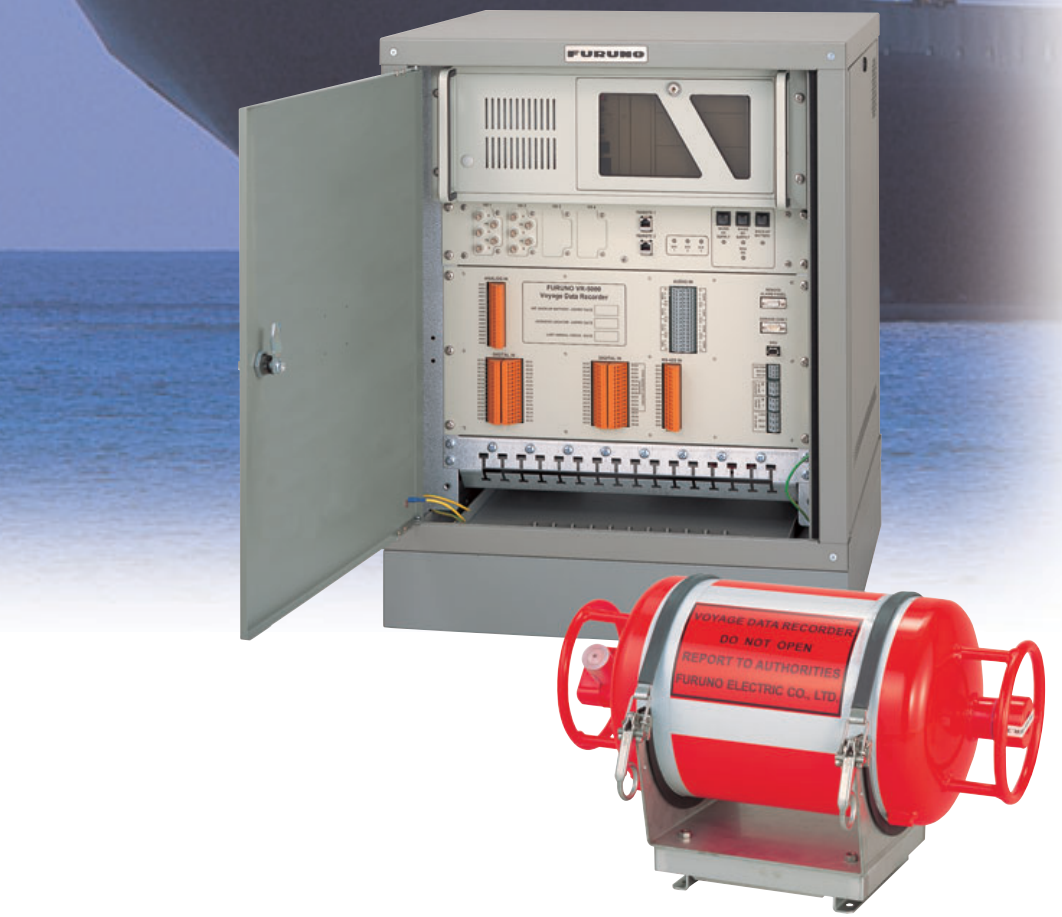
FURUNO DEEPSEA WORLD

FURUNO®

Voyage Data Recorder

Model VR-5000



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The future today with FURUNO's electronics technology.

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Records essential navigational status, Helps locate casualty causes and

- **Complies with IMO A.861(20), IEC 61996, IEC 60945**
- **Reliable and fast data exchange between data collecting and data recording units via a single IEEE1394 cable**
- **Easy setup by using PC with Web Browser**
- **12-hour recording of data with standard memory**
- **UTC time tagged for system synchronization and easy data retrieval**
- **Choice of flash memory capacity in the data recording unit**
- **Removable Hard Disk for backup of data stored in the Data Recording Unit**

The VR-5000 is a Voyage Data Recorder (VDR) designed to meet IMO A.861 (20) and IEC 61996 regulations. The purpose of the VDR is to help investigators locate causes of marine casualty. In addition, the VDR can also be used to promote education for safe navigation.

The VR-5000 consists of a Data Collecting Unit (DCU), a Data Recording Unit (DRU), a Remote Alarm Panel (RAP) and 6 pieces of Microphones. The DCU contains interface modules, a powerful computer and a status monitor. It collects data from sensors as required by the IMO and IEC standards. The DCU processes the incoming data and information in the order of occurrence, while old data is overwritten with new data for storage in the DRU. The recording time is a minimum 12 h with the standard flash memory. In case of an emergency power supply failure, the dedicated reserve batteries enable the VDR to record bridge audio for 2 h.

The DCU is fitted with a removable hard disk for backup of data recorded in the DRU. The hot swap system and an external docking station for the removable hard disk allow data to be retrieved without interrupting the mandatory data collection.

The Data Recording Unit (DRU) stores the data coming from the DCU in the flash memory. All essential navigation and status data including bridge conversation, VHF communications and radar images are recorded. The data can be retrieved by using the playback software for educational briefing as well as accident investigation purposes. The DRU components are embodied in a protective capsule. The capsule ensures survival and recovery of the recorded data after an incident. An acoustic pinger helps locate the capsule.

Implementation schedule (International voyages)

Type of ships	Schedule		
Passenger ships NB	1 July 2002		
Ro-ro passenger ships constructed before 1 July 2002		before first survey after 1 July 2002	
Passenger ships other than ro-ro constructed before 1 July 2002			1 January 2004
NB other than passenger ships, of 3,000 gross tonnage+	1 July 2002		

Data Recording Unit

command and control of ship.
promote education for safe navigation.

Remote Alarm Panel

The Remote Alarm Panel indicates status of system and gives audible and visual alarms. There are three buttons: SAVE, ACK (acknowledgement) and TEST. Simply pressing the SAVE button allows you to save back up data recorded on the removable hard disk.

Commercial PC
with playback software

Playback Data

Data Collecting Unit

Data

RADARS
FR-15X5 MK3
FR-21X5 Series
FAR-28x5 Series

GPS Navigator
GP-90

VHF R/T FM-8500

Microphone
6 pieces standard

Echo Sounder
FE-700

Doppler Speed Log
DS-50

Data to be recorded

- Date and time
- Position
- Speed
- Heading
- Bridge audio
- Communication audio (VHF)
- Radar images
- Echo Sounder
- Main alarms (IMO mandatory alarms)
- Rudder order and response
- Engine order and response
- Hull openings (doors) status
- Watertight and fire doors status
- Accelerations and hull stresses*
- Wind speed and direction*

*Shall be recorded if available

SPECIFICATIONS OF VR-5000

GENERAL

Rules and Regulations

IMO A.861(20), IEC 61996, IEC 60945, IEC 61162

Data Collecting Unit (DCU)

Structure of DCU

Deck mounted, containing a status display, interface, mainframe computer, dedicated reserve battery, power supply for all VDR operation

Interface

Fire wire (IEEE1394)	1 ch
Serial interface IEC 61162:	8 channels
Analog:	16 ports
Contact:	12 ports
Digital status (5-32 V):	52 ports
Bridge communication:	2 ch (max 6 ch)
VHF audio:	2 ports
Radar RGBHV (VGA to SXGA):	1 ch (max 4)
Ethernet:	1 ch 10/100 Base-T

Integrity monitoring

Alarms for mains supply failure, recording function, mic function

Data retrieval

Data stored in the CPU in the DCU may be copied for lesson or investigation with an optional software. Interruption of data storage to DRU is less than 8 minutes.

Data Recording Unit (DRU)

Memory

6 GB flash memory standard for IMO mandatory data for 12 h cycle, first-in first-out basis. Retains data for more than 10 years under no external power.

Larger memory for extended duty cycle (Optional)

ENVIRONMENTAL TESTS (for protective capsule)

Fire:	1100°C for 1 h, 260°C for 10 h (complies with ED 56A)
Shock:	50 G, duration 11 ms
Penetration:	250 kg with a pin ø100 mm dropped from 3 m (ED 56A)
Deep sea immersion:	6,000 m

Acoustic Pinger:	Pinger emitting 10 ms pulses at 37.5 kHz. Automatically switched on when submerged in water.
Data retrieval:	By playback equipment (not part of standard VR-5000)

POWER SUPPLY

115 - 230 VAC, 50 - 60 Hz

EQUIPMENT LIST

Standard

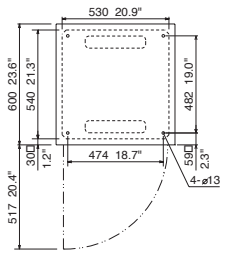
1.	Data Collecting Unit (incl. Removable Hard Disk)	1 unit
2.	Data Recording Unit with 30 m cable and cradle	1 unit
3.	Microphone	6 sets
4.	Remote Alarm Panel	1 unit
5.	Installation Materials and Spare Parts	

Optional

1. Playback Software for displaying recorded data
2. Docking station for Removable Hard Disk
3. VHF Interface IF-5200

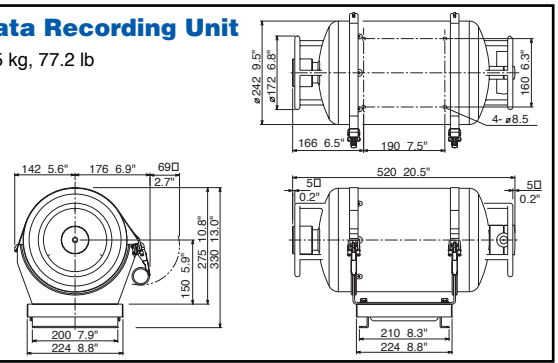
Data Collecting Unit

129 kg, 284 lb



Data Recording Unit

35 kg, 77.2 lb

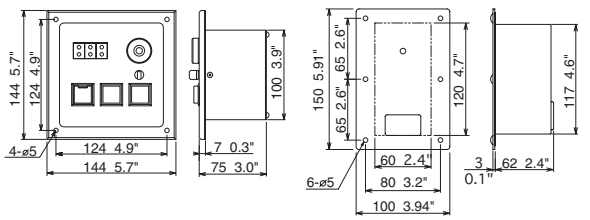


Remote Alarm Panel

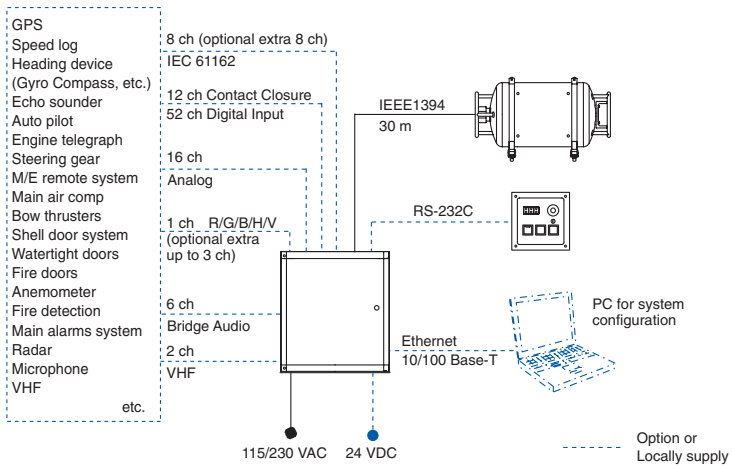
0.9 kg, 2.0 lb

Microphone

0.3 kg, 0.7 lb



Interconnection Diagram



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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