ST-328 Xenon Stroboscope Array
Operation Manual

Nidec

⚠️ **Warning**

Use in flammable environments is prohibited. Use in this manner may result in fire or explosive.

Don't look directly into the LED light Source. This may result in eye injury.

Don't use or store in the following environments. Direct sunshine condensation, dust or caustic.

Do not alter, or modify of improperly. Such action may cause damage and void warranty.

Operate with 0-35°C (32-95°F), 35-85% RH. Use outside of this range may alter operation of the unit.

Case may become excessively hot when used continuously for more than 2 hours. Mount unit on a tripod or other fixed device.

The ST-328 is a Permanent Mount Stroboscope Array utilizing bright high powered xenon style lamps. The ST-328's xenon light array provides a bright, stable strobe light over a wide measurement range. The ST-328 arrays are available in several standard sizes from 10" (260 mm) to 71" (1800 mm) in length. Custom sizes are available upon request. The arrays are easily mountable on production equipment. An optional mounting adapter kit is available to aid in array installation. An integral or remote control enclosure is available to program the unit. If selecting the separate, external control enclosure, communication is via a 9.8' (3 m) connecting cable. Operation is simple with the 6 button keypad and large, LED display. Flash rate is quickly adjustable via the control dial. The unit can work off user programmed flash frequency or from a remote sensor's signal which will automatically adjust to corresponding process fluctuations.

The ST-328 is designed for speed and frequency measurements in the printing, packaging, textile, automotive, cable, mining, steel, chemical, optical, medical and shipbuilding industries in various applications.

SPECIFICATIONS
Flash Rate Range: 60 to 20,000 FPM
Accuracy: 0.01%±1 digit of F.S. @ 77° F (25°C)
Lamp Lifetime: Approximately 1 x 10^7 cycles depending on usage.
Display: LED
Resolution: 60 ~12,000 FPM = 0.1 FPM; 12,001~20,000 FPM = 1 FPM
Power Requirement: 100-120 VAC; Optional 220-260 V. Max. Power: 100 W.
Input Signal: 5V - 12V Pulse Input; high level trigger M-12, 3 pin
Input Signal Range: 60-20,000 FPM
Input Pulse Width: Over 50 μs
Temperature Limits: 32-95°F (0-35°C)
Humidity Limits: 35 to 85% RH
Enclosure: Control-Aluminum; Array - ABS window & aluminum frame
Mounting: Control: Mounting Flange; Array: Flanges for use with 6 mm bolts. Mounting bracket kit available separately.
Enclosure Rating: NEMA 4X (IP65) - Control enclosure only
Dimensions: Length (See chart on page 3), x6" (152 mm) x 5.75" (146 mm)
Approvals: CE
Warranty: 1 year
Included Accessories: 6.5' (2 m) AC power cord, 9.8' (3 m) control/array connection cable (Remote control models only)

POWER OVERRIDE SWITCH: Power Control ON and OFF. (Remote Control Models Only)

MODE: Switch between FPM and Hz

SIG: Select between internal panel control (INT) or external sensor signal control (EXT1).

x2: Multiplies the flash rate/frequency by a factor of 2.

1/2: Divides the flash rate/frequency by a factor of 2.

Dial: Set flash rate or frequency. CW: Increase flash rate/frequency. CCW: Decrease flash rate/frequency. (Hold dial full CW or CCW to drastically change value; Turn dial slowly to change value by 1 digit.)

Power

Dial
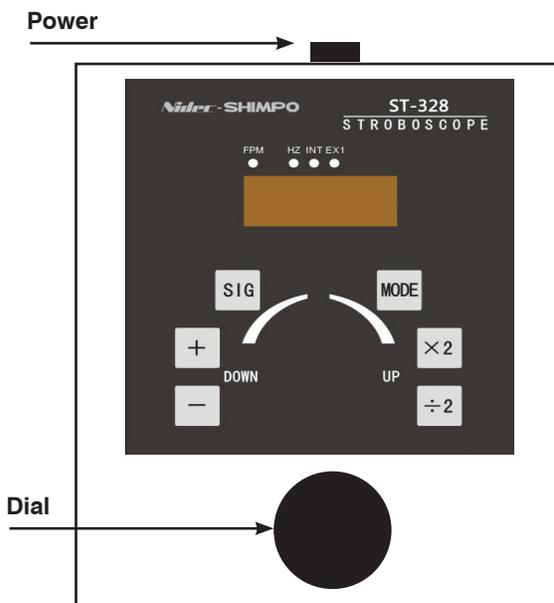
NIDEC-SHIMPO CORPORATION

INSTALLATION
Mounting
If you purchased the remote control, the control box is easily mounted with its mounting tabs. On control box mount through screw/bolt holes to a surface. The array may be mounted with its integral mounting flanges located on each end with 6 mm bolt holes. For additional mounting hardware to aid array mounting, the MK-320 mounting kit provides brackets that easily connect to the array's flanges.

Connections
Connect power cable to power connection on underside of array.

Remote Control Models
Connect control box to array with provided 3 pin connection cable. Note: Attach this cable to bottom left side connector on remote control enclosure. (See Figure 2)

M-126 3 pin connector on bottom right side of control enclosure is input control signal connection for external signal control. (See Figure 2)
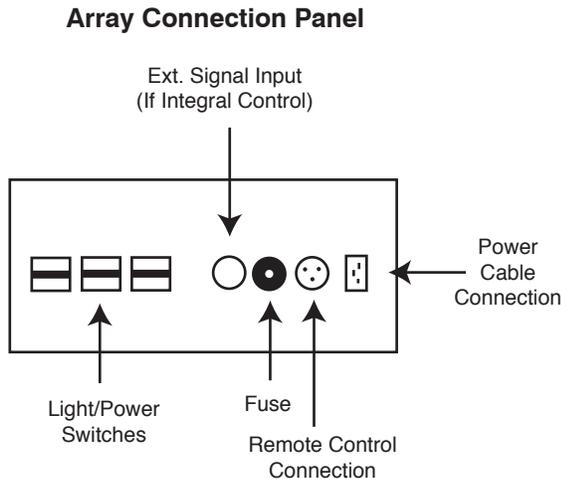
Array Connection Panel

Ext. Signal Input
(If Integral Control)

Power
Cable
Connection

Light/Power
Switches

Fuse

Remote Control
Connection

Fig. 1

Remote Control Connection Panel

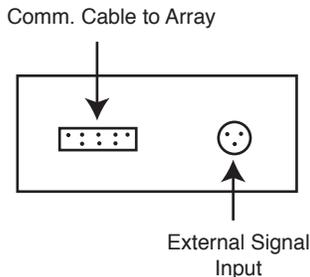Comm. Cable to Array

External Signal
Input

Fig. 2

DISPLAY
The flash rate value will be displayed in Internal flashing (INT) or External (EXT1) trigger modes.

FUNCTION INSTRUCTIONS
Mode Selection - To switch between INTERNAL (INT), EXTERNAL (EXT1) modes, press and release the MODE key.

Flash Rate (Frequency Setting) in Internal Mode
You can set the flash rate by turning the dial in the center of the unit. To increase the flash rate, turn the dial in the clockwise direction. To decrease the flash rate, turn the dial in the counter-clockwise direction. For small adjustments, turn the dial slowly. For quick adjustments, rotate the dial and hold at the limit position on the dial. The flash rate range and resolution will be different according to the selected measuring range.

Multiple/Divide by 2 Function
The flash rate can be doubled or halved by x2 and 1/2 keys on the operation panel.

1. Doubling the flash rate (x2). Press x2 key to multiply the current flash rate by a factor of 2.

Note: The use of the x2 key will have no effect when multiplication of the current flash would result in a value that exceeds the maximum flash rate range. After the flash rate changes, it becomes the new value based on the set display resolution. Therefore, the rate may likely not return to the original frequency, even if the "1/2" key is pressed.

2. Halving the flash rate (1/2). Press "1/2" key to divide the current flash rate by a factor of 2.

Note: The use of the 1/2 key will have no effect when the division of the current flash rate would result in a value that goes below the minimum flash rate.

After the flash rate changes, it becomes the value based on the set display resolution. Therefore, the rate may likely not return to the original, even after pressing the x2 key.

Flash Rate (Frequency Setting) in External Trigger Mode
External trigger mode will allow the flash rate of the ST-328 stroboscope to be controlled by an external signal, such that the flash rate will automatically increase or decrease when the signal is altered, so that it may remain in unison with the speed of a changing target.

Press "MODE" once and the unit enters EXT1. In this mode, speed (FPM) automatically flashes according to the external trigger signal.
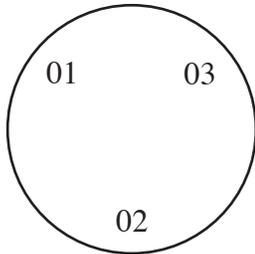
External Signal Input Connection:
3 pin M-16 connection
1. +12V
2. GND
3. External Pulse Signal Input

The input signal requires the following characteristics.
Input Frequency: 60-20,000 fpm Input pulse width. Pulse width must be greater than 50 μs.

Dimension Chart & Light Arrangement

Model*	Length	# Lamps
ST-328-XC-1	10" (260 mm)	1
ST-328-XC-2	20" (500 mm)	2
ST-328-XC-3	31" (800 mm)	3
ST-328-XC-4	39" (1000 mm)	4
ST-328-XC-5	51" (1300 mm)	5
ST-328-XC-6	59" (1500 mm)	6
ST-328-XC-7	59" (1500 mm)	7

*Note: For Integral Controller change"X" to an "I". For Remote Control Enclosure change "X" to an "R". For 230 Volt Models add: -230V to end of model code.

01   03

02

Stopped Image
One function of a stroboscope is to provide a "stopped" image of a rotating target when the flash rate of the stroboscope has matched the rotational speed of the target object. The stroboscope will show a single image when the flash rate is set to a lesser multiple of the true RPM (1/2,1/3,etc.) When the flash rate is increased to a higher multiple (2,3,etc.), multiple images will appear. To find the true RPM of the target object, reduce the flash rate to a lower multiple until only one image appears.

Stopped image

2times   3times   4times

Pattern   Motor

1/2times   3/1times
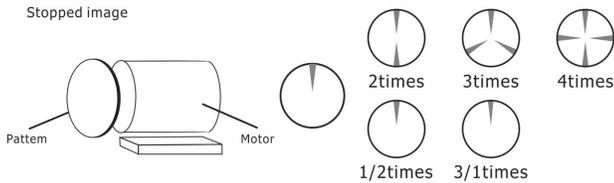
Example			
True Rotational Speed of Target Object (rpm)	Flash Rate of Stroboscope (fpm)	Multiple of True Rotational Speed	Number of Stopped Images
900 rpm	3600	4 times	4
	2700	3 times	3
	1800	2 times	2
	900	1 time	1
	450	1/2 times	1
	300	1/3 times	1