

PUMPCONTROL Product Overview



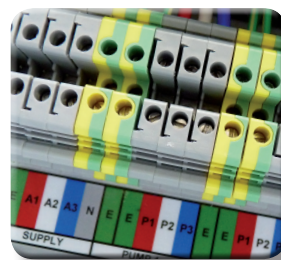
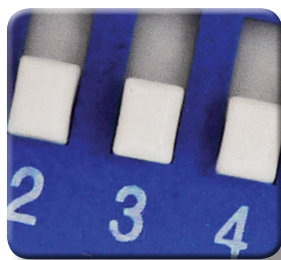
Three Phase Dual Pump Controller c/w BMS

APTDPC-3 ID

APT DPC-3 ID

Hardware Features

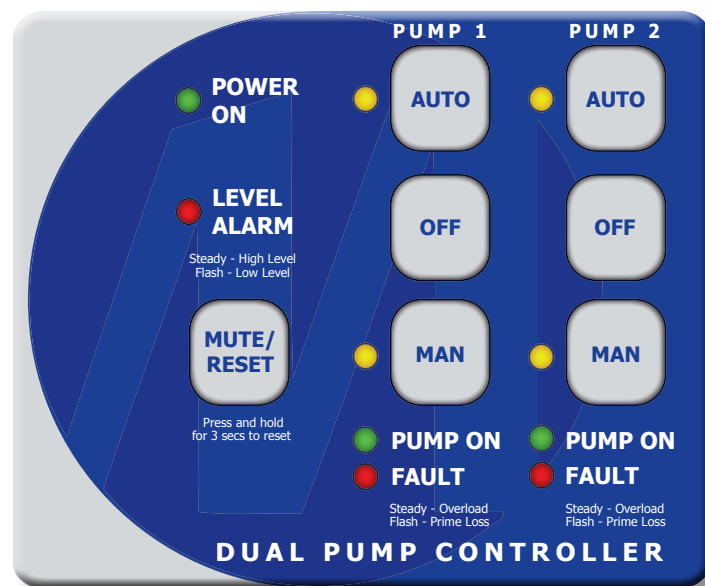
- IP 65 Weather Proof, Powder Coated Metal Enclosure c/w removable gland plate
- Lockable Main Isolator
- Individual Pump Isolation
- Circuit Breaker protected Control Circuit
- Low Voltage Control and input Circuitry
- Advanced Micro Processor Control Module
- Distinctive, Highly durable and aesthetically attractive Electronic Keypad
- Auto/Off/Manual Operation of Both Pumps
- Thermal Overload Protection of Pump Motors
- LED Indicator Lights for System Status indication
- Visual and Audible Alarms c/w Mute Switch
- User friendly, clearly labelled, Din Rail mounted, Input and Output Terminal Connection
- Individually Serial Numbered and logged for traceability and product support
- Owner/Operator, Installation and Operation Manual supplied with each controller



APT DPC-3 ID

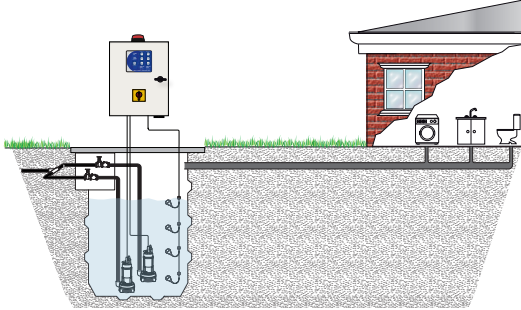
Function Features

- Auto Alternation of Pump Duty
- Provision for 4 digital + 1 Analogue inputs (typically Low Level, Stop/Start, Standby In and High Level)
- Lamp, Strobe and Buzzer Test feature
- Level Alarm Delay feature avoiding nuisance tripping
- Maximum Run Time and Auto Alternation Feature
- Anti Seize/Freeze feature, for Low Use and Seasonal Pumping applications
- Maximum Idle Time Feature, for "pump out" of residual in Pump Well situations
- Smart "Auto Silencing" and "Chirp Mode" audible Alarm
- Delayed Start and Minimum Run Time Feature
- Delayed Standby Pump Start, avoids two motors starting simultaneously
- Optional "Time Out" on Manual Pump Mode automatic reset to Auto
- No Flow/Pressure - Inbuilt Timer feature
- Interconnectable with Remote Status Indicator panel, via simple data connection
- Interconnectable with Building Monitoring System Module, via simple data connection

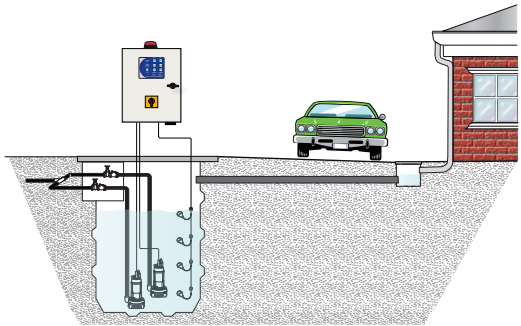


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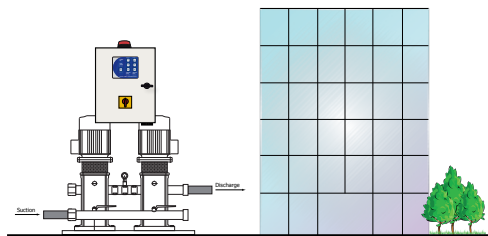
Typical Applications



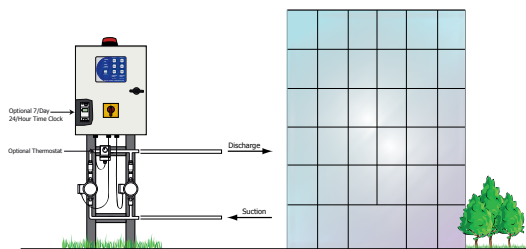
***SUBMERSIBLE
SEWAGE***



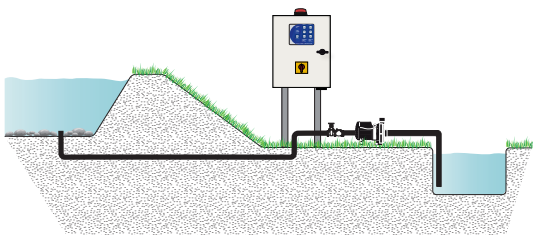
***SUBMERSIBLE
STORMWATER***



***CONSTANT
PRESSURE***



***HOT WATER
CIRCULATION***

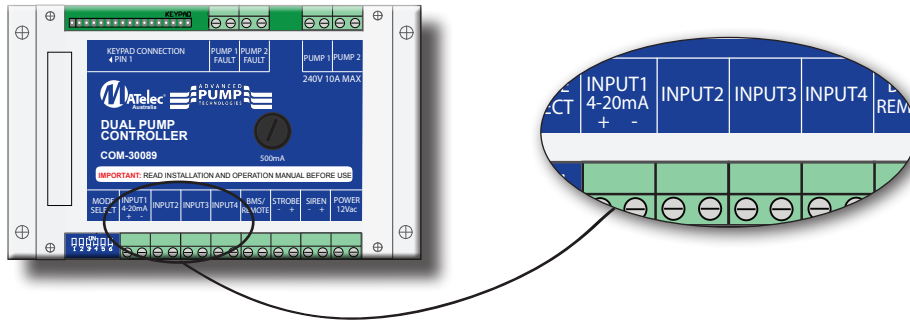


***TRANSFER
PUMPING***

One Controller.....All Applications

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Multiple Input Options

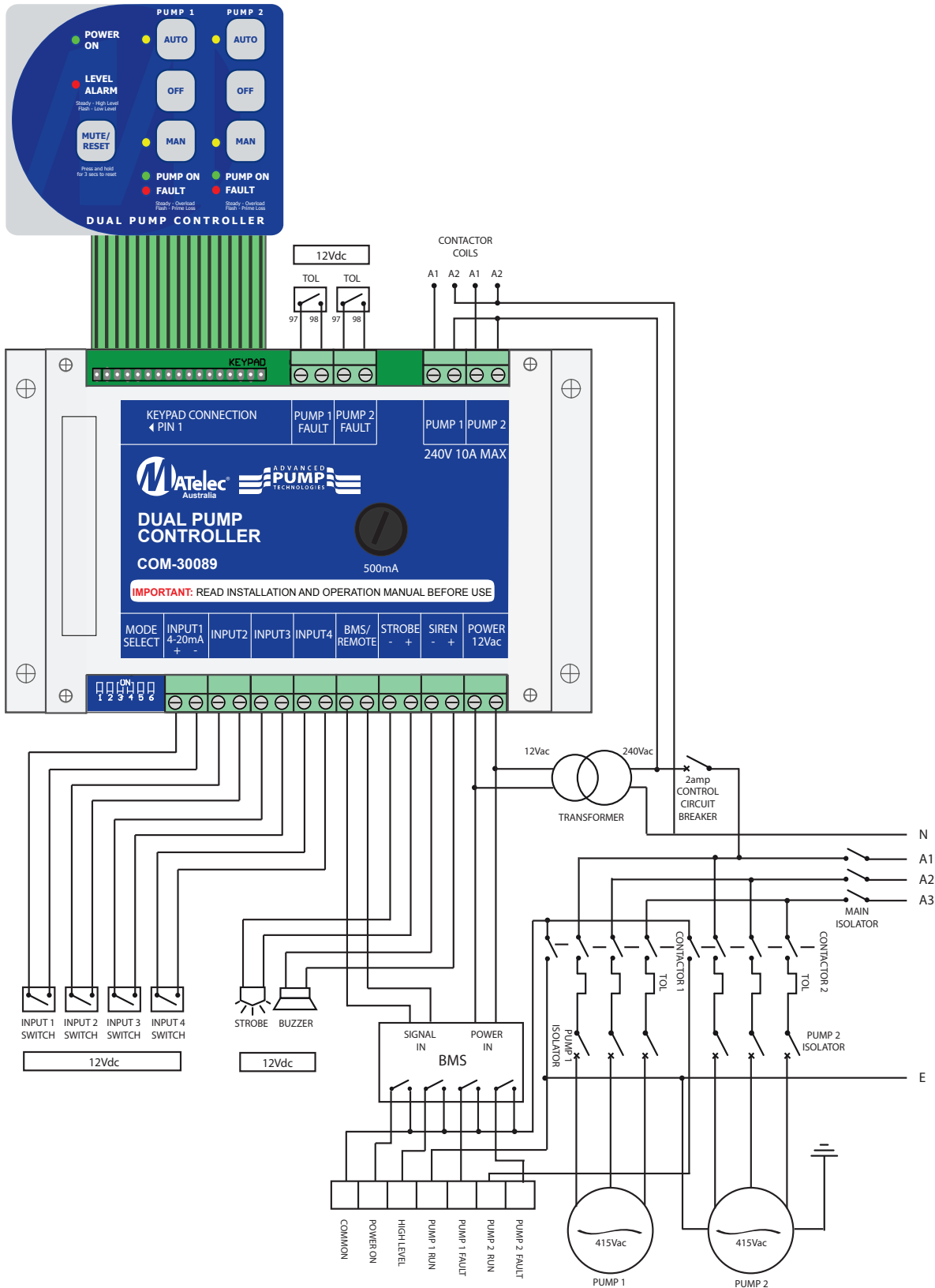


APPLICATION	Input 1	Input 2	Input 3	Input 4	MODE
SUBMERSIBLE - SEWAGE PUMPING SYSTEM					
Automatic Pumps	-	-	Bridge	-	A
Automatic Pumps + High Level Float	-	-	Bridge	High Level	A
2 Floats	-	-	Start/Stop	High Level	A
3 Floats	-	Stop	Start	High Level	A
3 Floats c/w Standby In	Standby Start	-	Start/Stop	High Level	A
4 Floats c/w Standby In	Standby Start	Stop	Duty Start	High Level	A
4 Floats c/w Low Level Alarm	Low Level	Stop	Start	High Level	B
Transducer (4-20mA) + Optional High Level Float	Transducer	-	-	High Level	A
SUBMERSIBLE - STORMWATER PUMPING SYSTEM					
Automatic Pumps	-	-	Bridge	-	A
Automatic Pumps + High Level Float	-	-	Bridge	High Level	A
2 Floats	-	-	Start/Stop	High Level	A
3 Floats	-	Stop	Start	High Level	A
3 Floats c/w Standby In	Standby Start	-	Start/Stop	High Level	A
4 Floats c/w Standby In	Standby Start	Stop	Duty Start	High Level	A
4 Floats c/w Low Level Alarm	Low Level	Stop	Start	High Level	B
Transducer (4-20mA) + Optional High Level Float	Transducer	-	-	High Level	A
HOT WATER RECIRCULATION SYSTEM					
No Thermostat	-	-	Bridge	-	A
With Thermostat	-	-	Thermostat	-	A
CONSTANT PRESSURE PUMPING SYSTEM					
Automatic (Press Control)	-	-	Bridge	-	A
Automatic (Press Control) + Standby In Switch	-	-	Bridge	Standby In	A
1 Pressure Switch	-	-	Start/Stop	-	A
1 Pressure Switch + Prime Loss	Prime Loss Sw	-	Start/Stop	-	C
2 Pressure Switches	-	Lead	Lag	-	D
2 Pressure Switch + Pressure Loss Sw.	-	Lead	Lag	Pressure Loss PS	D
2 Pressure Switch + Prime Loss Press/Flow Sw	Prime Loss Sw	-	Start/Stop	Low Press Sw	C
TRANSFER PUMPING SYSTEM					
1 Pressure or Float Switch	-	-	Work Level	-	A
As above + Prime Loss	Prime Loss Sw	-	Work Level	-	C
1 Pressure Start/Stop & Low Level Cut Out Float	-	-	Series Conn.	-	A
As above + Prime Loss	Prime Loss Sw	-	Series Conn.	-	C

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Wiring Diagram



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APT DPC-3 ID

The Range

Product Code	Voltage Rating	Contactors Rating	Overload Rating	Enclosure Size
	415Vac	18Amp	1.6-2.5 Amp	400Hx400Wx200D
	415Vac	18Amp	2.5 - 4 Amp	400Hx400Wx200D
	415Vac	18Amp	4 - 6 Amp	400Hx400Wx200D
	415Vac	18Amp	7 - 10 Amp	400Hx400Wx200D
	415Vac	18Amp	9 - 13 Amp	400Hx400Wx200D
	415Vac	18Amp	12 - 18 Amp	400Hx400Wx200D

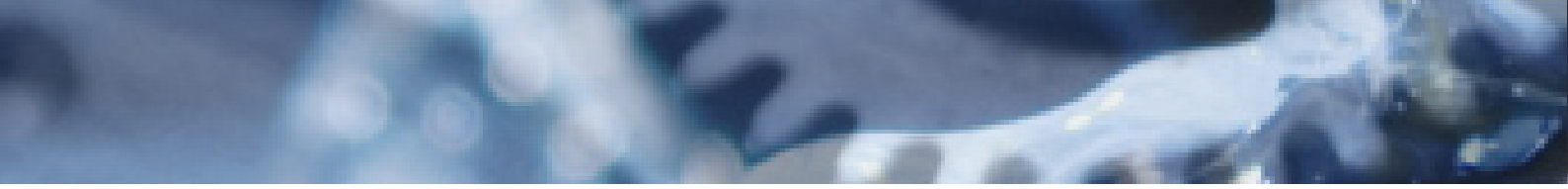
Notes

One Controller.....All Applications



The background features a close-up of industrial machinery, including large gears and mechanical components. A prominent blue brushstroke curves across the top right and bottom left corners. The text is centered in a dark blue horizontal band.

DUAL PUMP CONTROLLER OPERATION



Building on the success of the FPC-300 Series Dual Pump Controller, the new FPC-300-Advanced version, further enhances the *"One controller does it all"* concept, while at the same time, makes "simplicity of operation" even more user friendly. Although many unique features of the controller are common to all pumping applications, many "system specific" optional features, can be enabled or disabled at the flick of a switch.

COMMON FEATURES

Hardware

- Advanced Micro Processor Control Module
- Distinctive, Highly durable and aesthetically attractive Electronic Keypad
- Circuit Breaker protected Low Voltage Control and input Circuitry
- Lockable Main Isolator
- Individual Pump Isolation
- Auto/Off/Manual Operation of Both Pumps
- Thermal Overload Protection of Pump Motors*
- Visual and Audible Alarms c/w Mute Switch
- LED Indicator Lights for System Status indication
- IP 65 Weather Proof, Powder Coated Metal Enclosures c/w removable gland plate
- User friendly, clearly labelled, Din Rail mounted, Input and Output Terminal Connection
- Individually Serial Numbered and logged for traceability and product support
- Owner/Operator, Installation and Operation Manual supplied with each controller

Function

- Auto Alternation of Pump Duty
- Provision for 4 digital + 1 Analogue input (typically Low Level, Stop/Start, Standby In and High Level)
- Delayed Start and Minimum Run Time Feature
- Maximum Run Time and Auto Alternation Feature
- Maximum Idle Time Feature, for "pump out" of residual in Pump Well situations
- Anti Seize/Freeze feature, for Low Use and Seasonal Pumping applications
- Smart "Auto Silencing" and "Chirp Mode" audible Alarm
- Delayed Standby Pump Start, avoids two motors starting simultaneously
- Optional "Time Out" on Manual Pump Mode automatic reset to Auto
- Lamp, Strobe and Buzzer Test button
- No Flow/Pressure - Inbuilt Timer feature
- Level Alarm Delay feature avoiding nuisance tripping
- Interconnectable with **Remote Status Indicator** panel, via simple data connection
- Interconnectable with **Building Monitoring System** Module, via simple data connection

One Controller.....All Applications

APPLICATIONS

- Submersible Sewage
- Submersible Storm Water
- Constant Pressure Systems
- Hot Water Circulation Systems
- Transfer Pumping Systems

OPERATION

This controller can perform control functions for most Dual 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 set up 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, High Level and Low 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 Low Level	Input 2 Pump Stop	Input 3 Pump Start	Input 4 High Level	Pump State	Alarm
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.

One Controller.....All Applications

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 1 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

Duty Pump: Lead Pump

Standby Pump: Lag Pump

Input functions are as follows:

Input	Function
Input 1	Not Used
Input 2	Lead Pump Pressure Switch (set at say 350kPa)
Input 3	Lag Pump Pressure Switch (set at say 350kPa)
Input 4	Low Pressure Switch (set at say 200kPa)

Typical Operation for Mode D:

- Pressure drops to 400kPa: Lead (for this cycle) Pump cuts in.
- Pressure increases and Pump cuts out.
- Cycle continues with duty (Lead and Lag) alternating between the two pumps.
- If pressure drops to 350kPa, Lead Pumps will cut in and remain running until Lead Pressure Switch opens circuit. Then duty alternates.
- No faults are logged against the Lead Pump if the Lag Pump starts.
- 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 Lead Pressure switch opens circuit during this initial period. If however run time exceeds 11 seconds, the pump will stop immediately upon "Open Circuit" occurring.
- If the Lead Pressure Switch input closes circuit as well as the Low Pressure Switch input, both pumps will be turned on and the 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 Opened on High Pressure.

Maximum Run and Alternation Mode

With DIP Switch 3 set to "Off" the unit will alternate as usual each time a pump start condition occurs. Additionally, the controller will automatically alternate pump duty if a pump has been running continuously for 30 minutes (maximum run timer)

Setting this DIP Switch to "On" will cause the controller to operate in "Circulation Mode" where duty will only alternate once the pump has run for 6 hours of accumulated time.

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 hold the Mute/Reset button on the Keypad continuously for a period of 3 seconds until an acknowledgement 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. Both types of faults can be reset by way of the Fault Reset button.

Level Alarms

A High Level Alarm is indicated by way of a steady Level Alarm Indicator Light.

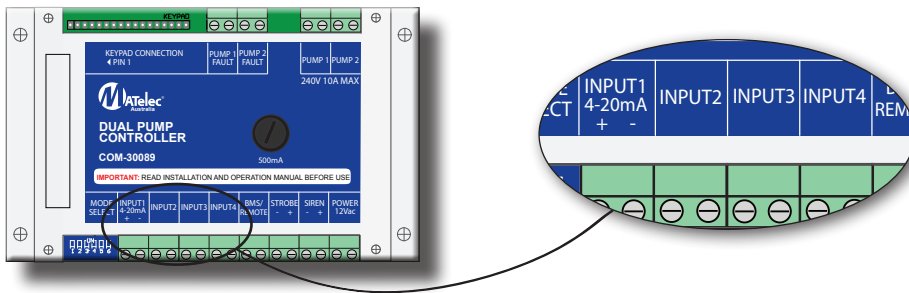
A Low Level/Low pressure Alarm is indicated by way of a Flashing Level Alarm Light.

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.


One Controller.....All Applications

INPUT OPTIONS



APPLICATION	Input 1	Input 2	Input 3	Input 4	MODE
SUBMERSIBLE - SEWAGE PUMPING SYSTEM					
Automatic Pumps	-	-	Bridge	-	A
Automatic Pumps + High Level Float	-	-	Bridge	High Level	A
2 Floats	-	-	Start/Stop	High Level	A
3 Floats	-	Stop	Start	High Level	A
3 Floats c/w Standby In	Standby Start	-	Start/Stop	High Level	A
4 Floats c/w Standby In	Standby Start	Stop	Duty Start	High Level	A
4 Floats c/w Low Level Alarm	Low Level	Stop	Start	High Level	B
Transducer (4-20mA) + Optional High Level Float	Transducer	-	-	High Level	A
SUBMERSIBLE - STORMWATER PUMPING SYSTEM					
Automatic Pumps	-	-	Bridge	-	A
Automatic Pumps + High Level Float	-	-	Bridge	High Level	A
2 Floats	-	-	Start/Stop	High Level	A
3 Floats	-	Stop	Start	High Level	A
3 Floats c/w Standby In	Standby Start	-	Start/Stop	High Level	A
4 Floats c/w Standby In	Standby Start	Stop	Duty Start	High Level	A
4 Floats c/w Low Level Alarm	Low Level	Stop	Start	High Level	B
Transducer (4-20mA) + Optional High Level Float	Transducer	-	-	High Level	A
HOT WATER RECIRCULATION SYSTEM					
No Thermostat	-	-	Bridge	-	A
With Thermostat	-	-	Thermostat	-	A
CONSTANT PRESSURE PUMPING SYSTEM					
Automatic (Press Control)	-	-	Bridge	-	A
Automatic (Press Control) + Standby In Switch	-	-	Bridge	Standby In	A
1 Pressure Switch	-	-	Start/Stop	-	A
1 Pressure Switch + Prime Loss	Prime Loss Sw	-	Start/Stop	-	C
2 Pressure Switches	-	Lead	Lag	-	D
2 Pressure Switch + Pressure Loss Sw.	-	Lead	Lag	Pressure Loss PS	D
2 Pressure Switch + Prime Loss Press/Flow Sw	Prime Loss Sw	-	Start/Stop	Low Press Sw	C
TRANSFER PUMPING SYSTEM					
1 Pressure or Float Switch	-	-	Work Level	-	A
As above + Prime Loss	Prime Loss Sw	-	Work Level	-	C
1 Pressure Start/Stop & Low Level Cut Out Float	-	-	Series Conn.	-	A
As above + Prime Loss	Prime Loss Sw	-	Series Conn.	-	C

One Controller.....All Applications



Advanced Pump Technologies
72 May Holman Drive, Bassendean, WA 6054

Phone | 08 6143 1000 **Fax** | 08 6143 1009

Email | info@advancedpumps.com.au

Web | www.advancedpumps.com.au

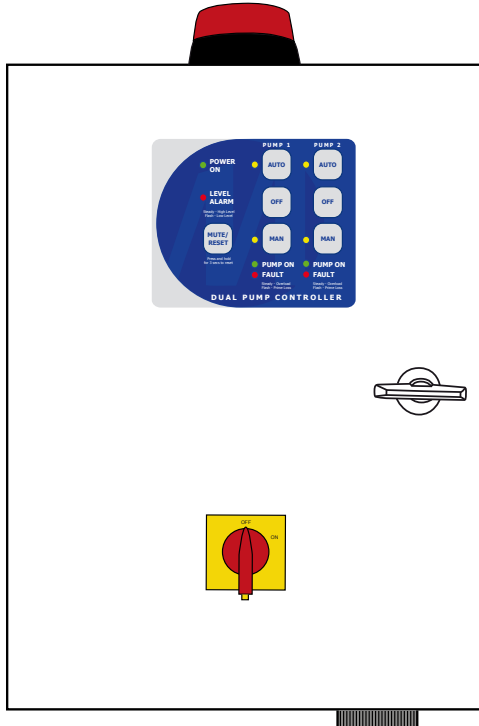


PUMPCONTROL

OWNER'S OPERATION MANUAL

**Dual Pump Controller Installation and
Operating Instructions**

MODEL: APTDPC-1 A-E (240v)



WELCOME TO DUAL PUMP CONTROL

Your Dual 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

SAFETY	2	CIRCUIT DIAGRAM	7
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Mounting		Indicators	
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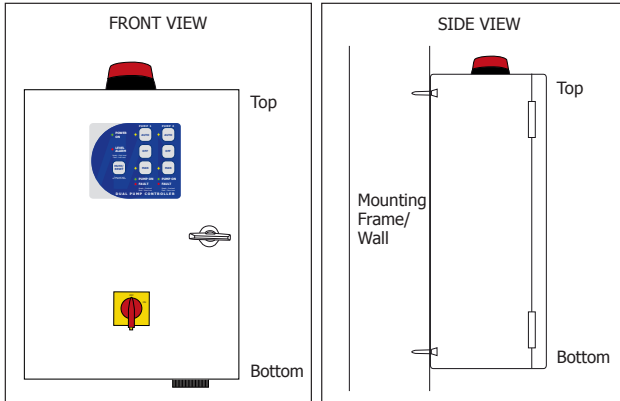
WARNING: All electrical connections must be carried out by a suitably qualified and registered electrician.

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.
- 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.

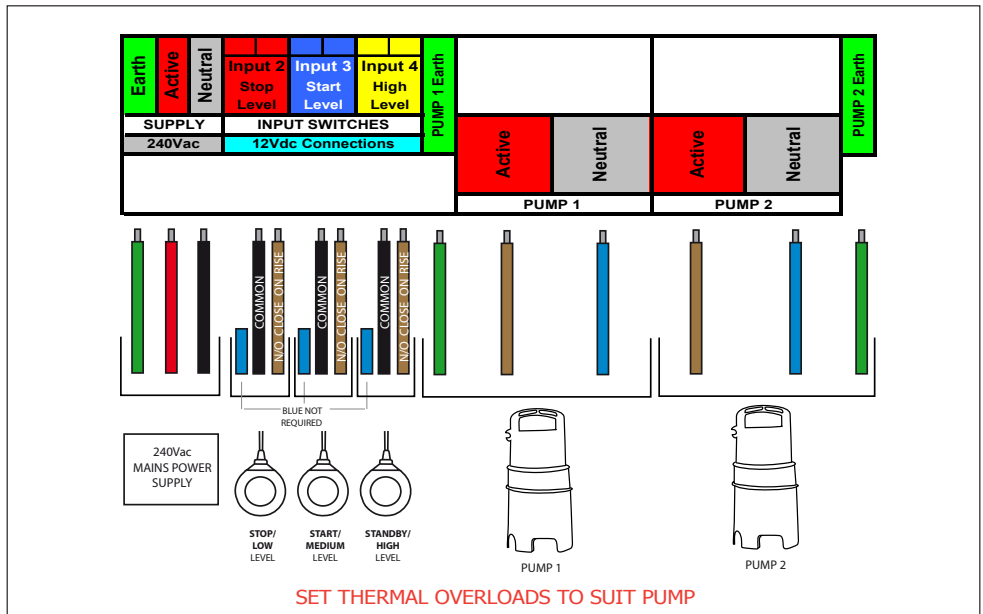
INSTALLATION

MOUNTING



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



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 Dual 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 set up 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, High Level and Low 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 Low Level	Input 2 Pump Stop	Input 3 Pump Start	Input 4 High Level	Pump State	Alarm
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 1 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

Duty Pump: Lead Pump

Standby Pump: Lag Pump

Input functions are as follows:

Input	Function
Input 1	Not Used
Input 2	Lead Pump Pressure Switch (set at say 350kPa)
Input 3	Lag Pump Pressure Switch (set at say 350kPa)
Input 4	Low Pressure Switch (set at say 200kPa)

Typical Operation for Mode D:

- Pressure drops to 400kPa: Lead (for this cycle) Pump cuts in.
- Pressure increases and Pump cuts out.
- Cycle continues with duty (Lead and Lag) alternating between the two pumps.
- If pressure drops to 350kPa, Lead Pumps will cut in and remain running until Lead Pressure Switch opens circuit. Then duty alternates.
- No faults are logged against the Lead Pump if the Lag Pump starts.
- 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 Lead Pressure switch opens circuit during this initial period. If however run time exceeds 11 seconds, the pump will stop immediately upon "Open Circuit" occurring.
- If the Lead Pressure Switch input closes circuit as well as the Low Pressure Switch input, both pumps will be turned on and the 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 Opened on High Pressure.

Maximum Run and Alternation Mode

With **DIP Switch 3** set to "Off" the unit will alternate as usual each time a pump start condition occurs. Additionally, the controller will automatically alternate pump duty if a pump has been running continuously for 30 minutes (maximum run timer)

Setting this DIP Switch to "On" will cause the controller to operate in "Circulation Mode" where duty will only alternate once the pump has run for 6 hours of accumulated time.

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 hold the **Mute/Reset** button on the Keypad continuously for a period of 3 seconds until an acknowledgement 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. Both types of faults can be reset by way of the Fault Reset button.

Level Alarms

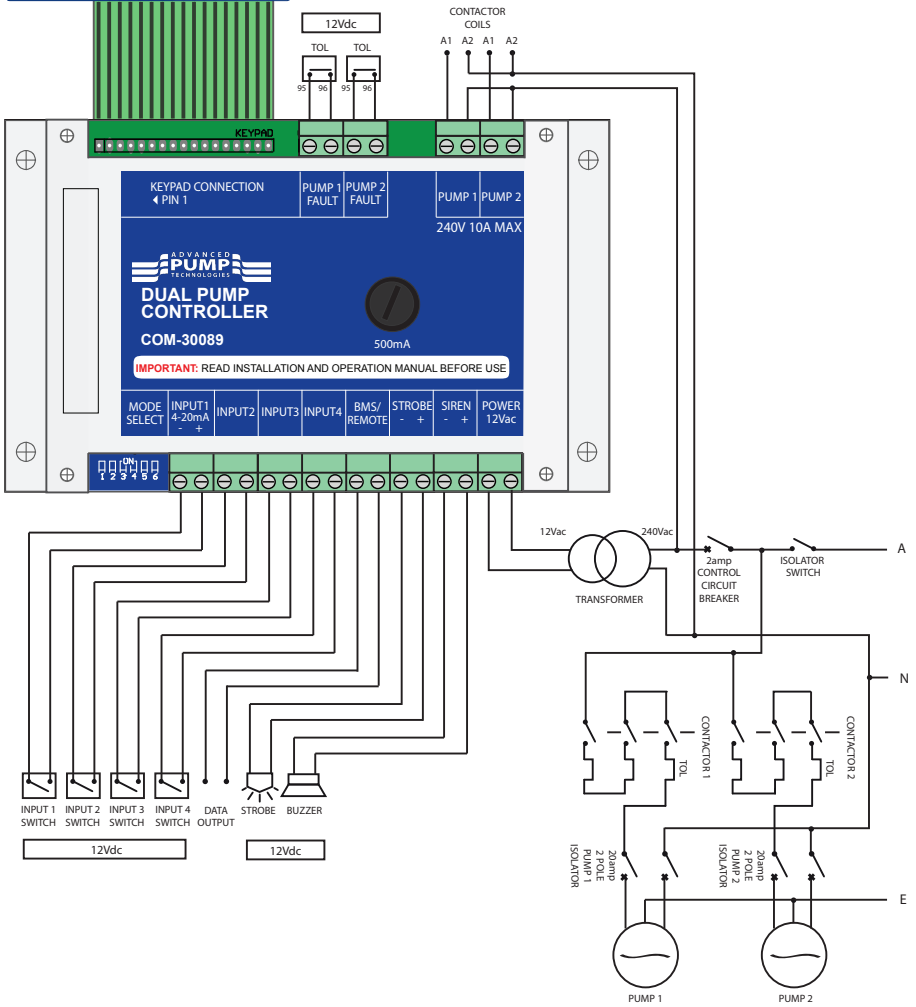
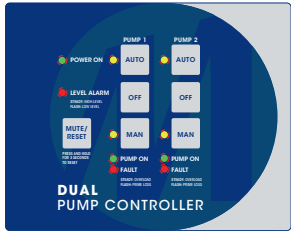
A High Level Alarm is indicated by way of a steady Level Alarm Indicator Light.

A Low Level/Low pressure Alarm is indicated by way of a Flashing Level Alarm Light.

Auto Silencing Alarm Feature

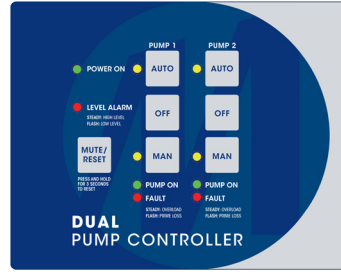
The audible Alarm is programmed to sound for 5 minutes continuously, unless muted and will thereafter automatically silence and enter "Chirp" mode. In "Chirp" mode, the Audible Alarm will sound briefly (2 seconds) every 5 minutes.

CIRCUIT DIAGRAM



AT A GLANCE

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



KEYPAD

INDICATORS



POWER ON
Power is turned on.



LEVEL ALARM ON
A high level alarm has been present for the preset time.
FLASHING
A low level alarm is present.



ON STEADY
Pump switched on to run.



ON STEADY
A pump fault/overload has occurred.
FLASHING
A prime loss fault has occurred.

PUSH BUTTONS



Silences the siren and if held down for 3 seconds, clears all faults



If selected (the LED indicator will confirm if on) the particular pump is set to Automatic Pumping Mode



Turns all pumps off



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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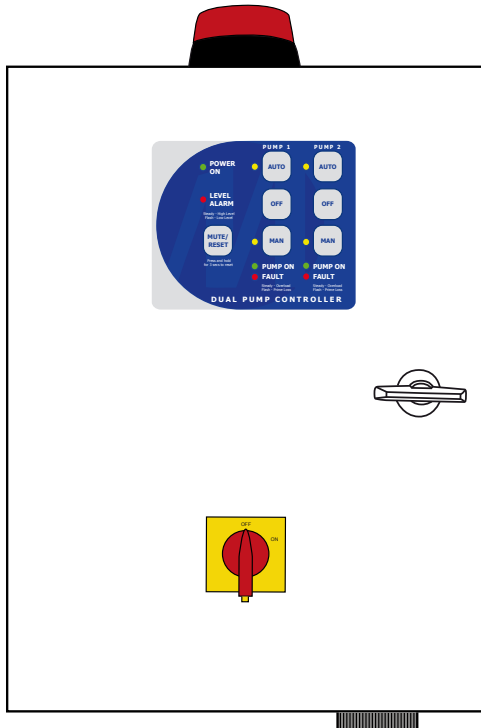
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PUMP CONTROL

OWNER'S OPERATION MANUAL

Dual Pump Controller Installation and Operating Instructions

MODEL: APTDPC-3 A-E (415v)



WELCOME TO DUAL PUMP CONTROL

Your Dual 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

SAFETY	2	CIRCUIT DIAGRAM	7
INSTALLATION	3	AT A GLANCE	8
Mounting		Indicators	
Connection		Push Buttons	
GETTING STARTED	4		
Operations			
Features			

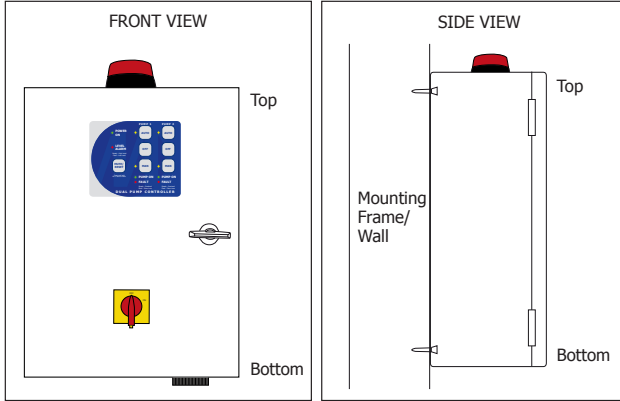
WARNING: All electrical connections must be carried out by a suitably qualified and registered electrician.

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.
- 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.

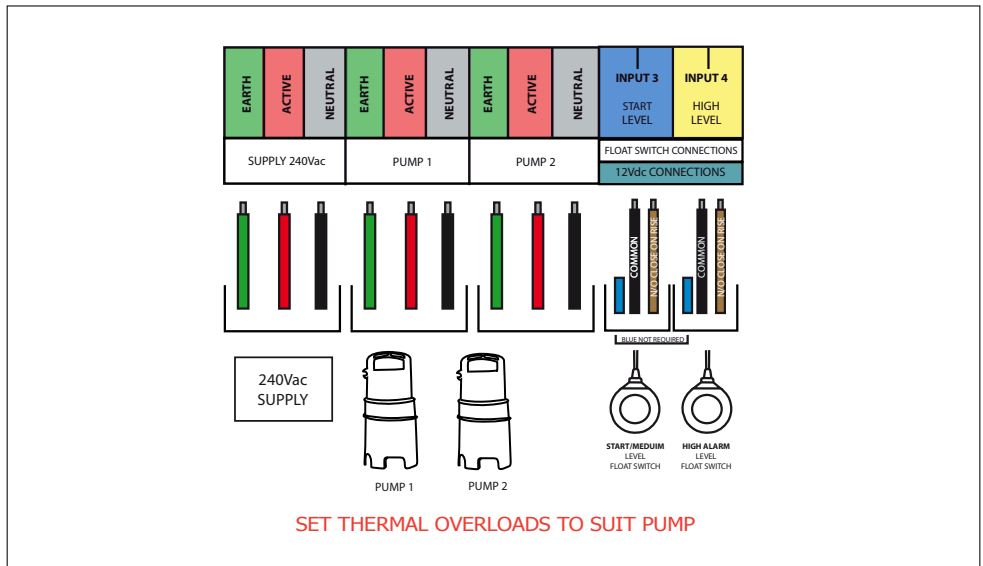
INSTALLATION

MOUNTING



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



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 Dual 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 set up 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, High Level and Low 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 Low Level	Input 2 Pump Stop	Input 3 Pump Start	Input 4 High Level	Pump State	Alarm
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 1 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

Duty Pump: Lead Pump

Standby Pump: Lag Pump

Input functions are as follows:

Input	Function
Input 1	Not Used
Input 2	Lead Pump Pressure Switch (set at say 350kPa)
Input 3	Lag Pump Pressure Switch (set at say 350kPa)
Input 4	Low Pressure Switch (set at say 200kPa)

Typical Operation for Mode D:

- Pressure drops to 400kPa: Lead (for this cycle) Pump cuts in.
- Pressure increases and Pump cuts out.
- Cycle continues with duty (Lead and Lag) alternating between the two pumps.
- If pressure drops to 350kPa, Lead Pumps will cut in and remain running until Lead Pressure Switch opens circuit. Then duty alternates.
- No faults are logged against the Lead Pump if the Lag Pump starts.
- 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 Lead Pressure switch opens circuit during this initial period. If however run time exceeds 11 seconds, the pump will stop immediately upon "Open Circuit" occurring.
- If the Lead Pressure Switch input closes circuit as well as the Low Pressure Switch input, both pumps will be turned on and the 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 Opened on High Pressure.

Maximum Run and Alternation Mode

With **DIP Switch 3** set to "Off" the unit will alternate as usual each time a pump start condition occurs. Additionally, the controller will automatically alternate pump duty if a pump has been running continuously for 30 minutes (maximum run timer)

Setting this DIP Switch to "On" will cause the controller to operate in "Circulation Mode" where duty will only alternate once the pump has run for 6 hours of accumulated time.

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 hold the **Mute/Reset** button on the Keypad continuously for a period of 3 seconds until an acknowledgement 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. Both types of faults can be reset by way of the Fault Reset button.

Level Alarms

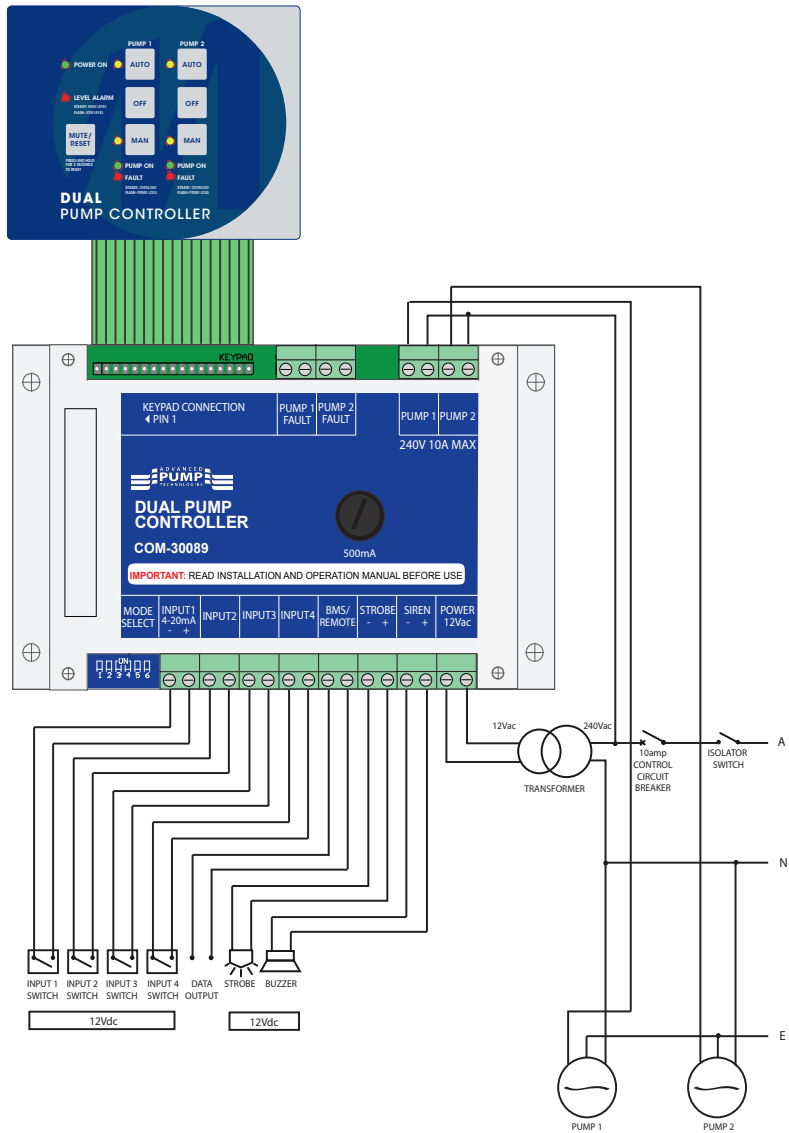
A High Level Alarm is indicated by way of a steady Level Alarm Indicator Light.

A Low Level/Low pressure Alarm is indicated by way of a Flashing Level Alarm Light.

Auto Silencing Alarm Feature

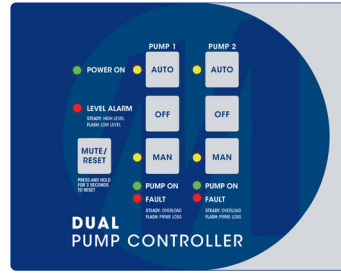
The audible Alarm is programmed to sound for 5 minutes continuously, unless muted and will thereafter automatically silence and enter "Chirp" mode. In "Chirp" mode, the Audible Alarm will sound briefly (2 seconds) every 5 minutes.

CIRCUIT DIAGRAM



AT A GLANCE

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



KEYPAD

INDICATORS



POWER ON
Power is turned on.



LEVEL ALARM ON
A high level alarm has been present for the preset time.
FLASHING
A low level alarm is present.



ON STEADY
Pump switched on to run.



ON STEADY
A pump fault/overload has occurred.
FLASHING
A prime loss fault has occurred.

PUSH BUTTONS



Silences the siren and if held down for 3 seconds, clears all faults



If selected (the LED indicator will confirm if on) the particular pump is set to Automatic Pumping Mode



Turns all pumps off



If selected (the LED indicator will confirm if on) the pump is set to Manual Pumping Mode

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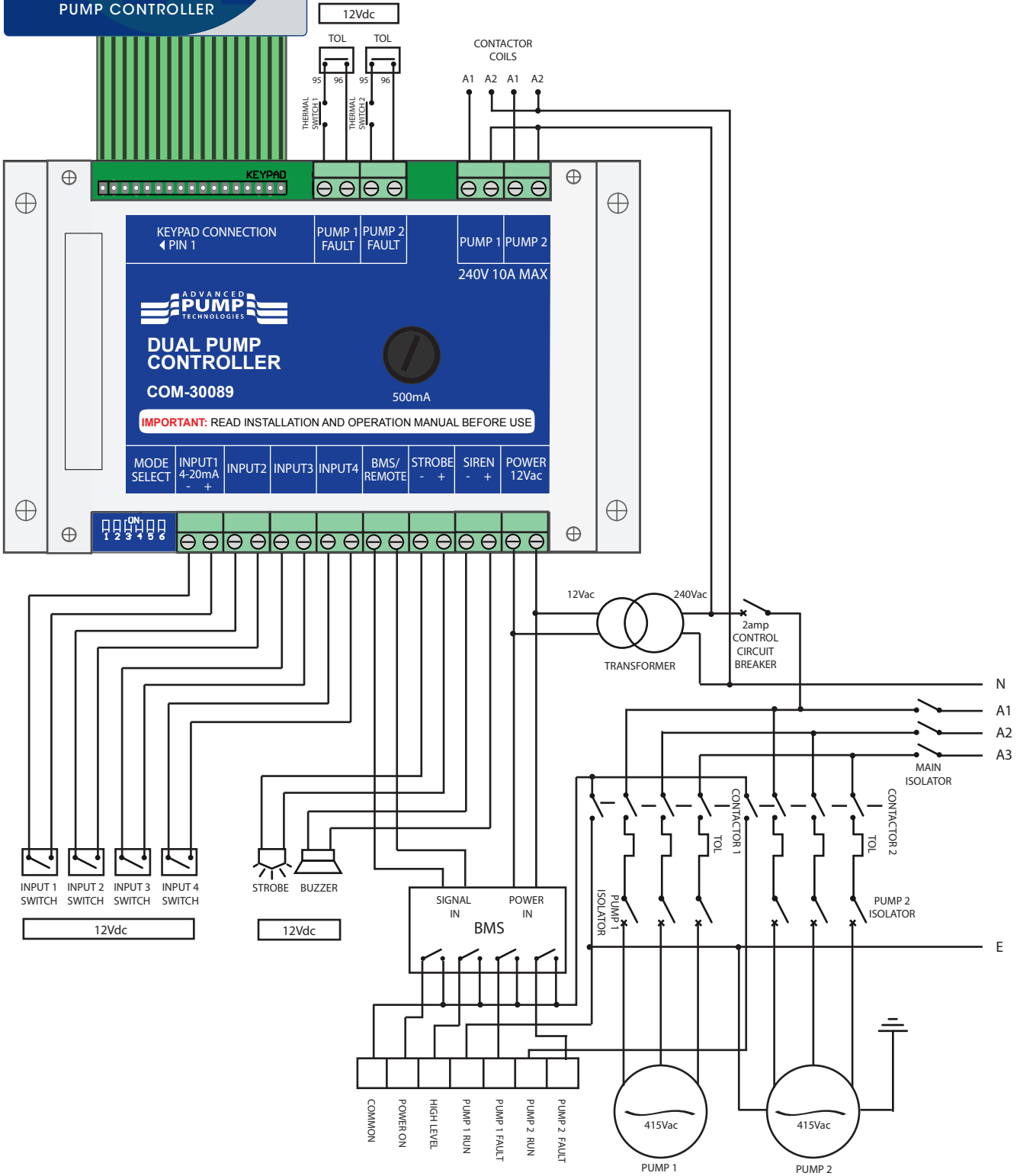
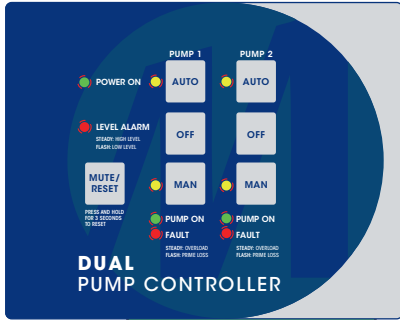


INSTALLATION DATE:

SERIAL NUMBER:

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Dual Pump Controller



Multi Level Float Tree



Description

The Multi Float Tree is a unique combination of floats, configured in a way that minimises installation/setup time and overcomes the many issues associated with float switch installations.

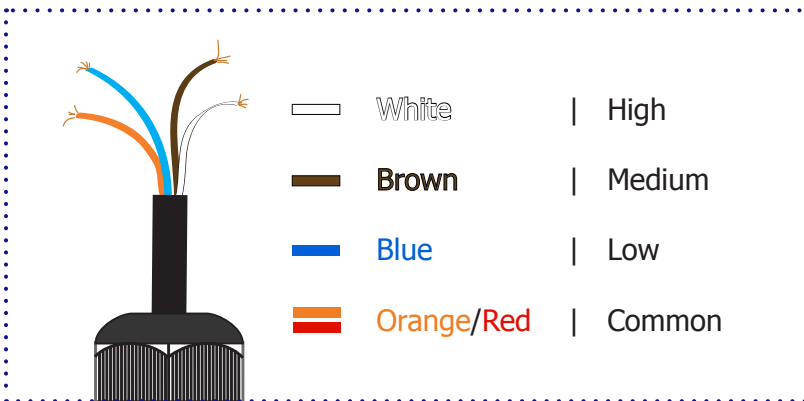
Features

- No more tangled floats
- No more setting up with conduits and ties
- No more trying to pull multiple float wires through undersized conduit
- No more trying to decipher which wires relate to which floats
- Resin filled / potted connection - fully submersible
- Neoprene rubber float cables
- Horizontal pivot point for switching accuracy / consistency
- Internally weighted obviating current induced travel

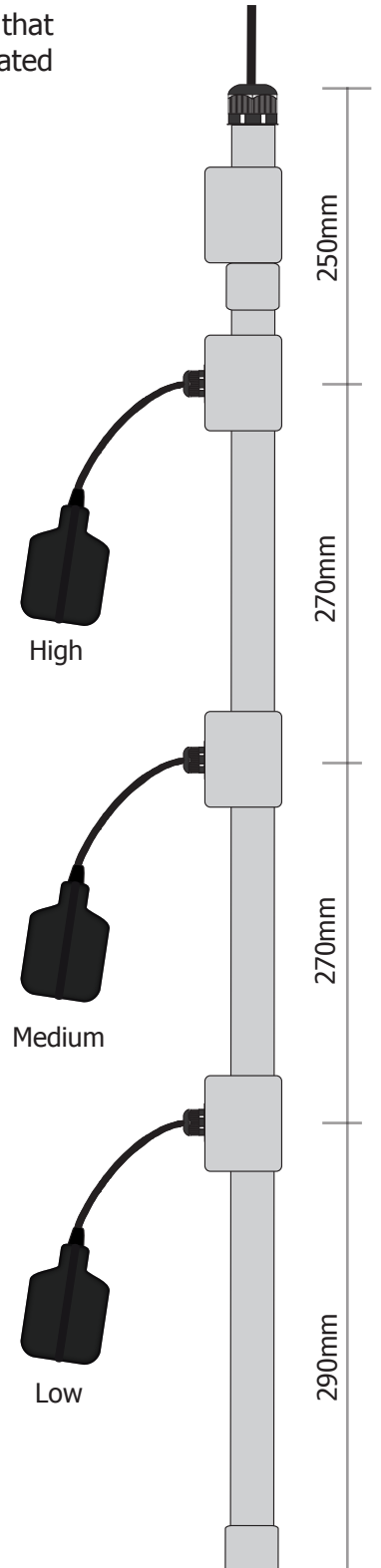
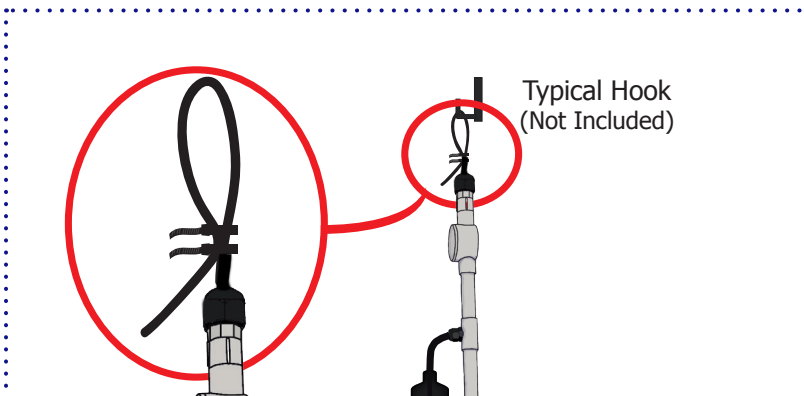
The Range

CODE	DESCRIPTION
FSW-12545	c/w 10m Cable
FSW-12546	c/w 15m Cable
FSW-12547	c/w 20m Cable

Connection Details



Mounting Details



*Dimensions may vary slightly
*Artwork not drawn to scale

Dual Pump Control Auxiliary Equipment

SMS Alarm Sender



SMS Alarm Sender - FPC-30120

A unique feature of the FPC-300 Dual Pump Controller is the coded Data Output, which can be utilized to provide a signal to a remote, compatible device such as this SMS Alarm Sender. The unique feature is that the coded data signal, derived from the Pump Controller's micro processor, is conveyed through a low voltage 2 wire connection and then decoded by the BMS unit. Once the signal is decoded the micro controller provides four inputs to the GSM modem which then in turn, sends SMS messages as configured.

Features

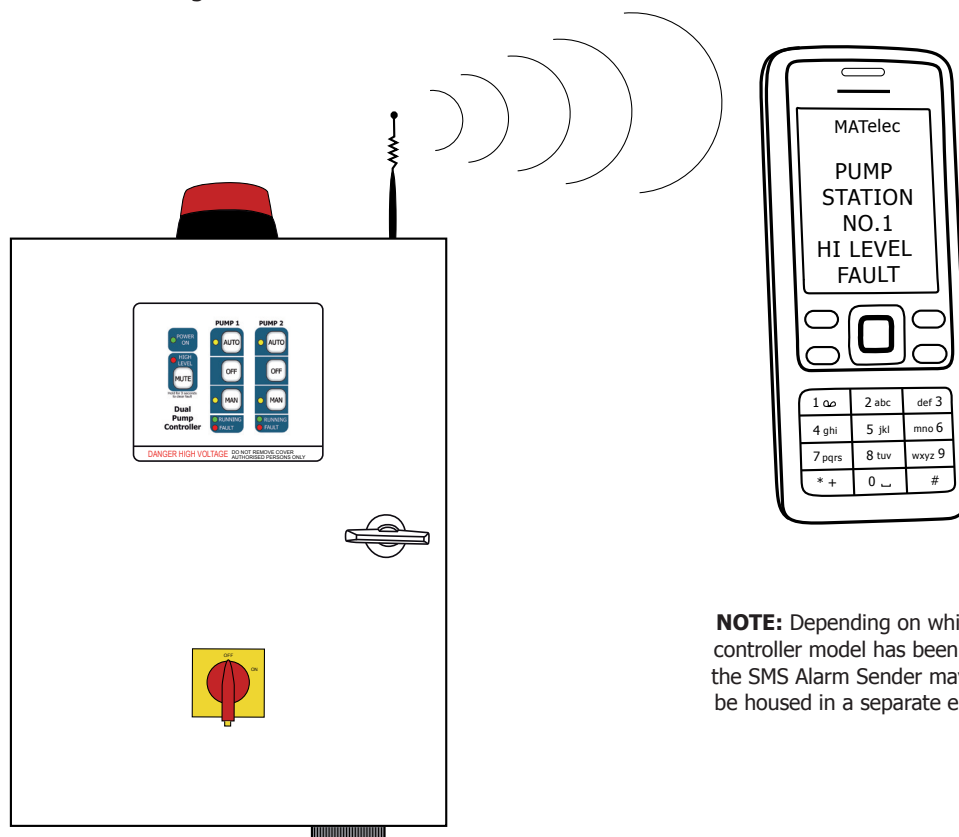
- Up to 5 separate phone numbers to send messages to
- Sending of a descriptive message whenever an alarm condition is initiated or cleared
- Sending of alert message if backup battery voltage drops too low

Kit Includes

- GSM modem (preconfigured with supplied phone numbers and SIM code)
- Antenna to suit
- 1.7Ah or 3Ah SLA battery
- 12V Power supply / battery charger

Notes

In order to pre-configure the GSM modem, the customer will need to supply an active SIM card, along with; up to 5 Phone numbers, all of which are messaged upon an alarm action. SIM code, so that the GSM modem can access the SIM card. Station name, to be included in any SMS sent, for identifying which pump station has sent the message.



NOTE: Depending on which pump controller model has been ordered, the SMS Alarm Sender may need to be housed in a separate enclosure.

CONDUCTIVITY PROBE - SINGLE SENSING POINT

FPC-12521

TECHNICAL SPECIFICATIONS

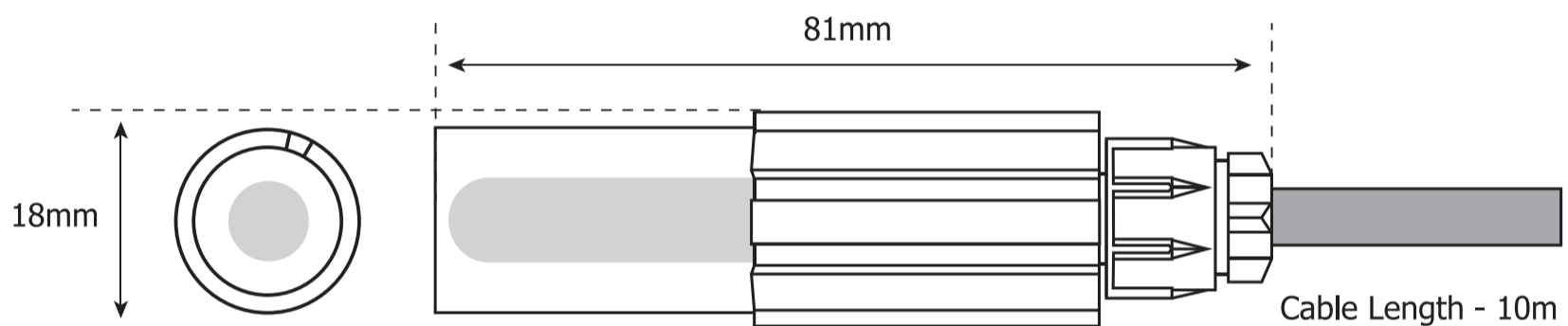
MOUNTING:
Directly into liquid (submersible)

WEIGHT:
45grams

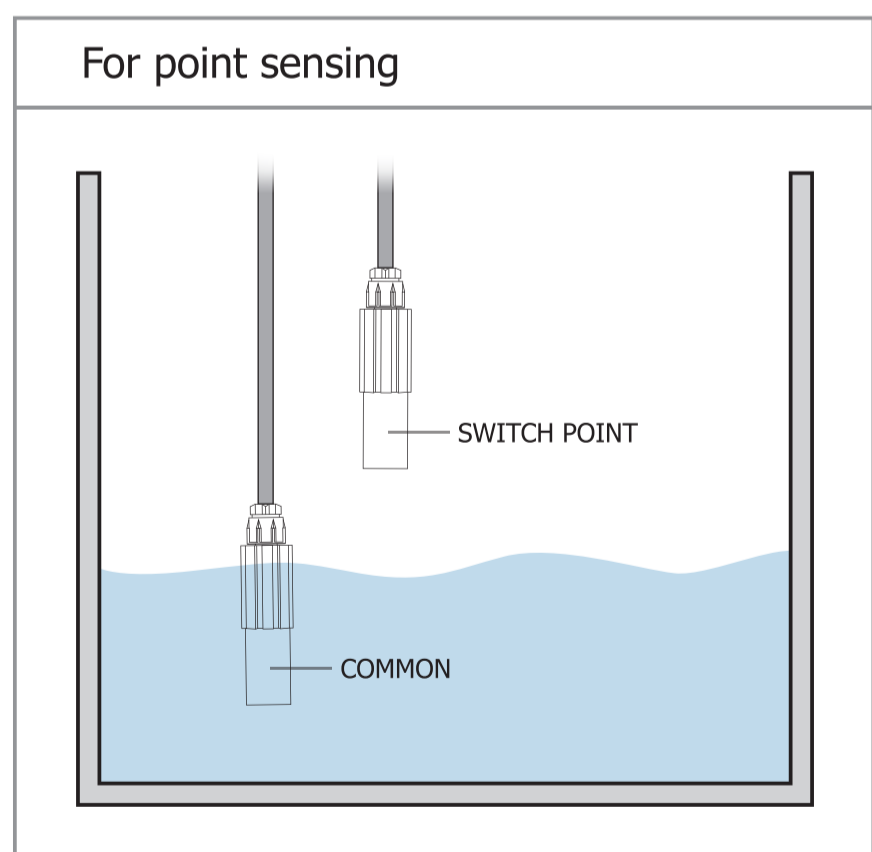
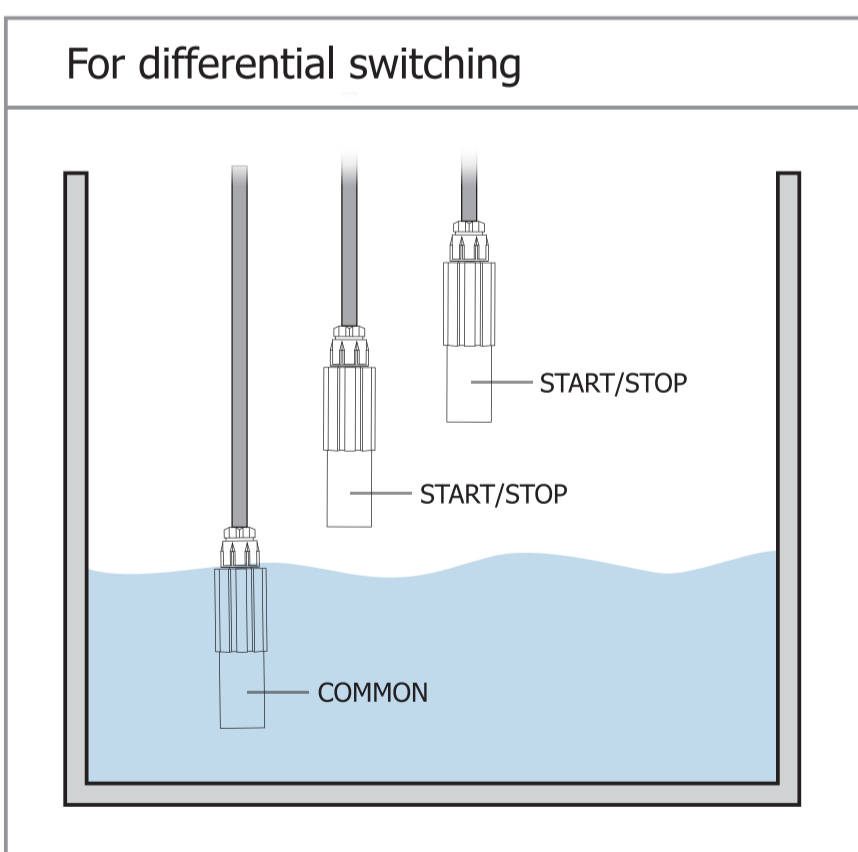
OPERATING TEMPERATURE:
0°C - 75°C

MATERIAL:
Housing - ABS
Cable - Neoprene Rubber
Sensing Points - 304 Stainless Steel

DIMENSIONS



APPLICATIONS



FIXING

Typical Set up - Cable Gland securing probe cable to the top of the tank.