Ramsey
Motion Monitoring Systems

Accurate Sensing of Underspeed, Overspeed and Zero Speed Conditions on Rotating Shafts and Machinery

The Ramsey Series 60-200 Motion Monitoring Systems offer a choice of versatile and reliable packages for monitoring underspeed, overspeed and zero speed conditions on various machinery and systems by sensing the speed variations of rotating parts.

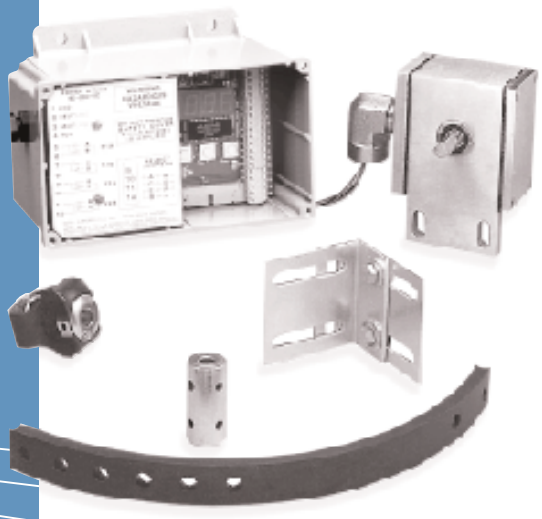
Customers can choose from either mechanically coupled (shaft-driven) or non-contacting proximity type sensors, depending on their particular application requirements and design preferences.

Either type of sensor can then be tied to the 60-200 programmable motion monitor.

This unique control package is housed in a separate NEMA 4X enclosure and can be mounted near the sensing component or, for convenience and accessibility, up to 1000 feet from the sensor. Optional signal amplification accessories can increase that distance even further.

Thermo
ELECTRON CORPORATION

Ramsey Model 60-24 Motion Sensor



The Model 60-24 systems incorporate a direct coupled shaft-driven sensor for measurement of shaft rotation. System selection allows for the choice of a single or dual channel monitor, high speed (up to 2000 RPM) or low speed (up to 50 RPM) sensor. The very low speed system is capable of very sensitive operation at very low shaft speeds (less than 0.025 RPM). All systems include conduit type connector and 5 foot lead wire.

60-24 sensors are suitable for Class II hazardous areas. If used in a Class I hazardous area, an intrinsic safety barrier must be incorporated in signal leads. The 60-200 monitor must always be located in a non-hazardous area.

Options for the 60-24 systems include two types of mounting hardware and intrinsic safety barriers.

Options:

The following options are regularly available for 60-24 systems. If ordering options, they should be designed by adding suffix letter(s) to the system model number. (Example: High speed system with single channel monitor and optional rigid mounting hardware is designed by model number 60-24H-I-R).

(-F) Flexible mounting strap with rigid coupling hardware suitable for shaft speeds up to 200 RPM

(-I) 4 – 20 mA or 0 – 20 mA output

(-R) Rigid mounting brackets for sensor with flexible shaft coupling. Recommended for shaft speeds in excess of 200 RPM to decrease sensor vibration.

(-X) Intrinsic safety barrier to allow mounting sensor in hazardous Class I or II, Division 1 area

(-VL) Optional for setpoints to 0.025 RPM

(-SL) Optional for setpoints to 0.0125 RPM

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 set-points shown with various models above. 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 also 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	115VAC 60HZ or 230VAC 50HZ +/- 10% Note: 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.
Operating Temperature	60-200-1: -40˚C to +50˚C 60-200-2: -40˚C to +85˚C
Enclosure	Noryl GFN3 (NEMA 4X), See drawing for dimensions.

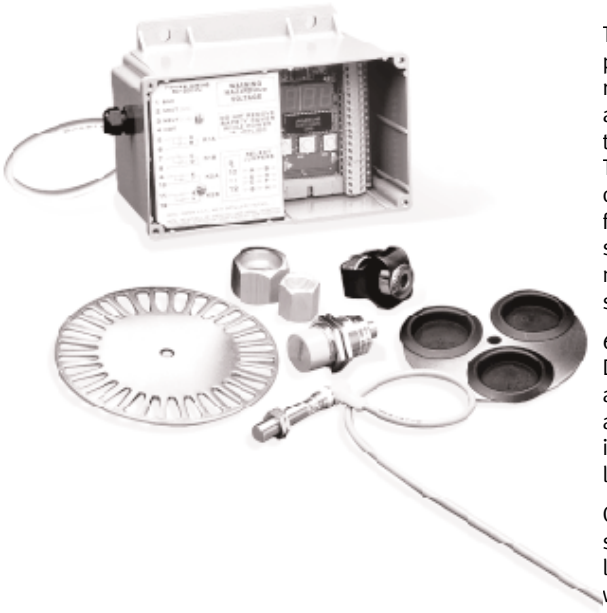
GENERAL SPECIFICATIONS cont.

Outputs	Model 60-200-1: Single channel, one adjustable output. (1) DPDT 230VAC/5A Non-Inductive 2 Amp Inductive Relay (NC/NO Selectable). Model 60-200-2: Dual Channel, two independently adjustable outputs. (2) DPDT 230VAC/5A Non-Inductive 2 Amp Inductive Relay (NC/NO Selectable). Both models have 0 to 2 VDC output or an optional 4 – 20mA signal available, proportional to rotational speed of monitored device. 1VDC equals reference speed (100%).
Sensor Input	NPN (up to 3KHZ), PNP*, or dry contact.* *60-200-2 only.
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	12VDC from 60-200 monitor
Output	Open collector NPN 100 mA current sinking
Electrical Connection	Furnished with 1/2" NPT conduit fitting and 5 feet 22 AWG leads with butt splices
Operating Temperature	-40˚C to + 85˚C
Dimensions	See drawings
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.

Ramsey Model 60-22 Motion Sensor



The Model 60-22 systems incorporate a non-contacting proximity type sensor for measurement of shaft rotation. System selection allows for the choice of a single or dual channel monitor, high speed (up to 5000 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 systems include 20 feet of lead wire and a sensing mounting bracket. Low speed systems include 30 segment target disc and mounting kit.

60-22 sensors may be mounted in Class I or II, Division 2, hazardous areas if wiring is run in approved conduit. For use in Class I or II , Division 1 areas, an intrinsic safety barrier must be incorporated in signal leads. The 60-200 monitor must always be located in a non-hazardous area.

Options for the 60-22 systems include a stainless sensor, intrinsic safety barriers, conduit connectors long range sensors, and several target options with hardware.

Options:

The following options are regularly available for 60-22 systems. If ordering options, they should be designated by adding suffix letter(s) to the system model number. (Example: High speed system with single channel monitor and optional 3 pulse target designated by model number 60-22H-l-T).

(-H) Hose clamp hardware with insulator for simple target on side of rotating shafts

(-T) Three pulse target for slower speed applications of 60-22H system. Alarm range approximately 4 to 50 RPM.

(-X) Intrinsic safety barrier to allow mounting sensor in hazardous Class I or II, Division 1 area

(-Z) Conduit connector, metric to english. Hazardous area mounting requires running cable in conduit.

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 set-points shown with various models above. 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 also 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	115VAC 60HZ or 230VAC 50HZ +/- 10% Note: 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.
Operating Temperature	60-200-1: -40˚C to +50˚C 60-200-2: -40˚C to +85˚C
Enclosure	Noryl GFN3 (NEMA 4X), See drawing for dimensions.

GENERAL SPECIFICATIONS cont.

Outputs	Model 60-200-1: Single channel, one adjustable output. (1) DPDT 220VAC/5A Non-Inductive 2 Amp Inductive Relay (NC/NO Selectable). Model 60-200-2: Dual Channel, two independently adjustable outputs. (2) DPDT 220VAC/5A Non-Inductive 2 Amp Inductive Relay (NC/NO Selectable). Both models have 0 to 2 VDC output or an optional 0 – 20, 4 – 20 mA signal available, proportional to rotational speed of monitored device.
Sensor Input	NPN (up to 3KHZ), PNP*, or dry contact*. *60-200-2 only.
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	12VDC from 60-200 monitor
Nominal Sensor to target Range	60-22H Sensor (30mm dia.): 0.394 inches/10mm 60-22L Sensor (12mm Dia.): 0.197 inches/5mm
Dimensions	See drawings
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

Ramsey Model 60-200 Control

Model 60-200 Control

The 60-200 programmable motion monitor is a versatile microprocessor-based controller that can be used with any Ramsey sensors, or in some cases, as the control device matched 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 will show the current speed as a percentage relative to a user-programmed reference speed. It also is used to display various parameters and set-up values when the control is in its set-up mode. Finally, the display will show an error code if any problems occur. This helps the operator to troubleshoot any system failures.

Detailed programming instructions are contained in the system manual and a quick reference programming guide is displayed on a label on the inside of the control's enclosure cover. One or two DPDT outputs are available from the 60-200 (depending on whether the single or dual channel model is used) for output of monitored conditions to remote alarm displays or control functions. Also available is a 0 to 2VDC output or optional 0-20 mA, 4-20 mA signal proportional to the rotational speed of the shaft being monitored.

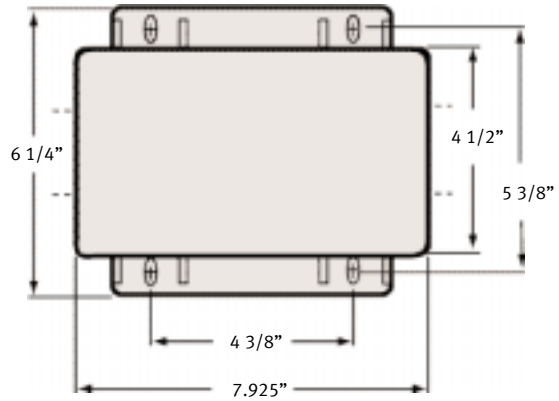
Alarms can be set at 1% increments over a range of 0 to 160% of reference speed. With the dual channel 60-200-2 models, one output can be set for overspeed and one for underspeed, or both for overspeed or underspeed. (For example: Set both outputs at underspeed, one at 90% for alarm and one at 80% for shutdown).

Other programmable set-up features include start-up delay, alarm delay, restart mode, how start-up delay is initiated, and whether the alarm condition must be manually reset (latched) or will reset automatically upon termination of alarm condition.

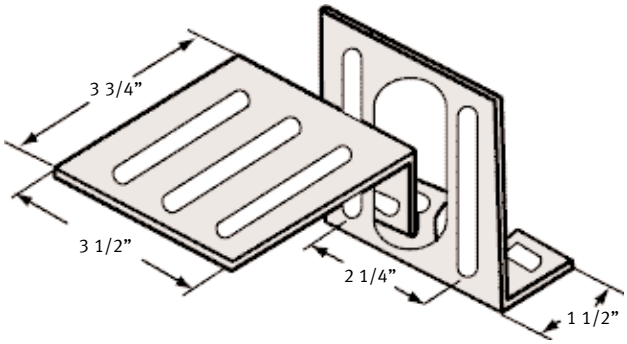
PROGRAMMABLE FEATURES	
Start-up Delay	0 to 99 Seconds
Alarm Setpoint(s)	0 to 160%
Alarm Delay	0 to 99 Seconds
Reset Mode	Power on, Remote Relay Input
Begin Start-up Delay	Power up, First Pulse
Alarm Clear	Manual (Latched), Automatic

Specifications

60-200 Motion Monitor

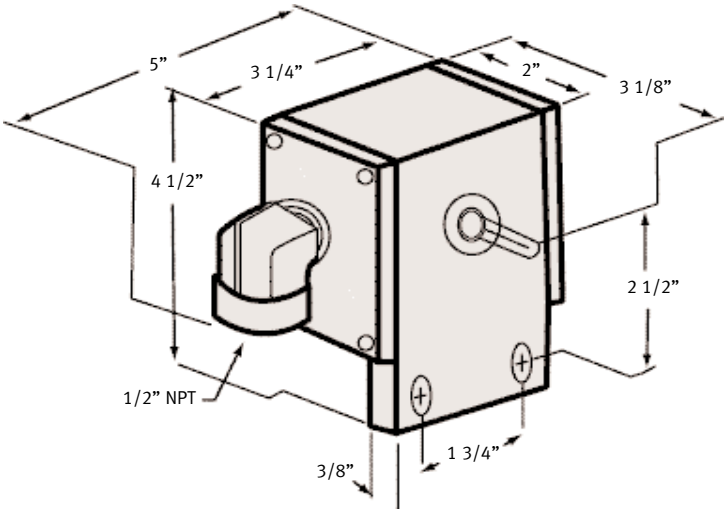


60-22 Non-Contacting

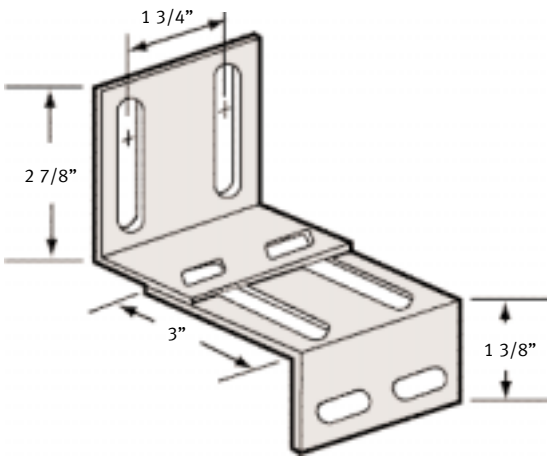


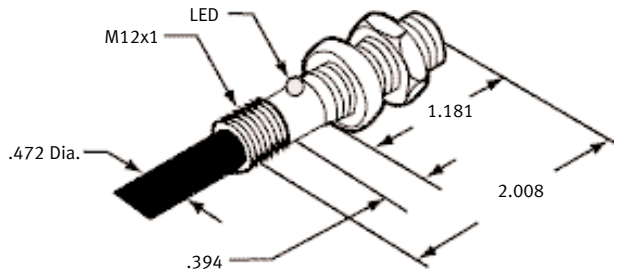
Sennsor Mouning Brackets

60-24 Direct Couple

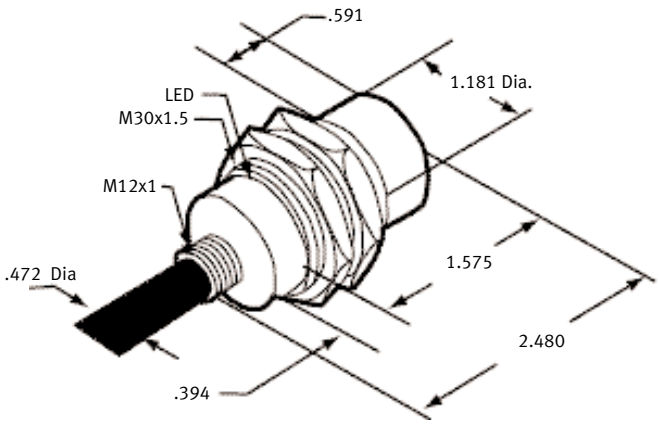


60-24 Direct Coupled Sensor





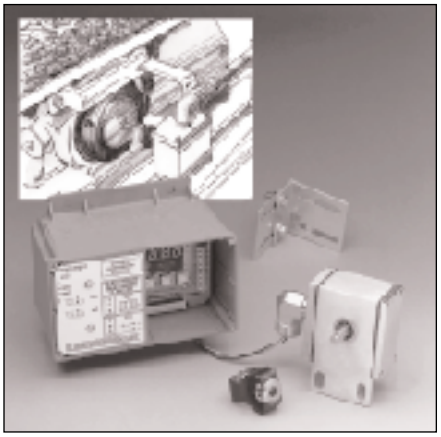
12MM Sensor

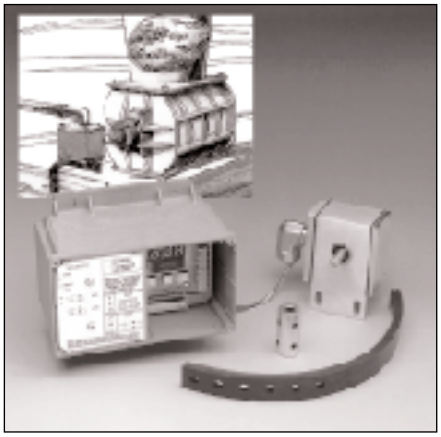


30MM Sensor

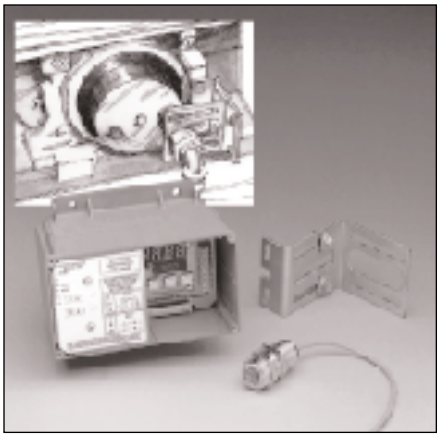
Typical Applications

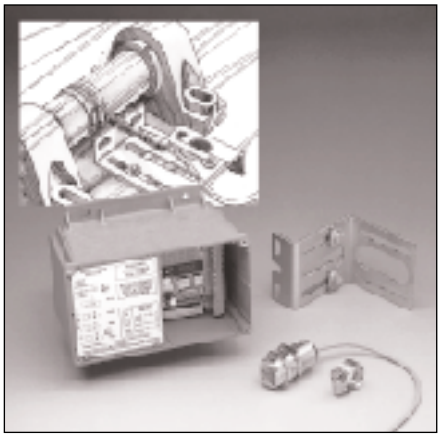
60-24 Direct Coupled Sensors

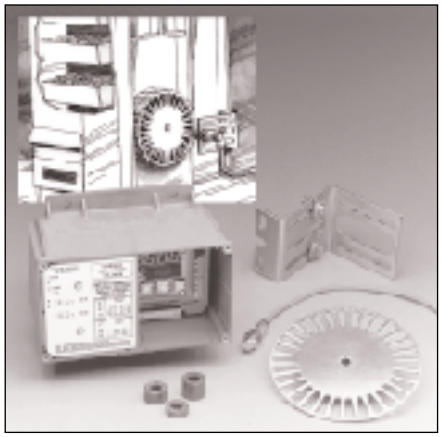




60-22 Non-Contacting Sensors







Catalog No. 20.620 (Rev. 10/02)
Printed in U.S.A. SP

501 90th Avenue N.W. • Minneapolis, MN 55433
Tel: (763) 783-2500 FAX: (763) 783-2525
http://www.thermoramsey.com

Thermo
ELECTRON CORPORATION