



Integrated Automation System Solution

Bulk Carrier & General Cargo Vessels




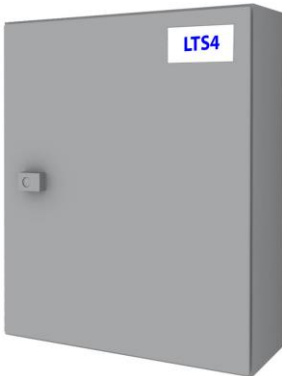





Technical Proposal


- 
- *Remote Sounding System*
 - *Valve Remote Control*
 - *Temperature and pressure*
 - *High/low Level switch*

Scope of Supply


Remote Sounding System for ballast and service tanks


| Pos | Illustration | Qty | Description |
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| 1 |  | 1 | <p>Operator Stations OS1</p> <p>Marine Approved Panel PC, Display 19" LCD keyboard and, trackball. Windows, SCADA System, OSSY, Ethernet. Power supply 220VAC, SSD Hard drive, USB Port, No CD Drive</p> <p>Locations to be agreed.</p> <p>Provides: Receiving information from LTS2 & LTS4 Indication of:</p> <ul style="list-style-type: none"> • Drafts and levels in ballast, fuel and service tanks. • Modbus connection for remote controlling of valves and pumps • Indication of temperatures and pressures from UPT and UTT sensors • Indication of high and low alarms from UTS sensors <p>Alarms indications</p> |
| 2 |  | 1 | <p>Local Technological Station LTS4 cabinet (24 channels)</p> <p>On wall mounted cabinet. Dimensions (WxHxD): 600x600x210 mm. Protection class: IP44. Number of measuring channels: 24. Power supply: ~220 VAC/ 24 VDC. Output: 2xRS-485/Modbus RTU. Air supply: 4-8 bar. Measuring range: 0-10 m.</p> <p>Connected air tubes: stainless steel Ø8x1 mm or Ø10x1mm (to be agreed).</p> <p>LTS4.x cabinets provide level measuring in ballast and service tanks as well as draught measuring.</p> |




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| 3 |  | 1 | <p>Local Technological Station LTS2</p> <p>On wall mounted cabinet. Dimensions (WxHxD): 600x600x210 mm. Protection class: IP44. Number of measuring channels: 24. Power supply: ~220 VAC/ 24 VDC. Output: 2xRS-485/Modbus RTU or ethernet</p> <p>LTS2 provides:</p> <ul style="list-style-type: none"> • Connection of UPT, UTS and UTT sensors • Modbus communication – for communication with other systems onboard • Inclinometers for trim and heel • Input/outputs for all kind of equipment |
| 4 |  | TBA | <p>UPT - Universal pressure transmitter</p> <p>Stainless housing. 316L Measuring type: absolute or relative Power supply: 24 VDC. Output: 2-wire 4-20 mA Process connection: thread or flange connection Measuring range: to be agreed Protection degree: IP67 or IP68 Explosion protection: ExiaIICT6/T5</p> |
| 5 |  | TBA | <p>UTT - Universal temperature transmitter</p> <p>Stainless housing. 316L Power supply: 24 VDC. Output: 2-wire 4-20 mA Process connection: thread or flange connection Length: to be agreed Temperature range: to be agreed Protection degree: IP67 or IP68 Explosion protection: ExiaIICT6/T5 Thermowell: yes</p> |


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| 6 |  | TBA | UTS – Ultrasonic level switch Stainless housing. 316L Power supply: 24 VDC Output: 2-wire 4-20 mA Process connection: thread or flange connection Length: to be agreed Protection degree: IP67 or IP68 Explosion protection: ExiaIICT6/T5 No moving parts |
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Valve Remote Control System

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| 7 |  | <p>1</p> <p>LTS15 cabinet</p> <p>On floor mounted cabinet. Dimensions (WxHxD): 800x950x400 mm <i>(TBD)</i>. Colour: <i>(TBD)</i> Protection: IP44. Output: ETHERNET, RS-485. Power supply: 24VDC, AC220V.</p> <p>Located in cargo control room or machinery spaces.</p> <p>LTS2 cabinet provides control of ballast valves, ballast pumps and transmitting data to operator station OS1 by Ethernet/RS-485. Functions include:</p> <ul style="list-style-type: none"> - Remote control and emergency stop for ballast pumps - Open/close remotely/local controlled valves - Valve Emergency operation - Pick up the signals of valve position <p>Components:</p> <ul style="list-style-type: none"> - Power unit - PLC logic unit - Solenoids for valves - Emergency valve block for valves - Pressure switch used for location feedback for submerged valves - spare channels Xpcs <p>- Other accessory</p> <p><u>Subject to number of input / output</u></p> |
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| Pos. | Illustration | Qty | Description |
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| 8 |  | 1 | <p>Hydraulic Power Unit</p> <p>Location: Engine room Power supply: AC440V 60HZ Size(WXHXD):1500X1400X600MM (TBD) Colour: (TBD) Functions include:</p> <ul style="list-style-type: none"> - Keep the pressure between 7Mpa to 9Mpa - Pressure low/high alarm output -Level low alarm output -Pressure ind. -Current ind. <p>Components:</p> <ul style="list-style-type: none"> - Hydraulic oil tank TBD - Accumulator TBD - Motor & pump 3KWX2 (switched automatically) - Motor control cabinet AC440V 60HZ - Filters and over pressure release valve - Sensors - Other accessory |

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| 9 |  <p>Picture for illustration only</p> | TBA | <p>Valves and actuators (dry/submerged)</p> <p>Location: Power supply: Size(WXHXD): TBD</p> <p>Colour: (TBD) Functions include:</p> <ul style="list-style-type: none"> - Open/close the valve - Valve position feedback - Valve position ind. -Emergency operation <p>Components:</p> <ul style="list-style-type: none"> - Valves -Actuators - Position feedback switch -Position feedback -emergency unit |
| 15 |  | 1 | <p>Operator Station OS2 (Optional)</p> <p>Marine Approved Panel PC, Display 19" LCD keyboard and, trackball. Windows, SCADA System, OSSY, Ethernet. Power supply 220VAC, SSD Hard drive, USB Port, No CD Drive</p> <p>Location to be agreed.</p> |
| 16 |  | 1 | <p>UPS (Optional)</p> <p>Power supply 220VAC, 60Hz. Dimensions (L x W x H): 460x192x360 mm function: Keep the system power for minimum 30 Min</p> |

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| 17 |  | TBA | <p>Hydraulic hand pump Dimensions (LxWxH): Colour: TBD Work pressure: 2~12Mpa Oil tank volume: 1.6L Rubber hose: 3M</p> |
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System Overview – Example

Remote Sounding System & Valve Remote Control System

