



MOTOR SWITCHGEAR ENCLOSURES-

TWIN enclosures are used with dual motor power-packs – each with single set of switchgear for control of a single motor on the power pack.

Each Panel has it's own circuit breaker, phase fail relay, motor contactor and overload relay.

The steel enclosures are also each supplied complete with AC/24VDC switch-mode power supply to provide DC control voltage for the control panels and alarms.

The enclosure has visible status LED's to show the condition of the board – it shows :-

- Phase OK
- Overload OK
- DC-OK
- □ **Command** showing if this motor has been activated from the main controller
- Engaged Command on and Engaged off indicates a contactor failure only. If the other motor has been selected, the Command lamp will be off for this motor.

The enclosures are supplied with a shielded data cable which it pre-fitted through a cable gland on one end – and the other end is pre-fitted with a multi-pin plug which connects directly into the bottom of the steering control cabinet. The correct sockets are clearly labelled for ease of installation.

The only connections that have to be made by the installer are the main AC power supply and the cables to the electric motor. Each motor enclosure **MUST** be supplied with a **separate and independent AC power supply 380/415VAC**. Do **NOT** share power between two cabinets as this eliminates all redundancy features on phase fail and DC control.

E-Series ES-901 AC Switchboard



Cabinet Dimensions 300 x 250 x 150 Mounting Feet centres approx 350 x 210 x 10mm dia

Features:-

Fully self-contained AC motor enclosure.

Contactor ratings to suit HP/KW of the motor used on the power pack.

One enclosure used per motor to comply with Class Rules regarding fire risk.

24VDC heavy duty switch-mode power supply for back-up control voltage.

Visual display on power and steering status.

Simple - pre-wired connection to control cabinet for ease of installation







STEERING CONTROL PANEL

The ES-805 Junction Box is the control centre for the power-pack motor(s) and the ES-900 bridge control panels.

It is connected by means of pre-wired & plugged cables which plug into the bottom sockets making installation a simple matter of "plug and play".

This becomes the terminal for the following items:-

- □ Cable from each of the ES-901 motor switchgear Panels.
- □ Cable from each of the ES-900 control panels.
- Prewired cable from the power pack carrying the Solenoid connections and the alarm inputs.

The cables from the ES-901 switchgear panels provide the DC power to operate all the control systems. This provides two independent DC supplies from the twin independent AC power supplies connected to the AC enclosures. A separate DC connection from the vessel's DC supply must be connected to the junction box to maintain DC control in the event of total AC failure.

The only other connections that need to be made by the installer into this unit are as follows:-

- Emergency joystick control optional connected to terminals as marked
- Limit switches required for all joystick operation - connected to terminals as marked

The circuit drawing for the specific vessel will detail any other connections necessary for items such as DGPS and Autopilots



E-Series ES-805 - INTEGRATED Control System



Cabinet Dimensions 400 x 300 x 210 Mounting Feet centres approx 350 x 210 x 10mm dia

FEATURES:-

This system is very simple to install and has been fully tested for all functions prior to despatch.

It is provided with emergency bypass switches to allow the manual selection of electric motors and the running of them – totally independent of the PLC control system. This gives full system redundancy.

It also allows the manual selection of an emergency joystick which can be operated in the event of failure of the DC PLC control system. This is an optional device which can give added security to the overall performance of the steering.

In addition, a full range of alarm switches have been provided which allow the testing of each individual alarm, plus also the ability to isolate and turn off the alarm function in the event of a faulty alarm sensor.

DATA SHEET



E-Series ES-805 - INTEGRATED Alarm Test Panel

The latest E-Series control panels now have a convenient alarm test and isolation panel provided.

This allows the installer to simulate the alarm fail mode to ensure the correct wiring and operation of the switches and panels.

It also allows a faulty alarm sensor to be isolated and avoid the frustration of the alarm constantly sounding etc.



Switch in **OPERATE** position for normal use and alarm set to operate automatically.

Switch in **DISABLE** position to isolate sensor switch and deactivate that particular alarm function

Switch in **TEST** position to activate the alarm function selected and simulate operation of the sensor.

They are also provided with emergency manual OVERRIDE SWITCHES as standard to allow the selection and operation of the electric motors manually and by-pass the electronic controls. This is in the event of electronic problems which prevent normal operation.

To activate emergency control - move the **STEER** switch AND the **PUMPS** switch to the emergency position. Move upper switch to either **pump 1 ON** or **2 ON** and this will turn ON the motor/pump selected.

The optional emergency joystick can then be activated whilst in emergency mode - to give full control of the vessel. NOTE: the standard joystick will not operate in emergency mode as this is part of the electronic control system.

To return to electronic control - return switches to **NORMAL** position and pump control to **CENTRE OFF**



Emergency override

IT IS IMPORTANT TO LEAVE ALL SWITCHES IN ACTIVE POSITION FOR NORMAL USE UNLESS A SENSOR MALFUNCTION IS DETECTED

ES-805





CONTROL PANEL – ES-900 PLC based control panel with back-lit function descriptions and buttons:-

- □ RUN turns power pack motors on.
- □ STOP turns power pack motors off.
- DODGE STEER emergency manoeuvring control . If activated it will disconnect autopilot control and allow push-button steering to right and left as required.
- MUTE silences audible alarm
- ALARM TEMP High temperature alarm – triggered by high temperature of oil.
- ALARM OIL LEVEL low oil level alarm – triggered by low oil level.
- ALARM PRESSURE low oil pressure alarm. – triggered by drop in pressure cause by tripping of motor overload – or other faults such as line breakage etc.
- PHASE ALARM triggered by failure of operating phase – either single or all on motor
- OVERLOAD ALARM triggered by motor overload beyond limits set.
- 24VDC FAIL ALARM triggered by failure of primary 24VDC power supply
- AUTOMATIC DIMMING CONTROL light sensor controls brilliance of LED's automatically for lighting conditions.

E-Series ES-900 CONTROLLER



ACTUAL CONTROL PANEL DISPLAY



FLUSH-MOUNTING DESIGN Dimensions 185 x 145 x 80

