

# INS<sup>+</sup>HLD-INS600

INTEGRATED NAVIGATION SYSTEM

Type Approved  
Safety • Efficiency • Easy operation • lower costs



- Remote Diagnosis
- Remote Maintenance
- Fleet Management
- Chart Update
- Weather Routing



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## OVERVIEW

The Highlander "Intelligent Bridge" integrated navigation system (INS) brings single navigation sensors and devices into a sole organic system whose treatment of data is far superior to that offered by traditionally arranged pieces of equipment where each one is separate from the others. The INS 600's multi-function workstations bring every piece of navigation data right to the Navigating position, abating the need for the officer to walk to different places around the wheelhouse in order to view navigation equipment display panels. The navigation tasks of route planning, route monitoring, collision avoidance and track control are supported by a totally rational, ergonomic presentation of information. A graphic-rich conning display shows all of the most critical datums in large-font alphanumeric and in realistic mimic objects. The conning display has two principle selectable viewing modes: DOCKING mode for close-in maneuvering in restricted waterways and NAVIGATION mode for open-ocean sailing where course and speed changes are seldomly made.

The network-based "Intelligent Bridge" HLD-INS 600, certified to IMO Resolution MSC.252(83) and IEC 61924-2, is the product of many years of advanced engineering work by Highlander's research and development teams. Very importantly, it is designed or "Hi-Cloud" remote access for ship-to-shore data exchange which serves as a convenient way to exercise fleet management and augment the servicing of ship's equipment. Dramatic reductions in ship operating costs are achievable by tapping into ship data to carry out remote diagnosis and repairs.

## BENEFIT

### Improve Safety

- Data values are scrutinized by the INS for validity and plausibility.
- A consistent common reference system (CCRS) intrinsic to the INS eliminates non-coherence in datums owing to the non-identical positions of antennas, transducers and other sensors.
- Thresholds for INS monitoring and alerting raise the bridge team's awareness of own ship's position with respect to track.
- The redundancy gained from multi-function displays lowers the likelihood of losing radar detection and electronic charting from failure of a single monitor.
- Blending radar, ECDIS and AIS onto a single presentation makes it easier and quicker for the officer to interpret the information from these three crucial navigation systems.
- Centralized alert management alleviates the problem of "alarm proliferation."

### Increase Efficiency

- Each workstation provides multitasking capabilities
- All workstations use consistent data and reduce data error
- Data shared between each workstations and tasks
- Track control system make ship sailing in the planned route accurately
- To show the detail status of the vessel and equipments anytime and anywhere, improve the efficiency of management

### Easy to Operate

- The conning officer sees all navigational information while standing in one place.
- The display of radar, conning and ECDIS can be arranged to suit individual preferences at the time.
- INS track control takes a great deal of the tedium out of steering.
- Each workstation uses the same exact keyboard-trackball module.
- All workstations can be dimmed in unison from a single control point.

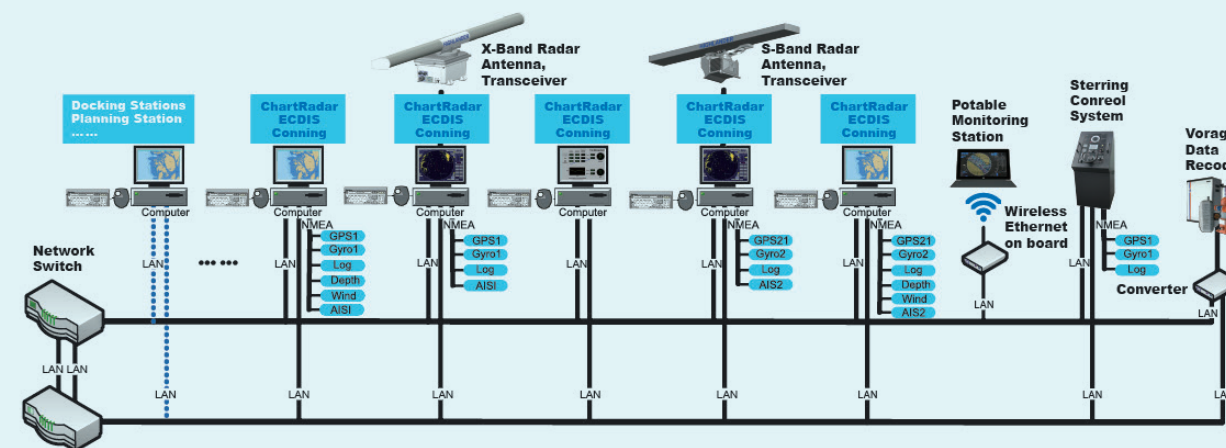
### Save Cost

- The vessel can be sailed with fewer bridge personnel.
- ECDIS route optimization and INS track control can shorten sailing distances by optimizing rudder movement and lessening off-track inefficiencies, thereby bringing about considerable reductions in fuel consumption.
- INS standardized hardware lessens the onus of spare parts management.
- INS standardized software ameliorates the upgrading of applications programs.
- Hi-Cloud remote equipment checkup and troubleshooting means smarter servicing. Solutions are identified better and sooner.
- Simplify Cablling

## SYSTEM COMPONENTS & DESCRIPTION

### Stable system architecture

- The Highlander "Intelligent Bridge" integrated navigation system (INS) is based on dual-redundant Gigabit Ethernet.
- All workstations use the same identical hardware and software.
- Workstation computers are ultra-compact, fanless industrial computers with resilient solid-state drives. Display monitors are top-notch IEC 60945 marine industrial models.



INS System Architecture Diagram

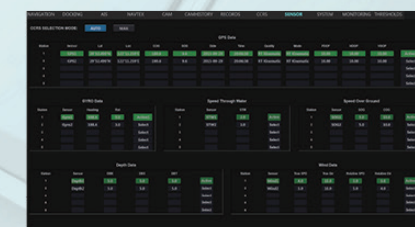
### Multifunctional Workstations

Each bridge workstation is multifunctional, configurable to display stand-alone radar, chart radar, ECDIS, conning, alert management or track control.



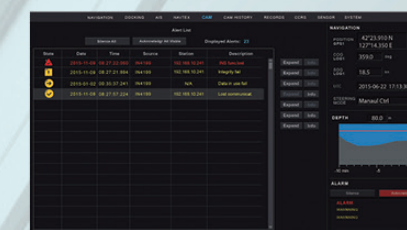
### Information Fusion

Following validity and plausibility checks on data, the HLD-INS 600 common consistent reference system (CCRS) applies spatial corrections to data and then synchronizes datums in time (latency correction). Data is then subjected to integrity monitoring. Finally, it is distributed throughout the INS environment.



### Intelligent alarm management

A central alert management module classifies alarms, warnings and cautions and then assigns each with a priority level. Danger of collision and danger of grounding are the highest priority alerts (category A). With such logical prioritization, the bridge team is better able to respond to alarms with the urgency due.



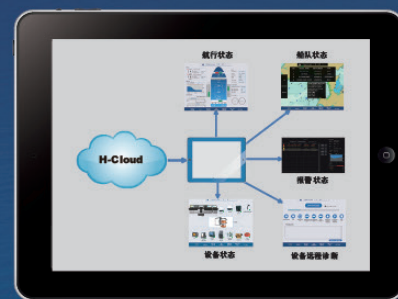


## HI-CLOUD

"Hi-Cloud" remote access facility enables ship data to be seen and utilized ashore for fleet management and technical servicing.



"Hi-Cloud" as a fleet management tool typically consists of a large-screen electronic chart system ashore where all ships in a fleet are shown in their current geographic positions. All ship's data is displayed with a mere click on the vessel.



Either fixed or mobile computing devices can be used to connect with the vessel via "Hi-Cloud". The benefit is a quite powerful accessing of all the ship's data that passes through the INS: equipment health, navigational data, weather conditions and navigational alerts can all be accessed. Ship's equipment can be diagnosed for proper operation and troubleshooting.



"Hi-Cloud" remote access is a splendid tool for technical service providers, enabling them to get ahold of information from within shipboard systems about their well-being and thereby suggest appropriate corrective measures and, if need be, dispatch spare parts and service engineers to the best choice port of call.

Hi-Cloud provides real-time status of navigation data. Standard Conning interface, providing GPS, heading, depth, rudder angle, steering rate, wind speed and direction, trim and rolling and other information. Graphical user interface intuitive and visual, easy to use





### OPTIONAL WORKSTATIONS

Individual Processor, Shared information with INS



1. VMS
2. Small Target Monitoring
3. Oil spill Monitoring
4. Wave Monitoring

### SYSTEM OVERVIEW

#### S-Band Radar System and Multifunction workstation

- 12ft. S-Band Antenna 1 HLD-AT112
- Transceiver Unit 1 HLD-TU130
- Power Supply Unit 1 HLD-PCU600
- Display Unit 1 HLD-DU112/133/134/135
- Main Control Unit 1 HLD-MCU600/200
- Human Interface Unit 1 HLD-IU600
- UPS(Optional) 1

#### X-Band Radar System and Multifunction workstation

- 6/8ft. X-Band Antenna 1 HLD-AT106/108
- Transceiver Unit 1 HLD-TU110/125
- Power Supply Unit 1 HLD-PCU600
- Display Unit 1 HLD-DU112/133/134/135
- Main Control Unit 1 HLD-MCU600/200
- Human Interface Unit 1 HLD-IU600
- UPS (Option) 1

#### ECDIS System and Multifunction workstation

- Power Supply Unit 1 HLD-PCU600
- Display Unit 1
- Main Control Unit 1 HLD-MCU600/200
- Human Interface Unit 1 HLD-IU600
- UPS 1

#### Conning & Alert Management System and Multifunction workstation

- Power Supply Unit 1 HLD-PCU600
- Display Unit 1 HLD-DU112/133/134/135
- Main Control Unit(Monitor) 1 HLD-MCU600/200
- Human Interface Unit 1 HLD-IU600
- UPS(Optional) 1

#### Steering Control System

- Follow-Up Unit(Dual Channel) 1 HLD-FU200
- Non-Follow-Up Unit(Dual Channel) 1 HLD-NFUV200
- Steering Mode Switch 1 HLD-SW200
- Alarm Display Unit 1 HLD-AD600
- Steering Control Unit 1 HLD-SCU600

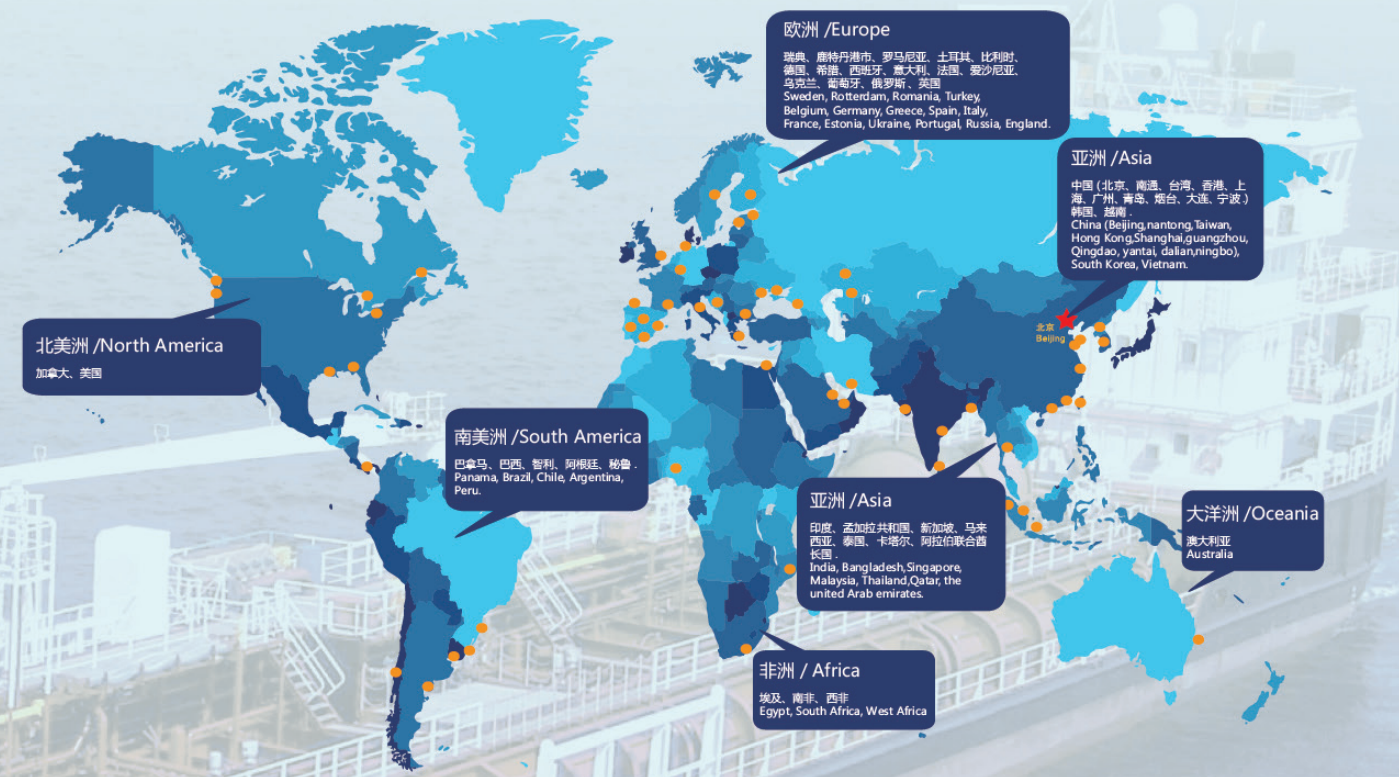
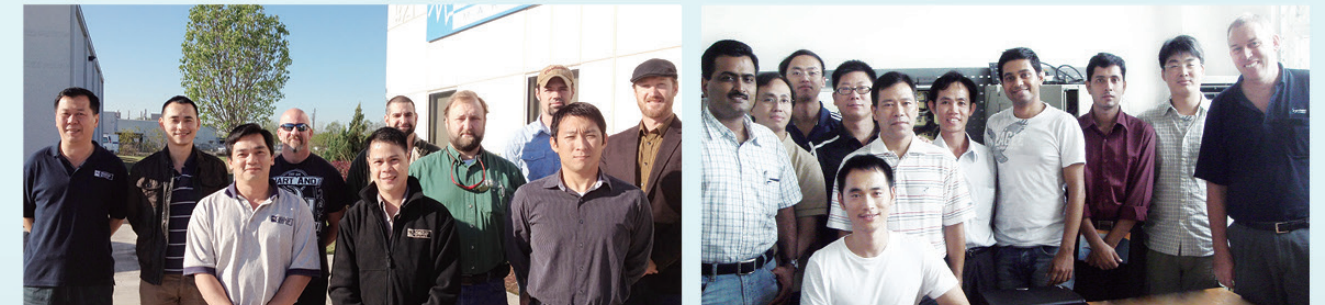
- Steering Compass Repeater 1 HLD-RP200
- Steering Console 1 HLD-ST200
- Rudder angle feedback Unit 1 HLD-RF600
- Automation Control Unit 1 HLD-ACU600
- Relay 2 HLD-RE200

#### Other Components

- LAN Switch 2 HLD-LS600
- Signal Conversion Unit 1 HLD-SCU600

### WORLD-WIDE SERVICE NETWORK

With more than 80 service partners covering more than 30 countries worldwide such as USA, France, Russia, Belgium, Spain, Canada, Brazil, India, Korea and Singapore, Highlander is able to provide professional and prompt service to the customers. The service philosophy places the customers' interests in the highest priority.



★ 服务中心 Service Center  
 ● 服务站 Service Station