

## Simrad EK80

Combining a scientific echo sounder with ADCP

An underwater photograph showing a vibrant coral reef. In the foreground, a large, colorful fish with a yellow and blue stripe swims towards the left. The reef is covered in various types of coral, including branching and brain coral. The water is clear and blue, with many small fish visible in the background. The overall scene is a healthy and diverse marine ecosystem.

State of the art current velocity and backscatter measurements

Easy synchronization

Wideband capability

Built-in sphere calibration

Auxiliary sensor data are integrated in the data files

User friendly and flexible user interface

Low installation costs

The Simrad EK80 once again confirms its position as the leading scientific instrument for measurements of aquatic ecosystems. With the EC150-3C transducer, the EK80 repeats its performance as an innovative acoustic system. It combines the absolute backscatter measurements from the split-beam echo sounder with physical oceanographic measurements from the acoustic doppler current profiler (ADCP) beams. And it all happens in one single instrument.

The common phrase “two-in-one” can easily describe the new functionality available for the EK80.

With the EC150-3C transducer the EK80 offers a dedicated calibrated wideband split-beam echo sounder with a 3 degrees beam opening angle. The narrow beam effectively increases the ability to resolve single targets within the beam. The system characterizes and quantifies objects in the water column and bottom backscatter using wideband and split-beam algorithms. The absolute backscatter measurements are used as foundations for science and resource management. The echo sounder transducer is calibrated with a sphere using the built-in EK80 functionality.

In addition to the backscatter measurements, the EK80 offers accurate current velocity measurements. The speed and direction of the currents throughout the water column are measured, and presented as a function of the depth. This offers a valuable tool for understanding how organisms, nutrients and other biological and chemical constituents are transported through the ocean. The information can also help understand how climate changes have an effect on how the warm water is transported through the oceans. Physical current measurements can also improve models for how the sea currents behave. This improves various forms of ocean and meteorological forecasts.

The acoustic doppler current profiler (ADCP) and narrow split-beam functionality offered by the Simrad EK80 is based on the

EC150-3C transducer. The EC150-3C is a phased array transducer with the advanced transceiver circuitry inside. The common EK80 user interface is used for operational control.

You can use the EK80 and the EC150-3C transducer as a “stand-alone” system. You can also add the EC150-3C to an existing EK80 system by simply connecting the additional units to your Ethernet switch.

To use the EC150-3C you need EK80 software version 1.13.0 or later.

The EC150-3C is provided with a dedicated power supply to feed the built-in electronic circuitry. The transducer is easily installed using mounting- and clamping rings. The open-ended cable between the transducer and the power supply is provided with the delivery.

### Key functionality

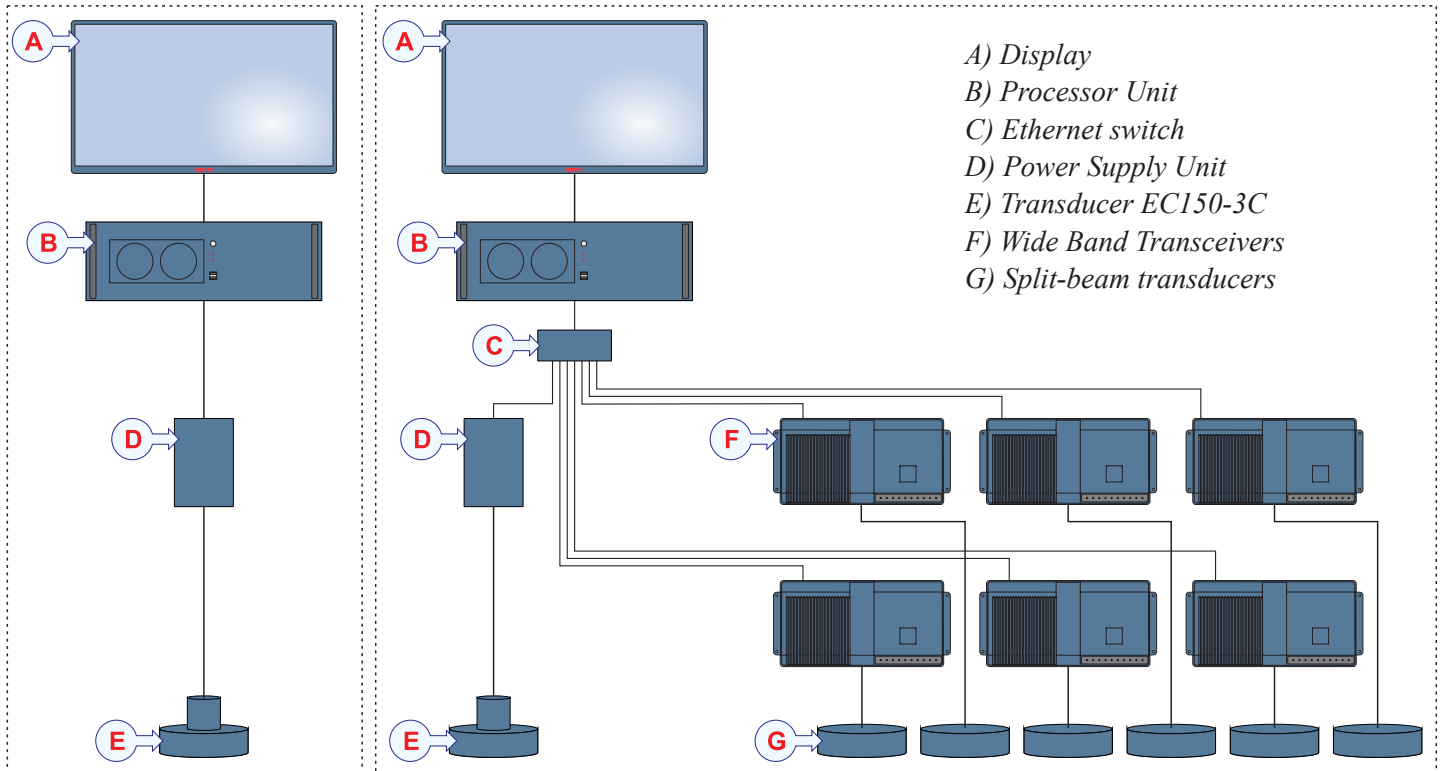
- State of the art current velocity and backscatter measurements
- Easy synchronization of ADCP and scientific echo sounder
- Wideband capability
- Built-in sphere calibration of echo sounder
- Auxiliary sensor data are integrated in the data files, such as heave, pitch, roll, GPS information, sound speed and temperature
- User friendly and flexible user interface
- Low installation costs by reducing the system complexity



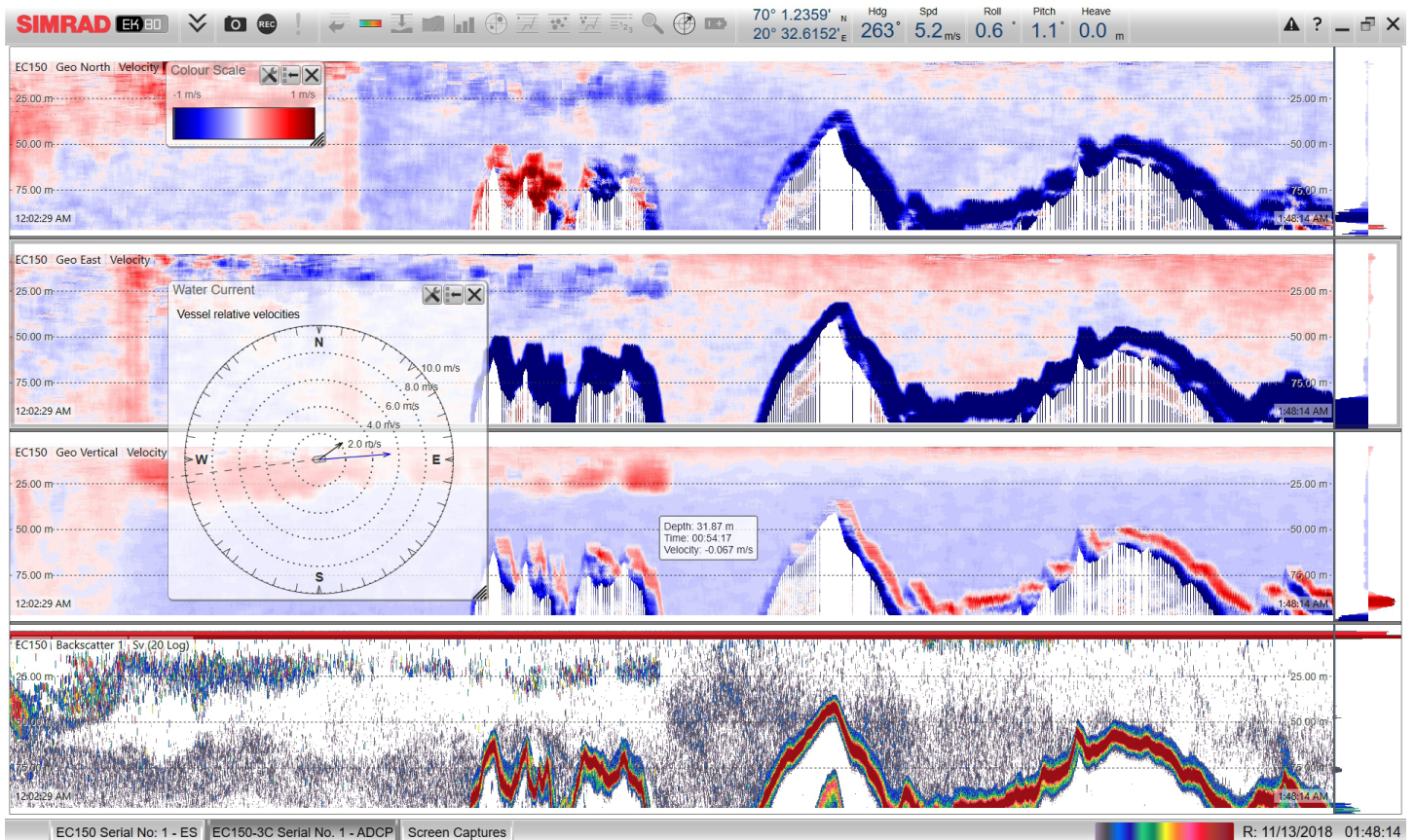
## System diagrams

Basic system

Complete EK80 scientific system with ADCP functionality



This screen capture presents four typical views from a Simrad EK80 using the EC150-3C transducer and ADCP functionality. The top three views present the current water velocity in the north/south, east/west and vertical (down/up) directions. The colours indicate the water speed as specified by the colour scale. The bottom view contains the traditional echogram provided by one of the four ADCP beams. In this view the colours indicate the backscatter intensity..



## Technical specifications

*We are continuously working to improve the quality and performance of our products. Technical specifications may therefore be changed without prior notice.*

### Overall performance

- Nominal frequency: 150 kHz
- Frequency range: 130 to 170 kHz
- Dynamic range: 135 dB

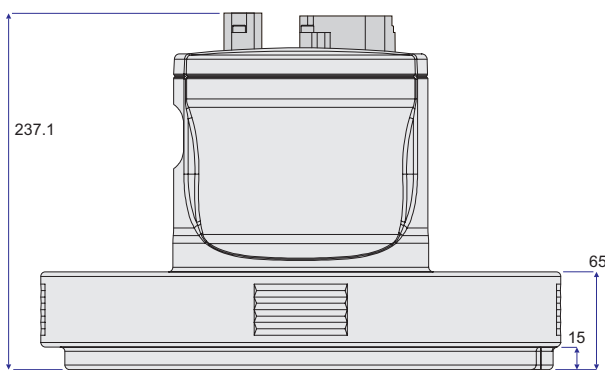
### ADCP performance

- Number of beams: 4
- Beam vertical tilt: 30 degrees
- Beam width: 3 degrees @ 150 kHz
- Pulse type: CW or FM
- Cell size: 2 to 16 m
- Max output sample interval: 40  $\mu$ s
- Max number of depth cells: Unlimited
- Max range: > 400 m @ CW, 8 m cell size

*Maximum range depends on the acoustic scattering conditions.*

## Weight and outline dimensions

All measurements are in mm. The drawings are not to scale.



*Transducer  
Largest diameter is 346 mm  
Weight in air: 12 kg*

### Echo sounder performance

- Number of beams: 1 split beam
- Beam width: 2.5 deg @ 150 kHz
- Pulse type: CW or FM
- Calibration functionality: Included

### Output specifications

- Ethernet: ZeroMQ
- File: NetCDF

### Processor Unit

- Computer: EK80 Processor Unit
- Operating system: Windows® 10
- Software: EK80

### Interfaces

- Internal sensor: Temperature
- External sensors: Position, Attitude and Heading

### EC150-3C connections

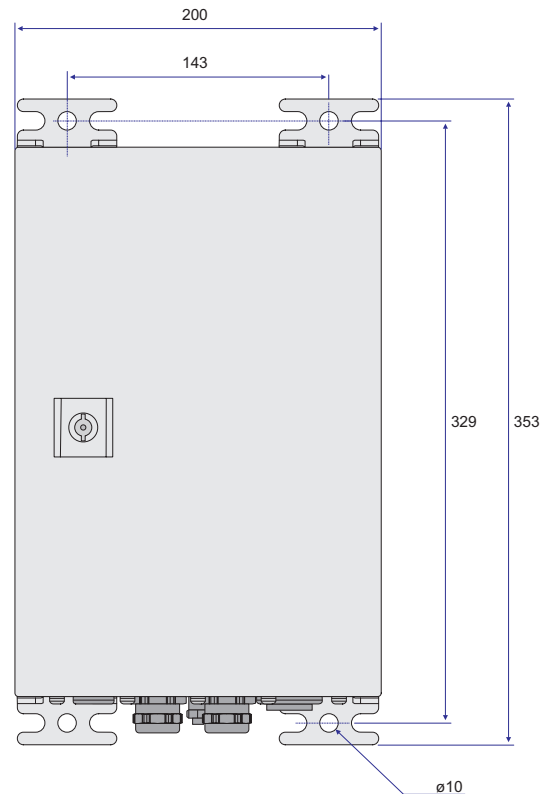
- A dedicated 40 m open ended cable is provided with the transducer.

### EC150-3C power requirements

- Voltage requirement: 115 to 230 VAC, 50-60 Hz (nominal)
- Power consumption: 70 W
- Inrush current: 30 A with cold start @ 230VAC/25°C
- Input current: <0.65 A@230 VAC

### EC150-3C environmental requirements

- Operational temperature: -5 to +50°C
- Storage temperature: -20 to +60 °C



*Power Supply Unit  
Depth is 171 mm  
Weight: 5 kg*

449326 / Rev.A / April 2019

## Simrad

Kongsberg Maritime AS  
Strandpromenaden 50  
P.O.Box 111  
N-3191 Horten, Norway

Telephone: +47 33 03 40 00  
Telefax: +47 33 04 29 87  
[www.simrad.com](http://www.simrad.com)  
simrad.sales@simrad.com

**SIMRAD**