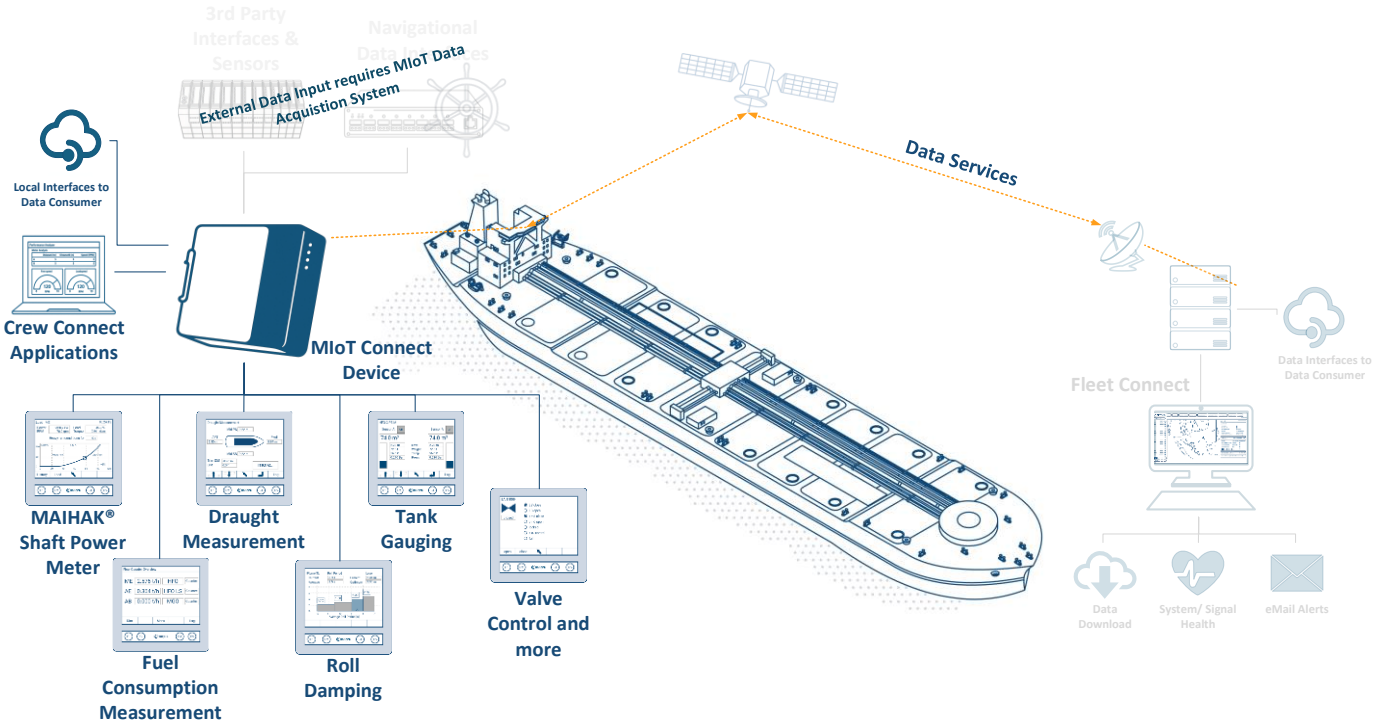
System

The Maritime Internet of Things **(MIoT) Digitalization Upgrade** supports the digitalization of new and existing Hoppe Marine systems. It offers a plug-and-play approach, enabling self-commissioning by the crew, along with key functionalities such as logging **high-quality data**, providing various interface options for **data sharing**, and serving as the basis for **Data Services** that enable remote troubleshooting and support.



General System Digitalization Features

- Applicable to **newbuild** and **retrofit** projects, enabling seamless integration into existing Hoppe systems and plug and play installation for **self-commissioning**.
- Data Logging Module: **High performance database** for continuous recording of system data, sensor values, and system health information.
- Crew Connect Web Module: Includes Crew Connect - BASIC and supports additional Crew Connect applications for **onboard data access**, data quality feedback, and visualization.
- Ship to Shore Module: Prerequisite for **Hoppe Data Services**, enabling cyber secure Ship-to-Shore connectivity and **cloud-based data access**, data sharing and **remote services**.
- Service Module: Advanced troubleshooting features, digitalized Hoppe system documentation, and an integrated spare parts catalogue.
- Optional standardized onboard interfaces for data exchange via **REST API** and **Modbus TCP**.

System Specific Data and Information (Sample)

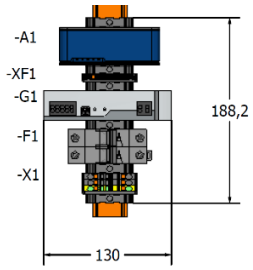
All Systems	System Alerts, Interface Monitoring, Sensor Failures, PLC Status
MAIHAK® Shaft Power Meter	Shaft Power, Shaft Torque, Shaft Speed, Shaft Energy Counter
Fuel Consumption Measurement	Actual Consumption and Fuel Counters per Consumer and per Consumer Group
Tank Content Measurement	Tank Levels, Tank Content, Tank Content Density
Draught Measurement	Draughts at Draft Marks, Perpendiculars, and Sensor Positions; Vessel Trim
Dynamic Draught and Floating Measurement	Dynamic Draughts, Dynamic Trim; Angles, Rate, Period, and Acceleration for Roll and Pitch Movements
Valve Control	Valve Operations, Valve Positions, Valve Runtimes, Valve Failures, Relevant Air or Hydraulic Pressures
Roll Damping	Angles, Rate, Period, and Acceleration for Roll and Pitch Movements; Tank Level, Tank Content, Tank Levels, System Usage
Anti Heeling	Heel Angle, Pump Operation, Pump Runtime, Pump Vibrations, Valve Position, Tank Level, Tank Content, System Usage

Technical Data

MIoT Digitalization Upgrade kit

- includes: MIoT Connect device, Power supply 24 VDC, Power circuit breaker, Terminals, cabling, mounting rail

Dimensions (W × H × D): 188.2 × 130.0 × 130.0 mm



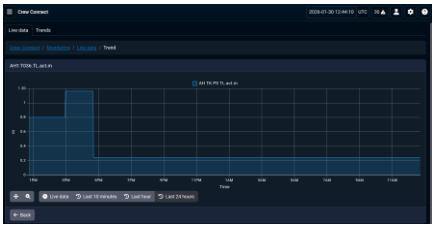
MIoT Connect device

- Processor: Raspberry Pi Compute Module 4 (CM4), Broadcom BCM2711, Cortex-A72 (ARM v8)
- Storage: 128 GB (M.2 SATA SSD)
- Interfaces: 2 × Ethernet port (1 GbE LAN, separated)

Dimensions (W × H × D): 102.5 × 129 × 38 mm

Crew Connect Basic

- Self-hosted web application accessible from any computer connected to the MIoT Connect device network.
- Includes: Data Visualization, Signal Quality overview, System alert history, Device Configuration, Digital Documentation Package, User Management, Raw Data download



Additional Options

- **Crew Connect MAIHAK®:** Noon and Event Report Advanced data visualization
- **Custom Data Output via Modbus TCP interface:** Data sharing to other data loggers, systems and applications.
- **Data Services (Service Connection, Data Butler, Data Inspector):** Cyber secure ship to shore transmission, remote troubleshooting, advanced data sharing options and access to Fleet Connect