
**SERIES
1651**

Revised March 1990

14 BIT TRACKING SYNCHRO/RESOLVER-TO-DIGITAL CONVERTER

FEATURES:

- 14 bit or 12 bit resolution
- ± 4 arc minute accuracy
- Tracking rate: To 36 rps (flicker free)
- Reference and signal inputs are transformer isolated
- No calibration or adjustments are required
- No 180° hangup
- No -15VDC required
- No special precautions required against static electricity
- Hermetically sealed units on request
- Available for either 0°C to +70°C or -55°C to +105°C
- Built to meet MIL-STD-202D, Methods 101C, 105B, 106C, 107C, 202D, 204B, and 205D
- High reliability 883B or MIL-M-38510 units on request



DESCRIPTION:

These modular solid state tracking converters continuously transform synchro or resolver inputs into digital form that is error free up to the maximum specified tracking rate. Type 2 servo loop processing techniques assure that data is always fresh and continuously available except during "Converter Busy". Ratiometric conversion techniques are used to prevent signal and reference voltage or frequency variations from effecting the accuracy. Full transformer isolation of the input and reference assure true DC isolation.

The high accuracy, ruggedness and reliability recommends these converters for the most exacting requirements.

SPECIFICATIONS:

Resolution:

Accuracy: **

Tracking Rate:

400 Hz
60 Hz
2.6k Hz

Acceleration:

400 Hz
60 Hz
2.6k Hz

Step Response:

400 Hz
60 Hz
2.6k Hz

Logic:

Fan Out:

Power:

+5VDC $\pm 5\%$
* +15VDC $\pm 5\%$

Operating Temperature:

Storage Temperature:

Weight:

Code A

14 bits
 ± 4 arc minutes

15 rps

1.4 rps

25 rps

80,000/sec²

1100/sec²

300,000/sec²

125 ms

1.5 sec

50 ms

Parallel positive logic, TTL levels, binary coded angle

4 TTL

Code B

12 bits

± 8 arc minutes

36 rps

5 rps

75 rps

80,000/sec²

1100/sec²

300,000/sec²

125 ms

1.5 sec

50 ms

Model "C": 0°C to +70°C; Model "M": -55°C to +105°C

-55°C to +125°C

Approx. 4 oz.

Approx. 4 oz.

** Accuracy applies over the operating temperature range $\pm 5\%$ power supply, $\pm 10\%$ frequency and reference amplitude variation, and 10% harmonic distortion.

* +12VDC operation available. See part number designation.

Input Code	Input	Frequency [2] (Hz $\pm 10\%$)	Ref Vrms [2] $\pm 10\%$	L-L Vrms	L-L Imped Min	Ref. Current (mA)
01	Synchro	400	26	11.8	40 K	2
02	Synchro	400	115	90	100 K	2
03	Synchro	50/400	115	90	100 K	2
05	Resolver	400	26	12.5	40 K	2
06	Resolver	400	26	11.8	40 K	2
07	Resolver	400	115	11.8	100 K	2
11	Synchro	400	115	11.8	40 K	2

[2] Other voltages and frequencies are available

T-71-35-03

ISOLATION:

Transformer inputs are isolated from each other and from DC power common. Insulation resistance from any AC input to output is greater than 200 megohms at 200 VDC.

GRUNDS:

Logic and analog grounds are common internally. A separate logic ground is available to minimize potential ground loop problems. See part number designation. Analog ground is +15VDC return; Logic ground is +5VDC return.

DATA TRANSFER:

Converter Busy: The output is updated in 1 LSB steps whenever the input angle changes. Error free data can be transferred when "Converter Busy" is at logic "0". Logic "1" indicates that the output data is changing and that data should not be transferred. Fan out is 4 TTL loads.

Inhibit: Apply logic "0" to prevent output data from changing during transfer. The converter will ignore an "Inhibit" command during the "Converter Busy" period. Fan in: 1 LSTTL load.

PART NUMBER DESIGNATION

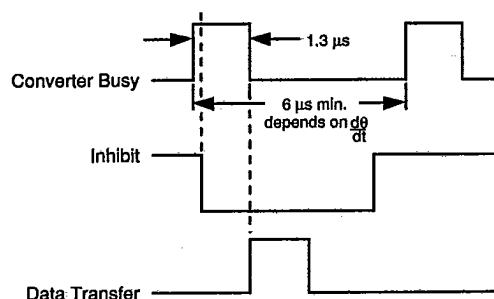
*1651 * - * * * * *

- Add 883 for Hi-Rel
- Add P for potting
- Add D for separate logic ground
- Add H for hermetic seal
- Add 12 for +12VDC operation
- Resolution: A = 14 bits; B = 12 bits
- Input code (01 through 11)
- Temperature range (C or M)
- Add L for low profile series

PIN DESIGNATIONS

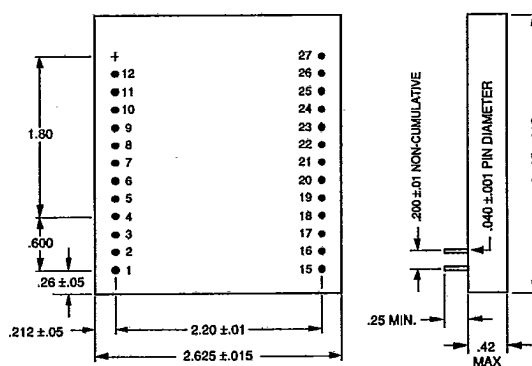
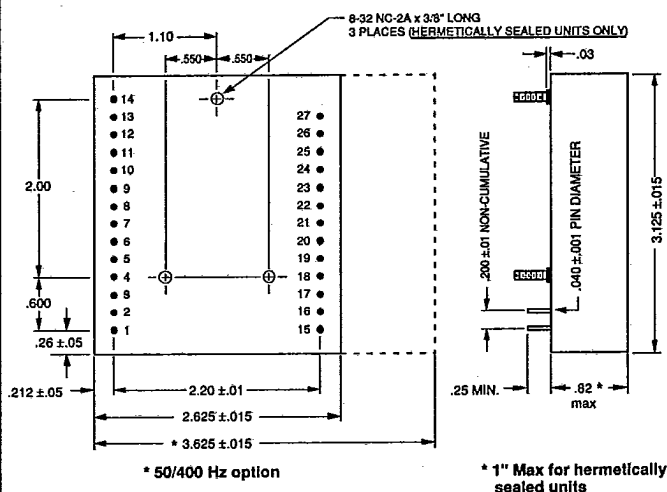
1	MSB (180°)	15	RHI	
2		16	RLO	
3		17	+5VDC	
4		18	N/C	
5		19	ANLG GND	
6		20	+15VDC	
7		21	INHIBIT	
8	BINARY	22	BUSY	
9	OUTPUTS	23	S1	
10		24	S2	
11		25	S3	
12		26	S4 (Resolvers only)	
13		27	LOGIC GND (When specified)	
14		LSB (.02197°)		

TIMING: (At max. tracking speed)

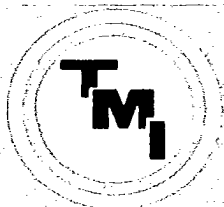


NOTE: Data is immediately available when Converter Busy goes low.

OUTLINE & CONNECTION



"L" Low profile series



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