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Erbatronic

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Dual Pump Monitored Control System (DPM01)

BRIEF DESCRIPTION OF CONTROL UNIT

The DPM01 twin pump controller system is designed to control two submersible 'Pump on Demand' type water pumps, each with maximum power rating of 1.2kW, in twin pump redundancy water reclamation systems. The unit monitors the current drawn when either of the pumps are running. Each pump is energised alternately to help reduce wear on a single pump and try to ensure water demand is not interrupted if a pump failure occurs. The device monitors for short circuit and thermal overload. As the unit is specifically designed for use with submersible pumps in a system utilising automatic mains water top-up, dry run is not monitored.

The system has three modes of operation:

- 'Running' – Both pumps running normally;
- 'Running/Fault' – Fault detected in one pump. System still operational.
Call a Service Engineer immediately;
- 'Fault' – Fault detected in both pumps. System ceases to operate.

The system has been designed with simplicity as the core design criteria. Quick and easy 'plug and play' installation. If a fault condition should occur, the fault output alerts that servicing of the system is required. If serviced quickly, no loss in water supply should be noticed.



INSTALLATION

The IP55 rated control unit should preferably be wall mounted internally. If external mounting is necessary, it is recommended that the unit be mounted in a suitable enclosure. The unit is designed to be a 'plug and play' unit with no additional set-up requirements. There are four connections: power; auxiliary fault output; pump1; pump2.

POWER REQUIREMENTS

The full system requires a 230V AC fused mains supply, suitable to supply 10A.

EXTERNAL FAULT OUTPUT

Auxiliary output can feed an external warning lamp, which is illuminated when a fault condition occurs. This output is 230V AC, 300W max. (Fused inside the unit)

PUMP1 and PUMP2

Both pumps should be 1.2kW submersible 'pump on demand' type pumps.

SYSTEM ACTIVATION

At power up (or recovering from a power failure) the system will check the status of all monitored signals and if all signals are in normal status, switch to 'running' mode. In this mode, a single pump is energised at any one time and power is supplied alternately when current water demand ceases.

Normal operation:

RUNNING



SYSTEM OPERATION

There are three modes of operation: Running; Running-Fault; Fault.

The system, when running normally, will remain in 'Running' mode indefinitely. When a fault is detected, the unit switches to 'Running-Fault'. The system will continue to operate using the remaining pump, display the fault light with the running light. The Auxiliary fault output will be activated.

At this point a service engineer should be called.

Single pump failure: **RUNNING-FAULT**



Should the second pump fail, the unit will isolate power to both pumps. The running light will not be illuminated. The fault light and auxiliary fault output will be powered. No water will be supplied from the system.

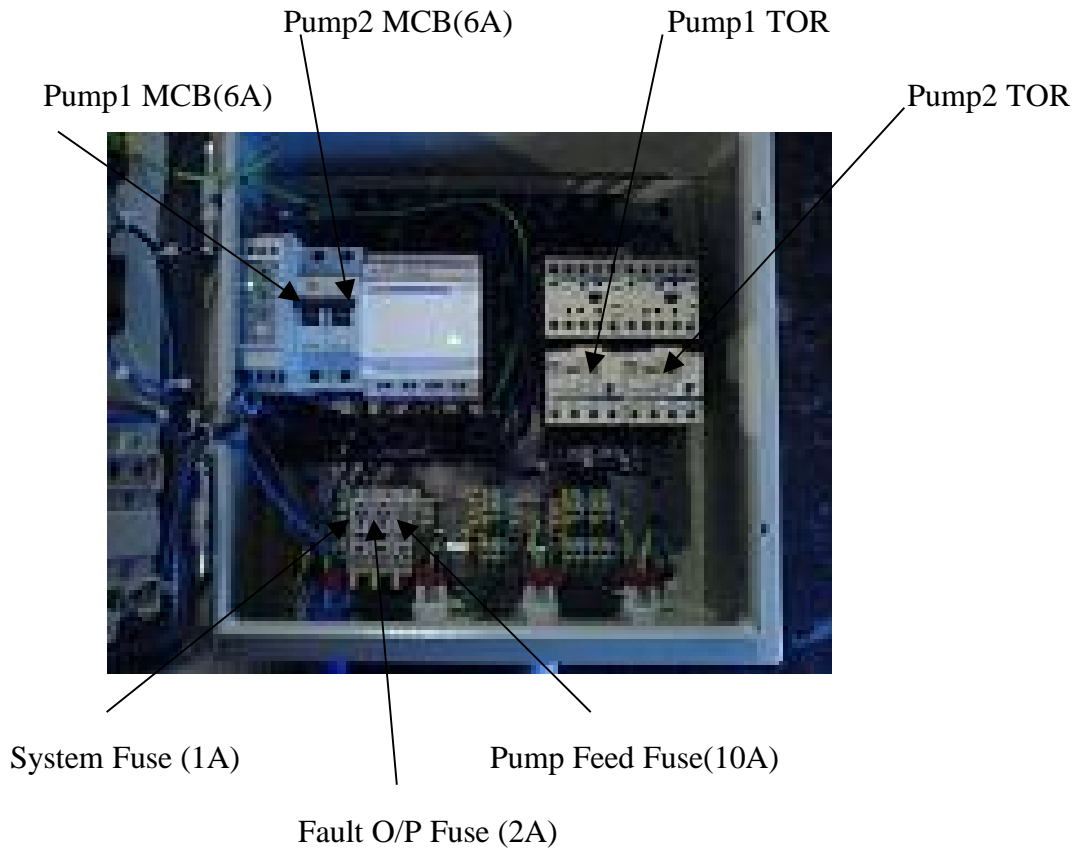
Both pumps failed: **FAULT**



SERVICING

A suitably competent person, with electrical installation knowledge, should only perform servicing of this unit. If in doubt, call a service engineer.

There are user serviceable components in the unit:



PUMP1 & PUMP2 MCB's

The bank of MCB's is there to protect the system against short circuit in the pump output circuitry. If one of the MCB's has cutout, check pump wiring continuity and PNE insulation.

DO NOT TAMPER WITH OMRON CURRENT SENSOR!



STANDARD FUSE BANK

The fuse bank is to protect the internal components.

Fuse1: 1A protects: Zelio PLC, Omron and contactor control signals.

Fuse2: 2A, auxiliary fault output

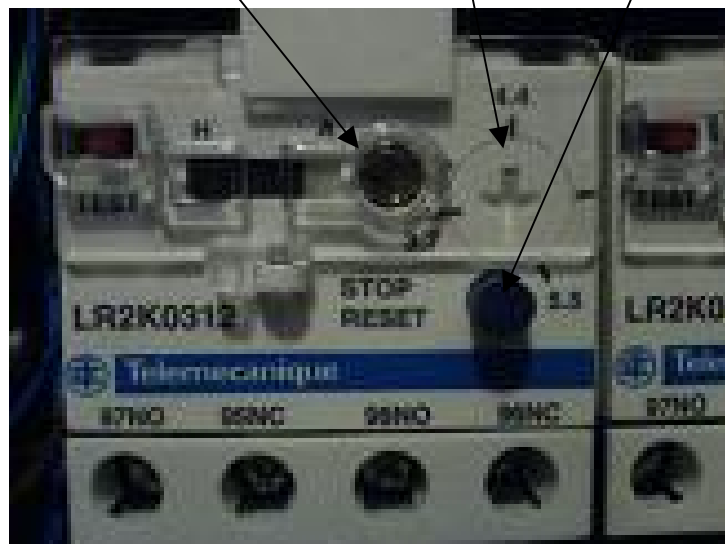
Fuse3: 10A, High current feed protection



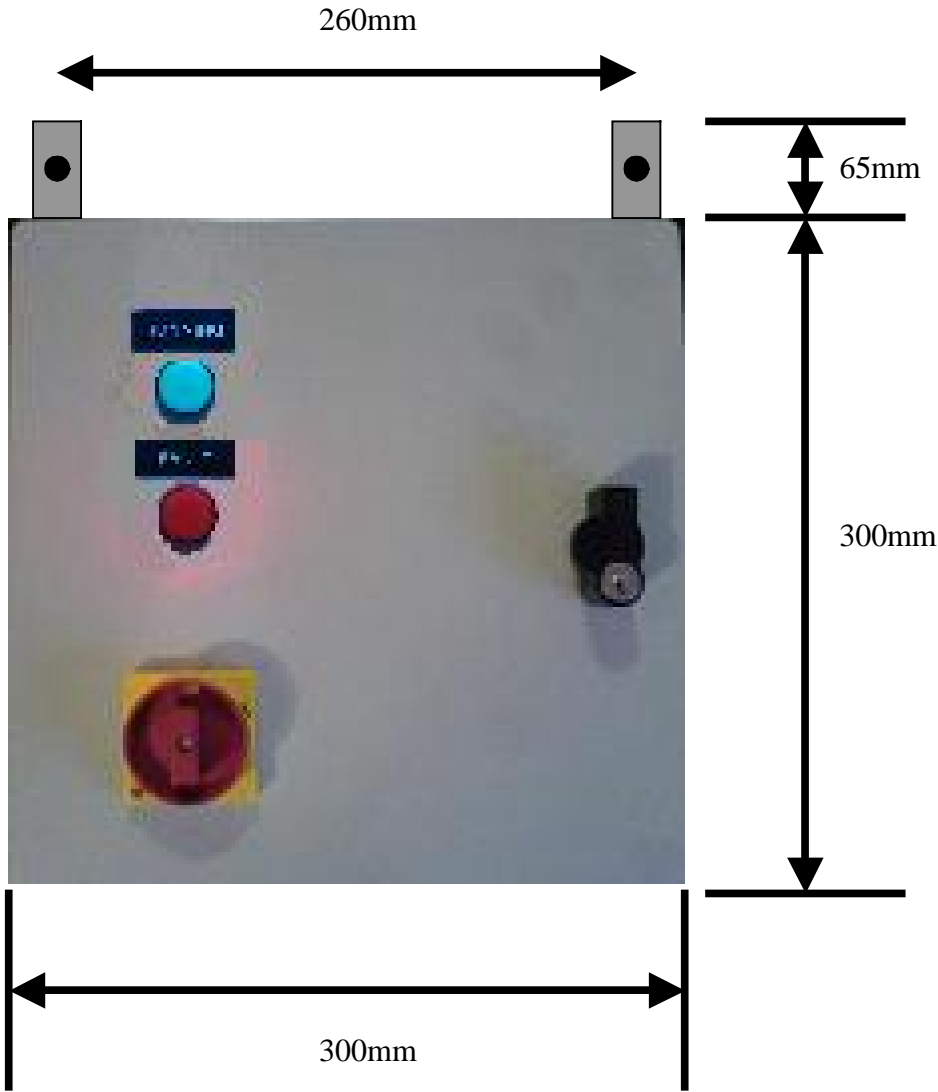
THERMAL OVERLOAD RELAYS (TOR)

Thermal Overload Relays are adjustable. The dial 3.7-5.5 should be set to the Full Load Current (FLC) rating of the pump. 1200W pump should require a setting of 5.2A. If the relay has cutout, a yellow indicator is visible in the status window to the left of the dial. The switch can be re-set by pressing the blue re-set button.

Status Indicator window FLC setting Re-set button



DIMENSIONS



Unit Depth : 150mm + 40mm surface mountings



Declaration of Conformity

Erbatronic declare, under our sole responsibility, that the product named below conforms to:

European Directive: 73/23/EEC
British Standard: BS EN 60439-1

Low Voltage Directive
LV Switch gear / Control Assemblies

Model: DPM01

Dual-Pump Control Unit

Unit description and mode of operation:

The DPM01 control unit is designed to control the operation of and to monitor the condition of two submersible water pumps installed in dual pump redundancy water harvesting systems. When operating under normal conditions, one pump will be active at any time. On water demand, pump current is sensed by the control circuitry then when current draw ceases, the CPU switches power to the other pump. This mode of operation continues until a fault condition occurs. Fault condition is detected as Thermal Overload or short circuit in either pump. When one fault has been detected, the unit continues to operate using the remaining pump. Water supply will not be affected in single fault mode. A fault lamp, including auxiliary fault lamp output, will indicate that service is required. If fault conditions occur in both pumps, the control unit isolates both pumps.

Signed by: Lee Wilde B_{Eng} M_{Sc}

Authority: Technical Director

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