



MK31 INS

Inertial Navigation System

High performance ring laser gyro system

The MK31 is a ring laser gyro inertial navigation system (INS) that provides accurate heading, attitude and positional data for a wide range of naval vessels including frigates, corvettes, patrol vessels and submarines. It is ideal for customers seeking a cost-effective and reliable solution for navigation and control of onboard radar, weapon, and satellite systems.



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The MK31 is easy to install, configure and operate. With extremely fast alignment alongside and at sea, the system provides highly accurate pitch, roll, heading and positional data even in the most extreme sea states. The complete system uses solid-state technology therefore no maintenance is required to keep the MK31 fully operational.

PRODUCT FEATURES & BENEFITS

- Innovative design incorporating state-of-the-art highly reliable Honeywell GG1320 ring laser gyro elements
- Highly accurate heading, heave, roll and pitch in all dynamics
- Inertial position output
- Small, lightweight and versatile
- Dynamic turn rates of up to 200°/s
- Maintenance free, due to the solid-state sensing elements
- Configurable RTU allows for numerous I/Os to meet all customer requirements
- Fast and simple unit installation
- High mean time before failure (MTBF)
- Low mean time to repair (MTTR)
- User-friendly operation
- Efficient CDU menu structure allows simple configuration and diagnostics
- RS232/RS422 output, multiple channels
- No temperature related system degradation
- Programmable 200Hz HDLC 307.2K Baud output channels
- Supplied with adjustable deck plate to remove requirement to realign
- IMO approved for high speed craft, type approved to the Marine Equipment Directive
- Qualified to MIL-STD for vibration, shock and EMC



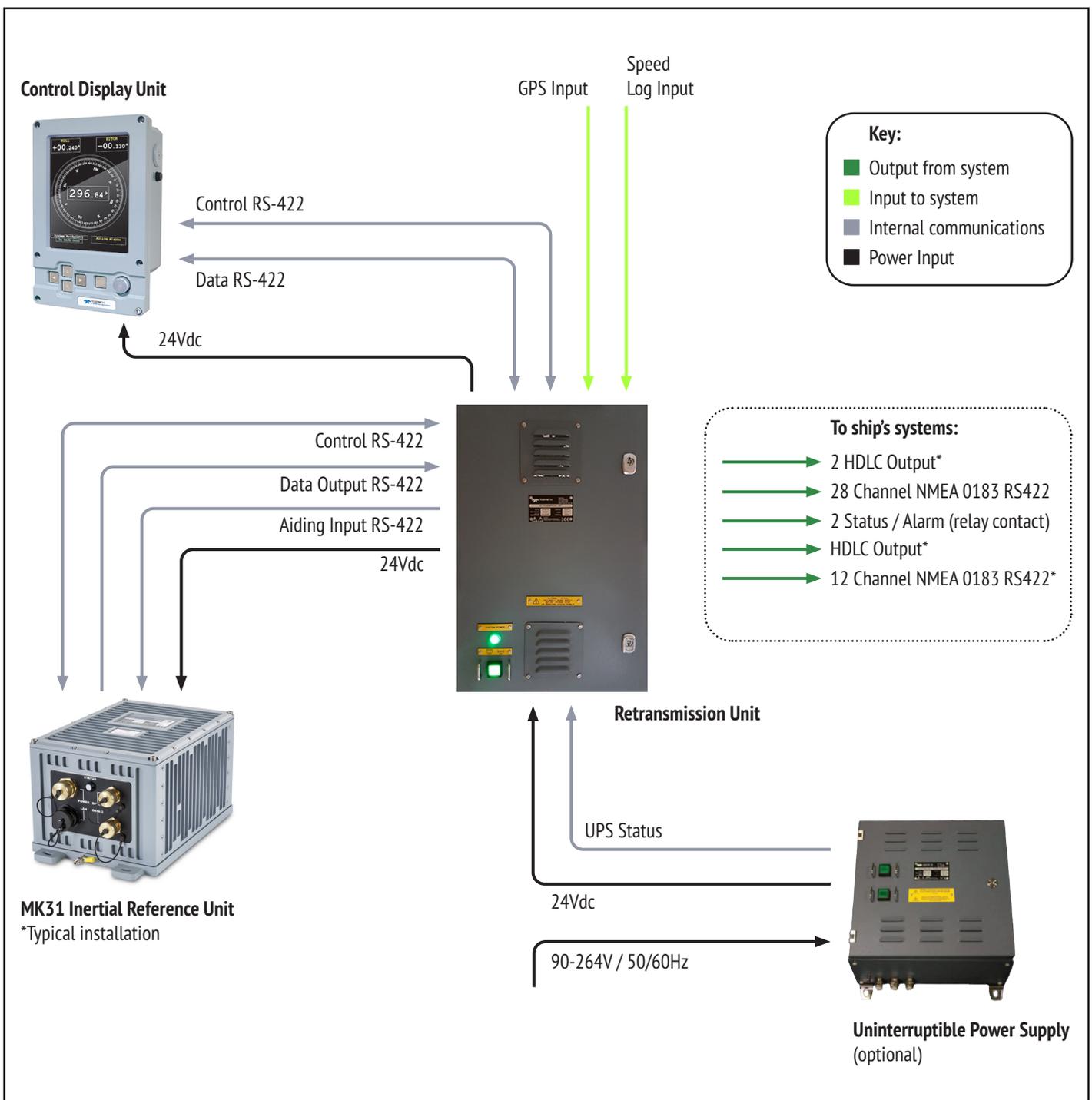
MK31 incorporating Honeywell GG1320 ring laser gyros.

Scope of Supply

Control Display Unit (CDU) - bulkhead mounted CDU running a real-time display of sensor outputs and status information. Software includes built-in test equipment facility, system set-up, configuration and analysis through a simplified menu structure.

Retransmission Unit (RTU) - custom-configurable for each application to satisfy the platform requirements. A rugged bulk-head mounted enclosure, the RTU is powered via 24Vdc and typically has 6 synchros, HDLC 200Hz outputs and 12 RS422 output channels.

Uninterruptible Power Supply (UPS) - optional



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TECHNICAL SPECIFICATIONS

INERTIAL REFERENCE UNIT

Heading	Accuracy	6 arc min RMS secant latitude	
	Follow up rate	200°/s	
	Alignment time	<30 minutes	
	Data latency	<3 ms	
Position	Accuracy	1nm / 8 hours TRMS (with speed aiding)	
	Roll and Pitch	Dynamic accuracy	0.6 arc min RMS
		Range	-90° <pitch <+90°, -180° <roll <180°
	Data latency	<3 ms	
Aiding	GPS	IEC 61162 (NMEA 0183)	
	Speed Log	IEC 61162 (NMEA 0183)	
Data Outputs	Line standard	RS-422	
	Output rate	Up to 200Hz	
	Baud rate	1200 to 115,200	
Sensors	Gyroscopes	Honeywell GG1320 RLG (MTBF >300,000 hours)	
	Accelerometers	Honeywell Q-Flex (MTBF >300,000 hours)	
	Sensors	IRU (MTBF >40,000 hours)	
Environmental and EMC	Ambient operating temperature	-15° to +55°C	
	Shock	MIL-STD-810G	
	Vibration	MIL-STD-167-1A, IEC 60945	
	EMC	MIL-STD-461F, IEC 60945	
	Rating	IEC 60945 Protected	
Physical Characteristics	Dimensions	190mm (h) x 224mm (w) x 375mm (d)	
	Weight	15.0kg	
Power	Power supply	18 - 36Vdc	
	Power consumption	20W	
Standards	MED Type Approval	IMO A.424 (XI), IMO A.821 (19), ISO 8728, ISO 16328, IEC 60945	

RETRANSMISSION UNIT

Data Outputs	Digital	28 x RS-422 IEC 61162 (NMEA 0183) and industry standard formats (digital only) / 12 x RS-422 IEC 61162 (NMEA 0183) and industry standard formats (with synchro option)
	Synchro (option)	90V / 400Hz L-L or 90V / 60Hz L-L coarse & fine (6 outputs)
	Resolver (option)	6.3V / 400Hz resolver (6 outputs)
Data Inputs	GPS	IEC 61162 (NMEA 0183)
	Speed Log	IEC 61162 (NMEA 0183) or 90V / 400Hz (Synchro option)
Physical Characteristics	Dimensions	400mm (h) x 400mm (w) x 200mm (d) (digital) / 600mm (h) x 400mm (w) x 200mm (d) (analogue)
	Weight	15.0kg (digital) / 20.0kg (analogue)
Reliability	MTBF	>45,000 hours (Analogue Retransmission Unit), >100,000 hours (Digital Retransmission Unit)
Power	Power supply	18 - 36Vdc

CONTROL & DISPLAY UNIT

Data I/O	Line standard	RS-422
Physical Characteristics	Display	LCD TFT
	Dimensions	293mm (h) x 188mm (w) x 109mm (d)
	Weight	4.6kg
Reliability	MTBF	>65,000 hours
Power	Power supply	18 - 36Vdc

UNINTERRUPTIBLE POWER SUPPLY

Power	Input	90 to 264V, 47 to 63Hz
	Output	24Vdc / 250W
Physical Characteristics	Support time	>30 minutes depending on load
	Dimensions	400mm (h) x 400mm (w) x 200mm (d)
	Weight	32.0kg
Reliability	MTBF	>90,000 hours

SYSTEM

Reliability	MTBF	>14,000 hours (Analogue Retransmission Unit), >16,000 hours (Digital Retransmission Unit)
	MTTR	<0.5 hours
Compliance	Export	Goods may be subject to export control - details upon quotation
Warranty		12 months international warranty including parts and labour
Mounting		Industry standard adaptor plate



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Specifications subject to change without notice.
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