PUMP **CONTROL**

OWNER'S OPERATION MANUAL

Single Pump Controller Installation and Operating Instructions

MODEL: RPC-15007

WELCOME TO SINGLE PUMP CONTROL

Your Single Pump Controller reflects the superior quality and attention to detail in design, engineering and manufacturing that has distinguished MATelec Products for decades. The controller incorporates the very latest in micro-processor technology, ensuring you, the owner/operator, of many years of functional, reliable and 'user friendly' operation.

Please read this manual prior to installation and operation of the controller.

CONTENTS

WARNING: All electrical connections must be carried out by a suitably qualified and registered electrician

SAFETY ⚠️

- Prior to Installation, ensure power supply is isolated.

- Power supply must be Circuit Breaker Protected. (Qualified Electrician to determine appropriate amp rating.)

- Electrical connection to the panel must be carried out in accordance with 'Connection Instructions', see page 3.

- Addition or modifications to the control panel are not permitted and will void warranty.

- The controller is not intended for use by children or infirm persons without supervision.

- Repairs to the Controller must only be carried out by a suitably qualified Electrician
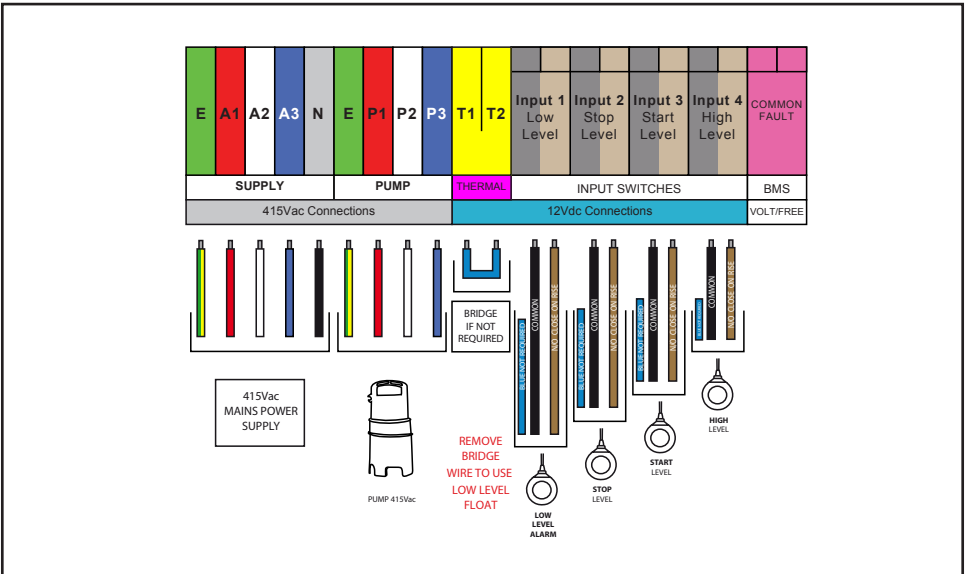
INSTALLATION

MOUNTING

FRONT

Top

Bottom

SIDE VIEW

Top

Mounting Frame/ Wall

Bottom
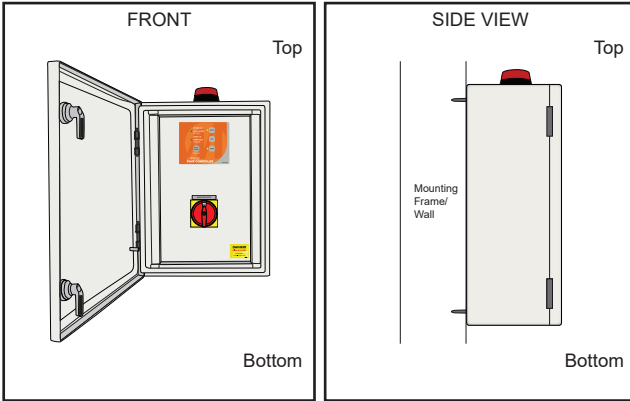
1. Controller enclosure must be mounted in a vertical position.

2. Ensure mounting method does not compromise enclosure weather proof rating.

3. Ensure access to main isolator is not restricted.

4. Ensure cables/conduits entering the panel have mechanical protection and that the penetrations are sealed and do not compromise the weather proof rating of the enclosure.

CONNECTION

E	A1	A2	A3	N	E	P1	P2	P3	T1	T2	Input 1 Low Level	Input 2 Stop Level	Input 3 Start Level	Input 4 High Level	COMMON FAULT

SUPPLY — PUMP — THERMAL — INPUT SWITCHES — BMS

415Vac Connections — 12Vdc Connections — VOLT/FREE

415Vac MAINS POWER SUPPLY

PUMP 415Vac

BRIDGE IF NOT REQUIRED

REMOVE BRIDGE WIRE TO USE LOW LEVEL FLOAT

COMMON

NO CLOSE ON RISE

LOW LEVEL ALARM

STOP LEVEL

START LEVEL

HIGH LEVEL

Note: Controller must be earthed and all electrical connections must be carried out by a suitably qualified Electrician. For Single Working Level Float Switch Applications, connect to "Start (Input 3)" terminals only, and NO bridge wire is required in "Stop (Input 2)" terminals.

OPERATION

This controller can perform control functions for most Single Pump pumping applications. It is more than likely that the control parameters have already been set up for your particular application, however, hereunder you will find details of the setup and configuration options.

There are 6 DIP switches located on the lower side of the control module, which allows for selecting "mode" and "feature"options, as per the following table:

DIP Switch	Position	Function
1/2	Off/Off	**Mode A:** Standard typical float switch configuration (Start,Stop and High Level). No Low Level
	Off/On	**Mode B:** Standard configuration plus low level (Start,Stop and High Level).
	On/Off	**Mode C:** Standard configuration plus Prime Loss enabled, on Low Level (Input 1)
	On/On	**Mode D:** Pressure Pumping configuration (Lead, Lag and Low Pressure)
3	Off	Operating Pump alternates each time a pump start is triggered, or after 30 minutes continuous running.
	On	Operating Pump alternates after 6 hours continuous running.
4	Off	Anti-seize Timer disabled
	On	Anti-seize Timer 6 seconds every 7 days enabled
5	Off	When placed in Manual Mode, pump remains in Manual Mode
	On	When placed in Manual Mode after 5 minutes the pump will revert to Auto
6	Off	High Level Alarm automatically resets upon open circuit of high level input. High Level alarm has 15 minute delay.
	On	High Level Alarm can only be reset manually. High Level Alarm has 5 minute delay.

Mode A: Standard Configuration
Start/Stop/High Level operation. When the Pump Start input is closed contact (triggered), the Duty Pump will be turned on. The pump will remain on until both the Pump Start and Pump Stop Inputs have turned off (Open Circuited). Upon High Level, both pumps will run until the Pump Stop Input turns off.

In addition to this, there is a maximum idle timer, which will trigger a Pump Start condition, if either pump has not run for 4 hours, and the Stop Float Contacts are closed. The pump will continue to run until the Stop Float Contacts open. Input functions are as follows:

Input	Function
Input 1	Not used
Input 2	Pump Stop
Input 3	Pump Start
Input 4	High Level

Mode B: Standard Configuration plus Low Level Alarm
As per Mode A, except it has an active Low Level input. The Low Level input must be closed, for Pump Start and Pump Stop inputs to function. The High Level input however, will still override the Low Level and run both pumps. Input functions are as follows:

Input	Function
Input 1	Low Level
Input 2	Pump Stop
Input 3	Pump Start
Input 4	High Level

The basic logic on which a High or Low Level Alarm is determined, is set out in the Table below:

Input 1	Input 2	Input 3	Input 4	Pump State	Alarm
Low Level	Pump Stop	Pump Start	High Level		
Closed	Open/Closed	Open	Open	Off	-
Closed	Open/Closed	Closed	Open	On	-
Closed	Open/Closed	Closed	Closed	Both On	High Level (after Timeout)
Closed	Open/Closed	Open	Closed	Both On	High Level (after Timeout)
Open	Open/Closed	Open	Open	Off	-
Open	Open/Closed	Closed	Open	Off	Low Level
Open	Open/Closed	Open	Closed	Off	Low Level
Open	Open/Closed	Closed	Closed	Both On	High Level (after Timeout)

If there is a Low Level Alarm, then both Pumps will be locked out until the alarm is manually reset. This lockout will only be over ridden upon a High Level condition where both the Pump Start and High level inputs are closed.

Note that after a High level is triggered, the pumps will both run until the Pump Start and Stop inputs are opened

Mode C: Standard Configuration plus Prime Loss
As per Mode A, except Input 1 is connected to a prime loss/flow switch. If at any stage, after Pump Start, or whilst a pump is running, the Prime Loss input opens, for a continuous 2 minute period, a fault is immediately triggered for that pump and duty alternates. Input functions are as follows:

Input	Function
Input 1	Prime Loss
Input 2	Pump Stop
Input 3	Pump Start
Input 4	High Level

Mode D: Pressure Pumping Configuration
Input functions are as follows:

Input	Function
Input 1	Prime Loss (BRIDGE IF NOT REQUIRED
Input 2	Lead Pump Pressure Switch (set at say 350kPa)
Input 3	not used
Input 4	Low Pressure Switch (set at say 200kPa)

Typical Operation Mode D:
- Pressure drops to 400kPa: Lead (for this cycle) Pump cuts in.
- Pressure increases and Pump cuts out.
- Cycle continues
- The controller has inbuilt timers for "Delayed" Start and Stop to obviate pump chatter. Upon Input 1 contact closure, the pump will not start (delay start) for 1 second and will not stop (minimum run time) for 10 seconds (or 11 seconds from close of Input contacts). This "run on" occurs even if Pressure switch contacts open during this initial period. If however run time exceeds 11 seconds, the pump will stop immediately upon "open circuit" occurring.
- If the Pressure Switch Input closes circuit as well as the Low Pressure Switch Input, a low pressure timer will begin counting. If this condition exists for a period of 60 seconds, then both pumps are shut down and the system signals a level alarm. This would be typical of a Loss of Prime or Burst Main situation
- Pressure switches are normally closed and open on High pressure

In pressure pump mode some of the optional features are disabled, including maximum run alternation, anti-seize and maximum idle timers

Mode 'Current Loop': Level Transducer (4-20mA) Configuration

In order to activate current loop mode the enclosure must be opened and jumper J10 moved to the "current loop enabled" position (as shown in the following picture). By selecting current loop input mode the pump start input can be connected to a 4-20mA loop powered pressure transducer. The pump start, stop and high level signals can then be received from the pressure transmitter instead of float switches. In this mode the pump stop float switch input will be ignored however the high level input will still operate as per normal so that a float switch can be used as backup if desired. The start, stop and high level current set points will be pre-programmed into the software and therefore cannot be adjusted. The levels for a 0-4m transducer are Stop= 300mm, Start= 600mm and High= 1000mm.
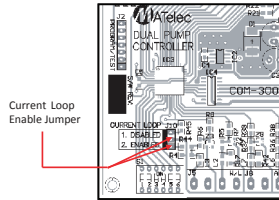
Figure 1: APC6 PCB Layout and Current Loop Jumper

Anti-Seize Timer

With DIP Switch 4 set to "On", the Anti-seize timer will automatically run the pumps for 6 seconds, every 7 days. This pump operation will completely override all inputs including the low level (if enabled). This feature will only run pumps that are set in Auto. This "Pump Run", will alternate between Pump 1 and Pump 2. A pump that has been locked out due to a fault will not run.

Manual Mode Timeout

With DIP Switch 5 set to "On" the pump will only remain in Manual Mode for 5 minutes, after which time, it automatically reverts to Auto.

High Level Alarm Reset

With DIP Switch 6 set to "Off", the High Level Alarm will automatically reset once the High Level input opens circuit. The controller will also use the alternate High Level Alarm Delay. Typically used for Storm Water applications. High Level Alarm delay in this mode is 15 minutes. Setting this DIP Switch to "On", will cause the High level Alarm to remain active until the controller is reset. The High Level Alarm will use the standard High Level Alarm activation delay. Typically used for Sewerage applications. High Level Alarm delay in this mode is 5 minutes.

Audible and Visual Alarm Test

By pressing the **Mute/Reset** button on the Keypad continuously for a period of 5 seconds, the Strobe, Siren and indicator Lights will be powered up for inspection.

Fault Reset

To reset all faults on the controller, press and old the Mute/Reset button on the Keypad continuously for a period of 3 seconds until an acknowledgment beep is heard.

Pump Fault

A Pump Fault is indicated for two types of faults. A Thermal Overload will be indicated by way of a steady Fault Indicator Light when the overload opens the contact for 3 seconds. Prime loss will be indicated by flashing the pump fault light slowly.

Level Alarms

A High Level Alarm is indicated by way of a steady Level Alarm Indicator Light.
A Low Level/Low pressure Alarm is indicated by way of a Flashing Level Alarm Light.
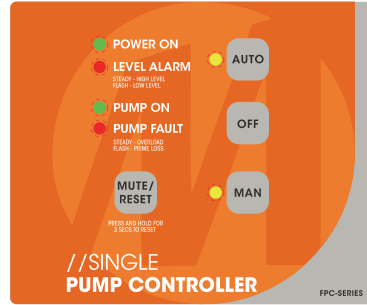
Auto Silencing Alarm Feature

The audible Alarm is programmed to sound for 5 minutes continuously, unless muted and will thereafter automatically silence and enter "Chirp" mode. In "Chirp" mode, the Audible Alarm will sound briefly (2 seconds) every 5 minutes.

CIRCUIT DIAGRAM
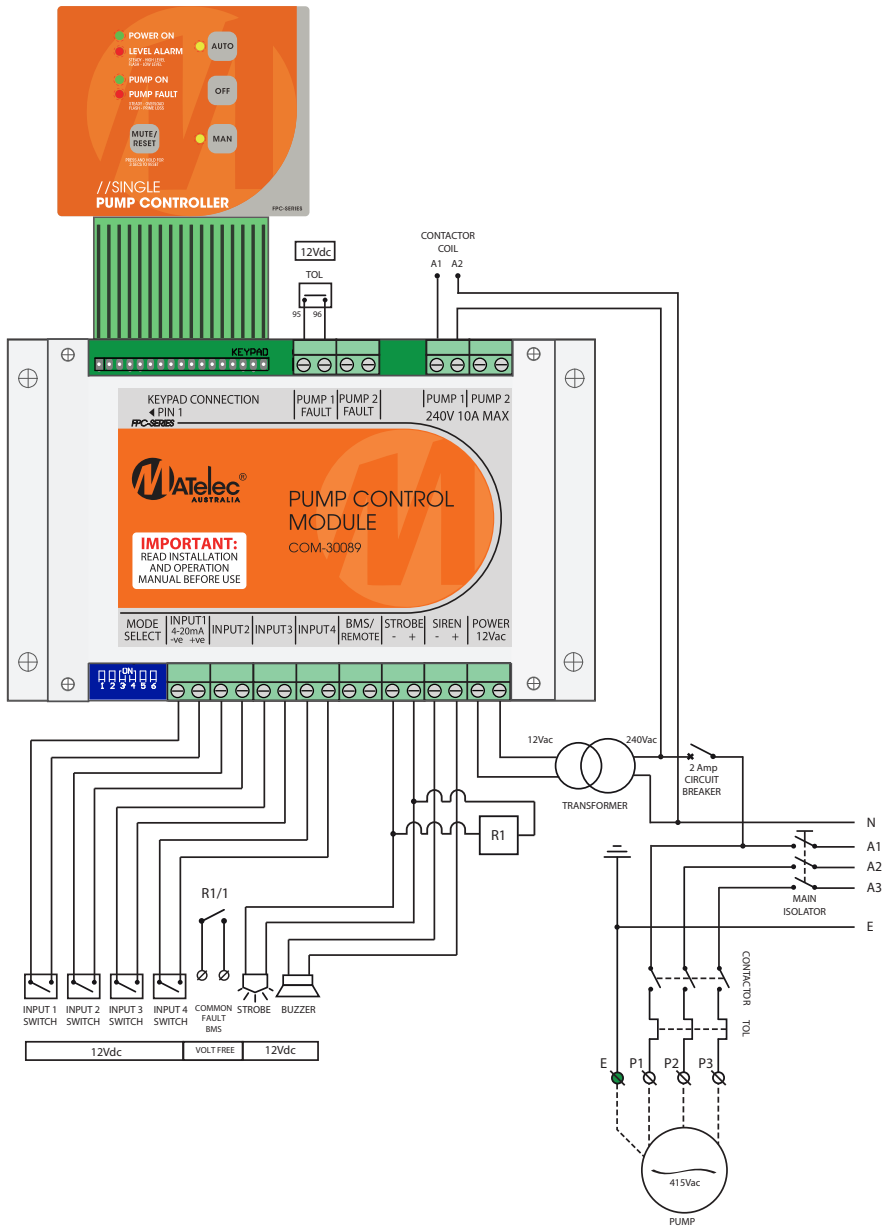
AT A GLANCE

A quick reference to the controller's Keypad and Indicator functions and meanings.

KEYPAD

INDICATORS

POWER ON	**POWER ON** Power is turned on.
LEVEL ALARM	**LEVEL ALARM ON** A high level alarm has been present for the preset time. **FLASHING** A low level alarm is present.
PUMP ON	**ON STEADY** Pump switched on to run.
FAULT	**ON STEADY** A pump fault/overload has occurred. **FLASHING** A prime loss fault has occurred.

PUSH BUTTONS

MUTE/ RESET	Silences the siren and if held down for 3 seconds, clears all faults
AUTO	If selected (the LED indicator will confirm if on) the particular pump is set to Automatic Pumping Mode
OFF	Turns pump off
MAN	If selected (the LED indicator will confirm if on) the pump is set to Manual Pumping Mode

DISTRIBUTED BY:

INSTALLATION DATE:

SERIAL NUMBER:

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