



**Nm** 01324  
Torque Sensors – Rotary Shaft Slip Ring

These sensors are designed to measure rotating drive torque using a conventional shaft-to-shaft configuration for in-line placement. The design incorporates a coin silver slip ring assembly that transmits excitation voltage to, and output signals from, the rotating sensor. These sensors can be supplied with Auto-ID, which eliminates scaling when used with the PTI or PMAC 2000 instruments. An optical encoder to measure angle or speed is also available with this model



**OPTIONS:**

4 pin Bendix connector (non Auto-ID)

- 10 pin Bendix connector (Auto-ID)
- Integrated signal amplifier (+/-5V or +/-10V, 4-20mA)
- Integral optical encoder – 1024 ppr and 1500 ppr (requires 10 pin connector)
- Footmount

**SPECIFICATIONS**

Capacity	50 in. oz. to 20,000 in.lb. (.35 to 2300Nm)
Overload capacity	150% of F.S.
Output at F.S.	2.0 mV/V nominal
Non-linearity	0.10% of F.S.
Hysteresis	0.10% of F.S.
Zero balance	1.00% of F.S.
Compensated temperature	70 to 170°F
Useable temperature	-40 to +185°F
Temperature effect on zero	0.002% of F.S./°F
Temperature effect on span	0.002% of Rdg./°F
Bridge resistance	1000 Ohms
Excitation voltage, maximum	20 Vdc
Maximum shaft speed	5000 RPM*



**DIMENSIONS**

MODEL NO.	CAPACITY		EXTRANEIOUS LOAD COEFFICIENTS				TORSIONAL SPRING RATE (IN#/RAD)	REV	DESCRIPTION	BY	DATE	CHK	ENG	REL DATE
			A&B	C	D&E	F								
01324-030	3.125 IN. LBS.	50 IN. OZ.	1,030	56.7	223	4,300	182	A	ANTI-ROTATION HOLE ADDED	GMC	12-12-01	-	-	7-3-02
01324-060	6.25 IN. LBS.	100 IN. OZ.	678	26.1	102	2,060	556							
01324-120	12.5 IN. LBS.	200 IN. OZ.	435	18	70.5	997	1,660							
01324-310	31.25 IN. LBS.	500 IN. OZ.	214	10.9	42.7	380	7,120							
01324-620	62.5 IN. LBS.	1000 IN. OZ.	104	7.3	28.5	175	22,900							

  

PT02E-8-4P CONNECTOR  
MATING CONNECTOR SUPPLIED

OPTIONAL FOOT MOUNT  
WITH CLEARANCE SLOTS  
FOR (2) 1/4 SCREWS

① #10-24 TAP-.30  
DEEP FOR ANTI-  
ROTATION

4.00  
2.52  
1.26  
1.04  
.49 REF  
1.91  
1.26  
2.85  
1.0  
.25  
4.88  
.75 TYP  
.34

C.W. UPSCALE

PIN CODE	
PIN	FUNCTION
A	+ EXC.
B	- EXC.
C	+ SIG.
D	- SIG.

NON-WESTERN  
REGIONAL

EXTRANEIOUS LOAD EQUATION

$\sigma_{MAX} = 18,000 \text{ PSI}$   
 $\sigma_{MAX} \geq AFx + BFy + CFz + DMx + EMy + FMz$

SPECIFICATIONS MODEL: 01324-XXX-F00XX  
CAPACITY \_\_\_\_\_ CHARTED  
OUTPUT @ F.S. (mV/V NOM.) \_\_\_\_\_ 2.0  
NON-LINEARITY (%F.S.O.) \_\_\_\_\_ .10  
HYSTERESIS (%F.S.O.) \_\_\_\_\_ .10  
BRIDGE RESISTANCE (OHM NOM.) \_\_\_\_\_ 1000  
OVERLOAD (TORQUE) \_\_\_\_\_ 150% F.S.  
MAX RPM \_\_\_\_\_ 5,000  
MAX TEMP RANGE \_\_\_\_\_ -40' TO +185'F

ASSEMBLY DWG REF: 1901500-\*  
\*-INDICATES CURRENT REV

INSTALLATION		CHECKED BY	D.S.
MODEL: 01324-XXX-F00XX		PROJ. ENG.	D.S.
FINISH	SCALE 1/2	DRAWN BY	GMC
MATRL.		DATE	7-5-01
UNLESS OTHERWISE SPECIFIED DIM'S ARE IN INCHES X.X ±.03 X.XX ±.01 X.XXX ±.005 ANG. ±.5°		D.E. REVIEW	BY DATE
		DRAWING NUMBER	19016B0-A

MODEL NO.	CAPACITY		EXTRANEIOUS LOAD COEFFICIENTS				TORSIONAL SPRING RATE (IN#/RAD)	REV	DESCRIPTION	BY	DATE	CHK	ENG	REL DATE
			A&B	C	D&E	F								
01324-030	3.125 IN. LBS.	50 IN. OZ.	1,030	56.7	223	4,300	182	A	ANTI-ROTATION HOLE ADDED	GMC	12-12-01	-	-	1-18-02
01324-060	6.25 IN. LBS.	100 IN. OZ.	678	26.1	102	2,060	556							
01324-120	12.5 IN. LBS.	200 IN. OZ.	435	18	70.5	997	1,660							
01324-310	31.25 IN. LBS.	500 IN. OZ.	214	10.9	42.7	380	7,120							
01324-620	62.5 IN. LBS.	1000 IN. OZ.	104	7.3	28.5	175	22,900							

  

PT02E-12-10P CONNECTOR  
MATING CONNECTOR SUPPLIED

OPTIONAL FOOT MOUNT  
WITH CLEARANCE SLOTS  
FOR (2) 1/4 SCREWS

① #10-24 TAP-.30  
DEEP FOR ANTI-  
ROTATION

4.00  
2.52  
1.26  
1.04  
.49 REF  
1.91  
1.26  
2.85  
1.0  
.25  
4.88  
.75 TYP  
.34

C.W. UPSCALE

PIN CODE	
PIN	FUNCTION
A	+ EXC.
B	- EXC.
C	+ SIG.
D	- SIG.
E	GND
F	+5V
G	CW LEAD
H	CW TRAIL
J	GND
K	SIG

ENCODER  
AUTO ID

EXTRANEIOUS LOAD EQUATION

$\sigma_{MAX} = 18,000 \text{ PSI}$   
 $\sigma_{MAX} \geq AFx + BFy + CFz + DMx + EMy + FMz$

SPECIFICATIONS MODEL: 01324-XXX-GA0XX  
CAPACITY \_\_\_\_\_ CHARTED  
OUTPUT @ F.S. (mV/V NOM.) \_\_\_\_\_ 2.0  
NON-LINEARITY (%F.S.O.) \_\_\_\_\_ .10  
HYSTERESIS (%F.S.O.) \_\_\_\_\_ .10  
BRIDGE RESISTANCE (OHM NOM.) \_\_\_\_\_ 1000  
OVERLOAD (TORQUE) \_\_\_\_\_ 150% F.S.  
MAX RPM \_\_\_\_\_ 5,000  
MAX TEMP RANGE \_\_\_\_\_ -40' TO +185'F

POSITION ENCODER;  
TYPE \_\_\_\_\_ OPTICAL ENCODER  
RESOLUTION \_\_\_\_\_ 1024 PULSES/REV W/QUADRATURE  
ASSEMBLY DWG REF: 18982D0-\*  
\*-INDICATES CURRENT REV

INSTALLATION		CHECKED BY	D.S.
MODEL: 01324-XXX-GA0XX		PROJ. ENG.	D.S.
FINISH	SCALE 1/2	DRAWN BY	GMC
MATRL.		DATE	6-13-01
UNLESS OTHERWISE SPECIFIED DIM'S ARE IN INCHES X.X ±.03 X.XX ±.01 X.XXX ±.005 ANG. ±.5°		D.E. REVIEW	BY DATE
		DRAWING NUMP	18983L

Version | 09.2019



**DIMENSIONS**

MODEL NO.	CAPACITY	EXTRANEIOUS LOAD COEFFICIENTS				TORSIONAL SPRING RATE (IN#/RAD×10 <sup>3</sup> )	ØY	Z NOM.
		A&B	C	D&E	F			
01324-012	100 IN. LBS.	724	79.5	517	431	6.9	.749	3/16
01324-022	200 IN. LBS.	363	31.6	259	216	17.3		
01324-052	500 IN. LBS.	145	9.3	103	86.1	59		
01324-013	1000 IN. LBS.	72.3	3.8	51.7	43.1	149	.999	1/4
01324-152	1500 IN. LBS.	55.1	2.8	37.4	33.6	281		
01324-023	2000 IN. LBS.	35.9	2.4	25.7	21.4	378		

  
  

REV	DESCRIPTION	BY	DATE	CHK	ENG	REL DATE
A	ANTI-ROTATION HOLE ADDED	GMC	12-12-01	-	-	1-18-02

  

NON-WESTERN REGIONAL

PIN CODE	
PIN	FUNCTION
A	+ EXC.
B	- EXC.
C	+ SIG.
D	- SIG.

  
  

**SPECIFICATIONS** MODEL: 01324-XXX-FOXXX  
 CAPACITY \_\_\_\_\_ CHARTED  
 OUTPUT @ F.S. (mV/V NOM.) \_\_\_\_\_ 2.0  
 NON-LINEARITY (%F.S.O.) \_\_\_\_\_ .10  
 HYSTERESIS (%F.S.O.) \_\_\_\_\_ .10  
 BRIDGE RESISTANCE (OHM NOM.) \_\_\_\_\_ 1000  
 OVERLOAD (TORQUE) \_\_\_\_\_ 150% F.S.  
 MAX RPM \_\_\_\_\_ 5,000  
 MAX TEMP RANGE \_\_\_\_\_ -40° TO +185°F  
 ASSEMBLY DWG REF: 19009D0-\*  
 \*-INDICATES CURRENT REV

INSTALLATION		CHECKED BY	D.S.
MODEL: 01324-XXX-FOXXX		PROJ. ENG.	D.S.
FINISH	SCALE 1/2	DRAWN BY	GMC
MATRL.		DATE	6-29-01
UNLESS OTHERWISE SPECIFIED DIM'S ARE IN INCHES X.X ±.03 X.XX ±.01 X.XXX ±.005 ANG. ±.5°		D.E. REVIEW	BY DATE
		DRAWING NUMBER	19010B0-A

MODEL NO.	CAPACITY	EXTRANEIOUS LOAD COEFFICIENTS				TORSIONAL SPRING RATE (IN#/RAD×10 <sup>3</sup> )	ØY	Z NOM.
		A&B	C	D&E	F			
01324-012	100 IN. LBS.	724	79.5	517	431	6.9	.749	3/16
01324-022	200 IN. LBS.	363	31.6	259	216	17.3		
01324-052	500 IN. LBS.	145	9.3	103	86.1	59		
01324-013	1000 IN. LBS.	72.3	3.8	51.7	43.1	149	.999	1/4
01324-152	1500 IN. LBS.	55.1	2.8	37.4	33.6	281		
01324-023	2000 IN. LBS.	35.9	2.4	25.7	21.4	378		

  
  

PIN CODE	
PIN	FUNCTION
A	+ EXC.
B	- EXC.
C	+ SIG.
D	- SIG.
E	GND
F	+5V
G	CW LEAD
H	CW TRAIL
J	GND
K	SIG

  
  

**SPECIFICATIONS** MODEL: 01324-XXX-GA0XX  
 CAPACITY \_\_\_\_\_ CHARTED  
 OUTPUT @ F.S. (mV/V NOM.) \_\_\_\_\_ 2.0  
 NON-LINEARITY (%F.S.O.) \_\_\_\_\_ .10  
 HYSTERESIS (%F.S.O.) \_\_\_\_\_ .10  
 BRIDGE RESISTANCE (OHM NOM.) \_\_\_\_\_ 1000  
 OVERLOAD (TORQUE) \_\_\_\_\_ 150% F.S.  
 MAX RPM \_\_\_\_\_ 5,000  
 MAX TEMP RANGE \_\_\_\_\_ -40° TO +185°F  
**POSITION ENCODER:**  
 TYPE \_\_\_\_\_ OPTICAL ENCODER  
 RESOLUTION \_\_\_\_\_ 1024 PULSES/REV W/QUADRATURE  
 ASSEMBLY DWG REF: 18899D0-\*  
 \*-INDICATES CURRENT REV

INSTALLATION		CHECKED BY	D.S.
MODEL: 01324-XXX-GA0XX		PROJ. ENG.	D.S.
FINISH	SCALE 1/2	DRAWN BY	GMC
MATRL.		DATE	2-1-01
UNLESS OTHERWISE SPECIFIED DIM'S ARE IN INCHES X.X ±.03 X.XX ±.01 X.XXX ±.005 ANG. ±.5°		D.E. REVIEW	BY DATE
		DRAWING NUMBER	18900E



**DIMENSIONS**

MODEL NO.	CAPACITY	EXTRANEOUS LOAD COEFFICIENTS				TYPICAL SLIP RING ( $\mu\text{M}/\text{RAD}\times 10^3$ )	$\sigma Z$
		A&B	C	D&E	F		
01324-053	5,000 IN. LBS.	18.5	1.2	9.2	4.6	1.4	1.499
01324-014	10,000 IN. LBS.	9.2	.6	4.6	2.3	3.5	
01324-153	15,000 IN. LBS.	6.2	.6	3.1	1.5	6.0	
01324-024	20,000 IN. LBS.	4.6	.5	2.3	1.2	8.8	1.749

  

PT02E-8-4P CONNECTOR  
MATING CONNECTOR SUPPLIED

OPTIONAL FOOT MOUNT  
WITH CLEARANCE SLOTS  
FOR (2) 3/8 SCREWS

NON-WESTERN REGIONAL

PIN	FUNCTION
A	+ EXC.
B	- EXC.
C	+ SIG.
D	- SIG.

EXTRANEOUS LOAD EQUATION

$\sigma \text{ MAX} = 84,000 \text{ PSI}$   
 $\sigma \text{ MAX} \geq AFx + BFy + CFz + DMx + EMy + FMz$

3/8 KEYWAY TYP  
BOTH ENDS

#10-24 TAP-.30  
DEEP FOR ANTI-ROTATION

2.38  
 $\sigma Z \pm .003$

1.10  
.49 REF

2.38  
 $\sigma Z \pm .003$

2.36

1.78  
2.15

2.5  
2.78  
2.97

6.75

3.5  
1.7

C.W. UPSCALE

SPECIFICATIONS MODEL: 01324-XXX-F0BXX  
CAPACITY \_\_\_\_\_ CHARTED  
OUTPUT @ F.S. (mV/V NOM.) \_\_\_\_\_ 2.0  
NON-LINEARITY (%F.S.O.) \_\_\_\_\_ .10  
HYSTERESIS (%F.S.O.) \_\_\_\_\_ .10  
BRIDGE RESISTANCE (OHM NOM.) \_\_\_\_\_ 1,000  
OVERLOAD (TORQUE) \_\_\_\_\_ 150% F.S.  
MAX RPM \_\_\_\_\_ 5,000

ASSEMBLY DWG REF: 19593D0-\*

\*--INDICATES CURRENT REV

INSTALLATION		CHECKED BY	
MODEL: 01324-XXX-F0BXX	PROJ. ENG. _____	DATE	DATE
FINISH _____	SCALE FULL	DRAWN BY GMC	
MATL. _____		DATE 11-4-04	
UNLESS OTHERWISE SPECIFIED DIM'S ARE IN INCHES		D.E. REVIEW	
X.X ±.03 X.XX ±.01 X.XXX ±.005 ANG. ±.5		BY DATE	
		DRAWING NUMBER	
		19594C0-0	

MODEL NO.	CAPACITY	EXTRANEOUS LOAD COEFFICIENTS				TYPICAL SLIP RING ( $\mu\text{M}/\text{RAD}\times 10^3$ )	$\sigma Z$
		A&B	C	D&E	F		
01324-053	5,000 IN. LBS.	18.5	1.2	9.2	4.6	1.4	1.499
01324-014	10,000 IN. LBS.	9.2	.6	4.6	2.3	3.5	
01324-153	15,000 IN. LBS.	6.2	.6	3.1	1.5	6.0	
01324-024	20,000 IN. LBS.	4.6	.5	2.3	1.2	8.8	1.749

  

PT02E-12-10P CONNECTOR  
MATING CONNECTOR SUPPLIED

OPTIONAL FOOT MOUNT  
WITH CLEARANCE SLOTS  
FOR (2) 3/8 SCREWS

PIN	FUNCTION
A	+ EXC.
B	- EXC.
C	+ SIG.
D	- SIG.
E	GND
F	+5V
G	CW LEAD
H	CW TRAIL
J	GND
K	SIG

EXTRANEOUS LOAD EQUATION

$\sigma \text{ MAX} = 84,000 \text{ PSI}$   
 $\sigma \text{ MAX} \geq AFx + BFy + CFz + DMx + EMy + FMz$

ENCODER

AUTO ID

3/8 KEYWAY TYP  
BOTH ENDS

#10-24 TAP-.30  
DEEP FOR ANTI-ROTATION

2.38  
 $\sigma Z \pm .003$

1.10  
.49 REF

2.38  
 $\sigma Z \pm .003$

2.36

1.78  
2.15

2.5  
2.78  
2.97

6.75

3.5  
1.7

C.W. UPSCALE

SPECIFICATIONS MODEL: 01324-XXX-GXBXX  
CAPACITY \_\_\_\_\_ CHARTED  
OUTPUT @ F.S. (mV/V NOM.) \_\_\_\_\_ 2.0  
NON-LINEARITY (%F.S.O.) \_\_\_\_\_ .10  
HYSTERESIS (%F.S.O.) \_\_\_\_\_ .10  
BRIDGE RESISTANCE (OHM NOM.) \_\_\_\_\_ 1,000  
OVERLOAD (TORQUE) \_\_\_\_\_ 150% F.S.  
MAX RPM \_\_\_\_\_ 5,000  
OPTIONAL POSITION ENCODER:  
TYPE \_\_\_\_\_ OPTICAL ENCODER  
RESOLUTION \_\_\_\_\_ 1500 PULSES/REV W/QUADRATURE

ASSEMBLY DWG REF: 19388D0-\*

\*--INDICATES CURRENT REV

INSTALLATION		CHECKED BY	
MODEL: 01324-XXX-GXBXX	PROJ. ENG. _____	DATE	DATE
FINISH _____	SCALE FULL	DRAWN BY GMC	
MATL. _____		DATE 6-11-07	
UNLESS OTHERWISE SPECIFIED DIM'S ARE IN INCHES		D.E. REVIEW	
X.X ±.03 X.XX ±.01 X.XXX ±.005 ANG. ±.5		BY DATE	
		DRAWING NUMBER	
		19389C0-A	

The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

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Althen stands for pioneering measurement and custom sensor solutions. In addition we offer services such as calibration, design & engineering, training and renting of measurement equipment.

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