

Ramsey Series 60-200 Motion Monitoring Systems

Accurate Sensing of Speed Conditions on Rotating Shafts and Machinery

Ramsey Series 60-200 Motion Monitoring Systems offer versatile and reliable packages for monitoring under-speed, over-speed and zero-speed conditions on various types of machinery by sensing speed variations of rotating parts. 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.



Ramsey Series 60-200 Motion Monitoring Systems from Thermo Electron Corporation offer a choice of versatile and reliable packages for monitoring under-speed, over-speed and zero-speed conditions on various types of machinery and systems by sensing the speed variations of rotating parts. You can choose from mechanically coupled (shaft-driven) or non-contacting proximity type sensors to satisfy your

particular application requirements and design preferences.

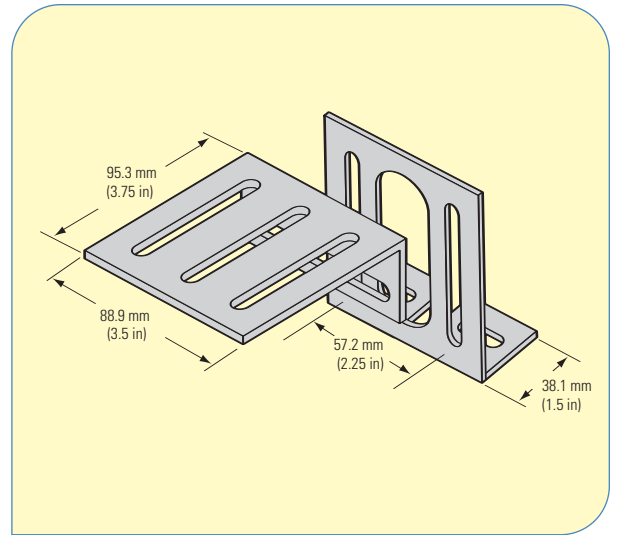
These unique control packages are housed in separate NEMA 4X enclosures and can be mounted near the sensing components or, for convenience and accessibility, up to 305 m (1,000 ft) from the sensor. Optional signal amplification accessories can increase that distance.

Ramsey Model 60-22 Motion Sensor

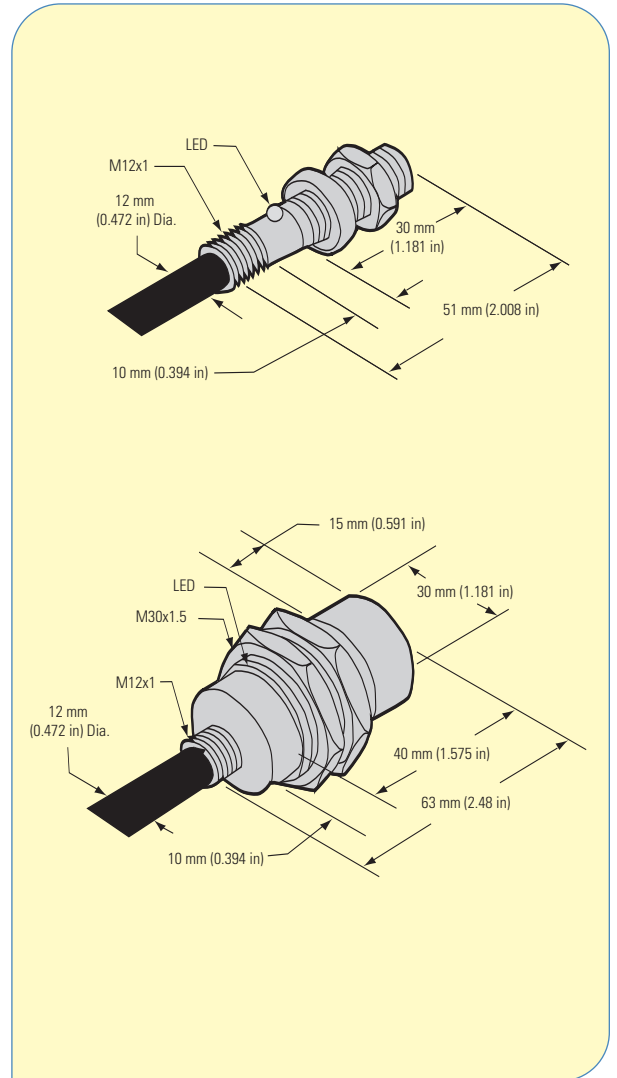
The Ramsey Model 60-22 Motion Sensor is a non-contacting proximity type sensor used for measuring shaft rotation. It is available as a single or dual channel monitor and can be utilized as a high speed (up to 5,000 RPM) or low speed (up to 50 RPM) sensor. The sensor includes a LED that indicates pulse output. This feature simplifies system installation for correct gap setting and troubleshooting. All sensors include 6 m (20 ft) of lead wire and a mounting bracket. The low speed version includes a 30-segment target disc and mounting kit.

These motion sensors 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 60-200 control must always be located in a non-hazardous area.

Ramsey Model 60-22 Motion Sensor options include: a stainless sensor, intrinsic safety barriers, conduit connectors, long range sensors and several target options with appropriate hardware.



Ramsey Model 60-22 12 mm and 30 mm Sensor Mounting Bracket



Ramsey Model 60-22 12 mm and 30 mm Sensor





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 Ramsey sensor and, in some cases, with compatible pulse output sensors from other sources.

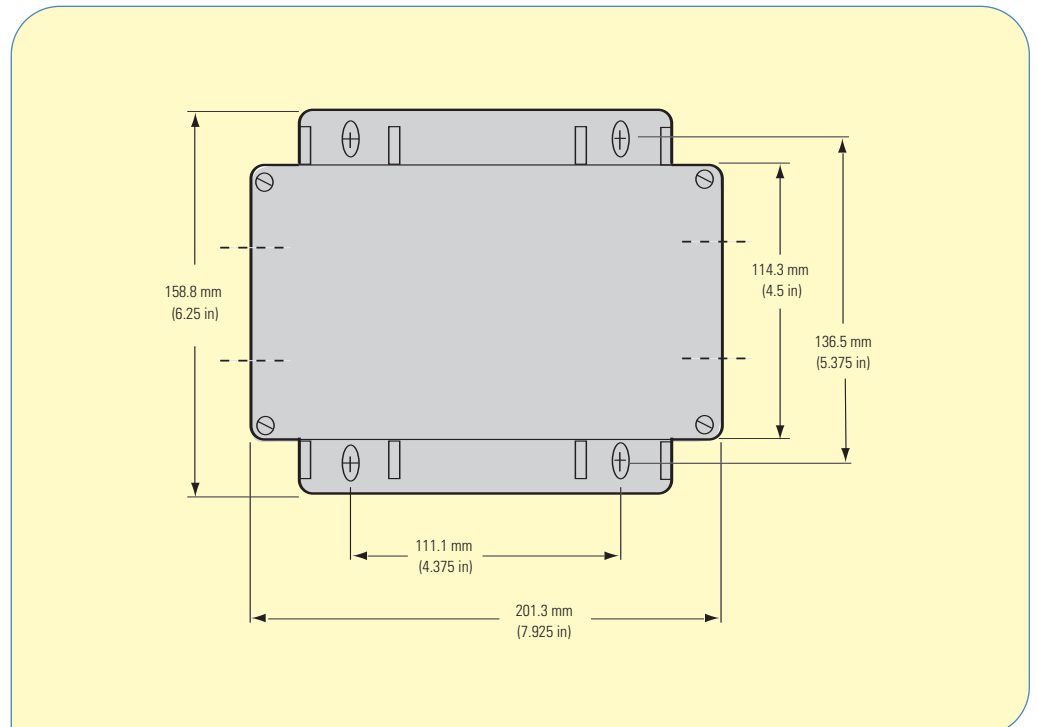
All alarm functions, delays and operating parameters are entered via a simple three-button keyboard. There are no potentiometers to adjust. A four-digit, seven-segment display shows the current speed as a percentage relative to a user-programmed reference speed. It also displays various parameters and set-up values when the control is in its set-up 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.

Alarms can be set at 1% increments over a range of 0% to 160% of the reference speed. With the dual channel 60-200-2 models, one output can be set for over-speed and one can be set for under-speed, or both can be set to monitor over-speed or under-speed.

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



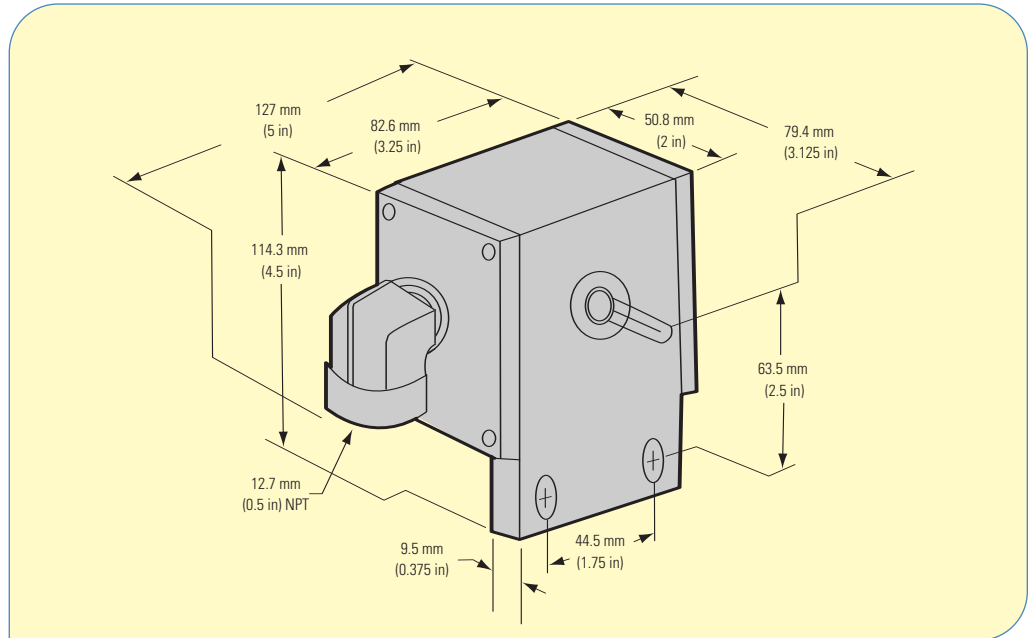
Ramsey Model 60-200 Motion Monitor Control

Ramsey Model 60-24 Motion Sensor

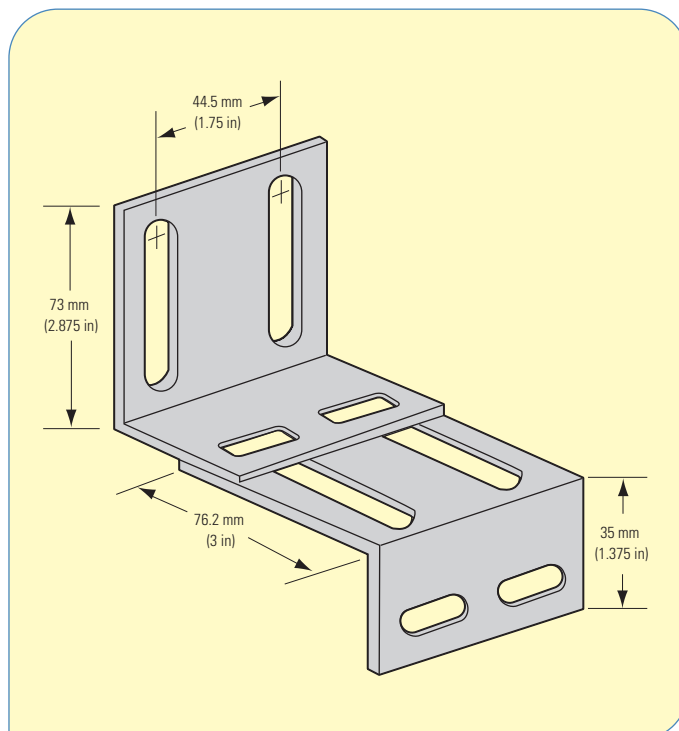
The Ramsey Model 60-24 Motion Sensor is a direct coupled, shaft-driven sensor used for measuring shaft rotation. It is available as a single or dual channel monitor and can be utilized as a high speed (up to 2,000 RPM) or low speed (up to 50 RPM) sensor. The very low speed version is capable of very 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.

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

Ramsey Model 60-24 Motion Sensor options include two types of mounting hardware and intrinsic safety barriers.



Ramsey Model 60-24 Direct Coupled Sensor



Ramsey Model 60-24 Mounting Bracket



Ramsey Model 60-200 Motion Monitor Control

Specification	
Programmable Features	
Start-Up Delay	0-99 seconds
Alarm Setpoint(s)	0-160%
Alarm Delay	0-99 seconds
Reset Mode	Power on; Remote relay input
Begin Start-Up Delay	Power up; First pulse
Alarm Clear	Manual (latched); Automatic

Ramsey Model 60-24 Motion Sensor

Specification	
Programmable Features	
Reference Speed	Learned by operator pressing and holding Select key for five seconds
Display Speed	At touch of key, current speed is displayed as a percentage of reference
Alarm Adjustment	0% to 160% of reference speed, in 1% increments, subject to minimum alarm setpoints shown with various models. Dual channel model has two separately adjustable alarm points. Channels may be set for underspeed and/or overspeed.
Start-Up Delay	0-99 seconds, in 1-second steps
Alarm Delay	0-99 seconds, in 1-second steps
Reset Mode	Power on/Remote reset or PLC control
Start Conditions	Power on or detection of pulses
Alarm Clear	Automatic or manual (latched) reset. Various error messages are generated via the LED display to alert user of programming errors or system faults. Programming instructions are stored in permanent memory and will be retrieved when power is applied.
General Specifications	
Voltage	115 VAC 60 Hz or 230 VAC 50 Hz $\pm 10\%$ ¹
Operating Temperature	60-200-1: -40°C to +50°C (-40°F to +122°F) 60-200-2: -40°C to +85°C (-40°F to +185°F)
Enclosure	Noryl GFN3 (NEMA 4X), See drawing for dimensions.
Outputs	Model 60-200-1: Single channel, one adjustable output. (1) DPDT 230 VAC/5A Non-Inductive 2A Inductive Relay (NC/NO Selectable). Model 60-200-2: Dual Channel, two independently adjustable outputs. (2) DPDT 230 VAC/5A Non-Inductive 2A Inductive Relay (NC/NO Selectable). Both models have 0 to 2 VDC output or an optional 4-20 mA signal available, proportional to rotational speed of monitored device. 1 VDC equals reference speed (100%).
Sensor Input	NPN (up to 3 KHZ), PNP ² or dry contact ²
Operating Ranges	60-24H System: up to 2000 RPM; Minimum alarm setpoint = 1.25 RPM 60-24L System: up to 50 RPM; Minimum alarm setpoint = 0.1 RPM 60-24VL System: up to 10 RPM; Minimum alarm setpoint = 0.025 RPM
Sensor Specifications	
Supply Voltage	12 VDC from 60-200 monitor
Output	Open collector NPN 100 mA current sinking
Electrical Connection	Furnished with ½-in NPT conduit fitting and 5-ft 22 AWG leads with butt splices
Operating Temperature	-40°C to +85°C (-40°F to +185°F)
Sensor Housing	Polished aluminum
Mounting Hardware	Furnished as option only. Can supply flexible strap with rigid coupling, recommended for speeds up to 200 RPM, or rigid mounting bracket with flexible coupling, recommended for shaft speeds in excess of 200 RPM. See Options.

¹ The dual channel 60-200-2 model (only) has a power transformer that is adaptable to other voltages and frequency power supplies that are found outside of the USA.

² Applies to 60-200-2 only

Ramsey Model 60-22 Motion Sensor

Specification	
Programmable Features	
Reference Speed	Learned by operator pressing and holding Select key for five seconds
Display Speed	At touch of key, current speed is displayed as a percentage of reference
Alarm Adjustment	0% to 160% of reference speed, in 1% increments, subject to minimum alarm setpoints shown with various models. Dual channel model has two separately adjustable alarm points. Channels may be set for underspeed and/or overspeed.
Start-Up Delay	0-99 seconds, in 1-second steps
Alarm Delay	0-99 seconds, in 1-second steps
Reset Mode	Power on/Remote reset or PLC control
Start Conditions	Power on or detection of pulses
Alarm Clear	Automatic or manual (latched) reset. Various error messages are generated via the LED display to alert user of programming errors or system faults. Programming instructions are stored in permanent memory and will be retrieved when power is applied.
General Specifications	
Voltage	115 VAC 60 Hz or 230 VAC 50 Hz $\pm 10\%$ ¹
Operating Temperature	60-200-1: -40°C to +50°C (-40°F to +122°F) 60-200-2: -40°C to +85°C (-40°F to +185°F)
Enclosure	Noryl GFN3 (NEMA 4X), See drawing for dimensions.
Outputs	Model 60-200-1: Single channel, one adjustable output. (1) DPDT 220 VAC/5A Non-Inductive 2A Inductive Relay (NC/NO Selectable). Model 60-200-2: Dual Channel, two independently adjustable outputs. (2) DPDT 220 VAC/5A Non-Inductive 2A Inductive Relay (NC/NO Selectable). Both models have 0 to 2 VDC output or an optional 0-20 mA, 4-20 mA signal available, proportional to rotational speed of monitored device. 1 VDC equals reference speed (100%).
Sensor Input	NPN (up to 3 KHZ), PNP ² or dry contact ²
Operating Ranges	60-22H System: up to 5000 RPM; Minimum alarm setpoint = 12 RPM 60-22L System: up to 50 RPM; Minimum alarm setpoint = 0.4 RPM
Sensor Specifications	
Supply Voltage	12 VDC from 60-200 monitor
Nominal Sensor to Target Range	60-22H Sensor (30 mm dia.): 10 mm (0.394 in) 60-22L Sensor (12 mm dia.): 5 mm (0.197 in)
Detection Indicator	LED lights when iron target in range of sensor. Helpful in adjusting sensor position and for troubleshooting sensor or wiring failures.
Cable	3 wire, oil resistant thermoplastic, 20 ft standard
Sensor Material	Threaded barrel is chrome plated brass, plastic face is PA12-GF3. Metric threads.
Bracket Material	Chrome plated brass

¹ The dual channel 60-200-2 model (only) has a power transformer that is adaptable to other voltages and frequency power supplies that are found outside of the USA.

² Applies to 60-200-2 only

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