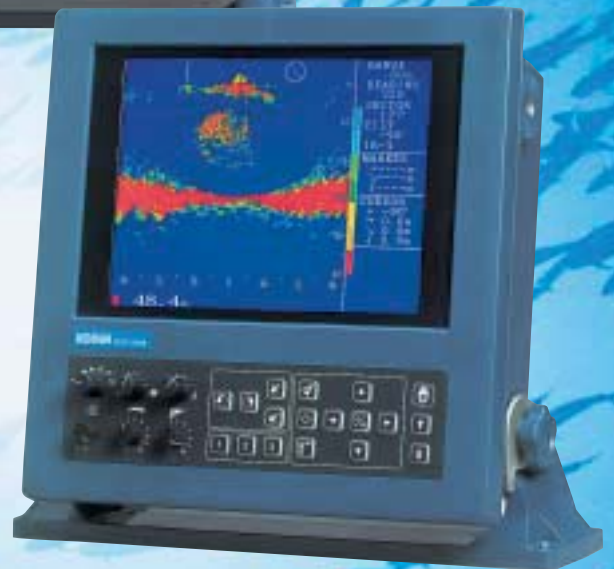


# KODEN

10.4-inch / 15-inch LCD  
Sonar

## ESR-160 / 180 / 180BB



ESR-160



ESR-180

*Flat screen, High speed scan and Target lock!*

## FEATURES

### Flat screen

The ESR-160 / 180's flat screen allows for flexible installation on the boat. Especially the ESR-160, by its light weight and compact body, fits for mounting on the tight console. ESR-180BB Black Box sonar connects to any XGA type display (owner supplied).

### High speed scanning

The fastest echo-refreshing rate in this class allows 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 / 180 controls the transducer's beam angle in azimuth and elevation to keep the school of fish displayed on the screen.

### Echo sounder display

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

### Bottom scanning

Bottom scanning up to sector angle of 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.

### Image off-centering

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

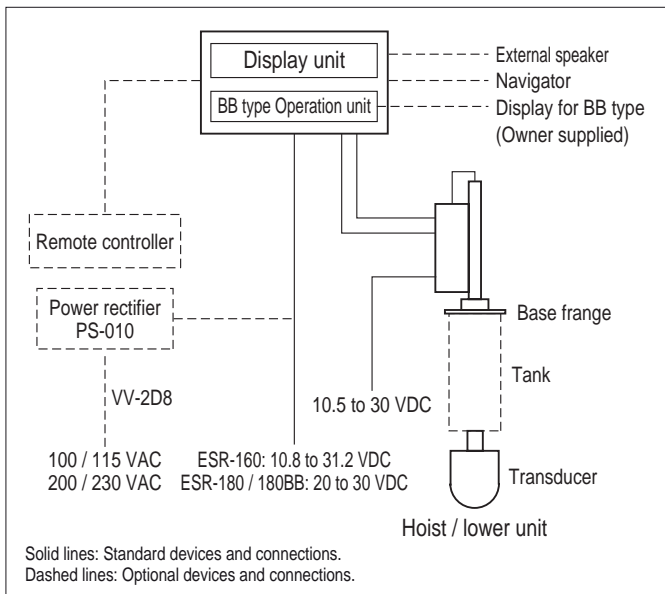
### Built-in standard water temperature sensor

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

## EQUIPMENT LIST

Standard equipments	Display unit (ESR-160 / 180)	1
	Operation unit (ESR-180BB)	1
	Hoist / lower unit	1 set
	DC power cable, connecting cable	1 set
	Installation materials, spare parts, operation manual	1 set
Options	Remote controller, PVC tank unit, FRP tank unit, External speaker, Power rectifier unit, NMEA output cable, NMEA input cable, Joint pipe (1681 mm / 1981 mm)	

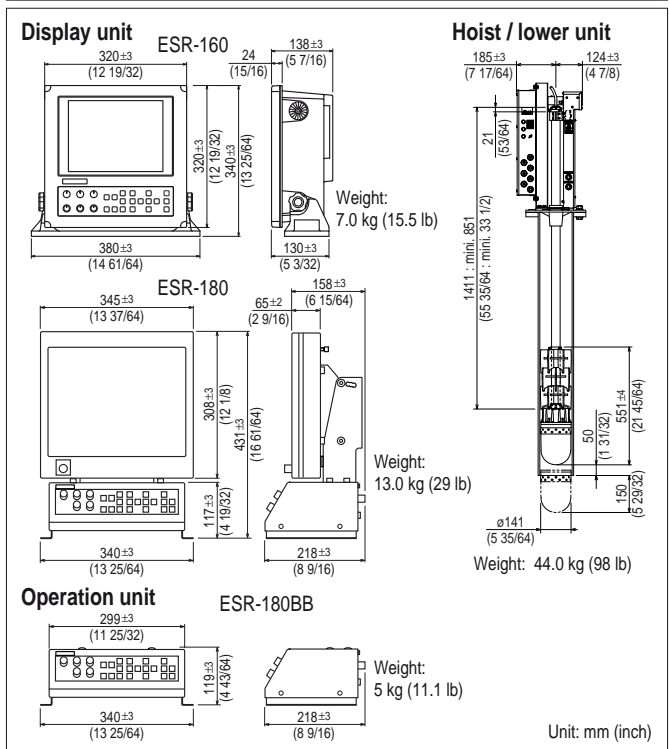
## CONNECTIONS



## SPECIFICATIONS

Model	ESR-160	ESR-180 / 180BB
Output power (RMS)	1.5 kW	
Output frequency	180 kHz or 80 kHz	
Tilt angle	+5° to -90° (1° step)	
Hoist stroke	200 to 400 mm	
Display size and type	10.4 inch color TFT LCD	15 inch color TFT LCD (Except BB type)
Display resolution	640 x 480 (VGA)	
Basic ranges	20 to 2000 (m), 80 to 6000 (ft), 12 to 1600 (fm / l. fm) (8 ranges can be set to users choice)	
Range units	m, ft, fm, l.fm	
Scanning sector angles	Sonar mode	5° step: 5°, 25°, 45°, 85°, 125°, 165°, 205°, 360° 10° step: 10°, 30°, 50°, 90°, 130°, 170°, 210°, 360°
	Bottom scan mode	5° step: 5°, 25°, 45°, 65°, 95°, 115°, 145°, 175° 3° step: 3°, 27°, 45°, 63°, 93°, 117°, 147°, 177°
360° scanning time (extracts)	Scanning range (m)	20 40 80 100 160 200 240 320 400 600 800 1000 1200 1600 2000
	Scanning time (sec.) 5° step	6.4 8.4 12.2 14.1 19.9 23.8 27.6 35.4 43.2 62.5 81.9 101 121 153 198
	Scanning time (sec.) 10° step	4.3 5.1 7.0 7.0 10.9 12.8 14.8 18.6 22.5 32.2 41.9 51.5 61.2 80.6 99.9
Bearing center	5° step	
Presentation modes	Sonar, Off-center, Bottom scan, Echo sounder	
Presentation colors	8 colors (Selected in 4096 colors on color palette)	
Functions	TVG (4 type), Pulse selection (3 types), Color rejection, Dynamic range (3 levels), Compass display, Interference rejection, Power reduction, Bow compensation	
Language	English	
Input data format and sentences	Option: (NMEA 0183) GGA, GLL, VTG	
Output data format and sentences	NMEA 0183 DBT, MTW, TLL	
NMEA ports	Option:2 (input 1 / output 1)	
Power supply	Display unit	10.8 to 31.2 VDC
	Hoist / lower unit	10.5 to 30 VDC
Power consumption	Display unit	30 W or less (24 VDC)
	Hoist / lower unit	110 W or less (24 VDC)
<b>Environmental</b>		
Operating temperature	0°C to +50°C	
Water protection	IPX2	IPX1

## DIMENSIONS AND WEIGHT



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**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: