

## Valve Remote Control and Level Gauging System

### ► Overview

The Valve Remote Control System enables centralized remote operation of all controllable valves onboard. Crew members can operate the valves via a graphical interface on the workstation display. In case of power, air, or hydraulic source failure, the system supports emergency valve operation using a manual hydraulic pump, ensuring system reliability and rapid emergency response.

The Level Gauging System provides real-time monitoring of fluid levels in various onboard tanks (e.g., mud tanks, fuel tanks), as well as forward and aft draft measurements. Signals collected from each sensor are transmitted to the workstation via a data acquisition unit, enabling real-time status display and alarm handling from the control room. This ensures accurate support for vessel operation and safety.

### ► System architecture

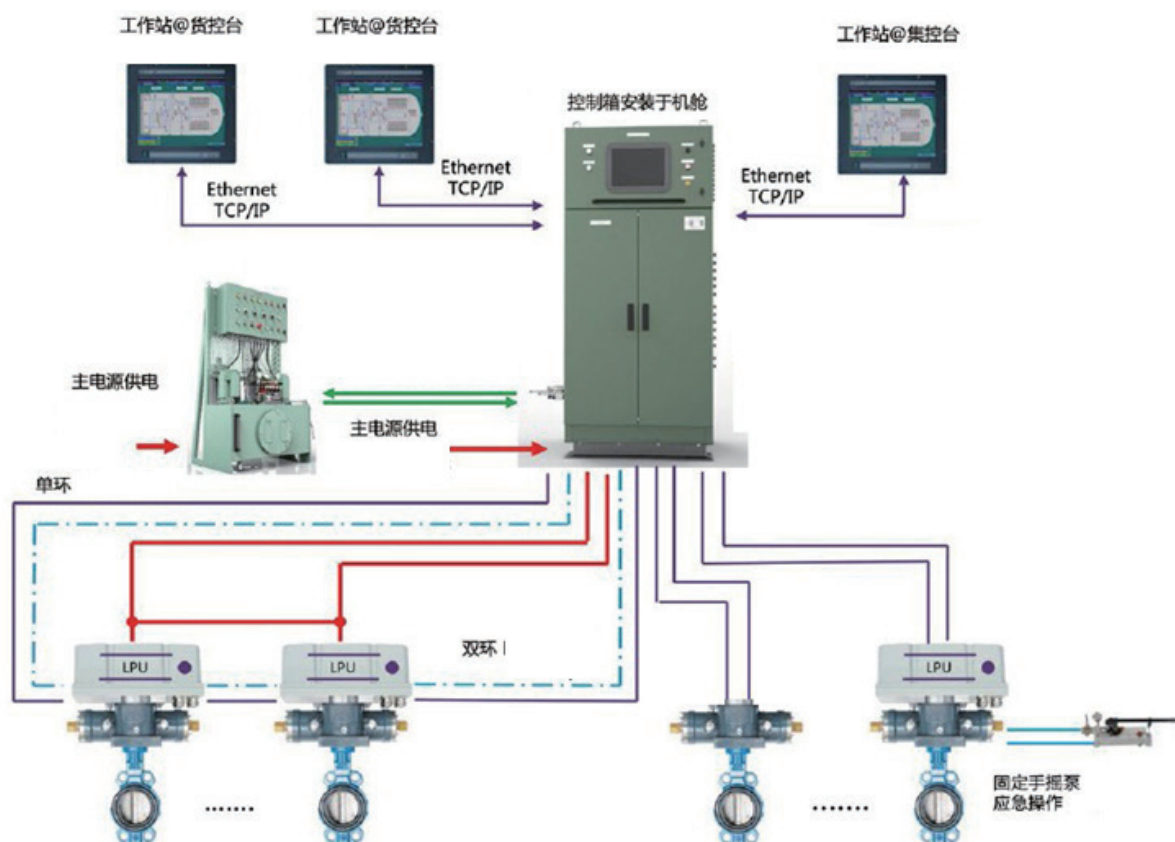


Figure 1 system composition block diagram

## ► Product features

- Real-time Monitoring: The main monitoring program enables real-time acquisition of alarm information and the operational status of key equipment, ensuring fast system response and efficient operation.;
- Data Synchronization :The main monitoring program is installed on all workstation industrial PCs, ensuring stable and consistent data synchronization across the system.;

- Unified Software Architecture:All industrial PCs operate with a unified version of the monitoring software, ensuring compatibility and ease of maintenance.;
- Secure User Access :The system features a user login mechanism to effectively manage permissions and ensure operational security.

## ► Product function

- Valve Remote Control System
  - Remote control of valve opening/closing and stroke via workstation HMI
  - Control signals processed by PLC logic to accurately drive actuators
  - Actuators feedback valve position signals for real-time status display
  - Local touchscreen control supported during workstation failure to ensure system reliability
  - PLC centrally handles control and feedback signals to ensure stable operation and fast response

- Level Gauging System
  - Piezoelectric level sensors provide real-time monitoring of fuel tanks and forward/aft drafts
  - Bubble-type level telemetry control box measures mud tank liquid level and density
  - Inclinometers monitor vessel heel angle to ensure navigation safety
  - PLC centrally processes sensor signals for real-time data calculation and logical operations
  - Monitoring data is displayed in real-time on the workstation, supporting remote monitoring and alarms

## ► Product technical parameters

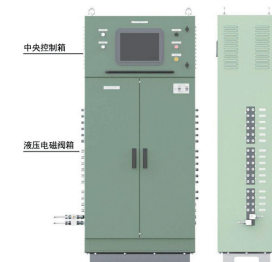
- System Indicators
  - Data refresh time: ≤1S;
- Hydraulic Power Unit



- Protection Rating: Hydraulic Power Unit: IP23、Electrical Control Cabinet: IP44
- Operating Voltage: AC 380V, 50/60Hz
- Operating Temperature: -10°C to +55°C

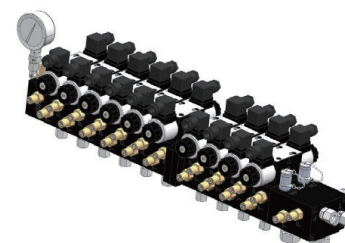
- Oil Tank Capacity: 150L / 250L / 350L
- Nominal Pressure: 160 Bar
- Working Pressure: 135 Bar
- High-Temperature Alarm Threshold: 70±2°C (Pump Stop)
- Low Oil Level Alarm Points: 50%, 25% (Pump Stop)
- High Pressure Alarm Threshold: 180 Bar
- Low Pressure Alarm Threshold: 100 Bar
- Filter Differential Pressure Alarm Threshold: 3.5 Bar
- Output Flow Rate: 5.5 L/min, 9.7 L/min, 13.2 L/min
- Working Medium: Mineral Oil (Compliant with DIN 51524)

### ■ Central Control Cabinets



- Installation Type: Floor-standing or Wall-mounted (Optional)
- Protection Rating: IP23
- Operating Voltage: AC 220V 50/60Hz, DC 24V
- Operating Temperature: -10°C to +70°C
- Operation Type: Touchscreen Control
- Communication Interfaces: Digital I/O, Analog I/O, CAN Communication

### ■ Solenoid Valve Cabinets



- Installation Type: Vertical Mounting
- Protection Rating: IP44
- Valve Block Material: Aluminum Alloy
- Operating Voltage: DC 24V
- Operating Temperature: -10°C to +55°C
- Nominal Pressure: 160 Bar
- Working Pressure: 135 Bar
- Signal Feedback: VPI (Digital and Analog Feedback)
- Operating Mode: Solenoid Valves Support Local Operation
- Working Medium: Mineral Oil (Compliant with DIN 51524)

### ■ DHA Series Quarter-turn Double-acting Hydraulic Actuator

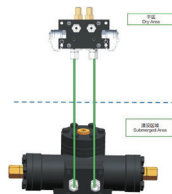
- Actuation Type: Double-acting
- Protection Rating: IP67 (Dry Type)、IP68 (Submersible, Long-term Immersion at 30m Depth)
- Operating Temperature: -10°C to +55°C
- Valve Position Indication: Local Indication (Optional)
- Working Pressure: 135 Bar
- Rotation Angle: 90° ±3°
- Hydraulic Cylinder Material: QT400-15
- Coating: Epoxy Resin
- Working Medium: Mineral Oil, Compliant with DIN 51524
- Flange Mounting Standard: ISO 5211

### ■ EDHA Series Quarter-turn Double-acting Electro-hydraulic Actuator

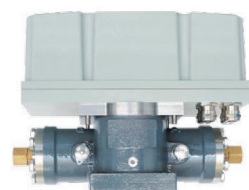
- Actuation Type: Double-acting
- Protection Rating: IP67 (Dry Type)、IP68 (Submersible, Long-term Immersion at 30m Depth)
- Operating Temperature: -10°C to +55°C
- Control Mode: On/Off Type, Modulating Type
- Valve Position Indication: Local Indication (Optional)
- Working Pressure: 120 Bar
- Rotation Angle: 90° ±3°
- Coating: Epoxy Resin
- Hydraulic Cylinder Material: QT400-15
- Working Medium: Mineral Oil, compliant with DIN 51524
- Flange Mounting Standard: ISO 5211
- Operating Voltage: AC 220V 50/60Hz, DC 24V
- Rated Power: 300W
- Duty Cycle: S3-10%, 30 minutes



Dry type angular stroke  
double-acting hydraulic actuator



Immersion type double-  
acting angular stroke hydraulic actuator



Dry type angular stroke double-  
acting electro-hydraulic actuator



Immersion type angular  
travel double-acting Electro-hydraulic actuator

## ► Overall dimensions

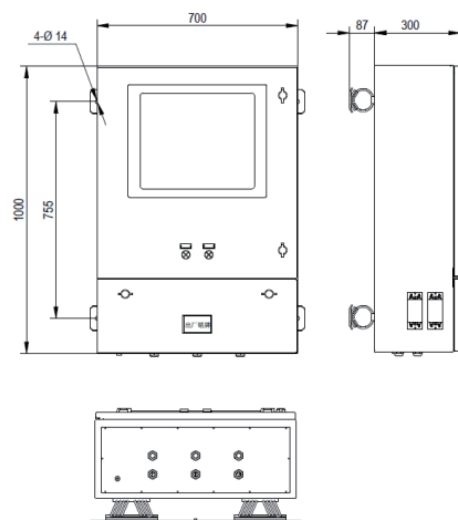


Figure 2 Workstation

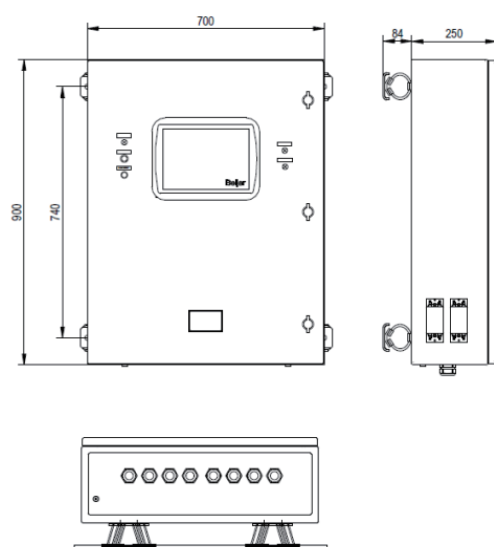


Figure 3 Central Control Cabinet

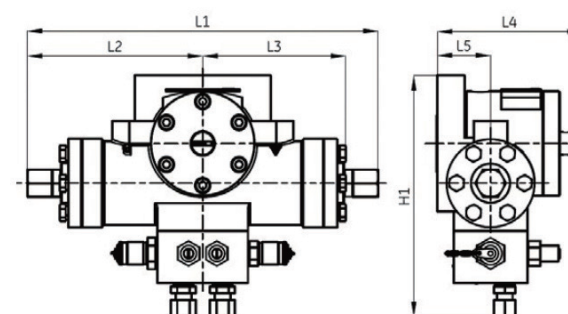


Figure 4 Hydraulic Actuator

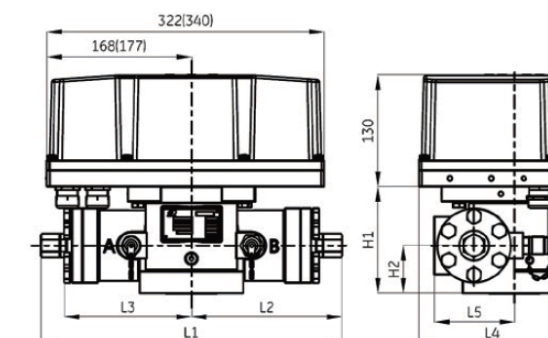


Figure 5 Electro-hydraulic Actuator

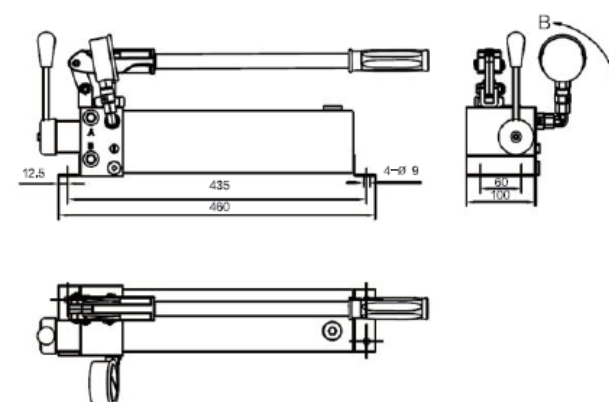


Figure 6 Hydraulic Manual Pump

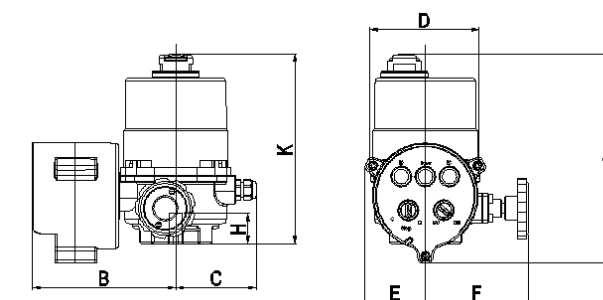


Figure 7 Electric Actuator

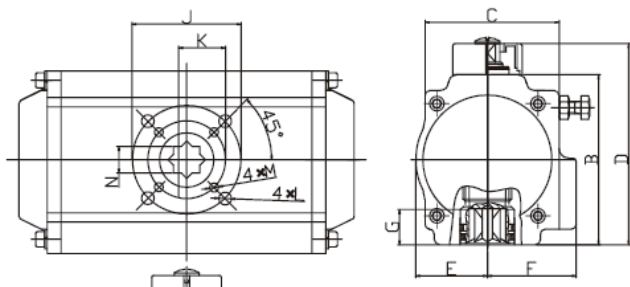


Figure 8 Pneumatic Actuator

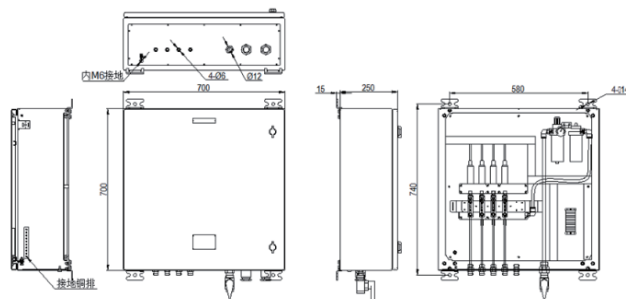


Figure 9 Bubble-type Level Monitoring Control Cabinet

## ► software interface

