



PCM

- A01018
- A01021

Pump Control Standard Module

Version 1.0 RevD

Operation Manual

Pump Control Standard Module Manual

Part number: A01018 – 110V
A01021 - 24/48V

Version 1.0
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Index

OVERVIEW	4
1 PHYSICAL LAYOUT	5
2 TERMINAL CONNECTIONS.....	5
PCM OPERATION	7
3 SETUP MODE	7
4 AUTOMATIC MODE	8
5 AUTOMATIC MODE SETUP	8
5.1 AUTOMATIC MODE DETAIL OPERATION & INDICATION	8
6 SETTINGS.....	9
6.1 CURRENT RANGES	9
6.2 PAUSE RESPONSE TABLE SWITCH SETTINGS	10
7 CURVE A	10
7.1 CURVE B.....	10
7.2 CURVE C	11
7.3 CURVE D	11
7.4 CURVE E.....	11
7.5 CURVE F	12
7.6 CURVE G.....	12
SPECIFICATIONS.....	13
FAULT DIAGNOSIS	13
8 FUNCTION	13
9 TYPICAL CONNECTIONS.....	14

OVERVIEW

The Pump Control Standard Module (PCM) provides submersible pump control. This module monitors the current used by the pump and differentiates between load and no load currents. The pump control module will do full control of the pump operation by switching the pump on and off based on the selected pause timer.

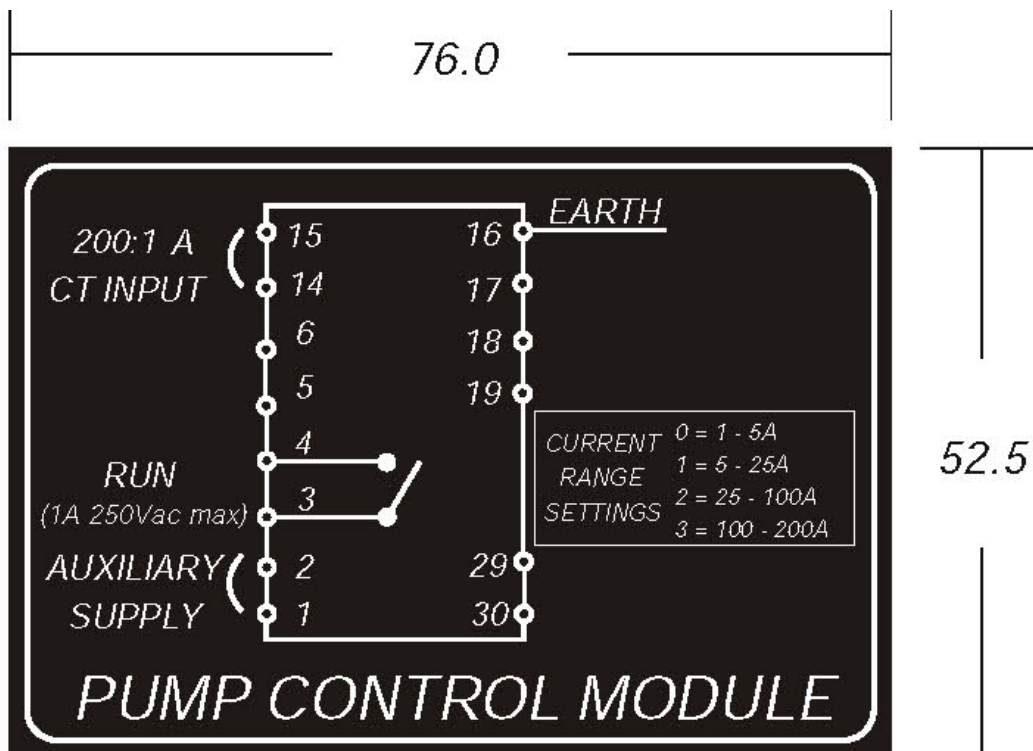
An adaptive control algorithm is used to vary the pause and run cycle times for effective automatic pump control. Long run times will cause a short pause time. Short run times will cause long pause times.



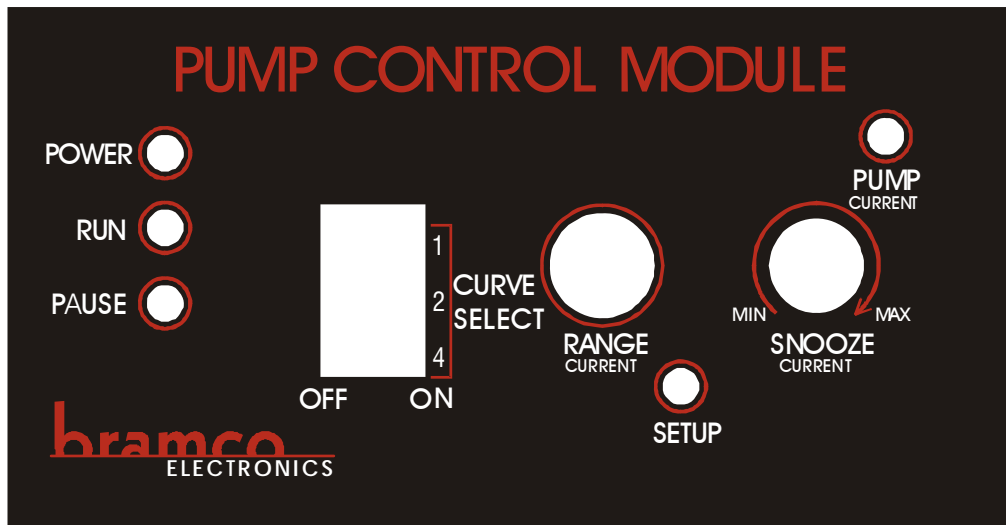
1 Physical Layout



2 Terminal Connections



Front Panel



PCM Operation

3 Setup Mode

Setup mode is used to adjust the snooze current level. This is the level where if the pump current drops below this level the pump will be stopped to protect it from overheating.

- Connect the PCM with the 200:1 CT secondary directly into terminal 14 and 15
- Supply the auxiliary power to terminal 1 and 2 depending on the power supply range
- Connect the pump run contactor to terminal 3 and 4
- Stop the fluid flow to the pump to be able to get the pump current with no fluid level
- Adjust the **snooze current** knob to minimum
- The Setup LED will light up

The module is now in setup mode. This mode is indicated by the Setup LED. In this mode the pump will be switched on for 1 minute and then switched off. This time is to set the no load run current level of the pump.

- Turn the **snooze current knob** slowly **clockwise** until the **setup LED** switch off

The module is now **set**.

4 Automatic Mode

Automatic mode is used on installations where the pump must be **fully controlled**. The PCM will attempt to start the pump. If PCM senses that there is no fluid to pump, it will switch the pump off for a pause time related to the time that the pump was on.

5 Automatic Mode Setup

- Set the **curve switch 1,2 and 4** according to **Section 6.2** below

5.1 Automatic Mode Detail Operation & Indication

When the **module is powered** in automatic mode:

- The **power LED** will come on to show the module is powered
- The **pause LED** will switch on to indicate that the pump is not running for 10 seconds
- After the 10 second pause the **run LED** and **run relay** will switch on to run the pump

Automatic **start** conditions:

- Power up
- Snooze timer timed out
- The optionally wired high limit switch is closed

NOTE. When the pump is started, it will be allowed **20 seconds** to get the fluid flowing. In this time pump motor must start up and reach full load current (pump current above snooze current level).

Normal run indication:

- The **run LED** is on indicating the pump is powered
- The **pump current LED** on

Automatic **stop** conditions:

- When the pump current is lower than the snooze level current

When one of these conditions is active the module will:

- Switch the **run LED** and **relay off** to stop the pump
- Switch the **pause LED** on
- The pump **current LED** should go off to indicate that the power to the pump is off

Pause control:

- When the pump was stopped for any reason controlled by the PCM, the time that the pump was on is used to determine the pause time according to setup tables.
- If the pump was on for less than 60 seconds the longest pause time in the table will be used
- If the pump was on for longer than 60 seconds the next pause time is used and so on till the shortest pause time is selected. From here on if the run time is longer the pause time is fixed on the shortest pause time.
- See tables below

6 Settings

6.1 Current ranges

Range Selected	Current
0	1 – 5A
1	5 - 25A
2	25 - 100A
3	100 - 200A

The current range is selected by the miniature rotary switch. The ranges are selected dynamically (As you turn the switch the range change). The ranges above are the only available ranges.

NOTE. It is recommended to select a range that enables the current to be set around the centre of the range for ease of adjustment. Both full load and no load currents must be in the range.

6.2 Pause response table switch settings

NOTE. Make sure that the switches are set fully to the edges for proper contact.

4	2	1	CURVE SELECT
OFF	OFF	OFF	A
OFF	OFF	ON	B
OFF	ON	OFF	C
OFF	ON	ON	D
ON	OFF	OFF	E
ON	OFF	ON	F
ON	ON	OFF	G

7 Curve A

Table is in hours

Run Time (hr)	Pause Time (hr)
0	12
2	10
4	8
6	6
8	4
10	2

7.1 Curve B

Table in minutes

Run Time (min)	Pause Time (min)
0	20
1	17.4
2	15.2
3	13.2
4	11.5
5	10
6	8.7
7	7.6
8	6.6
9	5.7
10	5

7.2 Curve C

Table in minutes

Run Time (min)	Pause Time (min)
0	10
1	9.2
2	8.7
3	8.1
4	7.6
5	7
6	6.6
7	6.2
8	5.7
9	5.4
10	5

7.3 Curve D

Table in minutes

Run Time (min)	Pause Time (min)
0	5
1	4.6
2	4.4
3	4.1
4	3.8
5	3.5
6	3.3
7	3.1
8	2.9
9	2.7
10	2.5

7.4 Curve E

Table in minutes

Run Time (min)	Pause Time (min)
0	10
1	7.6
2	5.7
3	4.4
4	3.3
5	2.5

7.5 Curve F

Table in minutes

Run Time (min)	Pause Time (min)
0	5
1	4.4
2	3.8
3	3.3
4	2.9
5	2.5

7.6 Curve G

Table in minutes

Run Time (min)	Pause Time (min)
0	2.5
1	1.9
2	1.4
3	1.1
4	0.8
5	0.6

SPECIFICATIONS

Supply Voltage	110/240Vac 50/60Hz 3vA 24-48Vdc Optional
Motor Current	1-200A using external CT Full range using 200:1 special CT
Operating Temp	0-50°C
Relay Function	1 x Changeover set of contacts
Contact ratings	1A 415Vac, 100VA max
Dimensions	100w x 75h x 110d
Material	High impact resistant polycarbonate
Mounting	Din rail and screw mounting
Weight	550g

Fault Diagnosis

To assist in fault diagnosis, a variety of typical faults are shown, with possible solutions given.

8 Function

Indication	Possible condition/suggestion
Power LED is Off	Check the module incoming supply voltage. AC or DC is available?
Pump current LED stays Off	Snooze current setting incorrect or CT connections to terminal 14 and 15 open

9 Typical Connections

Auto mode does not use the run stop switch.

