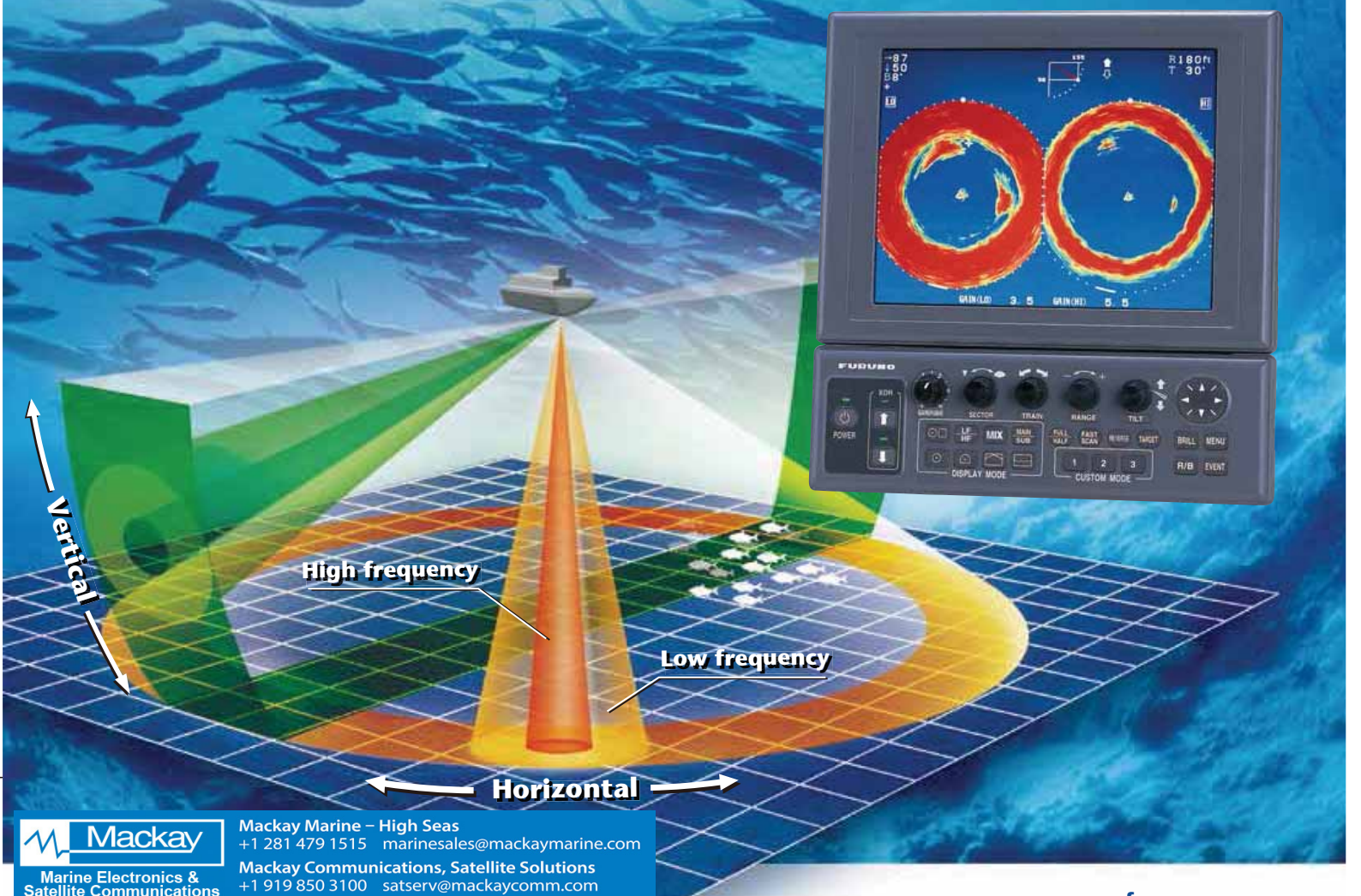
FURUNO

## 10.4"COLOR TFT LCD and Black Box Configurations

# DUAL FREQUENCY SEARCHLIGHT SONAR

Model **CH-300**

- Incorporates both a low and a high frequency (60/153 or 85/215 kHz) transducer in one single soundome
- BlackBox system configuration allows for use of FURUNO or other commercial monitors
- CUSTOM MODE keys provide one-touch setup or short-cut key functions
- A variety of display modes: Horizontal and Vertical scan, Mix, Echo sounder
- Compact hull unit for space saving installation (select from 250 or 400 mm travel)
- To optimize performance pulse length is automatically switched according to range selected
- Target lock tracks selected fish schools or L/L position
- Multi language menu: English, Spanish, Danish, Portuguese, French, Norwegian, Italian, Swedish, Thai and Chinese

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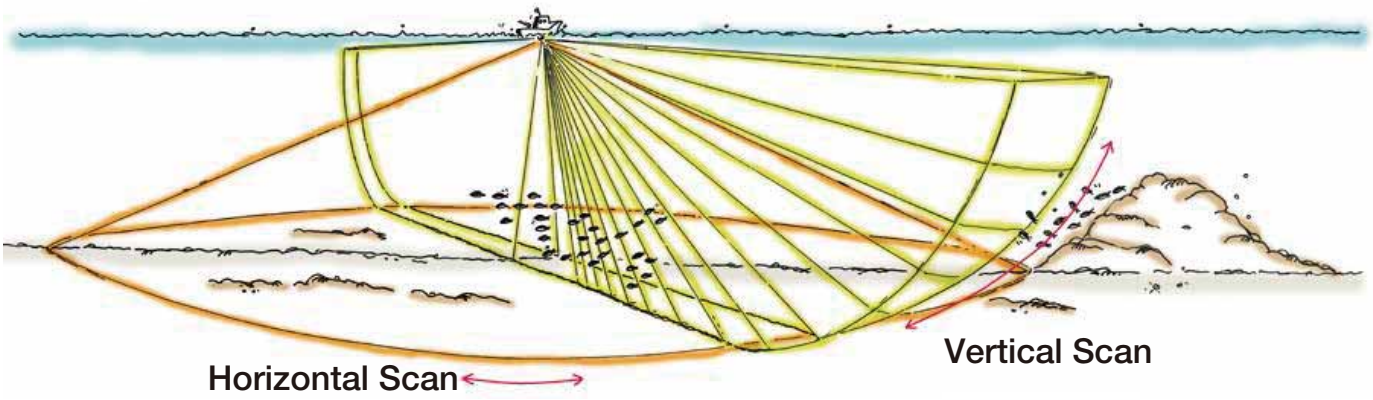



The world's first dual-frequency searchlight sonar CH-300 is designed for a wide range of commercial or sport fishing vessels. Its operating frequency can be selected from either 60/153 or 85/215 kHz, and the transducers are incorporated in one soundome. The high frequency of 153 and 215 kHz gives a highly detailed search near and all aound the vessel. The lower frequency 60 and 85 kHz enables long-range searches of over 500 m. With the advantages of both high and low frequencies, the CH-300 helps to search rough seabeds as well as greatly enhance fish school detection.

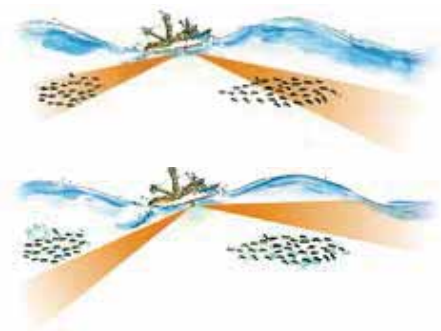
A variety of presentation modes are available: horizontal and vertical scan, echo sounder and the combination mode displaying horizontal and vertical scan/historical/plotter presentations. The combination of horizontal and vertical scan helps when evaluating the distribution of fish schools in both the horizontal and vertical planes simultaneously.

The CH-300's unique mix mode uses the frequency characteristic that "high frequency beams receive stronger echoes from tiny fish, compared with low frequency". By comparing the returned echo intensity of both frequencies, this mode picks out the echoes of tiny fish and displays them in discriminative colors. Other echoes are displayed in the weakest color. This helps to discriminate tiny fish such as small bait fish from other fish.

The CH-300 provides two target lock modes to track a fish echo and stationary position such as a fish shelter or reef. Target Lock automatically tracks the chosen fish school. In Position Track, the beam is locked onto the L/L position specified by the target marker.

The standard package consists of a 10.4" LCD, control, transceiver and compact hull units. This separated system configuration provides a flexible and space-saving installation. A BlackBox configuration (without monitor) is also available. The hull unit, whose travel or stroke can be selected at either 250 mm or 400 mm, will fit any boat where a 190 mm (7.5") internal diameter hull tube is available. Also, a previously installed CH-250 can be changed to the CH-300 without dry-docking since both models use the same sized hull unit.

| | Long-range detection | Use in shallow waters | Wide-area detection | Detection of bottom fish | Detection of bait fish | Affected by cavitation from other vessel |
|---|---|---|---|---|---|---|
| Low frequency<br>featuring a wide beamwidth | ✓ Attenuation loss is small | | ✓ Detection area is wide, so detection deadspots are reduced | | | |
| High frequeny<br>featuring a narrow beamwidth | | ✓ Bottom echo is less prominent because of narrow beam width | | ✓ Fish and bottom echoes are displayed separately | ✓ Bait fish are more easily detected | ✓ Strong echoes from other ship's cavitation trail |

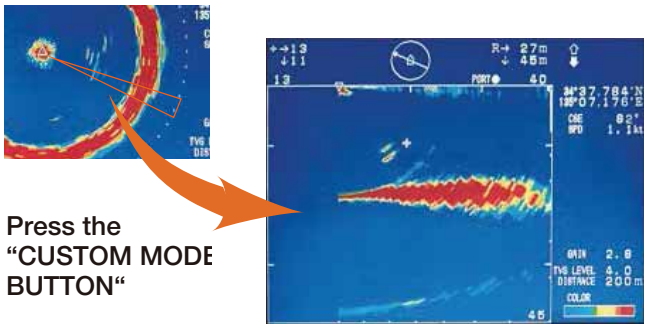


**Stabilizer : ON**
The beam on the targeted fish.

**Stabilizer : OFF**
The beam, affected by pitching and rolling, fails to detect the targeted fish.

## Beam stabilization

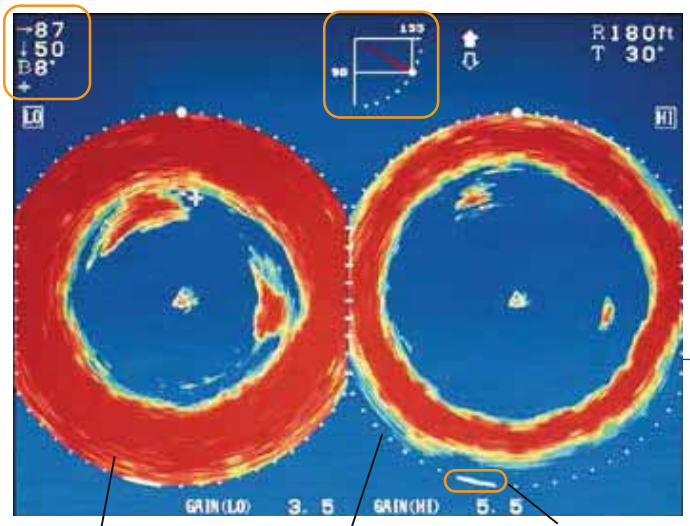
Even in rough seas, the sonar beam is kept at the required tilt angle by using ship's pitch and roll information. The CH-300 can obtain this information from a satellite compass (SC-50/110). The motion sensor MS-100 or clinometer BS-704 can also be interfaced.




## Cross section scan

The CH-300 has a "Cross Section Scan" function. It allows you to instantly view the vertical plane in a specific direction by pressing the "CUSTOM MODE BUTTON". It is useful for evaluating the concentration and location of the targeted fish school as well as for navigation purposes.

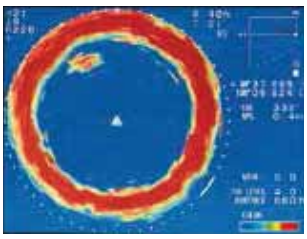
# Compact soundome contains a dual-frequency transducer. See fish targets you have never seen before!




Low frequency  High frequency  Sweep indicator (Shows train position)

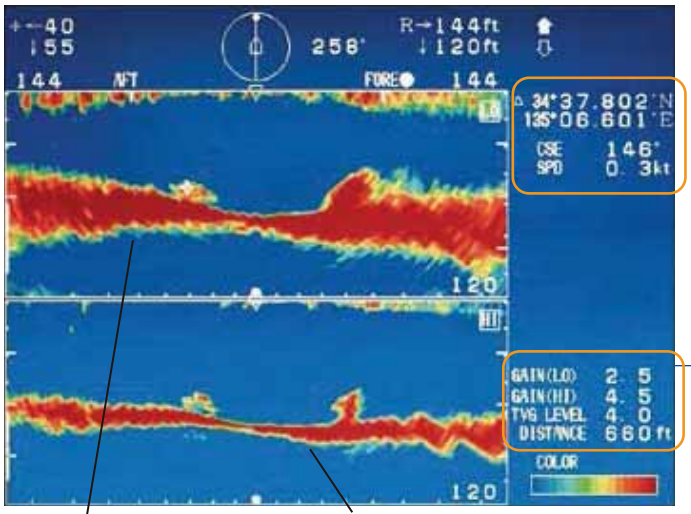
## Horizontal scan

The horizontal scan helps detect fish schools at any tilt, all around the vessel. In the dual-frequency presentation, any two presentations from high/low frequency scan can be displayed in the mix mode. Gain can be adjusted separately.




Cursor position data
→: Horizontal range
↓: Depth
B: Bearing

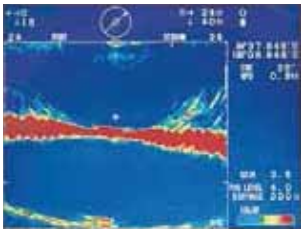

Tilt angle indicator
1: Horizontal max. range
2: Vertical max. depth
3: Tilt angle




Low frequency  High frequency

## Vertical scan

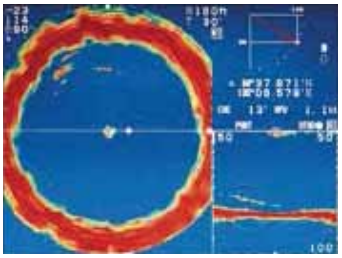
The vertical scan paints the bottom profile within a user-specified vertical plane in any direction. In the dual-frequency presentation, the vertical scan mode shows any two of high/low frequency scan and the mix mode. The slant range and sonar dome tilt are graphically shown by a cursor indicator.



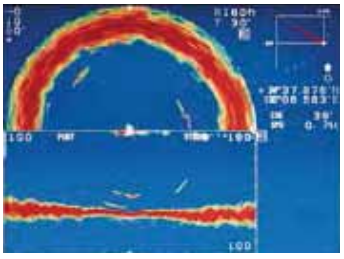

**Nav data** (Requires appropriate sensor)
- Position in latitude, longitude
- Course
- Speed


**Echo settings**
- Gain setting
- TVG level
- Distance settings

**Horizontal with vertical scan**

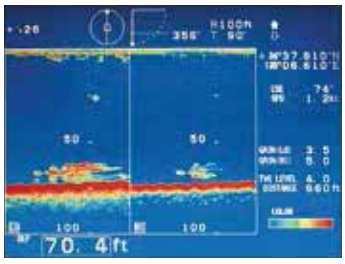


**Half-circle horizontal with vertical scan**



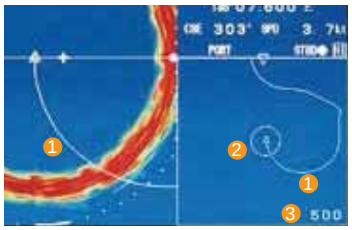
## Combination of horizontal with vertical scan

A unique feature of this sonar is a mode integrating the two images above. This sonar image can be switched between full and half circle with vertical scan.




## Echo sounder

The transducer tilted down at 90 degrees can sound fish schools and seabed straight down like a fish finder. This mode is available when the soundome is retracted into the tank.




## Horizontal scan with VideoPlotter

Own ship track is displayed on the sonar image, which is ideal for purse seining or bottom trawling.

**VideoPlotter display** (sub window)
1: Track
2: Sonar range marker
(Radius changes with video plotter range)
3: Scale

# SPECIFICATIONS OF CH-300

1. **Display Unit**
   Standard: 10.4" TFT color LCD
   BlackBox: FURUNO 15"LCD MU-150HD recommended or commercial monitor (640 x 480 pixels)
2. **Color**
   Echo: 16 or 8 colors (echo)
   Background: 3 colors selected (user setting available)
3. **Display Mode**
   Horizontal scan (Normal/Expanded), Vertical scan, Mix, Echo sounder
4. **Combination Display**
   Plotter, Vertical scan, History
5. **External Data Indication**
   L/L (Own ship or cursor), Depth, Bearing, Speed, Water temperature, Tide, Ship's track, North mark, Tide vector, ETA marker (External IEC-61162 data required)
6. **Audio Monitor** 1.0 kHz (external speaker required)
7. **TX Output Power** 1 kW
8. **Frequencies** 60/153 or 85/215 kHz
9. **Beamwidth** (at -3 dB)
   60/153 kHz: 16°/7° (Hor), 14°/5° (Ver)
   85/215 kHz: 11°/5° (Hor), 10°/4° (Ver)
10. **Transducer Control**
    Tilt: 0° to -180° at 3° or 6° steps (Ver)
    +5° to -90° at 1° steps (Hor)
    Training Sector: Manual or automatic training at 6° or 12° steps in search sector 6° to 360°
    Target Lock: By L/L, Echo position
11. **Range scales** (Feet, Fathom, Passi/Braza, Hiro can also be selected)
    Horizontal: 15 ranges customized between 10 to 1600 m
    Vertical: 15 ranges customized between 10 to 600 m
12. **Interface** (NMEA 0183 Ver 1.5, 2.0, IEC61162-1)
    Input: DBS, DBT, DPT, GGA, GLL, HDG, HDM, HDT, MDA, MTW, RMA, RMC, VDR, VHW, VTG, att (P sentence)
    Output: SSTLL
13. **Language**
    English, Spanich, Danish, Portuguese, French, Norwegian, Italian, Swedish, Thai, Chinese

## POWER SUPPLY

Transceiver Unit: 12-24 VDC; 7.0-3.5 A
Hull Unit: 12/24 VDC; 4.7/2.3 A, 16.7/8.2 A*
*While raising/lowering transducer

## ENVIRONMENT

Temperature
Display, Transceiver Unit: -15°C to +55°C
Hull Unit: 0°C to +35°C
Waterproofing
Display Unit: IEC IPX5
Hull Unit: IEC IPX2

## EQUIPMENT LIST

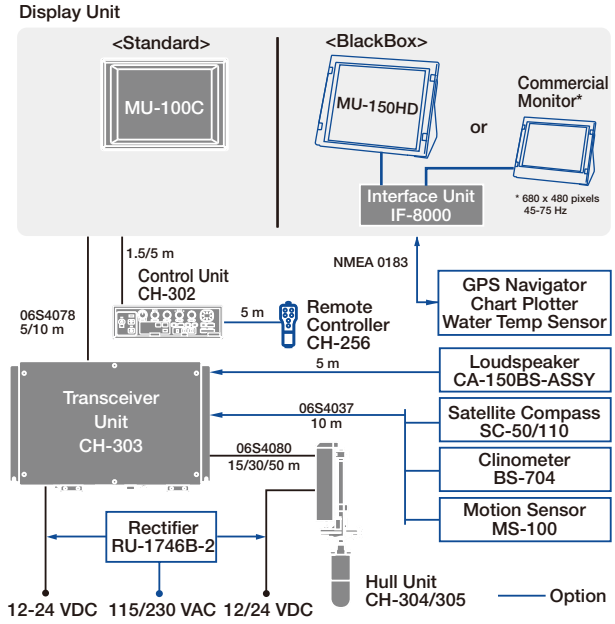
**Standard**

| | |
|---|---|
| 1. Display Unit MU-100C (Not included in BlackBox) | 1 unit |
| 2. Control Unit CH302 | 1 unit |
| 3. Transceiver Unit CH303 | 1 unit |
| 4. Hull Unit CH-304（travel 400mm） or CH-305（travel 250mm） | 1 unit |
| 5. Interface Unit IF-8000 （BlackBox only） | 1 unit |
| 6. Installation Materials and Spare Parts | 1 set |

**Option**

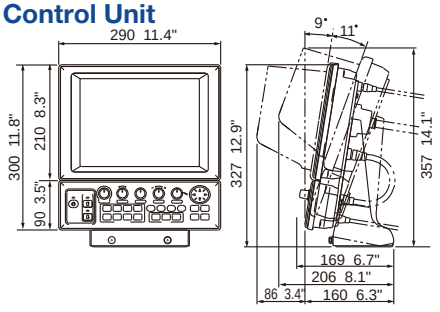
1. Remote Controller CH-256-E
2. Rectifier RU-1746B-2
3. Loudspeaker CA-150BS-ASSY
4. Transducer Tank
   Steel: 1, 1.8, 3.5 m; FRP: 1, 1.8 m; Aluminum: 1m
5. NMEA Cable
   6P-6P: 5 m (MJ-A6SPF0012-050C), 10 m (MJ-A6SPF0012-100C)
   6P-4P: 5 m (MJ-A6SPF0011-050C), 10 m (MJ-A6SPF0011-100C)
6. Monitor Sensor MS-100
7. Clinometer BS-704
8. Interface Unit IF-8000

## Interconnection Diagram

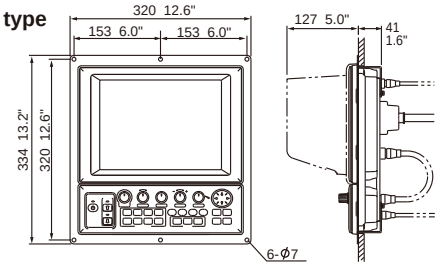



## Display and Control Unit

**MU-100C and CH-302**
5.7 kg, 12.6 lb

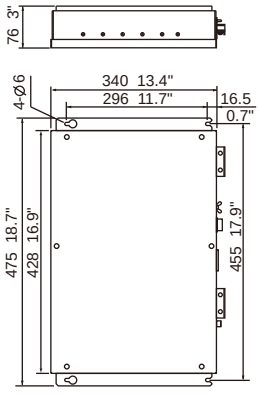



**Flush mount type**
4.2 kg, 9.3 lb




## Transceiver Unit

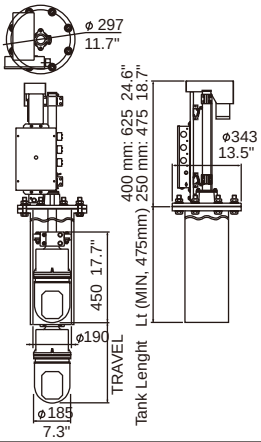
**CH-303** 3.5 kg, 7.7 lb




## Hull Unit

**CH-304** (Travel 400 mm)
43 kg, 94.8 lb

**CH-305** (Travel 250 mm)
42 kg, 92.6 lb

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