

SundGard™

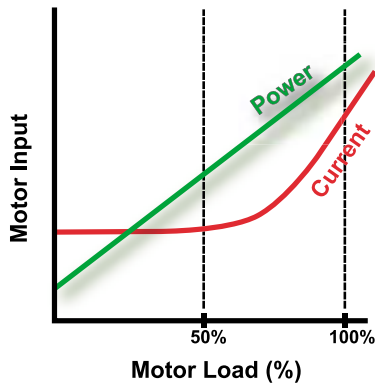
Power Monitors



Power Monitoring — *Protecting Your Pump Investment*

Power Monitoring represents one of the best values available today to protect your pump from system upset damage and avoid costly shutdowns, unexpected repair costs, and premature equipment failures. A Power Monitor is a device packed with value features that is installed in line with the motor driver of a pump or other rotating equipment. It senses true power input and can be set to alarm or shut off if preset power limits are exceeded. By simply monitoring motor input power, nearly all pumping conditions that typically damage pumps can be quickly detected and avoided. These detectable pumping conditions include:

- Dry-running
- Low Flow/Back-on-Curve
- Increased Viscosity/Precipitation
- Deadhead/Closed Discharged Valve
- High Flow/End-of-Curve
- Jammed Impeller
- Severe Cavitation
- Decoupling (Magnetic Drive Pumps)



The Power Monitor Advantage

Power Monitoring has distinct advantages over common current monitoring, also known as amperage monitoring. Current is almost constant up to 50% of the motor load range. Because of this, it is very difficult to detect changes below 50%. In contrast, because the input power varies linearly across the entire motor load range, it is an extremely reliable and accurate detector of system changes. As such, most pumping condition changes will be seen in input power fluctuations.

The SundGard™ Power Monitor Features

PM-1000 Power Monitor

Unlike any other power monitors available today, the SundGard™ PM-1000 and PM-2000 are modular devices designed to fit your individual requirements. Extremely compact, the analog PM-1000 is the heart of the system and is designed to fit inside a standard motor starter box. With its integral current transformer and standard DIN rail mount, the PM-1000 is the basic system needed to protect your pump. The PM-1000 is easily programmed to sense both high and low power upset conditions and send a signal that can be used to either sound an alarm or automatically shut down the pump before significant damage can occur.

PM-2000 Interface Module

The PM-2000 is a digital interface device designed to expand functionality of the PM-1000. It is powered by a 10V power supply and allows the user easy remote access to the PM-1000 controls outside the motor starter box away from high voltage connections. This arrangement is much safer and eliminates the need for the presence of a licensed electrician to make simple setting changes. The PM-2000 also has industry standard 4-20mA output for remote data readings, expanded trip delay range for added flexibility, kW/HP/%kW unit display, remote reset, NEMA 4X option, DIN rail mounting options, and both hardware and software locking options to discourage unauthorized changes to settings.



Feature	Model PM-1000	Model PM-2000
Display	Static Panel w/knobs	Dynamic 3-Digit LED
Low Trip Delay	1-30 Seconds	1-99 Seconds
High Trip Delay	1-10 Seconds	1-99 Seconds
Start-up Delay	1-30 Seconds	1-999 Seconds
Power Setting Units	Kilowatts only	kW or HP
Display Units	Kilowatts only	kW, HP or %kW
Trip Range (% Of Max Power)	20-80%	5-100%
Low Voltage Supply	No	Yes — 10V Only
Remote Reset	Yes	Yes
Analog Output	0-10VDC	4-20 mA Output for PLC
Program Lockout	--	Yes
User Friendly Input	--	Yes
NEMA 4X Option	--	Yes

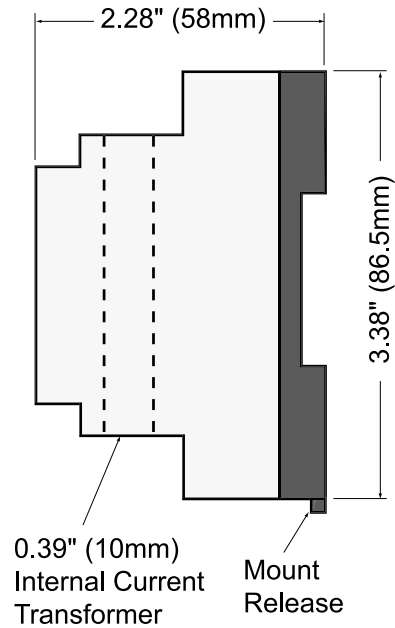
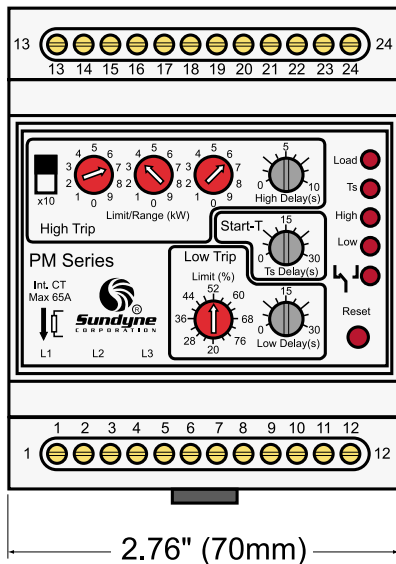
NOTE: PM-2000 interface operates in conjunction with PM-1000 Power Monitor.

The SundGard™ Benefits

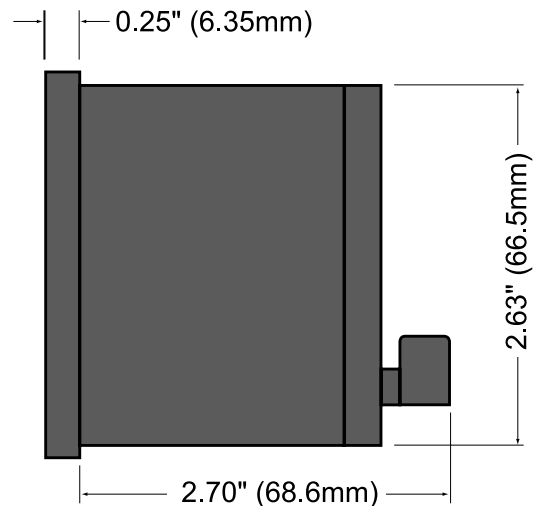
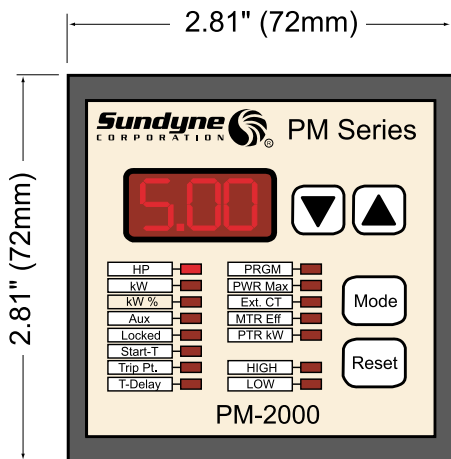
Whether you choose to use the PM-1000 by itself, or expand its protection capabilities with the PM-2000, the cost of the SundGard™ Power Monitor system often pays for itself after sensing just one system upset by shutting down the pump before damage can occur. Think of Power Monitoring as an affordable insurance policy for your pump!

- Virtually eliminates pump damage due to system upsets
- Significantly reduces spare parts costs
- Reduces downtime and service costs
- Integral current transformer eliminates extra component and installation costs
- PM-1000 compact design neatly fits INSIDE standard motor starter box
- PM-2000 greatly expands features and accessibility
- PM-2000 isolates all dangerous high voltage exposure from workers
- Provides valuable feedback to troubleshoot operational problems
- Protects your rotating equipment investment!

PM-1000 Dimensions



PM-2000 Dimensions



PM-1000 Specifications

Normal Motor Voltage Range (3 Phase)		208 to 575 VAC or 600 to 660 VAC
Internal CT		0-65 Amp (up to 500 amps with external CT, 500:5)
High Trip Limit		High Trip = kW range set
Low Trip Limit Range		20 to 80% of kW power range
Start-Up/Low Trip Delay		1 - 30 seconds
High Trip Delay		1 - 10 seconds
Frequency Range		45 - 65 Hz
Control Supply		115/230 VAC \pm 10%, 50/60 Hz, 1-Ph
Relay Output	Rating Type	5 Amp @ 250 VAC (non-inductive) SPDT, Normally Close
Analog Output		0 - 10 VDC source (directly proportional to kW range selected)
Operating Temperature		+5 to +122°F (-15 to +50°C)
Enclosure	Material Mounting Rating Dimensions	Upper: White Lexan (UL94-V0), Lower: Black Noryl (UL94-V0) 35 mm DIN Rail NEMA 1 Type (IP 20) 2.76" x 3.38" x 2.28" (70mm x 86mm x 58mm)
Third Party Approvals		CE (UL and C-UL pending)

PM-2000 Specifications

Power Requirements		10 VDC / 50mA (provided from PM-1000)
Digital Display		LED, 3 digit, 0.3" (7.62mm) High
Analog Output	Range	4-20 mA source (proportional to maximum power range)
	Input Voltage Range	15 to 30 VDC
	Maximum Load Resistance	136 Ohms @ 15V/818 Ohms @ 30 V
	Short Circuit Protection	Yes
	Reverse Voltage Protection	Yes
Start-Up Timer		1 - 999 seconds
High and Low Trip Delays		1 - 99 seconds
Trip Range		5% to 100% of maximum power value
Display Power Units		HP, kW, or %kW
Parameter Program Lock	Software Hardware	Embedded command entered from keypad Closed connection between terminals 6 and 7
Communication Distance		Maximum wire distance between the Power Monitor and the Display Panel is 25 ft. (76.2 m). A twisted wire pair is recommended for the distance between 1 ft. (.3 m) to 6 ft. (1.82 m), and shielded wire for distance over 6 ft. (1.82 m).
Operating Temperature		+5 to +122°F (-15 to +50°C)
Enclosure	Material Mounting Dimensions Rating	Flame resistant Noryl Panel 2.83" x 2.83" x 2.70" (72mm x 72mm x 68.6mm) NEMA 12 Type (IP 54)
Third Party Approvals		NEMA 4 with optional translucent, plastic hood CE (UL and C-UL is not required if supply is under 30 VDC)

www.sundyne.com

Manufacturers representatives, distributors, service centers and direct offices are located throughout the world. For a complete list, visit our website.



SundGard™

Sundyne
CORPORATION

Sundyne Corporation • Arvada, CO 80007 USA • +1-303-425-0800 • FAX: +1-303-425-0896 • www.sundyne.com
Sundyne Europe • Longvic Cedex, France • +33-380-383300 • FAX: +33-380-383371

• ANSIMAG • ANYSPEED • CASTER • HMD/KONTRO • MASO/SINE • SCMP • COMPRESSORS • SUNDYNE • SUNFLO •