**SAL R1E**  
**Speed Log and Echo Sounder Combination**

A highly cost efficient solution that fulfills the SOLAS requirements for both speed log and echo sounder for vessels below 50,000 GT. The SAL R1E Package combines one small SAL R1a speed through water transducer with one echo sounder transducer into the same sea valve, and thus requires only ONE hull penetration.

**Advantages**
- Easy to fit in narrow spaces
- Easy maintenance and service with sea valve
- Only One hull penetration
- Only One package to be purchased

**System Description**
The basic version of the SAL R1E consists of one SAL R1a Water Track Speed Log and one E1 Navigational Sounder (50 kHz), a combined sea valve and two separate displays. The speed log transducer and the echo sounder transducer share the same sea valve. Installation with sea valve allows easy access for maintenance, and if necessary, exchange of transducer from the inside without dry-docking. The system can optionally be upgraded to a dual frequency E2 Navigational Sounder (50 kHz in fore R1E combined sea valve and 200 kHz in aft tank).

**SAL R1a Water Track Speed Log**
SAL R1a is the fourth generation acoustic correlation SAL speed log for measuring relative speed – speed through the water. The log is designed to meet requirements as specified by authorities and ship owners. Its performance exceeds the various IMO specifications and has proven reliability in many thousand installations worldwide.

**E1 Navigational Sounder**
Compact high-end, one unit wheel mark approved model, compliant with IMO resolution MSC.74(69).

**The Unique Combined Sea Valve**
The two transducers are fitted into the well proven SAL 860/T sea valve with a unique approved dual pipe top cover solution. The design is optimized for durability and serviceability. Both transducers can be handled separately at installation and maintenance.
SAL R1E Technical Specifications

SAL R1a – System Performance Data
- Working principle: Acoustic correlation
- Measuring distance: 130 mm from surface of transducer
- Frequencies: 3.8 and 4.2 MHz
- Speed range: ±50 knots sensed speed
- Speed accuracy: <1% or 0.1 knot, whichever is greater
- Distance accuracy: <1%
- Minimum water depth: 3 meters below the transducer

SAL R1a – Electronics Unit
- Serial speed output: One, IEC 61162-1 3rd edition (NMEA 0183)
- Max load: 100 ohm (10 SD-indicators)
- Analogue speed output: One, 0.1 VDC/knot (max load 5 mA)
- Pulse speed output: Two closing contact relays, potential free, 200 p/NM (max load 30V/30mA or 15V/100mA)
- Status output: One power fail switching contact relay
- Power supply for SD-indicators: Max 3 SD-indicators
- Power requirement: 230/115 VAC 50-60 Hz.
- Environmental requirements: IEC 60945, 4th edition 2002-8
- Dimensions: 360 (+30) x 360 x 170 mm
- Weight: 10.5 kg
- Colour: RAL7035

SAL R1a – Main Indicator
- SD4-3: Digital speed display
- Dimensions: 144 x 144 x 170 mm
- Weight: 0.6 kg

SAL R1a – Transducer TRU R1
- Dimensions: 32 mm (Ø) x 160 mm (length)
- Weight: 3.7 kg (30 m cable)
- 3.9 kg (40 m cable)

Combined sea valve MSSBSV (standard, single bottom)
- Dimensions (mm): Flange Ø 250
- Height: 485
- Weight: Sea Valve 38 kg, Upper parts 25 kg, Flange etc 15 kg

Combined Sea valve - MSDBSV (optional, double bottom)
- Dimensions and weight depend on tank height.

E1 Navigational Sounder – Features
- IMO resolution-compliant single-frequency navigation sounder housed in electrostatically shielded compact ABS plastic cabinet.
- Certified to comply with EU Marine Equipment Directive (MED) and other relevant international standards for wheel mark certification.
- 7-analog color echogram across 5.7-inch LED-backlit daylight-readable LCD screen.
- Fully automatic operation, tracking bottom contour with appropriate range, receiver gain and TVG settings. Manual override possible.
- Stores up to 12 hours of sounding history for off-line applications, together with date, time stamping and with position coordinates (NMEA-0183 format GPS data source required).
- Externally acknowledgeable navigational and failure alarms by software commands.
- Password protection to prevent unauthorized changes to important operational settings.
- Optional AC power adapter for operation from 110/220 VAC (50/60 Hz single phase) power source.

E1 Navigational Sounder – Specifications
- Transducer Frequencies:
  - Display: 5kW in SAL R1E package
  - Depth Ranges: 5 to 1000m in 8-range steps, automatic or manual
  - Transmitter: Approx. 600W RMS with automatic or manual power reduction
  - Data Storage: Up to 12 hours
  - External Interfaces: 2XRS-422 ports. 8-pin IO data port
  - Power Requirements: Approx. 12 W
  - Weight: 24W

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