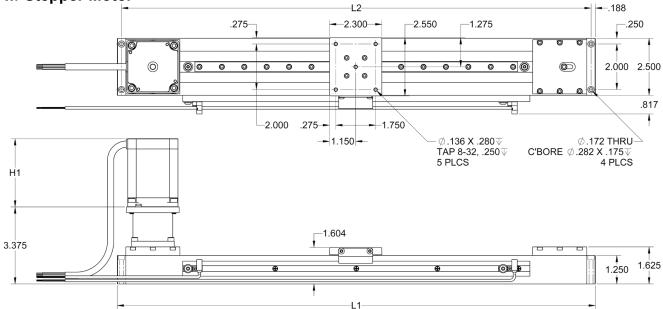
LB250 Belt Driven Linear Actuator



- Belt Driven Linear Actuator
- Stroke Lengths up to 48 Inches
- Dynamic loads up to 200 lbs
- Speeds up to 100 in/sec
- Linear Guide Motion
- Compatable with Nema 23 Motor or 60mm Frame Servo Motor
- Additional Accessories Available



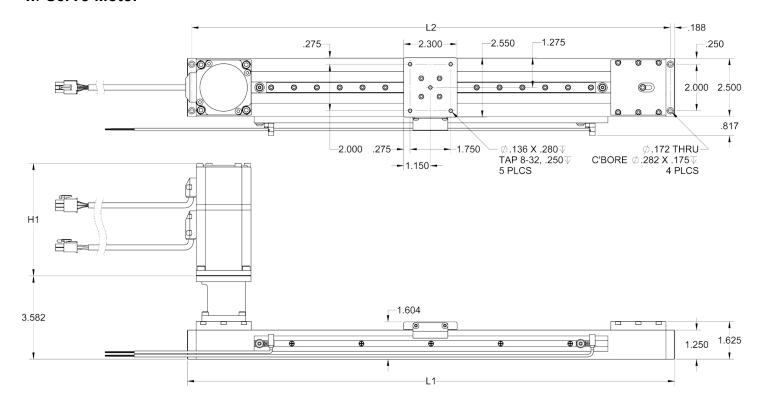
*w/ Stepper Motor



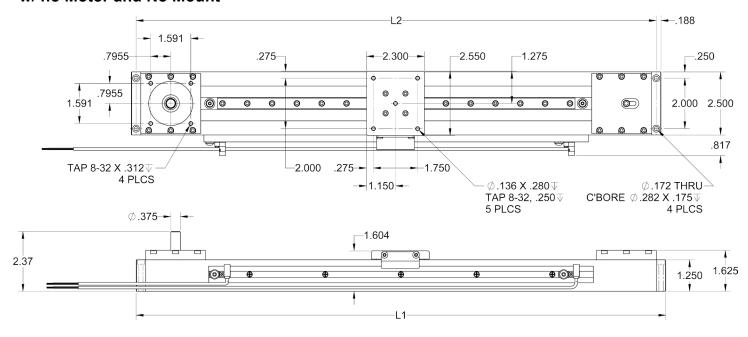
Dimesions					
Model	L1	L2	H1		
12"	21.0	20.624			
18"	27.0	26.624	Motor Height,		
24"	33.0	32.624	See Motor Specs		
36"	45.0	44.624	for More Information		
48"	57.0	56.624			

*Units are in inches

*w/ Servo Motor

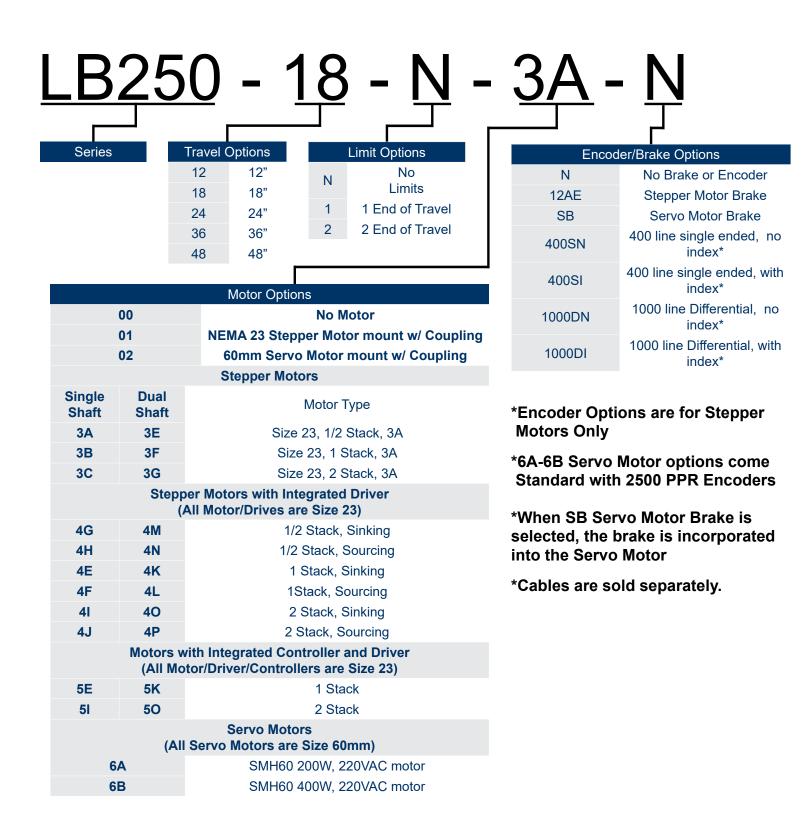


*w/ no Motor and No Mount



	Dimesions				
Model	L1	L2	H1		
12"	21.0	20.624			
18"	27.0	26.624	Motor Height,		
24"	33.0	32.624	See Motor Specs		
36"	45.0	44.624	for More Information		
48"	57.0	56.624			

*Units are in inches



Specifications:

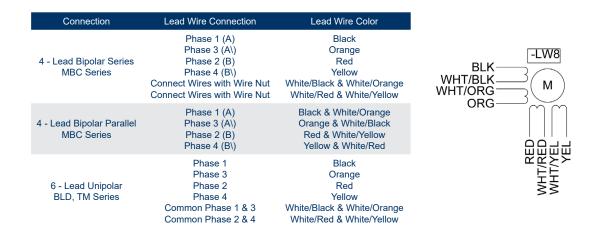
Travel		12"	18"	24"	36"	48"
	Static (lb)			1,000		
Load Capacity	Dynamic (lb)			200		
Max Stroke Length	Inches	12	18	24	36	48
Encoder Outputs			TTL Square W	ave, Two Ch	annel A & B	
Maximum Travel Speed	Inches/ Second			100		
Accuracy	Inches			0.005		
Material				Aluminum		
Finish				Clear Anodiz		
Flatness, Straightness, & Orthogonality		<0.001 [Inch/Inch] (<25.4µm/µm)				
Rail Material	Stainless Steel					
Inches Per Revolution	Inches	Inches 4.8				
Belt Pitch	Inches			0.200		
Number of Pulley Teeth				24		
Duty Cycle			Low	to Mid (<50%	6)	
Stage Weight (Without Motor)	Without Limit Switches (lb)	4.88	5.96	7.00	9.10	11.14
(Without Mount)	With Limit Switches (lb)	4.89	5.97	7.01	9.11	11.15
Weight of Mount and Coupling	(lb)			0.34		
Moment of Intertia* (No Coupling)	oz-in-sec²	0.016	0.016	0.017	0.018	0.019
Moment of Inertia* (With Coupling)	oz-in-sec²	0.019	0.020	0.020	0.021	0.023
Max Moments	Mro			34.9		
Max Moments (Nm)	Мро			30.2		
	Муо			30.2		

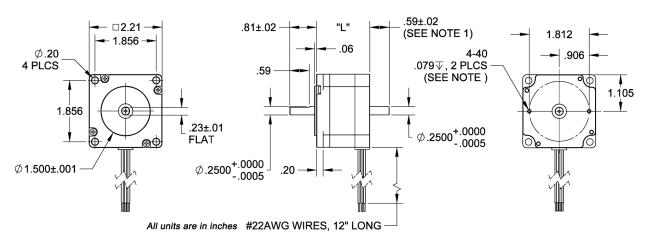
*Note: add 0.0274 oz-in-sec²/1lb load on a carriage

Stepper Motor Specifications:

Motor Option	Motor Part Number	Bipolar Torque (oz-in)	Series Current (A)	Unipolar Current (A)	Parallel Current (A)	Unipolar Inductance (mH)	Rotor Inertia (oz-in-sec²)	Weight (lbs)	"L" Length (in)
3A	23Y006S-LW8	76	2.10	3.0	4.2	0.6	0.0017	1.00	1.62
3B	23Y106S-LW8	175	2.10	3.0	4.2	1.1	0.0042	1.55	2.21
3C	23Y206S-LW8	262	2.10	3.0	4.2	1.6	0.0068	2.21	3.00
3E	23Y006D-LW8	76	2.10	3.0	4.2	0.6	0.0017	1.00	1.62
3F	23Y106D-LW8	175	2.10	3.0	4.2	1.1	0.0042	1.55	2.21
3 G	23Y206D-LW8	262	2.10	3.0	4.2	1.6	0.0068	2.21	3.00

Step Angle Accuracy:	± 5% (Full Step, No Load)	Insulation Resistance:	100M Ohm Min, 500VDC
Resistance Accuracy:	± 10%	Dielectric Strength:	500VAC for 1 minute
Inductance Accuracy:	± 20%	Shaft Radial Play:	0.02" Max (1.0 lbs)
Temperature Rise:	80°C Max (2 Phases On)	End Play:	0.08" Max (1.0 lbs)
Ambient Temperature:	-20° to +50° C	Max Radial Force:	16.9 lbs (0.79" from Flange)
Insulation Type:	Class B	Max Axial Force:	3.4 lbs-Force



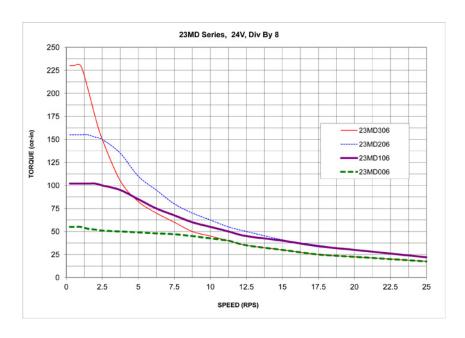


NOTE 1: 23YxxxD-LW8 Models Only

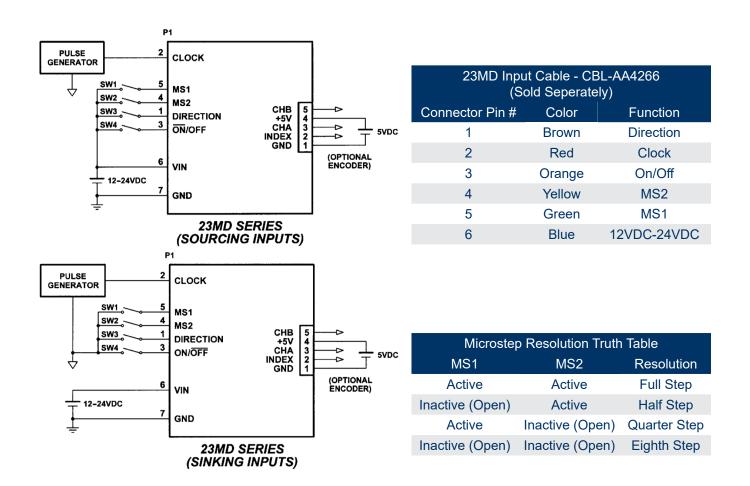
Stepper Motors with Integrated Driver Specifications:

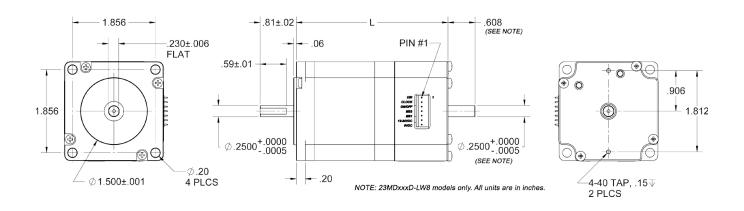
Motor Option	Motor Part Number	Active Input	Bipolar Torque (oz-in)	Rotor Inertia (oz-in-sec²)	Weight (lbs)	"L" Length (in)
4G	23MD006S-00	Sinking	76	0.0017	1.20	2.98
4H	23MD006S-24	Sourcing	76	0.0017	1.20	2.98
4E	23MD106S-00	Sinking	175	0.0042	1.75	4.03
4F	23MD106S-24	Sourcing	175	0.0042	1.75	4.03
41	23MD206S-00	Sinking	262	0.0068	2.41	4.94
4J	23MD206S-24	Sourcing	262	0.0068	2.41	4.94
4M	23MD006D-00	Sinking	76	0.0017	1.20	2.98
4N	23MD006D-24	Sourcing	76	0.0017	1.20	2.98
4K	23MD106D-00	Sinking	175	0.0042	1.75	4.03
4L	23MD106D-24	Sourcing	175	0.0042	1.75	4.03
40	23MD206D-00	Sinking	262	0.0068	2.41	4.94
4P	23MD206D-24	Sourcing	262	0.0068	2.41	4.94

Power Requirements:	12-24VDC	Microstepping Res.	1600 Steps/Rev (Div-by 8)
Input Voltage (Inputs):	3.5 - 24VDC	Driver Type:	Bipolar Series
Step Angle Accuracy:	+/- 5% (Full Step, No Load)	Insulation Resistance:	100M Ohm Min, 500VDC
Temperature Rise:	80°C Max (2 Phases On)	Dielectric Strength:	500VDC for One Minute
Ambient Temperature:	-20° to +50° C	Radial Play:	0.02" at 1.0 lbs
Insulation Type:	Class B	End Play:	0.08" at 1.0 lbs
Max Axial Force:	3.4 lbs-Force	Max Radial Force:	16.9 lbs (0.79" from Flange)



Stepper Motors with Integrated Driver Specifications: (Cont.)

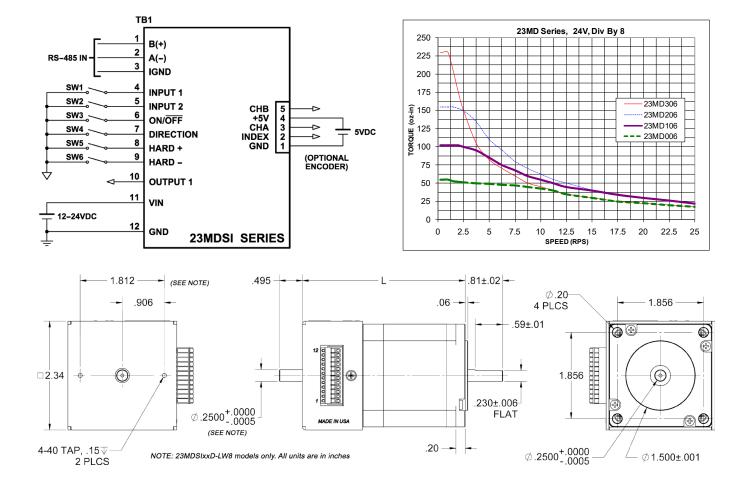




Stepper Motors with Integrated Controller and Driver Specifications:

Motor Option	Motor Part Number	Bipolar Torque (oz-in)	Rotor Inertia (oz-in-sec²)	Weight (lbs)	L Length (in)
5E	23MDSI106S-00-00	175	0.0042	1.73	3.504
51	23MDSI206S-00-00	262	0.0068	2.39	4.292
5K	23MDSI106D-00-00	175	0.0042	1.73	3.504
50	23MDSI206D-00-00	262	0.0068	2.39	4.292

Power Requirements:	12-24VDC	Microstepping Res.	1600 steps/rev (Div-by 8)
Input Voltage (Inputs):	3.5 - 24VDC	Driver Type:	Bipolar Series
Step Angle Accuracy:	+/- 5% (Full Step, No Load)	Insulation Resistance:	100M Ohm Min, 500VDC
Temperature Rise:	80°C Max (2 Phases On)	Dielectric Strength:	500VDC for One Minute
Ambient Temperature:	-20° to +50° C	Radial Play:	0.02" at 1.0 lbs
Insulation Type:	Class B	End Play:	0.08" at 1.0 lbs
Max Axial Force:	3.4 lbs-Force	Max Radial Force:	16.9 lbs (0.79" from Flange)



Servo Motor Specifications:

Servo Motor Option	Motor Used (when No Brake Selected*)	
6A	SMH60S-0020-30AAK-3LKH	
6B	SMH60S-0040-30AAK-3LKH	

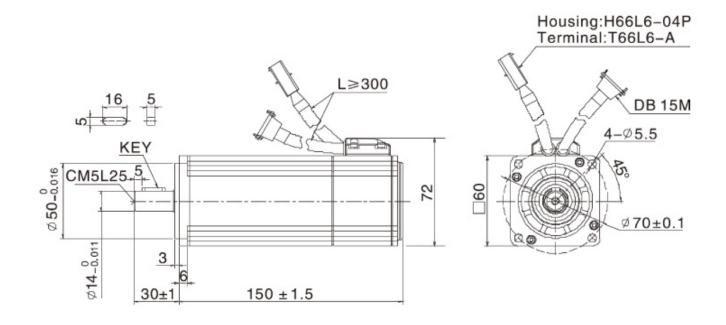
Servo Motor + Servo Brake Option	Motor Used
6A + SB	SMH60S-0020-30ABK-3LKH
6B + SB	SMH60S-0040-30ABK-3LKH

^{*}Note: When SB Servo Brake option is selected, the brake is incorporated into the servo motor.

Model	KNC-SRV-SMH60S-0020-30AAK-3LKH KNC-SRV-SMH60S-0020-30ABK-3LKH	KNC-SRV-SMH60S-0040-30AAK-3LKH KNC-SRV-SMH60S-0040-30ABK-3LKH
Compatible Driver	KNC-SRV-FD422-LA-000	
DC Link Voltage (VDC)	300	300
Rated Power (W)	200	400
Rated Torque (oz-in)	91	180
Rated Speed (RPM)	3000	3000
Rated Current (A)	1.6	3.1
Maximum Torque (oz-in)	271.9	540.9
Maximum Current (A)	4.8	9.3
Standstill Torque (oz-in)	25	50
Standstill Current (A)	1.79	3.38
Resistance Line-Line (Ω)	8.02	3.52
Inductance Line-Line (mH)	16.3	7.8
Electrical Time Constant (ms)	2.03	2.22
Mechanical Time Constant (ms)	2.26	1.35
Reverse Voltage Constant Ke (V/krpm)	29	29
Torque Constant Kt (oz-in/A)	68	68
Rotor Moment of Inertia Jm (oz-in-s²)	0.00531 0.00536 (with brake)	0.0072 0.0073 (with brake)
Pole Pair Number	3	3
Maximum Voltage Rising du/dt (KV/μs)	8	8
Insulation Class	F	F
Maximum Radical Force F (N)	180	180
Maximum Axial Force F (N)	90	90
Weight (lbs)	1.3 1.8 (with brake)	1.8 2.3 (with brake)

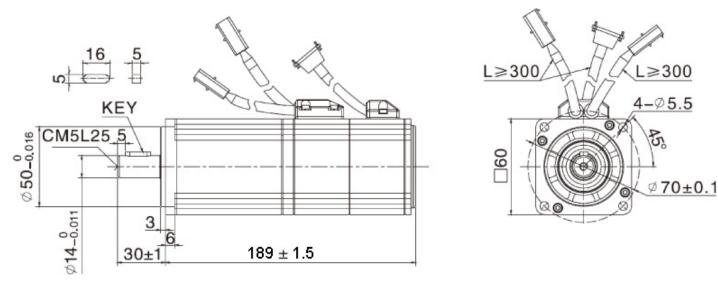
Servo Motor Specifications (Cont.):

KNC-SRV-SMH60S-00x0-30AAK-3LKH



KNC-SRV-SMH60S-00x0-30ABK-3LKH

Dimensions are in mm



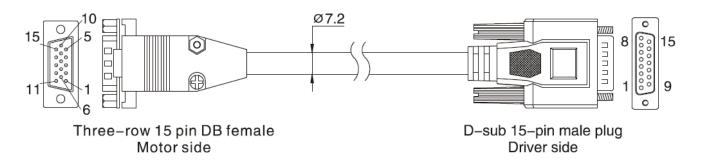
Dimensions are in mm

Model	KNC-SRV-SMH60S-0020-30AAK-3LKH KNC-SRV-SMH60S-0020-30ABK-3LKH	KNC-SRV-SMH60S-0040-30AAK-3LKH KNC-SRV-SMH60S-0040-30ABK-3LKH
Length of Motor L (mm)	85.3±1 119±1.5 (with brake)	110.8±1 145±1.5 (with brake)

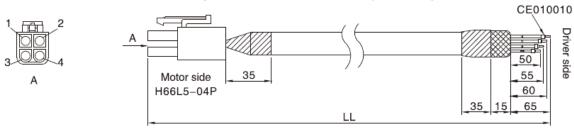
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4985 East Landon Drive Anaheim, CA 92807 **Tel. (714) 992-6990** Fax. (714) 992-0471 **www.anaheimautomation.com**

Servo Motor Specifications (Cont.):



Wire spec. UI20328 4C x 18AWG(41/0.16T) black



Encoder Cable							
Three-row 15 Pin DB	Two-row 15 pin DB	Signal	External Wire Color	Motor Wire Color			
PIN 1	PIN 1	+5V	Red (thick)	Red			
PIN 8	PIN 2	Α	Orange	Blue-black			
PIN 7	PIN 3	В	Yellow	Green			
PIN 6	PIN 4	Z	Green	Yellow			
PIN 4	PIN 5	U	Brown	Brown-black			
PIN 10	PIN 6	V	Purple	White-black			
PIN 9	PIN 7	W	Blue	Gray-black			
PIN 2	PIN 9	GND	Black (thick)	Black			
PIN 13	PIN 10	/A	Orange-White	Blue			
PIN 12	PIN 11	/B	Yellow-White	Green-Black			
PIN 11	PIN 12	/Z	Green-White	Yellow-Black			
PIN 5	PIN 13	/U	Brown-White	Brown			
PIN 15	PIN 14	N	Purple-White	White			
PIN 14	PIN 15	/W	Blue-White	Gray			
PIN 3 empty	PIN 8 empty						
Internal Metal Ring	DB Metal Shell	Sheild	Shield	Metal Shell			

MOT-005-05-KL						
Cable Color	Signal	PIN#				
Yellow	U	PIN 1				
Red	V	PIN 2				
Black	W	PIN 3				
Yellow-green	PE	PIN 4				

Model		KNC-SRV-SMH60S-0020-30AAK-3LKH KNC-SRV-SMH60S-0020-30ABK-3LKH	KNC-SRV-SMH60S-0040-30AAK-3LKH KNC-SRV-SMH60S-0040-30ABK-3LKH		
Length of Motor L (mm)		85.3±1 119±1.5 (with brake)	110.8±1 145±1.5 (with brake)		
Position I	Feedback Device	Incremental Encoder 2500PPR			
Coo	ling Method	Totally Enclosed	, Non-Ventilated		
Prot	ection Level	IP65 for Body, Shaft Sealing IP54			
	Temperature	-20°C~40°C			
	Humidity	Below 90% RH (No Condensing)		
Environmental	Ambient Environment	Away from active gas, combu	stible gas, oil drops and dust		
Conditions of Operation	Altitude	Maximum Altitude 4000m, Ra Above 1000m: Decreasi	•		

Stepper Encoder Specification:

Encoder Cable - CBL-AA4175-10 (Sold Separately)							
Connector PIN #	Color	Function					
1	Black	0VDC					
2	N/C						
3	Orange	CH A					
4	Red	+5Vdc					
5	Yellow	CH B					

Parameter	Min	Тур	Max	Units
Supply Current CPR < 500, no load CPR ≥ 500, no load	- -	27 55	30 57	mA mA
Output Low (I _{OL} = 8mA max)	-	-	0.5	Volts
Output High* I _{OL} = -8mA max no load	2.0 4.2	- 4.8	-	Volts Volts
Output Current Per Channel	-8.0	-	8.0	mA
Output Rise Time		110		nS
Output Fall Time		35		nS

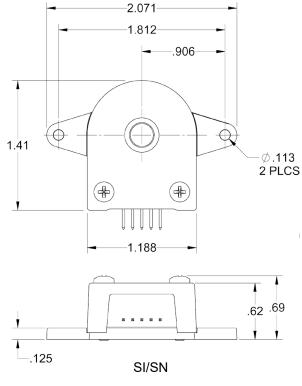
* Unloaded high level output voltage is 4.80V typically, 4.2V minimum.

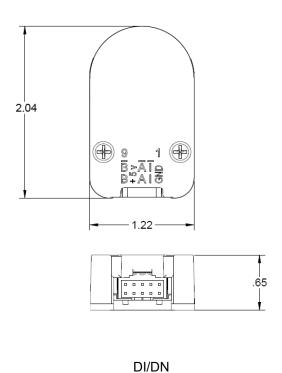
Recommended Operating Conditions	Min	Max	Units
Temperature	-40	100	°C
Supply Voltage	4.5	5.5	Volts
Load Capacitance	-	100	pF
Count Frequency	-	100	kHz

Parameter	Description
CPR(N):	The Number of Cycles Per Revolution
One Shaft Rotation:	360 mechanical degrees, N cycles
One Electrical Degree (°e):	1/360th of one cycle
One Cycle (C):	360 electrical degrees (°e). Each cycle can be decoded into 1 or 4 codes, referred to as X1 or X4 resolution multiplication
Symmetry:	A measure of the relationship between (X) and (Y) in electrical degrees, nominally 180 °e
Quadrature (Z):	The phase lag or lead between channels A and B in electrical degrees, nominally 90 °e
Index (CH I):	The Index Output goes high once per revolution, coincident with the low states of channels A and B, nominally 1/4 of one cycle (90°e)

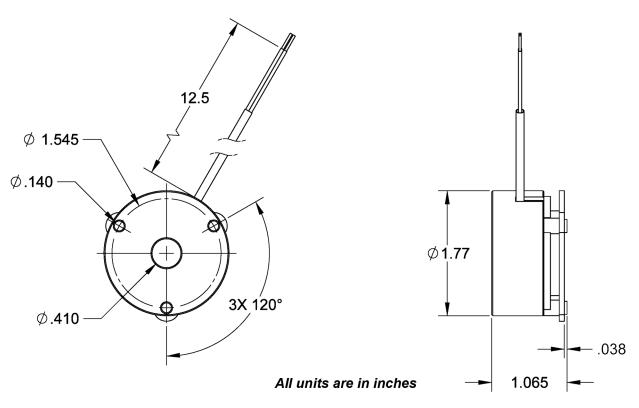
Parameter	Max	Units
Vibration (5 to 2kHz)	20	g
Shaft Axial Play	+/- 0.01	in.
Shaft Eccentricity Plus Radial Play	0.004	in.
Acceleration	250,000	rad/sec ²

Timing Characteristics	Symbol	Min	Тур	Max	Units
Cycle Error	С	-	3.0	5.5	°e
Symmetry	X,Y	150	180	210	°е
Quadrature	Z	60	90	120	°е
Index Pulse Width	Po	60	90	120	°е
Ch. I Rise After Ch. B or Ch. A Fall	t1	10	100	250	ns
Ch. I Fall After Ch. B or Ch. A Rise	t2	70	150	300	ns

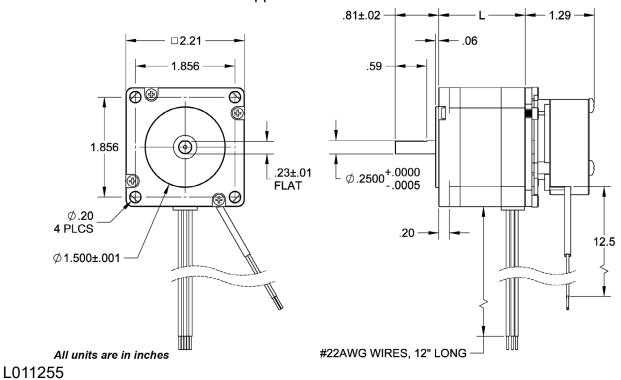




Model #	Fits NEMA Size	Bore Size (in)		Maximum Torque (in-lb)	Electric Power (Watts)	Current (mA)	Voltage (V)	Diameter (in)	Width (in)	Weight (lbs)
12AE	23	0.250	80	5	7	375	24	1.77	0.890	0.38



Brake Attached to NEMA 23 Stepper Motor:



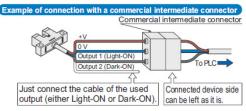
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Limit Switch Specifications:

Equipped with two independent outputs

All models are equipped with two independent outputs-Light-ON and Dark-ON.

Hence, one model suffices even if the output is to be used differently, depending upon the location of use. Also, since two independent outputs have been provided, cumbersome handling of the output conversion control input, or fear of logic inversion due to a cable break, is eliminated. The sensor can be connected to the existing wiring as it is.



Note: Ensure to insulate the unused output wire.

I/O circuit diagram

Color code (Brown) +V ZD1 (Black) Output 1 Load (Note 1,2) Load + 5 to 24 V DC Trz (White) Output 2 (Note 1,2) (Blue) 0 V Internal circuit Users' circuit

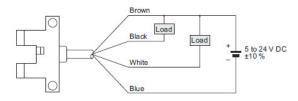
Notes: 1) Make sure to connect terminals correctly as the sensor does not incorporate a reverse polarity protection circuit.

Further, the output is not incorporated with a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load. Faulty wiring may result in damage.

2) Ensure to insulate the unused output wire.

Symbols ... ZD1, ZD2: Surge absorption zener diode Tr1, Tr2 : NPN output transistor

Wiring diagram



Output operation

	Color code	Output operation
Output 1	Black	Light-ON
Output 2	White	Dark-ON

Supply voltage		5 to 24 V DC ±10 % Ripple P-P 10 % or less	
Current consumption		15 mA or less	
Output		<npn output="" type=""> NPN open-collector transistor Maximum sink current: 50 mA Applied voltage: 30 V DC or less (between output and 0 V) Residual voltage: 0.7 V or less (at 50 mA sink current) 0.4 V or less (at 16 mA sink current) </npn>	<pnp output="" type=""> PNP open-collector transistor Maximum source current: 50 mA Applied voltage: 30 V DC or less (between output and + V) Residual voltage: 0.7 V or less (at 50 mA source current) 0.4 V or less (at 16 mA source current) </pnp>
	Utilization category	DC-12 or DC-13	
	Output operation	Incorporated with 2 outputs: Light-ON / Dark-ON	
Response time		Under light received condition: 20 µs or less Under light interrupted condition: 100 µs or less (Response frequency: 1 kHz or more) (Note 2)	
Operation indicator		Vermilion LED (lights up under light received condition)	
Environmental resistance	Pollution degree	3 (Industrial environment)	
	Ambient temperature (Note 3, 4)	-25 to +55 °C -13 to +131 °F (No dew condensation or icing allowed), Storage: -30 to +80 °C -22 to +176 °F	
	Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH	
	Ambient illuminance	Fluorescent light: 1,000 & at the light-receiving face	
	EMC	EN 60947-5-2	
	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure	
	Insulation resistance	50 M Ω , or more, with 250 V DC megger between all supply terminals connected together and enclosure	
	Vibration resistance	10 to 2,000 Hz frequency, 1.5 mm 0.059 in amplitude in X, Y and Z directions for two hours each	
	Shock resistance	15,000 m/s ² acceleration (1,500 G approx.) in X, Y and Z directions for three times each	
Emitting element		Infrared LED (Peak emission wavelength: 940 nm 0.037 mil, non-modulated)	
Material		Enclosure: PBT, Slit cover: Polycarbonate	
Cable		0.09 mm² 4-core cabtyre cable [PM-□24-R: 0.1 mm² flexible, oil and heat resistant cabtyre cable (Note 5)], 1 m 3.281 ft long	
Cable extension		Extension up to total 100 m 328.084 ft is possible with 0.3 mm², or more, cable.	
Weight		Net weight: 10 g approx.	

Terms and Conditions

Limited Warranty

All Anaheim Automation products are warranted against defects in workmanship and materials, when used under normal operating conditions and when used in accordance with the factory's specifications. This warranty is in effect for a period of twelve months from the date of purchase, or eighteen months from the date of manufacture, whichever comes first. Anaheim Automation will repair or replace at its' option, any of its products found to be defective and are within the warranty period. Anaheim Automation is not responsible for removal, installation, or incidental expenses incurred in shipping to and from the factory. Anaheim Automation is not liable, under any circumstances, for any consequential, incidental or indirect damages or expenses associated with the warranted product. Product that is damaged due to misuse, abuse, negligence, exposure, accident, improper installation or hook-up, or has been modified or dismantled, is NOT covered under this warranty.

Open Accounts

Anaheim Automation extends credit to Government agencies, industrial and distributor accounts with a good published credit rating. Companies may apply for an open account by filling out Anaheim Automation's Credit Application Form, or by supplying credit information on their company's letterhead to Anaheim Automation's Accounting Department. Credit Information supplied by the buyer, or by others on the customer's behalf, shall become part of the Credit Application and any false or misleading information shall constitute fraud. All orders are shipped prepaid, COD, cash, wire-transfer, VISA or Mastercard, until an open account is established.

Payment Terms for Open Accounts

Terms are Net 30 days. FOB is Anaheim, California.

Account Management and Remedies

In the event it becomes necessary for Anaheim Automation to file suit to enforce payment of past due invoices, such a suit will be brought in Orange County, California. Anaheim Automation shall be entitled to collection of fees, court costs, and interest at 10% per annum or such legal maximum rate as is allowed, on all invoice amounts past due. All purchase agreements are governed by the laws of the State of California.

Shipping

Anaheim Automation ships UPS Ground. If the customer prefers another carrier, or a premium routing method, this information must be clearly stated on the Purchase Order and confirmed, in writing, by Anaheim Automation. The customer must authorize any additional expenses that will incur. If quoted "factory stock," and Anaheim Automation has received a Purchase Order by noon PST, the order will ship the following day. For customers with an urgent request, there exists a possibility to ship later the same day. However, an "expedite fee" is charged, along with any other expenses incurred to fulfill this request.

All promises of shipment or delivery are approximated as closely as possible by Anaheim Automation, but are subject to delivery estimates made by our suppliers, weather conditions, fires, strikes, disputes, accidents, delays in transportation, material, fuel, or labor shortages, or any other cause beyond reasonable control of Anaheim Automation. In no event will Anaheim Automation assume any responsibility for any delays in shipments or deliveries.

Blanket Orders

All Blanket Orders must be confirmed with a written Purchase Order, and include scheduled release dates. Any changes to the schedule or the quantity purchased, must be agreed upon by Anaheim Automation, Inc., and a written "Change Order" must be in processed to confirm such changes. **NOTE: Blanket Orders are Non-Cancelable and Non-Returnable**.

Shortages or Damgaes

All claims for shortages or shipment errors must be made within 15 days after the receipt of the shipment. Anaheim Automation's liability is limited to the value of material value on the invoice. Claims for other loss or damages are filed against the carrier involved in the specific shipment.

Discontinued Items

Items are subject to change or discontinuance without notice. Ask a Customer Service Representative for advice on any possible substitution for your application.

Returns (RMA) and Repairs

Anything being returned to Anaheim Automation must have a RMA (Return Materials Authorization) number assigned by the factory, and it must be referenced on all the paperwork accompanying the return/repair. Items that do not reference the RMA number will not be processed. Do NOT return product using a Debit Memo. No product will be accepted for Credit after 30 days from the date of shipment. Product must be shipped with freight prepaid. **Special, custom or modified products are Non-Returnable, and no credit shall be offered.**

Product in need of repair must have previous authorization to return it to the factory. It is critical to do so, as the advice the factory can offer is invaluable, and can often save the customer money. The factory will determine upon inspection whether the product is covered under warranty. The factory charges a "flat-rate" fee based on model number, regardless of the problem found. The fee is charged for all returns, including those where no problem is found, as inspection and test is time-consuming.

Cancellations and Restocking Charges

Cancellation of any order must be approved by Anaheim Automation and will be on terms that protect us from any loss. The restocking charge is 15% on all product returned. The minimum restocking charge is \$25.00. Returns must be made within 30 days of receipt of product. Shipping expenses are paid by the customer. All products are subject to factory inspection and must be in resellable condition to receive credit. **Special, custom and modified products are Non-Returnable and Non-Cancelable**.

Engineering or Technical Assistance

Technical assistance is available at no charge to help the customer in choosing Anaheim Automation products for a specific application. However, any selection, quotation, or application suggestion offered from Anaheim Automation, its' representatives or distributors, are only to assist the customer, and in all cases, determination of fitness for purpose or use are solely the customers' responsibility. While every effort is made to offer solid advice and to produce technical data and illustrations accurately, such advice and documents are for reference only, and subject to change without notice. Programming of product is the customer's responsibility.

All Sales are made pursuant to the Terms and Conditions herein, are in lieu of any other expressed or implied terms, including but not limited to any implied warranties.