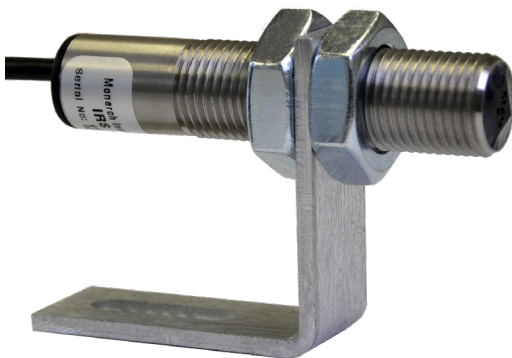




Instruction Manual

**IRS
Infrared Optical Sensor**



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SAFEGUARDS AND PRECAUTIONS



1. Read and follow all instructions in this manual carefully, and retain this manual for future reference.



2. This product emits low risk infrared (IR) optical radiation that cannot be perceived by the naked eye. Avoid staring directly into the IR beam.

3. Do not use this instrument in any manner inconsistent with these operating instructions or under any conditions that exceed the environmental specifications stated.
4. This instrument is not user serviceable. For technical assistance, contact the sales organization from which you purchased the product.



To comply with worldwide regulations such as the U.S. Environmental Protection Agency Resource Conservation and Recovery Act (RCRA) and EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE), you must not discard this electrical/electronic product in domestic household waste. The electronic components in this device may contain environmentally harmful substances. DO NOT DISPOSE of this product as unsorted municipal waste. This product needs to be RECYCLED and disposed of in accordance with environmental regulations in the country of use; contact your local authorities for more information. This product may be returnable to your distributor for recycling; contact the distributor for details.

Monarch Instrument's Limited Warranty applies.
See www.monarchinstrument.com for details.

Warranty Registration and Extended Warranty Coverage information is available online at www.monarchinstrument.com.

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1.0 DESCRIPTION

The IRS Infrared Optical Sensor has an invisible infrared light source that is ideal for working up to 0.5 inch [12 mm] from high-speed equipment or other applications providing only contrasting light and dark surfaces or beam interruption by solid objects as small as 0.039 inch [1 mm]. The sensor is housed in a threaded 303 stainless steel tube and supplied with a 90-degree angle aluminum-mounting bracket and two M16 jam nuts. The IRS comes with an 8 ft. [2.4 m] cable terminated with:

Model	Cable Termination
IRS-P	1/8 in. [3.5 mm] male stereo plug
IRS-W	Tinned wires

2.0 IRS-P: MODEL WITH STEREO PLUG

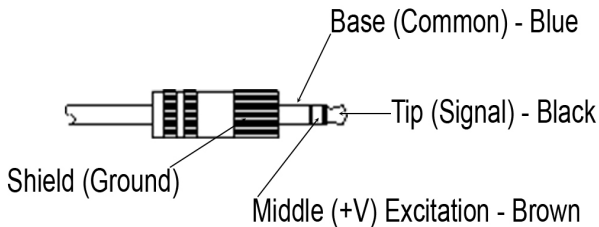
The IRS-P model will work directly with all Monarch Instrument handheld tachometers and stroboscopes that accept pulse input through an input jack (e.g. PLT200, PLS Pocket LED Strobe, Nova-Strobe™ dax, Nova-Strobe™ dbx, Nova-Strobe™ DBL, Nova-Strobe™ pbx, Phaser Strobe PBL, Nova-Pro® 300, Nova-Pro® 500).



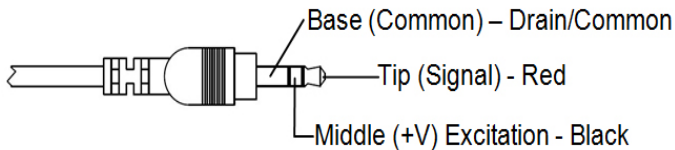
A sensor power supply (SPSR-IM) with BNC output is available for those applications that require a separate power source for the sensor.

An optional 25 ft. [7.6 mm] extension cable (EC-25P) is available with a female socket for the plug on one end and a 1/8 inch [3.5 mm] male stereo plug on the other.

2.1 Connection Detail for Metal Plug



2.2 Connection Detail for Molded Plug



3.0 IRS-W: MODEL WITH TINNED WIRES

The IRS-W model will work directly with all Monarch panel instruments that accept pulse inputs (e.g. ACT Series, Frequency to Analog Converters, DataChart™ 1250, DataChart™ 6000).



3.1 Connection Detail for IRS-W

Wire Color	Function	Connect To
Brown	Positive Power Excitation	+V
Blue	Common	Gnd
Black	Signal (+V to 0 Vdc Pulse)	Sig
Shield	Housing Ground	Gnd

4.0 PREPARATION FOR USE

In order for the sensor to work, you are required to have a contrasting color target on the rotating part. **NOTE: Standard Monarch Instrument reflective tape will not work.** The target can be any white surface that will reflect the infrared. A solution that works well on small high-speed shafts is wax crayon. Use black or white paint/ink to coat the shaft, 2/3 black and 1/3 white, so that as the shaft rotates the colors alternate in front of the sensor. White paper labels also work when wrapped fully around the shaft and then part of the label is blackened out with a marker. The sensor can also target off gear teeth, objects 0.039 inch [1 mm] diameter, slots, bolt heads and keys.

⚠ CAUTION: Centrifugal force at high speeds can be dangerous. Ensure all targets are adequately secured to shafts and always have operators protected by a plexiglass sheet at least 0.5 inch [12 mm] thick.

NOTE: In order for the IRS to be fully CE compliant, the supplied ferrite must be attached around the plug/wire end of the cable.

5.0 OPERATING INSTRUCTIONS

The user must mount the IRS to obtain an accurate measurement. The ideal focal point of the sensor is 0.5 inch [12 mm], but this is



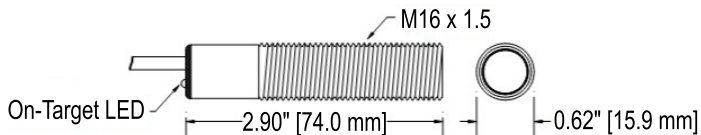
dependent on the size and speed of the target. The sensor has a red/green LED On-Target Indicator that shows when it is picking up a valid signal. The LED will be solid green when the unit is powered and will turn amber when on target. Use this to properly place the sensor, as you cannot see the infrared emissions.

NOTE: The sensor is sensitive to lighting, such as fluorescent lamps or sunlight. If the system appears to read a speed when the shaft is stationary, it may be necessary to shield it from ambient lighting.

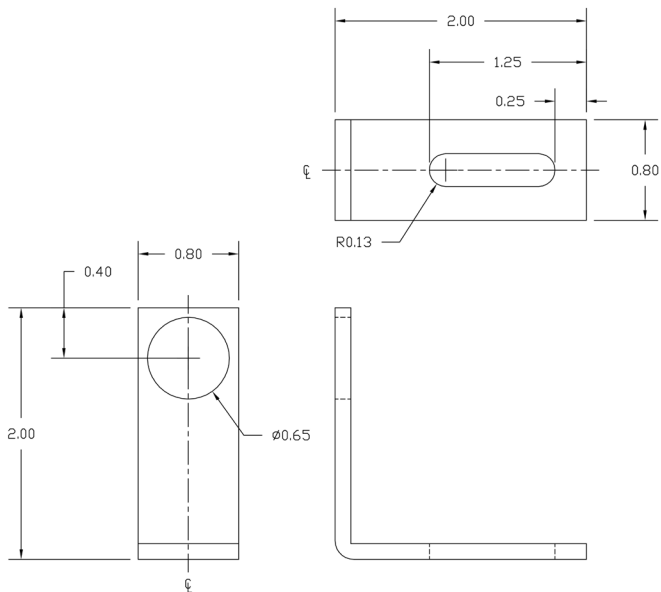
6.0 SPECIFICATIONS

Specifications*	IRS-P / IRS-W
Speed Range	1-1,000,000 RPM
Illumination	Infrared LED (not visible)
On-Target Indicator	Red/green LED on wire end cap
Target	Contrasting colors or beam interrupt
Operating Range	Up to 0.5 inch [12 mm] from target
Power Requirement	3.3 - 15 Vdc @ 40mA
Output Signal	Negative pulse input voltage (+V) to 0
Operating Temperature	-40° to 185° F [-40° to 85° C]
Humidity	Maximum relative humidity 80% for temperature up to 88 °F [31 °C] decreasing linearly to 50% relative humidity at 104 °F [40 °C], humidity must be non-condensing
Connection	1/8 in. [3.5 mm] male stereo plug (IRS-P); Tinned wires (IRS-W)
Cable Length	8 ft. [2.4 m]
Material	303 stainless steel tube supplied with mounting bracket and two M16 jam nuts
Dimensions	Threaded tube: 2.90 in. x 0.625 in. diameter [M16 x 1.5 x 74 mm] long

*Specifications are subject to change without notice.



6.1 Dimensions of Mounting Bracket (inches)



6.2 Compliance

- **CE Compliant**

Please visit our website, www.monarchinstrument.com, to download our Declaration of Conformity for this product.

7.0 ACCESSORIES

[See Accessories webpage for details.](#)

SPSR Self-Powered Sensor - Interface Module

PN: 6150-021



EC-25P 25-Ft. Extension Cable

PN: 6180-028



Mounting Hardware

“L” bracket and mounting nuts

PN: 4180-287



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Tachometers



Track-It™ Data Loggers



Panel Tachometers



Fixed Mounted
Strobes



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Frequency
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