

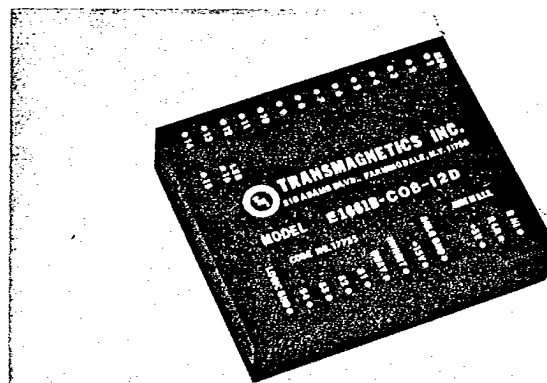
SERIES E1661

Revised April 1987

16 BIT, ± 40 ARC SECONDS, TRACKING S/D OR R/D CONVERTERS (IN SAME SIZE AS EXISTING 14 BIT MODULES)

FEATURES

- 16 bit resolution
- 40 arc seconds (0.011°) accuracy
- Tracking rate: 1050°/sec. flicker-free
- Reference and signal inputs are transformer isolated
- No -15 VDC supply required
- Available for either 0°C to +70°C or -55°C to +105°C
- Exceptional quadrature rejection
- No 180° hangup
- Hermetically sealed units on request
- Meets MIL-STD-202D, Methods: 101C, 105B, 106C, 107C, 202D, 204B, and 205D
- High reliability 883B or MIL-M-38510 units on request
- No special precautions required against static electricity



DESCRIPTION

This compact 16 bit converter with 40 arc seconds accuracy, represents a major advance in synchro/resolver-to-digital conversion technology. Occupying the same space as existing 14 bit designs, our unique Type II tracking design can be supplied to interface with any specified synchro or resolver. This model will track, without error, velocities up to 1050°/sec., and the use of a ratiometric conversion approach assures that accuracy is not effected by carrier amplitude variations. Accuracy holds over the temperature range. Our synthetic reference enables this unit to accept phase shifts of up to 45° without affecting accuracy. We can compensate for higher phase shifts. Most hybrids, on the other hand, do not include a synthetic reference and therefore cannot handle the high phase shifts of two-speed pancake resolvers. Input and reference are transformer isolated, but solid state inputs can be provided. The digital outputs are stable and flicker-free. A 180° step input will not latch-up these units. These units are ideally suited for ATE, antenna positioning, radar target tracking, gun controls and other systems requiring high resolution and accuracy.

SPECIFICATIONS

Resolution:	16 bit
Accuracy:	* ± 40 arc seconds
Tracking Rate:	0 to 1050°/sec.
Acceleration (1 LSB error):	1000°/sec. ²
Phase Shift:	Signal-to-reference phase shift of up to $\pm 45^\circ$ produces no additional error
Step Response (180° step):	750 ms
Fan Out:	2 TTL Loads at +5 VDC
Digital Outputs:	CMOS, Logic "1" outputs of +3 to +10 VDC are selected by setting the VL pin to the desired level.
Logic:	Parallel, positive logic, DTL/TTL/CMOS compatible, binary coded angle.
Storage Temperature:	-65°C to +125°C
Operating Temperature:	Model C: 0°C to +75°C; Model M: -55°C to +105°C
Potting:	Potting is available for high shock or vibration environments. See part number designation.
Weight:	Approximately 8 oz.
Power Requirement:	+15 VDC $\pm 5\%$ at 50 mA. +12 VDC option available. See part number designation.
Grounds:	VL: 5 to 10 VDC at 10 mA. Separate logic and analog grounds are available to minimize potential ground loop problems. See part number designation. Analog ground is +15 VDC return; Logic ground is +5 VDC return.
Isolation:	Input and reference are transformer 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.

*Accuracy applies over the operating temperature range $\pm 5\%$ power supply, $\pm 10\%$ frequency and reference amplitude variation, 10% harmonic distortion and phase shifts of up to 45°.

Input Code	Type	Frequency ⁽¹⁾ (Hz \pm 10%)	Ref. Vrms ⁽¹⁾ \pm 10%	L-L Vrms	L-L Imped Min.	Ref. Current (mA)
01	Synchro	400	26	11.8	40K	2
02	Synchro	400	115	90.0	100K	2
03*	Synchro	50/400	115	90.0	100K	2
05	Resolver	400	26	12.5	40K	2
06	Resolver	400	26	11.8	40K	2
07	Resolver	400	115	11.8	100K	2
10	Synchro/Resolver	400	26	11.8/11.8	40K	2
11	Synchro	400	115	11.8	40K	2
14	Resolver	2045	26	26	40K	2

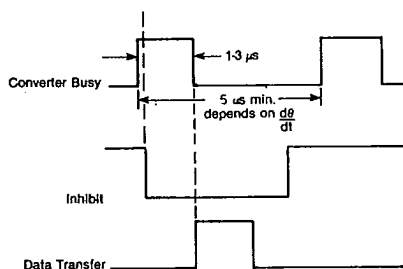
(1) Other voltages and frequencies are available.

- Input code 03 is supplied with an external input transformer.

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.

INHIBIT Applying logic "0" will prevent updating of output data. If applied during CB, the converter will complete the process before being inhibited.

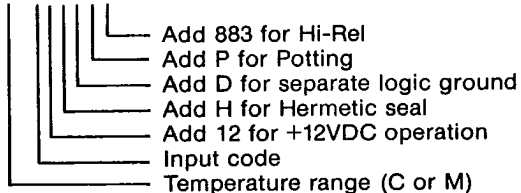
TIMING (At max. tracking speed)



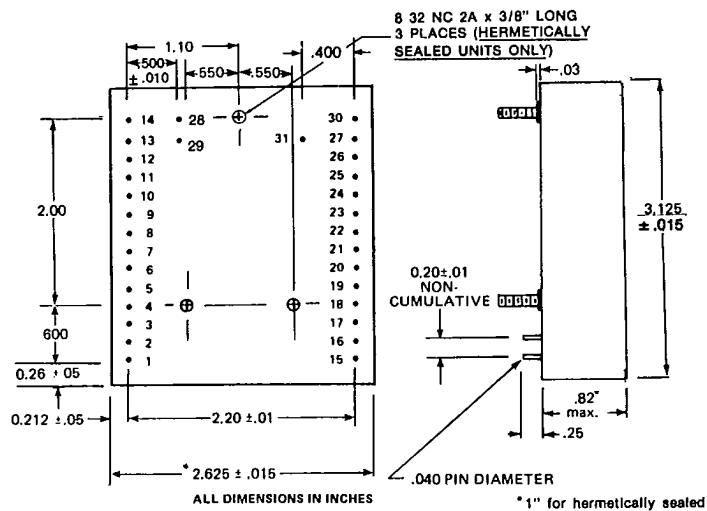
NOTE:
Data is immediately available when Converter Busy goes low.

PART NUMBER DESIGNATION

E1661*-*****



OUTLINE & CONNECTION



* 03 UNIT MEASURES 3.125 x 3.625 x .82

```

1  MSB
2  |
3  |
4  |
5  |
6  |
7  BINARY
8  OUTPUTS
9  |
10 |
11 |
12 |
13 |
14 |
15 R HI
16 R LO

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17 V L
18 N/C
19 Analog GND
20 + 15VDC
21 Inhibit
22 Busy
23 S1
24 S2
25 S3
26 S4 (Resolver Only)
27 Logic GND (When Specified)
28 B15
29 B16 LSB (.0055°)
30 S For Synchro/Resolver
31 SS units only. Connect together
for Synchro mode.

Synchro Connection: S₁, S₂, S₃. Short S to SS
Resolver Connector: S₁, S₂, S₃, S₄. Open S to SS



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