DA-TEL RESEARCH COMPANY, INC. • 932 N. PARK AVENUE • P. O. BOX 1206
MONTROSE, COLORADO 81402 • PHONE (970) 249-6129 • FAX (970) 249-8919
WWW.DA-TELRESEARCH.COM • EMAIL: INFO@DA-TELRESEARCH.COM

THE G-2003 FIBER OPTIC

DIGITAL TELEMETER TRANSMITTER

FIBER OPTICS

- 1300 nm E-LED
- SINGLEMODE(OR MULTIMODE OPTION)
- ST CONNECTORS
- REPEATER AVAILABLE
- OPTICAL POWER BUDGET OF 10 db MIN.
- MANCHESTER ENCODING

ENCODER

- 10 BIT A/D CONVERSION
- 6-BIT STATUS
- OPERATES AT 15.36 Kb/s OR 19.2 Kb/s
- FIBER TRANSMITTER AND ENCODER IN ONE MODULE
- MULTIPLE ANALOG POINT MULTIPLEXING
- DOUBLE SCAN WORD TRANMISSION
- UPDATE TIME PER ANALOG POINT, DOUBLE SCAN 8.8 m.s. (15.36 Kb/s)

GENERAL DESCRIPTION

The G-2003 is a fiber optic version of the Da-Tel tone channel G-7803 Digital Telemeter Transmitter.

The G-2003 digital telemeter incorporates a 10-bit analog-to-digital converter with 6 address bits for multiplexing multiple analog quantites.

The analog input is digitized into 10 binary bits for each transmission. When used in conjuction with the G-7903 module(s), a number of analog points can be digitized, addressed and transmitted by the G-2003.

The G-2003 circuitry sequentially scans the a/d output latches and 6 digital inputs. Using manchester encoding a digital word is generated. This includes the synchronizing sequence (8 clocking pulses and command sync), followed by the 16 data bits (10 analog, 6 status or address bits) and 1 parity bit. The word is generated and sent repeatedly every 4.4 milliseconds (15.36 Kb/s operation), re-synchronizing the transmitter and receiver.

Manchester encoding is incorporated for two reasons in the G-2003 design. Primarily the encoding insures that the fiber optic receiving circuitry operates optimally, resulting in the maximum optical power budget. Secondarily, the encoding transfers both the data and clock signal over one fiber optic circuit. The state of each data bit is indicated by the direction of the clock transition within a data "cell" as shown in figure 1.

FIBER OPTICS

The G-2003 uses one Hewlett-Packard HFBR-1315TM singlemode fiber optic transmitter, driven by four sections of a 74ACT11000 NAND. The message is encoded with a Harris HD-6409 CMOS manchester encoded-decoder before transmission. No additional encodeing is needed.

SECURITY

To insure the validity of the transmitted data, the fiber optic link is re-synchronized for each word sent as opposed to a free running link after an initial link synchronization. Additionally an odd parity bit is generated for each word. This parity bit is used by the receiver module in validating the received word along with an optional double scan security check. When double scan security is enabled at the receiver, the G-2003 can be field configured to send each analog conversion result twice. This insures that the receiver will not needlessly block the analog output due to the last digit of the analog value rolling.

POWER SUPPLY

+12 VDC AT 60 mA.
+5 VDC AT 200 mA

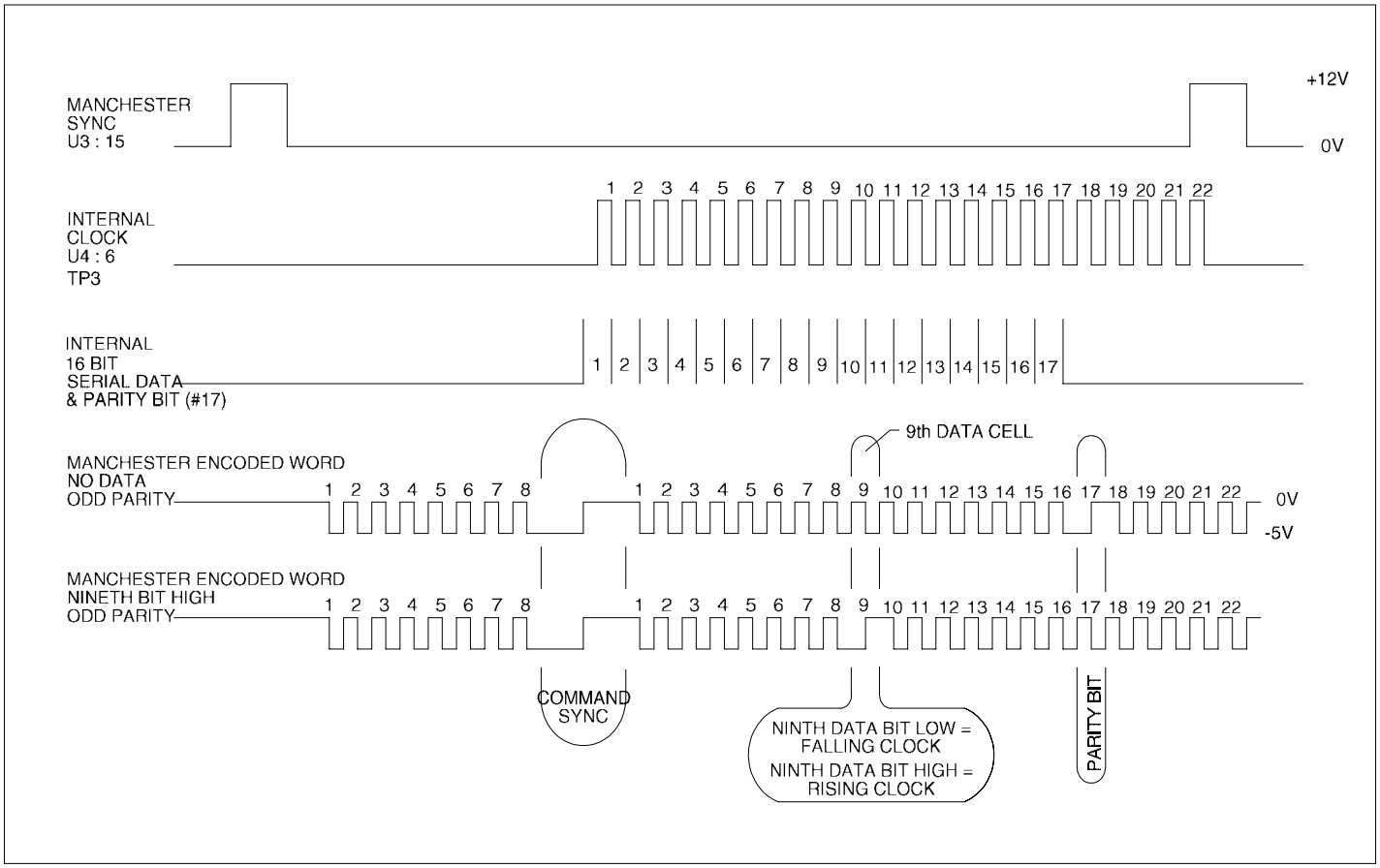

FIGURE 1.

NOTICE

As of the date of this printing, the specifications for the G-2003 in this Instruction Information sheet apply to all G-2003s, except as indicated. Because all Da-Tel products are continually being refined and improved, these specifications are subject to change without notice.