Recording Current Meter 9 LW/IW

For use in the Sea and in freshwater
Standard Data Storage and Real Time output via cable
Optional RS232 Output
RCM 9 LW Light Weight: depth rating 300m
RCM 9 IW Intermediate Water: depth rating 2000m

Standard Parameters: • Current Speed and Direction • Temperature • Signal Strength   • Instrument Tilt
Optional Parameters: • Conductivity • Pressure/Instrument Depth • Turbidity • Oxygen
NB! New and Improved Conductivity Sensor and Pressure Sensor available!

Features: • No Offset • Low noise • Burst mode • Forward Ping algorithm improves accuracy • No moving parts
• Insensitive to fouling   • Easy installation and handling   • Easy functional verification using our external Test Unit

Deployment: • Fixed bottom frame mooring • In-line string mooring • Buoy deployment • Direct Reading using a small boat • Long term/short term deployment

Instruments with Doppler shift technology are superior for use in shallow water due to insensitivity to fouling

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Specifications

General Specifications, RCM 9 LW / RCM 9 IW

No of channels is selectable from 2 to 10 channels	
Ch. 1 Reference is a fixed reading to check the RCM's performance and to identify individual instruments	

Ch. 2 and 3 Current Speed and Direction

Speed Sensor Type:	Doppler Current Sensor 4220/3820
Range:	0 to 300cm/s
Resolution:	0.3cm/s
Absolute Accuracy:	± 0.15cm/s
Relative Accuracy:	± 1% of reading
Statistic precision:	0.45cm/s (standard deviation)
Direction Sensor:	Magnetic compass, Hall effect type
Resolution	0.35°
Accuracy	± 5° for 0 to 15° tilt
	± 7.5° for 15 to 35° tilt
Acoustic Frequency:	2MHz
Power:	25W in 1ms pulses
Beam Angle:	± 1° (main lobe)
Installation Distance: (to the DCS Head)	Minimum 0.5m from bottom Minimum 0.75m from surface

Ch. 4 Temperature

Sensor Type:	Thermistor (Fenwall GB32JM19)
Resolution:	0.1% of selected range
Accuracy:	± 0.05°C
Response Time (63%):	12 seconds
Selectable Ranges:	
Wide:	-0.6°C to 32.8°C
Low[1]:	-2.7° to 21.7°C
High[1]:	+9.8° to 36.6°C
Arctic[1]:	-3.0°C to 5.9°C

Ch. 9 and Ch. 10[2] Signal Strength and Instrument Tilt

External Triggering:	A positive 5V pulse to the electrical terminal, output pin, will trigger one measurement cycle
Recording Interval:	1, 2, 5, 10, 20, 30, 60, and 120min Continuous (4s x no of ch. +2s) and Remote start only
Recording System:	Data Storage Unit 2990 or 2990E Data Storage in EEPROM
Storage Capacity:	
DSU 2990:	9000 records (7 ch) (2 months at 10 minutes interval)
DSU 2990E:	36100 records (7 ch) (8 months at 10 minutes interval)
Battery:	
Alkaline 3614:	9V, 15Ah (nominal 12.5Ah 20W down to 6V at 4°C)
or Lithium 3677:	7.2V 30Ah
Average Current Consumption (mA):	0.50 + (50 divided by the recording interval in minutes)
Warranty: Two years against faulty materials and workmanship. For subsurface cables: contact factory	

1) RCM 9LW: Available on request/RCM 9 IW: Standard
2) We recommend you to use the lowest available channel number
3) In-line Mooring Frame 4044: breaking strength 800 kg

Individual specifications, RCM 9 LW
(DCS 4220 Head)

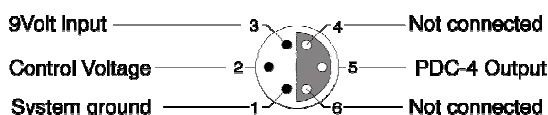|	
Depth Capacity:	300m
Dimensions:	H: 595mm OD: 128mm
Weight:	Net (in air)/(in water) Gross
With frame 4044	10.3 kg/4.1 kg 20.0 kg
With frame 3824A	14.8 kg/7.0 kg
Packing:	Woodybox: 900x350x330mm
External Materials:	POM, Titanium, Stainless acid proof Steel, Durotong DT322 polyurethane
Accessories Included:	Alkaline Battery 3614 Data Storage Unit DSU 2990 Data Reading Program 5059
Optional Accessories:	Recommended Spares In-line mooring frame 4044[3]/3824A DCS Test Unit 3731 PDC-4/RS-232 Converter 3818 Maintenance Kit 3813B Tools kit 3986 Bottom mooring frame 3438R

Individual specifications, RCM 9 IW
(DCS 3820 Head)

Depth Capacity:	2000m
Dimensions:	H: 595mm OD: 128mm
Weight (in air):	Net Gross
With frame	23.2 kg 32.7 kg
Packing:	Plywood case: 890x270x240mm
External Materials:	Stainless acid proof steel, Titanium, OSNISIL, Durotong DT322 polyurethane
Accessories Included:	Alkaline Battery 3614 Data Storage Unit DSU 2990 Mooring frame 3824A with Sensor Protecting Ring 966278 Data Reading Program 5059
Optional Accessories:	Recommended Spares Base Brackets 3627 (2) for Frame Additional Protecting Rods 3783 Vane Plate 3681 DCS Test Unit 3731 PDC-4/RS-232 Converter 3818 Maintenance Kit 3813 Tools kit 3986 Bottom mooring frame 3438R

PIN CONFIGURATION
Receptacle, exterior view; pin =● ; bushing =○

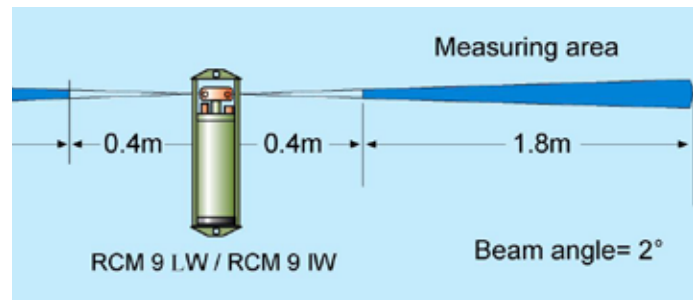|			
9Volt Input	3	4	Not connected
Control Voltage	2	5	PDC-4 Output
System ground	1	6	Not connected

Description

The RCM 9 LW (Light Weight) and RCM 9 IW (Intermediate Water) version utilize the well-known Doppler Shift principle as basis for its measurements.

Four transducers transmit short pulses (pings) of acoustic energy along narrow beams. The same transducers receive backscattered signals from scatteres that are present in the beams, which are used for calculation of the current speed and direction.

The scattering particles are normally plankton, gas bubbles, organisms and particles stemming from man-made activity.

Measuring area

0.4m   0.4m   1.8m

RCM 9 LW / RCM 9 IW

Beam angle= 2°

Fastening Knobs

RCM DCS 4220
RCM DCS 3820

Handle

Mooring Frame 3824A

Mooring Frame 4044

C-Clamp with screw

Protecting Ring

RCM 9 IW

Pressure Case

Zinc Anode

RCM 9 LW

RCM 9 LW/IW Standard Sensors

- Current Speed and Direction Sensor
- Water Temperature Sensor
- Signal Strength
- Instrument Tilt

Optional Sensors

- Conductivity Sensor (new, improved)
- Pressure Sensor (new, improved)
- Turbidity Sensor
- Oxygen Optode
- Temperature Sensor (high accuracy)

Refer Brochure B143 for sensor specifications

Note: If application requires breaking strength of more than 800 kg, mount the RCM9 LW in in-line mooring frame 3824A. Remember to change the handles.

Applications

The most common way to use the RCM 9 is in an in-line mooring configuration. As it operates under a tilt up to 35° from vertical, it has a variety of in-line mooring applications by use of surface buoy or sub surface buoy. The instrument is installed in a mooring frame that allows easy installation and removal of the instrument without disassembly of the mooring line.

Direct Reading is conveniently done due to its compact design, low drag force and easy handling. The instrument can be lowered into the sea from a small boat using a simple winch. In this application a small vane plate should be fastened to the instrument to avoid spin during operation. Data can be stored internally and read after retrieval or be read in real time on deck by use of the profiling cable.

RCM 9 can also be used in a bottom frame mooring (non-magnetic).
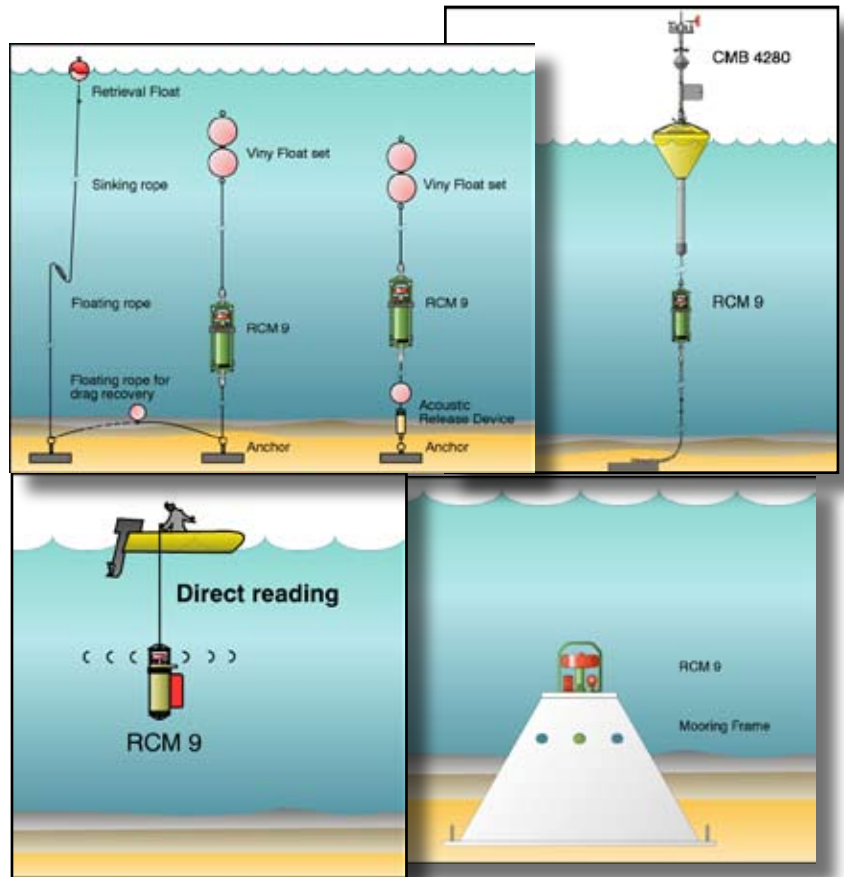
Data Reading Program

Data Reading Program 5059 is a software program that may be used to download DSU 2990 data to a Personal Computer (requires 5059 DSU-Reader). The program is based on the latest software technology and is designed for use with Windows 95, Windows 98 and Windows NT, 2000 and XP.

In addition to enable downloading and exporting of DSU data, it may also be used for data analysis. The 5059 includes extensive charting and analysis facilities, and the resulting analysis graphs may be exported to programs such as Microsoft Word and Excel.

Representative's Stamp

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