Thermo Scientific Motion Monitor System

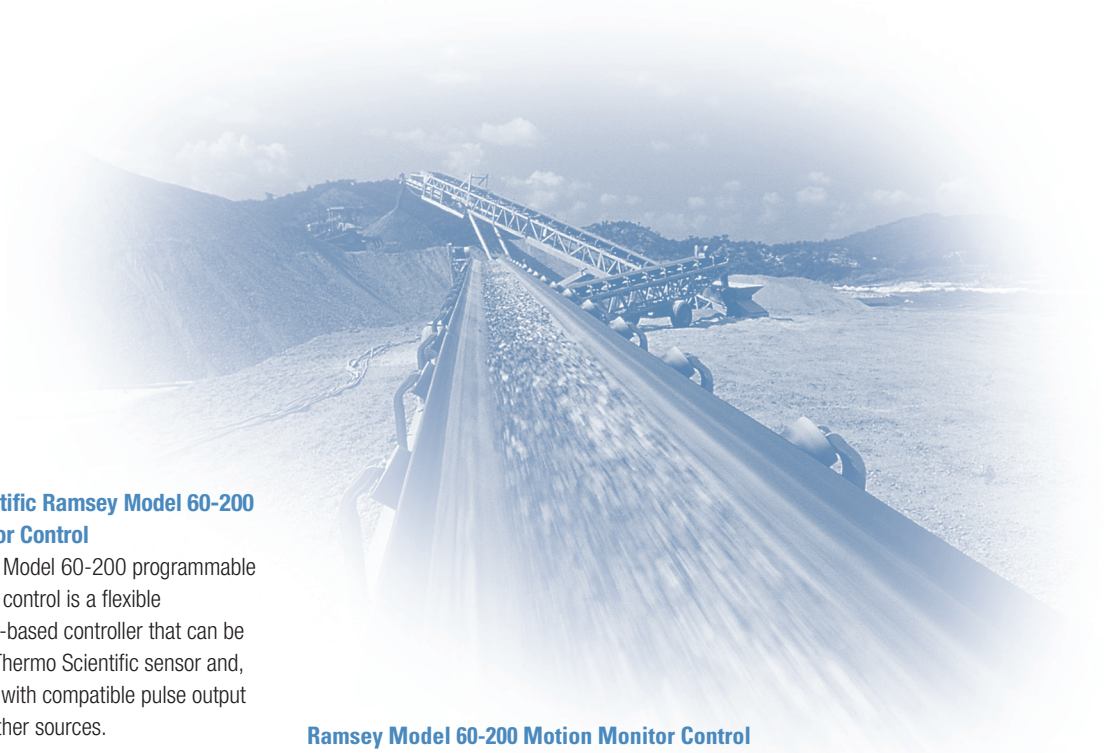
Sensing speed conditions on rotating shafts and machinery

Thermo Scientific™ Motion Monitor Systems measure the speed of rotating machinery and detect under-speed, over-speed and zero-speed conditions. They detect any deviance from your acceptable operating parameters, allowing you to troubleshoot system upsets or failures. This leads to reduced downtime and increased productivity, ultimately adding to your bottom line.

Thermo Scientific™ Motion Monitor Systems offer a choice of versatile and reliable packages for monitoring speed conditions on various types of machinery and systems by sensing the speed variations of rotating parts. The Motion Monitor can detect under-speed, over-speed, and zero-speed conditions as well as transmit a proportional speed signal. You can choose from mechanically coupled (shaft-driven) or non-contacting proximity type sensors to satisfy your particular application requirements and design preferences.

The control system for these unique systems are housed in separate NEMA 4X enclosures which can be mounted near the sensing components or, for convenience and accessibility, up to 610 m (2,000 ft) from the sensor.

Thermo SCIENTIFIC



Thermo Scientific Ramsey Model 60-200 Motion Monitor Control

The Ramsey™ Model 60-200 programmable motion monitor control is a flexible microprocessor-based controller that can be used with any Thermo Scientific sensor and, in some cases, with compatible pulse output sensors from other sources.

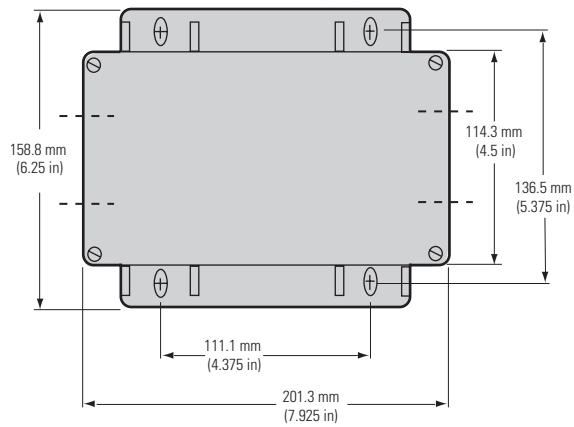
All alarm functions, delays and operating parameters are entered via a simple three-button keyboard. There are no potentiometers to adjust. A four-digit, seven-segment display shows the current speed as a percentage relative to a user-programmed reference speed. It also displays various parameters and setup values when the control is in its setup mode. Finally, the display shows an error code if any problems occur. This helps the operator to troubleshoot system failures or other difficulties.

Detailed programming instructions are contained in the system manual and a quick reference programming guide is displayed on a label inside of the control's enclosure cover. Depending on the model used, one or two DPDT outputs are available to transfer information about the monitored conditions from the monitor to remote alarm displays or control functions. Also available is a 0 to 2 VDC output or an optional 0-20 mA/4-20 mA signal proportional to the rotational speed of the monitored shaft.

The Ramsey Model 60-200 is available in two versions, a single channel or a dual channel. The alarm on a single channel model can be set at 1% increments over a range of 0% to 160% of the reference speed to provide an under-speed or an over-speed alarm. The dual channel model has two independent alarms, each adjustable between 0% to 160%.

Other programmable setup features include: start-up delay, alarm delay, reset mode, start-up delay initiation and alarm clearing.

Ramsey Model 60-200 Motion Monitor Control



Thermo Scientific Ramsey Model 60-22 Motion Monitor System

This system uses a Ramsey Model 60-200 controller and a Ramsey Model 60-220 non-contacting proximity type sensor used for measuring shaft rotation. It is available with either the single or dual channel controller and in either high speed or low speed. The sensors include an LED that indicates pulse outputs which simplifies system setup and troubleshooting. All sensors include 6 m (20 ft) of lead wire and a mounting bracket.

The Ramsey Model 60-220 sensor may be mounted in Class I or II, Division 2 hazardous areas if the wiring is run in approved conduit. For use in Class I or II, Division 1 areas, an intrinsic safety barrier must be incorporated into the signal leads. The Ramsey Model 60-200 control must always be located in a non-hazardous area.

Options include: a stainless-steel sensor, intrinsic safety barriers, conduit connectors, several target options with appropriate hardware, and an analog current output to transmit shaft speed.

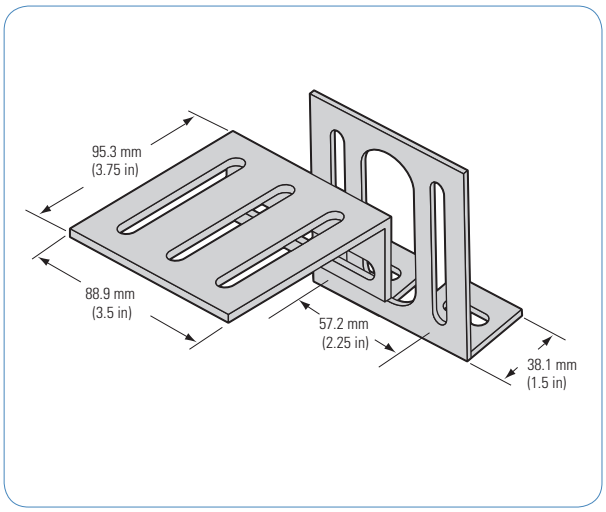
Thermo Scientific Ramsey Model 60-24 Motion Monitor System

This system uses a Ramsey Model 60-200 controller and a Ramsey Model 60-240 direct coupled, shaft-driven sensor for measuring shaft rotation speed. It is available with either the single or dual channel controller and in either high speed or low speed. A very low speed version is available capable of very sensitive operation at very low shaft speeds (less than 0.025 RPM). All systems include a conduit type connector and 1.5 m (5 ft) lead wire.

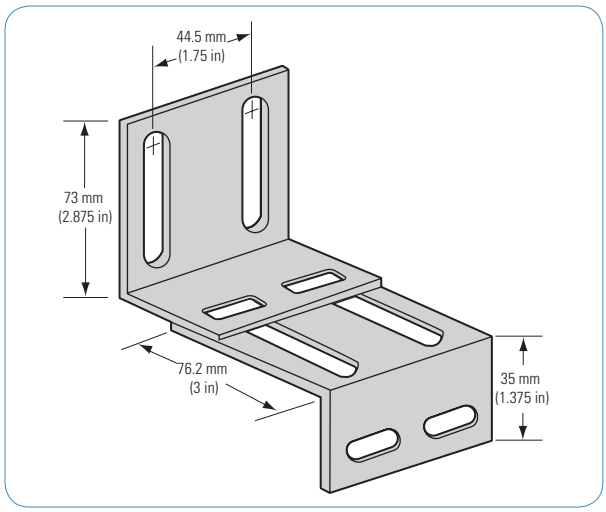
The Ramsey Model 60-240 sensors are approved for Class II combustible dust hazardous areas. If used in a Class I hazardous area, an intrinsic safety barrier must be incorporated into the signal leads. The Ramsey Model 60-200 control must always be located in a non-hazardous area.

Options include two versions of speed sensor mounting kits, intrinsic safety barriers, and an analog current output to transmit shaft speed.

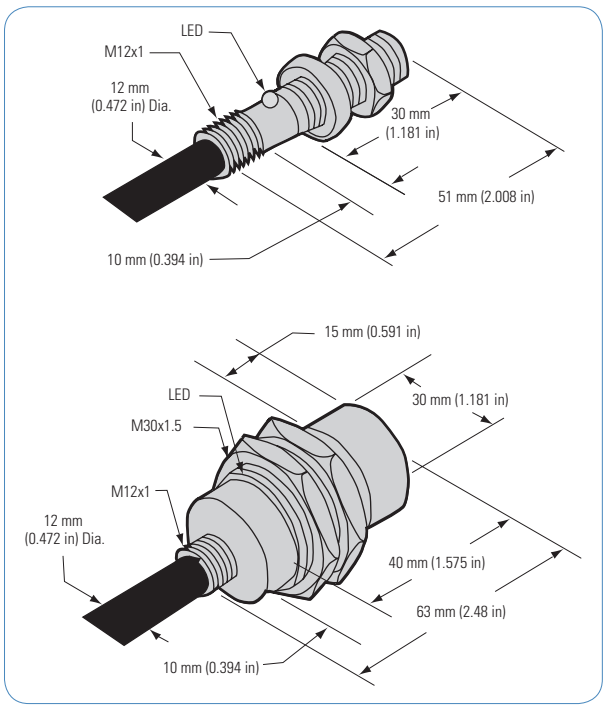
Ramsey Model 60-220 12 mm and 30 mm Sensor Mounting Bracket



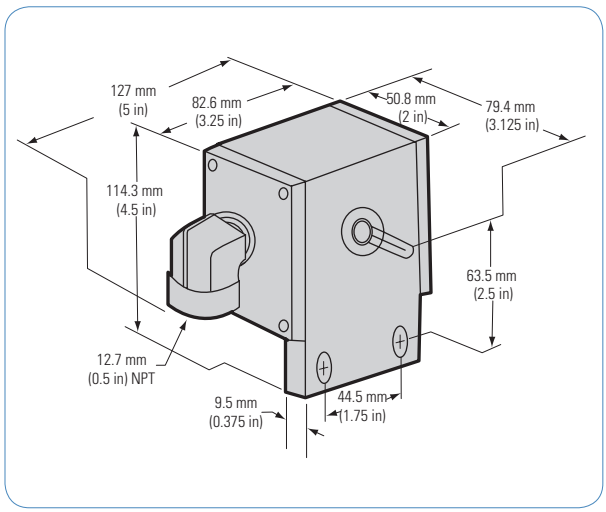
Ramsey Model 60-240 Mounting Bracket



Ramsey Model 60-220 12 mm and 30 mm Sensor



Ramsey Model 60-240 Direct Coupled Sensor



Thermo Scientific Ramsey Model 60-200 Motion Monitor Controllers

Programmable Features	
Reference Speed	Learned when operator presses and holds “Select” key for five seconds
Start-Up Delay(s)	1-99 seconds, programmable in one-second increments
Alarm Set-point(s)	0%-160% of reference speed, programmable in 1% increments
Alarm Delay(s)	1-99 seconds, programmable in one-second increments
Reset Mode	Selectable: Power On or both Power On and Remote Relay Input
Begin Start-Up Delay	Selectable: Power On or First Speed Pulse
Alarm Clear	Selectable: Manual Reset (latched) or Automatic Reset (unlatched)
General Features and Specifications	
Speed Display	Internal LED displays current speed as a percentage of reference at touch of a key
Error Display	Internal LED displays error messages to alert user of programming errors or system faults
Internal Memory	Non-Volatile memory stores all programming during power loss
Enclosure	Fiberglass (NEMA 4X), optional steel (NEMA 4) enclosure available
Speed Output	Proportional to rotational speed, 0 to 2 VDC output (1 VDC equals 100%); or Optional analog current output signal (Selectable 4-20 mA or 0-20 mA) available
Alarm Contacts	DPDT Relay(s) 230 VAC, 5A Non-Inductive 2A Inductive (Selectable NC/NO)
Operating Range	Maximum input speed pulse rate = 1000 Hz; Minimum input speed pulse rate = 0.2 Hz (5 seconds in between pulses) (Hz = RPM x Pulses per Revolution / 60) *Note: low pulse rates may limit how low the Alarm Set-point can be adjusted*
Power Consumption	10 Watts nominal (15 Watts maximum)
Max Wiring Distance	610 m (2000 ft) between controller and sensor when running at 300 Hz or less
Model Specific Specifications	
Input Power Voltage	60-200-SC: Selectable 115/230 VAC (50/60 Hz) ±10% 60-200-DC: 85 to 250 VAC (50/60 Hz)
Operating Temperature	60-200-SC: -40°C to +50°C (-40°F to +122°F) 60-200-DC: -40°C to +85°C (-40°F to +185°F)
Alarm Outputs	60-200-SC: One adjustable alarm with (1) DPDT relay 60-200-DC: Two independently adjustable alarms with (1) DPDT relay per alarm
Sensor Input	60-200-SC: NPN 60-200-DC: NPN, PNP, or Namur
Supply Voltage to Sensor	60-200-SC: 12 VDC, 75 mA 60-200-DC: 12 VDC, 150 mA

Thermo Scientific Ramsey Model 60-220 Proximity Speed Sensors

General Specifications	
Output	Open collector NPN, up to 200 mA current sinking
Operating Temperature	-25°C to +70°C (-13°F to +158°F), lower temp rating available upon request
Sensor to Target Range	60-22H High Speed system: 30-mm sensor has a 10-mm (0.394-in) nominal gap 60-22L Low Speed system: 12-mm sensor has a 4-mm (0.157-in) nominal gap
Detection Indicator	LED on sensor lights when target is in range, helpful for adjusting sensor position and troubleshooting
Cable	6-m (20-ft) standard cable length, optional longer cables available
Sensor Housing	Chrome plated brass with plastic face, stainless steel housings are available
Hazardous Area Approvals	FM approved for Class I & II, Division 2 (not for use in Canada)

Thermo Scientific Ramsey Model 60-240 Direct Coupled Speed Sensors

General Specifications	
Output	Open collector NPN, up to 100 mA current sinking
Operating Temperature	-40°C to +85°C (-40°F to +185°F)
Electrical Connection	Furnished with 1/2-in NPT conduit fitting and 5-ft 22 AWG leads with butt splices
Sensor Housing	Polished aluminum
Sensor Resolution	60-24H High Speed system: 60-242-12P-12V speed sensor with 12 pulses/revolution 60-24L Low Speed system: 60-242-80P-12V speed sensor with 80 pulses/revolution
Optional Mounting Hardware	Kit with rigid coupling and flexible strap for shaft speeds up to 200 RPM (-F); or Kit with flexible coupling and rigid mounting bracket for speeds in excess of 200 RPM (-R)
Hazardous Area Approvals	FM and CSA approved for Class II, Division 1 & 2, Group E, F, & G hazardous areas; Consult factory about Intrinsic Safety barriers for use in Class I areas

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