



# EA 400SP

KONGSBERG

## Hydrographic echo sounder, portable splashproof version



## General description

The EA 400SP is a compact version of the standard EA 400, making it the perfect portable echo sounder for surveying in shallow water depths in small and open boats.

The system consists of a computer and a General Purpose Transceiver (GPT) housed in a rugged and splashproof protective suitcase. The computer can be delivered as a standard laptop or a rugged IP rated notebook.

The echo sounder can be configured to operate on single or dual frequencies between 38 and 710 kHz. In this range the side-scan transducers 120 or 200 kHz are also available.

The computer employs Microsoft Windows 2000®/XP® operating systems to perform operator interface and data storage tasks. Communication between the General Purpose Transceiver (GPT) and the computer is through a network cable (LAN).

As standard, the EA 400SP unit operates on a DC voltage.

## Main features

- Standard or rugged computer for easy menu operation/interfacing and data storage
- Compensation for sound velocity
- Compensation for heave affecting transducer depth
- Advanced, built-in bottom digitiser
- Internal storage of data to file with time reference: digitises depth, position, heave and annotations

- Internal storage of sample data, including all input signals for replay use or exporting
- Echograms can be shown on the computer screen
- Side-scan imaging, single or dual, can be shown on the computer screen
- Choice of depth units: metres, feet or fathoms
- Storing or loading of your favourite settings
- On-line help function

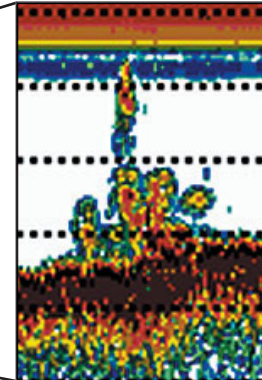
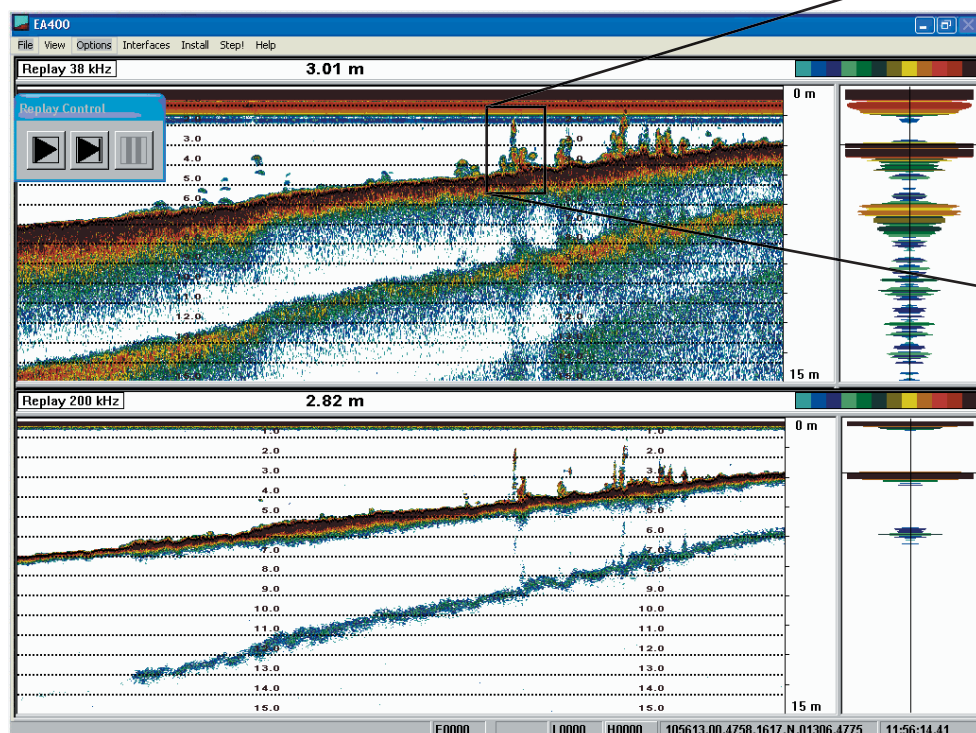
## Interfaces

- Positioning systems equipped with a NMEA 0183 serial line
- Motion sensor input on a serial line
- Depth data output and annotation input on a serial line
- External post-processing tools

## Individual screen and menu presentation

You can set up the display picture to suit your special needs. You can choose different windows on the screen for echogram, bottom expansion, side-scan, A-scope and digital depth. You can even control all the functions in the EA 400 with just a click on the screen. These functions include comprehensive context sensitive on-line help.

Save your favourite settings and recall them when you need them.



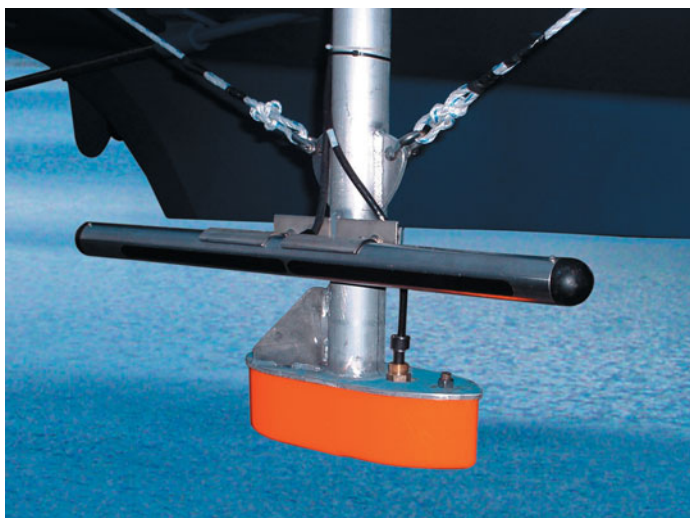
*The echogram pictures show seabed vegetation in fresh water. The survey was done with EA 400 and 38/200 kHz combi transducers.*



## Transducers

*A large selection of transducers is available for the EA 400SP echo sounder.*

*Outboard mounting of 200 kHz side-scan and 38/200 kHz combi transducers. This arrangement was used in a shallow water survey.*



### Options

- Survey software

Monitor the survey progress in a navigation display, on which an electronic background map can be imported. The display includes vessel's track, colour coded depths on a grid window, survey planning and helmsman's displays.

Use real time grid and interpolation between lines to produce a complete terrain model and a replay function, by which data can be checked and cleaned.

- Seabed classification

Operate on-line and replay if EA400/600 raw files exist from a survey. The system can handle four frequencies simultaneously. Post-processing can also be done using playback of features. Models from one dataset or location can later be applied to new data. Equipped with a 38/200 kHz transducer combination, the system is able to calculate an estimate of relative seabed hardness and roughness. The result is presented in a geographical view.

The classification software requires input from a positioning system.

### Unique features

- Windows 2000®/XP®
- Two frequencies displayed
- Independent frequency operation, simultaneous transmission
- Built-in bitmap data storage: depth, position, heave and annotations
- Raw data storage with replay
- Memory of favourite settings
- A-scope
- 160 dB dynamic range
- Non-saturating receiver
- Simultaneous use of electronic chart or post-processing software (HyPack, Hydro, QUINSy)
- High resolution sidescan option
- Colour printer output
- In/out data are timestamped to 1/100 seconds

The digital technology of the EA 400 makes on-line printing of echograms obsolete. Depth soundings with positioning data and echograms can be stored internally on the echo sounder's hard disk, and archived on CD ROM. Stored echograms and depth sounding profiles can easily be retrieved at any time for display and verification purposes.

If required, any standard colour or black and white Windows compatible laser or inkjet printer can be connected to the portable computer.

## System

Computer (recommended specifications)  
 Operating system..... Windows 2000®/XP®  
 Processor speed (CPU)..... 1 GHz  
 Min. internal RAM..... 256 MB

Storage capacity  
 Hard disk size ..... 40 GB

Interfaces  
 Min. 1 x USB 2.0 (external storage to CD/DVD/  
 USB stick)  
 Min. 1 x COM (pos/motion/output data)  
 RJ-45 LAN 10/100 Mbit

Languages .....English, German, French, Spanish

Display range modes.....Manual, Auto start,  
 Auto range

Display phasing modes .....Manual, Auto

Display bottom expansion

Echogram recording..... Unlimited (disk space)

Colour printer.....Optional (computer)

Ping rate ..... Up to 20/sec

Resolution ..... 1 cm

Accuracy (assuming correct sound velocity, trans-  
 ducer depth and shortest pulse length)

710 kHz and 200 kHz..... 1 cm

120 kHz ..... 2 cm

38 kHz ..... 5 cm

Variable sound velocity ..... 1,400 to 1,700 m/sec

Operating frequencies ..... 1 or 2

Single beam frequencies ..... 38 to 710 kHz

Side-scan transducers.....120 or 200 kHz

Combi transducers ..... 38/200 or 50/200 kHz

Optional frequencies .....33 or 210 kHz

Other frequencies on request

Power output, standard transducers

38 to 200 kHz ..... Variable up to 1 kW

710 kHz ..... 100 W

## Interfaces

Data output (RS-232 port)

- Simrad
- NMEA DPT, DBT, DBS
- Atlas
- Datagram output

Data input (RS-232 port)

- Latitude and longitude from (D)GPS
- Motion sensor input
- Annotation, internal/external (ASCII)
- Sound velocity

## Data storage

- Raw data
- History data
- Out data
- Echogram data

## EA 400SP Suitcase unit

Supply voltage ..... 12 Vdc (11 to 15 Vdc)

Power consumption..... 30 to 50 W

Operation temperature ..... 0 to 50 °C

IP rating suitcase ..... IP56

Suitcase unit physical dimensions

Height ..... 220 mm

Depth ..... 390 mm (includes grip and boom)

Width ..... 488 mm (includes sealing caps)

Weight (approximately, dependent on computer)

Suitcase complete (GPT/computer) ..... 18 kg

Note that specifications are subject to change without prior notice. *Microsoft* and *Windows 2000/XP* are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

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