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MultiControl

Universal Dairy Controller

- Air Injector/Purge
- Pulsation
- Milk Pump: Basic
- Milk Pump: VariSpeed

User Manual

Part No. DR51-0045-03

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The MultiControl Concept

MultiControl is an innovative range of high-technology dairy controllers that are highly reliable, economical, versatile and easy to set up. Although the range comes pre-packaged for individual applications, each uses the same front panel electronics which has distinct advantages:

1. Common setup method.
2. Single spare part for all the range.
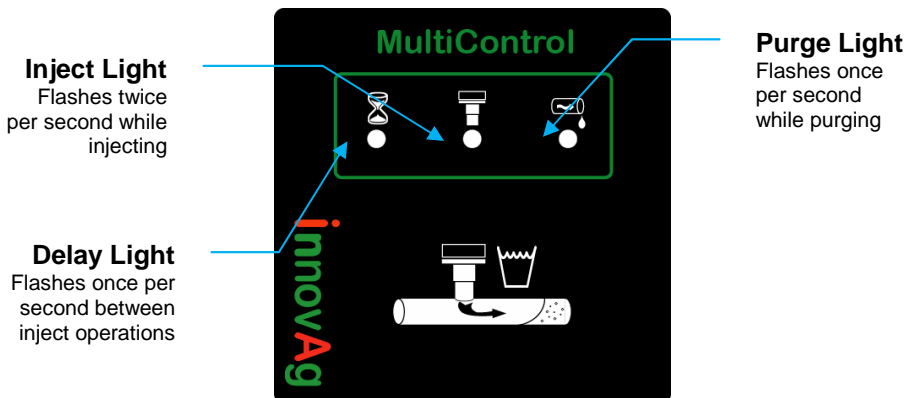3. Lower product cost.

This manual has sections for each controller type and includes how to set up a new board should replacement be required.

Air Injector/Purge

This unit controls operation of a dump valve to inject air into the milkline for more effective washing. In addition, an air purge system can be controlled to evacuate fluid in the milkline at appropriate times. Automatic air purge has two main advantages:

1. Valuable milk remaining in the line is flushed into the tank prior to washing, rather than going down the drain.

2. During washing cold water from the previous cycle is flushed out to avoid cool-down of the next wash.

The front panel has lights to show which action is currently operating:

Inject Light
Flashes twice per second while injecting

Delay Light
Flashes once per second between inject operations

Purge Light
Flashes once per second while purging

Note: All lights flashing **Orange** means the incoming DC supply is too low for MultiControl to work. They will flash **Red** if the voltage is too high.

Operating Modes

The controller has three modes of operation:

Auto-start: Injection starts automatically on power-up. The purge function is not used. A purge cycle starts when the **Purge** terminals close for at least 1s and is self-timed, i.e. once triggered purging continues regardless of state of the terminals.

Manual: Similar to Auto-start but Injection *only* operates while the **Inject** terminals are closed, i.e. ***does not*** automatically start on power up.

Auto-purge: Injection operates while the **Inject** terminals are closed. A self-timed purge cycle starts when the **Inject** terminals *open* <u>*or*</u> **Purge** terminals close for at least 1s.

<u>*NOTE:*</u> *In auto-purge mode **Inject** terminals must be closed for at least <u>30s</u> before an auto-purge is allowed to start.*

The table below summarizes each mode and the settings required (see **Setup** section):

	Inject	Purge	Setting #1	Setting #5
Auto-start	Power-on	Closes	0	0
Manual	Closed	Closes	1	0
Auto-purge	Closed	Closes **or** Opens	1	1

Installation

The unit has an internal solenoid valve for connection to Vacuum supply, filtered air and the dump valve. A pair of isolated screw-terminals are provided for connection of an external AC or DC solenoid for the Purge function. These terminals are shorted when Air Purge operates so they should be wired in series with the solenoid and its power supply.
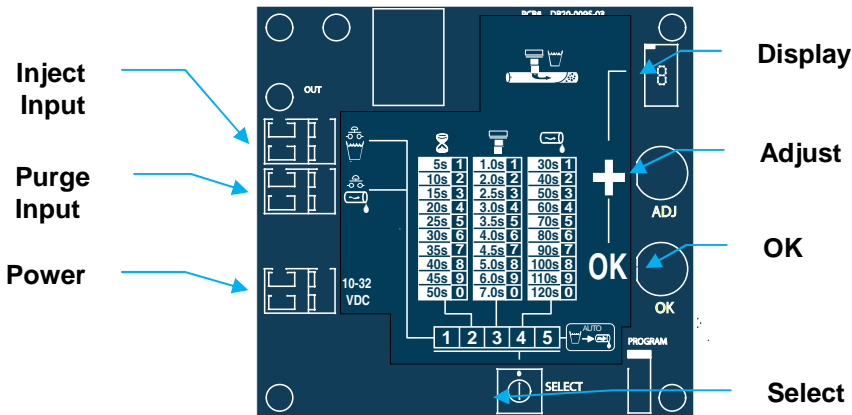
Connect power supply (8 - 48VDC or 7 -36VAC) to the **Power** terminals.

Connect isolated, normally-open contacts to the **Inject** and **Purge** terminals as required by the operating mode.

Setup

There are 5 adjustable parameters:

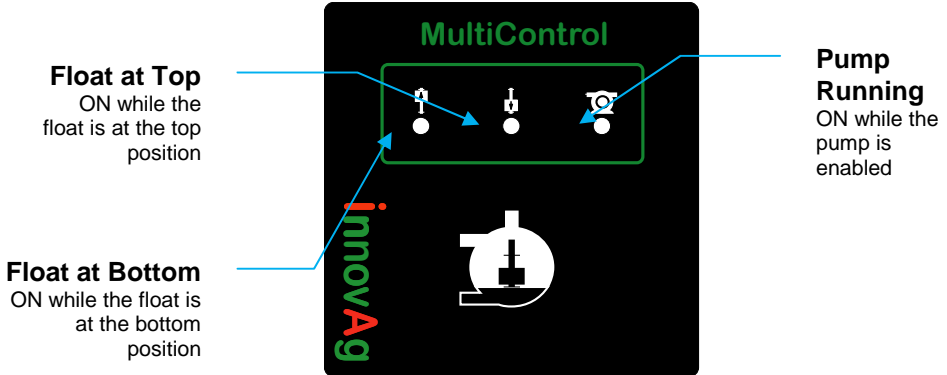|	Setting	Range Min.	Range Max
#1	External terminals enable	0	1
#2	Delay time	1	10 (*0*)
#3	Inject time	1	10 (*0*)
#4	Purge time	1	10 (*0*)
#5	Auto Purge enable	0	0

To adjust settings:

1. Press **OK** to place the controller in Setup mode.
2. The **Display** illuminates.
3. Turn **Select** to the required parameter number on the dial.
4. The **Display** will show the parameter's current value.
5. Press **Adjust** until the desired new value is shown on the display.
6. To adjust more parameters repeat steps 3 to 5.
7. Press **OK** to save the new settings and exit Setup Mode.

Setup mode will exit automatically if no buttons are pressed within 10s and any changes made _**will not**_ be saved.

Milk Pump

Controls operation of a milk pump in response to float level in a milk receiver.

The front panel has lights to show which action is currently operating:

Float at Top
ON while the float is at the top position

Pump Running
ON while the pump is enabled

Float at Bottom
ON while the float is at the bottom position

Note: All lights flashing **Orange** means the incoming DC supply is too low for MultiControl to work. They will flash **Red** if the voltage is too high.

Installation

The unit has an internal contactor to drive a milk pump. The contactor has three primary contacts and one auxiliary contact. Although the Controller is supplied pre-wired for single-phase use it can easily be re-wired to suit 3-phase pumps.

Important Notes:

1. The contactor coil is rated at **240VAC** so care should be taken when re-wiring for 415VAC 3phase to ensure the coil voltage is not exceeded, i.e. the coil should be connected between a phase and neutral, *NOT* phase to phase.

2. The controller *does not* have inbuilt motor-overload protection and this should be provided externally if the motor does not have an inbuilt overload protector.
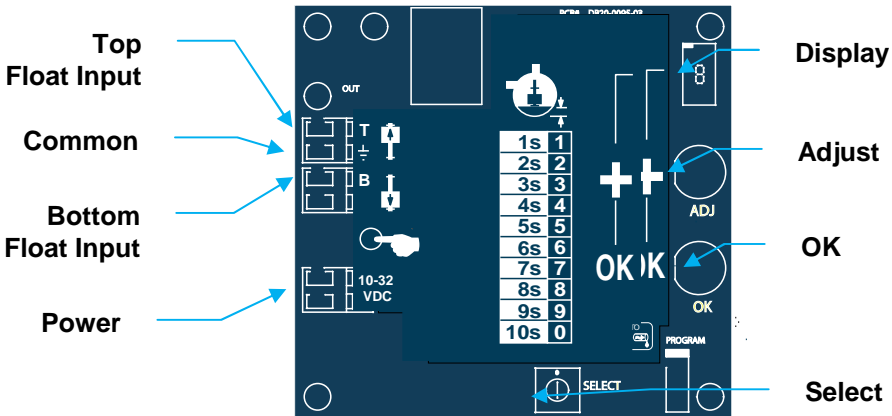
Connect power supply (8 - 48VDC or 7 -36VAC) to the **Power** terminals.

Connect a level probe (must be isolated, normally-open contacts) to the **Top Float** and **Bottom Float** terminals.

Setup

The only adjustable parameter is Run-On time which can be set from 1 to 10s.

To adjust the Run-On time:

1. Press **OK** to place the controller in Setup mode.
2. The **Display** illuminates.
3. Turn **Select** to **1**.
4. The **Display** will show the current Run-On Time value.
5. Press **Adjust** until the desired new value is shown on the display.
6. Press **OK** to save the new setting and exit Setup Mode.

Setup mode will exit automatically if no buttons are pressed within 10s and any changes made ***will not*** be saved.
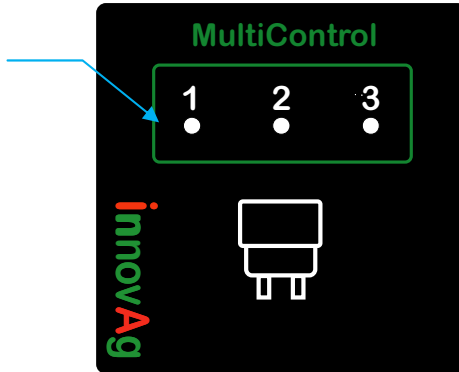
Pulsation

This unit controls three banks of 2x2 pulsators. Versions are available with in-built 12VDC or 24VDC switch-mode power supplies. Three banks for pulsator drive lowers the load on the vacuum supply, allows smaller-sized cable and lower voltage drops compared to single or dual bank controllers.

The front panel has lights to show the state of each Bank:

Bank Light
Flashes at
Pulsation Rate.

🟢 : Front ON
🔵 : Rear ON
🟠 : Both ON
🔴 : Fault

Note: All lights flashing **Orange** means the incoming DC supply is too low for MultiControl to work. They will flash **Red** if the voltage is too high.

Operating Modes

The controller has two modes of operation:

Auto-start: Pulsation starts automatically on power-up.

Manual: Pulsation operates only while the **Run** terminals are closed.
The table below summarizes each mode and the settings required (see **Setup** section):

|	Runs	Setting #1
Auto-start	Power-on	0
Manual	⏻ Closed	1

Installation

The unit has three sets of **Bank** terminals for connection of Pulsators.

If the unit *does not* have in internal power supply connect the DC supply to the **Power** terminals. **Make sure the polarity is correct!**

For units with an in-built power supply external equipment can be connected to the **Power** terminals. **Be careful not to overload the power supply.**
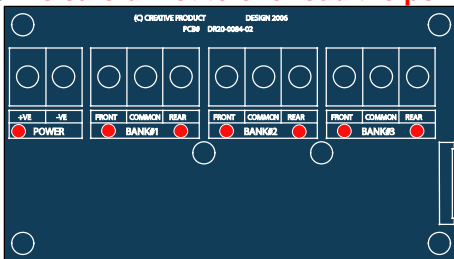
The Red LED shows if power is present. An LED is also provided on each side of all banks to indicate the side is correctly operating.
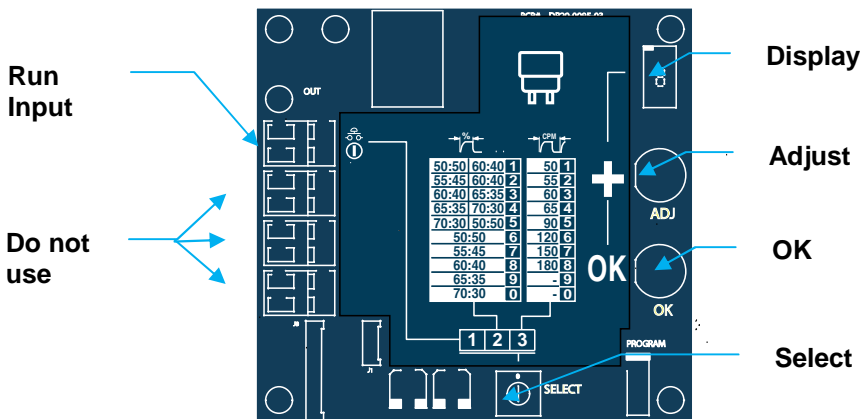
Connect an isolated, normally-open contact to the **Run** terminals if external control is required. Other terminals, if fitted, are not used.

<u>Setup</u>

There are 3 adjustable settings (Rate and Ratio tables are shown on the PCB label):

	Setting	Range	
		Min.	Max
#1	External terminals enable	0	1
#2	Pulsation Ratio (%)	1	10 (𝟢)
#3	Pulsation Rate (CPM)	1	10 (𝟢)

To adjust settings:

7. Press **OK** to place the controller in Setup mode.
8. The **Display** illuminates.
9. Turn **Select** to the required parameter number on the dial.
10. The **Display** will show the parameter's current value.
11. Press **Adjust** until the desired new value is shown on the display.
12. To adjust more parameters repeat steps 3 to 5.
13. Press **OK** to save the new settings and exit Setup Mode.

Setup mode will exit automatically if no buttons are pressed within 10s and any changes made **_will not_** be saved.

Setting Product Type

A new Multicontrol Board that is *not* set for a product type will continuously flash all front panel LEDs white. Before use it must be set to a specific product type using the following procedure:

1. Make sure power is off to the controller.
2. Press and hold the **OK** and **Adjust** buttons and turn the power on.
3. Continue to hold both buttons down (approx. 10s) until the display shows the current product type. The table below shows the letters used for each mode:-

Product Type	Letter
Air Injector/Purge	A
Pulsation	P
Milk Pump: Basic	C
Milk Pump: VariSpeed	F

4. Press **Adjust** until the desired product is displayed.
5. Press **OK** to save the setting.

The replacement board comes with a set of labels. Fit the appropriate one for the product being repaired.

Program Upgrade

The Multicontrol can be upgraded to the latest software version using the following procedure:
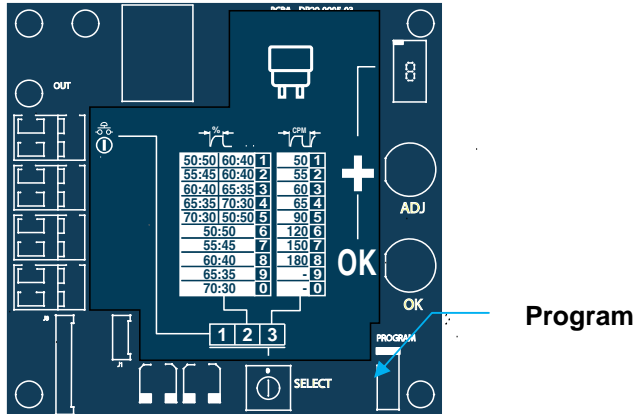
Program

1. Make sure the Controller is powered.
2. Plug the black Keyfob programmer into the **Program** connector on the PCB in the lid. Make sure the white mark on the Keyfob connector (also red stripe on the cable) is toward **Program** on the PCB.
3. Press the button on the Keyfob.
4. The Keyfob's light should go **green** while the new software is being transferred.
5. When programming is finished the Keyfob light should go off. If the light flashes **red** at any time there has been a problem. Unplug everything, power off the controller, wait 30s then try again.
6. Unplug the Keyfob.

Specifications

General

Operating Temperature:	-5 to 40°C
Storage Temperature:	-20 to 60°C

Air Injector/Purge

Power supply voltage:	8 - 48VDC, 7 - 36VAC
Purge contact max. voltage:	100VDC, 250VAC
Purge contact max. current:	5Amp DC, 10Amp AC

Milk Pump

Power supply voltage:	8 - 48VDC, 7 - 36VAC
Pump contact max. current:	15Amp AC

Pulsation

Mains voltage:	85 - 264VAC, 50 or 60Hz
Bank max. output current:	2.5A/side @ 60CPM, 60:40

Specifications are subject to change without notice.

Declaration of Conformity

Standards to which Conformity is declared:

- CISPR 11
- AS NZS 61000-6-4
- EN 61000-3-2

Manufacturer's Name: InnovAg Pty. Ltd.

Manufacturer's Address: 82 Victoria St.
Sandringham
Victoria 3191
Australia

Type of Equipment: Dairy Controls

Brand Name: MultiControl Dairy Controller

Model Number:

DR40-0125	Pulsation Controller
DR40-0126	Air Injector Controller
DR40-0127	Milk Pump Controller

I, the undersigned, hereby declare that the equipment specified above
conforms to the above Directives and Standards.

Signature
Date: 18 December 2006

Braham Basser
Director
InnovAg Pty. Ltd