

MultiControl

Universal Dairy Controller

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

USER MANUAL

Part No. DR51-0045-06

innovAg



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: 37/328 Reserve Road, Cheltenham
Victoria 3192, 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 Contro

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



Braham Bassar
Director
InnovAg Pty. Ltd

Date: 18 December 2006

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1. 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.

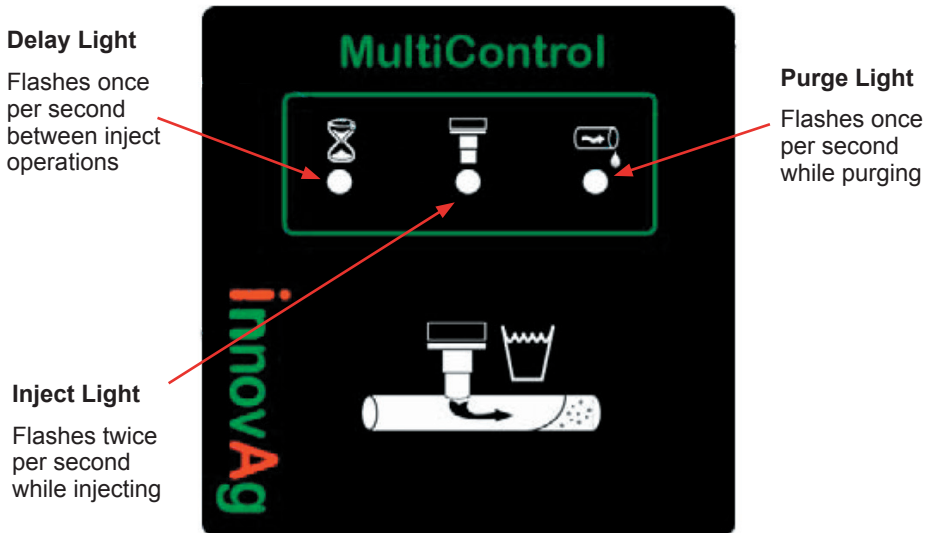
This manual has sections for each controller type and includes how to set up a new board should replacement be required.

2. 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:



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.



3. 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 1 second 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 or purge terminals close for at least 1 second.

NOTE: In auto-purge mode inject terminals must be closed for at least 30 seconds before an auto-purge is allowed to start.

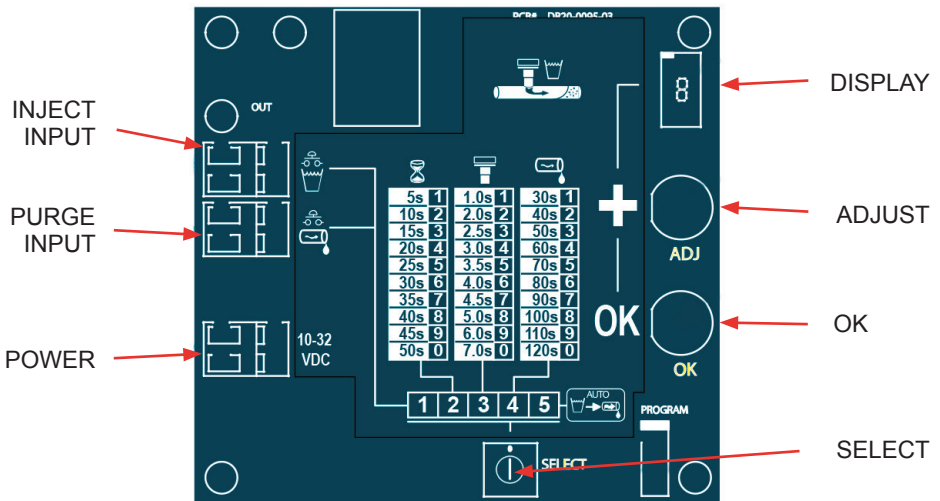
The table below summarises each mode and the settings required (refer to Section 5: Setup section):

	INJECT	PURGE	SETTING #1	SETTING #5
AUTO-START	Power-on	 Closes	0	0
MANUAL	 Closed	 Closes	1	0
AUTO-PURGE	 Closed	 Closes	1	1
		OR  Opens		

4. 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 operate,s 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.

5. Set up

There are 5 adjustable:

	SETTING	RANGE	
		MIN	MAX
#1	EXTERNAL TERMINALS ENABLE	0	1
#2	DELAY TIME	1	10 (⏏)
#3	INJECT TIME	1	10 (⏏)
#4	PURGE TIME	1	10 (⏏)
#5	AUTO PURGE ENABLE	0	0

To adjust settings:

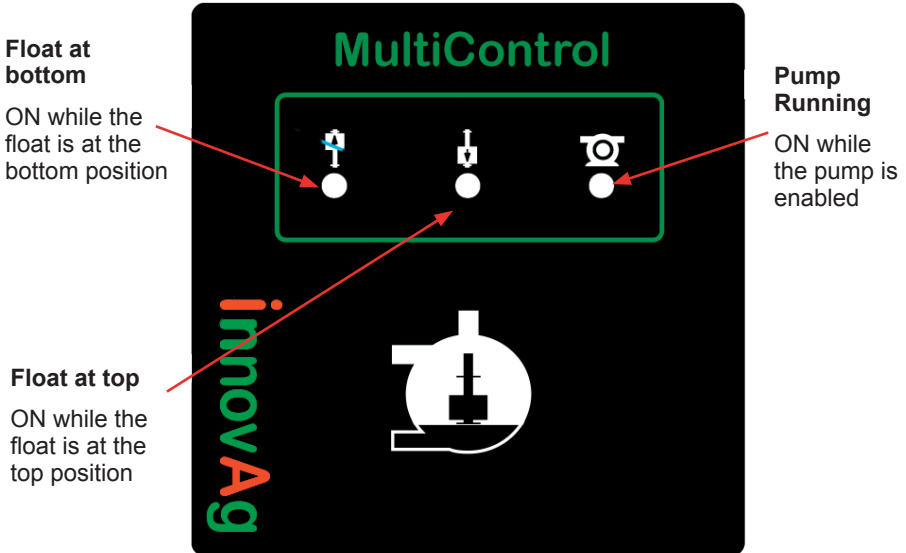
1. Press OK to place the controller in Setup Mode.
2. The display illuminates.
3. Turn Select to the required parameter number on the dial.
4. The display will show the parameter's current value.
5. Press Adjust until the desired new value is shown on the display.
6. To adjust more parameters repeat 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 10 seconds, and any changes made will not be saved.

6. 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:



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.

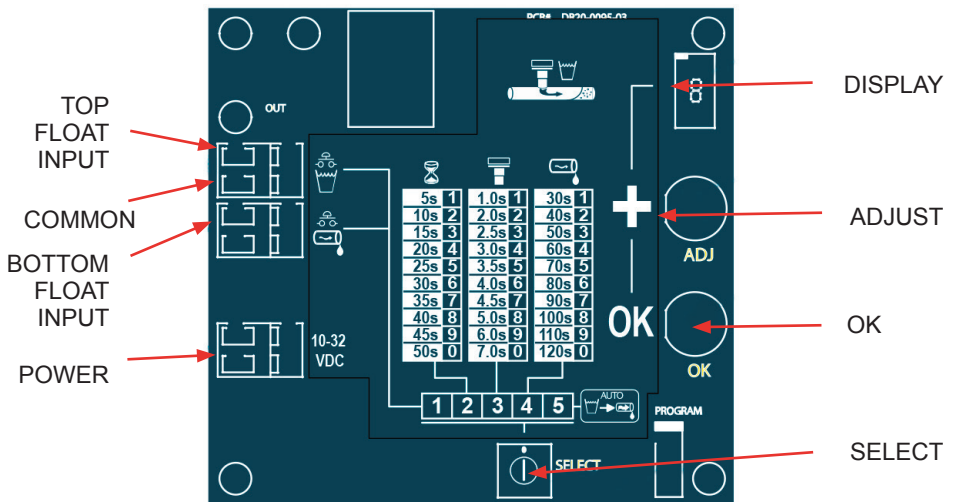
7. Installation

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 rewiring 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.

8. Setup

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

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.

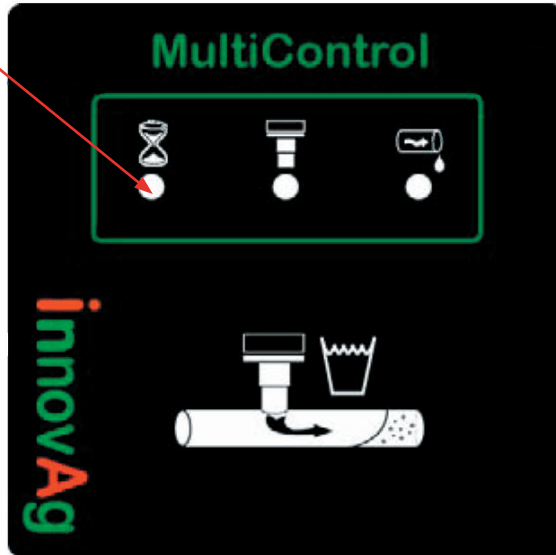
Setup Mode will exit automatically if no buttons are pressed within 10 seconds, and any changes made will not be saved.

9. 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.



10. 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.

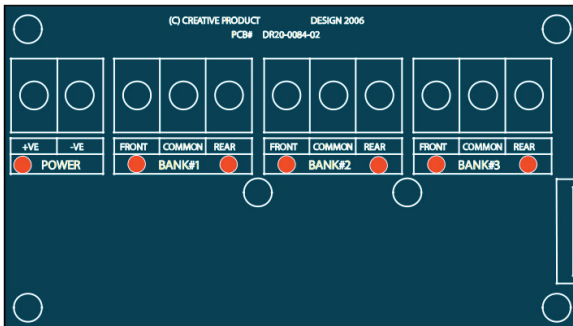
The table below summarises each mode and the settings required (refer to Section 9: Set up)

	RUNS	SETTING #1
AUTO START	POWER ON	0
MANUAL	 CLOSED	1

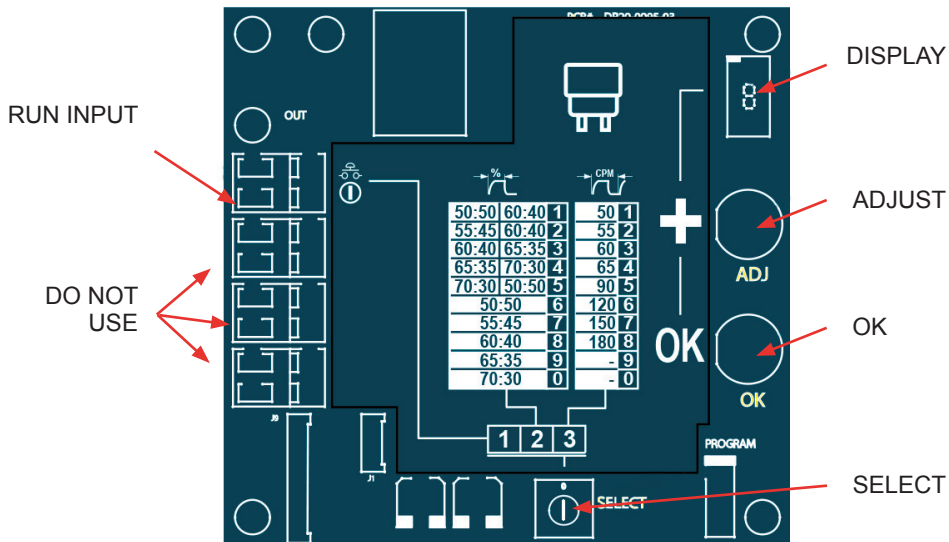
11. Installation

The unit has three sets of bank terminals for connection of pulsators. If the unit does not have an 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.

12. Setup

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 (\bar{U})
#3	PULSATION RATE (CPM)	1	10 (\bar{U})

To adjust settings:

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

Setup Mode will exit automatically if no buttons are pressed within 10 seconds, and any changes made **will not** be saved.

13. 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 (approximately 10 seconds) until the display shows the current product type. The table below shows the letters used for each mode:-

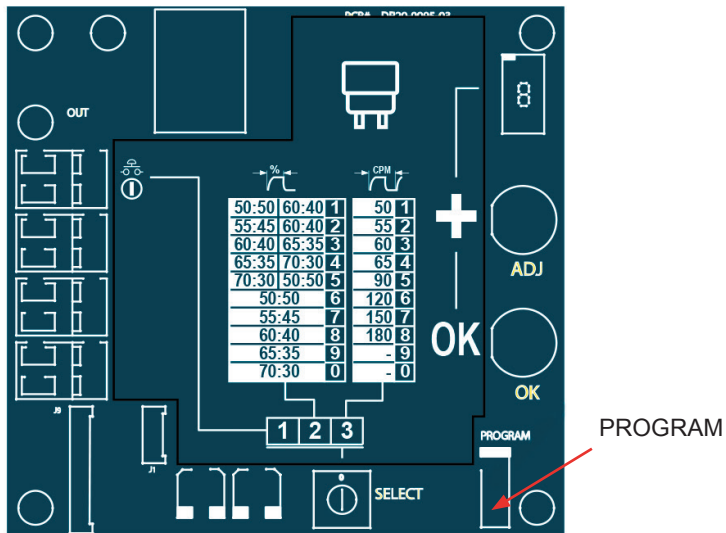
PRODUCT TYPE	LETTER
AIR INJECTOR/PURGE	<i>R</i>
PULSATION	<i>P</i>
MILK PUMP: BASIC	<i>C</i>
MILK PUMP: VARISPEED	<i>F</i>

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

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

14. Program Upgrade

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



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, installation has not been successful. Unplug everything, power off the controller, wait 30 seconds, then try again.
6. Unplug the Keyfob.

15. Specifications

Functional:

Accepts simple high/low switch level probe.

Multi-colour front panel LEDs indicate the status of pump and level probe.

Adjustable pump-out time (1s to 10s).

Input for external pump-out switch.

Requires external power supply.

Rugged contactor can be wired for single or three-phase pumps.

Electrical:

Power supply voltage: 8 - 48VDC, 7 - 36VAC.

Contactor: 240VAC, 15A.

Operating Temperature: -5 to 40°C

Storage Temperature: -20 to 60°C

*Specifications are subject to change without notice.

16. Warranty

InnovAg Pty. Ltd. provides the following limited two-year warranty warranty to the original purchaser of MT (“product”). This warranty cannot be assigned or transferred to subsequent purchasers. The registration form must be completed and returned to innovAg in order to be able to claim under this Warranty.

WHAT WE WILL DO

If the product fails under normal use and service because of a manufacturing defect in materials or workmanship within the warranty period, innovAg will, at its option either repair or replace the product with an equivalent product. The repaired or replacement product will be warranted under the terms of this warranty for the remainder of the applicable warranty period. Repair may include the replacement of parts or components with functionally equivalent reconditioned parts or components with functionally equivalent reconditioned parts or components.

WARRANTY PERIOD

The term of this warranty is two (2) years from the date of purchase.

WHAT IS NOT COVERED

This warranty does not cover any failures of equipment not supplied by innovAg, nor does it cover any failures of or damage to the product due to:

- (i) improper handling, misuse, neglect, accident, improper installation , non-compliance with the directions for use;
- (ii) any internal or external alteration or modification of any kind which in the opinion of innovAg will affect the ability to service the product; or
- (iii) repair by anyone other than an authorised innovAg Service Centre.

RIGHTS UNDER THE TRADE PRACTICES ACT

Under applicable State, Territory and Commonwealth law, certain conditions and warranties may be implied in this contract and rights and remedies conferred upon you as user in relation to the product which cannot be excluded, restricted or modified by agreement (“Non-excludable Rights”). Any rights conferred upon you by this warranty are in addition to and do not detract from those Non-excludable Rights.

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Subject to the above, in no event shall innovAg be liable (whether before or after discharge of the contract for supply of the product or otherwise) for any loss or damage suffered by you as the user arising from or caused or contributed to by the negligence of innovAg, its servants or agents, nor shall innovAg be liable for special, incidental, indirect or consequential loss or damages suffered by you as user as a result of breach by innovAg of this warranty or otherwise including but not limited to economic or moral loss, loss of profits or revenue or costs arising from the loss of use of the product or the cost of substitute products.

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