
**SERIES
1663**

Revised March 1990

18 BIT, 0.005°, S/D or R/D CONVERTER

FEATURES:

- 19.8 arc second accuracy
- 360°/sec. flicker-free tracking rate
- Reference and signal inputs are transformer isolated
- No -15VDC supply required
- Available for either 0°C to +70°C, or -55°C to +105°C
- Exceptional quadrature rejection
- No 180° hangup
- Designed to meet 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:

Testing and alignment of synchro systems is now simplified with the use of our ultra-stable, high accuracy single module tracking converters. Type 2 servo loop processing techniques insure that data is always fresh and continuously available, except during "Converter Busy". The accuracy holds over the temperature range and with phase shift of up to 45° because a synthesized reference was incorporated. Signal and reference inputs are transformer isolated, thus providing true DC isolation from power supplies and grounds. In addition, separate analog and logic grounds minimize potential ground loop problems. Synchronization is simplified because valid data is immediately available when the converter busy line goes low. These design and performance features recommend our units for ATE applications and other projects that would benefit from a stable, high resolution, high accuracy synchro- or resolver-digital converter. Dual input modes (synchro or resolver) are available.

SPECIFICATIONS:

Resolution:	18 bits
Accuracy: **	19.8 arc seconds
Tracking Rate:	300°/sec.
Acceleration:	1000°/sec ²
Step Response (180° Step):	750 ms
Logic:	Parallel positive logic, TTL levels, binary coded angle
Fan Out:	4 TTL loads
Grounds:	Separate analog and logic grounds are supplied to minimize potential ground loop problems. (Analog ground is +15VDC return; logic ground is +5VDC return).
Phase Shift:	±45° signal to reference phase shift produces no additional error.
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.
Power Requirements:	+15VDC ±5% at 85ma +5VDC ±5% at 5ma
Operating Temperature:	Model "C": 0°C to +70°C; Model "M": -55°C to +105°C
Storage Temperature:	-55°C to +125°C
Potting:	Potting is available for high shock or vibration environments. See part number designation.
Weight:	Approximately 9 oz.

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

Input Code	Input	Frequency [2] (Hz ±10%)	Ref [2] Vrms ±10%	L-L Vrms [2]	Z in L-L Min	Ref. Current (mA)
01	Synchro	400	26	11.8	40 K	2
02	Synchro	400	115	90	100 K	2
03	Synchro	50/60	115	90	100 K	2
06	Resolver	400	26	11.8	40 K	2
07	Syn/Rsvr	400	26	11.8/11.8	40 K	2

[2] Other voltages and frequencies are available. Contact factory.

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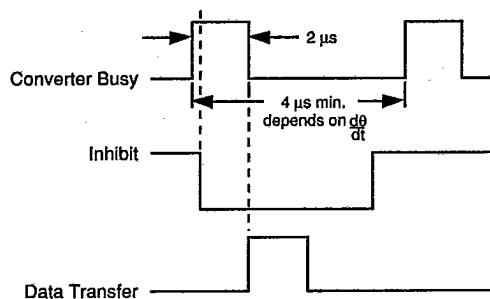
DATA TRANSFER:

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.

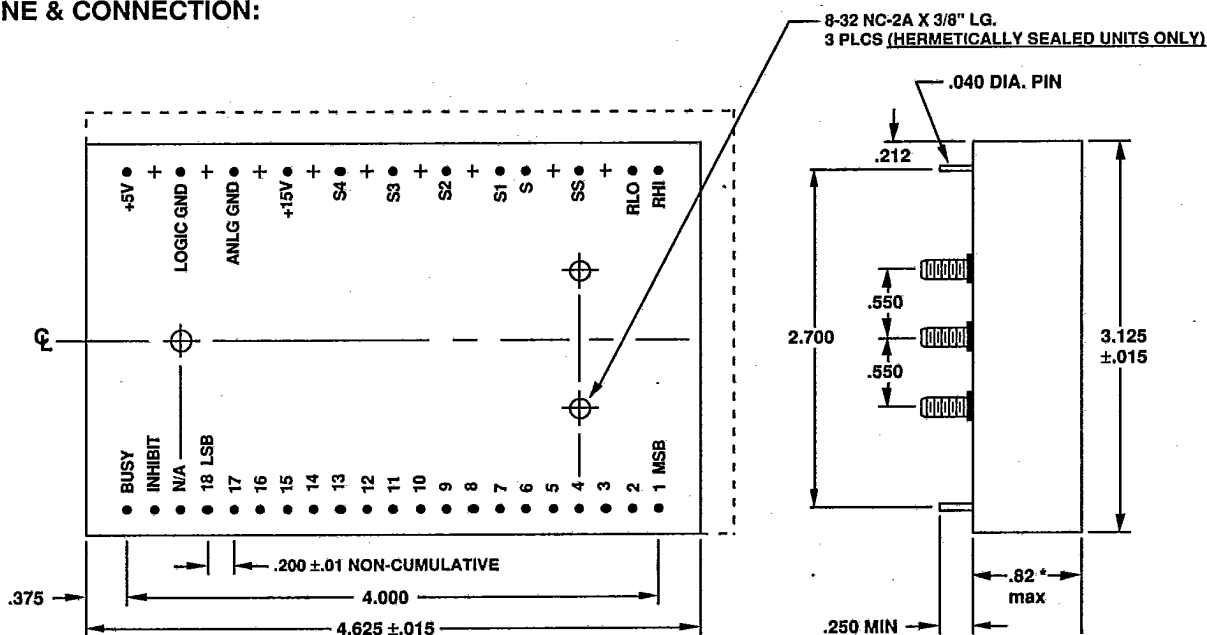
Inhibit: Applying logic "0" will prevent updating of output data. If applied during CB, the converter will complete the process before being inhibited.

PART NUMBER DESIGNATION:

1663 * - * * * *
 Add 883 for Hi-Rel
 Add P for Potting
 Add D to Separate logic ground
 Add H for Hermetic seal
 Add 12 for +12VDC operation
 Input code (01-06)
 Temperature range (C or M)

TIMING: (At max. tracking speed)

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

OUTLINE & CONNECTION:

50/60 Hz unit: 4.875" x 3.375" x 1" (see dotted line)

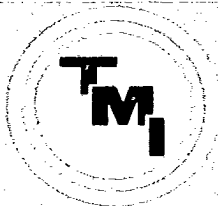
* Hermetically sealed units 1" max

CONNECTIONS FOR SINGLE INPUT

Synchro: S1, S2, S3
 Resolver: S1, S2, S3, S4

CONNECTIONS FOR DUAL INPUTS

Synchro: S1, S2, S3 and short S to SS
 Resolver: S1, S2, S3, S4 and open S to SS



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