

| ELECTRONIC MODULES

SERIAL TO PARALLEL CONVERTER FOR ABSOLUTE ENCODERS

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.



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



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 10K Ω 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)



ORDERING INFORMATION

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

Sensata Technologies, Inc. ("Sensata") data sheets are solely intended to assist designers ("Buyers") who are developing systems that incorporate Sensata products (also referred to herein as "components"). Buyer understands and agrees that Buyer remains responsible for using its independent analysis, evaluation and judgment in designing Buyer's systems and products. Sensata data sheets have been created using standard laboratory conditions and engineering practices. Sensata has not conducted any testing other than that specifically described in the published documentation for a particular data sheet. Sensata may make corrections, enhancements, improvements and other changes to its data sheets or components without notice.

Buyers are authorized to use Sensata data sheets with the Sensata component(s) identified in each particular data sheet. HOWEVER, NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER SENSATA INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY THIRD PARTY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT, IS GRANTED HEREIN. SENSATA DATA SHEETS ARE PROVIDED "AS IS". SENSATA MAKES NO WARRANTIES OR REPRESENTATIONS WITH REGARD TO THE DATA SHEETS OR USE OF THE DATA SHEETS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ACCURACY OR COMPLETENESS. SENSATA DISCLAIMS ANY WARRANTY OF TITLE AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUIET ENJOYMENT, QUIET POSSESSION, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS WITH REGARD TO SENSATA DATA SHEETS OR USE THEREOF.

All products are sold subject to Sensata's terms and conditions of sale supplied at www.sensata.com SENSATA ASSUMES NO LIABILITY FOR APPLICATIONS ASSISTANCE OR THE DESIGN OF BUYERS' PRODUCTS. BUYER ACKNOWLEDGES AND AGREES THAT IT IS SOLELY RESPONSIBLE FOR COMPLIANCE WITH ALL LEGAL, REGULATORY AND SAFETY-RELATED REQUIREMENTS CONCERNING ITS PRODUCTS, AND ANY USE OF SENSATA COMPONENTS IN ITS APPLICATIONS, NOTWITHSTANDING ANY APPLICATIONS-RELATED INFORMATION OR SUPPORT THAT MAY BE PROVIDED BY SENSATA.

Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

CONTACT US

Americas

+1 (800) 350 2727
sales.beisensors@sensata.com
Europe, Middle East & Africa
+33 (3) 88 20 8080
position-info.eu@sensata.com

Asia Pacific

sales.isasia@list.sensata.com
China +86 (21) 2306 1500
Japan +81 (45) 277 7117
Korea +82 (31) 601 2004
India +91 (80) 67920890
Rest of Asia +886 (2) 27602006
ext 2808