

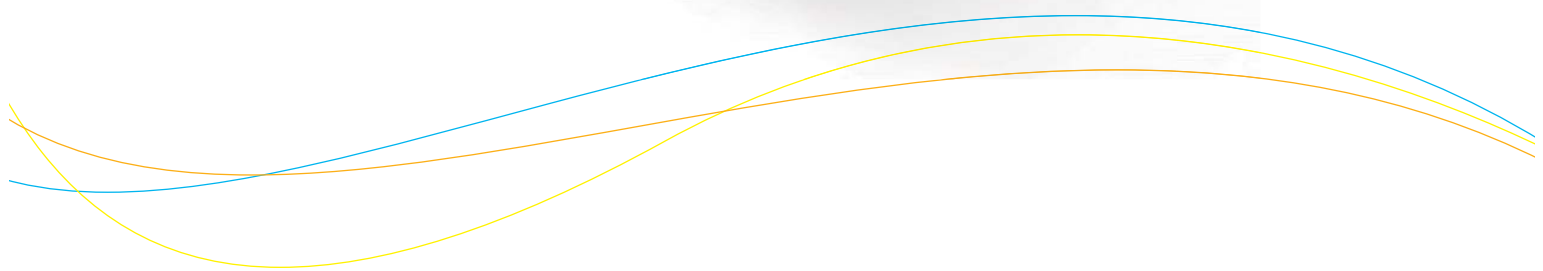
# BULKSAFE™

## Water Ingress Detection for Bulk Carriers

BULKSAFE™ is a fully Type Approved water ingress detection system for bulk carriers in accordance with SOLAS X11 Regulation 12, IACS UR S24, IMO performance standards and IACS UI SC180. The system comprises of a central BULKSAFE™ control and alarm panel interfacing with intrinsically safe MMS900® water level detectors.

The unique design of the MMS900® detectors allows them to be installed so that they are totally isolated from the cargo and protected from mechanical damage during cargo operations.

- Type approved
- Simple installation
- Low purchase cost
- Over 700 systems installed on bulk carriers
- Simple, maintenance free operation
- No local re-calibration required
- Lifetime sensor corrosion warranty
- Line monitoring - no false alarms
- Simple user friendly operation
- All sensor cabling included



# BULKSAFE™

## Specifications

### MMS900 Level Switch Assembly

<b>Material</b>	• Delrin
<b>Dimensions</b>	• $\pm$ 75mm x 90mm
<b>Weight</b>	• ~ 500g
<b>Fixing detail</b>	• Screws into standard 2 1/2" BSPP pipe union
<b>Environmental</b>	• -20°C to +80°C, 0 to 100%RH
<b>Dust Protection</b>	• In-board inert hydrophobic filter
<b>Switching Output</b>	• Hermetically sealed reed type differential 3-5mm
<b>Switch Setting</b>	• Normally closed, opening on alarm
<b>Switch Rating</b>	• 0.5A/240V ac/50VA max
<b>I.S. Operation</b>	• With optional Zener safety barriers

<b>Bonded Cable</b>	• 30m 2-core 0.75mm <sup>2</sup> cable (longer on request)
<b>IP Rating</b>	• IP68 in accordance with IEC 60529
<b>Warranty</b>	• Lifetime warranty against failure due to corrosion
<b>Certification</b>	• Simple apparatus
<b>In-situ Testing</b>	• Manual or automatic
<b>Filter Cleaning</b>	• Manual or automatic
<b>Test/Cleaning Port</b>	• 2No. 6mm o.d. Push fit nylon fittings
<b>Cable Monitoring</b>	• Fault alarm generated for short or open circuit
<b>Accuracy</b>	• +/- 10mm

### Bulksafe™ Control Panel

<b>Input Capacity</b>	• 24No. MMS900 level switches in 2 rows of 12 • 12No. Pre-alarm (0.5m) and 12No. Main alarm (2.0m)
<b>Input Definition</b>	• User definable (12 characters) by printable label template, 2 labels supplied and copy on CD-ROM
<b>Safety Barriers</b>	• Up to 24No. Included within enclosure
<b>Alarm Indicators</b>	• 24No. Green LED - input channel active indicator • 24No. Red LED - channel fault alarm indicator • Green mains 'power' LED • Red mains 'fail' LED • Amber 'sensor test' LED • LEDs flashing on new alarm • Steady on accept
<b>Alarm Override</b>	• By 'override' button indicated by flashing green channel active LED
<b>Audible Alarm</b>	• 2-tone 85db(a) @ 30cm mutable sounder for pre-alarm (0.5m level)
<b>Main Alarm</b>	• (2.0m) fault alarm and mains fail alarm
<b>Alarm Relays</b>	• Pre-alarm (0.5m level), main alarm (2.0m) • Common alarm (latched), mains fail (normally energized) • All relays SPCO rated 5a @ 240V
<b>Time Delay for Alarms Detector</b>	• 5s validity to switch outputs
<b>Function Test</b>	• Manually or automatically by 'sensor test' push button and valve Control relay - 30s duration indicated by Amber 'sensor test' LED

<b>System Alarm Test</b>	• By 'panel test' push button to test all LEDs, audible alarms and relay outputs
<b>Cable Monitoring</b>	• Fault alarm generated for short open circuit
<b>Environmental Data</b>	• -20°C to +55°C, 0 - 99%RH
<b>Dimensions</b>	• 340mm (W) x 380mm (H) x 175mm (D)
<b>Material</b>	• Powder coated steel to RAL5022
<b>Fixing Detail</b>	• No. M6 fasteners, one at each corner
<b>Weight</b>	• 8 kg
<b>Ingress Protection</b>	• IP55
<b>Mains Power Supply</b>	• Selectable 110v/230v ac 50/60hz, 1a fuse
<b>Emergency Operation</b>	• From ship's 24v dc emergency supply with auto-changeover, 2a fuse
<b>Power Consumption</b>	• 5w @ 24v dc
<b>Options</b>	• A100 alarm repeater panel • Full working mimic panel
<b>System Manuals</b>	• CD-ROM
<b>Cable Entry</b>	• 6No. M20 gland entries at base of cabinet
<b>Options</b>	• Remote alarm re-set • Individual alarms relays per point • Slave mimic panel