TRANSMAGNETICS

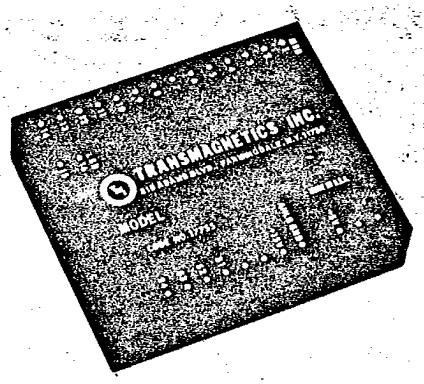
SERIES
1684

Revised January 1986

16 BIT SOLID STATE CONTROL TRANSFORMER

FEATURES:

- Accuracy: ±1.2 MINUTES OF ARC
- Error Angle: ±12.5° about null
- LSTTL inputs eliminate the need for special precautions against static electricity
- Reverse polarity protected
- Transformer isolated input and output
- Available for 0°C to +70°C or -55°C to +105°C
- Hermetic 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
- Completely protected against any possible latch-up condition due to any loss of signal or power



DESCRIPTION:

This small, low cost solid state control transformer accepts a synchro angle together with a 16 bit digital angle and converts these into a phase sensitive AC output with magnitude proportional to the sine of the difference between the two angles. This is described by K Sin (θ-ϕ) Sin ωt. Since this unit is primarily designed for Servo Follow-up systems, the output voltage of 5VRMS corresponds to a ±12.5° output range around a null. Other scaling factors can be supplied. Units with demodulated outputs (±10VDC) can be supplied.

SPECIFICATIONS:

Accuracy*: 1.2 minutes of arc

Resolution: 16 Bits (1 LSB = 0.33 arc minutes)

Digital Input (ϕ): Parallel, Positive Logic, TTL Levels, Binary Coded Angle

Fan In: 1 LSTTL load

Synchro Input (θ):

INPUT CODE	INPUT	FREQ. ±10%	(1) L-L Vrms ±10%	(1) L-L Imped. Min
1	Synchro	400 Hz	11.8	40K
2	Synchro	400 Hz	90	40K
3	Synchro	50/400	90	40K
5	Resolver	400 Hz	11.8	40K
6	Resolver	400 Hz	26	40K
7	Resolver	400 Hz	5	40K

(1) Other voltages and frequencies are available.

Output Format: K Sin (θ-ϕ) sin ωt. Magnitude variation is less than 1.0% over full input range of 0 to 360°

Scaling: 0.4VRMS/degree

Qutput: 5VRMS into a 2K ohm min. load. Output is short circuit proof and transformer isolated.

Range of output angle: ±12.5°. Other null gradients available.

Settling time: 50 μs max.

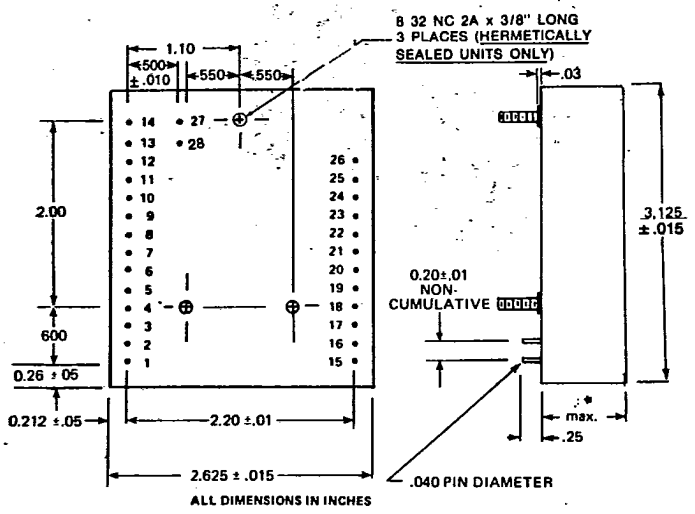
Power Requirements: ±15VDC, ±5% at 50 ma. ±12VDC operation available. See part number designation
+5 VDC ±5% at 145mA

Potting: For high shock or vibration applications, units should be potted. See part number designation.

*Accuracy applies over the operating temperature range, ±5% Power supply, ±10% input signal and frequency variation, and 10% harmonic distortion.

Operating Temperature: Model C: 0°C to +70°C Model M: -55°C to +105°C
Storage Temperature: -65°C to +125°C
Weight: Approx. 6 oz.
Isolation: Line-to-line input and output are transformer isolated from each other and from D.C. power common. Insulation resistance from any AC input to output is greater than 100 megohms at 200 VDC.
Options:
1. Analog and logic grounds are common internally. A separate digital ground is available on request. See part number designation.
2. Output can be supplied demodulated (±10VDC out.)

OUTLINE & CONNECTION



* .42" Hermetically sealed .62"

All dimensions in inches.

1	MSB (180°)	15	Output Hi
2		16	Output Lo
3		17	+5 VDC
4		18	−15VDC
5		19	Gnd. analog (±15VDC return)
6		20	+15VDC
7	BINARY	21	Logic Gnd
8	INPUTS	22	N/A
9		23	S1
10		24	S2
11		25	S3
12		26	S4 (Resolver only)
13		27	B15
14	LSB (.02197°)	28	B16 LSB (.0055°)

*When specified. Otherwise digital and analog grounds are connected internally to pin 19 with pin 21 omitted.

Part Number Designation:

1684*-* *****
- 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
- Input Code (1-7)
- Temperature range (C or M)

The code -3, 50/400 Hz unit requires an external output transformer STM 1684. The module output, in this case, is fed directly from Op. Amp. (Pin 15 & 16)

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