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Scoreboard Displays & Raceclock -RD Option

Serial Data Format

The serial data transmitted to the scoreboard display, must be transmitted in the following format. The signal containing this format may be in the form of serial ASCII (RS232) data or 20mA ASCII current loop however this must be specified at time of order. The data format that the scoreboard display will accept is:.

#	POLARITY	D	D	D	D	D	D	CR
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# (Pound sign)	Decimal 35
Polarity: +	Decimal 43
-	Decimal 45
space	Decimal 32
D (Data - Six digits numbers 0 to 9)	Decimal 48 to 57
CR (Carriage return)	Decimal 13

The Baud rate must be 1200
 The data stream contains:
 1 Start bit 8 Data bits "Space" Parity 1 Stop bit

For example, if the number to be displayed is -17592, the data stream would be assembled in the following manner.

	#	POLARITY	D	D	D	D	D	D	CR
Decimal code	35	45	49	55	53	57	50		13

The message text may be any length, however only the last sixteen (16) characters are retained. There is no checksum calculation on the message text. When the return is received, the last sixteen characters are copied to another buffer for processing. This permits receiving another message while processing the first. The program attempts to find the display field in the message by scanning the buffer from last to first looking for a digit. The field to be displayed is then scanned to insure valid length. The display field is terminated by a sign character, space (for plus) or minus. Decimal point (s) are ignored.

ERROR CODES

If some of the previous parameters are not correct, error codes will appear on the display in the form of ErXX, where XX is a one or two digit code defining the type of error. When more than one error is present the codes are additive. For example if Start Bit and Parity errors exist, the code displayed will be 3. Below is a list of all possible errors.

ERROR	CODE
Start bit	1
Parity	2
Framing	4
Uncertain	8
Display field not found	10
Display field too long	20
'ESC' character received	40
Unprocessed message in buffer	10

CODE EXPLANATION

- 1. Start bit:** Displayed when the start character is missing or incorrect.
- 2. Parity bit:** A redundant bit added to a group of bits in which the total number of binary 1's (or 0's) is always odd or even. An error is displayed if the parity number is not what is specified.
- 3. Framing:** A code display when the number of bits within the data format is greater or less than specified.
- 4. Uncertain:** There is an error but none of the codes represent it.
- 5. Display field not found:** Display field not present.
- 6. Display field length:** A code displayed when the number of bits within the numeric display field is greater or less than specified.

7. **'ESC' received:** An illegal ESC character is within the data stream.
8. **Unprocessed message:** Previous message is still in the buffer.

NOTE: Items 7 & 8 are primarily used by programmers that are developing their own driver..

CONNECTION LEADS

If the serial data input leads are open or disconnected from the data source or the display, the scoreboard will display HELP. When the data connection is made, the display will remove the letters HELP and appear blank, waiting for the first message to be sent. Data sent to the display will remain on the display until another data stream (message) is sent.

CONNECTION TO A PERSONAL OR IBM COMPATIBLE COMPUTER

The scoreboard must be connected to COM1 or COM2 serial port on the computer. These ports are present on two 'D' connectors. The smaller one uses 9 pins while the larger uses 25 pins. Usually the smaller connector is COM1. The chart below shows the connections for both connector types.

9 PIN CONNECTOR (DB-9)

Place a jumper between pins 4 & 6 and another between pins 7 & 8.

RS232: Connect the yellow wire from the scoreboard conduit box to pin 3.

Connect the blue wire from the scoreboard to pin 5.

20mA: Connect the blue wire from the scoreboard conduit box to pin 3.

Connect the yellow wire from the scoreboard to pin 5.

25 PIN CONNECTOR (DB-25)

Place a jumper between pins 4 & 5 and another between pins 6 & 20.

RS232: Connect the yellow wire from the scoreboard conduit box to pin 2.

Connect the blue wire from the scoreboard to pin 7.

20mA: Connect the blue wire from the scoreboard conduit box to pin 2.

Connect the yellow wire from the scoreboard to pin 7.