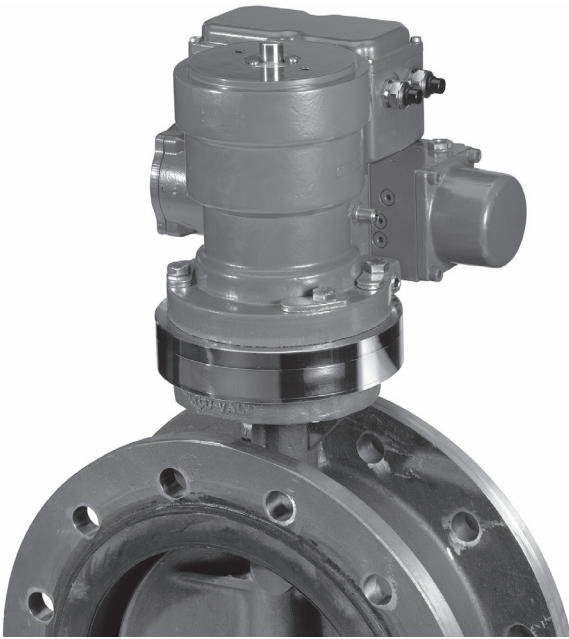


**Product Data Sheet**

SD 1503-2E05

November 2009

# Power controlled LPU system



**Damcos®**

  
**EMERSON™**  
Process Management

# Power control LPU system

## Description

Power controlled LPU has internal control ensuring stop of electrical motor, when the valve has reached end position or if the valve is locked in intermediate positions.

LPU-S can maintain an open position on a spring actuator by restarting the pump in case of a pressure loss.

The control of the units in the system is carried out

with hardwire in star connection from a relay- or PLC substation.

Each LPU is connected to a control console with one cable only and is controlled only by the operating voltage.

In power controlled versions the valve position signals (switches or 4-20 mA loop powered) are led directly to the substation.

## Position indication signals

The position indicator is built into the pump block with internal wiring from position indicator to the circuit board mounted in the LPU electrical encapsulation (except for KFR).

Potentiometer for analogue position indication, or 2 micro-switches for end-position indication are available.

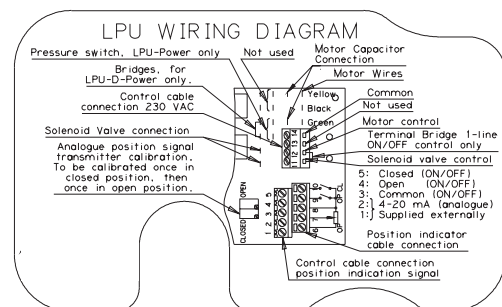
- For analogue position indication signals, two wires are required.
- For ON/OFF indication signal, one common wire and one wire each for open and for closed signal are required.
- ON/OFF switches are limited to 2.5 VA resistive load. Please refer to separate data sheet.

Position indication signal:	Continuous:	4-20mA 24V DC
		2 wire transmitter
Cable:	ON/OFF:	Max 2.5 VA switches
	Continuous:	Min. 5 x 1.5 mm
Damcos recommends standard cable, 7 x 1.5 mm <sup>2</sup>	ON/OFF:	Min. 6 x 1.5 mm
Cable diameter:		∅ 12.5 - 20.5 mm

## Electrical specification

This unit has to be controlled directly with 230V AC, 50 or 60 Hz.

A cable e.g. 7 x 1,5 mm containing motor control and position indicator signal is drawn from the control cabinet to each LPU unit.



Circuit board wiring diagram for power controlled LPU

## Operation LPU-S

**Opening:** The LPU-S requires only 2 wires for ON/OFF-operation. When the LPU-S is energized, it opens the valve, runs for 7 sec. extra, and then the motor stops. The valve is kept open by a solenoid valve, preventing the oil from flowing back into the tank.

- If a minor internal leakage over time causes the pressure to fall below the preset pressure switch level, the pump will restart and run for 7 sec., thus keeping up the pressure. This does not affect the position of the valve.
- If you want to obtain intermediate positions, the solenoid valve may be connected and controlled separately.

**Closing:** When the LPU is de-energized, the solenoid valve opens and the oil flow from actuator to tank, which causes that the spring closing actuator closes the valve. This function may be used as fail-safe.

- If the control system is built up so that the LPU “open” terminal is energized whenever the valve is to be open. An interruption in the power supply will cause the LPU motor to restart as soon as the power is reconnected. This will be avoided by defining the system so that only the solenoid valve is energized. If the valve leaves the required position, the control system must readjust the valve position by re-connecting, the power supply to the “open” terminal.

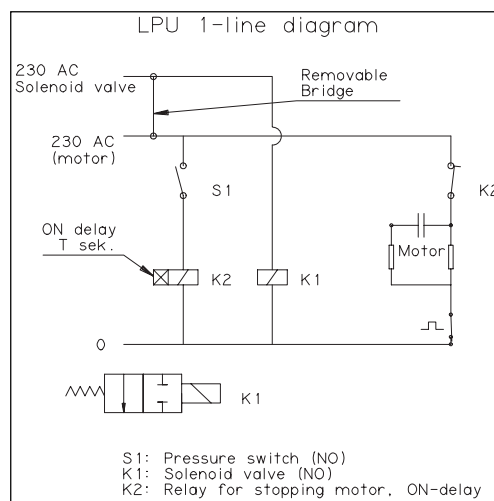
## Electrical LPU-S

The motor/pump starts directly by means of power on “open” terminal.

The timer stops the motor if the pressure has exceeded the pressure switch set point for 7 sec. This circuit ensures high safety on the LPU. Furthermore, a thermal safety is built into the motor.

When the valve is open and the pressure drops below set point, there is an automatic restart.

The solenoid valve will keep the unit in open position as long as the unit has power on.



## Operation LPU-D

**Opening / Closing:** LPU-D requires only 3 wires to operate the valve. When the motor is energized, it opens or closes the valve, dependent on the activation of the solenoid valve, runs for a further 7 sec., and then stops. The valve is locked in position by a double pilot operated check valve, preventing the oil from flowing back into the tank.

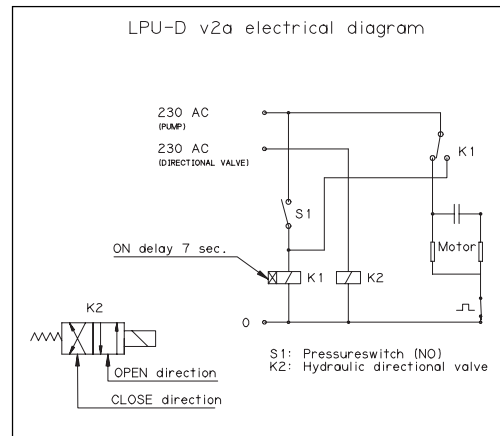
If you wish to obtain intermediate positions, the motor and the solenoid valve are simply de-energized when the required position has been reached.

**Note:** To prevent automatic restart after blackout, Damcos recommends to take away the power for 30 sec. after the valve has reached end position.

# Power control LPU system

## Electrical LPU-D

The motor/pump starts directly by means of power on - open or close. If the pressure exceeds 70 bar for 7 sec. the timer stops the motor/pump. This circuit ensures a high safety on the LPU.



## LPU with LED Postion Indicator

The LED Position Indicator in the top cover can be powered by:

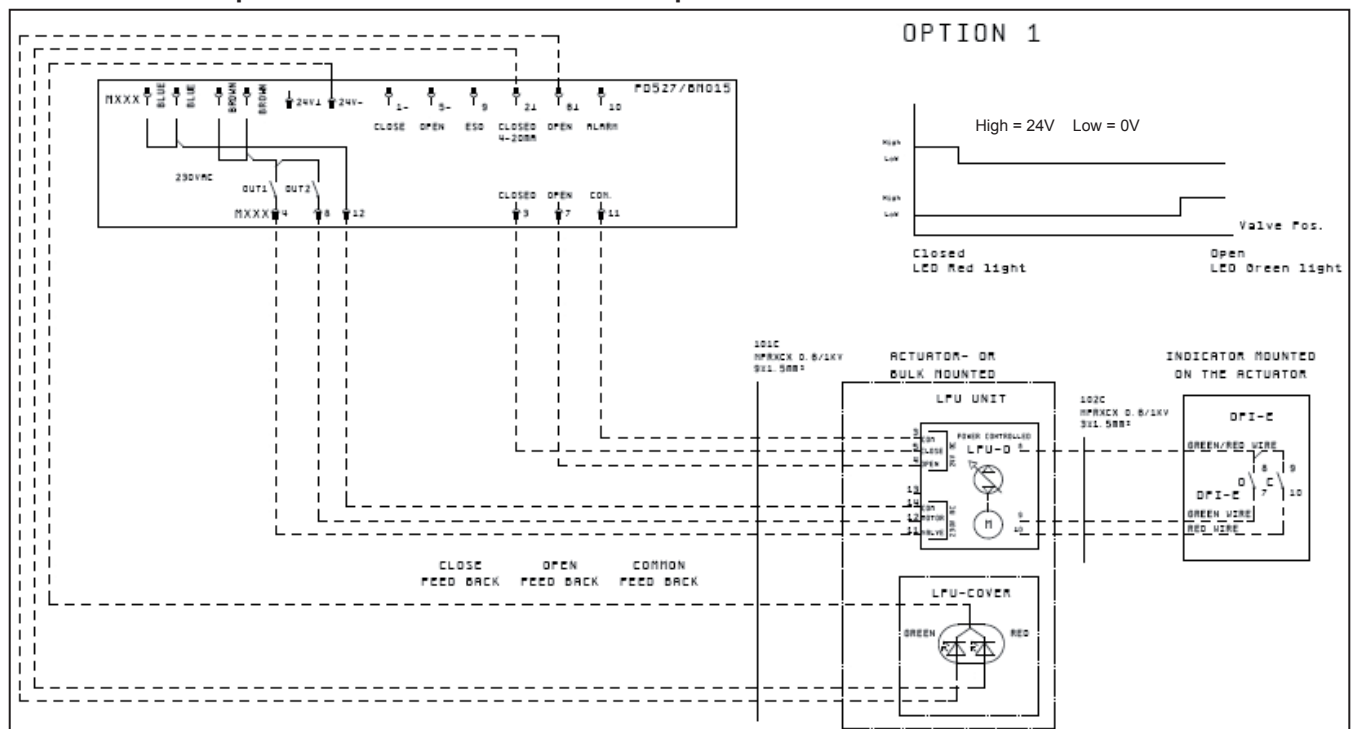
- Directly via the ON/OFF position indicator (commonly DPI-E), if the signal back to the inputs may be 24VDC respectively 0V.
- From the ON/OFF position indicator outputs in PD527, with the 0VDC connected to the common anode of the LED.

- From customer specified output.

Under all circumstances, 24VDC power to the LED must be available in LPU.

## Digrams for LPU with LED Postion Indicator

### PD527 Controlled power LPU with LED Indication - Option 1



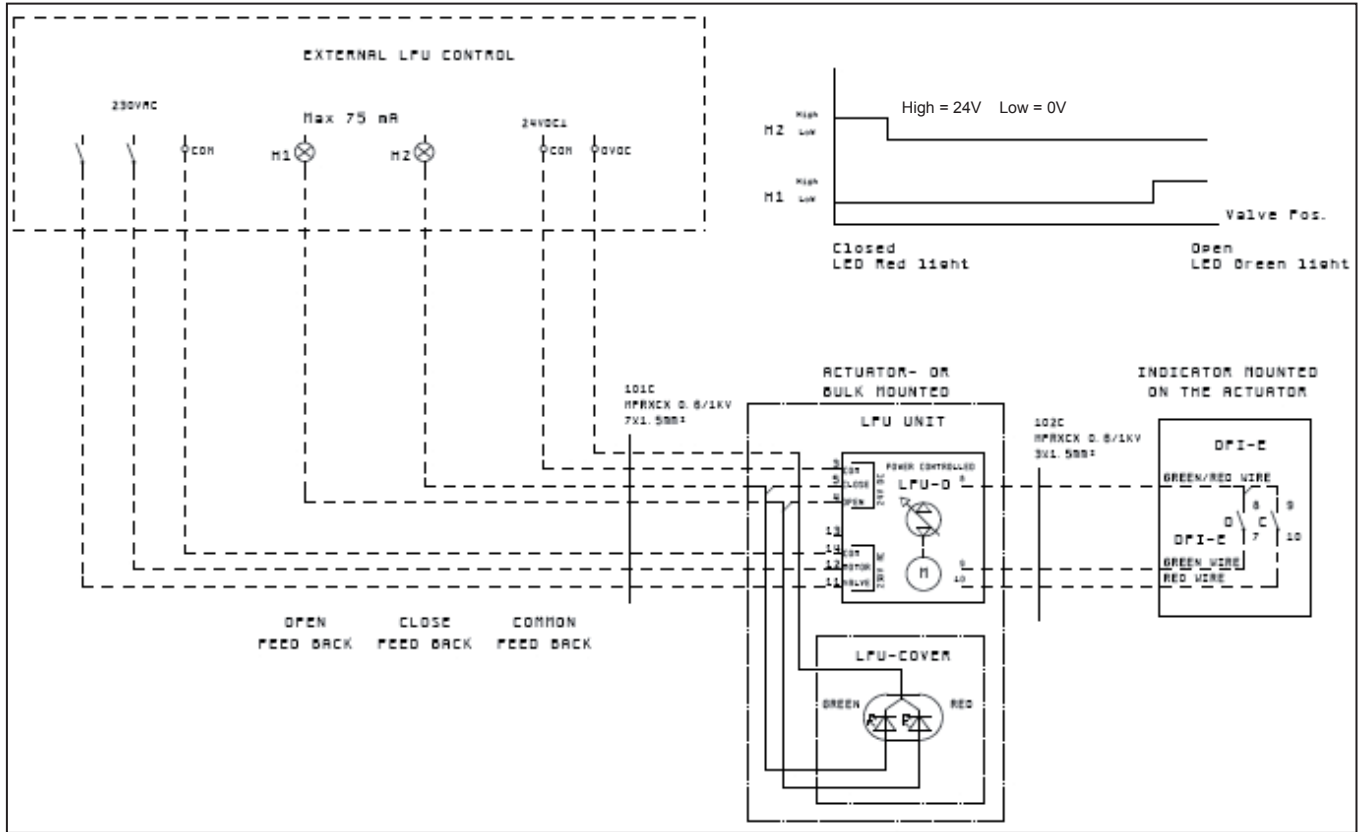
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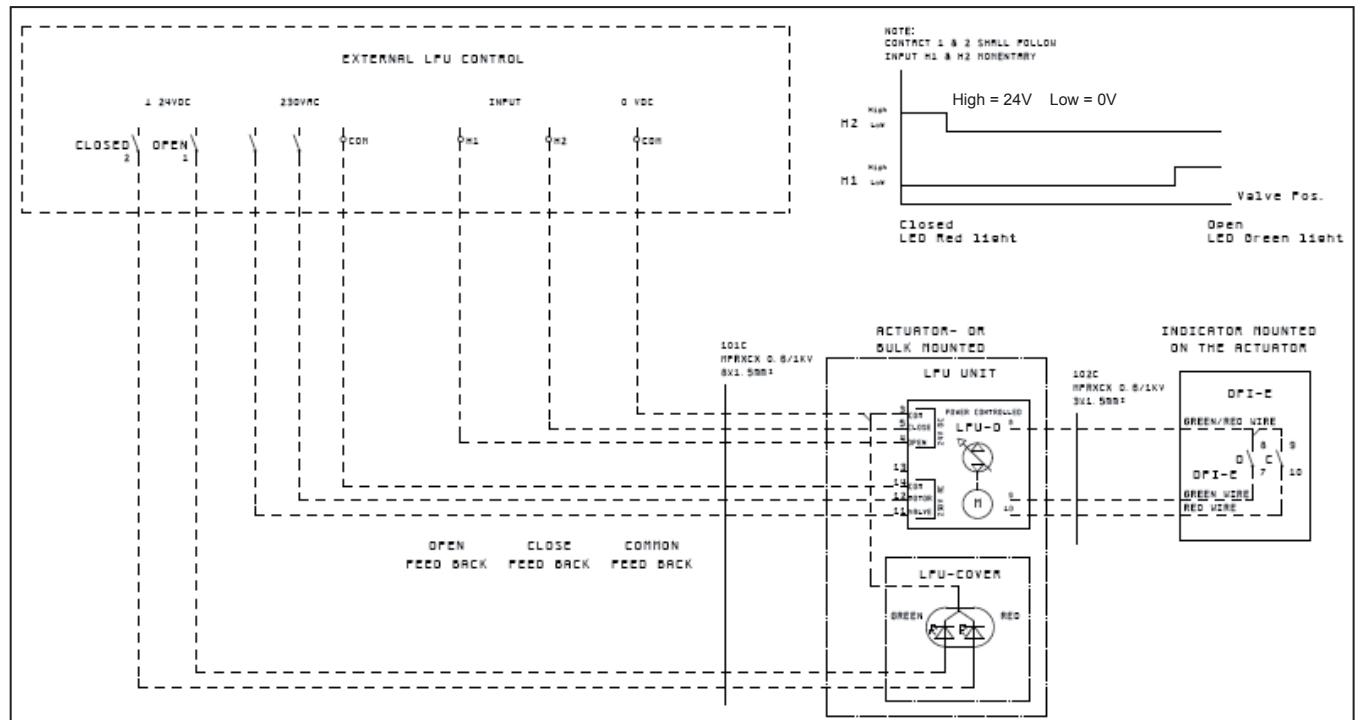
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# Power control LPU system

## External Controlled power LPU with LED Indication - Option 2

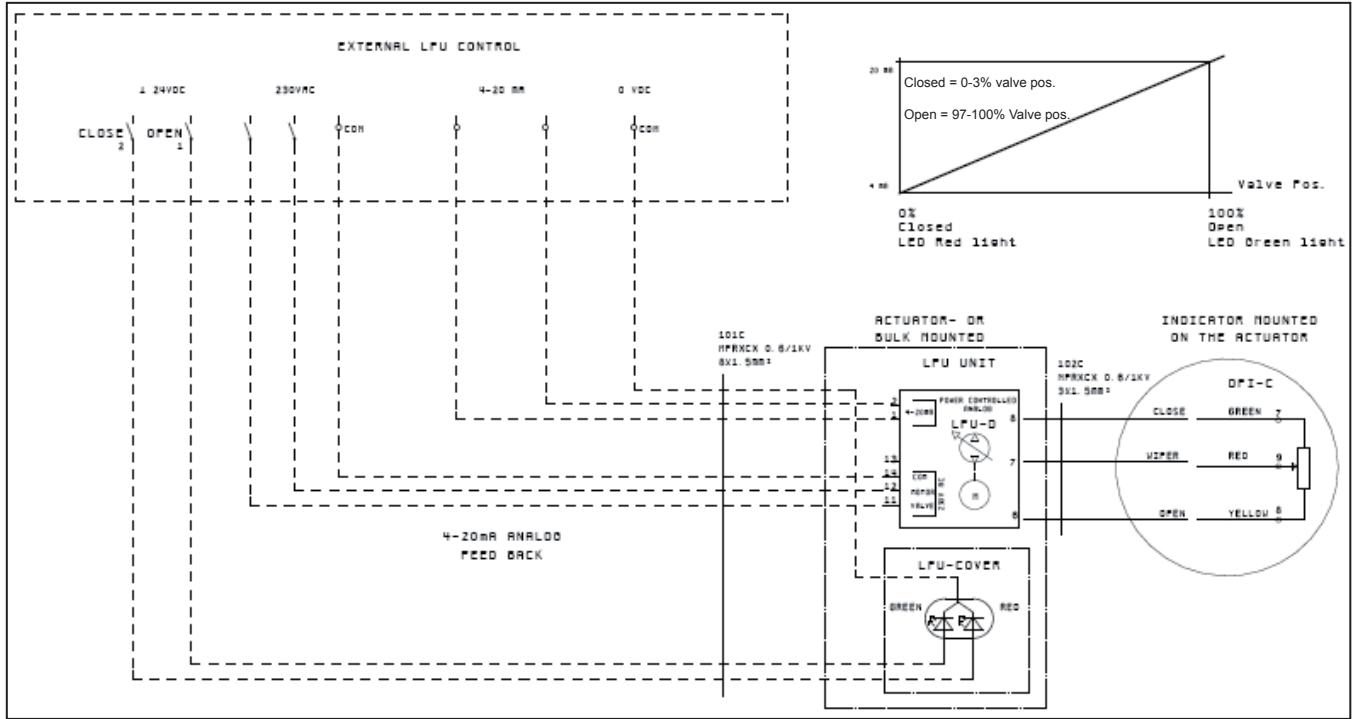


## External Controlled power LPU with LED Indication - Option 3



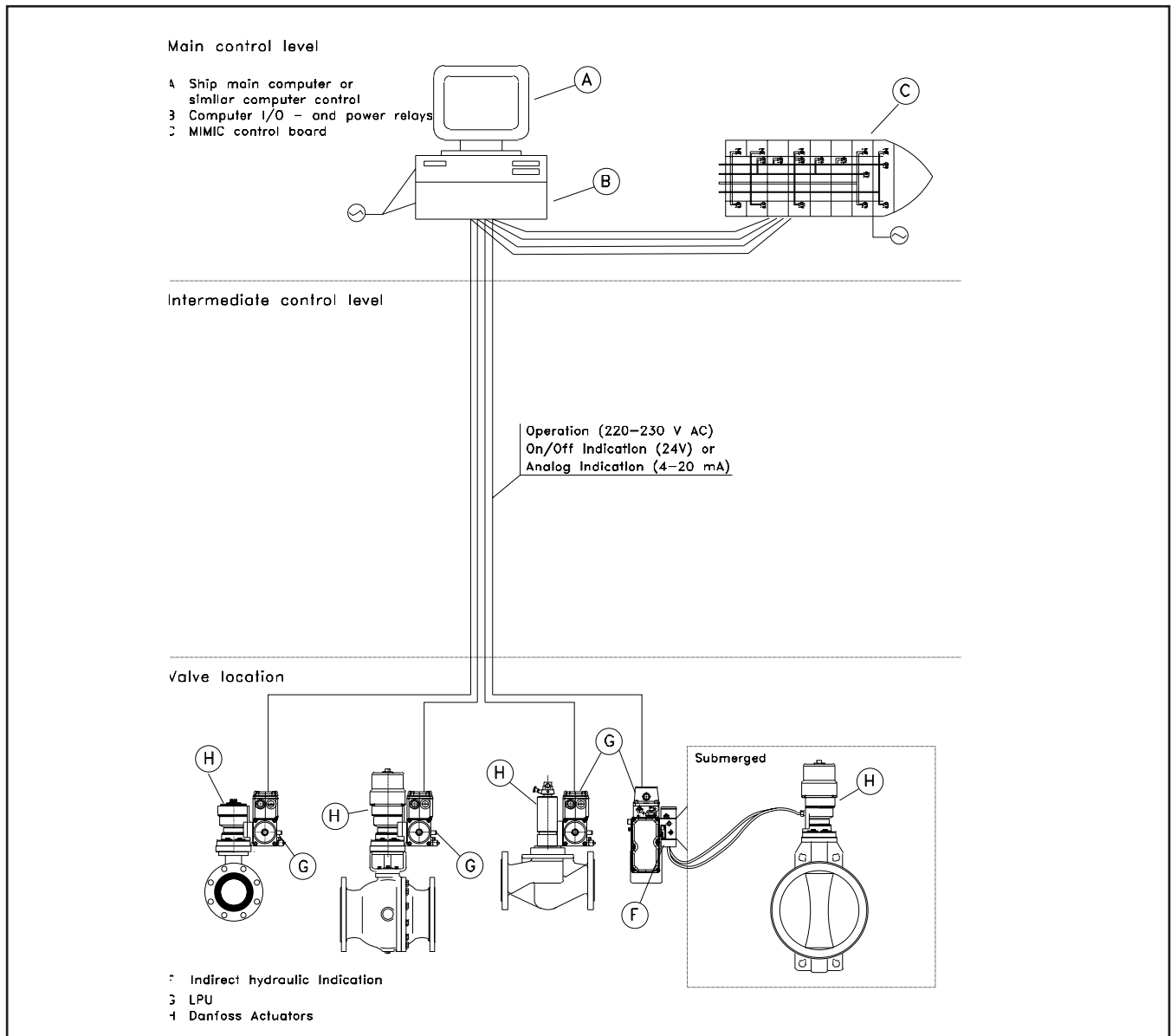
# Power control LPU system

## External Controlled power LPU with LED Indication - Option 4



# Power control LPU system

## System layout



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