# World Modem and Socket Module Evaluation Board

## Features

- Supports all CCI Socket Modem functions
- RS-232, Digital Serial & Parallel Host Interfaces
- PCM Audio Support
- Phone, Ethernet and CAN line-side interfaces
- On-board modem status indicators
- Internal 3.3 and 5 volt modem power supply
- Speaker
- Supports all socket modules including modem, wireless, CAN and Ethernet.
- RS-232 via DB-8 connector
- Supports RTS/CTS and XON/XOFF flow control
- CAN support via header and DB-9 connector
- RJ-45 for Ethernet network connection
- 
- Convenient accessible cabling
- Mounting holes for mounting into prototype equipment
- Universal AC/DC power input

## Description

The socket module evaluation board is designed to support current and future Copeland Communications Socket Modules including the complete line of World Modems, CAN, Ethernet and wireless modules. The board provides a flexible platform for evaluation of CCI Socket Modules and system prototyping.

The evaluation board provides convenient connections to all CCI Socket Modules. Specific hardware is provided to support RS-232, digital serial and parallel host interfaces. Industry standard connectors are provided to interface to telephone, CAN and Ethernet networks.

## Block Diagram

Insert Block Diagram

Copeland Communications, Inc.
440 Colony Place, Gahanna, OH 43230
Phone: (614) 475-1690
Fax: (614) 882-6062

Internet: www.copelandcommunications.com
Email: info@copelandcommunications.com
Subject to technical changes
# 03/03 Copeland Communications, Inc.

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## Detailed Specifications

The modem is based on the Silicon Labs SI3015 Silicon DAA and Si2400, Si2414, Si2433 or Si2456 DSP processor. The DSP processor determines the line speed of the modem. The DAA is line powered and isolated from the DSP and host side of the system by high voltage isolations capacitors. See the Si24xx data sheet for detailed description of circuit operation and system interface requirements.

The evaluation board specifications are as follows.

| Item | Specification |
|---|---|
| **Data Rate** | |
| 56K bps-28K<br>2400 bps – 33.6K bps<br>2400 bps – 14.4K bps<br>1200bps<br>300 bps | V.90<br>V.34<br>V.32bis<br>V.22, V.23 or Bell 212A<br>V.21 or Bell 103 |
| **Data Format** | |
| Bit format | Selectable 8,9,10 or 11 bits per character |
| Compatibility | V.23, V.22bis, V.21, Bell 212A & Bell 103 |
| Control | AT command set |
| **Host Interface** | |
| Serial | TTL - 8,9,10 & 11 bit asynchronous data @ 2400-19.2Kbps rate |
| | RS-232 with hardware flow control |
| Parallel | 8 bit interface to data and control registers with 12 deep FIFO |
| Flow Control | CTS, RTS, DCD, RI |
| Interface Select | Two multi-pin jumper blocks with LED inciator |
| **Features** | |
| LED Indicators | |
| POWER | Power is applied to board |
| TXD | Transmit Data |
| RXD | Receive Data |
| CD | Carrier Detect |
| RI | Ring Indicator |
| **Power Requirements** | |
| Input Voltage | 7-18 Volts (AC or DC)<br>Any polarity |
| Output voltage | 5VDC<br>xxxmA max |
| | |

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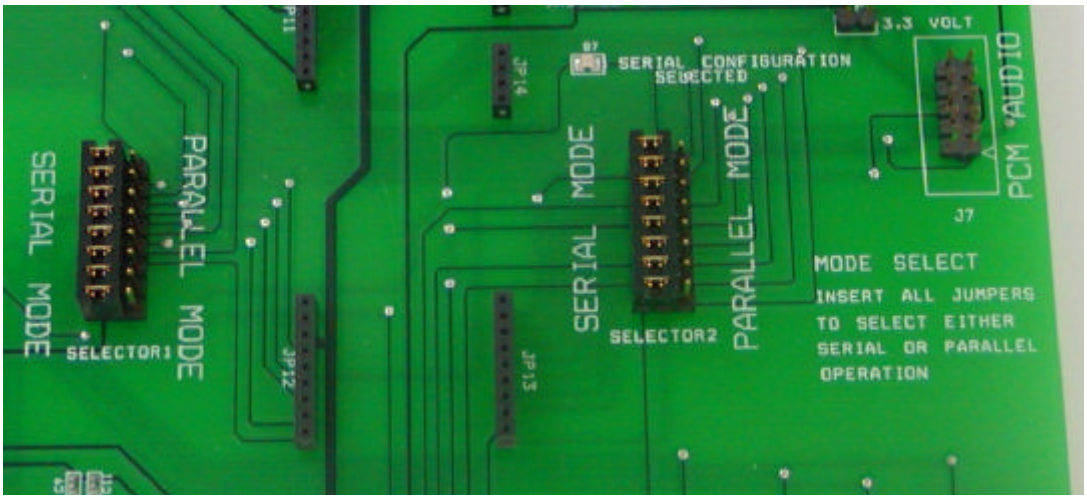
## Host Interface

The evaluation board supports RS-232 serial, TTL serial interfaces with hardware flow control and parallel interfaces.

### Serial/Parallel Interface Select

Two multi-pin jumper blocks select either serial or parallel interface mode. The position of **SELECTOR 1** and **SELECTOR 2** determine the operating mode. Intsall jumpers in the serial position for serial operation (default) or parallel position for parallel operation.

Note: Be sure to use the 8 position jumper plugs provided with the board to set the host interface mode or, if individual jumpers are used, that ALL jumpers are in either the SERIAL or PARALLEL modes.




**SERIAL MODE INDICATOR** (D7) will light when both jumpers are in the serial mode position.

To select the digital interfaces (serial or parallel) remove the RS-232 serial interface jumpers. This disconnects the RS-232 interface and drivers.

The module signals are connected directly to either the TTL serial interface (SERIAL I/F) or the TTL parallel interface (PARALLEL I/F) depending on the position of selector 1 and 2. Both Selectors 1 & 2 must be set to the either serial or parallel mode.

There are no buffers or drivers between the Socket Module and the evaluation board connectors. This provides the user direct electrical access to all the signals on the Socket Module.

### RS-232 Interface

The user can select the RS-232 by installing the RS-232 Select Jumpers on JP3 (Labeled '**SERIAL I/F SELECT**' on Rev 1 of the PCB). This connects the socket module serial interface signals to the on-board RS-232 interface. The output of the RS-232 interface IC connects to the DB-9F connector. The RS-232 interface is fully voltage compliant and is configured as DCE (Data Communication Equipment).

Note: The RS-232 and digital serial interfaces can not be used at the same time.

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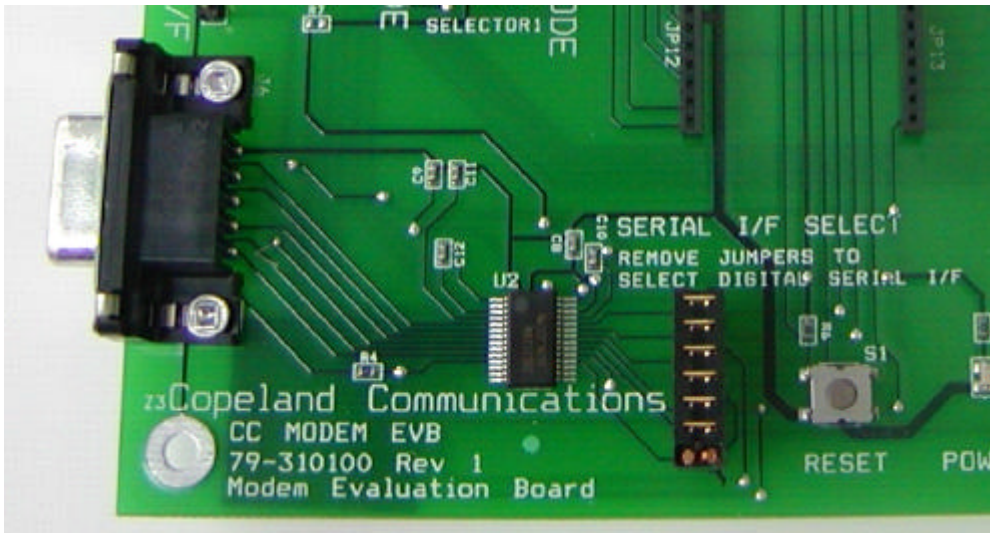


*These notes should be in modem data sheet not here>>>>>>>>>>>>>>>>>>>>>*
*When designing the modem into a custom board, care must be taken to be sure the modem comes out of reset properly. Under normal circumstances these aren't needed, but if these signals have signal traces connected to them, additional pull-ups should be added.*

*~RTS - pin 33 – must be held high during reset (a 10K resistor or directly pulled to VCC)*
*SDI - pin 40 – 10K resistor to VCC*
*~FSYNC - pin 24 – 10K resistor to VCC*
*SDO - pin 27 – 10K resistor to VCC*

**DIGITAL SERIAL INTERFACE**

The serial interface consists of serial receive and transmit data, flow control signals plus power and ground. These are digital CMOS versions of the RS-232 interface signals. The voltage level is set by the voltage selection on the evaluation board or module installed.

**PARALLEL INTERFACE**

The parallel interface consists of an 8 bit bi-directional data bus, bus contols plus 5 volt power and ground.

**Make voltage selector either 5 v or 3.3v, user selectable. This voltage should be the one on the parallel interaface connector.**

See the module datasheet for details of the user interface signals.

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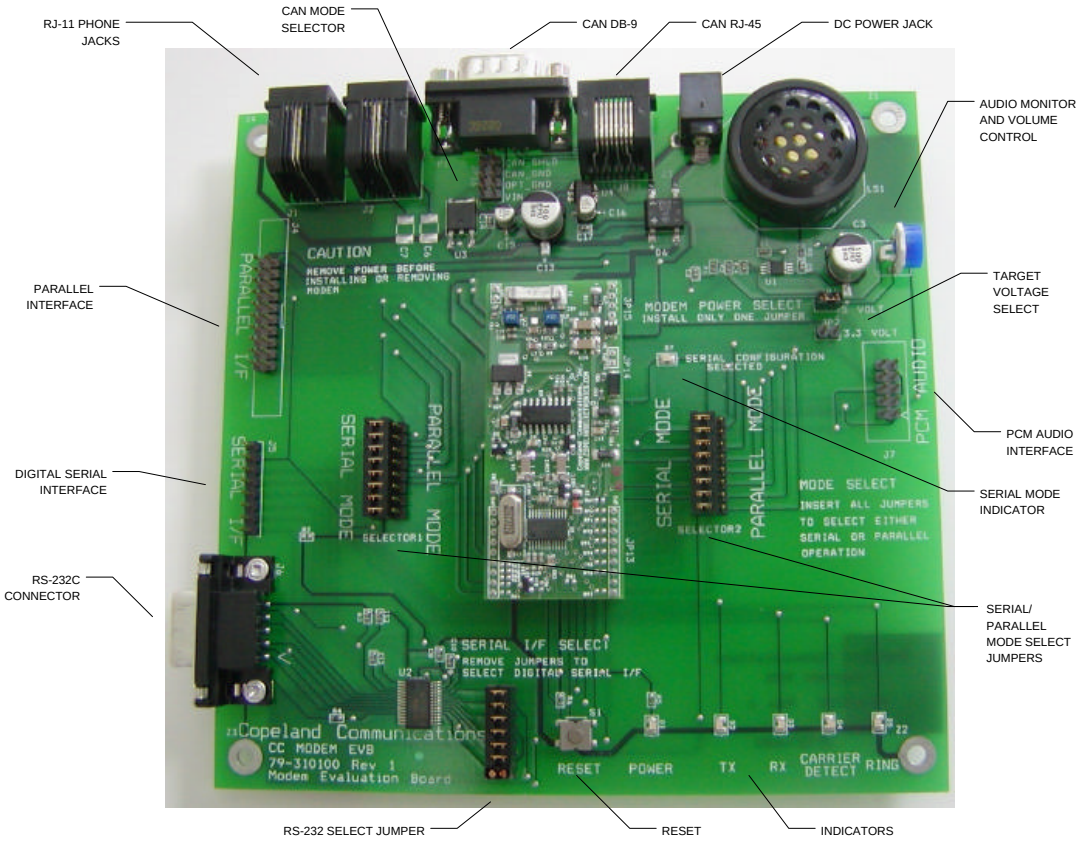


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## QUICK STATE GUIDE

Your evaluation board is delivered configured for RS-232 serial operation.

| | Option | Setting |
|---|---|---|
| Modem (Default configuration – RS-232 19.2KBPS N81) | | |
| | Selector 1 | Serial |
| | Selector 2 | Serial |
| | Serial LED Indicator | Lit |
| | | |
| RS-232 mode selected | Serial I/F Select | Installed |
| | | |
| Target Voltage set to 5 volts | Module Power Selector | 5 volt position |
| | | |
| Modem Settings | Default host speed | 19.2kbps default |
| | | |
| | | |
| | | |
| | | |
| | | |

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## Mechanical

The evaluation board is designed to support the entire family of Copeland Communications modules. These modules are designed on a dual in line package (DIP) configuration with 24mm row spacing and 2mm pin pitch.

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**Ordering**

| Evaluation Kit<br>Including evaluation board, sample module, serial cable, AC adapter and users guide | **CCI Order Number** |
|---|---|
| Sample Module Included: | |
| 9600 baud serial modem | **EVB-9600** |
| 14.4 kb serial modem | **EVB-14.4K** |
| 33kb serial modem | **EVB-33K** |
| 56 kb serial modem | **EVB-56K** |
| | |
| | |
| | |
| No sample module | **EVB-None** |
| | |
| Options | Add suffix |
| European/Asian Version (230 VAC) | **– 230 VAC** |
| | |
| | |
| | |

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