

ENC-AMT10 Capacitive Modular Encoder



FEATURES

- 16 DIP Switch Selectable Resolutions (48 to 2048 CPR)
- Modular Package Design
- Straight (Radial) and Right-Angle (Axial) Versions
- Patented Capacitive ASIC Technology
- CMOS Outputs
- Kit with 9 Sleeve Options (.079" to .315")
- Index Pulse
- -40 to 100°C Operating Temperature
- Single-Ended



DESCRIPTION

The AMT10 Modular Incremental Encoder is based on a new type of Capacitive technology. With CUI's new patented Capacitive ASIC technology this encoder is superior in every way compared to other encoders (Magnetic, Optical). The AMT10 is a rugged, high accuracy incremental encoder that offers 16 programmable resolutions from 48 to 2048 CPR, all in just one AMT10 Encoder. If that's not enough, there are 9 shaft diameter options. Each AMT10 comes with 9 color coded bore sleeves, ranging from .079" to .315", that will adapt to 9 different motor shaft diameters. Also, included are two mounting tools, one standard and one wide baseplate that has multiple pre-drilled mounting hole patterns designed to mate with a wide range of motors. Furthermore, because of the Capacitive platform it is not susceptible to contaminants such as dirt, dust, and oil that usually plague encoders in industrial environments. With its compact package and low current draw, it's unlike any other encoder. The AMT10 is the perfect solution for your business whether it's for industrial, automation, robotics, or renewable energy applications.

ORDERING INFORMATION

ENC - AMT102 - V

Capacitive
Modular
Encoder

Orientation

- 2 Radial
- 3 Axial

16 DIP Switch Selectable Resolutions (CPR)

0048	0192	0384	0800
0096	0200	0400	1000
0100	0250	0500	1024
0125	0256	0512	2048

V-Kit Includes:

Total of 9 Bore Sleeves

Diameter	Color
.079"	Light Blue Sky
.118"	Orange
.125"	Purple
.157"	Gray
.188"	Yellow
.197"	Green
.237"	Red
.250"	Snow
.315"	Blue

Total of 2 Tools

Tool A	Spacer Tool
Tool B	Shaft Tool

Total of 1 Cover, 2 Bases

Top Cover

Standard Base

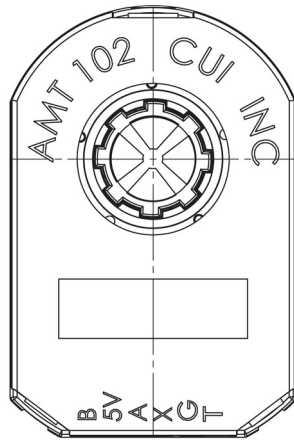
Wide Base (AMT103 does not have Wide Base)

L011742

PINOUT CONNECTOR

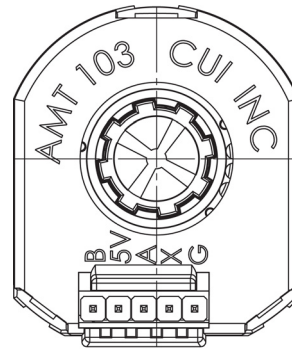
Pin #	Function	
	ENC-AMT102	ENC-AMT103
B	B Channel	B Channel
5V	+5 V	+5 V
A	A Channel	A Channel
X	Index Channel	Index Channel
G	GND	GND
T	Unused	N/A

ENC-AMT102



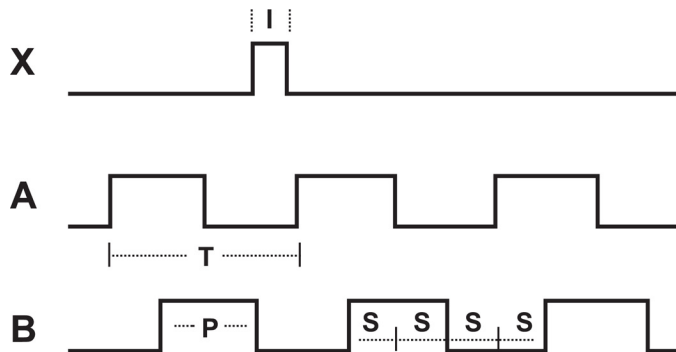
Mating Connector for ENC-AMT102
 Housing: MOLEX 50-57-9405
 Terminals: MOLEX 16-02-0086

ENC-AMT103



Mating Connector for ENC-AMT103
 AMP 3-640440-5 (TIN)
 AMP 3-641237-5 (GOLD)

Quadrature signals with Index showing counter-clockwise rotation



The following parameters are defined by the resolution selected for each encoder, where R = resolution

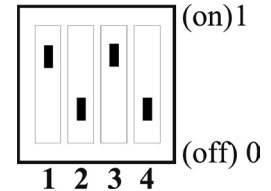
Parameter	Description	Expression	Units
T	Period	$360 / R$	Mechanical Degrees
P	Pulse Width	$T / 2$	Mechanical Degrees
I	Index Width	$P / 2$	Mechanical Degrees
S	A/B State Width	$P / 2$	Mechanical Degrees

RESOLUTION SETTINGS

Resolution (CPR)	Maximum RPM	1	2	3	4
2048	7500	0	0	0	0
1024	7500	0	0	1	0
1000	7500	1	0	0	0
800	7500	0	1	0	0
512	15000	0	0	0	1
500	7500	1	0	1	0
400	7500	0	1	1	0
384	7500	1	1	0	0
256	15000	0	0	1	1
250	15000	1	0	0	1
200	15000	0	1	0	1
192	7500	1	1	1	0
125	15000	1	0	1	1
100	15000	0	1	1	1
96	15000	1	1	0	1
48	15000	1	1	1	1

DIP switch:

Example Setting: 500 CPR



SPECIFICATIONS

Parameter	Conditions / Description	Min	Typ	Max	Units
Power Supply	VDD	3.6	5	5.5	V
Current Consumption	with Unloaded Output	-	6	-	mA
Output High Level		VDD-0.8	-	-	V
Output Low Level		-	-	0.4	V
Output Current	CMOS sink / source per channel	-	-	2	mA
Rise / Fall Time		-	30	-	ns

Parameter	Conditions / Description	Min	Typ	Max	Units
Channels	Quadrature A, B, and X Index	-	-	-	-
Waveform	CMOS Voltage Square Wave	-	-	-	-
Phase Difference	A leads B for CCW Rotation (viewed from front)	-	90	-	Degrees
Quadrature Resolutions 1*	48, 96, 100, 125, 192, 200, 250, 256, 385, 400, 500, 512, 800, 1000, 1024, 2048	-	-	-	CPR
Index 2*	One Pulse per 360 Degree Rotation	-	-	-	-
Accuracy		-	0.25	-	Degrees
Quadrature Duty Cycle (at each resolution)	256, 512, 1024, 2048	49	50	51	%
	48, 96, 100, 125, 192, 200, 250, 384, 400, 500	47	50	53	%
	800, 1000	43	50	56	%

Notes: 1*. Resolution selected via adjustable DIP switch.

2*. Some Stepper Motors may leak a magnetic field causing the ENC-AMT Index Pulse to not function properly (non-magnetic version available with 8 pulses per revolution).

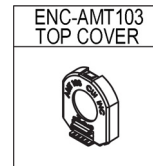
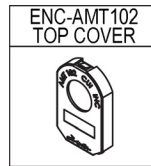
Parameter	Conditions / Description	Min	Typ	Max	Units
Motor Shaft Length		9	-	-	mm
Weight	ENC-AMT102	-	20.5	-	g
	ENC-AMT103	-	14.0	-	g
Axial Play		-	-	±0.3	mm
Rotational Speed (at each resolution)	192, 384, 400, 500, 800, 1000, 1024, 2048	-	-	7500	RPM
	48, 96, 100, 125, 200, 250, 256, 512	-	-	15000	RPM

Parameter	Conditions / Description	Min	Typ	Max	Units
Operating Temperature 1*		-40	-	100	°C
Humidity	Non-condensing	-	-	95	%
Vibration	20~500 Hz, 1 Hour on each XYZ	-	-	10	G
Shock	11 ms, ±XYZ direction	-	-	50	G
RoHS	2011 / 65 / EU	-	-	-	-

Note: 1*. Encoders with operating temperature of -40~125°C are available as a custom order.

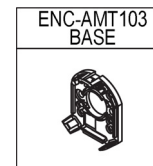
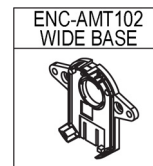
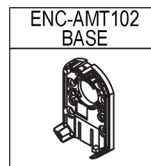
Covers:

ENC-AMT102	Top Cover
ENC-AMT103	Top Cover



Bases:

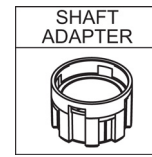
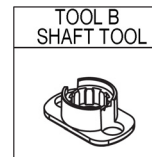
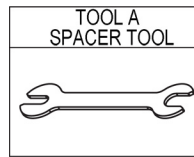
ENC-AMT102	Base
ENC-AMT102	Wide Base
ENC-AMT103	Base



Tools:

(Tool A) Spacer Tool
(Tool B) Shaft Tool

Note: Also, included is a Shaft Adapter.



Sleeves:

The following bore sleeves are provided with the kit:



SLEEVES								
.079"	.118"	.125"	.157"	.188"	.197"	.237"	.250"	.315"
Light Sky Blue	Orange	Purple	Gray	Yellow	Green	Red	Snow	Blue

Everything shown below here is not included with the kit. These Connectors and Cables are sold separately:

Connectors:

Encoder Part #	Connector Part Number	Description
ENC-AMT102	MOLEX 50-57-9405	Housing
ENC-AMT102	MOLEX 16-02-0086	Terminals
ENC-AMT103	AMP 3-640440-5	Tin
ENC-AMT103	AMP 3-641237-5	Gold

Cables:

Encoder Part #	Cable Part Number	Length
ENC-AMT102	ENC-CBL-AA5939	12"
ENC-AMT103	ENC-CBL-AA4032	12"