SERIAL TO PARALLEL CONVERTER

ELECTRONIC MODULES

Introduction

This serial-to-parallel converter module takes serial data from either an SSI (S3) or RS-422 Interface (S1) encoder and converts it to a 15 Bit 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.

This converter follows the standard protocol for Serial Synchronous Interface (SSI) and RS-422 for Asynchronous outputs, data format and timing.

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.

- 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

CONTROLLER SIDE

PIN	Description	Notes
D14 thru D0	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.
$\overline{\text{DVD}}$	$\overline{\text{Data Valid}}$	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	SSI: Logic HI (N/C) = 1.25 MHz Logic LO (0V) = 200kHz RS422: Logic HI (N/C) = 19.2 kBaud Logic LO (0V) = 115.2 kBaud
0V	Supply	Logic LO available for format and speed selections

NOTE: On Format, Enable and Speed selects, internal 10KΩ pull-ups to Vs 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
V5	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)