MONARCH INSTRUMENT

Instruction Manual

ROLS / ROLS24

Remote Optical Laser Sensor

CE

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Amherst, NH 03031 USA
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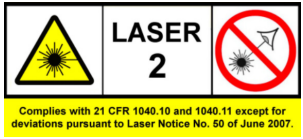
SAFEGUARDS AND PRECAUTIONS



Diode Laser
Max. Output Power: **<1 milliwatt**
Wavelength: **650 nanometers (visible light)**
Beam Divergence: **<18 milliradian**
Output: **Continuous (CW)**
Laser Hazard Classification: **Class 2**

Laser Hazards

- **Eye injury from beam** - Do not look into the direct or reflected beam; can cause eye injury up to 25 ft (7.5 m) away.
- **Visual interference (glare) with pilots and drivers** - Interferes with vision up to 525 ft (160 m) away. Can be a distraction up to 1 mile (1.6 km) away. ***NEVER point any laser towards aircraft or vehicles; it is unsafe and illegal.***

Safe Use Guidance

Class 2 lasers are considered safe for accidental eye exposure. Do not look or stare into beam. Do not aim at aircraft. **This is not a toy.** Always supervise children.

Manufacturer

Monarch Instrument
15 Columbia Drive
Amherst, NH 03031 USA
Country of Origin: USA
Contact info: www.monarchinstrument.com

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

Do not use this instrument in any manner inconsistent with these operating instructions or under any conditions that exceed the environmental specifications stated.

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), DO NOT DISPOSE of this product as unsorted municipal waste. The electronic components in this device may contain environmentally harmful substances. 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.

TABLE OF CONTENTS:

1.0 DESCRIPTION

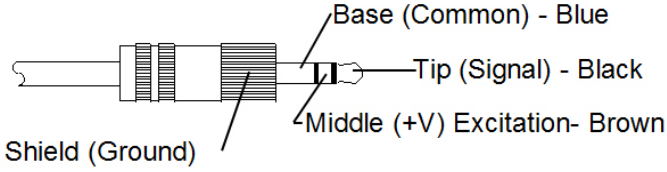
The Remote Optical Laser Sensor has a visible red laser light source and green LED On-Target Indicator. The Class 2 laser source acts as the aiming device during setup and can accurately measure speeds from 1-250,000 RPM from a distance of up to 25 feet with a maximum offset angle of 60 degrees from the rotating object. The sensor is housed in a threaded 303 stainless steel tube and supplied with a 90-degree mounting bracket and jam nuts. The sensor is available in the following configurations:

Model	Power Requirement	Cable Length	Cable Termination
ROLS-P	3.3 - 15 Vdc	8 feet	1/8 in. [3.5 mm] male stereo plug
ROLS-W	3.3 - 15 Vdc	8 feet	tinned wires
ROLS-P-25	3.3 - 15 Vdc	25 feet	1/8 in. [3.5 mm] male stereo plug
ROLS24-W	24 Vdc ±10%	8 feet	tinned wires
ROLS24-W-25	24 Vdc ±10%	25 feet	tinned wires

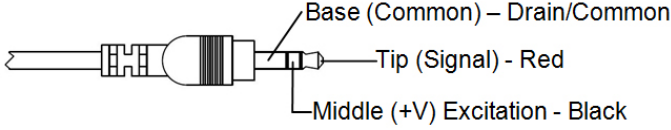
2.0 MODELS WITH STEREO PLUG

The ROLS-P and ROLS-P-25 models have an 8-foot or 25-foot length cable ending with a 3.5 mm [1/8 in] stereo plug connection. These models will work directly with all Monarch handheld stroboscopes that accept pulse input through an input jack (e.g. PLS; Nova-Strobe dax, dbx, DBL, pbx, and PBL; Nova-Pro® 300 and Nova-Pro® 500). A sensor power supply (SPSR-IM) with BNC output and connecting cable (CA-4044-6) are available for those applications that require a separate power source for the sensor (i.e. Monarch's PLT200). An optional 25 ft. [7.6 m] extension cable (EC-25P) is available with a female socket for the plug on one end and a 3.5 mm [1/8 in] male stereo plug on the other.

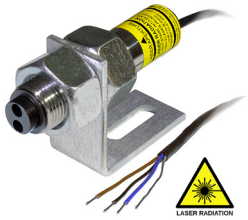
2.1 Connection Detail for Metal Plug



2.2 Connection Detail for Molded Plug



3.0 MODELS WITH TINNED WIRES



The ROLS-W, ROLS24-W and ROLS24-W-25 models have an 8-foot or 25-foot length cable ending with tinned wires. These models will work with most Monarch Instrument panel instruments that accept pulse inputs (e.g. ACT Series, Frequency to Analog Converters, DataChart™ 1250) and vibration data collectors. Pay close attention to power requirements for each ROLS model. Additional cables or sensor power supply may be required. ACT models need the appropriate Sensor Power option selected during product configuration.

3.1 Connection Detail for ROLS-W

Wire Color	Function	Unit
Brown	Positive Power Supply	3.3 - 15 Vdc
Blue	Common	Com
Black	Signal (+ V to 0 Vdc pulse)	Sig
Shield	Housing Ground	Gnd

3.2 Connection Detail for ROLS24-W and ROLS24-W-25

Wire Color	Function	Unit
Brown	Positive Power Supply	24 Vdc ±10%
Blue	Common	Com
Black	Signal (+ V to 0 Vdc pulse)	Sig
Shield	Housing Ground	Gnd

4.0 OPERATING INSTRUCTIONS

The ROLS Remote Optical Laser Sensor is capable of detecting a reflected pulse from a target consisting of T-5 Reflective Tape or high-contrast color differences (such as black and white) at distances up to 25 feet [7.6 m] from the rotating object and angles up to 60 degrees. For most applications, a ½" [12 mm] square piece of reflective tape (T-5) should be applied to a clean area on the rotating object. At slow speeds (<500 RPM), best results will be obtained by aiming the laser perpendicular (90°) to the target using a narrow piece of reflective tape – typically 0.2 inch [5 mm] wide.

The senor should be mounted (using the supplied jam nuts and aluminum mounting bracket) and optically aligned to illuminate the on-target indicator once per revolution. It is recommended that the optical sensor be placed at a slight angle (15 degrees) from perpendicular, so that the sensor will receive only pulses from the reflective marker. Triggering from contrasting colors should be done perpendicular to the target. The ROLS should be at least 1 inch from the reflective target to avoid false triggering. The green LED On-Target Indicator will blink at the input frequency rate when the ROLS is properly aimed.

NOTE: The green LED On-Target Indicator will blink on and off at slow speeds and remain on steady at high speeds.

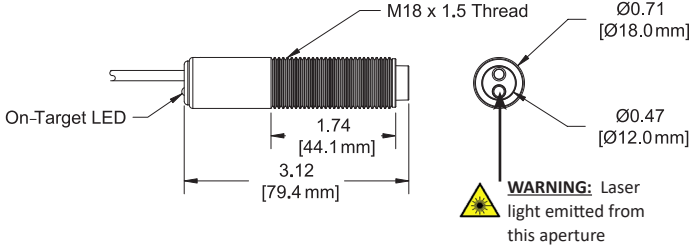
5.0 SPECIFICATIONS

Specifications*	ROLS	ROLS24
Speed Range	1-250,000 RPM	
Illumination	Visible Red Laser, Class 2	
Laser Specifications:		
Classification	Class 2 (per IEC 60825-1:2014) This product complies with IEC60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50 of June 2007	
Max Laser Output	1 mW max	
Pulse Duration	Continuous	
Laser Wavelength	650 nm (visible red)	
Beam Divergence	< 18 mrad	
Beam Diameter	4 x 7 mm typical at 2 m	
Laser Diode Life	8,000 operating hours MTBF (1-year warranty)	
On-Target Indicator	Green LED on wire end cap	
Operating Range	Up to 25 feet [7.6 m] and 60° offset from target	
Power Requirement	3.3 - 15 Vdc, 0.4 W max	24 Vdc ±10%, 0.4 W max
Output - Standard	Open collector with internal pull up resistor to supply voltage; positive pulse when target present - Output Voltage = Supply Voltage	Open collector with internal pull up resistor (5600 ohm) to supply voltage minus ~5 V; positive pulse when target present
Output - Optional (contact factory)	TTL pulse, negative pulse, open collector with internal pull up resistor (4700 ohm) to 3.3 V – 25 mA max load	
Operating Temperature	14 °F to 158 °F (-10 °C to 70 °C)	

Specifications*	ROLS	ROLS24
Humidity	Maximum relative humidity 80% for temperature up to 88 °F (31 °C), decreasing linearly to 50% relative humidity at 104 °F (40 °C)	
Connection	1/8 in. [3.5 mm] male stereo plug or tinned wires	Tinned wires
Cable Length	8 ft. [2.4 m] or 25 ft. [7.6 m]	
Material	303 stainless steel supplied with two M18 jam nuts and mounting bracket	
Lens	Acrylic plastic	
Dimensions	Threaded tube 3.12 in. x 0.71 in. diameter [M18 x 1.5 x 79.4 mm]	

***Specifications are subject to change without notice.**

5.1 Dimensions



5.2 Compliance

CE Compliant

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

6.0 ACCESSORIES

See Accessories webpage for details.

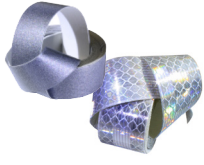
SPSR Self-Powered Sensor - Interface Module
PN: 6150-021

EC-25P 25-Ft. Extension Cable
PN: 6180-028

CA-4044-6 Input/Output Cable
PN: 6280-037

Mounting Hardware
"L" bracket and mounting nuts
PN: 6180-292

Reflective Tape
T-5 (single pack), 5 feet - PN: 6180-070
T-5 (2-pack), 5 feet each - PN: 6180-069
T-50, 50 feet - PN: 6180-072
T-5WP (waterproof), 5 feet - PN: 6180-079



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Measure • Monitor • Maintain

Monarch Instrument is committed to excellence and quality in manufacturing, sales, and service.

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Panel Tachometers

Fixed Mounted Strobes

Portable Strobes

Frequency Converters

Speed Sensors

DataChart™ Paperless Recorders

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