Binary to BCD Modulo 360° Converter

BDM 1615/6/7

FEATURES
Binary Angle to Modulo 360° BCD Output
Rounding Errors <0.005°
All TTL Levels
Fast Parallel Operation

DESCRIPTION

The BDM 1615/1616/1617 converters are solid state converters which take as inputs angular data in binary form and give out angular data in Binary Coded Decimal form—modulo 360°. The code converters are available in two versions. The first is scaled in degrees and decimal fractions of degrees and the second version is scaled in degrees and minutes.

The BDM 1615 and 1616 accept 14 bit binary inputs and give data in degrees and decimal fractions of a degree, and degrees and minutes respectively.

The BDM 1617 accepts a 16 bit binary input and gives out data in degrees and decimal fractions of a degree.

Rounding errors are <0.02° for the BDM 1615 and <0.005° for the BDM 1617.

All the converters take in parallel data and give out parallel data; the time of operation is <0.5μs.

With most synchro/resolver to digital converters the output digital angle is given in natural binary form with the bit weighting being 180°, 90°, 45° etc. While this natural binary form of angular information is suited for digital computer interfacing and direct angular transmission in serial form, it is not suited for direct conversion to visual digital displays or for use in computers using BCD coding. The BDMs (Binary Decimal Modules) 1615/1616/1617 have been designed to meet this interface requirement.

Two of the main applications for the BDMs are depicted in Figures 1 and 2. Figure 1 shows the BDM being used to convert the binary angular information from a synchro to digital converter into a suitable form for driving the visual display decoder and Figure 2 shows the BDM connected to the binary output from a computer to give a digital display.

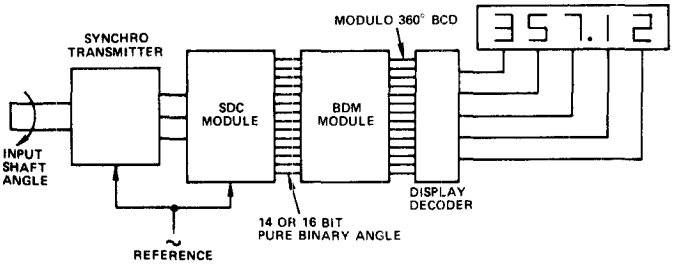

Figure 1.

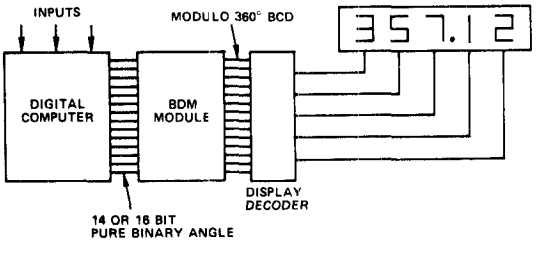

Figure 2.

SPECIFICATIONS (typical @ +25°C unless otherwise noted)

MODEL	BDM 1615	BDM 1616	BDM 1617
Input	14 Bits Natural Binary at TTL Levels	*	16 Bits Natural Binary at TTL Levels
Fan In	5 TTL Loads	*	*
Output	Modulo 360° and BCD Fraction—0.01, 0.02, 0.04, 0.08, 0.1, 0.2, 0.4, 0.8°.	Modulo 360° and Minutes Coded—40′, 20′, 10′, 8′, 4′, 2′, 1′.	*
Fan Out	2 TTL Loads	*	*
Mode of Operation	Parallel In, Parallel Out	*	*
Speed of Operation	$<0.5\mu s$	*	*
Rounding Errors	0.02°	1 arc minute	0.005°
Supply Voltage	5.0V ±5%	*	*
Supply Current	350mA	*	700mA
Power	1.75 Watts	*	2.25 Watts
Operating Temperature	0 to +70°C -50°C to +105°C	*	*
Storage Temperature	-55°C to +125°C	*	*
Size	4″ x 2″ x 0.4″ 102mm x 51mm x 10mm	*	3.125″ x 2.625″ x 0.8″ 79mm x 67mm x 20mm
Enable	—	—	@ "0" = Normal Operation @ "1" = LED Check

*Same specification as BDM 1615

Specifications subject to change without notice.

ORDERING INFORMATION

Each of the BDMs is available in either of two versions according to the required operating temperature range. The type number must be followed by a code defining the required temperature range; the code is 500 for 0 to +70°C and 600 for -55°C to +105°C.

e.g., BDM 1616/600 is for a temperature range of -55°C to +105°C.

PIN CONNECTIONS AND OUTLINE DIMENSIONS

Dimensions shown in inches and (mm).