

| SPECIFICATION                                 |                                                                     |
|-----------------------------------------------|---------------------------------------------------------------------|
| NUMBER OF PHASES: 4                           | ROTOR INERTIA: 123 g-cm <sup>2</sup> (0.67 oz-in <sup>2</sup> ) NOM |
| STEPS PER REVOLUTION: 200                     | DETENT TORQUE: 25 mNm (3.54 oz-in) MIN                              |
| STEP ANGLE: 1.8°                              | INSULATION CLASS: B                                                 |
| STEP TO STEP ACCURACY: 0.09°                  | BEARINGS: ABEC 3, DOUBLE SHIELDED                                   |
| POSITION ACCURACY: 0.09°                      | TEMP. RISE: 80°C MAX.                                               |
| HYSTERESIS: N/A%                              | OPERATING TEMP. RANGE: -20 TO +50°C                                 |
| SHAFT RUNOUT: 0.03 mm T.I.R. MAX              | STORAGE TEMP. RANGE: -30 TO +70°C                                   |
| RADIAL PLAY: 0.02 mm MAX (0.5 kg RADIAL LOAD) | RELATIVE HUMIDITY RANGE: 15 TO 85%                                  |
| END PLAY: 0.08 mm MAX (0.5 kg AXIAL LOAD)     | WEIGHT: 600 g (21.1 oz ) APPROXIMATE                                |

| CONNECTION      | RESISTANCE<br>PER PHASE<br>(ohm $\pm 10\%$ ) <span style="border: 1px solid black; padding: 2px;">7</span> | INDUCTANCE<br>PER PHASE<br>(mH $\pm 20\%$ ) <span style="border: 1px solid black; padding: 2px;">8</span> | RATED<br>CURRENT<br>(Amp) | HOLDING<br>TORQUE<br>(Nm MIN) <span style="border: 1px solid black; padding: 2px;">1</span> | HOLDING<br>TORQUE<br>(oz-in) <span style="border: 1px solid black; padding: 2px;">1</span> |
|-----------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| BI-POLAR SERIES | 6.4                                                                                                        | 12                                                                                                        | 1.0                       | 0.8                                                                                         | 113.29                                                                                     |
| ““““            | 1.6                                                                                                        | 3.0                                                                                                       | 2.0                       | 0.8                                                                                         | 113.29                                                                                     |
| UNI-POLAR       | 3.2                                                                                                        | 3.0                                                                                                       | 1.4                       | 0.56                                                                                        | 79.3                                                                                       |

NOTES, UNLESS OTHERWISE SPECIFIED:

- 1 MEASUREMENTS MADE AT RATED CURRENT IN EACH PHASE.
- 2 BETWEEN ANY TWO ADJACENT FULL STEP POSITIONS.
- 3 MAXIMUM ERROR IN 360°.
4. HIPOT 500 VAC, 60Hz FOR ONE MINUTE.
- 5 LEADS: 8, 26 AWG, 7 STRAND MIN. UL AND CSA APPROVED. UL 1430 OR UL 3265
6. INSULATION RESISTANCE: 100 MEGOHMS MIN AT 500 VDC.
- 7 AS MEASURED ACROSS EACH PHASE.
- 8 AS MEASURED ACROSS EACH PHASE USING AN A.C. INDUCTANCE BRIDGE AT 1KHz.
- 9 AS MEASURED BY THE CHANGE IN RESISTANCE METHOD, WITH RATED CURRENT APPLIED TO 2 PHASES: WITH MOTOR AT REST.
- 10 ENCODER INSTALLED PER AMP ASSEMBLY PRACTICES. ENCODER CABLE SOLD SEPARATELY.
11. ROTOR AND STATOR LAMINATED CONSTRUCTION.
12. THIS MOTOR IS MANUFACTURED IN COMPLIANCE WITH CURRENT EU RoHS DIRECTIVE.
- 13 MOTOR LABEL TO INCLUDE AMP LOGO, AMP WEBSITE ADDRESS, "RoHS" COMPLIANCE LOGO, AMP P/N, "MADE IN (COUNTRY)", AND DATE CODE.

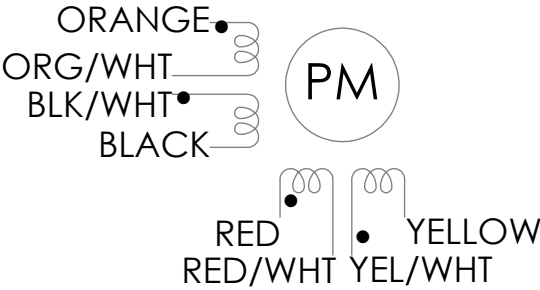
| REVISIONS |      |                 |         |          |
|-----------|------|-----------------|---------|----------|
| ECO #     | REV. | DESCRIPTION     | DATE    | APPROVED |
| 8675      | A    | INITIAL RELEASE | 6/15/21 | LEO. L   |

## DRIVE SEQUENCE MODEL BI-POLAR PARALLEL FULL STEP

| STEP | ORG &<br>BLK/WHT | BLK &<br>ORG/WHT | RED &<br>YEL/WHT | YEL &<br>RED/WHT |
|------|------------------|------------------|------------------|------------------|
| 1    | +                | -                | +                | -                |
| 2    | -                | +                | +                | -                |
| 3    | -                | +                | -                | +                |
| 4    | +                | -                | -                | +                |
| 1    | +                | -                | +                | -                |

CW (CLOCKWISE) AND CCW (COUNTER-CLOCKWISE) ROTATION  
WHEN SEEN FROM THE FLANGE SIDE OF THE MOTOR

## WIRING DIAGRAM



|                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                             |  |           |         |            |                                            |               |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--|-----------|---------|------------|--------------------------------------------|---------------|--------------|
| <br><b>APPLIED MOTION PRODUCTS</b><br><small>A MOONS COMPANY</small><br><br><b>PROPRIETARY AND CONFIDENTIAL</b><br><br>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APPLIED MOTION PRODUCTS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF APPLIED MOTION PRODUCTS IS PROHIBITED. | UNLESS OTHERWISE SPECIFIED:                                                                                                 |  | NAME      |         | DATE       | TITLE:<br><br><b>STEPPER MOTOR OUTLINE</b> |               |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | DIMENSIONS ARE IN MILLIMETERS                                                                                               |  | DRAWN     | ALAN. N | 6/15/20    |                                            |               |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | TOLERANCES:<br>ANGULAR: $\pm 0.5$<br>ONE PLACE DECIMAL $\pm 0.25$<br>TWO PLACE DECIMAL $\pm 0.13$<br>THIRD ANGLE PROJECTION |  | CHECKED   | YANN. L | 6/15/20    |                                            |               |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | MATERIAL                                                                                                                    |  | COMMENTS: |         |            | SIZE                                       | DWG. NO.      | REV          |
|                                                                                                                                                                                                                                                                                                                                                                                                                        | FINISH                                                                                                                      |  |           |         |            | <b>B</b>                                   | HT17-278D-WAA | A            |
| DO NOT SCALE DRAWING                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                             |  |           |         | SCALE: 1:1 |                                            | WEIGHT:       | SHEET 1 OF 2 |

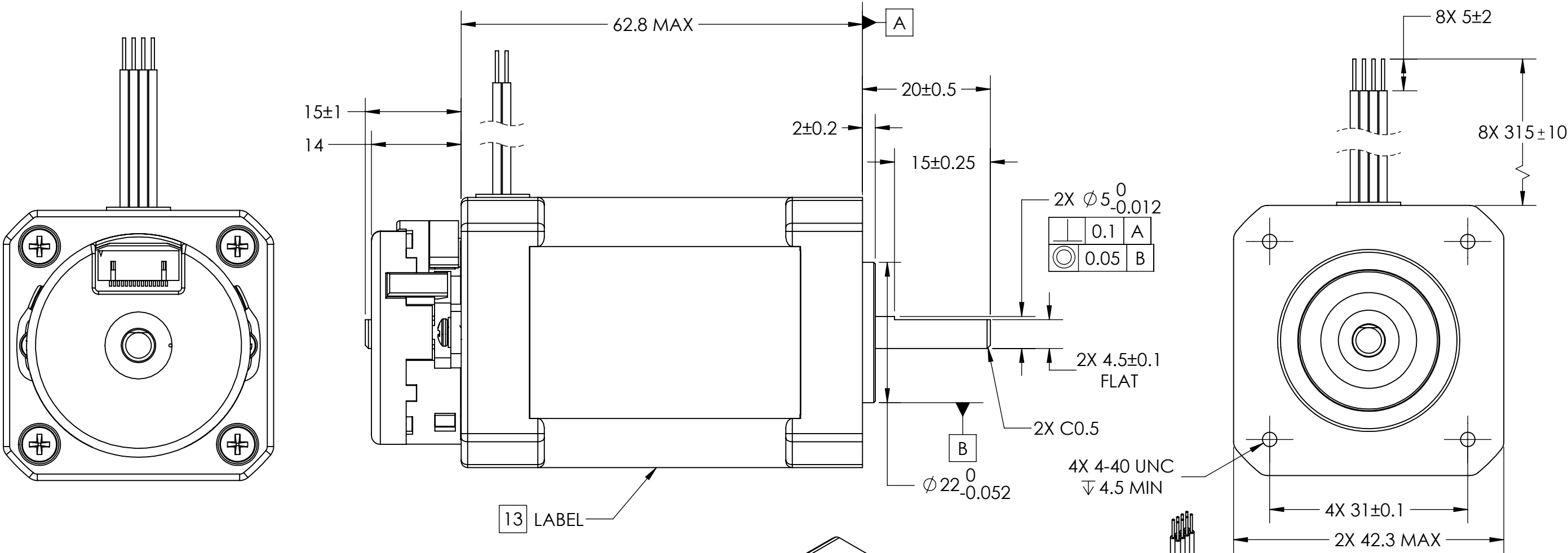
4

3

2

1

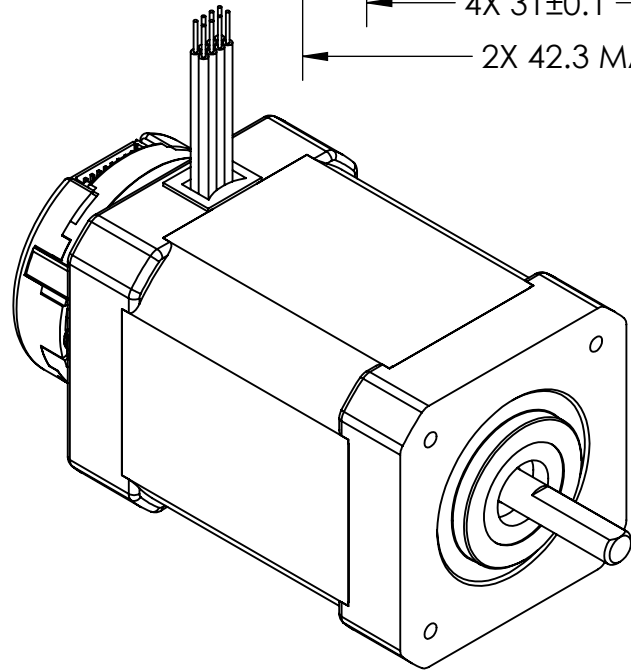
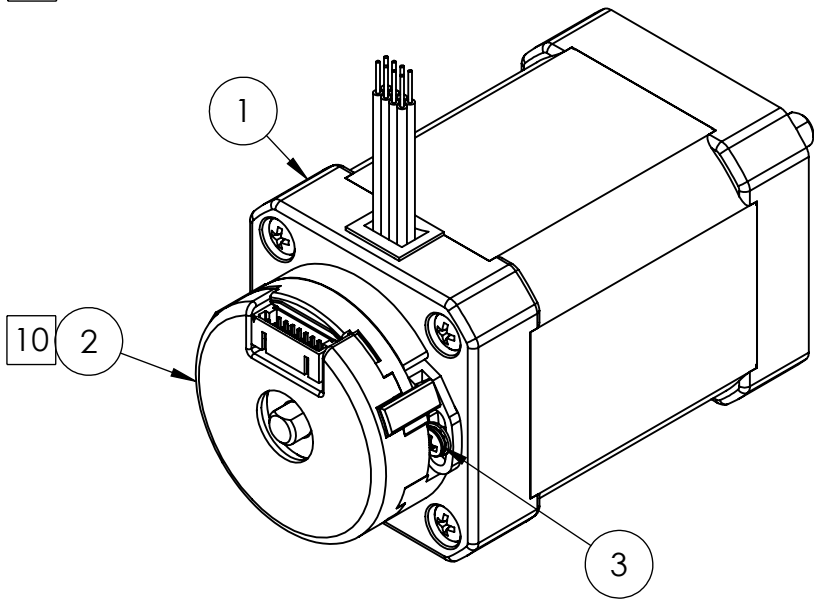
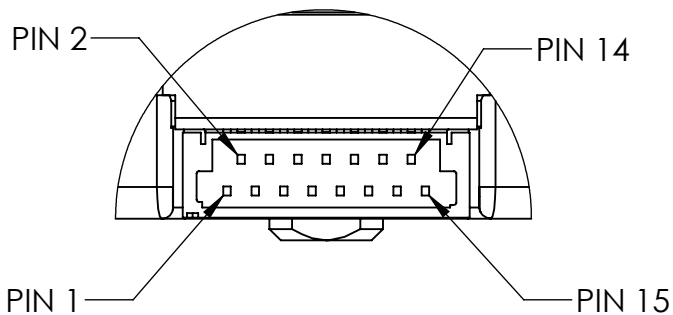
B



B

A

| CONNECTOR |        |
|-----------|--------|
| PIN #     | SIGNAL |
| 1         | CH A   |
| 2         | CH A-  |
| 3         | CH B   |
| 4         | CH B-  |
| 5         | INDEX  |
| 6         | INDEX- |
| 7         | CH U   |
| 8         | CH U-  |
| 9         | CH V   |
| 10        | CH V-  |
| 11        | CH W   |
| 12        | CH W-  |
| 13        | +Vcc   |
| 14        | GND    |
| 15        | N/A    |



A

| ITEM NO. | PART NUMBER                                                      | QTY. |
|----------|------------------------------------------------------------------|------|
| 1        | HT17-278D                                                        | 1    |
| 2        | ENCODER 970-1012                                                 | 1    |
| 3        | SCREW 2-56 X .1875 W-TOOTH LOCK WASHER (90403A077) OR EQUIVALENT | 2    |

|                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                  |  |           |         |            |                                 |                                     |  |              |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|---------|------------|---------------------------------|-------------------------------------|--|--------------|--|
|  <div><b>Applied Motion Products</b><br/>A MOONS' COMPANY</div> <div>PROPRIETARY AND CONFIDENTIAL</div> <div>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APPLIED MOTION PRODUCTS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF APPLIED MOTION PRODUCTS IS PROHIBITED.</div> | UNLESS OTHERWISE SPECIFIED:                                                                                                                      |  | NAME      |         | DATE       |                                 | TITLE:<br><br>STEPPER MOTOR OUTLINE |  |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                    | DIMENSIONS ARE IN MILLIMETERS<br>TOLERANCES:<br>ANGULAR: ± 0.5<br>ONE PLACE DECIMAL ± 0.25<br>TWO PLACE DECIMAL ± 0.13<br>THIRD ANGLE PROJECTION |  | DRAWN     | ALAN. N | 6/15/20    |                                 |                                     |  |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                    | MATERIAL                                                                                                                                         |  | CHECKED   | YANN. L | 6/15/20    | SIZE<br><br>DWG. NO.<br><br>REV |                                     |  |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                    | FINISH                                                                                                                                           |  | COMMENTS: |         |            |                                 |                                     |  |              |  |
| DO NOT SCALE DRAWING                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                  |  |           |         | SCALE: 1:2 |                                 | WEIGHT:                             |  | SHEET 2 OF 2 |  |

4

3

2

1