

ENC-AMT11Q Capacitive Modular Encoder



FEATURES

- Incremental Resolutions up to 4096 CPR
- Differential Line Driver
- Kit with 9 Bore Sleeve Options (.079" to .315")
- Radial and Axial Cable Connections
- Digitally Set Zero Position
- Compact Modular Package with Locking Hub
- Resolutions Programmable with AMT Viewpoint PC Software
- -40 to 125°C Operating Temperature



DESCRIPTION

The AMT11 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 encoder (Magnetic, Optical). The AMT11 is a rugged, high accuracy incremental encoder that offers resolutions up to 4096 CPR. Each AMT11 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 AMT11 is the perfect solution for your business whether it's for industrial, automation, robotics, or renewable energy applications.

ORDERING INFORMATION

ENC - AMT112Q - V

Capacitive Modular Encoder

Differential Line Driver

Orientation

- 2 Radial
- 3 Axial

Selectable Resolutions (CPR)

0048	0250	0512	2000
0096	0256	0768	2048
0100	0360	0800	2500
0125	0384	1000	4096
0192	0400	1024	
0200	0500	1600	

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

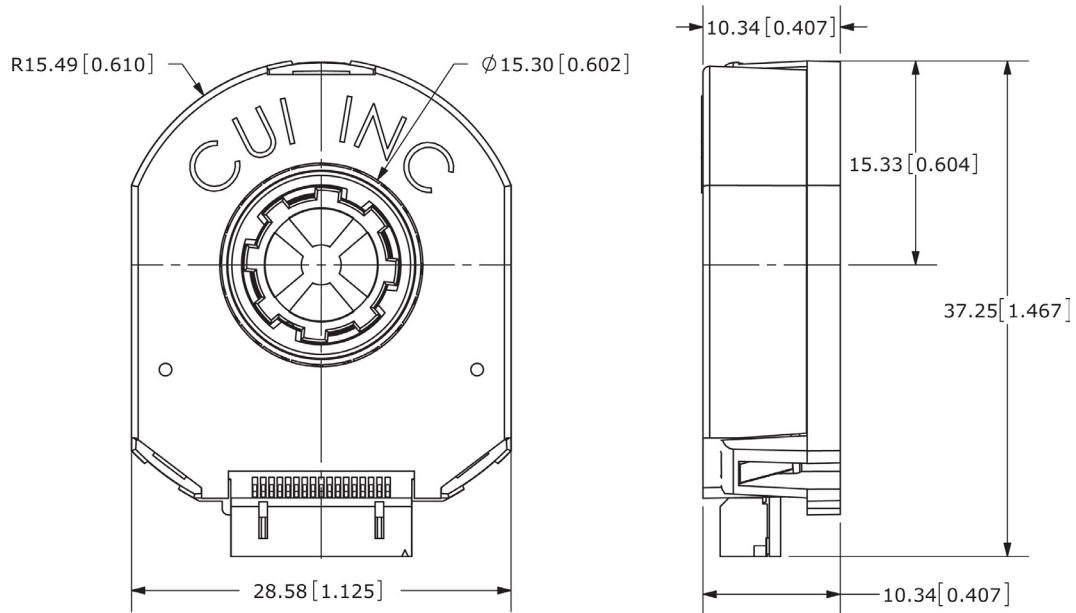
Tool A	Spacer Tool
Tool C	Shaft Tool

Total of 1 Cover, 2 Bases

- Top Cover
- Standard Base
- Wide Base

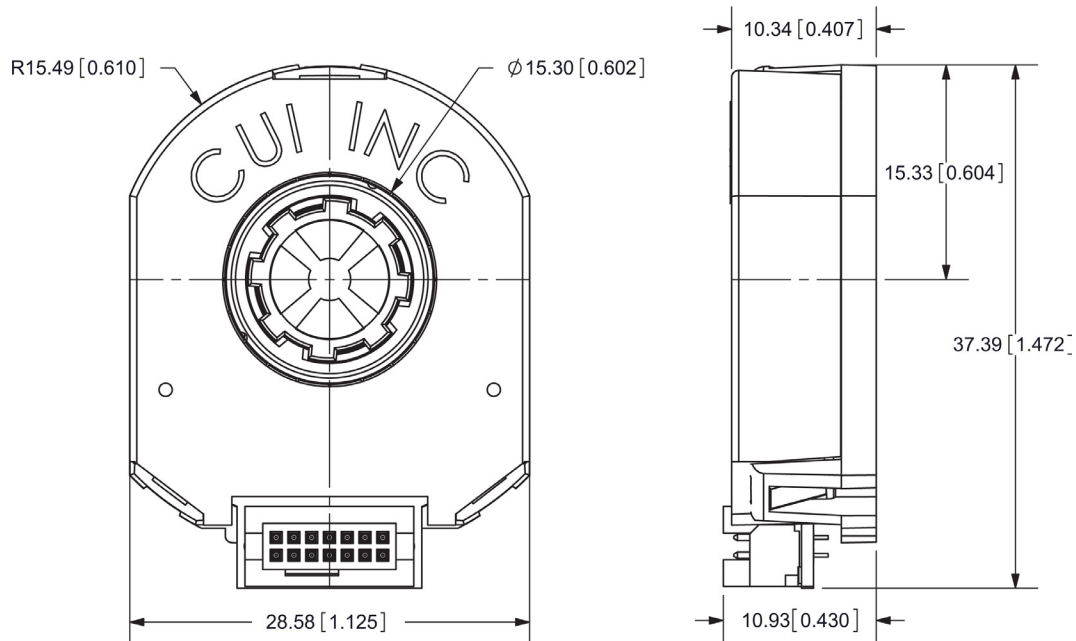
L011744

ENC-AMT112Q (Radial Connection)



DIMENSIONS

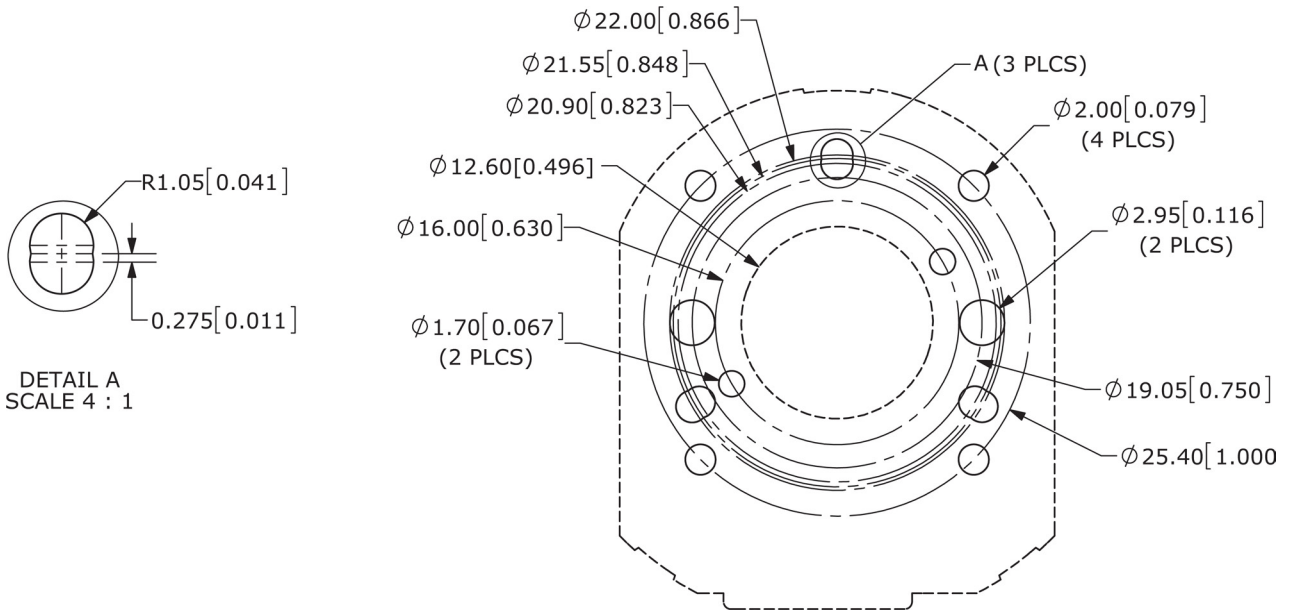
ENC-AMT113Q (Axial Connection)



ENC-AMT11 Standard Base

Units: mm[inch]

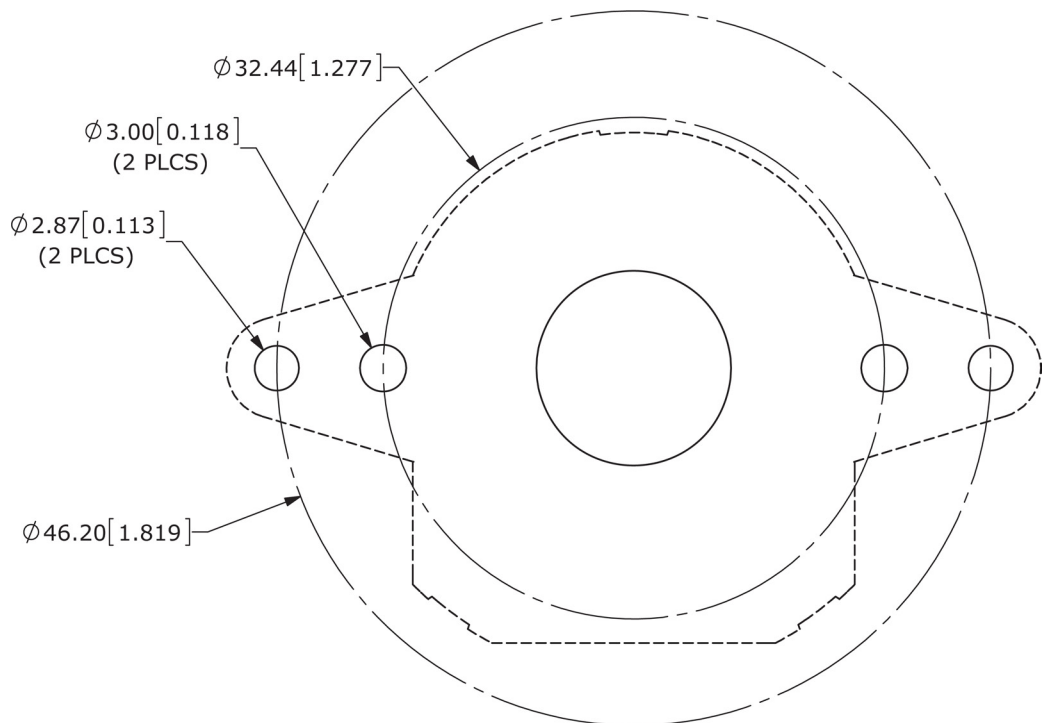
Tolerance: ± 0.1



ENC-AMT11 Wide Base

Units: mm[inch]

Tolerance: ± 0.1

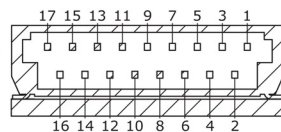
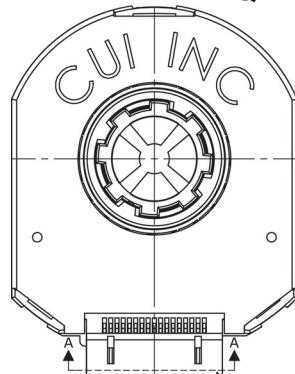


PINOUT CONNECTOR

Pin #	Function	
	ENC-AMT112Q	ENC-AMT113Q
1	TX_ENC+	RX_ENC+
2	RX_ENC+	TX_ENC+
3	N/A	N/A
4	GND ¹	GND ¹
5	N/A	N/A
6	+5 V	+5 V
7	N/A	N/A
8	B+	B+
9	B-	B-
10	A+	A+
11	A-	A-
12	Z+	Z+
13	Z-	Z-
14	MCLRB	MCLRB
15	N/A	N/A
16	N/A	N/A
17	N/A	N/A

Note: 1. Connect encoder GND to motor chassis as possible.

ENC-AMT112Q



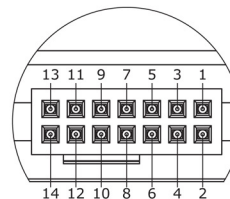
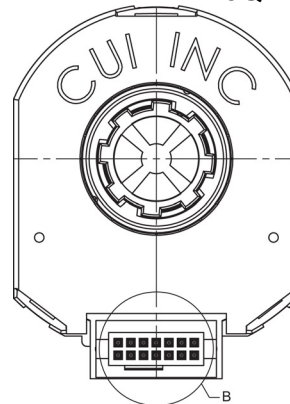
SECTION A-A
SCALE 4 : 1

Mating Connector: JAE FI-W17S

Mating Cable: ENC-CBL-AA7062

Programming Cable: ENC-AMT-PGRM-17C

ENC-AMT113Q



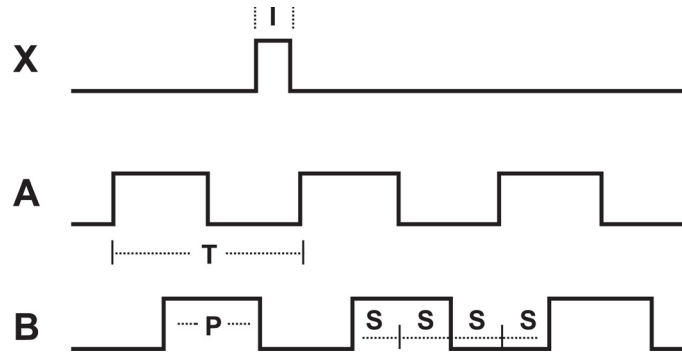
DETAIL B
SCALE 4 : 1

Mating Connector: Samtec ISDF-07-D-L

Mating Cable: ENC-CBL-AA7061

Programming Cable: ENC-CBL-14C-1-036-USB

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

Parameter	Conditions / Description	Min	Typ	Max	Units
Power Supply	VDD	4.5	5	5.5	V
Start Up Time		-	200		ms
Current Consumption	with Unloaded Output	-	16	-	mA
Single Ended Channels	Output High Level	VDD-0.1	-	-	V
	Output Low Level	-	-	0.1	V
	Output Current (Per Channel)	-	-	15	mA
	Rise / Fall Time	-	8	-	ns
Differential RS-422 Channels	Output High Level	3	-	-	V
	Output Low Level	-	-	0.1	V
	Output Current (Per Channel)	-	-	25	mA
	Rise / Fall Time	7	11	20	ns

Parameter	Conditions / Description	Min	Typ	Max	Units
Channels	Quadrature Line Driver A, A, B, B, Z, Z	-	-	-	-
Waveform	CMOS Voltage Square Wave	-	-	-	-
Phase Difference	A leads B for CCW Rotation (viewed from front)	-	-	-	-
Quadrature Resolutions 1*	48, 96, 100, 125, 192, 200, 250, 256, 360, 384, 400, 500, 512, 768, 800, 1000, 1024, 1600, 2000, 2048, 2500, 4096	-	-	-	CPR
Index 2*	One Pulse per 360 Degree Rotation	-	-	-	-
Accuracy		-	0.2	-	Degrees
Quadrature Duty Cycle (at each resolution)		-	50	-	%

Notes: 1*. Resolution programmed with AMT Viewpoint PC software. Default resolution set to 2048 CPR.

2*. Zero position alignment set with AMT One Touch Zero module, AMT Viewpoint PC software, or serial commands.

Parameter	Conditions / Description	Min	Typ	Max	Units
Motor Shaft Length		9	-	-	mm
Weight	Weight Varies by Configuration	-	15.7	-	g
Axial Play		-	-	±0.3	mm
Rotational Speed (at each resolution)	48, 96, 100, 125, 192, 200, 250, 256, 384, 400, 500, 512, 800, 1000, 1024, 2048	-	-	8000	RPM
Rotational Speed (at each resolution)	360, 768, 1600, 2000, 4096	-	-	4000	RPM
Rotational Speed (at each resolution)	2500	-	-	2500	RPM

Parameter	Conditions / Description	Min	Typ	Max	Units
Operating Temperature		-40	-	125	°C
Humidity	Non-condensing	-	-	85	%
Vibration	10~500 Hz, 5 Minute Sweep, 2 Hours on each XYZ	-	-	5	G
Shock	3 Pulses, 6 ms, 3 on each XYZ	-	-	200	G
RoHS	2011 / 65 / EU	-	-	-	-

Parameter	Conditions / Description	Min	Typ	Max	Units
Protocol	Serial UART	-	-	-	-
Controller	Driven by Onboard Microchip PIC18F25K80. See Microchip Documentation for A	-	-	-	-
Data Rate	8 Data Bits, No Parity, 1 Stop Bit, Least Significant Bit First	-	115200	-	baud

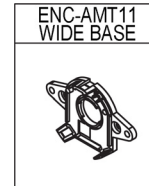
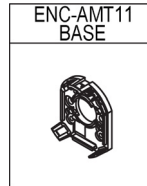
Covers:

ENC-AMT11	Top Cover
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Bases:

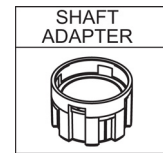
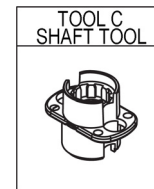
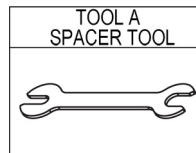
ENC-AMT11	Base
ENC-AMT11	Wide Base



Tools:

(Tool A) Spacer Tool
(Tool C) 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:

Connector Part Number	Description
JAE FI-W17S	Mating Connector
Samtec ISDF-07-D-L	Mating Connector

Cables:

Encoder Part #	Cable	Cable Part Number	Length
ENC-AMT112Q	Mating	ENC-CBL-AA7062	12"
ENC-AMT112Q	Programming	ENC-AMT-PGRM-17C	12"
ENC-AMT113Q	Mating	ENC-CBL-AA7061	12"
ENC-AMT113Q	Programming	ENC-CBL-14C-1-036-USB	36"