

## ESR-160

- *Flat screen*
- *High speed scan*
- *Target lock*



### FEATURES

- **Flat screen**

The ESR-160's lightweight and compact flat screen allows for flexible installation on the boat for mounting on the console and on the table.

- **High speed scanning**

The fastest echo-refreshing rate in this class, allowing the user to find schools of fish quickly and minimizes the chance of missing targets.

- **Target lock**

Once the target is locked on, the ESR-160 controls the transducer's beam angle in azimuth and elevation to keep the school of fish displayed on the screen.

- **Fish sounder display**

A conventional fish sounder display can be shown underneath the sonar display. This feature is effective in finding a school of fish and its density near the seabed.

- **Sector-scanning**

Sector scanning up to 95 degrees is possible, most suited for focusing on the largest school of fish as well as bottom profiling.

- **Variable depth marker and cross cursor**

Accurate distance to a target can be read off using the variable depth marker. Using the cross cursor, the distance and bearing to the target can be measured accurately.

- **Color palette**

Echo displays are shown in 8 colors, selected from standard 4 color patterns plus color palette containing 4096 kinds of colors. These color features provide the user the freedom in choosing the presentation colors for fish species, fishing type, etc.

- **Image off-centering**

The entire sonar image can be offset in 4 ways, up, down, left or right, for a larger viewing range.

- **Remote control unit**

The remote control unit is available on request. It's a useful feature for a small fishing vessel where a skipper doubles as a deckhand. Available controls on this unit are; depth range selection, scanning azimuth, elevation/depression angle adjustment, target lock ON/OFF and image off-centering.

- **Water temperature sensor built-in as standard**

Using this feature, the water surface temperature display is always available.

- **Other functions available as standard**

Boat speed, compass reading, own ship's position, pulse length selection, color rejection, etc.

## SPECIFICATIONS

Display	10.4-inch TFT color LCD
Presentation color	Image 8 colors (selected in 4096 colors on color palette)
Display mode	Sonar, vertical display, side scanning display
Off-centering	Right, left (50% of radius)
Target lock	Automatic train, automatic train with tilt control
Distance unit	Meter, fathom, l.fathom, feet
Scanning ranges	0 to 20, 40, 60, 80, 100, 120, 160, 180, 200, 240, 280, 320, 360, 400, 500, 600, 700, 800, 900, 1000, 1200, 1600, 2000 (m) 0 to 12, 20, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240, 280, 320, 360, 400, 500, 600, 800, 1000, 1200, 1600 (fathom, l.fathom) 0 to 80, 100, 120, 160, 200, 240, 280, 320, 360, 400, 500, 600, 700, 800, 900, 1000, 1200, 1600, 2400, 3200, 4000, 5000, 6000 (feet)
Scanning sector	Sonar mode 10°step angle : 10°, 30°, 50°, 90°, 130°, 170°, 210°, 360° 5°step angle : 5°, 25°, 45°, 85°, 125°, 165°, 205°, 360° Side scan mode 5°step angle : 5°, 25°, 45°, 65°, 95°, 115°, 145°, 175° 3°step angle : 3°, 27°, 45°, 63°, 93°, 117°, 147°, 177°
Scanning time	For 360° scanning time (scanning sector vs scanning time)
Scanning sector (m)	20, 40, 60, 80, 100, 120, 160, 200, 240, 280, 320, 400, 600, 800, 1000, 1200, 1600, 2000
(Fathom)	12, 20, 40, 60, 80, 100, 120, 160, 200, 240, 280, 320, 400, 600, 800, 1000, 1200, 1600
Scanning time (sec)	4.3, 5.1, 6.0, 7.0, 8.0, 9.0, 10.9, 12.8, 14.8, 16.7, 18.6, 22.5, 32.2, 41.9, 51.5, 61.2, 80.6, 99.9
Audio monitor	800 Hz, 6 W/4 Ω; outer speaker (option)
Input data format	NMEA-0183 (Option)
Other functions	TVG (4 types), pulse selection (3 types), color rejection, power reduction (4 levels), dynamic range (4 levels), compass display, interference rejection, bow compensation
Output frequency	80 kHz or 180 kHz
Tilt angle	+ 5° to - 90° (1° step)
Output power	1.5 kW
Hoist stroke	200 to 400 mm
Power supply	Display unit 10.8 to 31.2 VDC (30 W at 24 VDC) Hull unit 10.5 to 30 VDC (110 W at 24 VDC)

## EQUIPMENT LIST

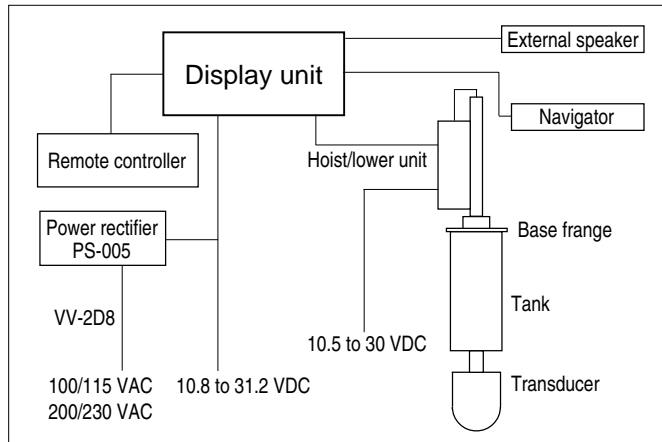
### Standard Equipment List

Display unit	ESR-1601	1
Hull unit	Hoist/lower unit, Transducer (with temp. sensor), Pipe, tank, Tank guide, Packing	1 set
DC power cable	CW-253 (2 m)	1
Connecting cable-1	CW-504-1	15 m
Connecting cable-2	CW-505-1	15 m
Spare parts	Fuses	1 set
Installation materials		1 set
Operation manual		1

### Options

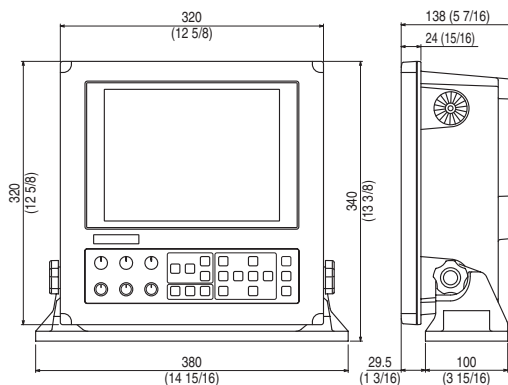
Remote controller	ESR-1609
FRP tank unit	ESR-1507, ESR-1510, ESR-1511, ESR-1513
External speaker	NP-5-03, with cable (3 m)
Audio pulg	AP314 (for external speaker)
Power rectifier	PS-005, with two fuses
AC power cable	VV-2D8, 3 m (9.9 ft), both ends plain

## CONNECTIONS



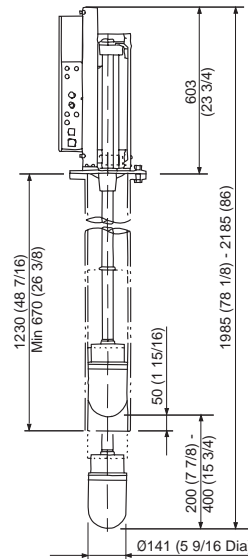
## DIMENSIONS AND WEIGHT

### Display unit (ESR-160)



Weight: 7.0 kg (15.5 lb)

### Hull unit



Weight: 44.0 kg (97 lb)

Unit: mm (inch)

\* Specifications subject to change without notice.

# KODEN

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Certified to ISO 9001 ( TUV PRODUCT SERVICE )



Safety  
precaution

To ensure proper and safe use of the equipment,  
please carefully read and follow the instructions in  
the OPERATION MANUAL.

FOR DETAILS, PLEASE CONTACT: