AANDERAA WLR7
WATER LEVEL RECORDER

Picture shows WLR7 fitted in mooring frame

GENERAL DESCRIPTION

Rugged, self-contained and high precision instruments to be placed on the seabed. They calculate water level by means of precise measurements of hydrostatic pressure.

The Water Level Recorder WLR 7 is specially designed to measure ocean water levels. Placed on the seabed, the instrument records pressure, temperature and conductivity at regular intervals. On the basis of these data, precise variations in water level can be calculated. The instrument consists of a high precision quartz pressure transducer, an electronic board, a Data Storage Unit, wiring and hardware, all fastened to the top end plate and housed in a cylindrical pressure case. A measurement cycle, triggered by a high precision clock, starts with a forty seconds integration time of the pressure measurements. This eliminates pressure fluctuations due to waves. When the integration is completed, the data words are recorded. The first data word is a fixed reference reading followed by the temperature of the ambient water. The pressure is recorded as two ten-bit words and finally a ten-bit word for the water conductivity (optional sensor).

The data is stored in the Data Storage Unit (DSU) 2990 or 2990E which also records the time of the first measurement and subsequently the time of every first measurement after midnight. The data is simultaneously transmitted acoustically into the sea by keying on and off a 16.384 kHz carrier. These acoustic signals can be monitored at the surface using a Hydrophone Receiver 3079. The acoustic transducer is standard on the WLR 7 model but optional on the WLR 8 model. On the high seas, the influence of barometric pressure on water level measurements is negligible. A depression or elevation of the sea surface relative to the pressure will compensate for changes in the measurement due to air pressure.

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Accredited to BS EN ISO 9001:2000

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TECHNICAL SPECIFICATIONS

Measuring system:
A digital system based on counting pulses from a sensor with frequency output. Five channels are measured in sequence and a ten-bit binary word is produced for each channel. The channels are:

Ch.1. Reference. A fixed reading obtained by hard wiring a shift register inside the electronic board to check the WLR's performance and to identify individual instruments

Ch.2. Temperature.

Sensor type:	The sensor is based on a thermistor controlled oscillator with frequency 2.048–4.096 kHz
Thermistor:	Fenwall GB32JM19
Range:	–3 to +35°C
Resolution:	0.04°C
Accuracy:	±0.1°C
Response time:	30 seconds

Ch.3. and 4. Pressure (10 + 10 bits)

Sensor type:	The sensor is based on a pressure controlled oscillator with frequency 36–40 kHz
Ranges WLR 7:	0 – 700 kPa (60 m) (standard) 0 – 3500 kPa (340 m) (standard)
Ranges WLR 8:	0 – 14MPa (1370 m) (standard) Other ranges on request
Resolution:	0.001% of range
Repeatability:	±0.01% of full scale
Calibration Accuracy:	0.02% of full scale
Integration Time:	40 seconds

The pressure inlet port is 341 mm above the bottom of the instrument for the WLR 7 and 360 mm for the WLR 8. The instrument is calibrated in upright position.

Ch.5. Conductivity (optional)

Sensor Type:	Conductivity Cell 3094 for WLR 7 Conductivity Cell 4094 for WLR 8
Ranges:	0 – 77 mmho/cm (standard) 0 – 42 mmho/cm (on request)
Resolution:	0.1% of range
Accuracy:	±0.25 mmho/cm

Sampling Intervals

Selectable:	MS(ManualStart),1, 2, 5, 10, 15,20, 30, 60 or 120 min.
Accuracy:	Better than ±2 s/day within 0 to 20°C
External Triggering:	A 6 volt pulse to the signal output terminal activates the instrument

Recording System Aanderaa standard type Data Storage Unit 2990 or 2990E

Data Format:	PDC-4.(Pulse Duration Code 4 s.)
Storage Capacity:	
DSU 2990:	65500 10 bit words
DSU 2990E:	262000 10 bit words

Telemetry Acoustic Transducer

Acoustically:	Acoustic carrier keyed on and off
Frequency:	16.384 KHz ±5 Hz
Detection Range:	Up to 800m with Hydrophone 3079

Note!
On the WLR 8 the Acoustic Transducer is optional.

Battery
High cap.Bat.3382: 7.2V, 14 Ah, sufficient for 343 days recording of all five channels at 10 minute intervals

Materials and Finish Nickel plated bronze and stainless acid proof steel. Durable epoxy coating

Weight (kg)	WLR 7		WLR 8	
	Net	Gross	Net	Gross
in air:	13.7	19.1	15.2	20.5
in water:	9.2		10.9	

Dimensions (mm)

WLR 7:	432xOD128
WLR 8:	450xOD128

Accessories (included)

WLR 7:	Mooring Frame 3130
WLR 8:	Mooring Frame 3371 Weight: In air 3.2 kg, in water 2.7kg
	Pyramidical Mooring Frame 3438W for WRL 7 (optional)

Packing
Plywood case: 190 x 250 x 600mm

Spares A set of recommended spares and accessories is included with the instrument

Warranty Two years against faulty materials and workmanship

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