

PART SPECIFICATION FOR APPROVAL

CUSTOMER	Moons
MODEL	AMT102-C1
DESCRIPTION	modular incremental encoder
DATE	09/28/2017
# OF PAGES	8

rev.	description	date
1.0	initial release	08/02/2017
1.01	updated to 8 index pulse version	09/28/2017

The revision history provided is for informational purposes only and is believed to be accurate.

Please sign below.

approved by _____
(please print)

signature _____

date _____

Specification sign-off verifies that you have reviewed the entire specification and tested this product and that it meets your requirements. This specification reflects the part as it is to be ordered. Orders will not be processed until the specification approval page has been signed and returned to CUI Inc. This specification is confidential and is not to be distributed without prior approval from CUI Inc.

MODEL: AMT102-C1 | **DESCRIPTION:** MODULAR INCREMENTAL ENCODER

FEATURES

- patented capacitive ASIC technology
- low power consumption
- CMOS outputs
- 16 DIP switch selectable resolutions
- 8 index pulses
- modular package design
- -40~100°C operating temperature


ELECTRICAL

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

INCREMENTAL CHARACTERISTICS

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				PPR
index	8 pulses per 360 degree rotation, equally spaced every 45°				
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

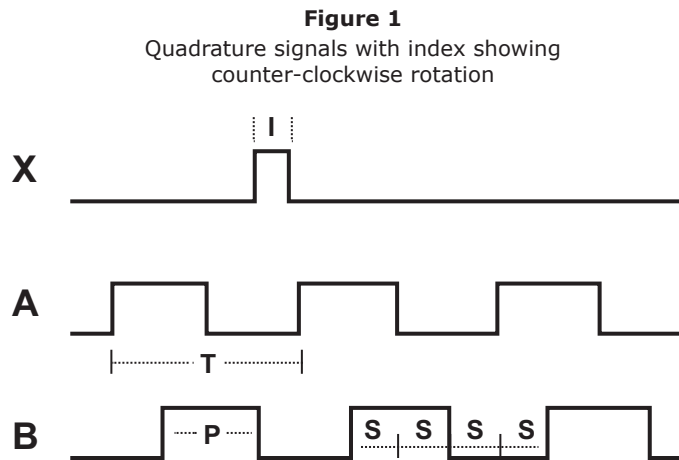
MECHANICAL

parameter	conditions/description	min	typ	max	units
motor shaft length		9			mm
weight			20.5		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

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature		-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				

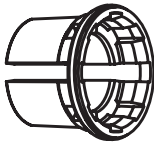
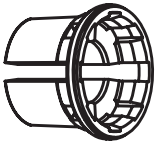
WAVEFORMS

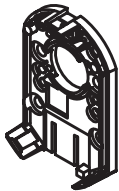

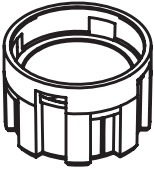


The following parameters are defined by the resolution selected for each encoder, where R = resolution.

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

AMT102-C1 KIT

SLEEVES	
	
1/4 inch (6.35mm)	5mm
Snow	Green

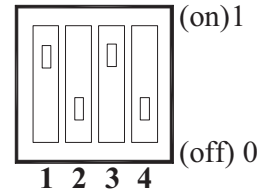
102 BASE	102 TOP COVER	SHAFT ADAPTER
		

RESOLUTION SETTINGS

1 = On, 0 = Off

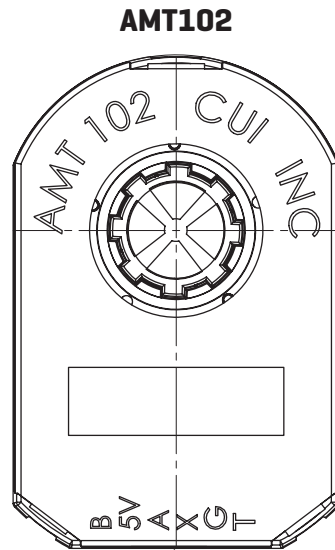
Resolution (PPR)	Maximum RPM	1	2	3	4
2048	7500	0	0	0	0
1024	7500	0	0	1	0
1000	7500	1	0	0	0
800	7500	0	1	0	0
512	15000	0	0	0	1
500	7500	1	0	1	0
400	7500	0	1	1	0
384	7500	1	1	0	0
256	15000	0	0	1	1
250	15000	1	0	0	1
200	15000	0	1	0	1
192	7500	1	1	1	0
125	15000	1	0	1	1
100	15000	0	1	1	1
96	15000	1	1	0	1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

DIP switch:
Example setting: 500 PPR



ENCODER INTERFACE

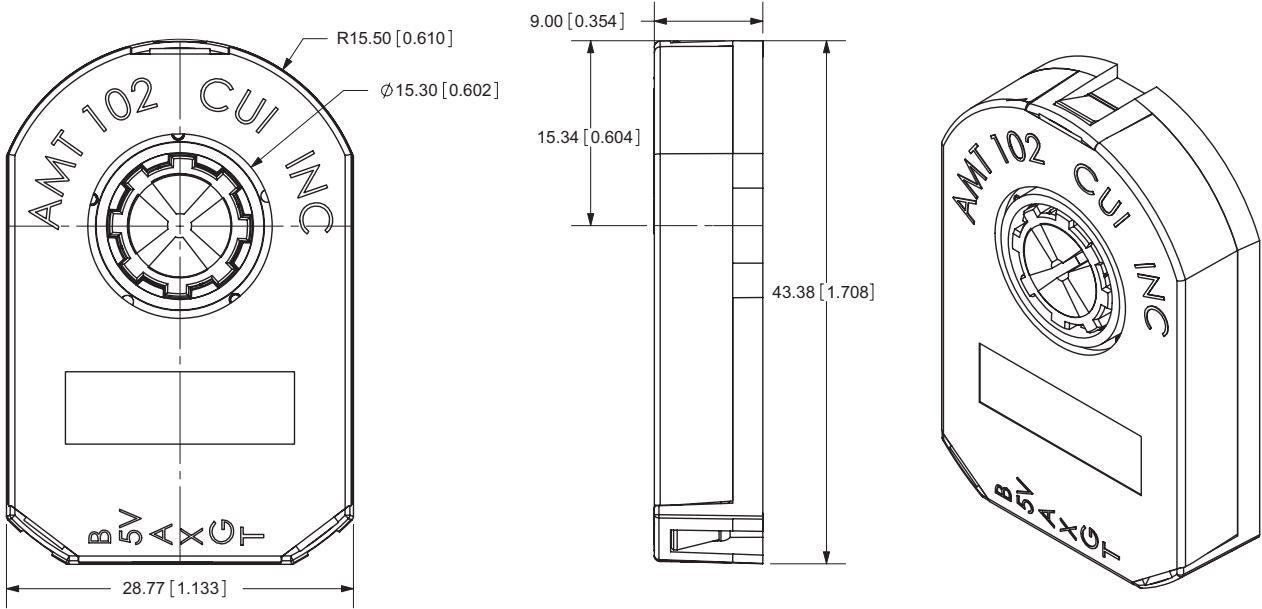
PINOUT CONNECTOR	
Function	
#	AMT102
B	B CHANNEL
5V	+5 V
A	A CHANNEL
X	INDEX CHANNEL
G	GND
T	UNUSED



Mating Connector:
Molex 50-57-9405 Housing
Molex 16-02-0086 Terminals

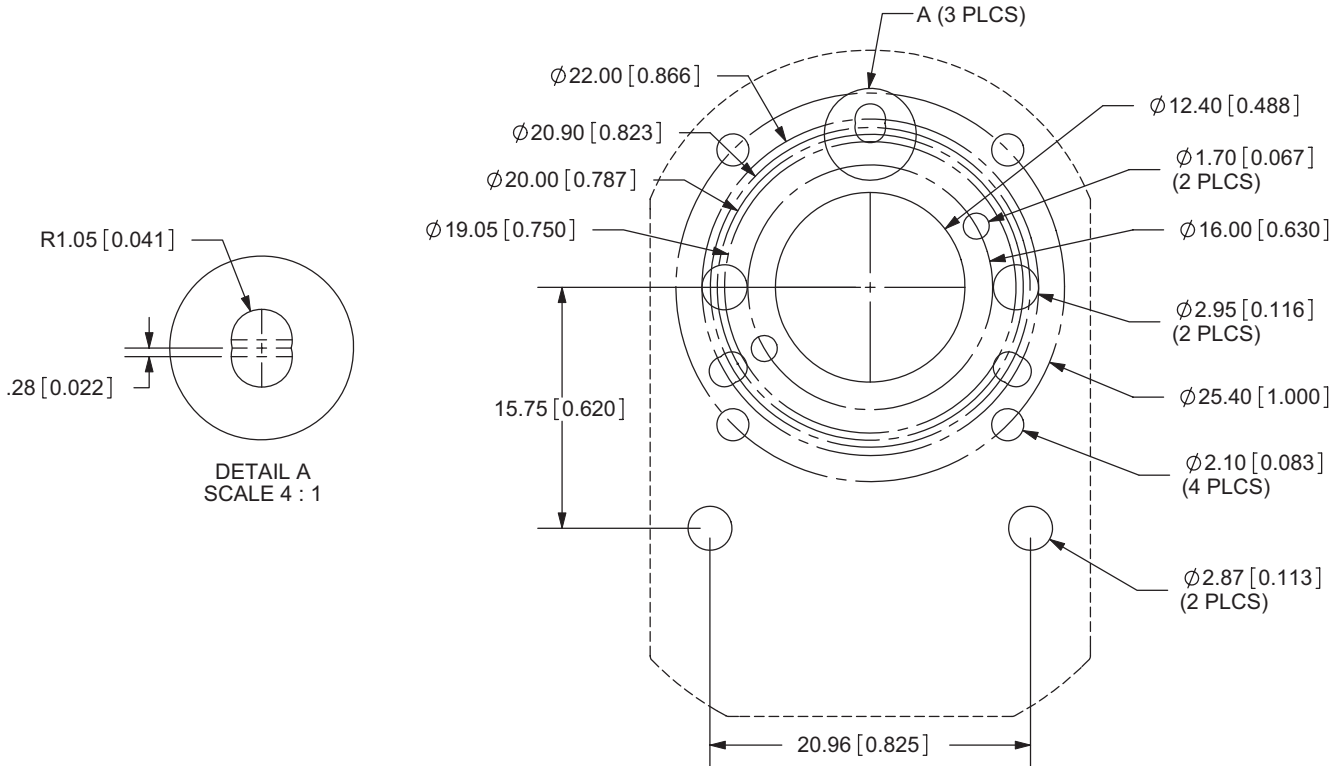
MECHANICAL DRAWING

units: mm[inch]
tolerance: ±0.1mm



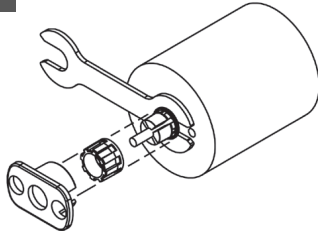
MOUNTING HOLE PATTERNS

units: mm[inch]
tolerance: ±0.1mm



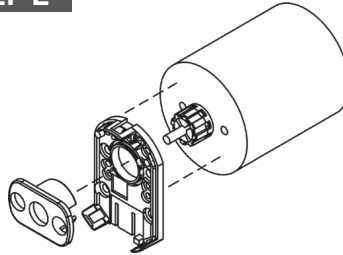
ASSEMBLY PROCEDURE

STEP 1



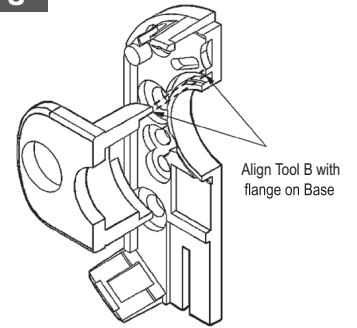
1. Insert Tool A as a spacer that defines the distance to the mounting surface.
2. Slide appropriate sized Sleeve over shaft all the way down to Tool A.
3. Slide Shaft Adaptor over Sleeve.
4. Use Tool B to press Shaft Adaptor over Sleeve until flush with Tool A.

STEP 2



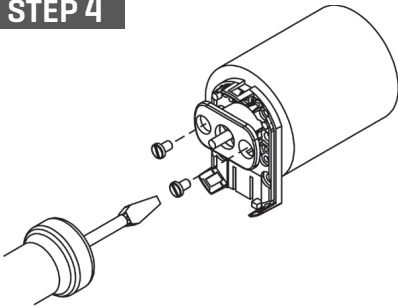
1. Remove Tools A and B.
2. Place Base on motor, with Tool B used as a centering tool.

STEP 3



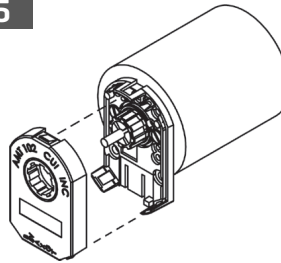
1. Align Tool B with flange on Base.
2. Slide Base and Tool B onto motor, centering onto the Shaft Adapter.

STEP 4



1. Fasten the Base on the motor.
2. Remove Tool B.

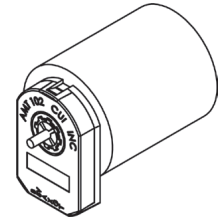
STEP 5



1. Slide the Top Cover onto the Base, carefully observing that the teeth of the Shaft Adaptor align with the grooves in the hub.*

* We recommend no more than three cycles of mounting and removal of the AMT top cover base. Multiple cycles of mounting and removing the top cover can cause base fatigue over time and affect encoder performance.

STEP 6



1. Make sure the snaps are fully engaged and the Top Cover is flush with the Base.
2. When assembly is finished, the Shaft Adaptor should be about flush with the front of the Encoder and the Motor Shaft should rotate freely.

REVISION HISTORY

rev.	description	date
1.0	initial release	08/02/2017
1.01	updated to 8 index pulse version	09/28/2017

The revision history provided is for informational purposes only and is believed to be accurate.



Headquarters
20050 SW 112th Ave.
Tualatin, OR 97062
800.275.4899

Fax 503.612.2383
cui.com
techsupport@cui.com

CUI offers a one (1) year limited warranty. Complete warranty information is listed on our website.

CUI reserves the right to make changes to the product at any time without notice. Information provided by CUI is believed to be accurate and reliable. However, no responsibility is assumed by CUI for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

CUI products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.