UTS485 & ULOG485 USB Converter Owner's Manaul

UTS485-002

CONTENTS

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

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1-1. Introduction:

UTS485/ULOG485 box is one device to support two RS232 serial ports
and two ground isolated RS422/RS485 serial ports.

Generally we use RS232 serial port to connect local equipment.
UTS485 box can connect upto two RS232 devices via RS232 serial port.

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. UTS485 box can set the target RS422
or RS485 interface type by DIP SWITCH. UTS485 box can connect upto
two RS422 devices or two RS485 network.

ULOG485 box is USB powered type interface converter. One ULOG485 box
can support two sets RS232 to ground isolated RS422/RS485 interface
converter.

Traditionally it is not easy to check the data function for RS232
to RS422/RS485 interface converter. ULOG485 box can monitor the data
input in each serial port. So it is very easy for us to confirm
the RS232 to RS422/RS485 converter function.

Serial port A and C is one set RS232 to ground isolated RS422/RS485
interface converter. Serial port B and D is one set RS232 to ground
isolated RS422/RS485 interface converter. Any data received in serial
port A,B,C,D will be send to host via USB and also convert to other
interface port. So we can monitor received data in each serial port
in host.
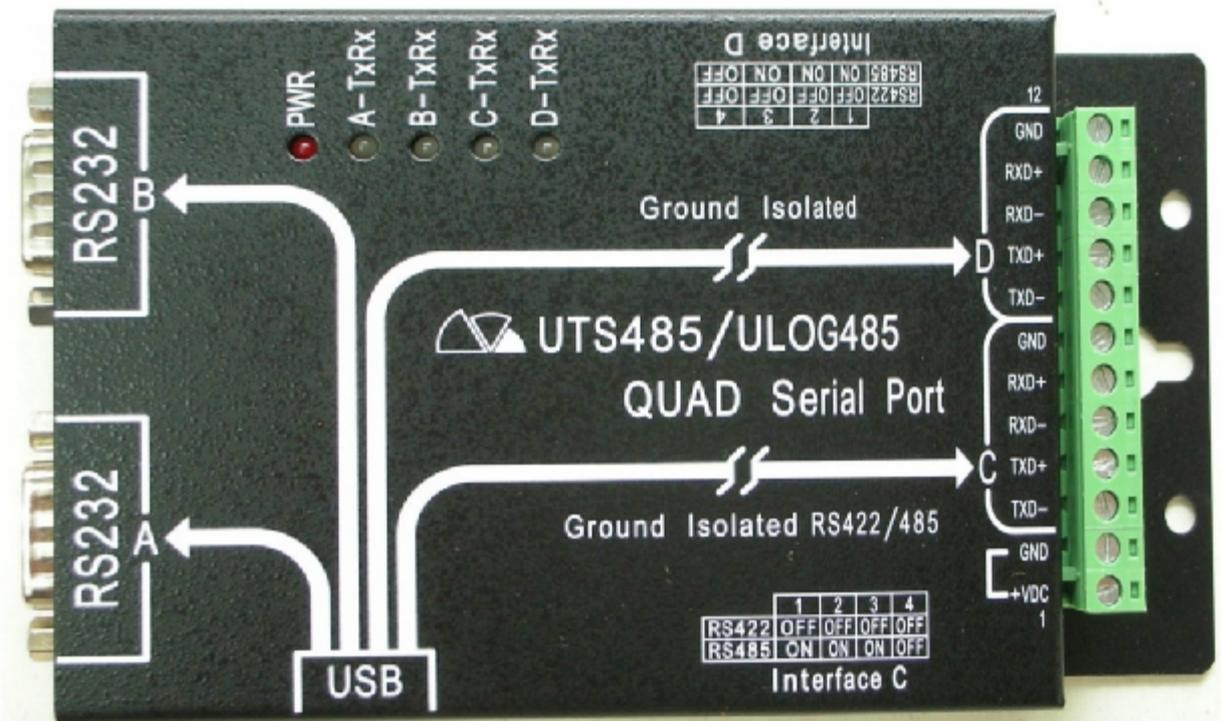
-----Chapter 2-----
System Setup

2-1. Introduction

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

2-2. RS422/RS485 interface setting

Each port we have one 4bit DIP SWITCH to set the interface type and terminator resistor insert or not.

When we need to set in RS422 interface type, we need to set bit1,2,3 of DIP SWITCH in OFF location.

When we need to set in 2-wire type RS485 interface type, we need to set bit1,2,3 of DIP SWITCH in ON location.

When we need to set in 4-wire type RS485 interface type, we need to set bit1 of DIP SWITCH in ON location and bit2,3 in OFF location.

When we need to insert 120 ohm terminator resistor in RS422/485 interface, we need to set bit4 of DIP SWITCH in ON location.

When we don't need to insert 120 ohm terminator resistor in RS422/485 interface, we need to set bit4 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 UTS485 box normally.

2-3. Installation procedure

Please use following procedure to install UTS485/ULOG485 in your system.

STEP 1: set the Interface DIP switch for Port A and Port B as target
RS422 or RS485 interface type.
STEP 2: wire the terminal block for RS422 or RS485 interface.
STEP 3: connect RS232 device to RS232 interface connector.
STEP 4: connect the U101 cable between UTS485/ULOG485 box and PC USB port.
If you had PC power turned on, then the power LED in UTS485
box will be ON.
STEP 5: You can test UTS485/ULOG485 function now.

-----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 (common signal ground of USB bus)
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.

3-2. DC Power input.

We can use the 5V power input from USB bus.

The other is +5V input from TERMINAL BLOCK. Pin 1 is +5V input and Pin 2 is ground. This mode is used in OEM case. We need to remove the power input from USB bus.

The power ground is common ground signal for RS232 interface.

3-3. RS422/RS485 connector pin definition.

Each RS422/RS485 interface has 5 signal pin in TERMINAL BLOCK.

Each RS422/RS485 interface has isolated ground signal with other circuitry. So you have three isolated ground signal for RS232 and two RS422/RS485 interface.

PORT C is in pin3 -- pin7 of TERMINAL BLOCK.
Pin 3 = 422TXD- (Output) signal.
Pin 4 = 422TXD+ (Output) signal.
Pin 5 = 422RXD- (input) or 485DATA- signal.
Pin 6 = 422RXD+ (input) or 485DATA+ signal.
Pin 7 = isolated GND (the signal ground of PORT A only)

PORT D is in pin8 -- pin12 of TERMINAL BLOCK.
Pin 8 = 422TXD- (Output) signal.
Pin 9 = 422TXD+ (Output) signal.
Pin 10 = 422RXD- (input) or 485DATA- signal.
Pin 11 = 422RXD+ (input) or 485DATA+ signal.
Pin 12 = isolated GND (the signal ground of PORT B only)

-----Chapter 4-----
How to install driver in Windows system

4-1. WIN32 driver

For WIN32 environment we can install driver for WIN98SE, WIN Me, WIN2000
WIN XP, WIN2003 system.

Under WIN32 directory you can have MSSETUP.exe , MSUninst.exe files and
Win98&me , Winxp directory.

a) You can run MSSETUP.exe to install driver.
b) You can run MSUninst.exe to remove driver.
c) Or you can specify the driver location in P&P procedure to install
driver. For WIN98SE and WIN Me system you need to specify location
in "Win98&me". For WIN2000/XP/2003 system you need to specify location
in "Winxp".

4-2. WIN64 driver

For WIN64 environment we can install driver for WIN XP,WIN2003 system.
This driver is only support AMD 64bit CPU.

Under WIN64 directory you can have MSSETUP.exe , MSUninst.exe files and
Win64_AMD directory.

a) You can run MSSETUP.exe to install driver.
b) You can run MSUninst.exe to remove driver.
c) Or you can specify the driver location in P&P procedure to install
driver. You need to specify location in "Win64_AMD".

4-3. device

UTS485 box use MCS7840 chip from www.moschip.com . So you can download
new version driver from www.moschip.com.

After driver installation you can find following device in control panel.
a) In Ports we can find four COM port for each UTS485 box
High-Speed USB Serial Port (COM3)
High-Speed USB Serial Port (COM4)
High-Speed USB Serial Port (COM5)
High-Speed USB Serial Port (COM6)

NOTE: Even though there are many items to be set in each device, we
don't suggest user to set them. Because it is the hardware feature
in MCS7840 chip. Any modification in default condition may have
different function result.

b) In USB Controller we can find one USB device for each UTS485 box
High-Speed USB MultiSerial Compound Device.

4-4 fix COM port number

**Because we have EEPROM in UTS485 to give serial number for each UTS485
box, so we can have fixed COM port number for each UTS485 box. When
you install one UTS485 box in one Windows system. Then we can have
fixed COM port number for this UTS485 box. When you connect this UTS485
box in other USB connector, then you can have same COM port number.
For other manufacture's USB converter they may be seen as new USB device
and give new COM port number. So you can find different COM port number
assigned in same USB converter for different USB connector. Then you can
find the available COM port number consumed in P&P procedure. UTS485
do not have such problem. Because UTS485 can assign same COM port
number for same UTS485 box in different USB connector.**

-----Chapter 5-----
How to install driver in Linux system

5-1. Linux driver

We offer source file type driver for Linux system. So user must have
kernel compiler environment to install our driver. We just support
kernel 2.6 system now.

Please prepare one blank directory to install our source file.

a) You just need to run "make" in our source file to generate
   driver .ko file.
b) You can run "make load" to load our module driver. then you can have
   /dev/ttyUSB0--/dev/ttyUSB3 device in your system.
c) If you need to load our module driver in boot procedure automatically
   ,then you need to run "make install". So you can have this feature
   in next boot procedure.

5-2. Device name

Because USB serial device is based on USB host driver, so the serial
port device name will be assigned in P&P procedure. When we have two
UTS485 boxes to install. The first plug in UTS485 box will have device
name /dev/ttyUSB0--/dev/ttyUSB3. The second UTS485 box will have device
name /dev/ttyUSB4--/dev/ttyUSB7.

When you connect both UTS485 boxes and reboot again. Our driver will find
UTS485 box in fix rule. The first UTS485 box to be found will have device
name /dev/ttyUSB0--3 and the second UTS485 box to be found will have
device name /dev/ttyUSB4--7. Please keep in mind that the first UTS485
to be found may not be same as your plug in procedure. So you need to
confirm it. If you do not do anything in both UTS485 boxes, then you
can have same device name for each serial port.

Due to above condition we suggest that user may connect UTS485 to PC
and power on to install driver. Then you can have same device name
for each box. If you use P&P feature to install driver, then the device
name may have different value in next boot.

UTS485 box use MCS7840 chip from www.moschip.com . So you can download
new version driver from www.moschip.com.

-----Appendix A-----
Accessories for UTS485/ULOG485 Box

A-1. U101 cable for PC host and UTS485/ULOG485 box.

**PC USB port is USB type A connector. The USB port in UTS485 box is USB
Type B connector. So we need USB type A to type B cable for PC USB port
and UTS485 USB port. U101 cable is the cable for PC USB port to
connect with UTS485 box.**

-----Appendix B-----
Troubleshooting Procedure for UTS485 Box

B-1. Please confirm your system structure firstly.

    a) **The DIP switch to set the interface type of UTS485 is correct or not.
DIP switch bit 1 is in ON location for RS485 interface mode. In
this mode DIP switch bit 2 and 3 must be in ON location. Normally
DIP switch bit 4 is in OFF location. When you set in ON location,
you must confirm no more terminator resistor in RS485 interface.
DIP switch bit 1 is in OFF location for RS422 interface mode. In
this mode DIP switch bit 2 and 3 must be in OFF location.**

B-2. Troubleshooting procedure

    a) **When we confirm that we have correct DIP switch setting in UTS485
box, we can insert U101 cable between UTS485 box and PC host. In
normal condition when PC is turned on the POWER LED indicator will
be ON. If POWER LED were not ON, then we may have DC/DC converter
in UTS485 box damaged. Or you may have wrong U101 cable to use.**

    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 UTS485. Please confirm that you have correct
cable between UTS485 box's DB9 connector and your RS232 device.
Please confirm that serial COM port is generated in PC host.**

    c) **When we set RS422 interface mode in UTS485 box, we can set DIP switch
bit 2 and 3 in ON location for loopback test. 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 UTS485.
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 C-----
RMA procedure for UTS485/ULOG485 Box

C-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

```
###########################################################################
#   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                                   #
###########################################################################
```

* 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

C-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.

-----Appendix D-----
Application Note for ULOG485 box

D-1. The difference between ULOG485 and UTS485 box

   ULOG485 box is special version UTS485 box. All the software driver and hardware setting is same for ULOG485 and UTS485 box.

   The major difference is ULOG485 box can support RS232 interface to ground isolated RS422/RS485 interface converter function.

   In UTS485 box we just support four serial ports in USB host. Port A and B is RS232 interface. Port C and D is ground isolated RS422/RS485 interface.

   In ULOG485 box we have same function as UTS485 box. But we support interface converter function in Port A , C pair and Port B , D pair. It means that the data received in Port A will be transmitted in Port C. The relationship for interface converter function is as follow:
    a) the data received in port A will be sent to USB host and transmitted in port C simultaneously.
    b) the data received in port B will be sent to USB host and transmitted in port D simultaneously.
    c) the data received in port C will be sent to USB host and transmitted in port A simultaneously.
    d) the data received in port D will be sent to USB host and transmitted in port B simultaneously.

   So we don't need to use USB host in normal RS232 interface to ground isolated RS422/RS485 interface converter function. Then one ULOG485 box can support two sets converter in one box. If you need to check the data transmission function in interface converter, then we can use USB host to monitor the received data in each serial port.

D-2. application structure for ULOG485

   When we have one RS485 application software in one PC. Because the standard interface for PC COM port is RS232 interface. So we need one RS232 to RS485 interface converter for PC COM port to work. Due to RS485 network is half-duplex structure system. So it is not easy to debug the RS485 application environment. It is not easy to confirm the problem is in software issue or hardware interface. Now we can use ULOG485 box as the RS232 to RS485 converter box. Now we can connect PC COM port to port A in ULOG485 box and connect RS485 network to port C in ULOG485 box. Then we can open monitor program (teraterm or rayontty or hyperterm) to display the data received in each serial port. So we can check hardware to work correct or not (data can be received correctly). And we can check software protocol correctly or not.