NASSAR® ELECTRONICS

SINCE 1973

User Manual

PUMP MONITOR
SINGLE-PHASE 60 Amp.
MODEL PM-23





The best solutions for
automation and protection

August 2026 Edition

www.nassarelectronics.com

⚠ PRECAUTIONS ⚠

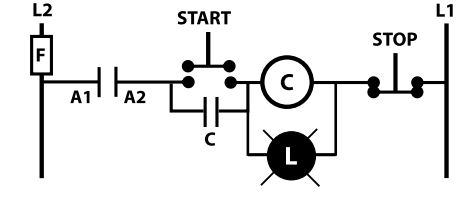
1) The Pump Monitor must be installed inside a CLOSED enclosure to protect it from dust, water and high temperature. NEVER INSTALL IT OUTDOORS.
2) TO PREVENT DAMAGE TO THE PUMP MONITOR, it must always be connected through fuses or a thermal-magnetic circuit breaker.
3) Make sure there is no voltage on the supply lines before wiring the Pump Monitor.

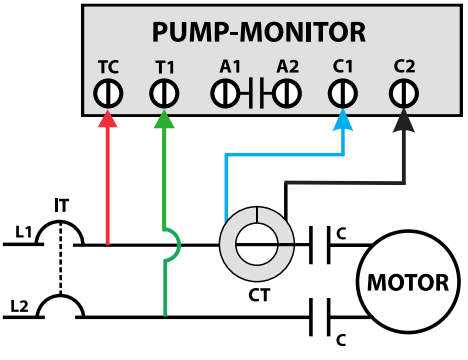
Electrical connection

The Pump Monitor model PM-23 is intended only for 220 V single-phase pumps, with a current draw in the range of 10 to 60 Amp. Connect the 220 V power supply to terminals **TC** a**nd T1** as shown in the diagram. Run the **L1 line wire** through the hole in the current transformer, and the black and blue wires to terminals **C1 and C2.**

C = Contactor
F = 5 amp control fuse
IT = Thermal-magnetic circuit breaker
A1-A2 = PM-23 normally open contact
L = Operation indicator light
CT = Current transformer

CONNECTION EXAMPLE
220 VAC



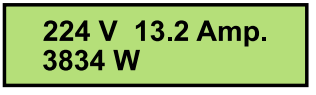


Reversed transformer

If the display shows "TRANSFORMER REVERSED" when the motor starts, turn off the Pump Monitor. Then **swap the blue and black wires connected to C1 and C2 to correct the connection.**



When the Pump Monitor is powered again, this message will no longer appear. The display will show the motor's voltage and power draw, confirming that the connection is correct.



Under-load protection (dry run)

The Pump Monitor protects the motor when the pump runs out of water. When this happens, the motor draws less power. The unit detects this drop in power and shuts off the motor automatically. The under-load setting (BC) can be set automatically or manually. In automatic mode, it is calibrated to 65 % of the power in Watts drawn by the motor.

If the motor's power varies widely and its draw falls below 65 %, false trips may occur. In that case, lower the under-load cutoff value manually. For more information, see page 5.

The under-load trip time is 5 seconds.

Under/over voltage protection

If the voltage stays high or low for more than 5 seconds, the Pump Monitor shuts off the pump.
From the factory, the cutoff values are set at 200 V for under voltage and 250 V for over voltage, which are the most recommended values.
To prevent oscillation, the unit has a 2 % hysteresis. The under and over voltage settings can be changed to other values. For more information, see page 5.

Rapid-cycle protection

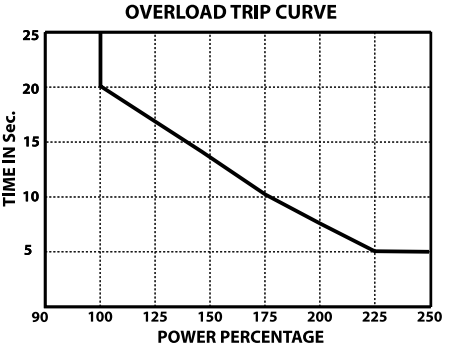
When the pump switches on and off very frequently, the motor heats up. This heating can burn it out, even when no overload occurs.
If the Pump Monitor detects that the pump starts more than 4 times per minute, it shuts it off to keep it from burning out.

Overload protection

When the motor draws more power than the set value, an overload occurs and the Pump Monitor detects this increase and shuts off the pump within a time that depends on the overload, according to graph #1.
The overload setting (SC) can be set automatically or manually. In automatic mode, it is calibrated to 125 % of the power in Watts drawn by the motor.

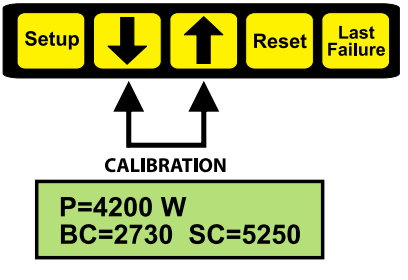
In the unlikely event that the motor's power varies widely and its draw rises more than 25 %, false trips may occur. If this happens, adjust the overload cutoff value manually, without exceeding the pump's rated values. For more information, see page 5.

Graph #1



Automatic calibration

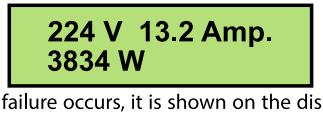
To make calibration easier, the Pump Monitor can calibrate itself automatically. This option is suitable for most applications. To do so, **the pump must be running under normal conditions.** Once the pump has started under normal conditions, press both arrows at the same time for more than 3 seconds. The Pump Monitor will measure the pump's power draw and automatically store the settings: under load at 65 % and overload at 125 %.



During calibration, the display will show the motor's power draw in Watts and the stored settings: under load (BC) and overload (SC).
If the motor's draw exceeds the overload setting for the time shown in graph #1, the Pump Monitor shuts off the pump. The same happens if the draw falls below the under-load setting for more than 5 seconds.
This calibration process can be repeated as many times as desired, to make sure calibration was done with the pump running under normal conditions.
These settings are typical, but they can be changed manually if desired. When pump conditions vary widely, a more precise setting may be required. For more information, see page 5.

Description of operation

UNDER NORMAL CONDITIONS
When the pump is on, the green "Pump" LED lights up. The display shows the voltage, current and power being drawn.



When a failure occurs, it is shown on the display and the failure LED (Failure) stays on during the disconnection delay time.



IN FAILURE CONDITION
When a failure occurs, it is shown on the display and the failure LED (Failure) stays on during the disconnection delay time.



AUTOMATIC RESET
Once the motor has shut off, if reset is set to automatic and the failure is not a voltage failure, the Pump Monitor starts counting the set time to restart the pump.

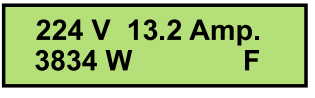
The display shows the time left before restarting. If you do not want to wait, press the RESET button to start the motor immediately.



MANUAL RESET:
The unit does not reset until the RESET button is pressed. When it is, internal contact A1-A2 closes and allows the motor to start.



FAILURE MEMORY
When a failure occurs, it is stored in the unit's memory. An "F" appears on the right of the display, indicating a stored failure.
VIEW AND CLEAR THE LAST FAILURE IN MEMORY



Press "LAST FAILURE" to show the failure for 5 seconds; it is then automatically cleared from memory. If you need to keep the record, write it down before that time runs out.



Settings

NOTE: During setup, the Pump Monitor turns off the "Pump" LED and prevents the pump from starting.

LANGUAGE SELECTION
Press the SETUP button and the setting to select the unit's language (Spanish or English) will appear on the display.

```
IDIOMA/LANGUAGE
ENGLISH
```

Press the down arrow for Spanish and the up arrow for English.

RESET TYPE
Press the SETUP button and the reset selection screen will appear. Use the down arrow for MANUAL and the up arrow for AUTOMATIC.

RESTART DELAY

```
RESET TYPE
MANUAL
```

Press the SETUP button; if you selected automatic reset, the restart delay setting will appear on the display.
Use the arrows to set the desired restart delay. You can choose any delay from 1 minute up to a maximum of 120 minutes.

```
RESTART
DELAY =60 Min.
```

UNDER LOAD
Press the SETUP button and the under-load setting will appear on the display. It lets you fine-tune the setting in case the automatic 65 % calibration was not adequate.
Use the arrows to set the desired load.

```
UNDER LOAD
ADJUST  BC=745
```

OVERLOAD
Press the SETUP button and the overload setting will appear. It lets you fine-tune the setting in case the automatic 125 % calibration was not adequate.
Use the arrows to set the desired load.

```
OVERLOAD ADJUST
SC=1456
```

The overload setting must be higher than the motor's power draw and cannot be lower than the under-load setting. If you try to do so, the unit will show an error.

UNDER VOLTAGE
Press the SETUP button and the under voltage setting will appear. If the voltage falls below this limit, the motor is disconnected.
Use the arrows to set the desired voltage.
Press the SETUP button again.

```
UNDER VOLTAGE
ADJUST=200
```

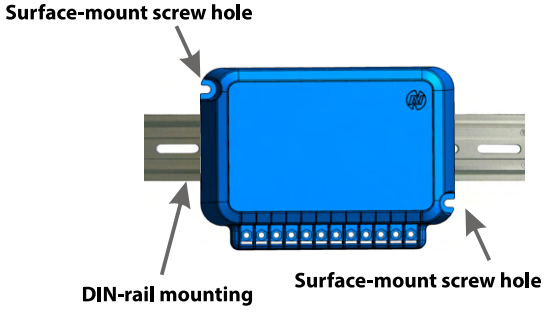
OVER VOLTAGE
Press the SETUP button and the over voltage setting will appear. If the voltage rises above this limit, the motor is disconnected.
Use the arrows to set the desired voltage.

```
OVER VOLTAGE
ADJUST=250
```

Press the SETUP button again to exit setup. The adjusted values will be stored in permanent memory.

Screw and DIN-rail mounting

The unit can be mounted on the back plate of an enclosure using the 2 side screws included. It can also be mounted on a DIN rail for easier installation and removal.



Front-of-enclosure mounting

The unit can also be mounted on the front of a panel so the display and indicators can be checked. To do so, request the front-mounting adapter plate, model PMF-237. When using front mounting, the enclosure **must NOT be installed outdoors.**



Specifications

OPERATING VOLTAGE	220 V ± 15 %, 50/60 Hz
VOLTAGE ACCURACY	0.7 % ± 1 DIGIT
CURRENT ACCURACY	0.7 % ± 1 DIGIT
UNDER VOLTAGE SETTING	180-220 V
OVER VOLTAGE SETTING	220-260 V
RESTART DELAY	Adjustable from 1 to 120 min.
CURRENT RANGE	10-60 Amp.
A1-A2 CONTACT	10 Amp. max. @ 220 VAC
RESET	Manual or automatic
SERVICE LIFE	100,000 Operations
OPERATING TEMPERATURE	-10 a +50 °C
POWER CONSUMPTION	3 Watts approx.
DIMENSIONS	14.5 x 10.5 x 6 cm
WEIGHT WITH PACKAGING	0.55 kg

***Specifications subject to change without notice.**

WARRANTY

This product is warranted against manufacturing and component defects for a period of 3 years from the date of purchase. Nassar Electronics will have the option to repair or replace this product at the manufacturing point, F.O.B., provided that Nassar Electronics finds it defective. Any repair or replacement needed due to improper maintenance, normal wear, improper supply voltage or unfavorable environmental conditions, accidents, misuse, use outside the specifications, modifications, repairs, use of unauthorized replacement parts, storage and handling, or any other cause for which Nassar Electronics is not responsible, is not covered by this warranty, and the buyer will be responsible for the costs required for its repair. Removal, reinstallation and freight costs shall be borne by the buyer/customer.

LIMITATION OF LIABILITY

NASSAR ELECTRONICS' LIABILITY SHALL BE LIMITED TO BREACH OF CONTRACT, NEGLIGENCE OR WILLFUL MISCONDUCT. IN ANY CASE, THE AMOUNT OF LIABILITY ATTRIBUTABLE TO NASSAR ELECTRONICS SHALL NOT EXCEED THE VALUE OF THE PRODUCT PURCHASED BY THE CUSTOMER FROM NASSAR ELECTRONICS. THE BUYER AGREES THAT NASSAR ELECTRONICS SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, DAMAGE TO OTHER EQUIPMENT/THIRD PARTIES, OR LOSSES OF ANY KIND NOT COVERED BY THIS WARRANTY.

NASSAR® ELECTRONICS

Nassar Electronics S.A. de C.V.
J. M. Salas 124 Pte.
64290 Monterrey, N.L., Mexico
email: ventas@nassarelectronics.com
www.nassarelectronics.com
Tel. (81) 8351-0006