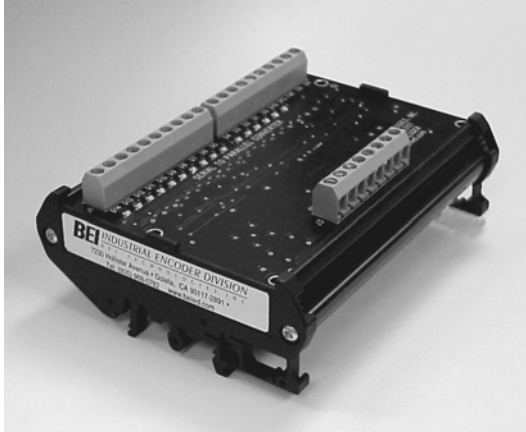# SERIAL TO PARALLEL CONVERTER FOR ABSOLUTE ENCODERS

FEATURES:

- **SSI OR RS422 SELECTABLE ON BOARD**

- **TWO TRANSMISSION RATES TO ACCOMMODATE LONG CABLE RUNS**

- **HIGH NOISE IMMUNITY**

- **CAN BE USED FOR SYSTEM TROUBLESHOOTING**

- **SAVES INSTALLATION COSTS**

- **COMPACT PACKAGE**

BEI'S serial-to-parallel converter module takes serial data from any BEI Serial Synchronous Interface (S3) or RS-422 Interface (S1) encoders and converts it to a parallel output. This eliminates the high cost and noise susceptibility of long, parallel cable runs, enabling the simplicity of a serial output encoder and a low cost twisted pair cable to interface with a standard PLC or controller. The bright LED indicators give visual status for deserialization, testing and troubleshooting.

Serial input, either SSI or RS-422 is easily selectable by a Format Select terminal directly on the board. In SSI mode, the on-board clock generates pulses to signal the encoder to provide data. Data is received serially and converted to a parallel format. Clock frequency is selectable by a Speed Select terminal, again directly on the board. For 100 feet or less, the 1.25 MHz mode can be used and for longer distances, up to 500 feet, a 200 kHz rate is available.

In RS-422 mode, data is received asynchronously from the encoder and converted to a parallel format. Speed Select input is used to set the baud rate: 19.2 kBaud for most applications, up to 500 feet; 115.2 kBaud for shorter runs below 100 feet.

See the BEI specifications for Serial Synchronous Interface (S3) and RS-422 for additional specifications, data format information and timing diagrams.

The module accepts inputs from 5 to 28 VDC and provides three output options: $V_{out} = V_{in}$; $V_{out} = 5$ V; and V_{out} = Open Collector. The compact DIN rail package is 105 mm wide, 78 mm high and only 45 mm high and mounts to standard DIN Rail, EN 50 022, 35 mm X 7.5 mm, included with the module.

ORDERING INFORMATION

Output	BEI Model Number	BEI Part Number
5 -28 Volts	EM-DR3-SP-5-TB-28V/V	924-60007-001
5 Volts	EM-DR3-SP-5-TB-28V/5	924-60007-002
Open Collector	EM-DR3-SP-5-TB-28V/OC	924-60007-003

CONTROLLER SIDE

Pin	Description	Notes
D14 thru D 0	Parallel Data Outputs	For the SSI selection under pin FMT, data is MSB justified. For the RS422 selection under pin FMT, data is LSB justified.
$\overline{DVD}$	$\overline{Data\ Valid}$	Logic LO = Data Valid Logic HI = Data not valid (transitioning)
FMT	Format Select	Logic HI (N/C) = SSI Logic LO (0V) = RS422 (Asynchronous)
EN	Output Enable	Logic HI (N/C) = Output active Logic LO (0V) = Inactive (High Impedance)
SPD	Speed Select	*For SSI :* Logic HI (N/C) = 1.25 MHz Logic LO (0V) = 200kHz *For RS422 :* Logic HI (N/C) = 19.2 kBaud Logic LO (0V) = 115.2 kBaud
0V	Supply Common	Logic LO available for format and speed selections

NOTE: On Format, Enable, and Speed selects, internal 10KΩ pull-ups to V_S provide default Logic HI

ENCODER SIDE

Pin	Description	Notes
0V	Supply Common	Connect either 0V pin to power supply common. This should be the same supply common as used on the encoder.
0V	Supply Common	Connected internally – see note above
V_S	Supply Voltage	Provide 5 to 28 volts supply.
D -	Data minus	Connect to Data – line from encoder
D +	Data plus	Connect to Data + line from encoder
CL -	Clock minus	Connect to Clock - line from encoder (SSI only). If using RS422, then N/C
CL +	Clock plus	Connect to Clock + line from encoder (SSI only). If using RS422, then N/C
DIR	N/C	Leave this disconnected

NOTE: LED indicators on key data and control lines (Logic HI = Red, Logic Lo = Green)