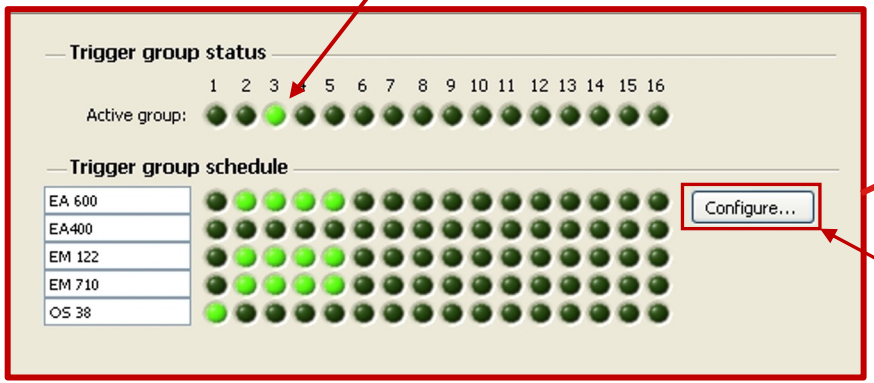
Echosounders may be disabled

Disabled echosounders will not be triggered - even if they are member of a group

Trigger Group

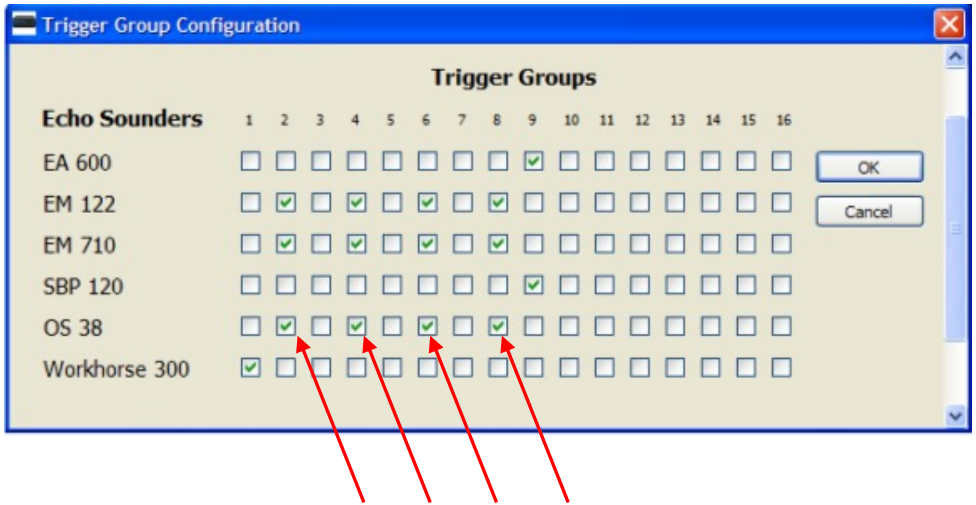


Active Group



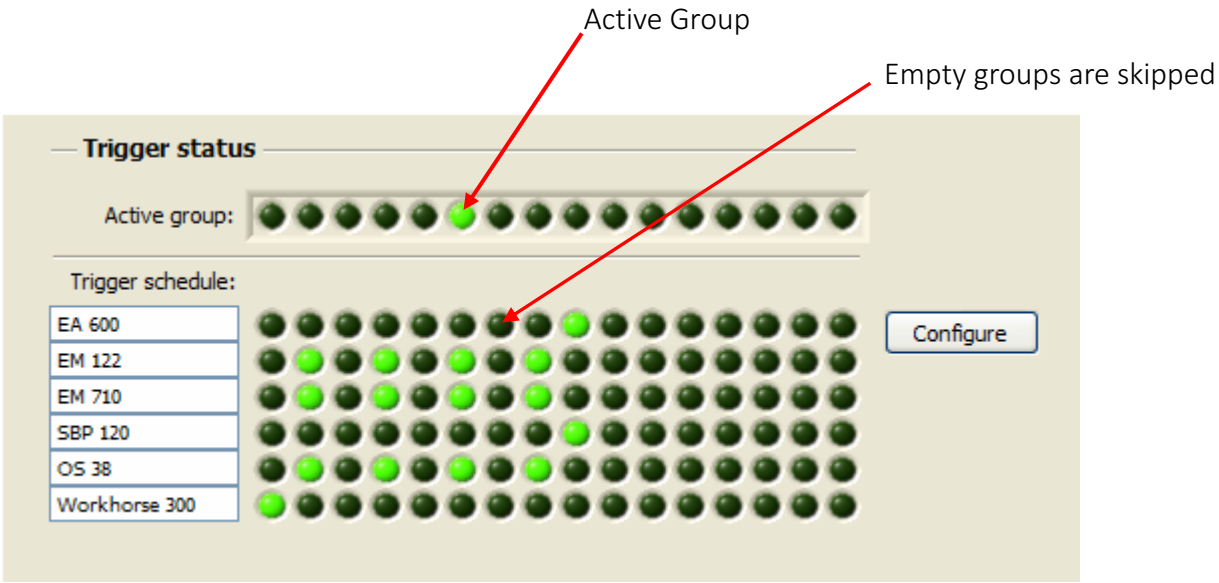
Set up groups

Trigger Group Configuration



If some echo sounders can ping several times before next instrument, make many equal groups

Trigger Group Example



Shows which group each echosounder is assigned to

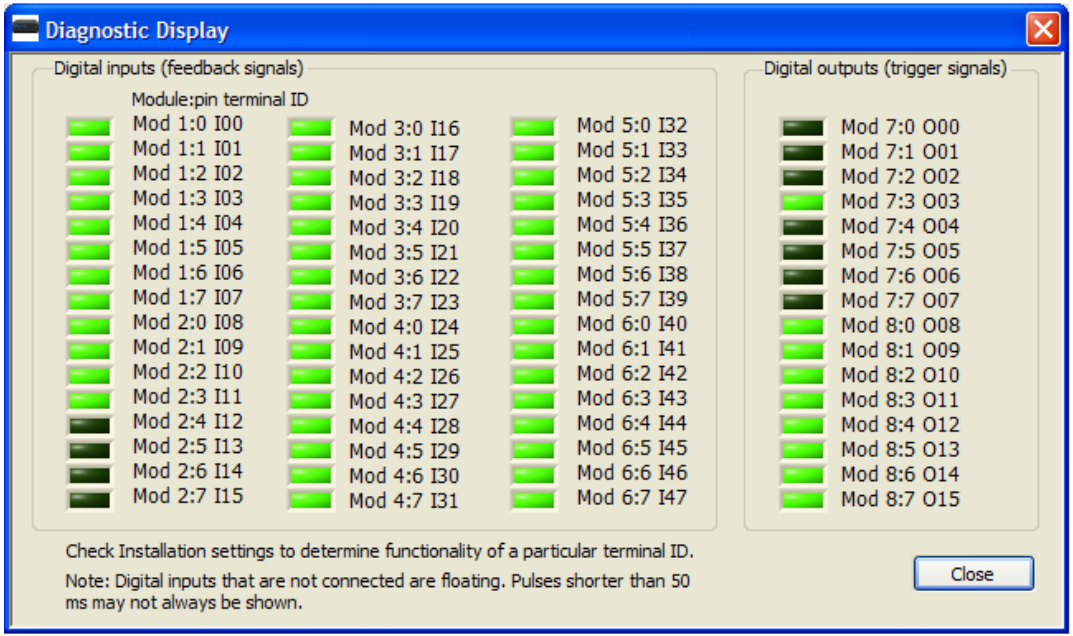
In this case: EM122, EM710 and SBP120 ping 4 times between each Workhorse 300

Diagnostic Tool

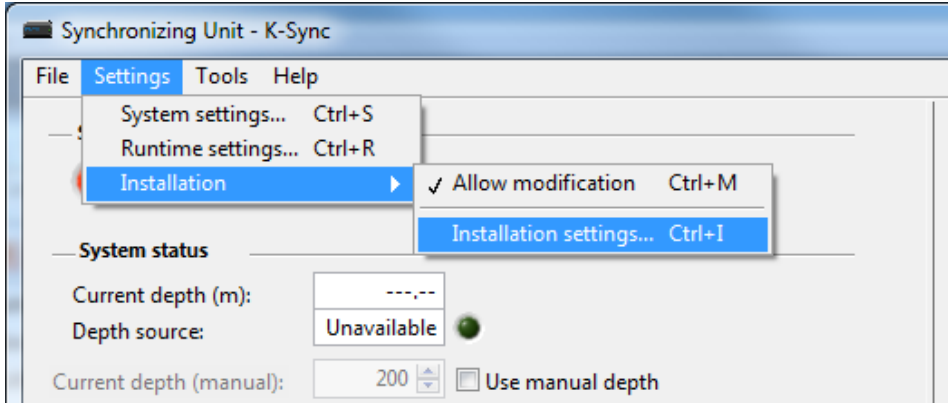
Shows signal level and pulses on each I/O (Green = 5v(high)

Module & pin numbers refer to physical connections inside the K-Sync

Terminal ID refer to selections in the installation settings



Installation Settings



To be able to change any installation settings:

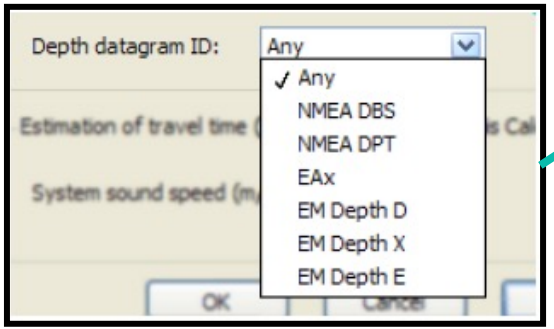
Press “Allow modification” and input correct password

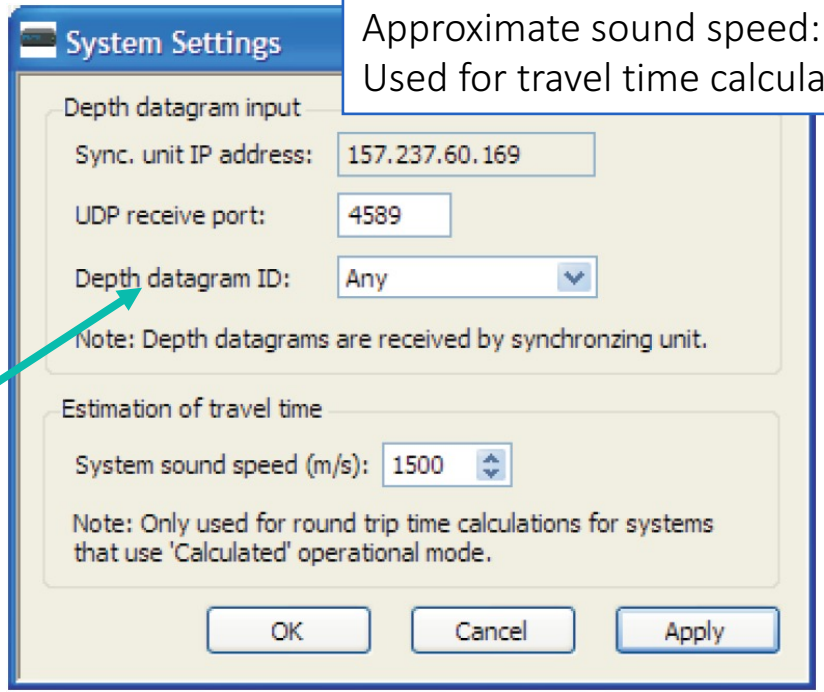
It is helpful to save a backup of all of these settings in a separate location

System Settings

Settings -> System settings

Sync unit's IP address and port number.
Default Subnet mask: 255.255.240.0





Approximate sound speed:
Used for travel time calculations

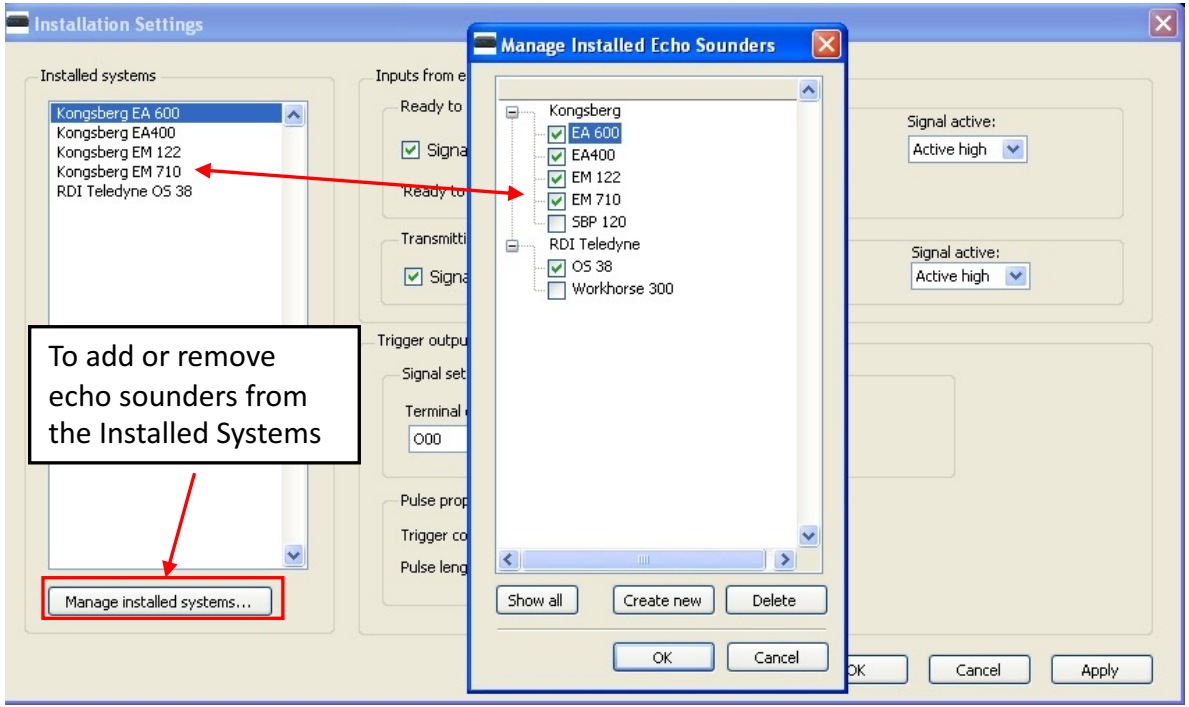
Manage Echosounders

Settings -> Installation -> Installation settings

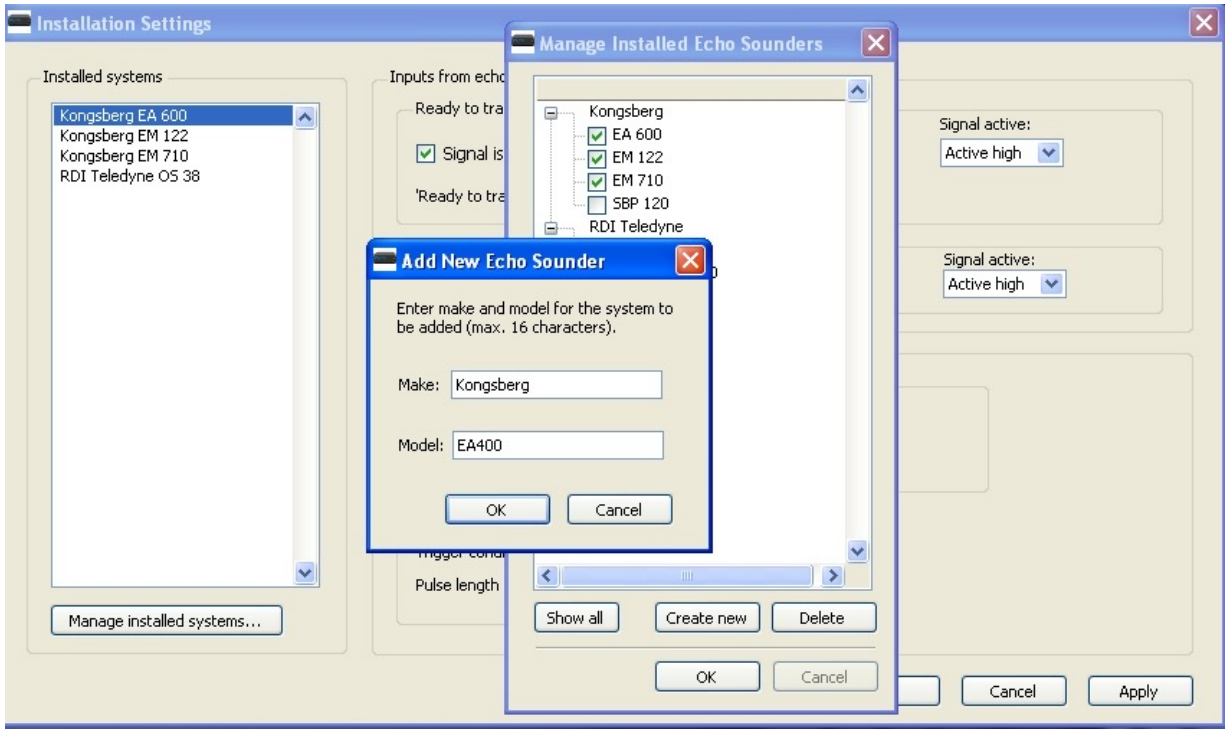
Manage Installed Echosounders
Mark the echosounders that are physically connected.

Add new echosounder if it is not already in the list.

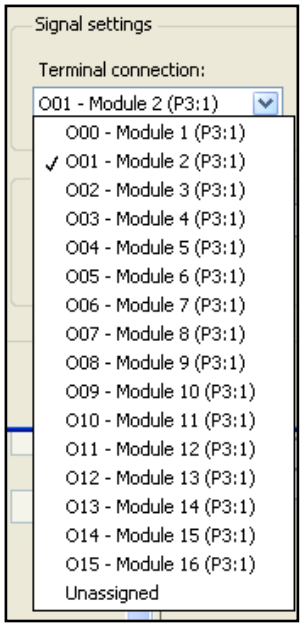
Password: *simrad0*

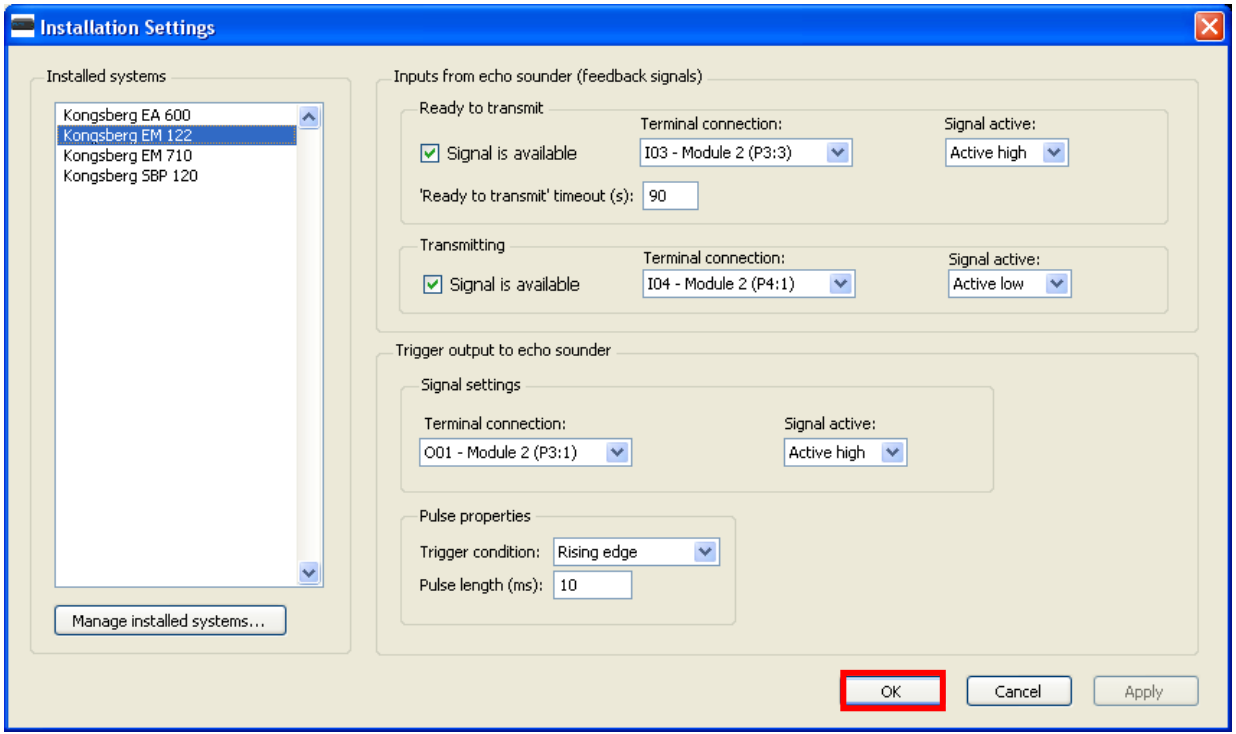


Add New Echosounder

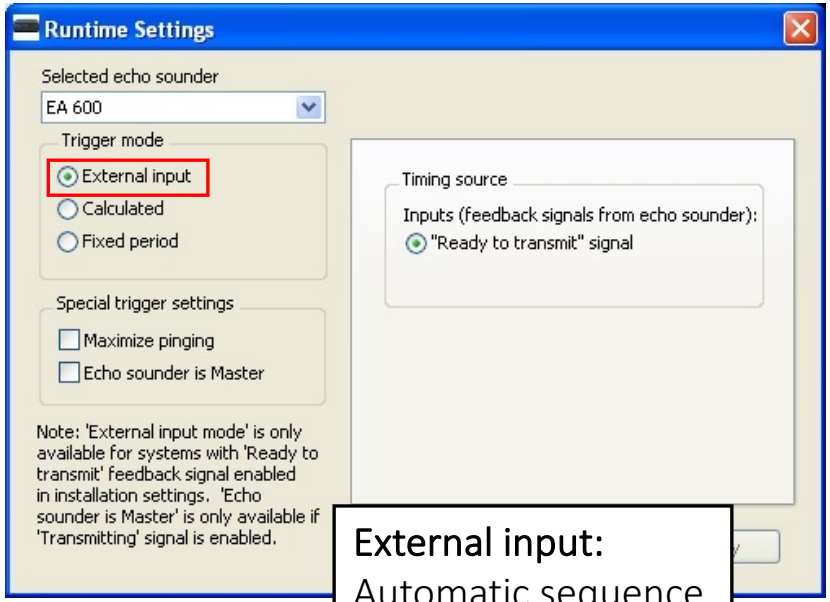


Installation Settings





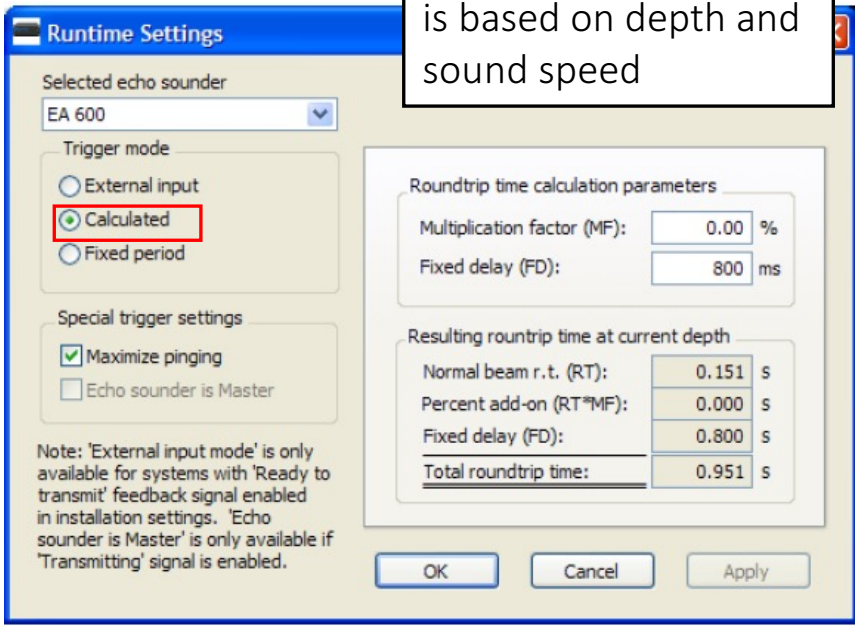
Runtime Settings



External input: Automatic sequence calculations

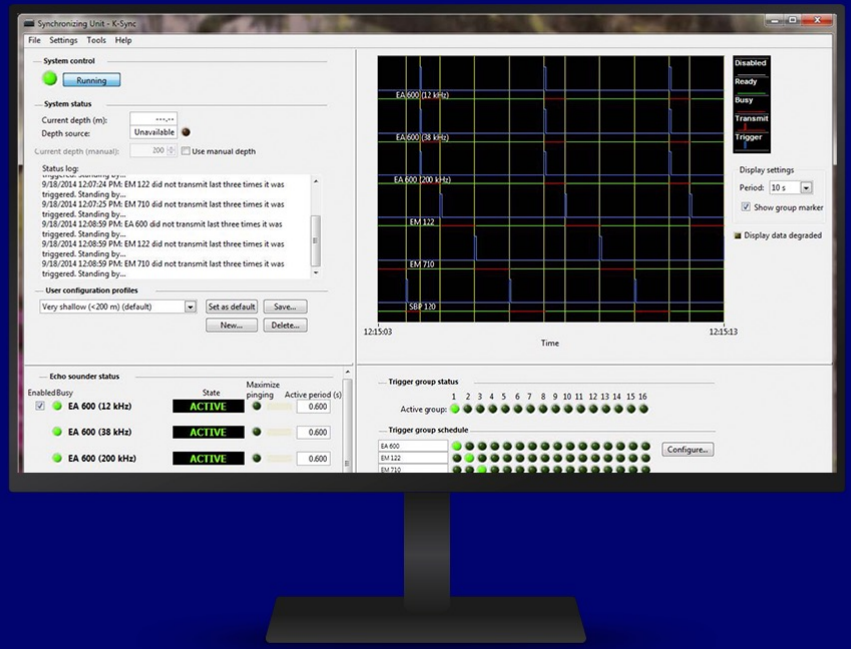
Settings -> Runtime settings

Calculated: Ping rate is based on depth and sound speed

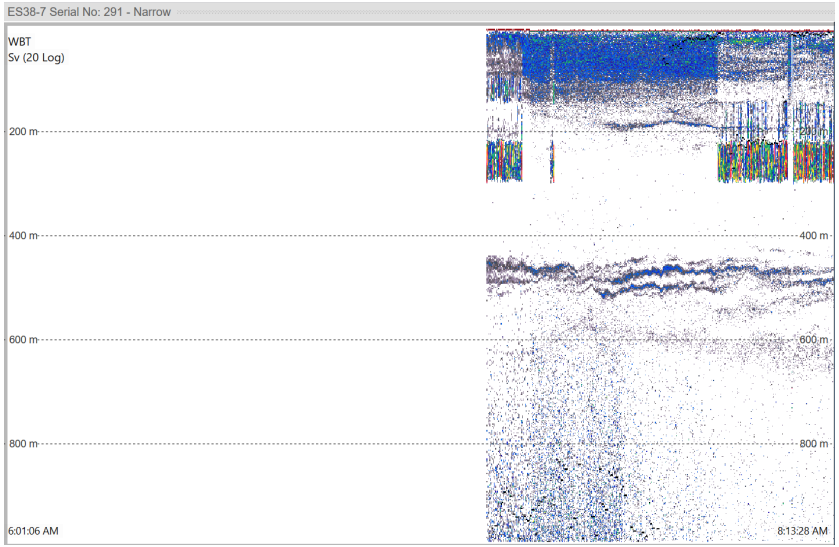


4

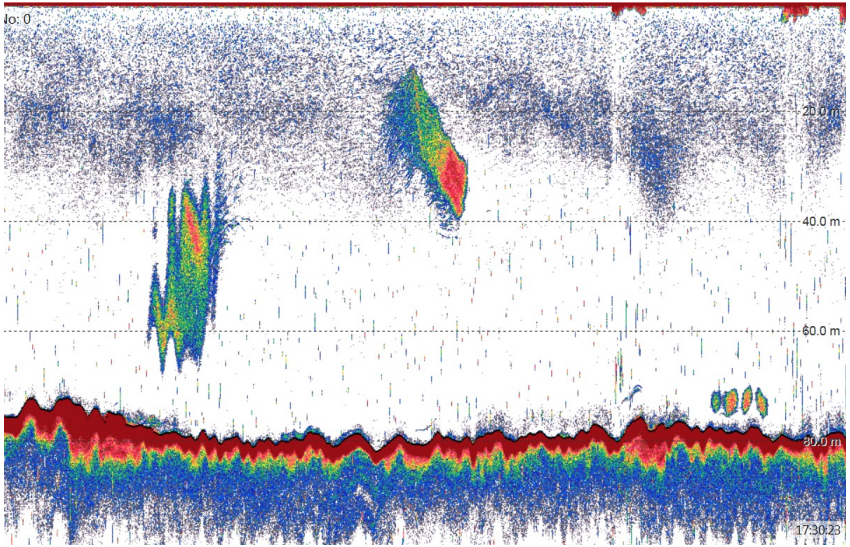
Optimizing Settings



Knowing Crosstalk



Noise at certain depth



“Rainy” Echogram