



FURUNO®

DOPLER SONAR

Model DS-30

*Accurate fore-aft and athwartship displays of ship's movement.
Ground or water tracking.
Laser Gyro option for ship's transverse speed at stern.*



The future today with FURUNO's electronics technology.

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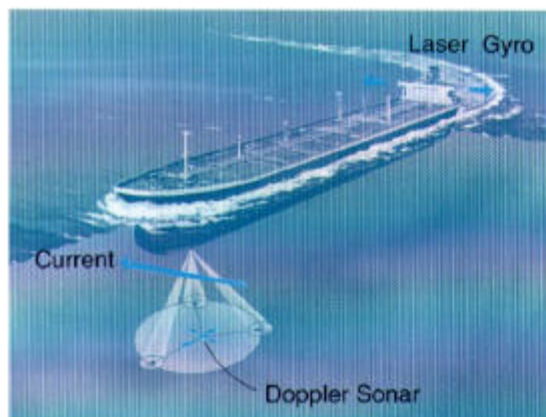
Catalogue No. M-1510f

TRADE MARK REGISTERED
MARCA REGISTRADA

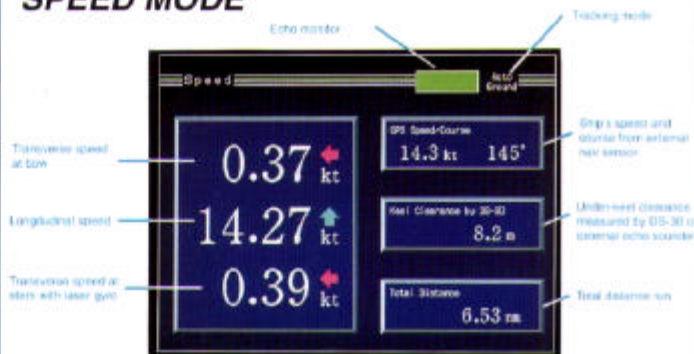
Accurate, real-time information on ship's motion and sea current for safe anchoring, docking and berthing operations

The DS-30 is a precision Doppler Sonar designed to assist berthing manoeuvres of large or heavy vessels such as ferries, container vessels, VLCC and other tankers, where large inertial forces leave no room for error.

It provides accurate displays of ship's speed over a wide range from dead slow to maximum. Speeds are detected relative to the ground or water both fore-aft and athwartship. This dead slow capability is vital for precise docking of mammoth tankers to oil loading/unloading facilities, as well as safe navigation in narrow channels or straits. Operation at high speed assists economical cruising in open seas. The DS-30 complies with IMO Resolution A.478 (XII) and IEC specifications.



SPEED MODE

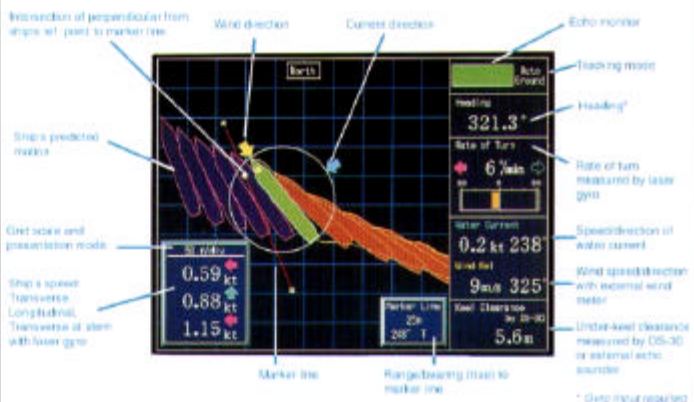


The 10" wide view-angle color LCD presents a variety of information in alphanumeric and graphics in three display modes.... Speed, Berthing and Nav Data. Operation is user-friendly by single-function touch keys and a trackball. The standard system includes a display unit, a separate control head and a transducer fixed hull unit.

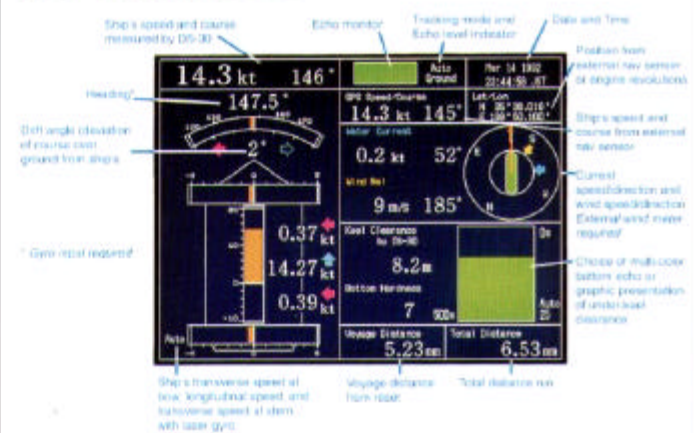
The compact, high-frequency transducer measures ship's longitudinal (fore-aft) speed and transverse (athwartship) speed, as well as water speed and direction under the hull. The transducer generates narrow beams which reduce the effects of cavitation. Emission of 3 beams greatly reduces the effects of ship's pitch/roll. High level of system accuracy is made possible even in shallow waters by the use of sophisticated new circuitry.

As an option, a state-of-the-art Laser Gyro is available. It provides accurate measurement of ship's transverse speed at stern without the need to install another transducer.

BERTHING MODE



NAV DATA MODE



- Complies with IMO Resolution and IEC specifications
- Provides accurate speed measurement in shallow water (1 cm/s, bottom clearance > 1 m)
- Bottom-tracking speed down to 200 m depth. Auto or manual changeover between ground-and water-tracking
- Large backlit color LCD display gives versatile presentation in graphic and alphanumeric form
- 3-beam transmission reduces effects of pitch and roll for better accuracy
- Two hull unit types to choose from:

gate valve or diver replaceable using watertight connector

- Displays ship's speed and course with ground tracking accuracy when interfaced with an external GPS receiver
- A variety of analogue speedometers and digital speed indicators optionally available for remote monitoring
- Analogue speed data and distance run signal fed to various onboard instruments for improving bridge automation
- Laser Gyro option for providing ship's transverse speed at stern and rate of turn indication

SPECIFICATIONS OF DS-30

MEASUREMENT RANGE

1. Ship's Speed

Bow

Fore-aft: -10.00 to +40.00 knots

Port-stbd: -9.99 to +9.99 knots

Stern (with optional laser gyro)

Port-stbd: -9.99 to +9.99 knots

Speed Measurement Depth

Ground-tracking: 1 to 200 m below hull bottom

Deep water operation possible if GPS interfaced

Water-tracking: 2 to 25 m below hull bottom

2. Current

Direction: 360 degrees relative (true with gyro signal input)

Speed: 0.0 to 9.9 knots

Current Measurement Depth

2 to 100 m below hull bottom

Clearance of more than 8 m required for Ground-tracking mode

3. Under-keel Clearance

1 to 200 m (Clearance)

ACCURACY

1. Ship's Speed

- Ground tracking
±0.4% or 0.01 m/s, whichever is greater
- Water tracking
±1.0% or 0.1 knots, whichever is greater
- Port-stbd at stern (ship's length: less than 400 m)
±1.0% or 0.04 m/s, whichever is greater

2. Depth (Clearance)

±1.0% or 0.1 m, whichever is greater
(At 1,500 m/s sound velocity and inclined beams converted to vertical, without consideration of temperature error)

3. Distance Signal

±1.0% of distance run/hour or 0.1 nm, whichever is greater

DISPLAYS

1. Main/Sub Display Unit

10-inch color LCD

2. Digital Indicator

Wide angle numeric LCD or LED

3. Analogue Indicator

Moving coil meter

TRANSDUCER CHARACTERISTICS

1. Frequency

440 kHz

2. Number of beams

3

INPUT/OUTPUT SIGNALS

1. Input/Output (2 ports provided)

IEC1162 input

\$- - RMA, \$- - RMC, \$- - HDG, \$- - DBK, \$- - ZDA, etc. - - : any talker

IEC1162 output

\$VDVDR, \$VDVTG, \$VDVHW, \$VDVCD, \$VDVBD, \$VDVDRU, \$VDVWT

2. Inputs

- 1 port for heading signal from gyro via gyro converter

- 2 ports for keying pulse from onboard echo sounding equipment for minimizing interference

- 1 port for wind speed/direction DC voltage signal

- 1 port for main engine revolutions DC voltage signal

3. Outputs

Ship's speed for

- digital indicator 3 ports

- distribution box 1 port

Distance signal for

- distribution box 1 port

- contact closure signal 8 ports

(200 pulses/nm, 30 V, 0.2 A max.)

- TTL signal 1 port

Alarm signal

- contact signal 1 port

- Keying pulse 1 port

ENVIRONMENTAL CONDITIONS (IEC 945 test method)

1. Temperature

-15°C to +55°C

2. Humidity

95% (at 40°C) max.

(Display unit DS-300 should be installed indoors)

POWER SUPPLY

115/230 VAC, 1ø, 50/60 Hz, 450 VA peak

EQUIPMENT LIST

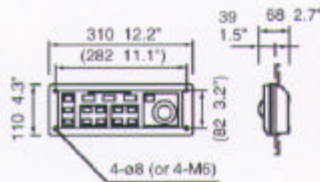
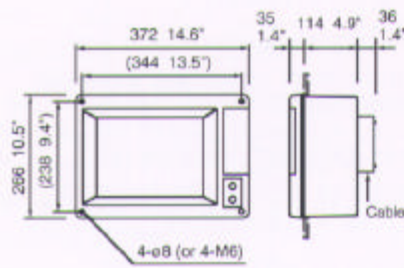
(Standard Supply)

1. Main Display with Control Head DS-300
2. Processor Unit DS-310
3. Transceiver Unit DS-320
4. Transducer/tank DS-330/331
5. Junction Box DS-360
6. Installation Materials and Standard Spare Parts

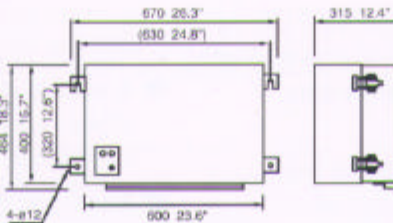
(Optional Supply)

1. Sub-display Unit with Control Head DS-300A
2. Laser Gyro DS-340
3. Gate Valve DS-335
4. Digital Indicator DS-350 (LCD, bulkhead or flush mount)
5. Digital Indicator DS-351 (LED, bulkhead or flush mount)
6. Distribution DS-370 (bulkhead or flush mount)
7. Distance Indicator DS-730 (bulkhead or flush mount)
8. Analogue Speedometer
(ø200 mm, specify bulkhead or flush mount)
9. Analogue Speedometer
(ø200 mm, counter-clockwise, specify bulkhead or flush mount)
10. Analogue Speedometer
(ø150 mm, specify bulkhead or flush mount)
11. Analogue Speedometer (ø130 mm, flush mount)
12. Analogue Speedometer (ø100 mm, flush mount)
13. Dimmer for Analogue Speedometers
14. Range Switch for Analogue Speedometers
15. Gyro Converter AD-100

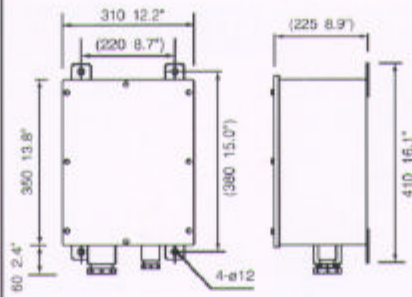
MAIN DISPLAY DS-300 & CONTROL HEAD DS-301



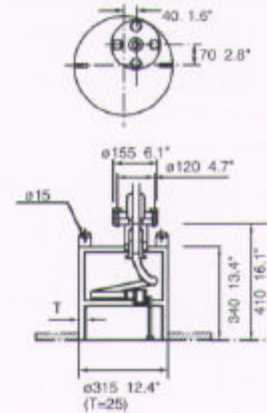
PROCESSOR UNIT DS-310



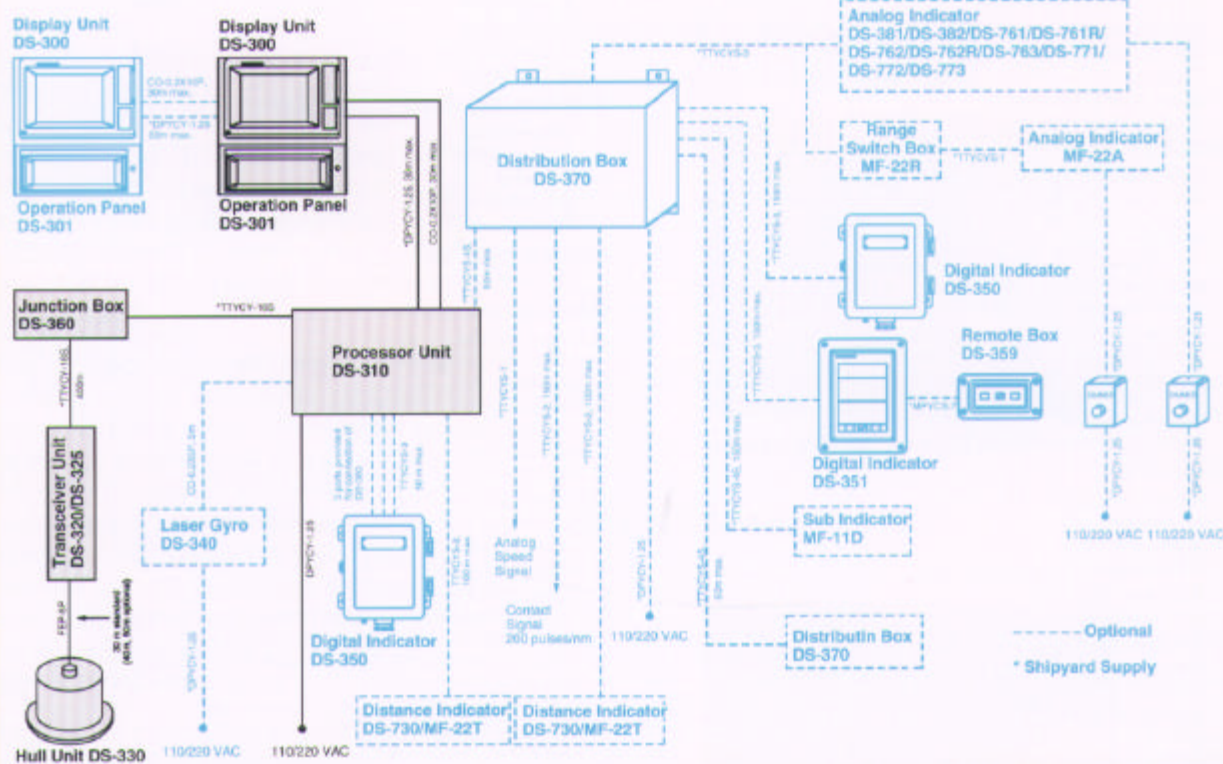
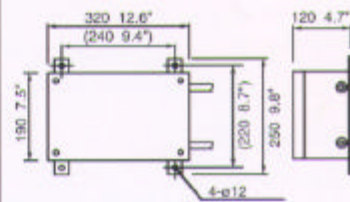
TRANSCIVER UNIT DS-320



TRANSDUCER/HULL UNIT DS-330



LASER GYRO DS-340



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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