

# Joystick M50



KONGSBERG



Precise manual, low-speed manoeuvring

## Joystick M50

The Joystick M50 is a joystick control system engineered for efficient manual vessel positioning and low-speed manoeuvring. Joystick M50 includes an automatic heading function delivering high control accuracy. A Joystick M50 operator station consists of a joystick control device and a touchscreen computer display. In manual heading mode, the vessel heading command is given by handling the joystick grip. The joystick device's base contains several backlit push buttons for the selection of the most used functions for joystick operation.

### Operator stations (OS)

The operator station comprises a physical joystick and a touchscreen. The OS panel displays all relevant information for the operator such as vessel position, heading, surge and sway speed, turning speed, and thruster action alongside the system's menus and sub-menus for functions and settings. If a Kongsberg Maritime thruster control system is installed on the vessel, the M50 system can utilise the existing touchscreen, reducing the amount of OS displays needed on the bridge.

### HIGHLIGHTS:

- Precise manual vessel positioning and low-speed manoeuvring
- Automatic heading
- Station-keeping function
- Intuitive user touchscreen display
- Tight integration with propeller, thruster, and rudder controls possible for efficiency and practical switch between automatic and manual operations through the shared touchscreen display

## Controller cabinet

The orders given by the vessel operator are transmitted via the digital network to the controller cabinet. In addition to the controller unit, the controller cabinet contains a power supply unit, network interfaces (Ethernet and Can-bus), and I/O interfaces to propellers, rudders and thrusters. The controller calculates the required thrust to be set out by the various propellers and thrusters as well as the steering angle for rudders in order to move or position the vessel according to the command given via the joystick system.

## Sensors

- **Gyrocompass:** the gyrocompass is connected to the controller via a serial line to enable the system to automatically keep the vessel heading. By means of the push buttons located on the control device's base, the operator can easily switch between manual and automatic heading control and set or change the heading.
- **GNSS:** the Joystick M50 can be connected to a Global Navigation Satellite System (GNSS) as an optional feature. This feature provides the operator with vessel speed and direction information on the OS screen. The GNSS interface is also a pre-requisite for the station-keeping functionality.
- **Position reference:** laser- or radar-based position reference sensors can be utilised for station-keeping.
- **Wind sensor:** a wind sensor can be added for automatic wind force compensation.

## Propeller, rudder and thruster interfaces

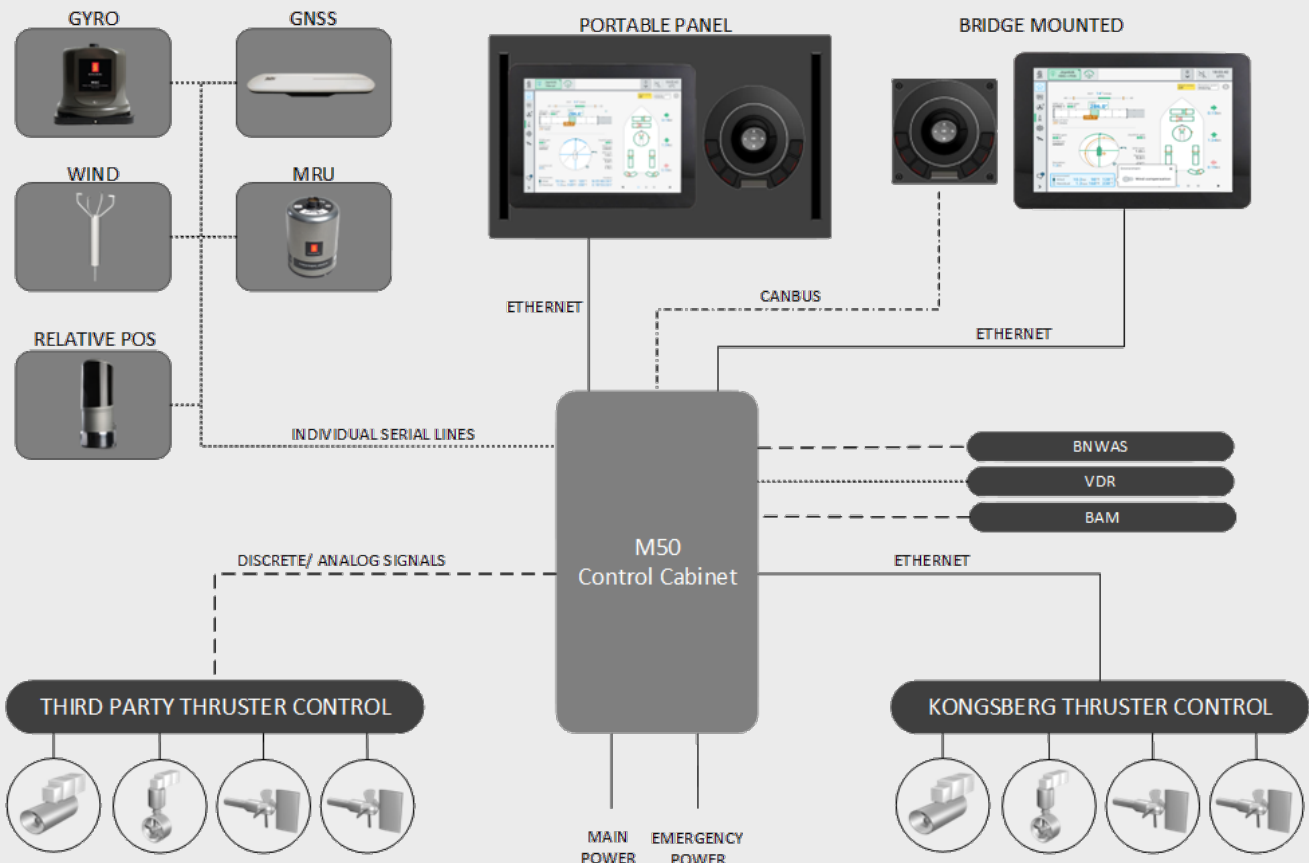
The controller communicates with the Kongsberg Maritime thruster, propeller and rudder control systems using an Ethernet link. Additional interfaces are available for thruster, propeller and rudder control systems that have traditional discrete I/O interfaces.

## Installation flexibility

The Joystick M50 operator station consists of few, small components that make the bridge layout lean and simple. The solution's flexibility in design and integration enables us to fit the equipment into various operator station solutions, for instance in an operator chair, desktop mount, or desk drop-in mount. The operator station components can also be delivered as a console, either for fixed mounting or as a portable station.

## Integration with the Mcon control system

Joystick M50 can be tightly integrated with the Mcon propeller and thruster control system. Both systems will share the same touchscreen computer display. The tight integration of the systems will ensure a smooth transition between manual and automated vessel control, further facilitated by the Mcon motorised levers.



## Functionalities

	Standard	Optional
Manual joystick	•	
Auto-heading	•	
Station-keeping		•
Automatic wind compensation		•
Green station-keeping		•
Towing mode		•

### Station-keeping

This function keeps the vessel in a fixed heading and position setting by utilising inputs from the position reference systems, VRU(s), gyro(s), and optionally a wind sensor. In fixed heading and position mode, the vessel is kept in the position selected by the operator automatically. Changing the position and heading of the vessel is easily performed via the input devices or directly on the display. The mixed mode control – a combined manual and auto-control function – allows separate control of the axis.

The environmental conditions, system control gain settings, and number of active thrusters will determine the performance of the station-keeping function.

### Green station-keeping

This function reduces thruster use to a minimum and keeps the vessel within a position radius that is defined by the operator. The function helps decrease the amount of energy used for the task.

### Towing mode

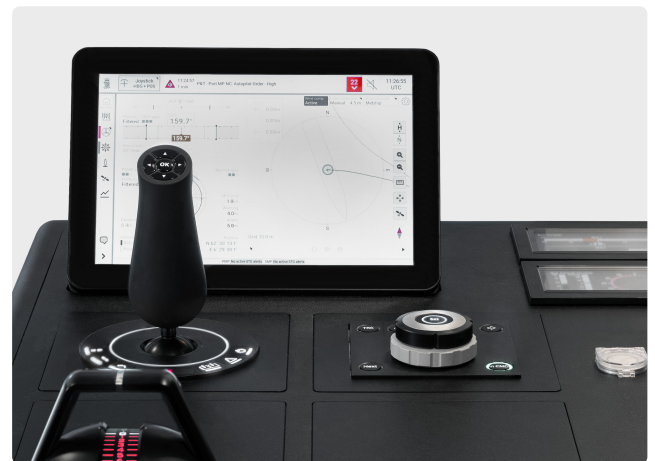
This function is used to account for along-ship forces that are being applied under towing operation. The operator can use the touchscreen to step the along-ship force instead of using the joystick.

### Thrust allocation

Active in all operational mode, the thrust allocation function converts force requirements for position and heading into thrust and azimuth setpoints for all propulsion and rudder units.



Portable operator station



Joystick M50 integration on bridge

## Technical data

### OPERATOR STATION: PANEL

#### 12" touchscreen

- **Dimensions**  
209.0mm x 307.5mm
- **Power consumption**  
max. 1A/24V
- **Environmental specifications**  
Rating: IP22, IP56 (flush mounted)  
Operating temperature range: -25°C to +70°C

#### Optional - Portable panel: joystick + 12" touchscreen

- **Dimensions (l/w/d)**  
470mm x 280mm x 110mm
- **Power consumption**  
2A/24V
- **Environmental specifications**  
Rating: IP22  
Operating temperature range: +5°C to +55°C

### OPERATOR STATION: INPUT DEVICES

#### Combined joystick and positioning device

- **Dimensions (l/w)**  
155mm x 155mm (top cover plate)
- **Power consumption**  
210mA/24V
- **Environmental specifications**  
Rating: IP22 or IP56  
Operating temperature range: -25°C to +70°C

#### Optional - Standalone joystick device

- **Dimensions (l/w/h)**  
121mm x 100mm x 160mm
- **Power consumption**  
0.5A
- **Environmental specifications**  
Rating: IP22  
Operating temperature range: +5°C to +70°C

### CONTROL CABINET

- **Weight and dimensions**  
Weight: 35 kg  
Dimensions (h/w/d): 600mm x 600mm x 250mm
- **Power specifications**  
Main: 230 VAC  
Back-up: 24 VDC
- **Environmental specifications**  
Rating: IP54  
Operating temperature range: -15°C to +55°C  
Humidity: <97%, non-condensing

### SENSORS & DATA INPUTS

- **Gyrocompass**
- **GNSS** (optional)
- **Wind sensor** (optional)
- **VRU** (optional)
- **Relative reference system** (e.g., laser, radar) (optional)

### INTERFACES

- **Kongsberg Maritime Mcon thruster control system**  
Network connection
- **Third-party thruster interface**  
Discrete and analogue signals
- **Rudder interfaces**  
Mcon or discrete and analogue signals