

### Introduction to technical specifications

These technical specifications summarize the main functional and operational characteristics of the SU90 Fish finding sonar. It also provides information related to power requirements, physical properties and environmental conditions.

Note \_\_\_\_\_

*At Kongsberg Maritime, we are continuously working to improve the quality and performance of our products. The technical specifications may be changed without prior notice.*

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### Performance specifications

These performance specifications summarize the main functional and operational characteristics of the SU90 Fish finding sonar.

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#### Operational frequency

- **User selectable:** 20 to 30 kHz in steps of 1 kHz

#### Operational range

- **Range steps (Standard):** 150 to 4,500 metres
- **Range steps (Optional):** 150 to 10,000 metres

Even though you can choose a large range value, that does not mean that you can detect your targets on the same range. The range value only defines the range that is shown in the views. Actual target detection will always depend on the operational environment, such as water temperature, salinity, interference and layers in the water column.

#### Tilt and Tip functionality

- **Tilt:** +10 to -60° in 1° steps
- **Tip:** 0 to -90°

#### Transmission

- **Number of transmitter channels:** 384
- **Transmission modes:**
  - 360 degrees omnidirectional
  - 180 degrees vertical
- **Pulse forms:**
  - CW (Continuous Wave) Transmissions
  - Hyperbolic FM (Frequency Modulation) Transmissions (also known as "Chirp")

#### Reception

- **Number of receiver channels:** 384
- **Gain functions:**
  - TVG (Time Varied Gain)
  - AGC (Automatic Gain Control)
  - RCG (Reverberation Controlled Gain)
- **Digital filters:**
  - Ping-Ping Filter
  - Noise Filter

- FM Correlation filter
- Bottom Filter

### Echo presentations

- **Number of colours:** 16 or 64 colours
- **Display resolution:** 1280 x 1024 pixels (Minimum)
- **Colours:** Weak, Normal or Strong
- **Palettes:** A choice of colour palettes is available to fit ambient light conditions.

### Beams

- **Horizontal transmission:** 360°
- **Horizontal reception:** 8.5 to 13°
- **Vertical transmission:** 4.9 to 7°
- **Vertical reception:** 5.3 to 7.4°

### Beam widths

- **User selectable:** Narrow, Normal or Wide

### Stabilisation

- **Roll stabilisation:** ±20 degrees (Automatic)
- **Pitch stabilisation:** ±20 degrees (Automatic)
- **External stabilisation sensor:** Interface to an optional peripheral motion reference unit (MRU) is supported. The SU90 has been designed to match the motion reference unit (MRU) sensors manufactured by Kongsberg Seatex.

### Interfaces

- **Interfaces to peripheral devices:** Serial lines + Ethernet (LAN) line
- **Transceiver Unit:** Ethernet (LAN) line
- **Optional interfaces:**
  - Scientific output (Ethernet line)
  - RAW data output for scientific research (Ethernet line)

### User interface

- **Main control:** The Operating Panel contains all necessary control functions for normal operation of the SU90.
- **Secondary control:** A comprehensive menu system allows access to all SU90 functionality.
- **Optional control:** You can also use a standard computer mouse to control the SU90. The mouse can be connected to either the Operating Panel or directly to the Processor Unit.
- **Menu languages:** Chinese, English, French, Greek, Icelandic, Japanese, Korean, Norwegian, Russian, Spanish, Turkish

### Hull Unit SU92

- **Stroke length:** 1.2 m
- **Maximum vessel speed:** 21 knots
- **Maximum lowering and retrieval speed:** 21 knots
- **Transducer cable:** 4.6 / 7 m
- **Type approval:** DnV Certificate S-6344

### Hull Unit SU93

- **Stroke length:** 1.6 m
- **Maximum vessel speed:** 16 knots
- **Maximum lowering and retrieval speed:** 16 knots
- **Transducer cable:** 4.6 / 7 m
- **Type approval:** DnV Certificate S-6344

### Hull Unit SU94

- **Stroke length:** 2.1 m
- **Maximum vessel speed:** 11 knots
- **Maximum lowering and retrieval speed:** 11 knots
- **Transducer cable:** 4.6 m
- **Type approval:** DnV Certificate S-6344

### Installation trunk

The same installation trunk is used on all hull unit types.

## Trunk extension

If you are replacing a SX90 or SP90 sonar system with a new SU90 system, you can use the existing trunk. However, due to the larger transducer on the SU90, a dedicated trunk extension must be mounted on top of your existing trunk.

## Transducer

The same transducer is used on all hull unit types.

- **Shape:** Cylindrical
- **Number of individual elements:** 384

## Power requirements

These power characteristics summarize the supply power requirements for the SU90.

## Display

The display is not a part of the SU90 scope of supply. It is not manufactured by Kongsberg Maritime. For more information, refer to the end-user documentation provided by the manufacturer.

## Processor Unit

- **Make and model:** Simrad Enix
- **Voltage requirement:** 115/230 VAC (Single phase/Nominal voltage)
- **Maximum voltage deviation:** 15%
- **Maximum transient:** 20% of nominal voltage, recovery time 3 s
- **Power consumption:** 500 W @ 230 VAC (Approximately)

## Operating Panel

Not applicable. This unit is not powered by AC mains.

## Operating Panel Power Supply

- **Voltage requirement:** 115/230 VAC, 47 to 63 Hz, single phase, nominal
- **Maximum voltage deviation:** 15%
- **Maximum transient:** 20% of nominal voltage, recovery time 3 s
- **Power consumption:** 10 VA (Approximately)

## Transceiver Unit

- **Voltage requirement:** 115/230 VAC, 47 to 63 Hz, single phase, nominal
- **Maximum voltage deviation:** 15%
- **Maximum transient:** 20% of nominal voltage, recovery time 3 s
- **Power consumption:** 600 VA (Approximately)

## Hull Unit SU92

- **Model:** SU92
- **Voltage requirement:** 230/380/440 VAC, 47 to 63 Hz, 3-phase
- **Maximum voltage deviation, 230 VAC:** 15%
- **Maximum voltage deviation, 380/440 VAC:** 340 - 485 VAC
- **Maximum transient:** 20% of nominal voltage, recovery time 3 s
- **Power consumption:** 3000 VA (Approximately)

## Hull Unit SU93

- **Model:** SU93
- **Voltage requirement:** 230/380/440 VAC, 47 to 63 Hz, 3-phase
- **Maximum voltage deviation, 230 VAC:** 15%
- **Maximum voltage deviation, 380/440 VAC:** 340 - 485 VAC
- **Maximum transient:** 20% of nominal voltage, recovery time 3 s

- **Power consumption:** 3000 VA (Approximately)

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- **Maximum voltage deviation, 380/440 VAC:** 340 - 485 VAC
- **Maximum transient:** 20% of nominal voltage, recovery time 3 s
- **Power consumption:** 3000 VA (Approximately)

### Gate valve

The gate valve is not manufactured by Kongsberg Maritime. Refer to the relevant end-user documentation provided by the manufacturer.

### Weight and outline dimensions

These weights and outline dimension characteristics summarize the physical properties of the SU90 Fish finding sonar.

Note \_\_\_\_\_

*The source drawings (normally in AutoCad format) can be downloaded from our website.*

<https://www.simrad.com/su90>

### Display

The display is not a part of the SU90 scope of supply. It is not manufactured by Kongsberg Maritime. For more information, refer to the end-user documentation provided by the manufacturer.

### Processor Unit

- **Make and model:** Simrad Enix
- **Outline dimensions:**

- **Depth:** 385 mm
- **Width:** 479.6 mm (Will fit in a 19" rack)
- **Height:** 177 mm
- **Weight:** 16 kg (Approximately)

### Operating Panel

- **Outline dimensions:**
  - **Depth:** 165 mm
  - **Width:** 385 mm
  - **Height:** 51 mm
- **Weight:** 4 kg

### Transceiver Unit

- **Outline dimensions:**
  - **Depth:** 660 mm (With shock absorbers)
  - **Width:** 563 mm (Without the large transceiver plug)
  - **Height:** 750 mm (With shock absorbers)
- **Weight:** 80 kg

### Hull Unit SU92

- **Model:** SU92
- **Flange diameter:** 760 mm
- **Number of holes in the flange:** 24
- **Height:**
  - **Total:** 3160 mm
  - **Above trunk:** 2118 mm
- **Weight:** 850 kg (Approximately)

### Hull Unit SU93

- **Model:** SU93
- **Flange diameter:** 760 mm
- **Number of holes in the flange:** 24
- **Height:**
  - **Total:** 3560 mm
  - **Above trunk:** 2518 mm

- **Weight:** 900 kg (Approximately)

### Hull Unit SU94

- **Model:** SU94
- **Flange diameter:** 760 mm
- **Number of holes in the flange:** 24
- **Height:**
  - **Total:** 4060 mm
  - **Above trunk:** 3018 mm
- **Weight:** 950 kg (Approximately)

### Gate valve

The gate valve is not manufactured by Kongsberg Maritime. Refer to the relevant end-user documentation provided by the manufacturer.

## Environmental requirements

These environmental specifications summarize the temperature and humidity requirements for the SU90 Fish finding sonar.

### Display

The display is not a part of the SU90 scope of supply. It is not manufactured by Kongsberg Maritime. For more information, refer to the end-user documentation provided by the manufacturer.

### Processor Unit

- **Make and model:** Simrad Enix
- **Operational temperature:** -15 to 55 °C
- **Storage temperature:** -20 to 70 °C
- **Relative humidity:** 10 to 95% relative non-condensing
- **Certificates:**
  - IEC 60945

- IACS E10

### Operating Panel

- **Operational temperature:** 0 to +50 °C
- **Storage temperature:** -40 to 70 °C
- **Relative humidity:** 5 to 95% relative, non-condensing

### Operating Panel Power Supply

- **Operational temperature:** 0 to +50 °C
- **Storage temperature:** -40 to 70 °C
- **Relative humidity:** 5 to 95% relative, non-condensing

### Transceiver Unit

- **Operational temperature:** 0 to +50 °C
- **Storage temperature:** -40 to 70 °C
- **Relative humidity:** 5 to 95% relative, non-condensing

### Hull Unit SU92

- **Model:** SU92
- **Operational temperature:** 0 to +50 °C
- **Storage temperature:** -20 to 40 °C
- **Relative humidity:** 5 to 95% relative, non-condensing

Note \_\_\_\_\_

*Do not expose the transducer to direct sunlight or excessive heat.*

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### Hull Unit SU93

- **Model:** SU93
- **Operational temperature:** 0 to +50 °C
- **Storage temperature:** -20 to 40 °C
- **Relative humidity:** 5 to 95% relative, non-condensing

Note \_\_\_\_\_

*Do not expose the transducer to direct sunlight or excessive heat.*

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### **Hull Unit SU94**

- **Model:** SU94
- **Operational temperature:** 0 to +50 °C
- **Storage temperature:** -20 to 40 °C
- **Relative humidity:** 5 to 95% relative, non-condensing

Note \_\_\_\_\_

*Do not expose the transducer to direct sunlight or excessive heat.*

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### **Gate valve**

The gate valve is not manufactured by Kongsberg Maritime. Refer to the relevant end-user documentation provided by the manufacturer.

### **Compass safe distance**

If you place any of the SU90 Fish finding sonar units on the bridge, you must observe the physical distance to the compass.

### **Display**

The display is not a part of the SU90 scope of supply. It is not manufactured by Kongsberg Maritime. For more information, refer to the end-user documentation provided by the manufacturer.

### **Processor Unit**

- **Make and model:** Simrad Enix
- **Standard compass:** 200 cm

- **Other compass:** 140 cm

### **Operating Panel**

- **Standard compass:** 30 cm
- **Other compass:** 20 cm

### **Transceiver Unit**

Not applicable. The unit is not located on the bridge.

### **Hull Unit**

Not applicable. The unit is not located on the bridge.

### **Gate valve**

Not applicable. The unit is not located on the bridge.

## **Minimum display requirements**

Unless specifically ordered, the SU90 is not provided with a display. The display must then be purchased locally.

You can use one or two displays on your SU90 Processor Unit depending on personal and/or operational preferences.

Note \_\_\_\_\_

*Make sure that the chosen display meets the SU90 requirements. The design and construction must allow for marine use, and the display must be able to withstand the movements and vibrations normally experienced on a vessel. Verify that you have easy access to cables and connectors, and that the display can be installed in a safe and secure way.*

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The minimum technical requirements for the display are:

- **Resolution:** 1280 x 1024 pixels (Minimum)
- **Video interface:** The video interface must match the output format(s) provided by the Processor Unit.

The Processor Unit may offer video output on several formats. Investigate your options before you purchase a display.

- **Physical screen size:** The screen size depends on personal and/or operational preferences.

The SU90 software supports 9:16 displays.