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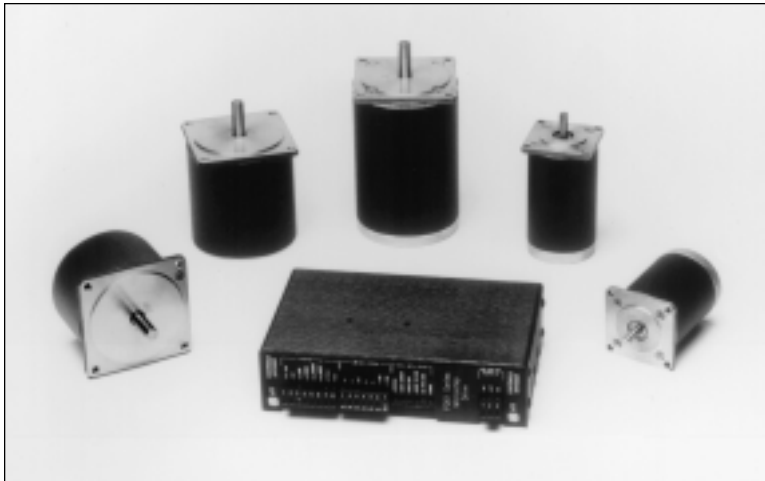
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# Compact Microstep Systems



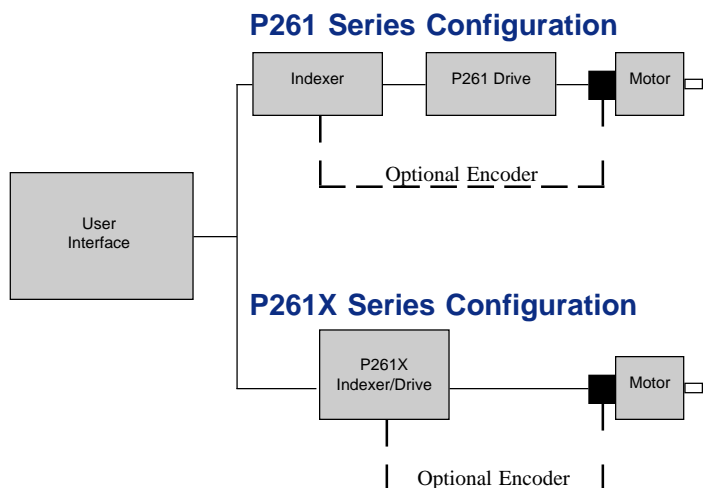
## Common Features

- Torques from 15 to 300 oz-in.
- Speeds to 3,000 RPM continuous.
- Dip switch selectable resolutions up to 50,800 steps per revolution.
- Mid range stabilization prevents loss of motor synchronization.
- Dip switch selectable automatic low power feature.
- Optical isolation of all inputs and outputs provides high noise immunity.
- Full short circuit protection.
- DIP switch selectable current settings from 0.2-5.0 Amps.
- Accepts 95-135 VAC 50/60 Hz input.
- Status/Fault LED indicators.

## Description

The P261 Series of Drives and the P261X Series of Drive/Indexer Systems are compact microstep systems that provide cost effective solutions for most motion control applications. The P261 packaged drive section is a state-of-the-art microstep drive utilizing surface mount technology with the translating and power stages needed to control virtually any hybrid step motor. By combining the ultra efficient MOSFET amplifiers, versatile H-bridge technology, and microprocessor controlled logic, the P261 provides outstanding speed/torque performance.

The P261X Indexer section automatically generates precise ramping routines; interfaces to your environment through the use of RS-232 communications, limit inputs, and programmable I/O; and for applications utilizing encoder capabilities, position maintenance and stall detection are available. Best of all, API's Intelli-Command Language (ICL) indexer software was designed for use by individuals without computer programming experience. Through the use of plain English type commands, your motion application will be up and running quickly, providing you with dividends long before other motion control systems.



## P261X Additional Features:

- Includes a powerful built-in indexer.
- Easy to learn "Plain English" instructions.
- RS-232 communications to 19,200 Baud allows daisy chaining of multiple devices.
- Home, End-of-Travel plus 13 programmable inputs and 8 programmable outputs.
- Encoder capabilities include position maintenance and stall detection for closed loop positioning.
- Built-in editor allows creation of up to 88 different motion programs.

**COMMON SPECIFICATIONS FOR P261 AND P261X:**

<b>DRIVE TYPE</b> .....	2 phase, bipolar, constant current, MOSFET chopper, 20 kHz fixed.
<b>RESOLUTIONS</b> .....	200, 400, 1000, 2000, 5000, 10000, 18000, 20000, 21600, 25000, 25400, 25600, 36000, 50000, 50800.
<b>WAVEFORMS</b> .....	Sine wave. Mid-range stabilization prevents loss of motor synchronization.
<b>POWER</b>	
Inputs .....	90-135 VAC 50/60 Hz, +5vdc for Logic 100mA min.
Output .....	0.2-5.0 amps/phase, dip switch selectable.
<b>PROTECTION</b>	
Short Circuit .....	Phase to phase, phase to ground.
Over Temperature .....	Internal air temp exceeds 140° F (60° C).
<b>FAULT OUTPUT</b> .....	Sinking output to OUTCOM, 5-24 VDC, 35mA max. Disable LED on.
<b>LOW POWER MODE</b>	
Auto Reduce .....	DIP switch enabled. Current drops to 50% of selected value if no step pulses are received in one second.
<b>ENVIRONMENTAL</b>	
Temperature .....	Drive heatsink max. 140° F (60° C); Motor case max. 212° F (100° C); Storage -40° to 185° F (-40° to 85° C)
Humidity .....	0-95%, non-condensing.

**P261 ADDITIONAL SPECIFICATIONS:****INPUTS**

TYPE .....	Optically isolated. TTL compatible.
OPTO IN .....	Optical isolation power. User supplies +5VDC at 100 milliamps min.
STEP .....	Requires 0.5 $\mu$ sec min. width, 1 MHz max. pulse rate, steps on trailing edge.
DIRECTION .....	CW/ $\overline{\text{CCW}}$ .
LOW POWER .....	HI/ $\overline{\text{LOPWR}}$ . Reduces motor current to 50% of selected value.
NO POWER .....	ENA/ $\overline{\text{NOPWR}}$ . Turns off motor current.
RESET .....	RUN/ $\overline{\text{RESET}}$ . Resets logic and establishes zero phase condition.

**P261X ADDITIONAL SPECIFICATIONS:****OPERATIONAL**

Acceleration .....	Optimal non-linear mathematical function.
Step Accuracy .....	$\pm 0$ steps.
Position Range .....	$\pm 2.1$ billion steps.
Speed Range .....	0 to 1,000,000 pulses/second. $\pm 1\%$ maximum speed.

**COMMUNICATIONS**

Type .....	RS-232C serial, 3 wire implementation (Tx, Rx, Gnd).
Baud Rates .....	1200, 2400, 4800, 9600 and 19200.
Mode .....	Full Duplex.
Format .....	8 data bits; 1 stop bit, no parity; ASCII Characters.
Multi-Axis .....	Daisy chain up to 36 indexers from a single host RS-232C port.

**INPUTS**

Type .....	Optically isolated. TTL or 5-24VDC.
Limits .....	CW, CCW, HOME.
Programmable .....	Thirteen.
Jog, Hold, Stop .....	Software assignable to programmable inputs.
Active State .....	High or low. Software selectable.

**OUTPUTS**

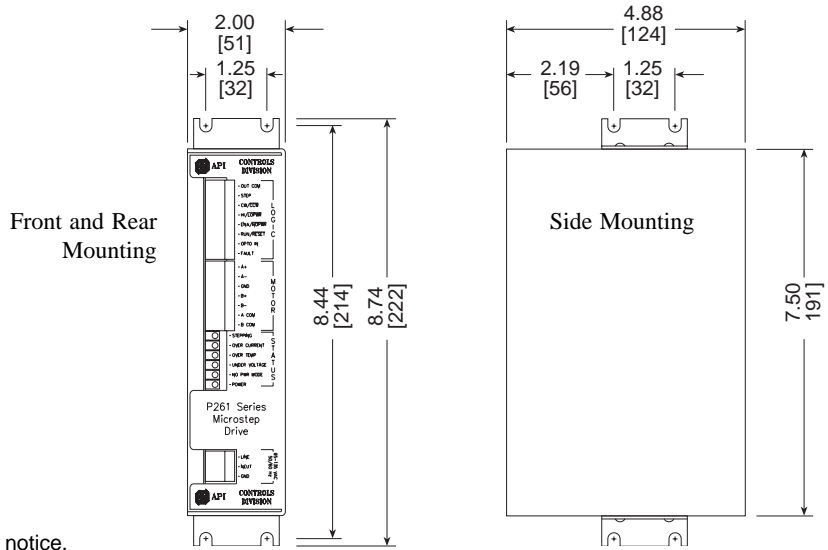
Type .....	Optically isolated. Open collector 5-24VDC, 35 milliamp max.
Fault .....	Overtemp, Undervoltage or Overcurrent.
Programmable .....	Eight. Active high or low. Software selectable.

**ENCODER**

Channels .....	Complementary A & B channel in quadrature with Z (index) channel. Maximum input frequency rate of 256 kHz on A & B Channel (pre-quadrature).
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**DIMENSIONS: P261 SERIES** [-] denotes millimeters

Unit should be mounted vertically with a 3" horizontal and 2" vertical clearance.



Subject to change without notice.

**P261 DRIVE CONNECTIONS/LED'S**

**STATUS LED'S**

STEPPING	1	Motor Stepping
OVER CURRENT	2	Drive Over Current
OVER TEMP	3	Drive Over Temperature
UNDER VOLTAGE	4	Drive Under Voltage
NO PWR MODE	5	Drive in No Power Mode
POWER	6	LED indicating power on

**MOTOR**

A+	1	Motor Phase A+
A-	2	Motor Phase A-
GND	3	Motor Phase Ground
B+	4	Motor Phase B+
B-	5	Motor Phase B-
A COM	6	Motor Phase A Common
B COM	7	Motor Phase B Common

**DRIVE/LOGIC**

OUT COM	1	Output Common
STEP	2	Step Signal
CW/CCW	3	Direction Signal
HI/LOPWR	4	High/Low Power Signal
ENA/NOPWR	5	Enable/No Power Signal
RUN/RESET	6	Run/Reset
OPTO IN	7	Opto Input (5VDC)
FAULT	8	Fault Output (5-24 VDC)

**AC POWER**

LINE	1	AC Input Black Wire (Line)
NEUT	2	AC Input White Wire (Neutral)
GND	3	AC Input Green Wire (Ground)

PACKAGED SYSTEMS

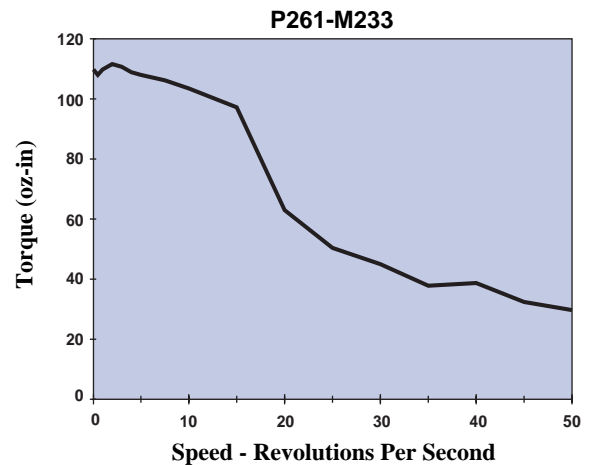
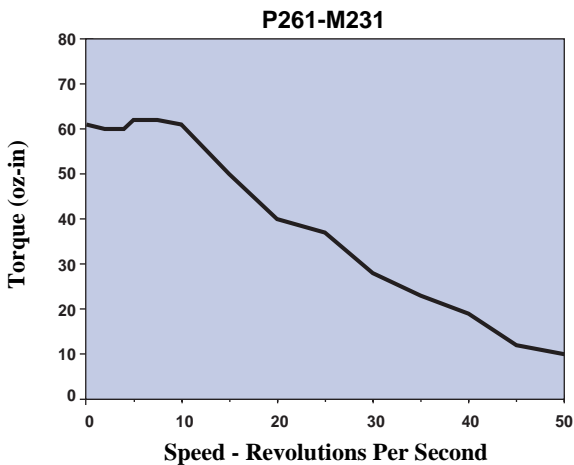
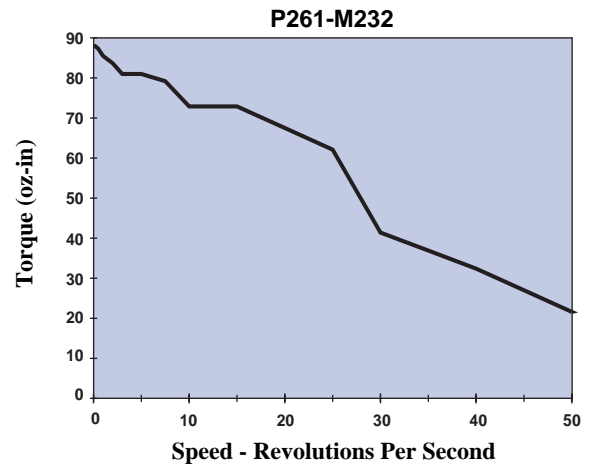
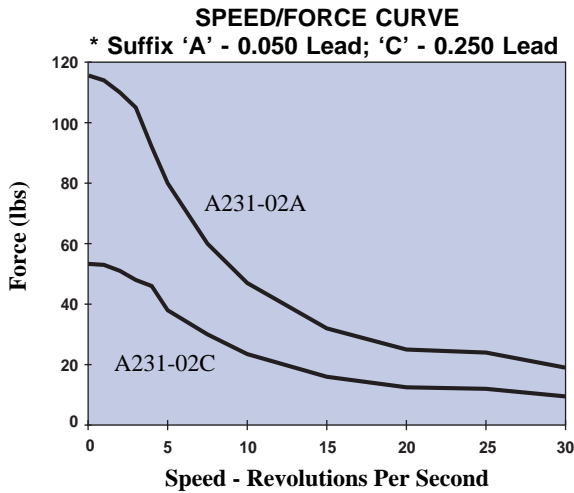


SYSTEM SELECTIONS / MOTOR DIMENSIONS

Each system includes a Power Supply, Drive, and Motor.

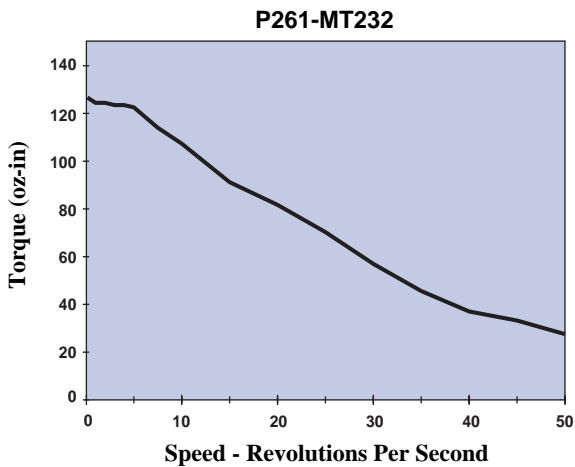
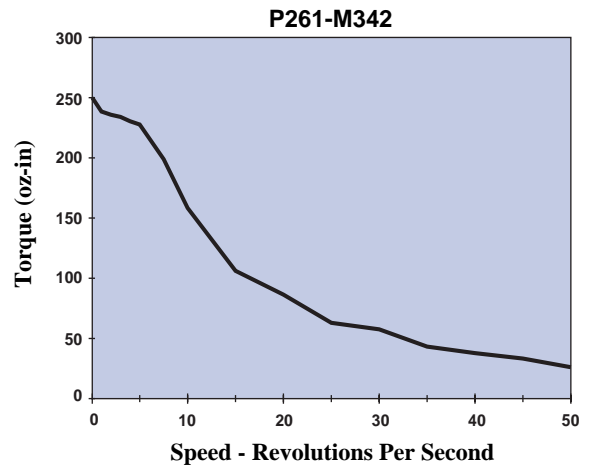
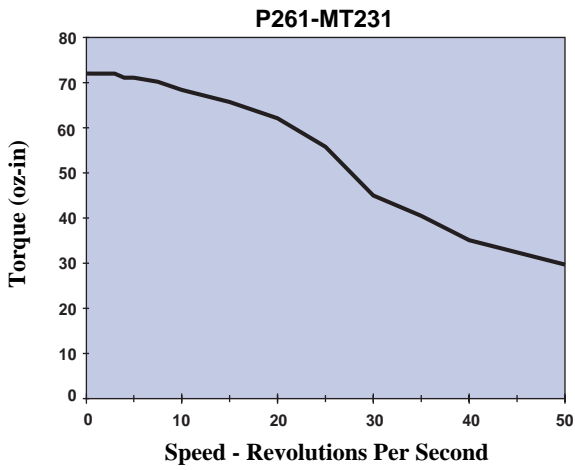
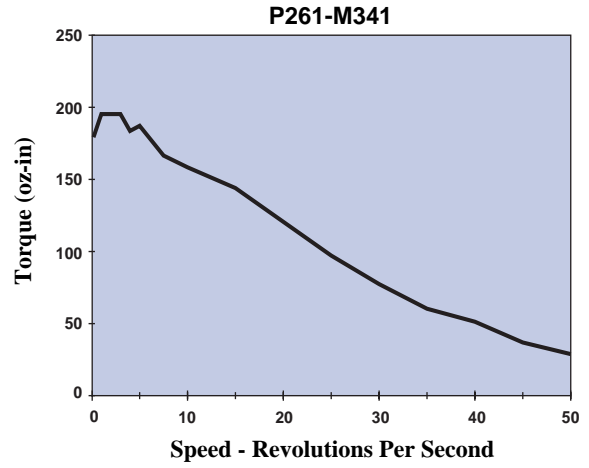
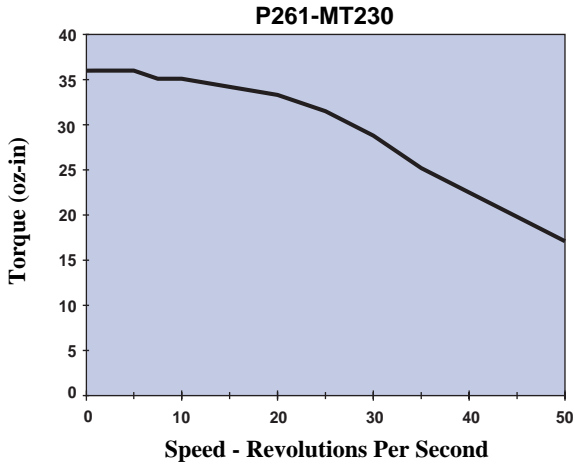
Base System	With Indexer	With Indexer/Encoder	Static Torque Oz-in (N-m)	Motor Width in. (mm)	Motor Length in. (mm)	Motor Model
P261-A231*	P261X-A231*	----	N/A	2.23 (57)	2.00 (51)	A231-02*
P261-M231	P261X-M231	P261X-M231E	60 (0.42)	2.23 (57)	2.00 (51)	M231-03
P261-M232	P261X-M232	P261X-M232E	100 (0.71)	2.23 (57)	3.25 (83)	M232-09
P261-M233	P261X-M233	P261X-M233E	150 (1.06)	2.23 (57)	4.00 (102)	M233-09
P261-M341	P261X-M341	P261X-M341E	150 (1.06)	3.25 (83)	2.45 (62)	M341-09
P261-M342	P261X-M342	P261X-M342E	300 (2.12)	3.25 (83)	3.70 (93)	M342-09
P261-MT230	P261X-MT230	P261X-MT230E	50 (0.35)	2.25 (57)	1.50 (38)	MT230-04
P261-MT231	P261X-MT231	P261X-MT231E	100 (0.71)	2.25 (57)	2.00 (51)	MT231-07
P261-MT232	P261X-MT232	P261X-MT232E	150 (1.06)	2.25 (57)	3.00 (76)	MT232-06

SPEED/TORQUE CURVES



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SPEED/TORQUE CURVES





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