

SHIMPO INSTRUMENTS

Measuring Quality

DT-311A Heavy Duty, AC Powered Stroboscope

The DT-311A heavy duty, AC powered stroboscope provides the illusion of "stopped motion": by adjusting the strobe's flash rate, equipment appear to be standing still or in slow motion. The DT-311A also measure rotational (RPM) or reciprocating (strokes per minute) speeds with the same precision as an electronic digital tachometer. Ideally suited for printing inspection, motion analysis, preventive maintenance and speed measurement of repetitive motion, DT-311A strobes provide timely data on vibrating parts, leaks, spray patterns and a variety of industrial and scientific operations the DT-311A strobe is extremely easy to maneuver and operate via its lightweight and compact design and simplified user interface. Its rugged metal construction provides unequalled reliability in the harshest environments.



Features

- Aluminum construction provides exceptional durability
- High polish and focused reflector eliminates "blind" viewing areas
- External trigger allows unit to be automatically synchronized with equipment
- Continuous duty cycle eliminates need to shut down for cooling
- Phase shift allows visual analysis of rotating/reciprocating objects
- High accuracy ($\pm 0.01\%$ of reading) is ideal for QC inspection and process control
- Synchronous output enables strobe to drive other strobes
- Flash timer control conserves flash tube life
- Easy tri-pod or permanent mounting with integral mounting thread

Easy Operation Control



LED
Display

Dial

Input Signal

SIG

Change Operation from INTERNAL to EXTERNAL flash control

MODE

Internal Signal "MODE" (Flash) or External Trigger Control LED Changes to Indicate FPM (flash/min.), flash delay in degrees and flash delay in milliseconds

X2 / $\div 2$

Adjust Flash Rate Settings Increase 2 times or decrease by 2 the flash rate setting when in "Internal" mode

+/-

Phase "SHIFT" Advance or Retard viewed motion in degrees or milliseconds

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DT-311A Specifications

Flashing Range	40.0 - 35,000 fpm (flashes per minute)
Accuracy	±0.01 % of reading
Resolution	0.1 fpm: 40.0 - 5,000 fpm / 0.2 fpm: 5,001 - 8,000 fpm / 0.5 fpm: 8,001 - 10,000 fpm / 1 fpm: 10,001 - 35,000 fpm
Phase Shift	Use +/- push buttons (360° in 6 seconds)
Display Update Time	0.2 sec approx
Output Signal	Synchronous, 400 μ sec. Pulse output, 0 to +12 VDC amplitude(approx.), 4.7 K Ω impedance
Rate Multiplier/Divider	Multiply by 2, divide by 2
Flashing Range	0.0 to 35,000 fpm
External Mode Accuracy	±0.01 % ±1 digit
Phase Shift	0 to 359° with 1° resolution
Delay Time	0 to 2,000 mSec from 40 - 10,000 fpm
External Trigger Input Signal	LO level: 0 -0.8 VDC, HI level: 2.5 - 12 VDC or open collector (NPN), pulse width 50 μ sec min.
Input Impedance	4.7 K Ω to 12 V / 6.8 K Ω to 0 V
Display	5 digits, 0.4" (10 mm) high, LED
Flashtube Power/Life	Xenon, 10 W max. (100 million flashes)
Flash Duration	10 to 40 μ s automatically adjusts with flash rate
Lux Rating	8" (20 cm) Distance = 4500 lx @ 1500 fpm, 3375 lx @ 6000 fpm with 4.5" (110 mm) irradiation diameter. 20" (50 cm) Distance = 1300 lx @ 1500 fpm, 930 lx @ 6000 fpm with 10" (250 mm) irradiation diameter.
Sensor Power Supply	12 VDC (40 mA)
Power Requirement	115 VAC or 220 VAC ±10 % 60/50 Hz, 30 VA (specify voltage)
Operating Temperature	32 - 104°F (0 - 40°C)
Product Weight	2.6 lbs (1.2 kg)
Package Weight	3.35 lbs (1.5 kg)
Dimensions	7.28" L x 4.72" W x 4.72" H (185 mm x 120 mm x 120 mm)
Warranty	2-Year
Included Accessories	Handle, flash tube removal tool



**Printing
Inspection:
Color
Registration**

DISTRIBUTED BY:

Ordering Details

DT-311A	Heavy duty, AC powered stroboscope
DT-311A-230V	Same as 311A but 230 VAC power
NIST-STROBE	NIST traceable certificate for digital stroboscopes, includes data

Accessories

CARRYING-CASE	Carrying Case for DT-311A
FLASHTUBE-311-2	Replacement flash tube for DT-311A
CABLE-311-10FT	Input/output cable for DT-311A
SAS-DT300	Permanent mount swing arm
SG-300	Rubber strobe guard for DT-311A
LS-S50MLR-DT311	Laser sensor with NPN/PNP (NO,NC) outputs, 1.5 kHz frequency, LED indication, DT-311A Connector Cable, NEMA 6 (IP67) rating

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DT-315A Portable Stroboscope with Rechargeable Battery

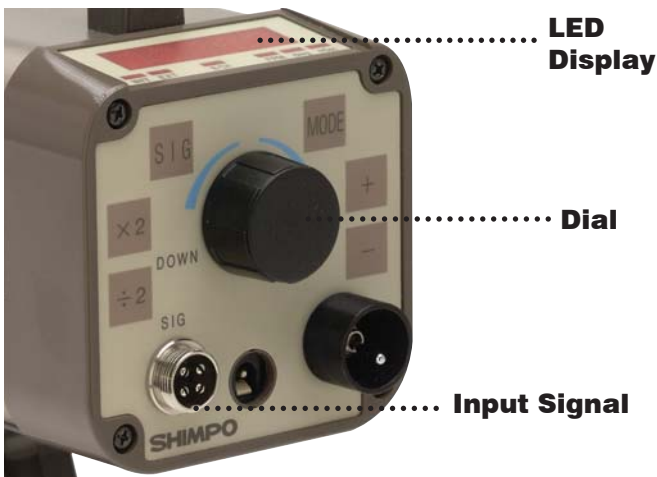
DT-315A Heavy Duty, Portable Stroboscope with Rechargeable Battery. The DT-315A heavy duty, battery powered stroboscope possesses the same great features of the DT-311A with the added convenience of total portability via its own internal power supply. The quick recharge battery lasts up to two hours of full continuous usage with its high intensity flash rate. The DT-315A provides power flexibility by utilizing either its rechargeable internal, batteries or AC line-power when plugged into the included AC adapter/charger unit. These features make the DT-315A ideal for quality inspection and preventive maintenance of automated motion equipment.



Features

- Internal, fast-charge rechargeable battery supply
- Aluminum construction provides exceptional durability
- High polish and focused reflector eliminates "blind" viewing areas
- External trigger allows unit to be automatically synchronized with equipment
- Continuous duty cycle eliminates need to shut down for cooling
- Phase shift allows visual analysis of rotating/reciprocating objects
- High accuracy ($\pm 0.01\%$ of reading) is ideal for QC inspection and process control
- Synchronous output enables strobe to drive other strobes
- Flash timer control conserves flash tube life
- Easy tri-pod or permanent mounting with integral mounting thread

Easy Operation Control



SIG

Change Operation from INTERNAL to EXTERNAL flash control

MODE

Internal Signal "MODE" (Flash) or External Trigger Control LED Changes to Indicate FPM (flash/min.), flash delay in degrees and flash delay in milliseconds

X2 / $\div 2$

Adjust Flash Rate Settings Increase 2 times or decrease by 2 the flash rate setting when in "Internal" mode

+/-

Phase "SHIFT" Advance or Retard viewed motion in degrees or milliseconds

DT-315A Specifications

Flashing Range	40.0 - 35,000 fpm (flashes per minute)
Accuracy	±0.01 % of reading
Resolution	0.1 fpm: 40.0 - 5,000 fpm / 0.2 fpm: 5,001 - 8,000 fpm / 0.5 fpm: 8,001 - 10,000 fpm / 1 fpm: 10,001 - 35,000 fpm
Phase Shift	Use +/- push buttons (360° in 6 seconds)
Display Update Time	0.2 sec approx
Output Signal	Synchronous, 400 μ sec. Pulse output, 0 to +12 VDC amplitude(approx.), 4.7 K Ω impedance
Rate Multiplier/Divide	0.0 to 35,000 fpm
Flashing Range	Synchronous Mode: 60.0 ~ 3,000FPM / Delay mode:200 ~ 3,000 FPM
External Mode Accuracy	±0.01 % ±1 digit
Phase Shift	0 to 359° with 1° resolution
Delay Time	0 to 2,000 mSec from 40 - 10,000 fpm
External Trigger Input Signal	LO level: 0 -0.8 VDC, HI level: 2.5 - 12 VDC or open collector (NPN),pulse width 50 μ sec min.
Input Impedance	4.7 K Ω to 12 V / 6.8 K Ω to 0 V
Display	5 digits, 0.4" (10 mm) high, LED
Flashtube Power/Life	Xenon, 10 W max. (100 million flashes)
Flash Duration	10 to 40 μ s automatically adjusts with flash rate
Lux Rating	8" (20 cm) Distance = 4500 lx @ 1500 fpm, 3375 lx @ 6000 fpm with 4.5" (110 mm) irradiation diameter. 20" (50 cm) Distance = 1300 lx @ 1500 fpm, 930 lx @ 6000 fpm with 10" (250 mm) irradiation diameter.
Sensor Power Supply	12 VDC (40 mA)
Low Battery Indicator	Display shows all L's
Battery Life	1 - 2 hours depending on flash rate
Power Requirement	Rechargeable Battery or AC Line Power with included AC adapter
Operating Temperature	32 - 104°F (0 - 40°C)
Product Weight	4.4 lbs (2 kg)
Package Weight	5.5 lbs (2.49 kg)
Dimensions	9.84" L x 4.72" W x 4.72" H (250 mm x 120 mm x 120 mm)
Warranty	2-Year
Certification	CE
Included Accessories	AC charger/adapter, flash tube removal tool, handle

Ordering Details

DT-315A	Heavy duty, rechargeable battery powered stroboscope
DT-315A-230V	Same as DT-315A except with 230V power
NIST-STROBE	NIST traceable certificate for digital stroboscopes, includes data

Accessories

BAT-DT315A/P-ASSY	Internal, rechargeable battery assembly for DT-315A
DT-315CHARGER	AC adapter/charger for DT-315A
CARRYING-CASE	Carrying Case for DT-315A
FLASHTUBE-311-2	Replacement flash tube for DT-315A
CABLE-311-10FT	Input/output cable for DT-315A
SAS-DT300	Permanent mount swing arm
SG-300	Rubber strobe guard for DT-315A
LS-S50MLR-DT311	Laser sensor with NPN/PNP (NO,NC) outputs, 1.5 kHz frequency, LED indication, DT-315A Connector Cable, NEMA 6 (IP67) rating



**DT-315A Viewing
Labeling Machine**

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Series DT-326B LED Stroboscope

The Series DT-326B is a portable, light-weight stroboscope utilizing super bright high powered LED lamps.

The DT-326B's LED array provides a bright, stable strobe light over a wide measurement range with a lifetime far exceeding xenon lit stroboscopes. Containing a rechargeable lithium battery, a single charge can last up to a full 12 hours of operation. The DT-326B is designed for speed and frequency measurements in motion and vibration analysis applications. It is ideal for predictive and preventive maintenance applications such as: motors, shafts, roto-gravure printing, extruders, blow molding, wire lettering and striping, engraving, pulse jets, water jets, fans, cams, gear teeth, belt inspections, fuel injectors, vibration analysis, audio speaker analysis, spindle spinning, cutting blade timing and sharpness, plus many more in the printing, packaging, textile, automotive, cable, mining, steel, chemical, optical, medical and shipbuilding industries.

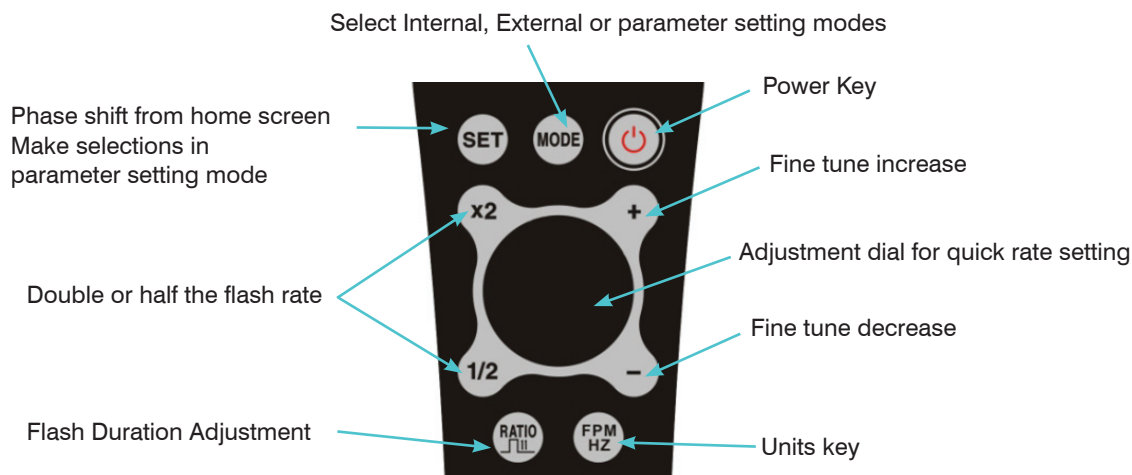


LED Panel Display
Close-up

Features

- Wide Flash Range 60 - 120,000 Flashes/min. (1-2000 Hz) can be adjusted to meet almost any high-speed application
- Adjustable Flash Pulse duration achieves sharper images for detailed inspection
- 100 - 240 VAC Line Power Operation with AC adapter for continuous use or rechargeable battery for maximum portability
- Phase Shift Advances or retards flash timing for viewing gear teeth, cutting surfaces, repeats or "drifting" images
- Input sensor trigger function allows process machinery to control flash rate
- Delay time adjustment combined with leading or trailing edge activation simplifies process set-up when using external signal input
- x2 and 1/2 keys for large adjustment rate change or +/- for fine tuning
- Long-life LED operation

DT-326B Easy Operation Panel



DT-326B Specifications

Flash Rate Range	60 to 120,000 FPM ; 1-2000 Hz
Accuracy	0.01%±1 digit of F.S. @ 77° F (25°C)
Lux Rating (Approx.)	6000 FPM & 2.5°: Distance 8" (20 cm) 5800 lx with 4" (100 mm) irradiation dia., Distance 20" (50 cm) 1050 lx with 6" (152 mm) irradiation dia. 1500 FPM & 2.5°: Distance 8" (20 cm) 6400 lx with 4" (100 mm) irradiation dia., Distance 20" (50 cm) 1125 lx with 6" (152 mm) irradiation dia.
Lamp Lifetime	Approximately 3~5 years depending on usage.
Display	Backlit LCD
Resolution	60 ~12,000 FPM = 0.1 FPM 12,001~120,000 FPM = 1 FPM 1~200 HZ = 0.01 Hz 201~2000 = 0.1 Hz
Flash Duration	0.1°- 2.5°
Phase Shift	0-359°
Power Requirement	100-240 VAC 50/60Hz
Battery	Lithium DC 10.8V 2000mA
Battery Life	Approx. 12 hours depending on settings
Input Signal	12 V Pulse Input
Input Signal Range	60-12,000 FPM (1-2000Hz)
Input pulse width	over 50 μ s
Input Signal Flash Delay	0-999 ms; 0-359°
Temperature Limits	32-95°F (0-35°C)
Humidity Limits	35 to 85% RH
Enclosure	ABS
Product Weight	0.84 lb (380 g)
Package Weight	3.50 lb (1.6 kg)
Dimensions	8.2 x 2.8 x 2.4" (208 x 70 x 60mm)
Approvals	CE
Warranty	1 year
Included Accessories	AC power adapter, Carrying Case

Ordering Details

DT-326B	Portable LED Stroboscope with AC or Battery Power, Included Protective Carrying Case
NIST-LEDSTROBE	NIST traceable certificate for digital stroboscopes, includes data

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DT-326B in Included Protective Carry Case.

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The DT-361 High-Intensity LED Stroboscope is a velocity analyzing and measuring device that is ideal for machinery process inspection.

The DT-361 Stroboscope is capable of flashing its LED lights in a synchronous frequency to the operating machinery, creating the illusion of viewing slowed or frozen images. Utilizing this phenomenon of slowing or stopping the motion with the adjusted flash rate of its LED lights, machine parts and processes may be inspected for defects, aiding in preventative maintenance programs. The DT-361's LED technology extends operation due to the low energy requirement of the light diodes compared with xenon stroboscopes. Maintenance time and down time is reduced since there is no need to replace the bulb typical of xenon lit stroboscopes. The light output (Lux) of the LED array is far brighter than not only xenon powered stroboscopes, but all comparable LED stroboscopes on the market.

The DT-361 has a vibrant red LED display that is ideal for viewing in dark locations. The simple to use keypad plus rate adjustment dial aids in making quick changes of the flash rate to coincide with changes in the speed of your process. The dial allows fine-tune altering of the flash rate while the $\times 2/\div 2$ keys enable large spanning over the entire flash range.

The DT-361 has the added feature of modifying the flash duration or on time which aids in picture clarity often necessary in printing processes. The phase shift function is ideal for rotating equipment where the user needs to change the focus on different blades, gears, or section of the machinery. The DT-361 is also capable of being synchronized with an input signal. To complete the system, the DT-361 has a power output to supply an input sensor if desired. The robust aluminum housing is NEMA4X (IP65) protected allowing usage in many harsh plant environments.

Typical applications for using the DT-361 is to determine speeds, inspect rotors, meshing gears, vibration diagnostic equipment, textile equipment, printing production lines, industrial fan inspection and many more.

Easy Operation Control



Measuring Quality

DT-361 High Intensity LED Stroboscope AC Power



Features

- Extraordinary durability with extruded aluminum, NEMA 4X (IP65) construction.
- Bright LED display and simple controls aid in user operation.
- Phase shift (in degrees of delay time) enables visual analysis of rotating or reciprocating objects through all points of motion/time/angle
- Flash controller dial permits accurate adjustments to the flash rate
- LED technology greatly extends operation life and eliminates need to replace burned out bulbs.
- Capable of being synchronized with input signal from sensor or controller.

MEM

Store and retrieve 5 flash setting values

SIG

Change Operation from INTERNAL to EXTERNAL flash control

MODE

Select between Flash Mode or Flash Duration and phase shift settings

$\times 2/\div 2$

Multiply or divide Flash Rate Setting by $\times 2$ or $\div 2$

+/-

Phase "SHIFT" Advance or Reverse viewed motion in degrees or milliseconds

UNIT

Select between degrees or ms in phase shift mode, select between degrees and μs in flash duration mode

DT-361 Specifications

Range FPM (RPM)	60-120,000 ; From Input Signal 40-35,000
Accuracy	±0.02% of reading
Lux Rating	@ 6000 FPM & 3.6° (100us): 8" (20 cm) Distance= 3047 Lux with 4.7"(120mm) irradiation diameter 20"(50 cm) Distance = 2444 Lux with 9" (230mm) irradiation diameter
Lamp Lifetime	Typ. 50,000 hours. Varies depending on usage.
Display	6 digit Red LED
Resolution	Internal Mode 1 FPM. External Mode 0.1 FPM
Flash Duration	0.1 to 3.6° (0.14 μ sec to 400 μ sec)
Phase Shift	0 to 999 msec; 0 to 359°
Power Requirement	100 to 230 VAC
Synchronization Input Signal	H level: 2.5 - 12V; L level: 0 - 0.4V
Input Signal Range FPM (RPM)	40 - 35,000
Input Signal Flash Delay FPM (RPM)	60-10,000
Power Supply Output	DC12V 40mA for sensor input
Temperature Limits	32 to 104°F (0 to 40°C)
Humidity Limits	35 to 85% RH
Protection Class	NEMA 4X (IP65)
Product Weight	4 lbs (1.8 kg)
Package Weight	6 lbs (2.72 kg)
Approvals	RoHs
Included Accessories	Input Signal Connector, flash-light style attachable handle
Warranty	2 year

Ordering Details

DT-361	High Intensity LED Stroboscope with AC Power
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DT-365 LED Portable Stroboscopes

High-Intensity, Battery Powered LED Stroboscopes. The DT-365 High-Intensity, Battery Powered LED Stroboscopes are velocity analyzing and measuring devices that are ideal for machinery process inspection. The DT-365 Stroboscopes are capable of flashing their LED lights in a synchronous frequency to the operating machinery, creating the illusion of viewing slowed or frozen images. Utilizing this phenomenon of slowing or stopping the motion with the adjusted flash rate of its LED lights, machine parts and processes may be inspected for defects, aiding in preventative maintenance programs. This LED technology extends operation due to the low energy requirement of the light diodes compared with xenon lit stroboscopes. Proper operation is assured as concern of light failure during usage, common with xenon bulbs, is eliminated. The light output (Lux) of the LED's is far brighter than xenon powered stroboscopes with the DT-365 outshining all comparable stroboscopes on the market from its array of 18 LED's.

The operation panel is a vibrant red LED display that is ideal for viewing in dark locations. The simple to use keypad plus rate adjustment dial aids in making quick changes of the flash rate to coincide with changes in the speed of your process. The dial allows fine-tune altering of the flash rate while the $\times 2/\div 2$ keys enable large spanning over the entire flash range.

The DT-365 has the added feature of modifying the flash duration or on time which aids in picture clarity often necessary in printing processes. The phase shift function is ideal for rotating equipment where the user needs to change the focus on different blades, gears, or section of the machinery. These stroboscopes are also capable of being synchronized with an input signal. To complete the system, the DT-365 has a power output to supply an input sensor if desired. The robust aluminum housing is NEMA-4X (IP65) protected allowing usage in harsh plant environments. The DT-365's array of 18 LED's allows continuous operation from 2 to 5 hours depending on user settings. Typical applications for the DT-365 are to determine speeds, inspect rotors, meshing gears, motors, textile equipment, printing production lines, conveyors, industrial fans, pump operation, vibration equipment diagnostics and many more.



Features

- Extraordinary durability with extruded aluminum, NEMA 4X (IP65) construction
- Bright LED display and simple controls aid in user operation
- Long Lasting, quick-charge NiMH rechargeable battery provides exceptional usage reliability
- Phase shift (in degrees of delay time) enables visual analysis of rotating or reciprocating objects through all points of motion/time/angle
- Flash controller dial permits accurate adjustments to the flash rate
- LED technology greatly extends operation life and eliminates need to replace burned out bulbs
- Capable of being synchronized with input signal from sensor or controller

Easy Operation Control



LOAD

Store and retrieve 5 flash setting values

SIG

Change Operation from INTERNAL to EXTERNAL flash control

MODE

Select between Flash Mode or Flash Duration and phase shift settings

X2/÷2

Multiply or divide Flash Rate Setting by X2 or ÷2

UNIT

Select between degrees or ms in phase shift mode, select between degrees and μ s in flash duration mode

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DT-365 Specifications

Range FPM (RPM)	60-120,000; From Input Signal 40-35,000
Accuracy	±0.02% of reading
Lux Rating (Approx.)	6000 FPM & 3.6° (100 μ s): Distance 8" (20 cm) 18,400 lx with 10" (250 mm) irradiation dia., Distance 20" (50 cm) 6200 lx with 13.5" (350 mm) irradiation dia. 1500 FPM & 3.6° (400 μ s): Distance 8" (20 cm) 15,000 lx with 10" (250 mm) irradiation dia., Distance 20" (50 cm) 6000 lx with 13.5" (350 mm) irradiation dia.
Lamp Lifetime	Typ. 50,000 hours. Varies depending on usage.
Display	6 digit Red LED
Resolution	Internal Mode 1 FPM. External Mode 0.1 FPM
Flash Duration	0.1 to 3.6° (0.14 μ sec to 400 μ sec)
Phase Shift	0 to 999 msec; 0 to 359°
Power Requirement	100 to 230 VAC to included AC power adapter
Battery	NiMH battery requires approximate 2.5 hour recharge time
Battery Life	Approx. 2 hrs. with flash duration set to 3.6° & 5 hrs. with duration set to 1.0°
Synchronization Input Signal	H level: 2.5 - 12V; L level: 0 - 0.4V
Input Signal Range FPM (RPM)	40 - 35,000
Input Signal Flash Delay FPM (RPM)	60-10,000
Input Signal	12V pulse input
Power Supply Output	DC12V 40mA for sensor input
Temperature Limits	32 to 95°F (0 to 35°C)
Humidity Limits	35 to 85% RH
Protection Class	NEMA 4X (IP65)
Product Weight	4.6 lbs (2.1 kg)
Package Weight	6 lbs (2.72 kg)
Approvals	RoHs
Warranty	2 year
Included Accessories	AC power adapter, Input signal connector, flash-light style attachable handle

Ordering Details

DT-365	High Intensity Portable LED Stroboscope with Rechargeable Battery
SAS-360	Flexible swing arm for DT-361, DT-365, DT-365E LED Stroboscopes
SAS-360BASE	SAS-DT360 Mounting base
CABLE-361-10FT	Daisy chain syncing cable for DT-361 and DT-365 stroboscopes with Connectors, 10 ft length
NIST-STROBE-IN	NIST traceable certificate of calibration for stroboscopes

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DT-365E LED Portable Stroboscopes

High-Intensity, Battery Powered LED Stroboscopes. The DT-365E High-Intensity, Battery Powered LED Stroboscopes are velocity analyzing and measuring devices that are ideal for machinery process inspection. The DT-365E Stroboscopes are capable of flashing their LED lights in a synchronous frequency to the operating machinery, creating the illusion of viewing slowed or frozen images. Utilizing this phenomenon of slowing or stopping the motion with the adjusted flash rate of its LED lights, machine parts and processes may be inspected for defects, aiding in preventative maintenance programs. This LED technology extends operation due to the low energy requirement of the light diodes compared with xenon lit stroboscopes. Proper operation is assured as concern of light failure during usage common with xenon bulbs, is eliminated. The light output (Lux) of the LED's is far brighter than xenon powered stroboscopes with its array of 6 LED's.

The operation panel is a vibrant red LED display that is ideal for viewing in dark locations. The simple to use keypad plus rate adjustment dial aids in making quick changes of the flash rate to coincide with changes in the speed of your process. The dial allows fine-tune altering of the flash rate while the $\times 2/\div 2$ keys enable large spanning over the entire flash range.

The DT-365E's have the added feature of modifying the flash duration or on time which aids in picture clarity often necessary in printing processes. The phase shift function is ideal for rotating equipment where the user needs to change the focus on different blades, gears, or section of the machinery. These stroboscopes are also capable of being synchronized with an input signal. The robust aluminum housing is NEMA-4X (IP65) protected allowing usage in harsh plant environments. The DT-365E's array of 6 LED's allows continuous operation from 3 to 8 hours depending on user settings.

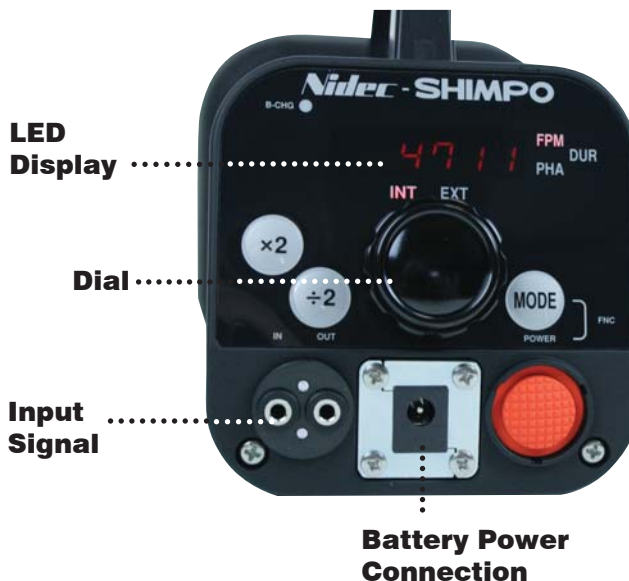
Typical applications for the DT-365E are to determine speeds, inspect rotors, meshing gears, motors, textile equipment, printing production lines, conveyors, industrial fans, pump operation, vibration equipment diagnostics and many more.



Features

- *Extraordinary durability with extruded aluminum, NEMA 4X (IP65) construction*
- *Bright LED display and simple controls aid in user operation*
- *Long Lasting, quick-charge NiMH rechargeable battery provides exceptional usage reliability*
- *Phase shift (in degrees of delay time) enables visual analysis of rotating or reciprocating objects through all points of motion/time/angle*
- *Flash controller dial permits accurate adjustments to the flash rate*
- *LED technology greatly extends operation life and eliminates need to replace burned out bulbs*
- *Capable of being synchronized with input signal from sensor or controller*

Easy Operation Control



MODE

Select between Flash Mode or Flash Duration and phase shift settings

$\times 2/\div 2$

Multiply or divide Flash Rate Setting by X2 or $\div 2$

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DT-365E Specifications

Range FPM (RPM)	60-120,000; From Input Signal 40-35,000
Accuracy	±0.02% of reading
Lux Rating (Approx.)	6000 FPM & 3.6° (100 μ s): Distance 8" (20 cm) 10,000 lx with 8.25" (210 mm) irradiation dia.; Distance 20" (50 cm) 2075 lx with 10" (250 mm) irradiation dia. 1500 FPM & 3.6° (400 μ s): Distance 8" (20 cm) 9750 lx with 8.25" (210 mm) irradiation dia.; Distance 20" (50 cm) 2050 lx with 10" (250 mm) irradiation dia.
Lamp Lifetime	Typ. 50,000 hours. Varies depending on usage.
Display	6 digit Red LED
Resolution	Internal Mode 1 FPM. External Mode 0.1 FPM
Flash Duration	0.1 to 3.6°
Phase Shift	0 to 359°
Power Requirement	100 to 230 VAC to included AC power adapter
Battery	NiMH battery requires approximate 2.5 hour recharge time
Battery Life	Approx. 3 hrs. with flash duration set to 3.6° & 8 hrs. when duration set to 1.0°
Synchronization Input Signal	NPN Open Collector 12-24 VDC
Input Signal Range FPM (RPM)	40 - 35,000
Input Signal Flash Delay FPM (RPM)	60-10,000
Input Signal	NPN open collector DC30V, 50 mA
Temperature Limits	32 to 95°F (0 to 35°C)
Humidity Limits	35 to 85% RH
Protection Class	NEMA 4X (IP65)
Product Weight	4.6 lbs (2.1 kg)
Package Weight	6 lbs (2.72 kg)
Approvals	RoHs
Warranty	2 year
Included Accessories	AC power adapter, flash-light style attachable handle

Ordering Details

DT-365E	High Intensity Portable LED Stroboscope with Rechargeable Battery
SAS-360	Flexible swing arm for DT-361, DT-365, DT-365E LED Stroboscopes
SAS-360BASE	SAS-DT360 Mounting base
NIST-STROBE-IN	NIST traceable certificate of calibration for stroboscopes

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DT-725 Portable, Light Weight Stroboscope with Rechargeable Battery

The DT-725 portable, light weight stroboscope with rechargeable battery possess many of the same features as the famous DT-300 Series Stroboscopes, but are lighter in weight. Constructed of strengthened high impact plastic, these rugged units are exceptionally reliable and withstand the same harsh conditions as more expensive units. Employing its unique phase shifting feature, the DT-725 "freezes" rotating or reciprocating machinery for visual inspection of covered gear teeth, shafts, oil/fuel/ink injector patterns, and print media; all without stopping production.

These features make the DT-725 ideal for quality inspection and preventive maintenance of automated motion equipment. Units can be ordered separately or as a convenient kit.



Features

- Bright LED Display Aids viewing in poorly lit areas
- Light Weight Design
- External trigger allows unit to be automatically synchronized with equipment
- Continuous duty cycle eliminates need to shut down for cooling
- Phase shift allows visual analysis of rotating/reciprocating objects
- Easy adjust flash rate controller dial
- Synchronous output enables strobe to drive other strobes
- Easy tri-pod or permanent mounting with integral mounting thread
- Internal, fast-charge rechargeable battery supply

Easy Operation Control



LED Display

Flash Rate Adjustment Dial

PHASE +/- Advance or Retard viewed motion in degrees or milliseconds

X2 Doubles the flashing rate

1/2 Decreases by half the flashing rate

DT-725 Specifications

Flashing Range	40.0 - 12,500 fpm (flashes per minute)
Accuracy	±0.02 % of reading
Resolution	0.1 fpm: 40.0 - 4,999.9 fpm / 0.2 fpm: 5,000 - 7,999.9 fpm / 0.5 fpm: 8,000.0 - 9,999.5 fpm / 1 fpm: 10,000 - 12,5000 fpm
Phase Shift	Use +/- push buttons (360° in 6 seconds)
Display Update Time	Ext. mode : varies with flashing rate
Output Signal	NPN open collector (24 VDC max., 50 mA), 150 μ sec typical
Rate Multiplier/Divider	Multiply by 2, divide by 2
External Trigger Input Signal	a) 12 - 24 VDC thru a 3-wire NPN output sensor (requires external power b) 12 VDC thru a 2-wire proximity sensor (leakage current 1 mA max., load current 8 mA min.) c) Switch or relay contact
Display	5 digits, 0.3" (8 mm) high, LED
Flashtube Power/Life	Xenon, 10 W max. (100 million flashes)
Flash Duration	10 to 15 μ s automatically adjusts with flash rate
Lux Rating	8" (20 cm) Distance = 5500 lx @ 1500 fpm, 8400 lx @ 6000 fpm with 4.5" (110 mm) irradiation diameter. 20" (50 cm) Distance = 1650 lx @ 1500 fpm, 2200 lx @ 6000 fpm with 7" (178 mm) irradiation diameter.
Low Battery Indicator	Flashing LED
Battery Life	1 - 2 hours depending on flash rate
Power Requirement	100 to 240 VAC; 50/60 Hz
Operating Temperature	32 - 104°F (0 - 40°C)
Product Weight	2.75 lbs (1.25 kg)
Package Weight	4.45 lbs (2.02 kg)
Dimensions	7.28" L x 4.72" W x 4.72" H (185 mm x 120 mm x 120 mm)
Warranty	2-Year
Included Accessories	Power Adapter; Kit models: Power Adapter, Spare Flash Tube, Carrying Case

Ordering Details

DT-725	Portable, Light Weight Stroboscope with Re-chargeable Battery; 100-240 Vac Power Adapter
DT-725-230V	DT-725 with EU Power Adapter, 230 Vac input
DT-725KIT	DT-725 with added protective carrying case & spare flash tube
DT-725KIT-230V	DT-725KIT with EU Power Adapter, 230 Vac input
NIST-STROBE	NIST traceable certificate for digital stroboscopes, includes data

Accessories

CARRY-CASE721	Protective carrying case for DT-725
DT-725UNPS	Universal Power Charger/Adapter. 100-240 Vac, 50/60 Hz.
DT-12V230	Power Charger/Adapter, 230 Vac with EU plug connection
FLASHTUBE721	Replacement flashtube for DT-725
SAS-DT300	Flexible swing arm



DT-725KIT Includes Protective Carrying case, spare flash tube and Battery Charger

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Series ST-320BL Black Light LED Stroboscope

The ST-320BL is a portable or permanent mount stroboscope. Utilizing super bright high-powered black light CREE LED lamps, these stroboscopes are perfect for UV ink printing applications. The ST-320BL's LED array provides a bright, stable strobe light over a wide measurement range with a lifetime far exceeding xenon lit stroboscopes. Operation is simple with the 8 button keypad and quick rate adjustment dial, combined with large, backlit LCD display. Phase shift, flash duration, plus flash rate are all quickly adjustable. The unit can work off user adjusted flash frequency or from a remote sensor's signal which will automatically adjust to corresponding process fluctuations.

The ST-320BL is designed for speed and frequency measurements in the printing, packaging, textile, automotive, cable, mining, steel, chemical, optical and medical industries in various applications.



ST-320BL Black Light LED Stroboscope

Features

- Wide Flash Range 60 – 120,000 Flashes/min. (1-2000 Hz) can be adjusted to meet almost any high-speed application
- Long-life Black Light LED operation for UV ink applications
- Adjustable Flash Pulse duration achieves sharper images for detailed inspection
- Phase Shift Advances or retards flash timing for viewing gear teeth, cutting surfaces, repeats or “drifting” images
- Input sensor trigger function allows process machinery to control flash rate
- Delay time adjustment combined with leading or trailing edge activation simplifies process set-up when using external signal input
- x2 and 1/2 keys for large adjustment rate change or +/- for fine tuning
- 1/4-20 UNC connection for permanent mount applications (remove trigger handle)



Operation Panel
& Flash Adjustment Dial



ST-320BL in Included
Metal Carrying Case

ST-320BL Specifications

Flash Rate Range	60 to 120,000 FPM ; 1-2000 Hz
Accuracy	0.01%±1 digit of F.S. @ 77° F (25°C)
Lamp Lifetime	Approximately 3~5 years depending on usage.
Display	Backlit LCD
Resolution	60 ~12,000 FPM = 0.1 FPM; 12,001~120,000 FPM = 1 FPM; 1~200 HZ = 0.01 Hz; 201~2000 = 0.1 Hz
Flash Duration	0.1°- 2.5°
Phase Shift	0-359°
Power Requirement	ST-320BL-1: 100-120 VAC (230V available upon request) ; ST-320BL-2: Rechargeable Battery with 100-240VAC power adapter.
Battery (ST-320BL-2)	Lithium DC 10.8V 2000mA
Battery Life (ST-320BL-2)	Approx. 12 hrs depending on settings
Input Signal	12 V Pulse Input; 3 pin M-12
Input Signal Range	60-120,000 FPM (1-2000 Hz)
Input Pulse Width	Over 50 μ s
Input Signal Flash Delay	0-999 ms; 0-359°
Temperature Limits	32-95°F (0-35°C)
Humidity Limits	35 to 85% RH
Enclosure	Aluminum & ABS
Mounting	1/4-20 UNC Thread
Enclosure Rating	IP54
Product Weight	ST-320BL-1: 1.85 lb (0.84 kg); ST-320BL-2: 1.98 lb (0.90 kg)
Package Weight	ST-320BL-1: 4.40 lb (2.0 kg); ST-320BL-2: 5.73 lb (2.6 kg)
Approvals	CE
Warranty	1 year
Included Accessories	Carrying Case, ST-320BL-1: 6.5' (2 m) AC power cord; ST-320BL-2: Power Recharging Adapter with cord

Ordering Details

Model	Description
ST-320BL-1	Portable Black Light LED Stroboscope, 100-120 VAC Line Powered.
ST-320BL-1-230V	Portable black light LED Stroboscope, 220-240 VAC line powered.
ST-320BL-2	Portable Black Light LED Stroboscope, Rechargeable Battery with 100-240VAC power adapter.

Accessories

Model	Description
SG-320BL	Front Rubber Strobe guard for ST-320BL
ST320HANDLE	Top Handle for ST-320BL
E2E-X5ME1-Z	Proximity sensor with M-12, 3 pin connection



Operation Control Panel

CHECK•LINE®—PRECISION QUALITY CONTROL INSTRUMENTS

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Series ST-329 LED Stroboscope

Series ST-329 is a permanent mount stroboscope array utilizing super bright CREE high powered LED lamps. The ST-329's LED array provides a bright, stable strobe light over a wide measurement range with a lifetime far exceeding xenon lit stroboscopes. The ST-329 arrays are available in several standard sizes from 9.25" (235 mm) to 59" (1500 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. A separate control enclosure is connected with 6.5' (2 m) cable to the array. Operation is simple with the 8 button keypad and large, backlit LCD display. Phase shift, flash duration, plus flash rate are all quickly adjustable via the controller. 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-329 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.



**ST-329-3 LED Array shown with
Optional Mounting Kit**

Features

- *Wide Flash Range 60 – 120,000 Flashes/min. can be adjusted to meet almost any high-speed application*
- *Long-life LED operation*
- *Adjustable Flash Pulse duration achieves sharper images for detailed inspection*
- *Phase Shift Advances or retards flash timing for viewing gear teeth, cutting surfaces, repeats or "drifting" images*
- *Input sensor trigger function allows process machinery to control flash rate*
- *Delay time adjustment combined with leading or trailing edge activation simplifies process set-up when using external signal input*
- *Nine standard size lengths from 9" (235 mm) to 59" (1500 mm). Custom options available.*
- *x2 and 1/2 keys for large adjustment rate change or +/- for fine tuning*



**ST-329 Operation
Control Enclosure**

ST-329 Specifications

Flash Rate Range	60 to 120,000 FPM
Accuracy	0.01%±1 digit of F.S. @ 77° F (25°C)
Lamp Lifetime	Approximately 3~5 years depending on usage.
Display	Backlit LCD
Resolution	60 ~12,000 FPM = 0.1 FPM; 12,001~120,000 FPM = 1 FPM
Flash Duration	0.1°- 2.5°
Phase Shift	0-359°
Power Requirement	100-120 VAC; Optional 220-260 VAC
Input Signal	12 V Pulse Input; M-12, 3 pin
Input Signal Range	60-120,000 FPM
Input Pulse Width	Over 50 μ s
Input Signal Flash Delay	0-999 ms; 0-359°
Temperature Limits	32-95°F (0-35°C)
Humidity Limits	35 to 85% RH
Enclosure	Control - ABS; Array - ABS window & aluminum frame
Mounting	Control: Magnetic mount to include bracket; Array: Flanges for use with 6 mm bolts. Mounting bracket kit available separately.
Enclosure Rating	IP65 - Control & Array
Dimensions	Length (See model chart) x 6" (153 mm) x 3.5" (90 mm)
Approvals	CE
Warranty	1 year
Included Accessories	6.5' (2 m) AC power cord, 9.8' (3 m) control/array connection cable (5 pin)

Ordering Details

Model	Length	# LED's
ST-329-0	9.25" (235 mm)	18
ST-329-1	20" (500 mm)	27
ST-329-2	24" (600 mm)	36
ST-329-3	31" (800 mm)	54
ST-329-4	39" (1000 mm)	63
ST-329-5	43" (1100 mm)	63
ST-329-6	49" (1250 mm)	81
ST-329-7	51" (1300 mm)	81
ST-329-8	59" (1500 mm)	99

Note: For 230 Volt Models add: -230V to end of model code.

Accessories

Model	Description
MK-320-X*	Mounting Kit for ST-329 Strobe Arrays
E2E-X5ME1-Z	Proximity Sensor with M-12 3 pin Connection

*To order matching width mounting kit, change '-x' with same numeral as strobe array. Ex. MK-320-3 for 800 mm wide kit compatible with ST-329-3 array.



ST-329-1 LED Array shown with
Optional Mounting Kit

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ST-5000 LED Stroboscope & Laser Tachometer

The Series ST-5000 Dual 2-in-1 LED Stroboscope & Laser Tachometer. The ST-5000 combination stroboscope/tachometer portable velocity analyzing and measuring device is ideal for machinery process inspection. The 2 in 1 unit eliminates the need to purchase and carry around two separate test instruments, plus streamlines time to analyze process machinery.

The LED stroboscope functionality of the ST-5000 is capable of flashing its light in a synchronous frequency to the operating machinery, creating the illusion of viewing slowed or frozen images. Utilizing this phenomenon of slowing or stopping the motion with the adjusted flash rate of the ST-5000's LED lights, machine parts and processes may be inspected for defects, aiding in preventative maintenance programs. The added adjustable flash duration feature enables a clearer stopped image and is ideal for monitoring repetitive processes such as on high-speed printing lines.

With the Laser Tachometer portion of the ST-5000, users can determine exact process speeds up to a distance of 5 feet, providing adequate safety for the operator. The tachometer mode provides the process speed as well as the maximum and minimum levels recorded. A graphing mode is selectable showing a plotted view of the process speed.

The ST-5000 has several time-saving features. One such function enables operators to quickly record the speed in tachometer mode and instantly transfer the recorded speed over to the stroboscope mode, reducing time to analyze and troubleshoot equipment that operates at various speeds. Another function automatically alters the frozen image flash speed to a rate that displays a slow motion movement of the process, allowing additional inspection capability. This slow motion view quickly makes evident to the user which direction the system is moving.



The ST-5000's LED technology extends operation due to the low energy requirement of the light diodes compared with xenon stroboscopes. Its large, backlit display and convenient 2 button plus dial wheel operation enable quick function selection. The scroll dial allows fast adjustment of flash rate and can adjust the rate multiplication factor (up to a factor of 10) to quickly scroll through the entire flash range.

Typical applications for using the ST-5000 is to determine speeds or inspect rotors, meshing gears, vibration diagnostic equipment, textile equipment, printing production lines, power tools, speaker acoustical analysis, fan balancing and many more.

Features

- *Combination Stroboscope & Tachometer eliminates need for two separate products.*
- *Quick mode selection provides instant back and forth operation between tachometer and stroboscope.*
- *Multiplication selection of flash rate with scroll dial accelerates ability to get to the process speed desired.*
- *Process speed detected by its tachometer can be taken instantly over to stroboscope flash rate, providing the exact rate to freeze the process without having to guess and dial in a speed manually.*
- *Rotation mode takes the stopped image rate and automatically calculates a slow motion of the process for additional analysis possibly not seen with the frozen view. Great for checking motor direction.*
- *Tachometer mode shows live process, maximum & minimum recorded values.*
- *Tachometer graphing mode aids in visualizing the process speed changes*
- *Large backlit display, light-weight, and easy- grip handle enables use in a multitude of test environments and applications.*
- *Adjustable flash duration aids process clarity, often necessary in printing applications.*
- *Low power draw LED's along with rechargeable batteries provides additional testing operation time.*

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ST-5000 Specifications

Stroboscope	Range	15-99,999 RPM; 0.25-1666.65 Hz
	Accuracy	+/- 0.012% FS
	Lux Rating (lx)	8" (20 cm) distance: 700 lx @ 1500 fpm, 890 lx @ 6000 fpm with irradiation diameter of 6"; 20" (50 cm) distance: 215 lx @ 1500 fpm, 330 lx @ 6000 fpm with irradiation diameter of 12"
	Display	Graphic LCD 2.3 x 1.3" (60 x 32.6 mm)
	Resolution	RPM: 0.1 < 1000, 1 >= 1000 ; Hz: 0.002 < 16.666, 0.02 >= 16.66
	Flash Duration	Adjustable
	Lamp Lifetime	20,000 hours
Tachometer	Range	15 -200,000 RPM
	Accuracy	+/- 0.013% FS
	Resolution	0.1 RPM < 1000, 1 RPM >= 1000
	Measuring Distance	7.8 to 59" (20 to 150 cm)
	Detection	Laser
	Power Supply	4 AA batteries
	Battery Life	Approx. 2.5 to 10 hours depending on flash rate and brightness levels
	Housing	ABS
	Dimensions	9 x 5 x 1.75" (228 x 127 x 44 mm)
	Product Weight	0.95 lb (430 g)
	Package Weight	approx. 2.2 lb (1000 g)
	Warranty	1 Year
	Included Accessories	4 AA Rechargeable Batteries, Reflective tape, Battery Recharger

Ordering Details

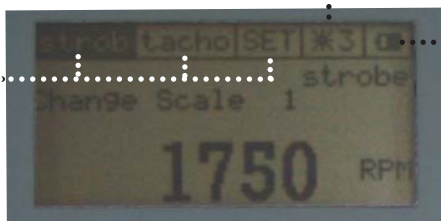
ST-5000	Combination LED Stroboscope, Laser Tachometer Portable Test Instrument with included rechargeable batteries and battery recharger.
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Easy Operation Control

**3 Menu
Operation**

**Flash Duration
Indication**

**Battery
Indication**



ON/OFF of Power and Backlight



Scroll Dial Quickly Adjusts Values



Menu/Sub-Menu Selection



**Included Battery
Recharger with 4
Rechargeable Batteries**

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