



MONARCH INSTRUMENT

Innovation in Instrumentation

HOW TO SPECIFY A MONARCH STROBOSCOPE (Revised April, 2014)

Answer the following questions to determine the Stroboscope that is right for your application.

1. The First and Most Important Question To Ask is “Do you Only Want to Check RPM?”

If the answer is “yes” then maybe you should buy an Optical Tachometer instead. Ask the user if they can shut down the device and attach a piece of Reflective Tape to the rotating surface.

If your customer cannot shut the rotating equipment down, then he must use a Stroboscope to check RPM while the device is running. Many times users want to “Stop or Freeze” the motion for Diagnostic Inspection with a Stroboscope to view what is happening at that particular RPM or Flashes Per Minute (FPM).

Checking RPM of a rotating device with a Stroboscope is more complicated and takes practice as compared to using an Optical Tachometer.

A Stroboscope will give the user more than (1) “stop motion” RPM readings and these are called “harmonics”. Harmonics are multiple single, double, triple, etc. “Stopped Motion Images” at various RPM or FPM settings.

Harmonics must be used to measure actual RPM of devices that exceed the maximum flashes per minute (FPM) rate of a particular Stroboscope.

Digital Stroboscopes can be utilized to measure up to 99,999 RPM by calculating 2-point harmonic readings and applying the math formulas as indicated in the Monarch Stroboscope Instruction Manual. The actual RPM is the first single image viewed while decreasing FPM from a higher flash rate. Verify the actual RPM by dividing the first single motion image RPM by two to view the same single image (one half harmonic).

Viewing “ Stopped Motion” or measuring RPM below 300 RPM is very difficult, if not impossible, for the average person’s eyesight due to the slow flash rate.

Best results for measuring RPM is for the user to fix his eyes on a single reference target a bolt head, keyway, scratch on the shaft or to place a reference mark such as tape, paint or chalk on a symmetrical object.

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When the user rotates the flash rate control knob "Very Slowly", the object will appear to stop rotating and their eyes will see the "Stopped Motion". Monarch provides a very detailed Instruction Manual on How To Use the Strobe.

If you decided to purchase a Tachometer instead of a Stroboscope, please read How to Specify Monarch Tachometers.

2. Next question is, "does your strobe application require a completely Portable Stroboscope with internal rechargeable batteries or an AC- Line powered model?"

BATTERY MODELS

AC Line/Mains POWERED MODELS

Xenon Series:

Palm Strobe x = psx

Nova Strobe Basic Battery x = bbx

Nova Strobe Basic AC = bax115 or
bax230

Nova Strobe Deluxe Battery x = dbx

Nova Strobe Deluxe AC = dax115 or
dax230

Phaser Battery PB x = pbx

(Phaser-Strobe and Vibration Strobe

Vibration Strobe x = vbx

Models can be operated continuously with

their power supply/battery charger Model PSC-pbxU.)

LED Series:

PLS Pocket LED Strobe

Nova Strobe Basic Battery LED = BBL

Nova Strobe Deluxe Battery LED = DBL

Phaser Battery LED = PBL

PBL can be operated continuously from the

included PSC-pbxU

NOTE: All Battery Operated Strobes come with Universal chargers for 115VAC to 230VAC operation.

3. What Maximum RPM Range or Flashes Per Minute Range Do You Need to Measure?

RPM / FPM RANGE ACCURACY RESOLUTION

XenonSeries:

Nova Strobe bbx/bax 30-10,000 " .002% or +/- 1 least significant digit / 0.01FPM

Nova Strobe dbx/dax 30-20,000 " .002% or +/- 1 least significant digit / 0.01FPM

Phaser Strobe pbx 30-50,000 " .002% or +/- 1 least significant digit / 0.01FPM

Palm Strobe psx 100-12,500 " .01% 1.0

Vibration Battery vbx 30-50,000 " .002% or +/- 1 least significant digit / 0.01FPM

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LED Series:

RPM / FPM RANGE ACCURACY RESOLUTION

Nova Strobe BBL (LED) 30-500,000 "	.01% or +/- 1 least significant digit / 0.01FPM
Nova Strobe DBL (LED) 30-500,000 "	.002% or +/- 1 least significant digit / 0.01FPM
Nova Strobe PBL (LED) 30-500,000 "	.002% or +/- 1 least significant digit / 0.01FPM
PLS Pocket LED Strobe 30-300,000 "	.005% or +/- 1 least significant digit / 0.01FPM

4. What Brightness Does Application Require from a Stroboscope?

AVERAGE POWER / LIGHT OUTPUT*

Nova Strobe bax, bbx, dax, dbx, pbx, vbx: 13W

Palm Strobe x psx: 7.9W

Nova Strobe BBL, DBL, PBL: 3000 Lux @ 6000FPM, at 8 Inches

PLS Pocket LED Strobe: 1800 lumens @ 6000FPM, at 8 Inches

* Xenon Strobes and LED Strobes are specified differently. There is no simple (example: 12 inches=one foot) direct conversion among the units of measurement. Conversion can depend on several other factors such as distance and area. (see also the companion application note: Xenon vs. LED Strobe)

5. Does Application Require External Input or Output Trigger Signals from Strobe?

The Nova-Strobe dax , NSdbx, Phaser-Strobe pbx, Vibration Strobe vbx, DBL, PBL and PLS all have both Input and Output jacks. The Input jack can power most Monarch Remote Sensors that end with a "-P" for plug, such as the ROS-P or ROLS-P. The input jack can also accept TTL Signals, typically 0-5VDC from other sources, such as the Self Powered Sensor Module, or other strobes.

The Palm Strobe psx has one 1/8 inch (3.5mm) phone jack that can be used either for input or as an output. The Palm Strobe does not provide power for remote sensors. The TTL output trigger signal allows one Master Strobe to fire (trigger) another Strobe at same time when you "daisy chain" (connect 5 strobes in series) to illuminate a larger surface area if required.

The Monarch " Self Powered Sensor" (SPSR-115/230) can be used to trigger the Palm Strobe. The NovaStrobes and Phaser Strobe can be triggered by the "Remote Optical Sensor" (ROS-P), "Remote Optical Laser Sensor" (ROLS-P) " Magnetic Sensor"(MT -190P) or the " Infrared Sensor" (IRS-P). Phase Shifting is electronically delaying the flash from a fixed reference point in either degrees or time to assist in high or low speed machinery timing or vibration analysis studies.

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6. Will Stroboscope Be Operated In a Moist or Dirty Environment?

The optional "Splash Proof Cover" (SPC-1) can be used on ONLY THE BATTERY POWERED NovaStrobes or Phaser-Strobe when operated in internal battery mode. The clear vinyl cover slips over the entire Strobe like a glove to keep foreign material from getting inside the Stroboscope. Customers can fabricate their own protective splash proof plastic or vinyl cover to keep contamination out.

7. N.I.S.T. Certificate of Calibration Required with Stroboscope?

The NSdax, NSdbx, Phaser pbx, Vibration vbx, Palm Strobe psx, DBL, PBL and PLS are supplied with a Certificate of Calibration traceable to N.I.S.T. (National Institute of Standards and Technology). Re-certification can be obtained at a cost of \$110.00. Initial certificate is good for 12-18 months min. Rotate your stock to keep s/n current.

8. What Accessories Does Customer Require for Strobe?

Refer to the appropriate technical data and price sheet for the accessories available for the respective Strobe models.

Need?

Spare Lamp - Carry Cases - Input/Output Cables- Remote Sensor – Splash Proof Cover etc.

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