Manuals+ — User Manuals Simplified.

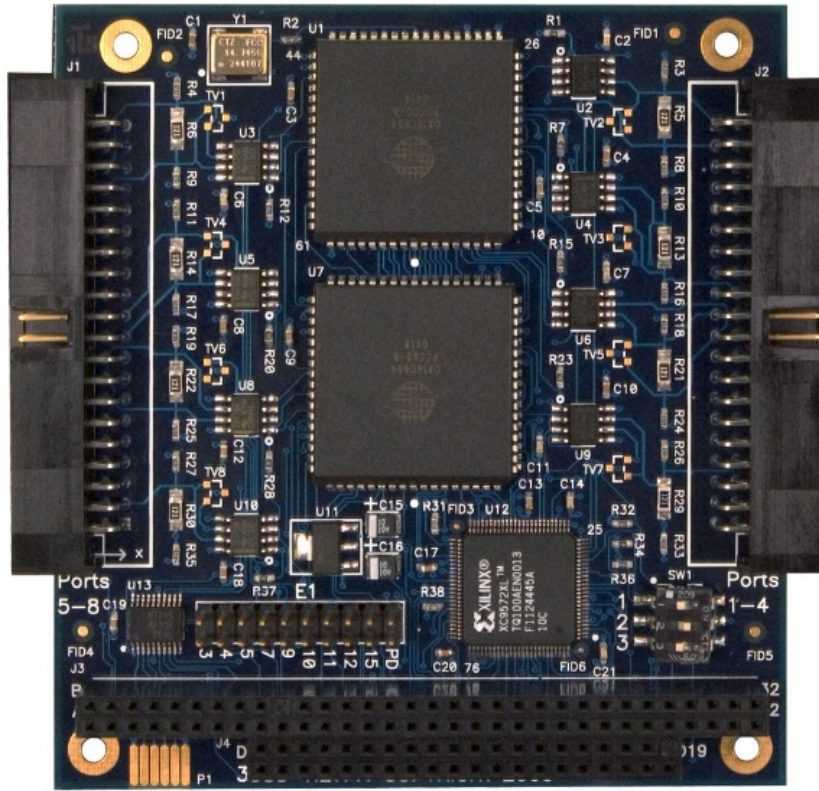# SEALEVEL SIO-104+8.485 Interface User Manual

Contents

SEALEVEL SIO-104+8.485 Interface

Product Information

Specifications

- **Product Name**: SIO-104+8.485
- **Item Number**: 3588
- **Interface**: PC/104 serial interface module
- **Serial Ports**: Eight 2-wire RS-485 serial interface ports
- **Data Rates**: Up to 921.6K bps
- **UARTs**: 16C954 with 128-byte FIFOs
- **Features**: Flexible clock prescalar (from 1 to 31.875), 9-bit protocol support, and isochronous mode
- **Operating Systems Compatibility**: Windows 98/NT/ME/2000/XP, Linux, and DOS
- **API**: SeaCOM API included on CD

Introduction

The SIO-104+8.485, Item Number 3588, is a PC/104 serial interface module with eight 2-wire RS-485 serial interface ports, supporting data rates up to 921.6K bps. The board is designed using a pair of 16C954 UARTs with 128-byte FIFOs. The 16C954 features a flexible clock prescalar (from 1 to 31.875), 9-bit protocol support, and isochronous mode.

RS-485 is optimized for 'Multi-Drop' or 'Party-line' operations selecting data from multiple peripherals (as many as 31 devices can be connected on an RS-485 bus). Optional terminal block adapters are available to simplify field-wiring connections.

The SIO-104+8.485 is designed to be used with a variety of Operating Systems including Windows 98/NT/ME/2000/XP, Linux, and DOS. The SeaCOM API (Application Programmer Interface) included on CD with the SIO-104+8.485 provides a variety of useful high-level function calls implemented as a Windows dynamic link library (DLL) and as a Linux kernel module and library. In addition to the API, SeaCOM includes sample code and utilities to simplify software development.

Product Usage Instructions

Before You Get Started

What's Included: The SIO-104+8.485 is shipped with the following items. If any of these items is missing or damaged, please contact Sealevel for replacement.

- SIO-104+8.485 module
- Advisory Conventions

Advisory Conventions

- **Warning:** The highest level of importance used to stress a condition where damage could result to the product, or the user could suffer serious injury.
- **Important:** The middle level of importance used to highlight information that might not seem obvious or a situation that could cause the product to fail.
- **Note:** The lowest level of importance used to provide background information, additional tips, or other non-critical facts that will not affect the use of the product.

Optional Items

Depending upon your application, you are likely to find one or more of the following items useful with the SIO-104+8.485. All items can be purchased from our website (**www.sealevel.com**) or by calling our sales team at 864-843-4343.

- **Cable Options**
    - Terminates a 40-pin header to four bulkheads mountable DB9 Male connectors. Two are required to terminate both 40-pin headers (all eight ports).
    - Provides a bulkhead mountable DB37 male connector. Designed to be used with the CA143 or with a customer supplied DB37 cable.
    - Terminates the DB37 connector to four DB9 male connectors via a 36 shielded 'spider' cable. Designed to be used with the CA110 cable.
    - IDC 40-pin ribbon cable wired straight through. Standard IDE cable that can be used to connect 40-pin header equipped PC/104 boards to terminal blocks, like the TB10.
    - Bulkhead mountable terminal block assembly with a 40-pin header that terminates to four DB9 male connectors. Can easily be integrated into the RelioTM line of embedded I/O servers from Sealevel Systems.

FAQ

- **Q: What is the maximum data rate supported by the SIO-104+8.485?**

  A: The SIO-104+8.485 supports data rates up to 921.6K bps.
- **Q: How many devices can be connected on an RS-485 bus?**

  A: As many as 31 devices can be connected on an RS-485 bus.
- **Q: Which Operating Systems are compatible with the SIO-104+8.485?**

A: The SIO-104+8.485 is compatible with Windows 98/NT/ME/2000/XP, Linux, and DOS.

- **Q: Where can I purchase optional items for the SIO-104+8.485?**

    A: Optional items for the SIO-104+8.485 can be purchased from our website (**www.sealevel.com**) or by calling our sales team at 864-843-4343.

Introduction

The SIO-104+8.485, Item Number 3588, is a PC/104 serial interface module with eight 2-wire RS-485 serial interface ports, supporting data rates up to 921.6K bps. The board is designed using a pair of 16C954 UARTs with 128-byte FIFOs. The 16C954 features a flexible clock prescalar (from 1 to 31.875), 9-bit protocol support, and isochronous mode.

RS-485 is optimized for 'Multi-Drop' or 'Party-line' operations selecting data from multiple peripherals (as many as 31 devices can be connected on an RS-485 bus). Optional terminal block adapters are available to simplify field-wiring connections.

The SIO-104+8.485 is designed to be used with a variety of Operating Systems including Windows 98/NT/ME/2000/XP, Linux, and DOS. The SeaCOM API (Application Programmer Interface) included on CD with the SIO-104+8.485 provides a variety of useful high-level function calls implemented as a Windows dynamic link library (DLL) and as a Linux kernel module and library. In addition to the API, SeaCOM includes sample code and utilities to simplify software development.

Other Sealevel PC/104 Serial Products

Model No.	Part No.	Description
ULTRA SIO-104	(P/N 3550)	– 1 Port RS-422/485
SIO-104	(P/N 3551)	– 1 Port RS-232
SIO.104+2	(P/N 3502)	– 2 Port RS-232/422/485
C4-104.ULTRA	(P/N 3540)	– 4 Port RS-232/422/485
SIO4-104.232	(P/N 3542)	– 4 Port RS-232
SIO-104.485	(P/N 3543)	– 4 Port RS-422/485
SIO4-104.2+2	(P/N 3544)	– 2 Port RS-232 & 2 Port 422/485

Before You Get Started

What's Included

The SIO-104+8.485 is shipped with the following items. If any of these items is missing or damaged, please contact Sealevel for replacement.

Item# 3588 – SIO-104+8.485 PC/104 Adapter

Advisory Conventions

Warning

The highest level of importance used to stress a condition where damage could result to the product, or the user could suffer serious injury.

Important

The middle level of importance used to highlight information that might not seem obvious or a situation that could

cause the product to fail.

Note

The lowest level of importance used to provide background information, additional tips, or other non-critical facts that will not affect the use of the product.

Optional Items

Depending upon your application, you are likely to find one or more of the following items useful with the SIO-104+8.485. All items can be purchased from our website (**www.sealevel.com**) or by calling our sales team at 864-843-4343.

Cables Options

- **DC40 Ribbon Cable to (4) DB9M, 14" in Length – (P/N CA273)**
  - Terminates a 40-pin header to four bulkheads mountable DB9 Male connectors. Two are required to terminate both 40-pin headers (all eight ports).
- **IDC40 Ribbon Cable to DB37M, 6" in Length – (P/N CA110)**
  - Provides a bulkhead mountable DB37 male connector. Designed to be used with the CA143 or with a customer supplied DB37 cable.
- **DB37F Shielded Cable to (4) DB9M, 36" in Length – (P/N CA143)**
  - Terminates the DB37 connector to four DB9 male connectors via a 36" shielded 'spider' cable. Designed to be used with the CA110 cable.
- **IDC40 to IDC40 Ribbon Cable, 18" in Length – (P/N CA222)**
  - IDC 40-pin ribbon cable wired straight through. Standard IDE cable that can be used to connect 40-pin header equipped PC/104 boards to terminal blocks, like the TB10.
- **IDC40 to (4) DB9M Terminal Block – (P/N TB10)**
  - Bulkhead mountable terminal block assembly with a 40-pin header that terminates to four DB9 male connectors. Can easily be integrated into the Relio™ line of embedded I/O servers from Sealevel Systems.

Hardware Setup

Address Selection

The SIO-104+8.485 occupies 8 consecutive I/O locations. The DIP-switch (SW1) is used to set the base address for these locations. Be careful when selecting the base address as some selections conflict with existing PC ports. The following table shows the addressing options available. If different address options are required, please contact Sealevel Systems Technical Support about a custom option.

SW1-1	SW1-2	SW1-3	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8
OFF	OFF	OFF	DISABLED							
OFF	OFF	ON	300	308	310	318	320	328	330	338
OFF	ON	OFF	400	408	410	418	420	428	430	438
OFF	ON	ON	500	508	510	518	520	528	530	538
ON	OFF	OFF	600	608	610	618	620	628	630	638
ON	OFF	ON	1500	1508	1510	1518	1520	1528	1530	1538
ON	ON	OFF	3220	3228	3230	3238	3240	3248	3250	3258
ON	ON	ON	4220	4228	4230	4238	4240	4248	4250	4258

Interrupt Configuration

The board is set up to always share interrupts. There is a jumper labeled "PD" which is located at (E1) on the SIO-104+8.485. Setting this jumper enables a 1K-ohm pull-down (biasing) resistor required on one adapter when sharing interrupts. The jumper should always be enabled on single SIO-104+8.485 installations (non-shared mode). In multiple SIO-104+8.485 installations, only one board should have the jumper enabled.

IRQ Selection

- The SIO-104+8.485 has an interrupt selection jumper located at (E1), which should be set prior to use, if an interrupt is required by your application software. Consult the user manual for the application software being used to determine the proper setting.
- The SIO-104+8.485 supports the following interrupts: 3, 4, 5, 7, 9, 10, 11, 12, and 15.

Clock Modes

The SIO-104+8.485 utilizes a 14.7456 MHz oscillator. This is eight times faster than the standard **COM**: port oscillator, which typically is 1.8432 MHz. This allows the adapter to achieve a maximum data rate of 921.6Kbps. The following sections outline the baud rate calculations and instructions for achieving your desired baud rate.

Baud Rates and Oscillator value

- The following table shows some common data rates and the rates you should choose to achieve them when using the SIO-104+8.485. If using Windows 95, 98, ME, 2000, or XP, the oscillator value (14.7456 MHz) should be entered into the 'Advanced' tab on the Device Manager applet. Typically this is done automatically when the Sealevel Software driver is loaded.
- When using Windows NT, the 'Advanced Ports' applet in the Control Panel should be launched and the oscillator value entered manually in the 'Advanced' tab, or all data rates will be eight (8) times the selected rate. For example if a data rate of 19.2Kbps is selected, the actual data rate will be 153.6K bps.
- When using any other OS (i.e. Linux or DOS) the following table should be used.

For this Data Rate	Choose this Data Rate
1200 bps	150 bps
2400 bps	300 bps
4800 bps	600 bps
9600 bps	1200 bps
19.2K bps	2400 bps
38.4K bps	4800 bps
57.6K bps	7200 bps
115.2K bps	14.4K bps
230.4K bps	28.8K bps
460.8K bps	57.6 K bps
921.6K bps	115.2 K bps

If your communications package allows the use of Baud rate divisors, choose the appropriate divisor from the following table

For this Data Rate	Choose this Divisor
1200 bps	768
2400 bps	384
4800 bps	192
9600 bps	96
19.2K bps	48
38.4K bps	24
57.6K bps	16
115.2K bps	8
230.4K bps	4
460.8K bps	2
921.6K bps	1

RS-485 Enable
RS-485 is optimized for party line or multi-drop applications. The output of the RS-485 driver is capable of being active (enabled) or tri-state (disabled). This capability allows multiple PCs to be connected in a multi-drop bus and selectively polled. Using the Sealevel SeaCOM driver, RS-485 enable is handled in hardware by the UART. This allows the RS-485 driver to be tri-stated when inactive on a multi-drop polled network. The SIO-104-+8.485 is equipped with 16C954 UARTs that enable the RS-485 drive automatically.

Line Termination
Typically, each end of the RS-485 bus must have line-terminating resistors. The SIO-104+8.485 features a 120-

ohm resistor is across each RS-485 input and a 510-ohm pull-down resistor combination that biases the receiver inputs. The board is not designed to have multiple adapters on the same RS-485 network. Contact Sealevel Technical Support if you have questions on how to remove this termination.

RS-485 'Echo'
The RS-485 'Echo' is the result of connecting the receiver inputs to the transmitter outputs. Every time a character is transmitted, it is also received. The SIO-104+8.485 automatically suppresses this 'Echo'.

Installation

Software Installation
Windows Installation

⚠️ Do not install the Adapter in the machine until the software has been fully installed.

W Only users running Windows 7 or newer should utilize these instructions for accessing and installing the appropriate driver via Sealevel's website. If you are utilizing an operating system prior to Windows 7, please contact Sealevel by calling 864.843.4343 or emailing **support@sealevel.com** to receive access to the proper driver download and installation instructions.

1. Begin by locating, selecting, and installing the correct software from the website -SeaCOM software.
2. Select the "SeaCOM for Windows" download link.
3. The setup file will automatically detect the operating environment and install the proper components.

To confirm that the SeaCOM driver has been successfully installed, click on the 'Start' button, and then select 'All Programs'. You should see the 'SeaCOM' program folder listed.
You are now ready to proceed with connecting the 3588 to your system. Refer to the Hardware Installation section for details.

Linux Installation

N You MUST have "root" privileges to install the software and drivers.

W The syntax is case sensitive.

SeaCOM for Linux can be downloaded here: **https://www.sealevel.com/support/software-seacom-linux/**. It includes the README and the Serial-HOWTO help files (located at seacom/dox/howto). This series of files both explains typical Linux serial implementations and informs the user about Linux syntax and preferred practices.

N User can use a program such as 7-Zip to extract the tar.gz file.

In addition, the software selectable interface settings can be accessed by referencing seacom/utilities/3588mode.

3rd Party Software Support

- Third party software support for many HMI/MMI and other process control software is accessible through links on the Sealevel's website. For the most up to date information on third party software support, please **visit**:

- For additional software support, including QNX, please call Sealevel Systems' Technical Support, (864) 843-4343. Our technical support is free and available from 8:00 AM – 5:00 PM Eastern Time, Monday through Friday. For email support **contact**: support@sealevel.com.

Physical Installation

Extreme care should be taken when installing the SIO-104-+8.485 to avoid causing damage to the connectors. After the adapter is installed, connect your I/O cable(s) to the 40-pin headers located at J1 and J2. Refer to Hardware Setup for information on setting the address and jumper options before inserting the SIO-104-+8.485 onto the stack.

⚠️Do not install the Adapter in the machine until the software has been fully installed.

1. Turn off PC power. Disconnect the power cord.
2. Gently insert the SIO-104-+8.485 connector noting proper key orientation of the expansion connector on a PC/104 compatible card. The SIO-104-+8.485 adapter is keyed per the current PC/104 Specification. This will aid in preventing the adapter from being inserted incorrectly.
3. Mounting hardware (nylon stand-offs and screws) is provided to ensure a good mechanical connection. Retain any mounting hardware not used to allow for future expansion.
4. Remove the case cover (if applicable).
5. Connect the power cord and power up the machine.

The SIO-104-+8.485 is now ready for use.
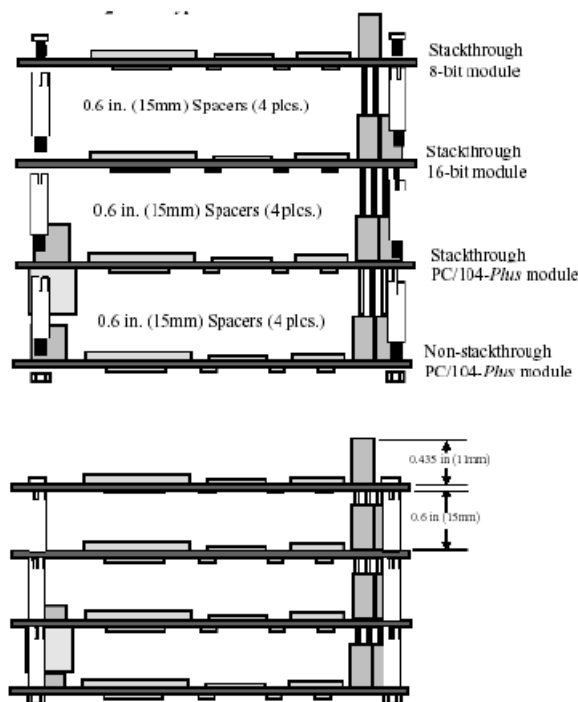
Physical Connection

The port signals for the SIO-104-+8.485 are physically connected via two 40-pin box headers located at board position J2 (Ports 1-4) and J1 (Ports 5-8). Several cable options are available. The following table shows the connector pinout for the 40-pin headers.

Ports 1-4 (J2)			Ports 5-8 (J1)		
PORT	**PIN**	**RS-485**	**PORT**	**PIN**	**RS-485**
1	36	DATA +	5	36	DATA +
1	34	DATA −	5	34	DATA −
1	28	GND	5	28	GND
2	27	GND	6	27	GND
2	21	DATA −	6	21	DATA −
2	19	DATA +	6	19	DATA +
3	18	DATA +	7	18	DATA +
3	16	DATA −	7	16	DATA −
3	10	GND	7	10	GND
4	9	GND	8	9	GND
4	3	DATA −	8	3	DATA −
4	1	DATA +	8	1	DATA +

N All pins not listed are no connects.

DB9 Cabling Options

There are three options available to output the SIO-104+8.485 board's signals to DB9 Male connectors.

Item number CA273 is a 40-pin ribbon cable with four (4) DB9M connectors. Item number CA143 is a cable with a DB37F connector on one end and four (4) DB9M connectors and can be used with Item number CA110, a 40-pin to DB37M cable. Item number TB10 is a bulkhead mountable terminal block with four (4) DB9M connectors. Each of the DB9 options has the same RS-485 pinout, as described in the following table

Pin #	Name	Signal
1	Data Positive	DATA +
2	Data Negative	DATA −
5	Ground	GND

N All pins not listed are no connects.

DB37 Cabling Option

Item number CA110 provides a 6" ribbon cable with a 40-pin connector on one end and a bulkhead mountable DB37 male connector on the other end. The CA110 can be used with the CA143 (DB37 female cable breaking out to four (4) DB9 male connectors) or a customer supplied DB37 cable. The pinout for the DB37 connector is described in the following table

PORT	PIN	RS-485	PORT	PIN	RS-485
1	37	DATA +	5	37	DATA +
	36	DATA −		36	DATA −
	33	GND		33	GND
2	14	GND	6	14	GND
	11	DATA −		11	DATA −
	10	DATA +		10	DATA +
3	28	DATA +	7	28	DATA +
	27	DATA −		27	DATA −
	24	GND		24	GND
4	5	GND	8	5	GND
	2	DATA −		2	DATA −
	1	DATA +		1	DATA +

(N) All pins not listed are no connects.

Electrical Specifications

Features

- Eight 2-wire RS-485 serial ports
- 16C954 buffered UARTs with 128-byte FIFOs
- Automatic RS-485 enable/disable
- IRQ interrupt status port
- Supports interrupt sharing
- Data rates to 921.6K bps
- Extended temperature range available (-40°C – +85°C)

Specifications

Environmental Specifications

Specification	Operating	Storage
Temperature Range	0º to 70º C (32º to 158º F)	-50º to 105º C (-58º to 221º F)
Humidity Range	10 to 90% R.H. Non-Condensing	10 to 90% R.H. Non-Condensing

Power Requirements

Supply line	+5 VDC
Rating	600 mA

Physical Dimensions

Board length	3.775 inches (9.59 cm)
Board Width	3.55 inches (9.02 cm)

Manufacturing
All Sealevel Systems printed circuit boards are built to UL 94V0 rating and are 100% electrically tested. These printed circuit boards are solder mask over bare copper or solder mask over tin nickel.

Appendix A – Troubleshooting

The adapter should provide years of trouble-free service. However, in the event that device appears to not be functioning incorrectly, the following tips can eliminate most common problems without the need to call Technical Support.

1. Install software first. After installing the software then proceed to Physical Installation section of the manual.
2. Identify all I/O adapters currently installed in your system. This includes your on-board serial ports, controller cards, sound cards etc. The I/O addresses used by these adapters, as well as the IRQ (if any) should be identified.
3. Configure your Sealevel Systems adapter so that there is no conflict with currently installed adapters. No two adapters can occupy the same I/O address.
4. Try the Sealevel Systems adapter with a unique IRQ. While the Sealevel Systems adapter does allow the sharing of IRQs, many other adapters (i.e., SCSI adapters & on-board serial ports) do not.
5. Make sure the Sealevel Systems adapter is securely installed.
6. For Windows operating systems, the diagnostic tool 'WinSSD' is installed in the SeaCOM folder on the Start Menu during the setup process. First find the ports using the Device Manager, the use 'WinSSD' to verify that the ports are functional.
7. Always use the Sealevel Systems diagnostic software when troubleshooting a problem. This will help eliminate any software issues and identify any hardware conflicts.

If these steps do not solve your problem, please call Sealevel Systems' Technical Support, (864) 843-4343. Our technical support is free and available from 8:00 A.M.- 5:00 P.M., Eastern Time Monday through Friday. For email support contact **support@sealevel.com**.

Appendix B – How To Get Assistance

Please refer to Troubleshooting Guide prior to calling Technical Support.

1. Begin by reading through the Trouble Shooting Guide in Appendix A. If assistance is still needed, please see below.
2. When calling for technical assistance, please have your user manual and current adapter settings. If possible, please have the adapter installed in a computer ready to run diagnostics.

3. Sealevel Systems provides an FAQ section on its web site. Please refer to this to answer many common questions. This section can be found at **http://www.sealevel.com/faq.asp**.

4. Sealevel Systems maintains a web page on the Internet. Our home page address is **www.sealevel.com**. The latest software updates, and newest manuals are available via our web site.

5. Technical support is available Monday to Friday from 8:00 A.M. to 5:00 P.M. Eastern Time. Technical support can be reached at (864) 843-4343. For email support contact **support@sealevel.com**.

RETURN AUTHORIZATION MUST BE OBTAINED FROM SEALEVEL SYSTEMS BEFORE RETURNED MERCHANDISE WILL BE ACCEPTED. AUTHORIZATION CAN BE OBTAINED BY CALLING SEALEVEL SYSTEMS AND REQUESTING A RETURN MERCHANDISE AUTHORIZATION (RMA) NUMBER.

Appendix C – Electrical Interface

RS-485
RS-485 is backwardly compatible with RS-422; however, it is optimized for party line or multi-drop applications. The output of the RS-422/485 driver is capable of being Active (enabled) or Tri-State (disabled). This capability allows multiple ports to be connected in a multi-drop bus and selectively polled. RS-485 allows cable lengths up to 4000 feet and data rates up to 10 Megabits per second. The signal levels for RS-485 are the same as those defined by RS-422. RS-485 has electrical characteristics that allow for 32 drivers and 32 receivers to be connected to one line. This interface is ideal for multi-drop or network environments. RS-485 tri-state driver (not dual-state) will allow the electrical presence of the driver to be removed from the line. Only one driver may be active at a time and the other driver(s) must be tri-stated. RS-485 can be cabled in two ways, two wire and four wire mode. Two-wire mode does not allow for full duplex communication and requires that data be transferred in only one direction at a time. For half-duplex operation, the two transmit pins should be connected to the two receive pins (Tx+ to Rx+ and Tx- to Rx-). Four wire mode allows full duplex data transfers. RS-485 does not define a connector pin-out or a set of modem control signals. RS-485 does not define a physical connector.

Appendix D – Asynchronous Communications

- Serial data communications implies that individual bits of a character are transmitted consecutively to a receiver that assembles the bits back into a character. Data rate, error checking, handshaking, and character framing (start/stop bits) are pre-defined and must correspond at both the transmitting and receiving ends.

- Asynchronous communications is the standard means of serial data communication for PC compatibles and PS/2 computers. The original PC was equipped with a communication or COM: port that was designed around an 8250 Universal Asynchronous Receiver Transmitter (UART). This device allows asynchronous serial data to be transferred through a simple and straightforward programming interface. A start bit, followed by a pre-defined number of data bits (5, 6, 7, or 8) defines character boundaries for asynchronous communications. The end of the character is defined by the transmission of a pre-defined number of stop bits (usually 1, 1.5 or 2). An extra bit used for error detection is often appended before the stop bits.
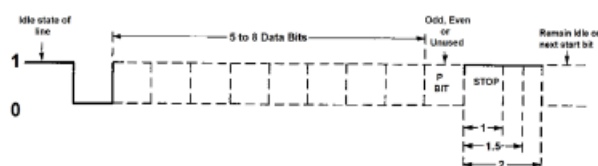

Asynchronous Communications Bit Diagram

This special bit is called the parity bit. Parity is a simple method of determining if a data bit has been lost or corrupted during transmission. There are several methods for implementing a parity check to guard against data corruption. Common methods are called (E)ven Parity or (O)dd Parity. Sometimes parity is not used to detect errors on the data stream. This is referred to as (N)o parity. Because each bit in asynchronous communications is sent consecutively, it is easy to generalize asynchronous communications by stating that each character is

wrapped (framed) by pre-defined bits to mark the beginning and end of the serial transmission of the character. The data rate and communication parameters for asynchronous communications have to be the same at both the transmitting and receiving ends. The communication parameters are baud rate, parity, number of data bits per character, and stop bits (i.e.,9600,N,8,1).

Appendix E – Silk Screen – 3588 PCB
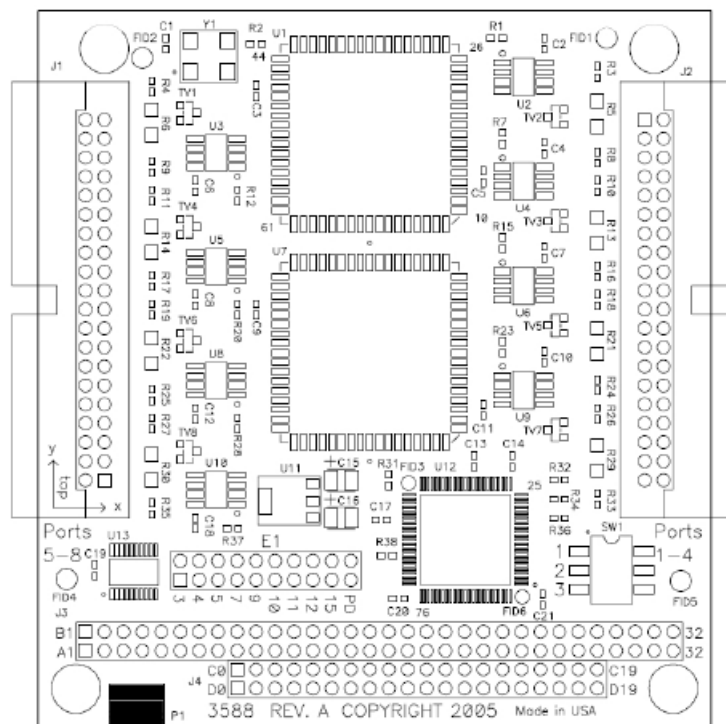
Warranty

Sealevel's commitment to providing the best I/O solutions is reflected in the Lifetime Warranty that is standard on all Sealevel manufactured I/O products. We are able to offer this warranty due to our control of manufacturing quality and the historically high reliability of our products in the field. Sealevel products are designed and manufactured at its Liberty, South Carolina facility, allowing direct control over product development, production, burn-in and testing. Sealevel achieved ISO-9001:2015 certification in 2018.

Warranty Policy

- Sealevel Systems, Inc. (hereafter "Sealevel") warrants that the Product shall conform to and perform in accordance with published technical specifications and shall be free of defects in materials and workmanship for the warranty period. In the event of failure, Sealevel will repair or replace the product at Sealevel's sole discretion. Failures resulting from misapplication or misuse of the Product, failure to adhere to any specifications or instructions, or failure resulting from neglect, abuse, accidents, or acts of nature are not covered under this warranty.

- Warranty service may be obtained by delivering the Product to Sealevel and providing proof of purchase. Customer agrees to ensure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to Sealevel, and to use the original shipping container or equivalent. Warranty is valid only for original purchaser and is not transferable.

- This warranty applies to Sealevel manufactured Product. Product purchased through Sealevel but manufactured by a third party will retain the original manufacturer's warranty.

Non-Warranty Repair/Retest

Products returned due to damage or misuse and Products retested with no problem found are subject to repair/retest charges. A purchase order or credit card number and authorization must be provided in order to obtain an RMA (Return Merchandise Authorization) number prior to returning Product.

How to obtain an RMA (Return Merchandise Authorization)

If you need to return a product for warranty or non-warranty repair, you must first obtain an RMA number. Please contact Sealevel Systems, Inc. Technical Support for assistance

- **Available**: Monday – Friday, 8:00 AM to 5:00 PM EST
- **Phone**: 864-843-4343
- **Email**: **support@sealevel.com**

Trademarks

Sealevel Systems, Incorporated acknowledges that all trademarks referenced in this manual are the service mark, trademark, or registered trademark of the respective company.

Documents / Resources

SIO-104+8.485 User Manual / 3568 [board image] SEALEVEL	**SEALEVEL SIO-104+8.485 Interface** [pdf] User Manual SIO-104 8.485 Interface, SIO-104 8.485, Interface

References

- **SL** **Sealevel - I/O & Computing Products, Engineering and Manufacturing**
- **SL** **Sealevel - I/O & Computing Products, Engineering and Manufacturing**
- **SL** **Sealevel - I/O & Computing Products, Engineering and Manufacturing**
- **SL** **3rd Party Software Support - Sealevel**
- **SL** **Software: SeaCOM - Linux - Sealevel**
- **SL** **Software: SeaCOM - Windows - Sealevel**
- **User Manual**