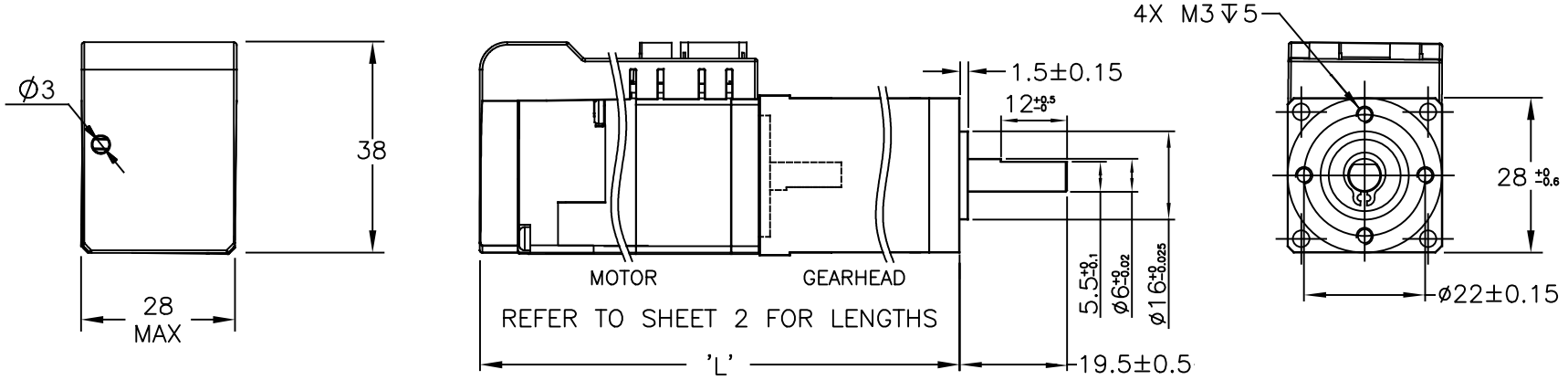
MOTOR SPECIFICATIONS:	GEARMOTOR SPECIFICATIONS:
NUMBER OF PHASES: 2	TEMP. RISE: 80 °C MAX. [6]
STEP ANGLE: 1.8°	OPERATING AMB. TEMP. RANGE: −20 TO +50°C
RATED CURRENT: REF TABS BELOW	STORAGE TEMP. RANGE: −20 TO +70°C
ROTOR INERTIA: REF TABS BELOW − NOM [4]	RELATIVE HUMIDITY: 85% MAX NON−CONDENSING
HOLDING TORQUE: REF TABS BELOW − NOM [5]	
INSULATION CLASS: CLASS B (130°)	

REVISIONS				
ECO NO.	REV	DESCRIPTION	DATE	APPROVED
7935	A	PRELIMINARY RELEASE	7/2/18	J.KORDIK

TABULATED DATA	TSM11Q−1RM−H01	TSM11Q−2RM−H01	TSM11Q−3RM−H01
RATED CURRENT:	0.95 A	1.1 A	1.1 A
ROTOR INERTIA:	0.023 g−cm²/1.27E−04 oz−in²	0.031 g−cm²/1.70E−04 oz−in²	0.046 g−cm²/2.55E−04 oz−in²
HOLDING TORQUE:	0.065 Nm/9.2 oz−in	0.08 Nm/11.3 oz−in	0.125 Nm/17.7 oz−in



Motor Connections Table		
Pin	Name	Description
1	Y2−	Open drain outputs with suppression diode (30 VDC 100 mA in max.)
2	Y2+	
3	Y1−	Open drain outputs with suppression diode (30 VDC 100 mA in max.)
4	Y1+	
5	X4	Digital inputs (input high voltage 5−24 VDC, input low voltage below 1 VDC, signal frequency 1 MHz in max.)
6	X3	
7	X2	Digital inputs (input high voltage 5−24 VDC, input low voltage below 2 VDC, signal frequency 1 MHz in max.)
8	X1	
9	+	V+ power supply (typ. 24 VDC)
10	−	V− power ground (GND)
COM1		RS−422/485 Configuration and Communication port
COM2		RS−422/485 Daisy Chain Communication port

NOTES, UNLESS OTHERWISE SPECIFIED:

1. HIPOT 500 VAC, 60 Hz FOR ONE MINUTE.
2. INSULATION RESISTANCE: 100 MEGOHMS MIN AT 500 VDC.
3. [3] AS MEASURED BY THE CHANGE IN RESISTANCE METHOD, WITH RATED CURRENT APPLIED TO 2 PHASES; WITH MOTOR AT REST.
4. THIS MOTOR IS MANUFACTURED IN COMPLIANCE WITH THE CURRENT EU RoHS DIRECTIVE.
5. ALL MOTOR SPECIFICATIONS AND OPERATING INSTRUCTIONS CAN BE FOUND AT APPLIED−MOTION.COM.

TOLERANCES	CONTRACT NO.	APPLIED MOTION PRODUCTS, INC.
DECIMALS: MM X.XXX= ±0.01 X.XX = ±0.10 X.X = ±0.20 ANGLES: MACH. = ±.5° CHAM. = ±5°	−	INTEGRATED STEP MOTOR WITH GEARHEAD − OUTLINE DRAWING
COMPUTER DATA BASE DRAWING	APPROVALS / DATE: DRAWN R.JONEZ 4/18/18; CHECKED; APPROVED; APPROVED	B · COMPUTER DATA BASE DRAWING · DWG NO. TSM11Q−XHM−GXXX · REV A
		SCALE: NONE · SHT 1 OF 2

GEARMOTOR TECHNICAL DETAILS:					
ASSEMBLY P/N	TSM11Q-1HM-G004	TSM11Q-1HM-G005	TSM11Q-1HM-G012	TSM11Q-1HM-G014	TSM11Q-1 HM-G022
TOTAL WEIGHT-MOTOR & GEARHEAD	169 g (0.37 lbs)	169 g (0.37 lbs)	184 g (0.40 lbs)	184 g (0.40 lbs)	184 g (0.40 lbs)
ASSEMBLY LENGTH - TOTAL 'L'	90.4 mm (3.56 in)	92.6 mm (3.65 in)	92.9 mm (3.66 in)	92.9 mm (3.66 in)	100.4 mm (3.95 in)

GEARHEAD TECHNICAL DETAILS:					
GEARHEAD P/N	28PH004.00-L1	28PH005.50-L1	28PH012.76-L1	28PH014.29-L1	28PH022.00-L1
RATIO	4:1	5.5:1	12.76:1	14.29:1	22.01:1
MAX TORQUE CONTINUOUS	0.5 Nm (70.80 oz-in)	0.5 Nm (70.80 oz-in)	2.0 Nm (283.22 oz-in)	2.0 Nm (283.22 oz-in)	2.0 Nm (283.22 oz-in)
MAX TORQUE	0.8 Nm (113.3 oz-in)	0.8 Nm (113.3 oz-in)	4.0 Nm (566.45 oz-in)	4.0 Nm (566.45 oz-in)	4.0 Nm (566.45 oz-in)
MAX RADIAL LOAD	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)
MAX AXIAL LOAD	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)
INERTIA	1.0 g-cm² (0.005oz-in²)	1.0 g-cm² (0.005oz-in²)	0.6 g-cm² (0.003oz-in²)	0.6 g-cm² (0.003oz-in²)	0.6 g-cm² (0.003oz-in²)
BACKLASH	≤ 1.2 °	≤ 1.2 °	≤ 1.8 °	≤ 1.8 °	≤ 1.8 °
EFFICIENCY	90 %	90 %	81 %	81 %	81 %

GEARMOTOR TECHNICAL DETAILS:					
ASSEMBLY P/N	TSM11Q-2HM-G004	TSM11Q-2HM-G005	TSM11Q-2HM-G012	TSM11Q-2HM-G014	TSM11Q-2HM-G022
TOTAL WEIGHT-MOTOR & GEARHEAD	217.3 g (0.48 lbs)	217.3 g (0.48 lbs)	232.3 g (0.51 lbs)	232.3 g (0.51 lbs)	232.3 g (0.51 lbs)
ASSEMBLY LENGTH - TOTAL 'L'	99.6 mm (3.92 in)	101.8 mm (4.0 in)	102.1mm (4.02 in)	102.1mm (4.02 in)	109.6 mm (4.32 in)

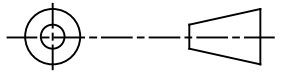
GEARHEAD TECHNICAL DETAILS:					
GEARHEAD P/N	28PH004.00-L1	28PH005.50-L1	28PH012.76-L1	28PH014.29-L1	28PH022.00-L1
RATIO	4:1	5.5:1	12.76:1	14.29:1	22.01:1
MAX TORQUE CONTINUOUS	0.5 Nm (70.80 oz-in)	0.5 Nm (70.80 oz-in)	2.0 Nm (283.22 oz-in)	2.0 Nm (283.22 oz-in)	2.0 Nm (283.22 oz-in)
MAX TORQUE	0.8 Nm (113.3 oz-in)	0.8 Nm (113.3 oz-in)	4.0 Nm (566.45 oz-in)	4.0 Nm (566.45 oz-in)	4.0 Nm (566.45 oz-in)
MAX RADIAL LOAD	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)
MAX AXIAL LOAD	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)
INERTIA	1.0 g-cm² (0.005oz-in²)	1.0 g-cm² (0.005oz-in²)	0.6 g-cm² (0.003oz-in²)	0.6 g-cm² (0.003oz-in²)	0.6 g-cm² (0.003oz-in²)
BACKLASH	≤ 1.2 °	≤ 1.2 °	≤ 1.8 °	≤ 1.8 °	≤ 1.8 °
EFFICIENCY	90 %	90 %	81 %	81 %	81 %

GEARMOTOR TECHNICAL DETAILS:					
ASSEMBLY P/N	TSM11Q-3HM-G004	TSM11Q-3HM-G005	TSM11Q-3HM-G012	TSM11Q-3HM-G014	TSM11Q-3HM-G022
TOTAL WEIGHT-MOTOR & GEARHEAD	268.3 g (0.59 lbs)	268.3 g (0.59 lbs)	283.3 g (0.62 lbs)	283.3 g (0.62 lbs)	283.3 g (0.62 lbs)
ASSEMBLY LENGTH - TOTAL 'L'	110.6 mm (4.35 in)	112.8 mm (4.44 in)	113.1mm (4.45 in)	113.1mm (4.45 in)	120.6 mm (4.75 in)

GEARHEAD TECHNICAL DETAILS:					
GEARHEAD P/N	28PH004.00-L1	28PH005.50-L1	28PH012.76-L1	28PH014.29-L1	28PH022.00-L1
RATIO	4:1	5.5:1	12.76:1	14.29:1	22.01:1
MAX TORQUE CONTINUOUS	0.5 Nm (70.80 oz-in)	0.5 Nm (70.80 oz-in)	2.0 Nm (283.22 oz-in)	2.0 Nm (283.22 oz-in)	2.0 Nm (283.22 oz-in)
MAX TORQUE	0.8 Nm (113.3 oz-in)	0.8 Nm (113.3 oz-in)	4.0 Nm (566.45 oz-in)	4.0 Nm (566.45 oz-in)	4.0 Nm (566.45 oz-in)
MAX RADIAL LOAD	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)
MAX AXIAL LOAD	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)	≤ 20 N (4.5 lbs)
INERTIA	1.0 g-cm² (0.005oz-in²)	1.0 g-cm² (0.005oz-in²)	0.6 g-cm² (0.003oz-in²)	0.6 g-cm² (0.003oz-in²)	0.6 g-cm² (0.003oz-in²)
BACKLASH	≤ 1.2 °	≤ 1.2 °	≤ 1.8 °	≤ 1.8 °	≤ 1.8 °
EFFICIENCY	90 %	90 %	81 %	81 %	81 %

MATERIAL SPECIFICATIONS	
GEARTRAIN	Y15 (1213) STEEL
HOUSING	304 STAINLESS STEEL
INPUT/OUTPUT FLANGE	LY12 ALUMINUM
OUTPUT SHAFT	40Cr STEEL
PINION	Y15 (1213) STEEL

THIRD ANGLE PROJECTION



APPROVALS	DATE
DRAWN R.JONEZ	4/18/18
CHECKED	
APPROVED	

APPLIED MOTION PRODUCTS, INC.

INTEGRATED STEP MOTOR WITH GEARHEAD - OUTLINE DRAWING

B | DWG NO. TSM11Q-XHM-GXXX | REV A

SCALE: NONE | SHT 2 OF 2