SEL-2885

EIA-232 to EIA-485 Transceiver

Connect SEL IEDs With Multidrop EIA-485

Integrate your SEL IEDs via EIA-485 protocol networks.

Features and Benefits

Compact
DB-9-sized footprint.

Convenient
Port-powered from SEL relay. EIA-485 32-unit load compatible.

Safe
Transformer isolated to 1500 Vrms.

Addressable
More than a protocol level converter, the SEL-2885 responds to targeted messages.

Easy
Simple network address programming is stored in nonvolatile memory.

Product Introduction

The SEL-2885 is an intelligent EIA-232 to EIA-485 transceiver designed to control the communications interface between SEL protective relays, communications processors and controllers, and an EIA-485 multidrop network. The SEL-2885 adds device addressing with the SEL LMD protocol and uses the EIA-485 network as a "virtual port switch." For general purpose EIA-232/EIA-485 applications, consider the SEL-2886, instead.

Settings

The normal operating mode of the SEL-2885 is determined by a configuration string stored in nonvolatile memory. For a 30-second period following power up, the SEL-2885 monitors the EIA-232 TXD data line for a new configuration string. If a new configuration string is received, it is stored to nonvolatile memory. After the 30-second duration expires, normal operation begins based on the stored configuration. The factory default configuration string is #99.

The configuration string must be in the following format:

[MOD PRE ADD : BA]

Where: [= left-hand square bracket

- MOD = optional setting to change addressing mode (SEL LMD is default) where MOD is one of the following:
  - n/a = Not specified, defaults to SEL LMD Distributed Port Switch Protocol (includes autoconfiguration for SEL relays)
  - N = LMD addressing for ASCII devices
  - B = LMD addressing for binary devices
  - RTS = RTS addressing (includes autoconfiguration for SEL relays)
  - NRTS = RTS addressing
- PRE = prefix character from the following list: @, #, $, %, &
- ADD = two-character address between 01 and 99
- : = colon
- BA = optional setting to change data rate, where BA is:
  - 12 = 1200 bps
  - 24 = 2400 bps
  - 48 = 4800 bps
  - 96 = 9600 bps (default)
-] = right-hand square bracket

LMD Configuration String Examples:

SEL Relay: [#56]

Standard ASCII Device: [N#56]

Device That Transfers Binary Data: [B#56]

Device Communicating at 2400 bps: [NRTS:24]

Installation

The SEL-2885 requires +5 Vdc on Pin 1 of the EIA-232 port. Refer to the SEL device instruction manual, or use the appropriate SEL cable.

SEL LMD and RTS Mode (for use with SEL devices):

When configured for SEL LMD or RTS operating mode, the SEL-2885 automatically retrieves the prefix character and addresses from the relay identification string. Place the SEL-2885 configuration string in the terminal ID (TID or TRMID) setting. If your device has a single identification string setting (ID), then include the SEL-2885 configuration string in the ID setting. A typical relay ID string is "SEL251 RELAY [#56]," with the LMD address being #56.

Once the address is placed in the relay ID string, use a computer to gain Level 1 Access to the device. Disconnect the computer, and connect the SEL-2885 to the same EIA-232 port. The SEL-2885 immediately transmits a STATUS command to the relay. The response to the STATUS command contains the identification string that includes the configuration string. Thirty seconds after power up, the SEL-2885 begins normal operation.

When the SEL-2885 is connected to the EIA-485 network and receives the correct prefix character and address, it establishes a transparent connection. For example, if the prefix character is # and the address is 56, the SEL-2885 transparently connects to the relay when it receives #56. To terminate a transparent connection, issue a QUIT command or a single prefix character.

In RTS mode, a transparent serial connection is established any time the SEL-2885 RTS control input is asserted. The transparent connection is terminated when the RTS is deasserted.

N, B, or NRTS Mode:

In N, B, or NRTS mode, no autoconfiguration occurs. The SEL-2885 accepts a manually transmitted configuration string within 30 seconds following power up. After the initial 30-second duration expires, normal operation begins based on the stored configuration.

To connect in N mode, issue the prefix character and address. To disconnect in N mode, issue a single prefix character, or transmit a prefix character followed by a different address.

Since binary data could contain any sequence of characters, idle time delays of >40 ms help identify the special characters. In B mode, issue the prefix character and address using the following sequence of characters and idle-time delays:

Prefix character, idle-time delay, address character 1, idle-time delay, address character 2

Example Binary (B) Mode EIA-232 Control Strings

Connect to #56:	# (45 ms delay) 5 (45 ms delay) 6
Disconnect Method 1:	# (45 ms delay) 0 (45 ms delay) 0
Disconnect Method 2:	# (45 ms delay) 5 (45 ms delay) 6
Disconnect and Switch to #57:	# (45 ms delay) 5 (45 ms delay) 7

In NRTS mode, a transparent serial connection is established any time the SEL-2885 RTS control input is asserted. The transparent connection is terminated when the RTS is deasserted.

Technical Specifications

Data Rate

1200, 2400, 4800, 9600 bps
Settable by configuration string

Type Tests and Standards

IEC 68-2-1 cold

IEC 68-2-2 dry heat

IEC 68-2-30 damp heat

Dielectric test, 1500 Vrms for 1 minute

IEC 801-2 ESD

IEC 801-4 fast transient burst

Power

5 Vdc (±5%) @ 80 mA on
Pin 1 of 9-pin connector

Operating Temperature:

–40° to +85°C (–40° to 185°F)

EIA-232 Interface:

DB-9 male connector

EIA-485 Interface:

5-position terminal block

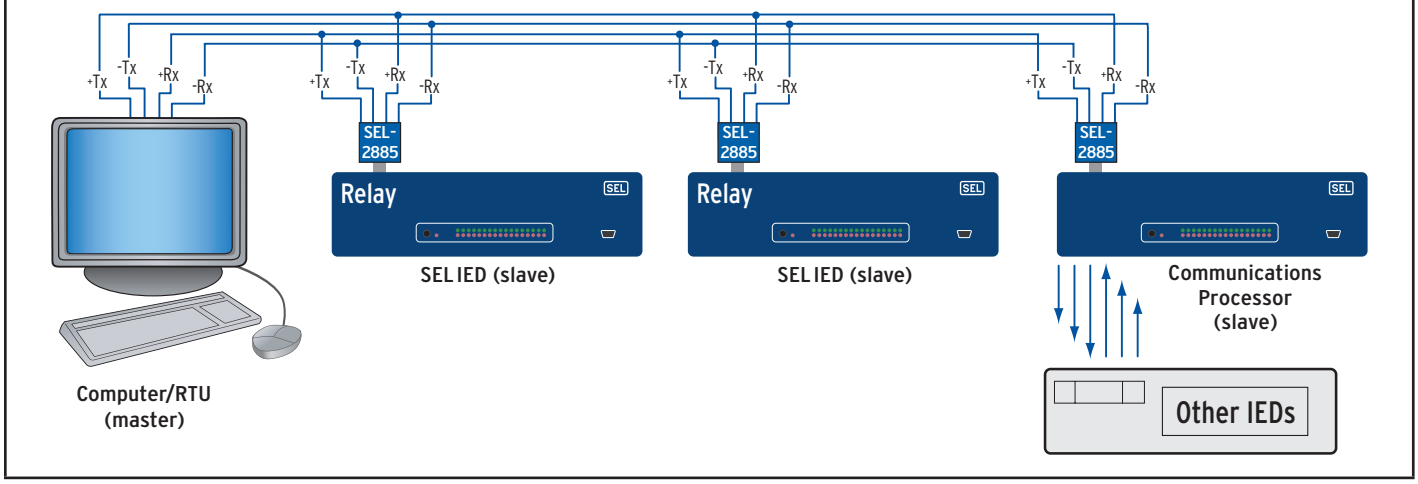
Addressing:

LMD Distributed Port Switch Protocol or RTS control

Transceiver Pinout

EIA-232 (DCE)		EIA-485	
Pin #	Function	Pin #	Function
1	+5 Vdc	1	+TX
2	RXD (out)	2	-TX
3	TXD (in)	3	+RX
4	NC	4	-RX
5	GND	5	ISO GND
6	NC		
7	RTS (in)		
8	CTS (out)		
9	GND		

Multidrop Configuration of SEL-2885



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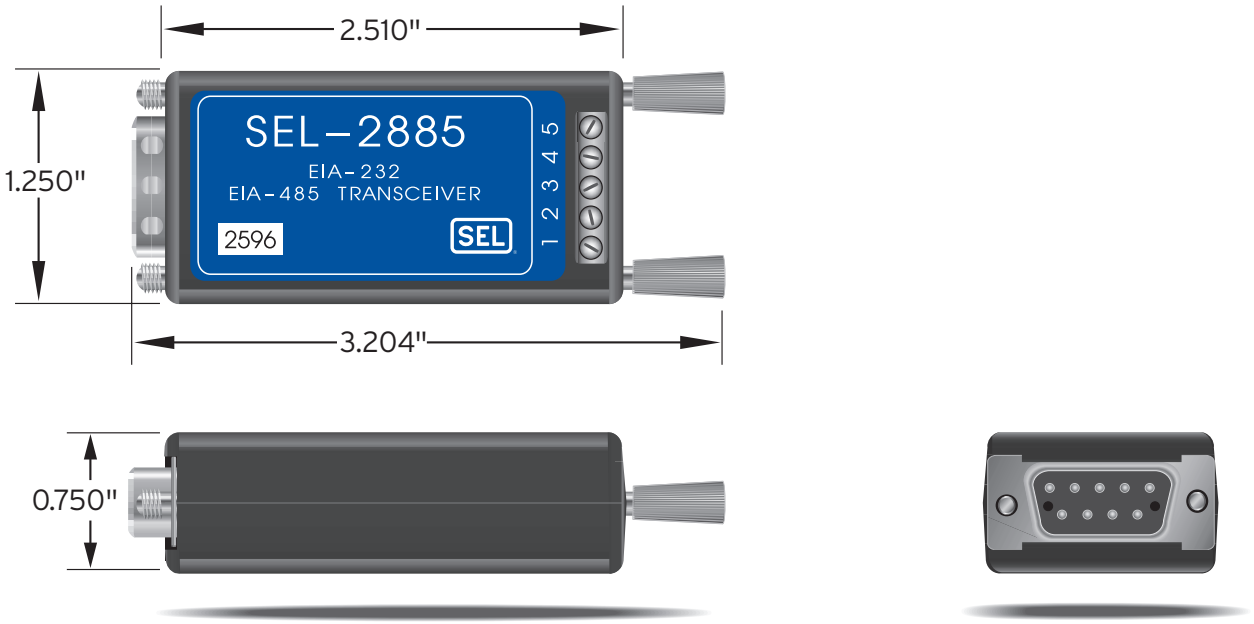
Physical Dimensions



Compatibility

The SEL-2885 is directly compatible with SEL-200, SEL-300, SEL-400, SEL-500, and SEL-700 series relays; SEL-2032, SEL-2030, and SEL-2020 Communications Processors; SEL-2411 and SEL-2440 DPACS; and SEL-2523 and SEL-2533 Annunciators.

SEL-100 series relays and personal computers can also link to the SEL-2885 through an adapter cable.

Related Products

SEL-2886 EIA-232 to EIA-485 Interface Converter

To connect EIA-232 devices with built-in addressable protocols to EIA-485 networks, apply SEL-2886 EIA-232 to EIA-485 Interface Converters, featuring operation over a broad range of data rates, control-switch-selectable choices for controlling the transmitter, and options to provide power through a power pin in the data connector or through a separate jack.

SEL-2820 EIA-485 Fiber-Optic V-Pin Transceiver

Safely add isolated segments to multidrop and point-to-point EIA-485 networks, separated by up to 500 meters. Improve safety, signal integrity, and reliability by using two optical fibers instead of wire to transfer bidirectional serial data. Use with an SEL-2800 Fiber-Optic Transceiver to convert an EIA-232 port to communicate with a remote EIA-485 network, separated by up to 500 meters of fiber-optic cable.

SEL-C642 Configuration/Power Cable

Connect an SEL-2885 to an EIA-232 port on an ac-powered device that does not supply power on Pin 1 of the EIA-232 connector. A plug-in ac power supply is included in the cable.

SEL-C160 Cable for SEL-100 Series Relays

Connect an SEL-100 series relay serial port to an SEL-2885.

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