Phasefale's VatpacV2 *2013 Model with Data Logging!*
INSTALLATION AND PROGRAMMING

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1. INTRODUCTION

The Vat Pac is extremely simple to set up and operate. The temperature is shown on the LED display. If cooling is on a LED dot labelled "output" is displayed at the end of the temperature display. The programmed settings may be viewed by pressing the M+ button and holding it for 2 seconds. The agitate output cycles automatically with time and temperature to ensure Milk is well mixed.

2. INSTALLATION

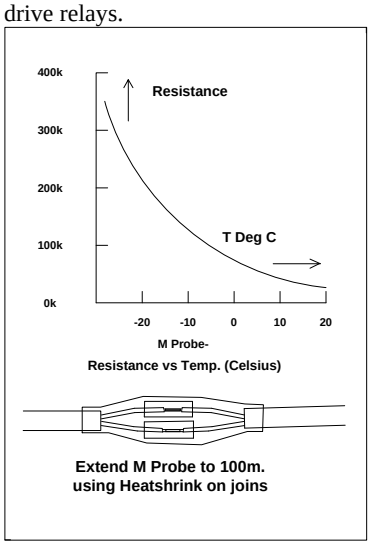
The Enclosure can be mounted in any position, and is splash proof. Mount the base and fit two of the mounting screws in the lid. The lid can then be hinged out to allow the electrical connections to be made.

2a. Temperature Sensor (M Probe) Installation

The temperature sensor is an NTC thermistor of 0.2°C accuracy , and it has a non-linear resistance-temperature characteristic (see chart below). It is ideally mounted in a stainless steel tube positioned in the Milk, or a stainless steel nipple protruding from the Vat base up into the Milk. Ensure that the sensor bulb is close to the Milk to ensure accurate temperature sensing and the thermal paste is also in contact with the sensor bulb. For long Vertical tubes, Ethylene Glycol is also recommended. The sensor is not suitable for direct immersion in the Milk for health considerations. If the sensor cable is open or short circuit, the Vat Pac will display **Er** to indicate the fault. The sensor cable is double insulated and therefore does not need to be enclosed in a conduit. There is no polarity to the sensor connection. It may be extended up to 100 metres by joining an extra cable (use double insulated cable) but the join must be well insulated and away from any dirt or moisture. Dirt or moisture at the join will reduce the resistance of the probe and result in a higher temperature reading than normal.

2b. Electrical Installation

Refer also to the electrical wiring diagram (next page) for details. The Active supply to the unit should be fused with a maximum rating of 10A. The refrigeration and agitator outputs are rated at; 10A resistive (0.25Hp) and are suitable ONLY to drive relays.



Motors up to 1HP @ 240VAC or 1.5HP @ 125VAC may be switched DIRECTLY by the optional mdPCB circuit board if fitted.

The momentary input for agitate (G/S2) ,compressor/motor protection (G/S4) are low voltage inputs and require voltage free contacts.

2c. Installation Self-Test

Press M+ and ^ together for 5 seconds. The Vat Pac automatically cycles the outputs in the following sequence:

Display	Action	Duration
CO/CF	Ref.On/Off	10/4
LO/LF	Agitator On/Off	4/4
HO/HF	1Hp Ag.On/Off	4/4
FO/FF	Master Relay On/Off	4/4

3. PROGRAMMING - The Set Point

To program the set point:

a) "Unlock" the Vat Pac permanent memory for programming
c) Alter the control (cutin) setting to your desired value.
d) Store the changed value.
e) Return to normal operation.
f) To unlock the Vat Pac and alter settings, press M+ and > together for 5 seconds. **UL** will be displayed to indicate that the system is unlocked.
g) After the Vat Pac is unlocked **SP** is displayed.
h) Next, the actual control setting (**eg 3.5 the default setting**) is displayed.
i) You can increase or decrease the setting by pressing ^ agitate (for increase) or **v** on/off (for decrease) until the numerical value required is displayed.
j) To store the changed value, press the M+ keypad. The new value is now stored indefinitely and will remain during power loss.
k) If no keypad is pressed for 60 seconds the Vat Pac will once again lock itself and further alterations will be disallowed until unlocked again. Remember! you must store the altered setting using M+.

3a. AA1 ADVANCED PROGRAMMING

A further series of functions and commands can be accessed to "fine tune" the Vat Pac to your application.

To access, during the Unlocking stage press the M+ and >> keys for a total of 20 seconds, until Un is displayed. Program items are indicated in the above table and are explained under their appropriate function headings.

Display	Default	Description, Range, units
Un	°C	Celsius/Fahrenheit °C/°F
Ca	0.0	Calibration -2.5~2.5°C
dI	0.5	Differential 0.5~3.0°C
At	15	Agitate time 2~30 min.
rt	2	Run on time 1~10 min.
On	4	Ag. ON time 2~30 min.
OF	26	Ag. OFF time 5~40min.
Ct	8	A'short cycle time 0~20m.
St	0(Off)	Safety time 0~99 sec.

3b. AA2 Advanced programming.

A further series of menus can be accessed to set the time for data logging applications [be sure to remove battery insulator so time clock can run on power loss]

Display	Value
+1n	Time –minutes (0-60)
+1h	Time hours (0-24)
dtd	Date- day (0-31)
dtn	Month (1-12)
Dty	Year (12 onwards)

3c. LOD Advanced programming.

A further series of menus can be accessed to reset default settings and USB memory stick options. Press up ^ and down v keys to change options.

Key	Display	Value
-	no	Do not access LOD
Up	dFv	Vatpac Default settings
Down	USB	Load settings from USB stick
Down	Out	Save settings to USB

USB settings are saved to and from the memory stick as **settings.txt** a plain text file which can be opened and edited with simple notepad type programs.

4. COOLING

Subject to time delays, the cooling output is ON whenever the temperature is above 3.5° C, or the control setting SP. The anti-short cycle time of 8 minutes (or as set by Ct) starts as the cooling shuts off. Cooling shuts off when the temperature reaches the cut-out temp. Cut-out is **SP** less **dI** (differential), and is 3.0° C as shipped.

5. AGITATOR OPERATION

The agitator is always on whenever the cooling output is on, as indicated by the "output" indicator LED.

A "run on" time of 2 minutes (or as set by rt in advanced programming) holds the agitator on after cooling stops.

In addition, the agitator will cycle on automatically every 26 minutes (or as set by OF). The on period is 4 minutes and is set by on in advanced programming.

5a. MANUAL AGITATOR OPERATION

The agitator may be started for 15 minutes (or as set by At) by pressing the agitator button momentarily.

6. SOLENOID SAFETY*

A safety timer, adjusted by St can be set (in seconds) to monitor for a compressor start after the cooling output starts. After the delay, the solenoid output is shut off until the compressor starts. If St=0, S/S4 is not monitored for the compressor contacts.

7. LOGGING

When fitted, the Vatpac stores time and date stamped temperature readings to the USB stick (not supplied by Phasefale). To access the logs, uplug the memory stick and save the log.txt file to a computer an open with Excel. A 1GB memory stick will give many years of logs.

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