OPERATION MANUAL

Fire Pump Controllers - Jockey/Jacking Pump

FPC-70011 (1 Phase) & FPC-70013 (3 Phase)

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Introduction

MATelec Australia's Jockey/Jacking Pump Controller is designed to provide control and status indication for a jockey/jacking pump, compliant with the current Australian Standards **(AS 2941-2013: Section 5).** Housed in a red powder coated metal enclosure, the Controller features pump overload protection, a digital input for automatic pump control and an LCD screen/keypad interface with pump status indication, logged data and auto/off/manual control.

Functions & Fault Protection

Pad-lockable Main Isolator

The main isolator is suitable for locking in the On or Off position.

Auto Mode

The automatic control mode is selected by pressing the Auto button on the keypad. In auto mode, the controller will operate based on the digital inputs. The pump will start when the input receives a closed contact from the pressure/pump start signal, and stop when the input receives an open contact.

Pump Off Mode

The off mode is selected by pressing the Off/Reset button on the keypad. The operation of the off mode can be adjusted in the configuration menu via the *Off Latch* parameter. See 'Configuration Screens' on page 7 for more information on the configuration menu.
To comply with AS 2941-2013: Section 5, the *Off Latch* parameter must be set to off 'Off', which is the default setting. This will cause the pump to only remain off while the Off/Reset button is held down. If the Off/Reset button is released, the system will immediately revert to auto mode. This prevents the system from being left in the off mode accidentally.
For other applications, the *Off Latch* can be set to 'On' if required. This will cause the system to remain in the off mode continuously after the Off/Reset button is pressed, and the Auto button must be pressed to return to auto mode.

Manual Mode

The manual mode is selected by pressing the Man button on the keypad, and will manually run the pump irrespective of the input. The pump to only run manually while the manual button is held down. If the Man button is released, the system will immediately revert to auto mode.

Run On Timer

The pump run on timer causes the pump to run for a period of time after the pump run input receives an open contact from the pressure switch/pump start signal. The *Run On Time* parameter is set to 0 seconds by default, but can be adjusted in the configuration menu to any value up to 255 seconds. See 'Configuration Screens' on page 7 for more information on the configuration menu.

Functions & Fault Protection

Pump Overload Protection

If the pump fault input on the control module receives an open contact from the thermal overload, the pump is immediately switched off and the system enters a fault state, closing the volt free pump fault output. The system will remain in fault until the Off/Reset button is held down for 3 seconds, or the controller is power cycled.

Safety

This control panel has been designed and built for applications that are Commercial and/or Industrial in nature, operation, function and location. If the control panel is to be used in Domestic/Residential applications, where specific Wiring Rules in respect of 'electrical supply' protection may apply, it is the responsibility of the installing electrician to ensure compliance with relevant standards.

- 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 the following pages.
- Additions 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.

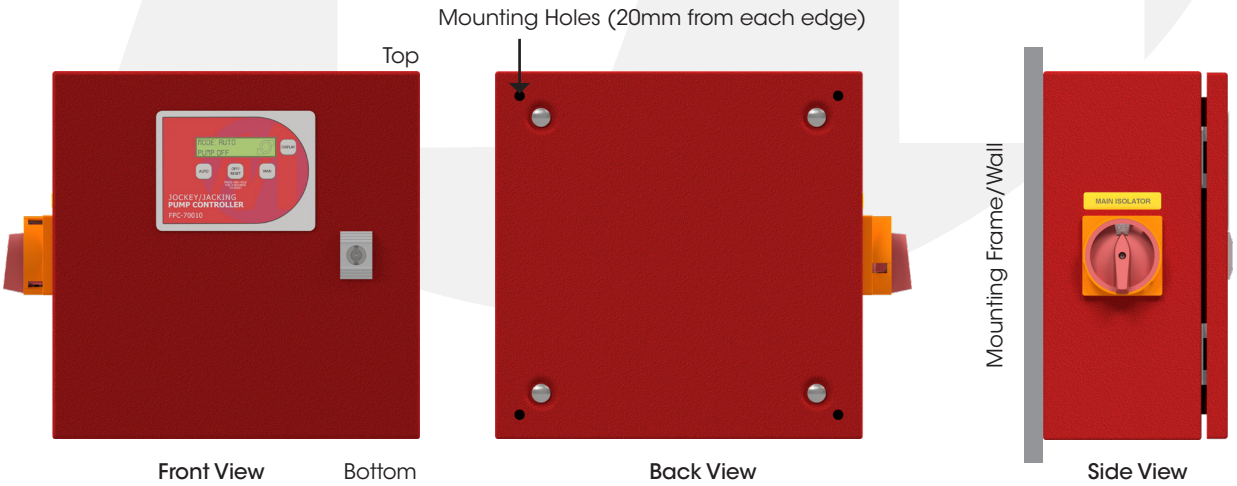
This operation manual makes use of the following symbols to indicate warnings that must be paid specific attention to:

Damage to equipment or personal harm may occur if this instruction is not followed

Electrical risk (electrocution hazard) may occur if this instruction is not followed

Installation

- The Controller enclosure must be mounted in a vertical position.
- Ensure mounting method does not compromise enclosure weatherproof rating.
- Ensure access to the main isolator is not restricted.
- Ensure cables/conduits entering the panel have mechanical protection and that the penetrations are sealed and do not compromise the weatherproof rating of the enclosure.



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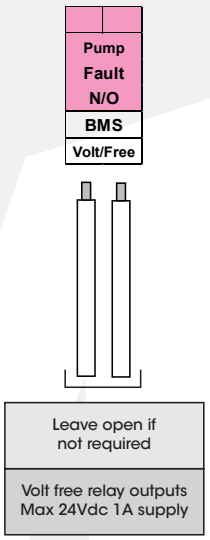
Connections

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

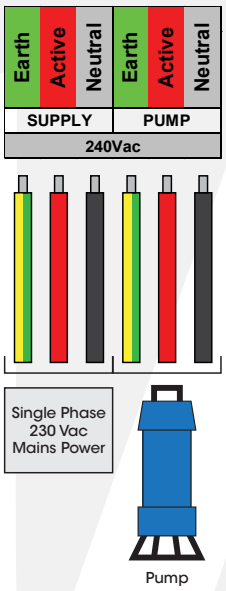
Input Connections

Volt Free Connections

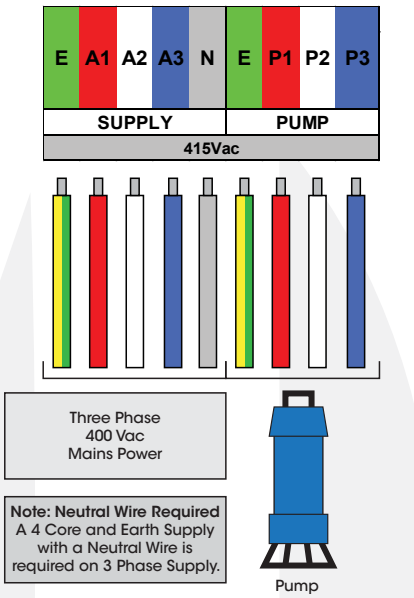


Power Supply & Pump Connections

Single Phase



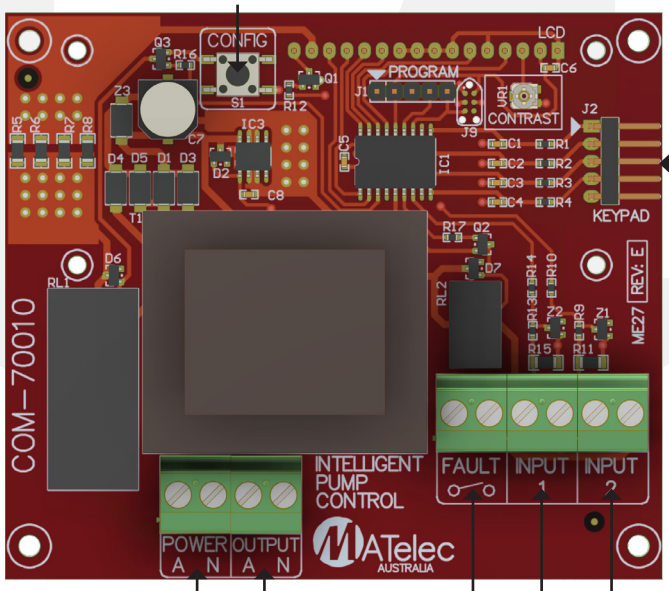
Three Phase



Important!
Check direction of pump rotation. Incorrect rotation could cause damage to the pump.

Control Module Connections

Config Button Press and hold for 2 seconds to enter the configuration menu



Keypad Connection

Power Supply
Single Phase 230Vac ±10%

Pump Run Output
(To Contactor)

Volt Free Relay Output
for Pump Fault to BMS
(Close on fault)
(Max 24Vdc 1A supply)

Pump Run Input
(From Input Terminals)

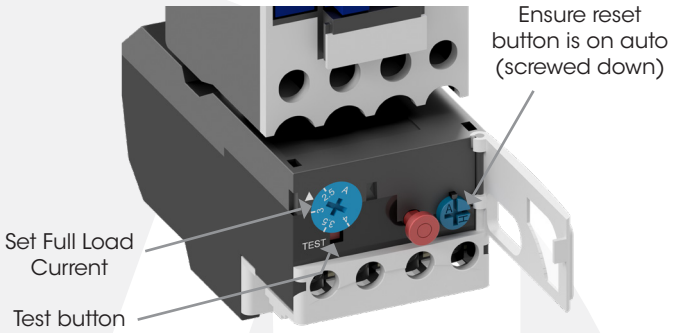
Pump Fault Input
(From Thermal Overload)

Thermal Overload Data

Thermal Overload Setup

The full load current (FLC) is written on the name plate of the pump and is required to be set on the thermal overload for the pump or motor's protection. If this value is set too high, there is potential that the pump may be damaged. If set too low the pump will go into fault prematurely during normal operation. Ensure power is isolated before opening the enclosure to set the thermal overloads. The auto reset button should be left in auto (screwed down) so that the controller can latch and reset the faults from the keypad without the need to access the live parts.

	THREE PHASE		
CAT.NO.	JM3550		
SPEC.	35F84W7		
FRAME	56J	SER.	F1295
H.P.	1 1/2T		E
VOLTS	208-230/460		
AMPS	7.6/2.3		
HZ	50		



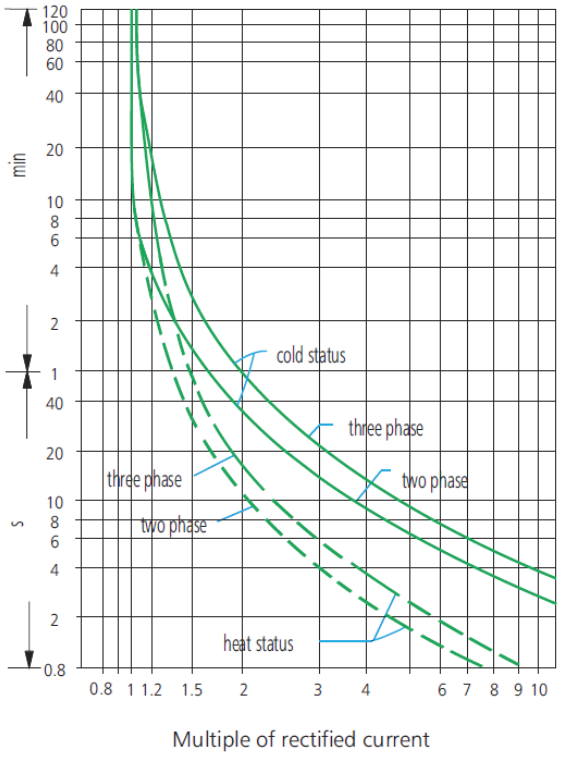
The thermal overload is designed to open the starting circuit and thus cut the power to the motor in the event of the motor drawing too much current from the supply for an extended time. The overload relay has a normally closed contact which opens due to heat generated by excessive current flowing through the circuit. To test the thermal overload is working correctly put a pump into manual run and while running hold in the test button with a small screw driver for 5-10 seconds. This should simulate excessive current and activate a pump fault.

Trip Curves

The current sensing circuits can measure a maximum of 11x the full load current. The trip time will vary based on the temperature of the overload, as can be seen in the adjacent graph. If cold, the fastest trip time is approximately 2.5 seconds and once warmed up the fastest time is reduced to approximately 800ms. Key times to trip are:

Multiple of Overload Setting for 3PH and Heat Status	Trip Time
1x	Will not trip
1.05x	Approx 8 minutes
1.5x	Approx 1 minute
5x	Approx 2.3 seconds
10x	Approx 800 milliseconds

As for thermal relay specific time-current characteristic curve, please see the graph to the right.



Cooldown

By nature of their construction, bimetallic strip based overloads have an automatic cooldown time after a trip event before the overload can be reset. When an overload condition results in the unit switching off the pump the cooldown will begin. The time for bimetallic strip cooldown is affected by the surrounding ambient temperature and the multiple of rectified current. During the cooldown period it will not be possible to reset the overload fault for that pump. Typically there will have been a sufficient period of time between the fault being triggered and a technician arriving on site for the cooldown time to have elapsed anyway.

HMI Operation

Keypad Operation

AUTO

Press for 1 sec - Sets pump to automatic mode

OFF/ RESET

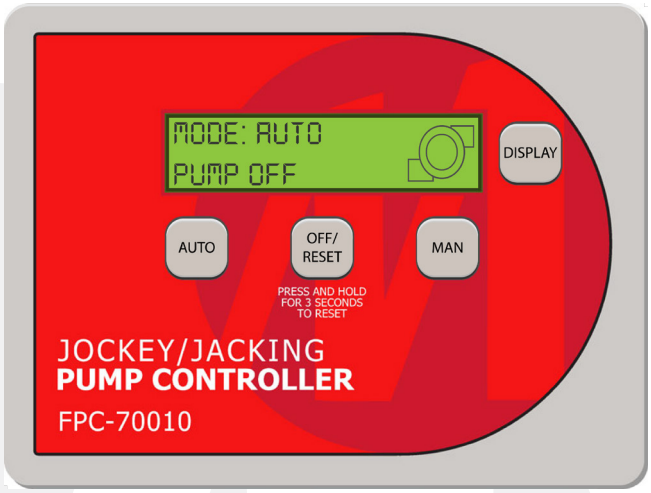
Press continuously - Turns pump off until released
(If Off Latch parameter is set to Off)
Press for 1 sec - Turns pump off
(If Off latch parameter is set to On)
Press for 3 sec - Resets pump fault

MAN

Press continuously - Runs pump until released
(If Manual Latch parameter is set to Off)

DISPLAY

Press for 1 sec - Cycles between main screen and pump data screen



Main Screen

The main screen is the default screen shown on the LCD. The main screen displays the system mode as Auto, Off or Manual, and the pump state as On, Off or Fault.

Main Screen - Auto Mode, Pump On

Main Screen - Manual Mode, Pump On

Main Screen - Off Mode, Pump Off

Main Screen - Auto Mode, Pump in Fault

Pressing the display button on the keypad will change to the pump data screen.

Pump Data Screen

The pump data screen lists the number of pump starts and elapsed run hours of the pump. The run hours is displayed in the format [hours:mins].

Pressing the display button on the keypad will change back to the main screen. The display will also automatically revert back to the main screen after 60 seconds if left in the pump data screen.

Firmware Revision Screen

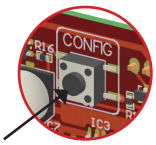
Pressing and holding the display button for 2 seconds when either the main or pump data screen is visible will show the firmware revision of the device. Pressing the display button again will return to the main screen.

HMI Operation

Configuration Screens

To enter the configuration menu, access to live parts is required. This should only be carried out by someone qualified to do so.

Pressing and holding the Config button on the control module for 2 seconds will display the configuration menu. The system will continue to operate as normal in whatever mode it was in before entering configuration, but the buttons on the keypad now have different functions. The Auto button is used to increase a parameter value and the Man button is used to decrease a value. Pressing the display button cycles through all of the configuration menu screens.



Config button

Run On Time

This is the time which the pump will continue running for after the pump start input receives an open contact

- Press the Auto button to increase the run on timer (max = 255 sec)
- Press the Man button to decrease the run on timer (0 sec = Off)

Off Latch

- Press the Auto or Man button to cycle between 'On' and 'Off'
- If set to 'On', the pump will remain off when the Off/Reset button is pressed.
- If set to 'Off', the pump will only turn off while the Off/Reset button is held down continuously

Exit Config Menu

Press the Off/Reset button to exit the configuration menu and return to the main screen.

Fault Diagnosis

Fault	Cause	Remedy
Pump Fault	• Thermal overload has tripped as a result of high current draw.	• Reset the fault by pressing the Off/Reset button for 3 sec. • Check pump for jamming or locked rotor. • Check that thermal overload is set to the appropriate setting for the pumps. See 'Thermal Overload Data' on page 5 for more information.