S400 series
Serial Port Sharer
Owner's Manual

S400-002

CONTENTS

-----Chapter 1-----
Introduction

1-1. Introduction:

S400 series box is one device to support four serial ports with different interface. We can have RS232, RS422/RS485 ,ground isolated RS232 and ground isolated RS422/485 interface.

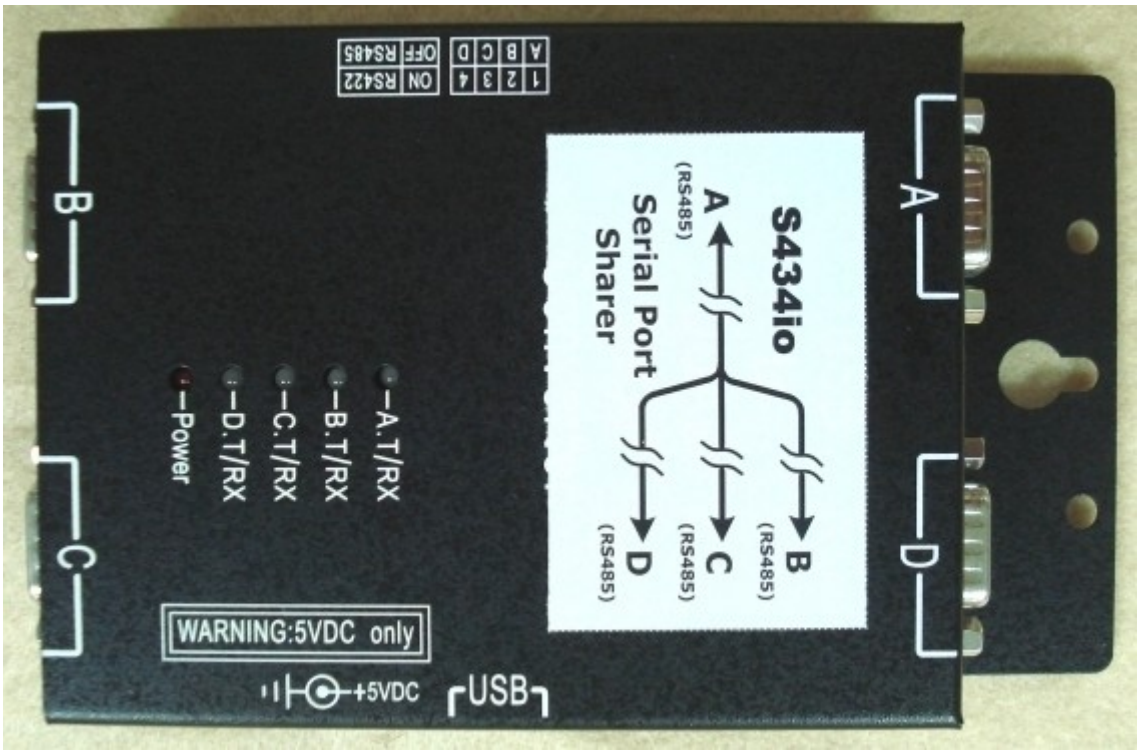
S400 box support one master serial port to three slave serial port.

Generally we use RS232 serial port to connect local equipment. S232 box can support four RS232 serial ports.

When safety connection is major point, we may use ground isolated RS232 serial port. S232io box can support four ground isolated RS232 serial ports.

When user needs to send data over long distance, we may use RS422 interface for full-duplex data transmission or RS485 interface for half-duplex data transmission. S400 box can set the target RS422 or RS485 interface type by DIP SWITCH. S400 box can connect upto four RS422 devices or four RS485 network.

For cost consideration we can have different model for any RS232 ,isolated RS232 and isolated RS422/485 combination.



1-2. Interface type & order information:

S400 box can support RS232, Ground isolated RS232 and Ground isolated RS422/RS485 interface for serial port.

S400 box will use following model name for different interface type.

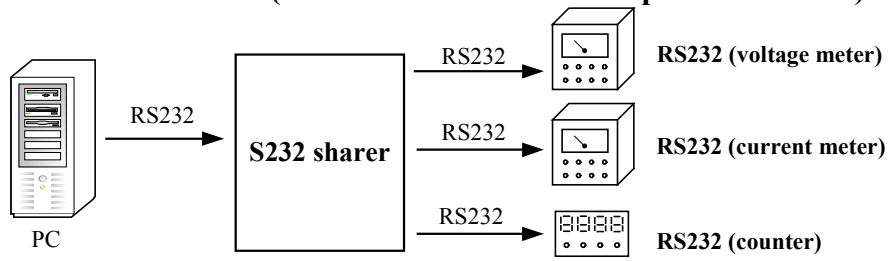
Sxyzio

x is master port interface type. 2 is RS232 and 4 is RS422/RS485.
y is port number of slave serial port.
z is slave port interface type. 2 is RS232 and 4 is RS422/RS485.
i is master port with Ground Isolated feature.
o is slave port with Ground Isolated feature.

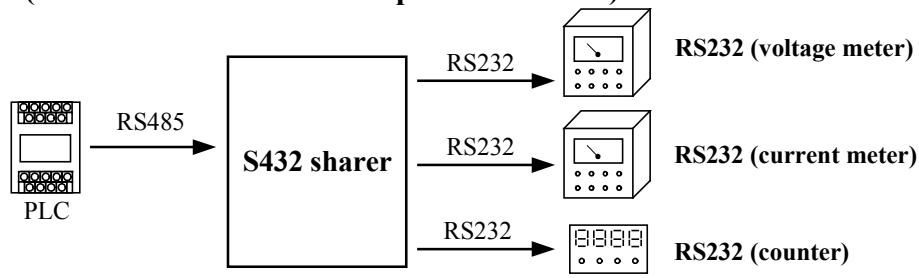
S232 box: support one RS232 master port and three RS232 slave port.
S232io box: support one Ground isolated RS232 master port and three Ground isolated RS232 slave port.
S432 box: support one RS422/RS485 master port and three RS232 slave port.
S432io box: support one Ground Isolated RS422/RS485 master port and three Ground isolated RS232 slave port.
S434 box: support one RS422/RS485 master port and three RS422/RS422 slave port.
S434io box: support one Ground Isolated RS422/RS485 master port and three Ground isolated RS422/RS422 slave port.
S234 box: support one RS232 master port and three RS422/RS485 slave port.
S234io box: support one Ground Isolated RS232 master port and three Ground isolated RS422/RS422 slave port.

What is serial port sharer?

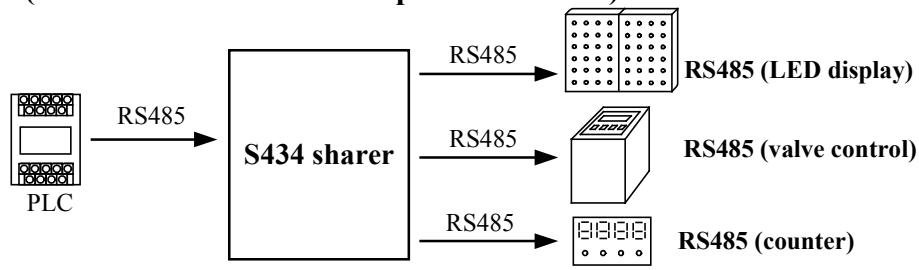
1. One PC can broadcast data to multiple serial port devices and get response from them. (one RS232 master to multiple RS232 slave)



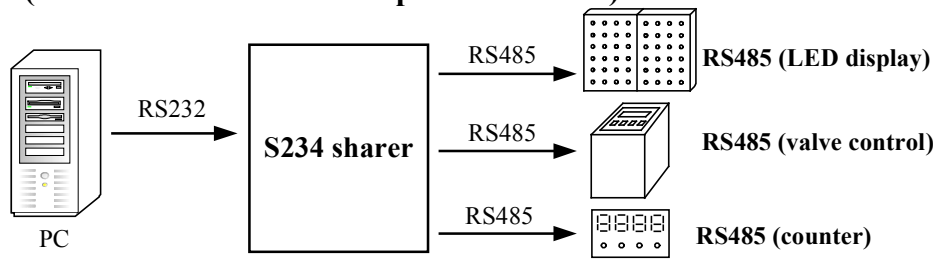
2. One PLC can expand serial port number via one RS485 port. (one RS485 master to multiple RS232 slave)



3. One PLC can extend one RS485 port to multiple RS485 segment. (one RS485 master to multiple RS485 slave)



4. One PC can control multiple RS485 segment. (one RS232 master to multiple RS485 slave)



5. RS232 interface is common ground environment. For rigid environment we may need ground isolation between RS232 device.

6. RS485 interface is used for long distance connection. For rigid environment we may need ground isolation between RS485 device.

-----Chapter 2-----
System Setup

2-1. Introduction

We have one DIP SWITCH to setup the interface type for RS422/RS485.

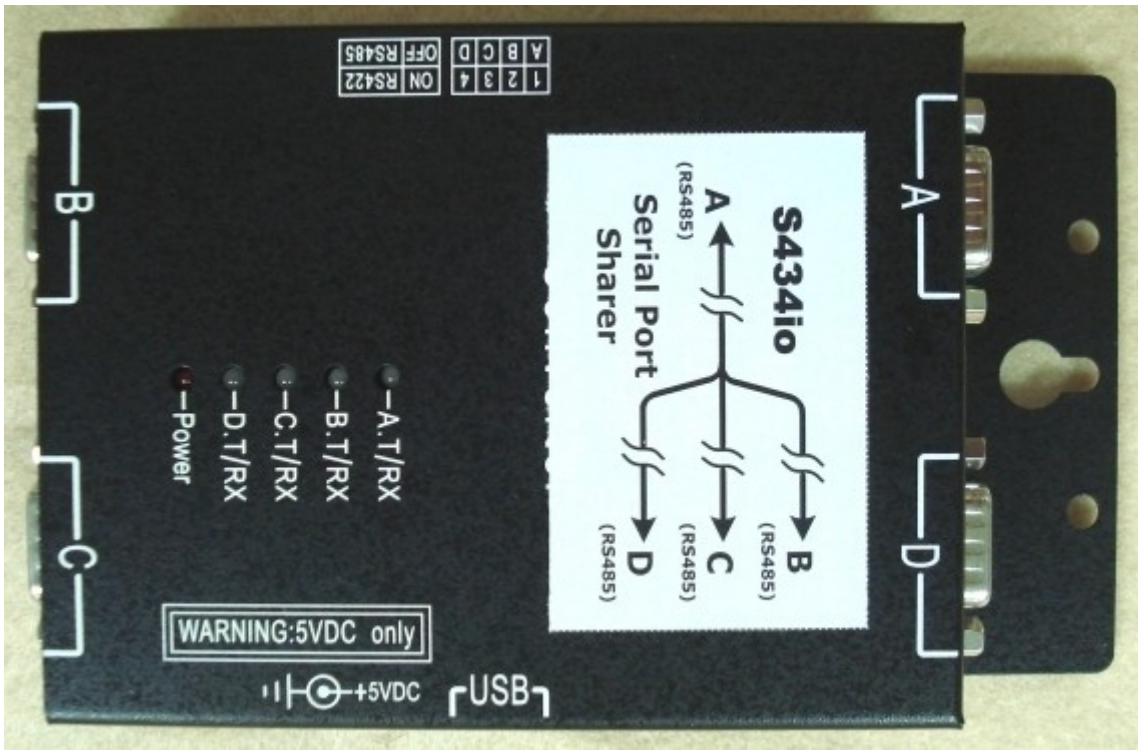
2-2. RS422/RS485 interface setting

Each port we have one bit of DIP SWITCH to set the interface type. Bit 1 is for port A. Bit 2 is for port B. Bit 3 is for port C. Bit 4 is for port D.

When we need to set in RS422 interface type, we need to set corresponding bit of DIP SWITCH in ON location.

When we need to set in RS485 interface type, we need to set corresponding bit of DIP SWITCH in OFF location.

***NOTE: Because RS485 network can only insert terminator resistor in both end of device. So we do not insert terminator resistor in RS485 interface. User may insert terminator resistor externally.



-----Chapter 3-----
Connector Pin Definition

3-1. RS232 connector pin definition.

Each RS232 interface is DB9 male connector with following pin definition.

Pin 1: DCD signal input from external RS232 device.
Pin 2: RXD signal input from external RS232 device.
Pin 3: TXD signal output to external RS232 device.
Pin 4: DTR signal output to external RS232 device.
Pin 5: GND
Pin 6: DSR signal input from external RS232 device.
Pin 7: RTS signal output to external RS232 device.
Pin 8: CTS signal input from external RS232 device.
Pin 9: RI signal input from external RS232 device.

Note: For standard RS232 interface pin 5 is same signal ground as USB bus. For ground isolated RS232 interface pin 5 is isolated.

3-2. DC Power input.

S400 box need 5VDC power input.

UP110/UP220 US/EU type power adapter can accept 100--240VAC power input to support 1000mA 5VDC power output.

3-3. RS422/RS485 connector pin definition.

Each RS422/RS485 interface is DB9 male connector with following pin definition.

Each RS422/RS485 interface has isolated ground signal with other circuitry. So you have isolated ground signal for each serial port and USB bus.

Pin 1 = PULL-.
Pin 2 = 422RXD+ (input) or 485DATA+ signal.
Pin 3 = 422TXD+ (Output) signal.
Pin 4 = 422TXD- (Output) signal.
Pin 5 = isolated GND
Pin 6 = 422RXD- (input) or 485DATA- signal.
Pin 7 = PULL+.
Pin 8 = same as pin3.
Pin 9 = same as pin4.

Note: pin2 and pin3 is shorted as DATA+ signal in RS485 mode. pin4 and pin 6 is shorted as DATA- signal in RS485 mode.
Note: In RS485 mode we may have 10K ohm pull high resistor in DATA+ signal and pull low resistor in DATA- signal. In isolated model we can set 680 ohm pull high and pull low resistor. We just need to short pin 7 & 8 for pull high and pin 1 & 9 for pull low.

-----Appendix A-----
Troubleshooting Procedure for S400 Box

A-1. Please confirm your system structure firstly.

a) The DIP switch to set the interface type of S400 is correct or not.
DIP switch bit is in OFF location for RS485 interface mode. In this mode you need to let pin 2 and pin 3 short as DATA+ signal, pin 4 and pin 6 short as DATA- signal.
DIP switch bit is in ON location for RS422 interface mode.

A-2. Troubleshooting procedure

a) When we confirm that we have correct DIP switch setting in S400 box, we can insert UP110/UP220 power adaptor to S400 box. In normal condition the POWER LED indicator will be ON. If POWER LED were not ON, then we may have components in S400 box damaged. Or you may have damaged power adaptor to use. Please confirm that S400 box can only accept 5VDC power input. If you used wrong power adaptor to support other higher voltage power input , then S400 box component will be damaged.

b) When we send/receive data from RS232 port, there are TXD and RXD double color LED indicator flash in normal condition. If TXD and RXD double color LED indicator were not ON, then we may have RS232 interface IC failed in S400. Please confirm that you have correct cable between S400 box's DB9 connector and your RS232 device.

c) When we set RS422 interface mode in S400 box, we can let DB9 pin2 and pin 3 short,pin4 and pin 6 short. When we send/receive data in serial port. In normal condition we can see the echo data in console. If there were no echo data in console, then we may have RS422 interface IC damaged or DC/DC converter damaged in S400. Please use multimeter to check the voltage level in TXD+ and TXD- signal. If the voltage level for such signal and ground pin were about 0V, then we may have isolated DC/DC converter damaged.

-----Appendix B-----
RMA procedure for S400 series Box

B-1. RETURN MATERIAL AUTHORIZATION (RMA or RA)

RAYON requires that you provide the following information :

* Model number

* RAYON serial number

* The reason for returning the products

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#########################################################################
#  We strongly suggest that you can check with RAYON by E_mail before#
#you can confirm the reason for returning the products. Because some #
#problem may be due to wrong software usage or setup.                 #
#                  rayon@ms1.hinet.net                                 #
#########################################################################
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* Your purchase-order number

You will be given the following information from your RAYON Service Representative:

* Your Return Material Authorization Number (RMA or RA Number)

* Information regarding applicable charges

* The address to which you will return the products

B-2. REPAIR CHARGES

All RAYON products have a one year warranty. Products that are damaged or modified are not covered.

This limited warranty covers defects in materials and workmanship in your RAYON-branded hardware products. This limited warranty does not cover problems that result from:

*external causes such as accident,abuse,misuse,or problems with electrical power.
*Servicing not authorized by us.
*Usage that is not in accordance with product instructions.
*Failure to follow the product instructions or failure to perform preventive maintenance.

Products that are covered under the original warranty and that are found defective by RAYON will be repaired at no cost. A standard handling and testing charge will be assessed for products returned for warranty repair that are found to be operating properly.

Products that are no longer covered under warranty will be repaired, if deemed repairable, for a flat rate charge regardless of the repair work required.

Please contact the nearest RAYON Service Center for current pricing information.