SPECIFICATIONS

Data Collecting Unit (DCU)	Recording Period		720 hours
	Interface	Ethernet (IEC 61162-450)	13 ch (1 ch for PC)
		Serial (IEC 61162-1/2) Input	2 ch (when interfaced with the MC-3000S, 4 additional channels can be added)
		Serial (IEC 61162-1) Input	6 ch (when interfaced with the MC-3000S, 4 additional channels can be added)
		Digital Input	Option (when interfaced with the MC-3020D, 8 channels can be added)
		Analog Input	Option (when interfaced with the MC-3010A, 3 channels can be added)
		Bridge audio	8 ch
		VHF audio	2 ch
		Remote Alarm Panel	1 ch
		24 VDC for Fixed DRU	1 ch
		24 VDC for Float-free DRU	1 ch
		24 VDC for Sensor Adapter	1 ch
		AMS (Serial IEC 61162-1 Input/Output)	1 ch
		AMS (Contact)	Input: 2 ch
			Output: 3 ch
		USB	1 ch (for USB flash memory to extract the data only)
Fixed Data Recording Unit (Fixed DRU)		Memory	32 GB
		Recording Period	48 hours
Float-free Data Recording Unit (Float-free DRU)		Memory	64 GB
		Recording Period	48 hours
Remote Alarm Panel		Display	4.3" color LCD
Video LAN Converter		Interface	DVI-D: 2 ch
			Ethernet: 1 ch
Sensor Adapter (Serial)		Interface	IEC 61162-1/2: 4 ch
			IEC 61162-1: 4 ch
			Ethernet: 1 ch
Sensor Adapter (Analog)		Interface	Analog Input: 3 ch
Sensor Adapter (Digital)		Interface	Digital Input: 8 ch
Intelligent Hub		Interface	Ethernet: 8 ch
Switching Hub		Interface	Ethernet: 8 ch

POWER SUPPLY

DCU	100-230 VAC: 1.6-0.7 A, 1 phase, 50/60 Hz
Video LAN Converter	24 VDC: 0.7 A

ENVIRONMENT

Ambient Temperature	DCU	-15˚C to +55˚C
	Fixed DRU	-25˚C to +55˚C
	Float-free DRU	-20˚C to +55˚C
	Microphone	-15˚C to +55˚C
	Waterproof Microphone	-25˚C to +55˚C
	Remote Alarm Panel	-15˚C to +55˚C
	Video LAN Converter	-15˚C to +55˚C
Relative Humidity		95 % at 40˚C
Degree of Protection	DCU	IP20
	Fixed DRU	IP56 equivalent
	Float-free DRU	IP67 equivalent
	Microphone	IP22
	Waterproof Microphone	IP56
	Remote Alarm Panel	IP22 (front panel), IP20 (back)
	Video LAN Converter	IP22 (bulkhead mount), IP20 (tabletop mount)
Vibration		IEC 60945 Ed. 4

EQUIPMENT LIST

Standard

1. Data Collecting Unit (DCU)	VR-7010	1 unit
2. Remote Alarm Panel	VR-7017	1 unit
3. Fixed Data Recording Unit (Fixed DRU)	VR-7020	1 unit
4. Float-free Data Recording Unit (Float-free DRU)	VR-7021F	1 unit
5. Junction Box for Float-free DRU	VR-7022F	1 unit
6. Video LAN Converter	IF-7100	0~2 units
7. Microphone	VR-7011	1~8 units
8. Waterproof Microphone	VR-7012W	
9. Sensor Adapter (Serial)	MC-3000S	0~2 units

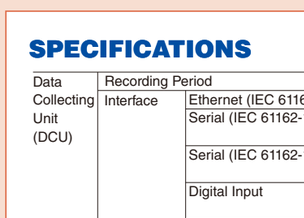
Option

1. Sensor Adapter (Serial*1/Analog/Digital)	MC-3000S/3010A/3020D
2. Video LAN Converter*2	IF-7100
3. Microphone	VR-7011
4. Waterproof Microphone	VR-7012W
5. Intelligent HUB	HUB-3000
6. Switching HUB	HUB-100
7. SSD for DCU	
8. DVI cable	

*1 Up to 8 units (including 1 unit of the standard configuration) can be connected
*2 Up to 2 units (including 1 unit of the standard configuration) can be connected

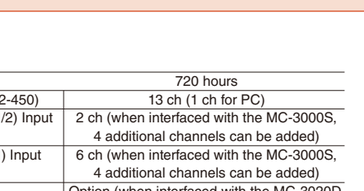
Data Collecting Unit

VR-7010
29 kg 63.9 lb



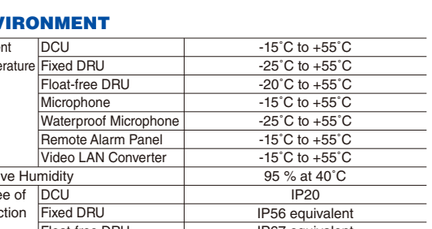
Video LAN Converter

IF-7100
3.2 kg 7.1 lb



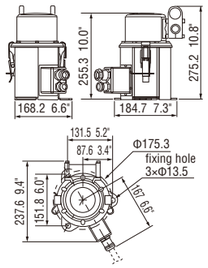
Microphone

VR-7011
0.3 kg 0.7 lb



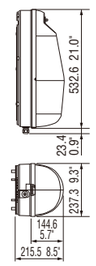
Fixed Data Recording Unit

VR-7020
7.3 kg 16.0 lb



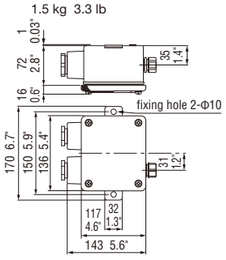
Float-free Data Recording Unit

VR-7021F
4.8 kg 10.6 lb



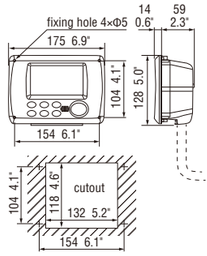
Junction Box for Float-free Data Recording Unit

VR-7022F
1.5 kg 3.3 lb



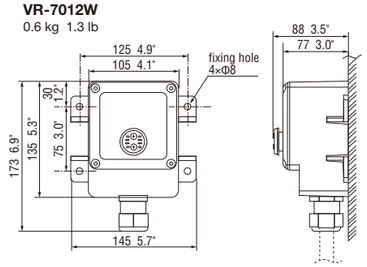
Remote Alarm Panel

VR-7017
0.64 kg 1.4 lb



Waterproof Microphone

VR-7012W
0.6 kg 1.3 lb



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FURUNO

VDR
Voyage Data Recorder

Model: VR-7000

www.furuno.com

Records all crucial data to identify the cause of maritime casualty as well as contribute to the future prevention of the catastrophe of any kind.

A Voyage Data Recorded (VDR) is similar to the black boxes carried on aircraft. The VR-7000 aids investigators in securing evidence by reviewing procedures and instructions in the moments before an accident. The VR-7000 collects data from all interfaced sensors on board the vessel, storing it in an external Data Recording Unit (DRU). The system comes with two tamperproof DRU units, one fixed and one float-free. They are designed to withstand the extreme impact, pressure, shock and heat, which may happen during an incident. When the DRU is retrieved, the stored data can be replayed by authorities to investigate the cause of the accident.

▶Complies with the new IMO performance standards for VDR

- Data storing for 48 hours both in fixed and float-free recording medium
- Data storing for 30 days/720 hours in SSD in the Data Collecting Unit
- No.1, 2 Radar and main ECDIS display images can be stored

* Up to 4 Radar and up to 3 ECDIS display images can be stored in rotation.
Also, the images of one other selected display can be stored with the optional SSD.
Radar and ECDIS images can be recorded at 15-second intervals.

▶Easy to integrate with FURUNO INS Network

FURUNO Radar FAR-3000/FCR-2xx9 series and ECDIS
FMD-3100/3200/3300 can be interfaced through Ethernet

* Software update for FAR-3000/FCR-2xx9 series and FMD-3200/3300 is necessary.
* Radar and ECDIS that utilizes LAN interface based on IEC 61162-450 can be connected through Ethernet.

▶Video LAN converter can convert the Radar signal (DVI or RGB) into Ethernet

* Necessary when FURUNO Radar FAR-2xx7/2xx5, ECDIS FEA-2107/2807 or the products of third-party manufacturers are connected to VR-7000.
* Data conversion from RGB to Ethernet will be made available after the product launch.

▶Optional sensor adapter gathers all the serial/analog/digital sensor data and collectively feeds it to DCU

Multiple sensor adapters can be interfaced depending upon the number of sensors to be interfaced.

▶"Live Player V5" for monitoring and playback of the collected data in the DCU on the PC

▶Extracted the data can be retrieved onto the USB flash memory

Revised performance standards of VDR MSC.333 (90)

To be applied to VDR installed on or after 1 July 2014.

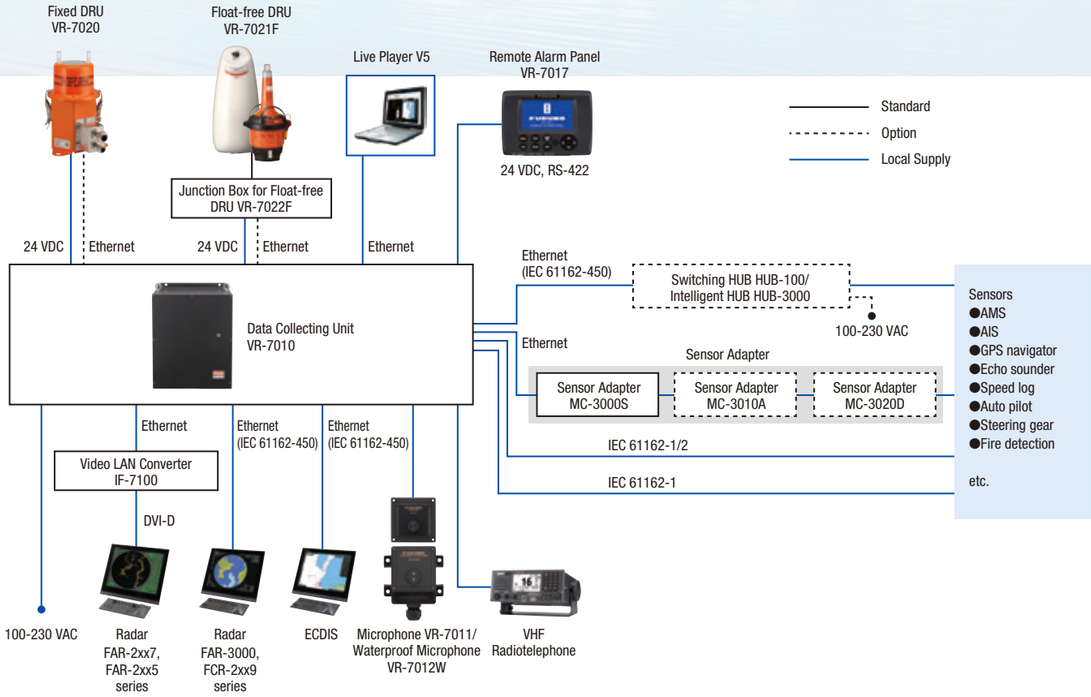
- Final recording medium and recording period

	Current	New
fixed recording medium	12 hours	48 hours
float-free recording medium	NA	48 hours
long-term recording medium	NA	30 days/720 hours

- At least 2 ch for bridge audio, at least 1 ch for outside on bridge wings
- Record Bridge audio and VHF com. relating to ship's operation on a separate channel from the bridge audio above
- Record No.1 and No.2 Radar (Current: No.1 Radar only)
- Record 1 main ECDIS (Current: no requirement)
- All AIS data needs to be recorded (Current S-VDR records it instead of Radar image)
- Record Bridge Alert Management System, if installed.
- Record thrusters, if fitted.
- Record electronic inclinometer, if fitted.
- Record information from electronic logbook, if fitted, etc.

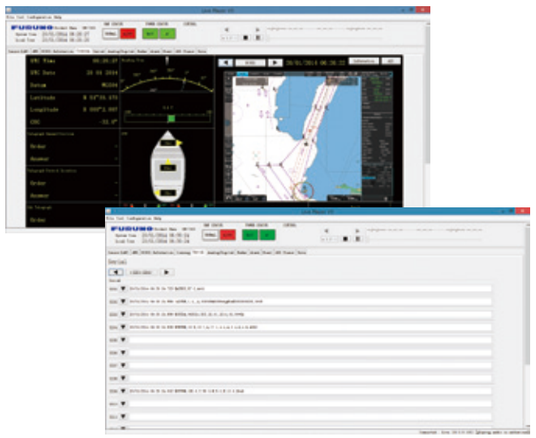
Easy to input the sensor data and review stored data

The onboard sensors can be integrated and interfaced to the VR-7000 thanks to Video LAN converter and sensor adapters. Also, the collected data can be replayed with the PC software or extracted onto a USB flash memories for later analysis.



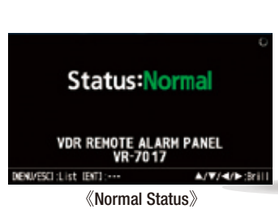
Live Player V5

This software extracts and displays the data accumulated from the VR-7000, in real time, on the networked PC screen. Also, the data can be replayed for a more thorough data analysis at a later date.



Remote Alarm Panel

At-a-glance recognition of VDR status with minimal operation.



《Normal Status》

《System health checking (serial/analog/digital signals)》

《Alert List》