

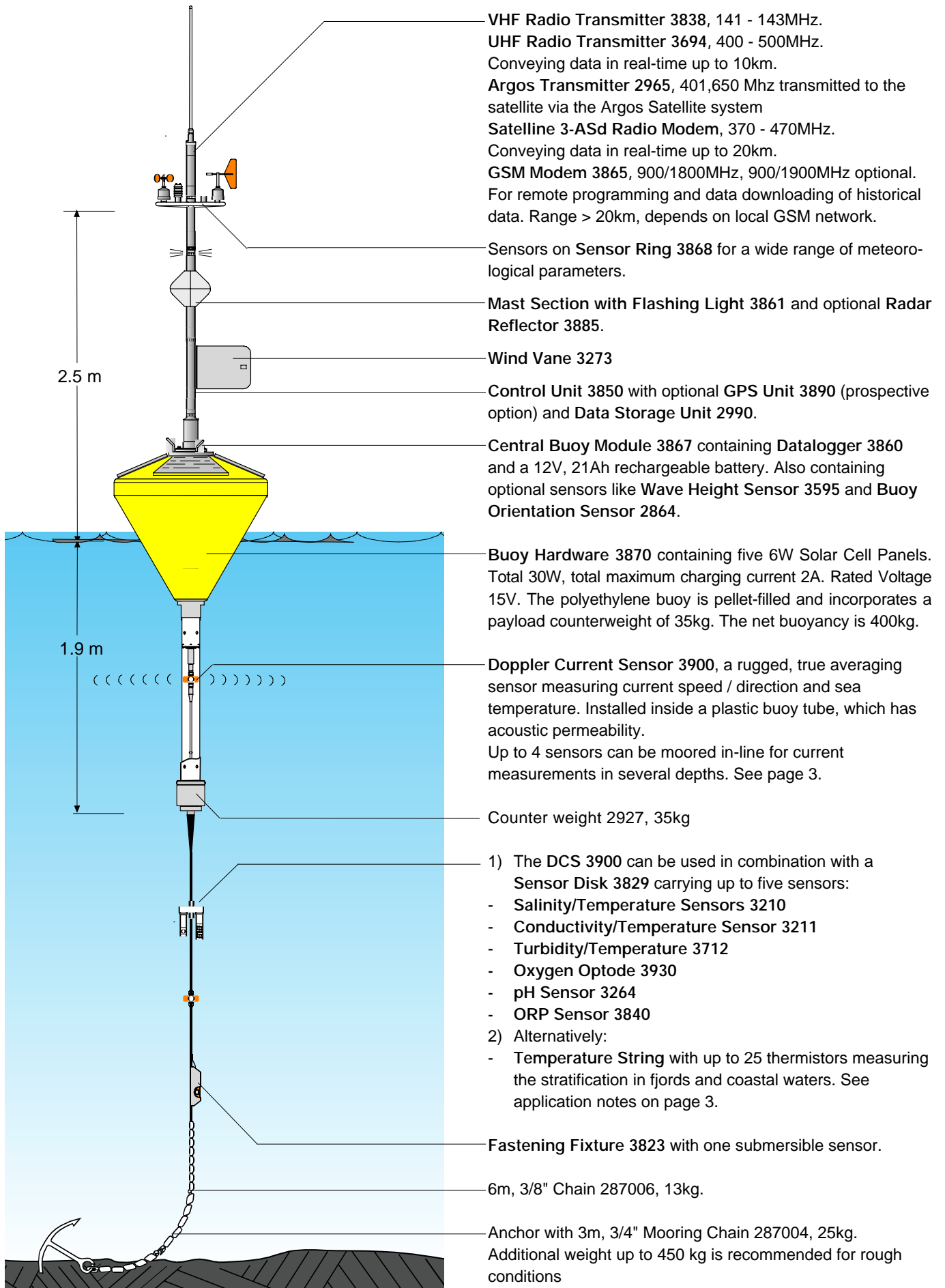
COASTAL MONITORING BUOY CMB 4280

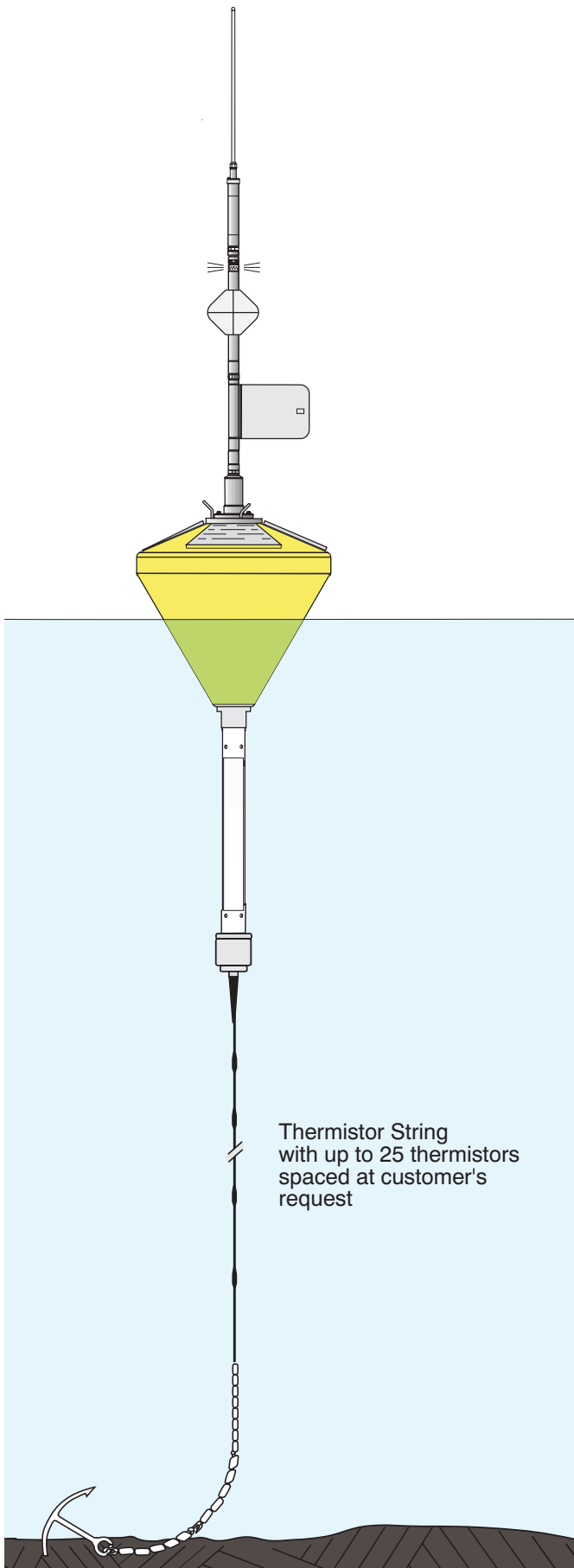
A moored data buoy for measuring

- meteorological conditions*
 - wave height and wave period*
 - current speed, current direction*
 - temperature, salinity, turbidity, pH*
 - oxygen, and conductivity of water*
- in a specific coastal area and to convey this information to the user in real-time.*

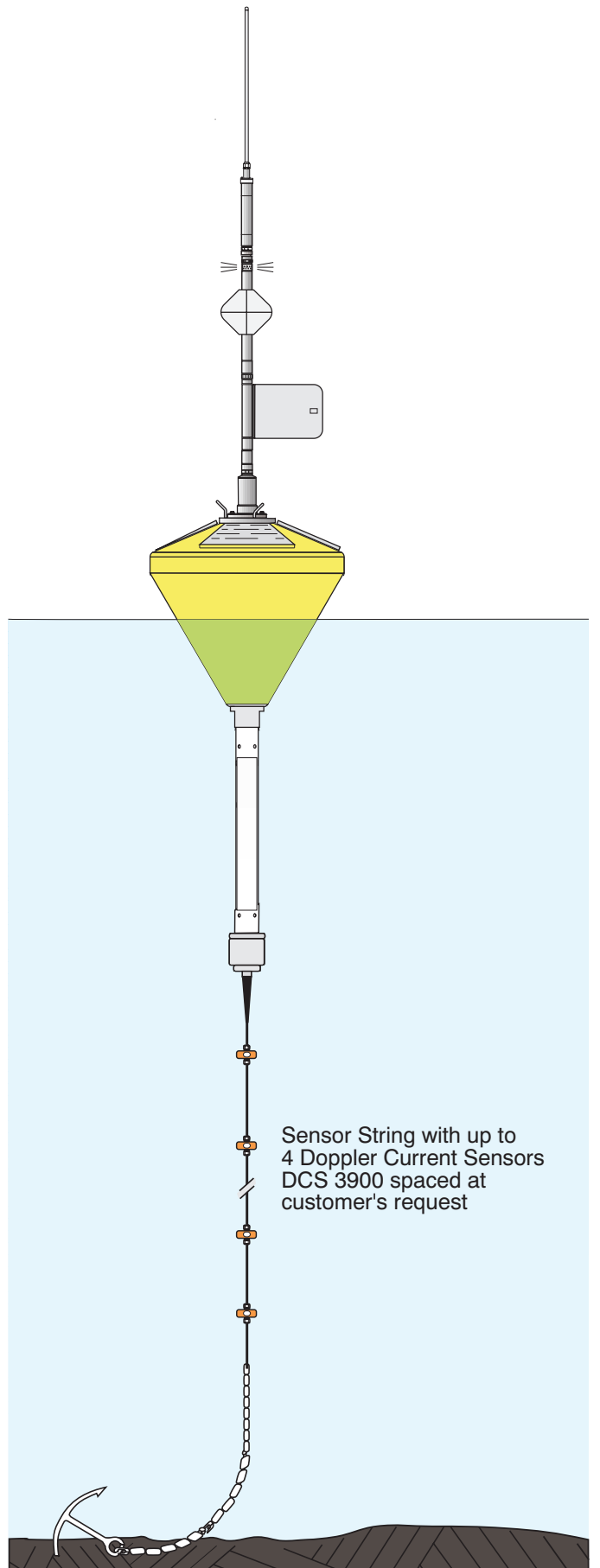
Features:

- Compact, lightweight and easy to install.*
- Solar cell powered.*
- High reliability and low cost.*
- Standard or customer specified sensor configuration.*
- up to 30 parameters can be measured*
- Several ways to transmit data via VHF, UHF up to 20km range, GSM communication or Satellite Transmitter.*





Telemetry temperature Profile application



Doppler Current Sensor application

General Description

The Coastal Monitoring Buoy CMB 4280 is a rugged, lightweight and compact data buoy intended for use along the coast, in ports and harbors and near off-shore platforms.

It measures wave height and period, sea current speed and direction, sea temperature as well as the most important meteorological parameters and transmits data ashore in real-time if a VHF or UHF radio or radio modem is connected.

If a GSM modem 3865 is connected the buoy can be dialed up and data can be downloaded.

The buoy is of modular design which enables a variety of applications, two examples are shown on page 3.

Data display on a PC using 3710 program

Another alternative is to connect the radio receiver to a PC via Deck Unit 3127. The PC runs Display Program 3710 that is a real time display program with data storage capability. When using radio transmission, the program can handle data from up to 20 buoys providing data multiplexing is employed or the receiving station is equipped with several radio receivers, Deck units and Com-ports. When using GSM communication, data can be downloaded via modem. The user can set up the visual display as wanted.

Five different basic windows are available:

- a bar graph to show for example water level
- a directional compass for wind or current
- a diagram display to show historical development of for example air temperature
- a text display to show static text
- a number display to show exact values

A complete display can then be built up by using a combination of these five windows. The on-line help will lead you, step by step, through a build-up of the display.

The program works almost like a drawing program with the ability to alter the drawing as the physical parameters change. Three display examples are available which can be altered by the user at will.

The program converts raw data in RS-232C format to data in engineering units. The program outputs can be saved in a log-file for each station either as raw Data or as Engineering Data.

It can also accommodate a wide selection of sensors depending on customers requirement.

CMB 4280 consists of a pellet-filled polyethylene buoy with a payload carrying the entire measuring system as well as all the sensors and the Radio Transmitter.

The buoy, which is moored in a fixed position, operates on solar cell panels and is controlled by the Datalogger 3860.

An internal clock starts the measuring cycle at the selected interval, reads the sensors and transmits the readings in real-time ashore or to a platform by radio.

Log File System

It is also possible to obtain an extra software (Autolog Program 3875 for the 3710 Display Program) which among others can save data for each day in separate files.

If the buoy is equipped with GSM modem the M version of program 3710 is required. The program has a dial-up function which automatically can dial up the buoy and download the last records

The C version of Program 3710 has a custom-made display which can be delivered at an extra cost.

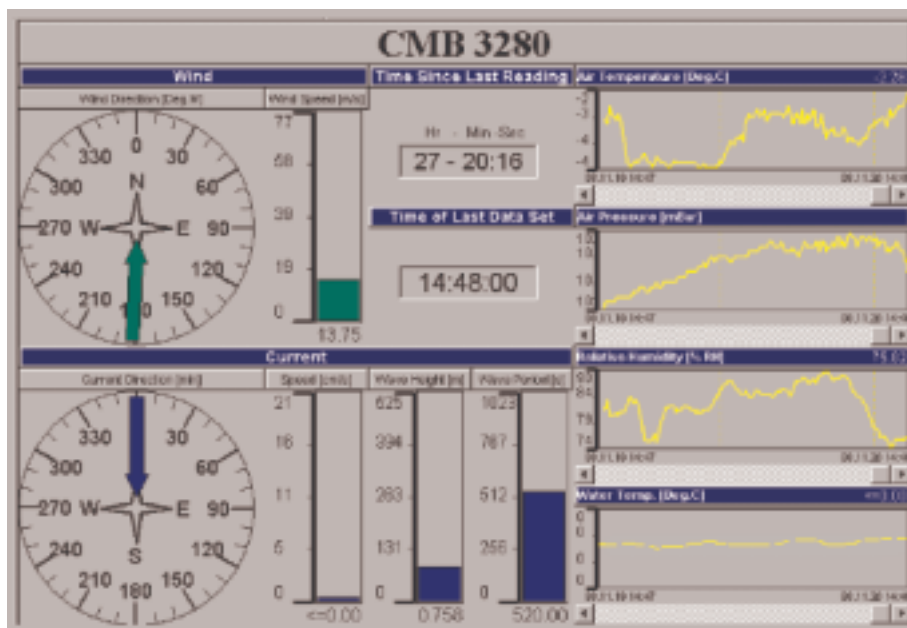
Program 3710 is intended for use in monitoring harbors, airports, power plants, reservoirs, etc., and facilities the need to monitor sea /coast or other outdoor environments. The program requires a computer with Windows ©95 (Build 1111 or later versions), Windows ©98 or Windows NT™, version 4, with at least one free serial communications port available, 8 Mbytes of memory, 4 Mbytes of free hard-drive space and a mouse connected.

The program is delivered on 3.5" diskettes or a compact disk with a quick start-up guide, on-line help, a license code and a license agreement sheet. The program is also available on the Internet. A 30-day test program can be downloaded from our Internet site at:

<http://www.aanderaa.com/3710DispProg.htm>

Note! To be able to publish the display on several terminals a client version of the program can also be delivered.

An example of a display set-up is shown below.





2740



3590



3455



3445



2810



3544



3595



2864



3900

ON THE SENSOR RING:

Wind Speed Sensor 2740

gives average wind speed and gust in the sampling interval. Output: SR10.

Range: up to 79m/s. Accuracy: $\pm 2\%$ of reading.

Wind Direction Sensor 3590, (Averaging)

consists of a light wind vane pivoted on top of a housing. Damping fluid in the vane opposes rapid changes but permits line-up in light wind. Output: SR10.

Threshold speed less than 0.3m/s. Accuracy: $\pm 5^\circ$.

Air Temperature Sensor 3455

Measures air temperature by means of a 2000 Ω platinum resistor protected from radiation by Radiation Screen 2922. Output: VR22.

Range: -44 to +49°C. Accuracy: $\pm 0.1\%$ of range.

Relative Humidity Sensor 3445

Measures percent relative humidity, and is based upon the influence of humidity on a capacitive polymer.

Output: SR10. Accuracy: $\pm 2\%$ RH.

Air Pressure Sensor 2810

Measures air pressure using a miniature monolithic silicon pressure transducer. Output: VR22.

Range: 920 – 1080 hPa. Accuracy: ± 0.2 hPa.

MIRA Visibility Sensor 3544

A compact, low power and rugged sensor measuring fog, haze, mist dust and smoke. It will also detect reduced visibility caused by snow. The sensor is based on forward scattering of infra-red light.

Range: 20 – 3000m.

IN THE CENTRAL BUOY MODULE:

Datalogger 3860

- 1) Number of channels: 32 including two fixed channels, Reference and Battery Voltage.
- 2) Sampling intervals: 0,5-1-2-5-10-20-30-60-120-180 min, depending on the number of channels used. Each channel reading takes four seconds.

Wave Height Sensor 3595

The buoy's movements in the waves are sensed by an accelerometer in the sensor. The outputs from the sensor are:

- 1) Significant Wave Height, 1/3H. Range: 0–10 meters, Accuracy: $\pm 10\%$ (for wave periods between 3 to 8s).
- 2) Wave Period, range: 1-30s.

Valid for measuring intervals from 10 to 60 minutes.

Buoy Orientation Sensor 2864 (Wind Direction)

Works in combination with the Vane plate on the Control Unit. The sensor measures the magnetic heading reference for the buoy and thereby the wind direction.

Accuracy better than $\pm 5^\circ$ Magn.H.

AND UNDERNEATH THE BUOY:

Doppler Current Sensor 3900

The DCS 3900 is a unique, new, fully solid-state sensor, which uses the well-known Doppler principle for measuring the sea current. It is a true vector averaging sensor also measuring the sea temperature.

The ranges are:

Current Speed: 0-300cm/s,

Accuracy: 0,55cm/s (Standard deviation)

Current Direction: 0-360°Magn.H. Accuracy: $\pm 5^\circ$

Water Temperature: -10 to + 43°C. Accuracy: $\pm 0.1^\circ$ C

Up to four DCS 3900 can be moored in-line at several depths.

For other available optional sensors, see next page



Salinity/Temperature Sensor 3210

Salinity range: 0–40 ppt, accuracy: ±0.2 ppt
 Temperature range: –8 to +41°C, accuracy: ±0.1°C

Salinity/Temperature/Depth Sensor 3230

Salinity range: 0–40 ppt, accuracy: ±0.2 ppt
 Temperature range: –8 to +41°C, accuracy: ±0.1°C
 Pressure,(Depth): 0-1100 kPa(abs) (Other ranges on request)
 Accuracy: 0.2% of range

Conductivity/Temperature Sensor 3211

Conductivity range: 0–75 mS/cm, accuracy: ±0.3mS/cm
 Temperature range: –8 to +41°C, accuracy: ±0.1°C

Conductivity/Temperature/Depth Sensor 3231

Conductivity range: 0–75 mS/cm, accuracy: ±0.3mS/cm
 Temperature range: –8 to +41°C, accuracy: ±0.1°C
 Pressure,(Depth): 0-11 bar A (Other ranges on request)
 accuracy: 0.2% of range

Temperature String

Up to 25 embedded Fenwal thermistors spaced at customers' request. Maximum length 400m
 Range: 0 to +30°C, accuracy: ±0.1°C

Oxygen Optode 3930

uses the latest technology for measuring dissolved oxygen in fresh and salt water The principle of measurement is based on the effect of dynamic luminescence quenching (lifetime based) by molecular oxygen

Output Settings

	Ab.Ox.Con.	Air Sat.
Measuring Range:	0-500 µM	0 - 120%
Accuracy:	< 5 µM	< 2%
Depth rating:	0 - 6000m (19,690ft)	

Turbidity Sensor 3712

measures scattered light from particles in the water. An infrared light emitting diode is placed at an angle of 60 degrees against a photodiode. The photodiode is furnished with a daylight filter.
 Range: 0.1-100NTU, accuracy: 2% of full scale

pH Sensor 3264

measures the pH value of water in lakes and fjords
 Range: 2 to 11 pH, Accuracy: ± 0.1 pH
 Depth Capacity: 160 meters

ORP Sensor 3840 (Oxidase Reduction Potential)

Sensor for oxidation reduction measurements for various applications.

- Oxidation of Cyanide Wastes
- Bleaching Pulp
- Reduction of Chromate Waste
- Waste Water
- Bleach Production

Range: ±1000 mV

Accuracy: ±4 mV

Depth rating: 160 meters



Latest version is on the Internet

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