

### Directional Wave Sensor

The buoy is fitted with a Motion Reference Unit (MRU) for wave direction measurements, based on the slope measuring principle. This sensor offers the unique advantage of being insensitive to high or low temperatures as well as spinning and rough handling. The MRU incorporates an accurate 3-axis fluxgate compass for buoy orientation measurements. This is important for high-quality wind and wave directional data.

### Power Supply

Maintenance-free solar panels and sealed lead-acid backup batteries enable long-term unattended operations. For low sun radiation conditions, lithium batteries are used.

### Mooring

The wavescan buoy can be equipped with two kinds of mooring. A single-point, taut mooring is used for normal conditions and heavily trafficked areas, while an S-mooring is used for deep-water and hostile environments.

### Applications

- Water quality control studies
- Scientific studies
- Meteorological and climatological studies
- Wave energy studies
- Harbour and coastal monitoring

The existence of such equipment is vital for PPKAS to ensure latest development in maritime quality monitoring technology for teaching and learning purposes at UniMAP.

# Wavescan Buoy & Applications

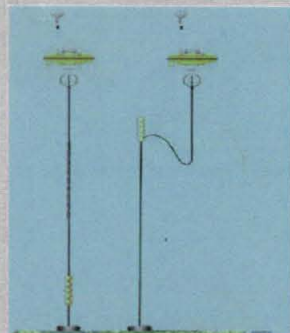
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PPKAS has obtained a discarded ocean wave and water quality monitoring buoy from the Department of Environment Malaysia (DOE) on the February 10th, 2007. This buoy was previously deployed at the Straits of Johor before defunct.

This metocean data collection buoy provides wave height and direction, sea surface temperature, salinity, temperature profiles, surface current speed and meteorological parameters. It is an ideal buoy for deep-water measurements in remote locations under strong current conditions. Additionally, the buoy can be equipped with other sensors such as oxygen, hydrocarbon, gamma radiation measurement and an optical sensor for algae detection to meet specific requirements. The buoy hull design is based on the dynamic response and stability requirements from comprehensive wave tank testing.



A few others of this equipment are also deployed as tsunami buoys at numerous locations, which act as an important component of the Malaysian Tsunami Early Warning System. Data from the buoys are transmitted on real time to the Earthquake and Tsunami Early Warning Centre located at the Malaysian Meteorological Department Headquarters in Petaling Jaya via satellite link.



Taut (Left) and S-shaped (right) single-point mooring

