

**MONARCH INSTRUMENT**



*Instruction Manual*



**REMOTE OPTICAL SENSORS**  
**ROS-5W / ROS-5P / ROS-9P / ROS-5LS**

P/N 1071-4854-014  
Rev 1.4

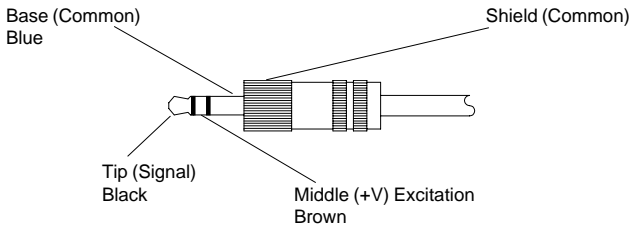
15 Columbia Drive • Amherst, NH 03031 • E-Mail: [MI@MonarchInstrument.com](mailto:MI@MonarchInstrument.com)  
Phone: (603) 883-3390 • Fax: (603) 886-3300

## Specifications:

Speed Range	1-250,000 RPM (ROS 9P- 1-100,000 RPM)
Illumination Power	Visible Red LED (5 Vdc @ 30mA) (ROS 9P- 9Vdc @ 30mA)
Operating Range	36" (0.9m) and up to 45 degrees from reflective tape
Operating Temp.	-40°F to 250°F (-40°C to 121°C)
On-Target Indicator	Green LED on end cap
Lens	Acrylic Plastic
Dimensions	Threaded Tube 2.90in x 0.62in diameter (M16 x 1.5 x 74mm) long
Material	303 Stainless Steel Supplied with two M16 Jam Nuts and Mounting Bracket
Cable Length	8 Feet (2.5M) Standard
(Longer cables optional)	(ROS-9P: 5 Feet (1.5M) Standard)

PART NUMBER	DESCRIPTION
ROS-NUT	Set of two M16 Jam Nuts
ROS-MNT	90° Angle Slotted Aluminum Mounting Bracket 2 inches x 2 inches x .80 inches (50mm x 50mm x 20mm)
T-5	5 foot (1.5M) roll Reflective Tape (12 inches (.3M) supplied with Sensor)

### ROS-5P ROS-9P



## TACHOMETER & STROBOSCOPE LIMITED WARRANTY

SELLER warrants hardware products to be free from any defect in materials or workmanship for A period of one (1) year from date of shipment to BUYER. SELLER's entire liability and BUYER's sole and exclusive remedy resulting from any defect in workmanship or material in the hardware product covered by this limited warranty shall be limited to and fully discharged by replacement or repair of such item as SELLER's option without charge. The limited warranty provided in this clause is in lieu of all other warranties, expressed or implied, arising by law or otherwise. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. This limited warranty shall not be modified except by an arrangement signed by both parties specifically referencing this clause.

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IN NO EVENT SHALL SELLER BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE LOSSES OR DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOSSES OR DAMAGES FOR ANY LOST PROFITS OR LOST DATA) AS THE RESULT OF ANY BREACH OR DEFAULT BY SELLER WITH RESPECT TO THE HARDWARE OR SOFTWARE, EVEN IF SELLER HAS BEEN ADVISED OR MADE AWARE OF THE POSSIBILITY OF ANY SUCH LOSSES OR DAMAGES AND REGARDLESS OF WHETHER THE CLAIM IS BASED ON CONTRACT, TORT, STRICT LIABILITY, OR OTHER THEORY OF LIABILITY.

This limited warranty does not extend or apply to consumables (including, but not limited to, lamps and batteries) or equipment, instruments or accessories which are warranted separately by the original manufacturer of these items.

## DECLARATION OF CONFORMITY

As Manufacturer:

**Monarch Instrument**

Division of Monarch International Inc.

15 Columbia Drive, Amherst NH 03031 USA

declares under Monarch's sole responsibility that the product:

**Name: Remote Optical Sensor**

**Model: ROS-5P, ROS-5W, ROS-9P**

to which this declaration relates is in conformity with the following standards:

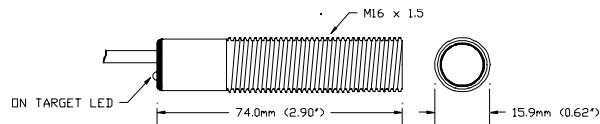
**EMC:**            **EN55011:1991 Class B**  
                      **EN50082-1: 1992**  
                      **IEC 801-2: 1991**  
                      **IEC 801-3: 1994**  
                      **IEC 801-4: 1998**

and therefore conforms with the requirements of Council Directive 89/336/EEC relating to electromagnetic compatibility. The testing of this product was performed by Retlif Testing Laboratories, NH, in August/September of 1995 (File R-2544N).



17<sup>th</sup> October 1995  
Manufacturer (Amherst, NH)

Alan Woolfson, VP Engineering  
(Authorized Signature)



### ROS-5W, ROS-9P, and ROS-5P

Remote Optical Sensors are capable of detecting a reflected pulse from reflective tape targets at distances of up to 36 inches (0.9m) from the rotating object and angles up to 45 degrees. For most applications, a ½" (12mm) square piece of reflective tape should be applied to a clean area on the rotating object. The sensor should be mounted and optically aligned to illuminate the target once per revolution. The green LED On-Target Indicator will blink at the input frequency rate when the sensor is properly aimed. It is recommended that the optical sensor be placed at a slight angle (15 degrees) from perpendicular, so that only pulses from the reflective marker will be received by the sensor. The sensor should be at least 1 inch from the reflective target to avoid false triggering. The sensor is supplied with a set of two M16 jam nuts and a 90° angle aluminum mounting bracket.

The **ROS-5W** is used with the ACT-1A, ACT-1B, ACT-2A, ACT-3A and ACT-3 Panel/Bench Mount Tachometers. The **ROS-5W** is supplied with an 8 foot (2.5m) cable terminated with 4 tinned wires. The cable length may be extended to 300 feet (100m). Power requirement is 5 Vdc at 30 mA supplied by the Tachometers. The output from the sensor to the instrument is a 5-0 V dc TTL Pulse.



CONNECTION DETAIL for Tinned Wires on ROS-5W:

Wire Color	Function	Tachometer
Brown	Positive Power Supply	(+V)
Blue	Common	(Com)
Black	Signal (TTL)	(Sig)
Shield	Threaded Tube Ground	(Com)

The **ROS-5P** is used with the TACH-4AR, PHASAR-TACH-R, SPS-5 Self-Powered Sensors, Data-Chart<sup>®</sup> Recorders, Nova-Strobe DA Plus and DB Plus and Phaser-Strobe Series. The **ROS-5P** is supplied with an 8 foot (2.5m) cable terminated with a 1/8" (3.5mm) three-conductor phone plug. The cable length may be extended to 300 feet (100m). The power requirement is 5 Vdc at 30 mA which is supplied by the instrument being used with the **ROS-5P**. The output from the sensor to the instrument is a 0-5Vdc TTL pulse from the leading edge of reflective tape.

The **ROS-9P** can only be used with the POCKET-TACH Plus Tachometer. The **ROS-9P** is equipped with 5 feet (1.5m) of cable and a 1/8 inch (3.1mm) three-conductor phone plug. Power requirement is 9 Vdc at 30mA supplied by the Tachometer. The output from the sensor to the tach is a 0-9Vdc TTL pulse from the leading edge of reflective tape.

The **ROS 9P** and **ROS 5P** must be plugged into the mating connector on the instrument while the power is off. The user must hold "steady" or mount any ROS sensor to obtain an accurate measurement. The green LED on the ROS is the On-Target Indicator.

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

Correct operation of the **ROS-5W**, **ROS-9P**, and **ROS-5P** can be checked at any time by aiming it at an original design fluorescent light up to 20 feet (6m) and observing  $7200 \pm 2$  counts on the instrument being utilized. Newer "energy efficient" design fluorescent lights will not be picked up by the sensor. (NOTE: In countries with a 50 Hz. power line frequency, the sensors will read  $6000 \pm 2$ ).

The **ROS-5LS** is used only with the Linear Strobe Self Contained (LSSC) unit. It is equipped with 5 feet (1.5m) of cable and a DIN connector. Power Requirement is 5 Vdc at 30 mA, which is supplied by the strobe. The output from the sensor to the strobe is a 5-0 Vdc TTL pulse.

