



RS232C < - > RS485 CONVERTER'S MANUAL

Model: LD15U



INTRODUCTION

Milestone's model LD-15U is a RS232 to RS 485 converter is designed for high-speed data transmission between computer system and or peripherals over long distance under high noise conditions. They provides dual line interface per signal.

APPLICATIONS

Application for these converters can be for factory automation, programmable logic controllers, attendance recording systems, Barcode Readers, remote data transmission, remote terminals, EPABX etc.

Technical Specifications				
Input (RS232C)	RS232C - TxD, RxD, DSR (for control), GND			
Output (RS485)	RS485 – Tx+, Tx-, Rx+, Rx-			
Signal Protection	Each signal is protected by spike suppressor, Opto-Isolation Fuse protection			
Selection Switch – 1	Rear side has 2 way Select switch for Selecting 2 wire or 4 wire mode in RS422 / RS485.			
Selection Switch – 2	1. Rear side has 3 way Select switch for selecting AUTO Mode (no Handshaking Signal), 2. DSR+ Mode (+12V Control) for controlling data flow 3. DSR– Mode (-12V Control) for controlling data flow			
Maximum Distance	1.2 Kms. @ 19,200 bps			
Output Cable	Shielded twisted pair cable –90 Ohms/km. (Not supplied)			
Transient Protection	2500 V Peak			
Indication	Power LED	Rx LED	Tx LED	DSR
Power Supply	230 V, 50 Hz			
Size	117 mm x 105 mm x 55mm			



INSTALLATION INSTRUCTIONS

□ Switch Settings

1. 2-WAY SELECT SWITCH:

Select 2-wire (half duplex) or 4-wire (full duplex) mode on 2-way switch on the back panel.

2. 3-WAY CONTROL SWITCH: (Optional / Old Models) (In new models, it is fully automatic. No selection required)

A. Position 1 - Auto - No Handshake Control

B. Position 2 - DSR + (+12V) to enables RS485 output

C. Position 3 - DSR - (-12V) to enables RS485 output

TABLE I: RS 232 Port – D9 Female Connector

Pin No.	Signal Name	Input / Output
2	Tx	Output
3	Rx	Input
4	DSR	Input
5	Signal Ground	-
6,8	DTR, DTS	Output

TABLE II: Output port-D9 Male connector

Pin No.	Signal Name	Input / Output
3	-Rx	
4	+Rx	
5	+Tx	+Tx/+Rx
6	-Tx	-Tx/-Rx
7	GND.	GND.
1	Frame Ground	Frame Ground



LED Indication:

A	Power	Power to the unit
B	TD	TX Data on RS485
C	RD	RX Data on RS485
D	DSR	Transmit Control

TABLE III: RS 232 Cable

Computer End			RS232 Port on LD-15U	
Pin No on (D-25)	Pin No on (D-9)	Signal	Pin No (D-9, F)	Signal
2	3	Tx	2	Tx
3	2	Rx	3	Rx
6	6	DSR	6	DTR
7	5	GND	5	Sig. Gnd
20	4	DTR	4	DSR
4,5	7,8	RTS.CTS	8	RTS

The above connections are for Standard PC COM Port. Please verify these connections for any other system or terminal before making the cable.

LONG DISTANCE CABLE LAYING

Long distance cable between two RS422/RS485 interfaces must be a twisted pair shielded cable. The pair should be used for each signal type + and – signal. This gives high common mode noise rejection. While laying the cable, care should be taken not to lay this cable parallel to power line cables. The cable resistance should not be more than 90 ohms/1000 meters. The cable should be run through conduit pipe for physical protection.

Cable Diagram for RS-422 / 485:

TABLE IV: OUTPUT CABLE – 4 Wire (RS-422)

D9-Male (LD-15U)	Pin No.	Instrument
-Rx	3	-TX
+RX	4	+TX
+TX	5	+RX
-TX	6	-RX

TABLE V: OUTPUT CABLE – 2 Wire (RS-485)

D9-Male (LD-15U)	Pin No	Instrument
+TX / + RX	5	+TX / +RX
-TX / - RX	6	-TX / -RX

- ❖ Above Cable diagram is for, from unit to (ML LD 15 U) to P.L.C.
- ❖ DB-9 Male is on ML LD 15U. So, you need to use DB-9 Female at RS-422 / 485 LD 15U side.

RS-232 to RS-422 Conversion



RS-232 to RS-485 Conversion





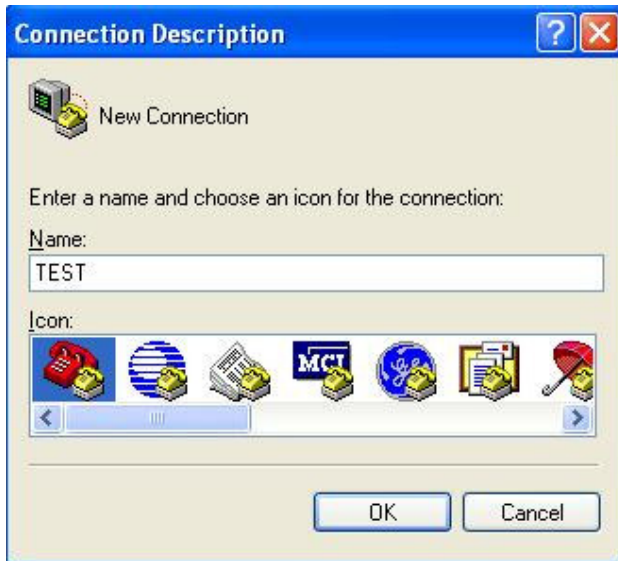
Testing Manual for RS-232 to RS-422/RS-485 Converter (ML LD-15 U)



For testing RS-232 to RS-485 Converter, one should follow the following steps:

1. Check the physical condition of the unit.
2. Plug-in the Converter in the power socket to check the power on the unit.
3. Attach the input cable, which comes with the Converter to get the input of RS-232 signal from the computer.
4. Prepare the Loop-back dongle and attach it on the output (RS-422/485) Port. To prepare this dongle, you need to short pin no. "3 & 6" and "4 & 5" of a 9 pin Female connector at the soldering side. Connect it on the Output port Do not connect any other pin.
5. Start the Hyper Terminal Software for testing the converter. Go to "Start -> Programs -> Accessories -> Communications -> Hyper Terminal".

6. Give the proper file name when asked at the start up. (See image 1.01)



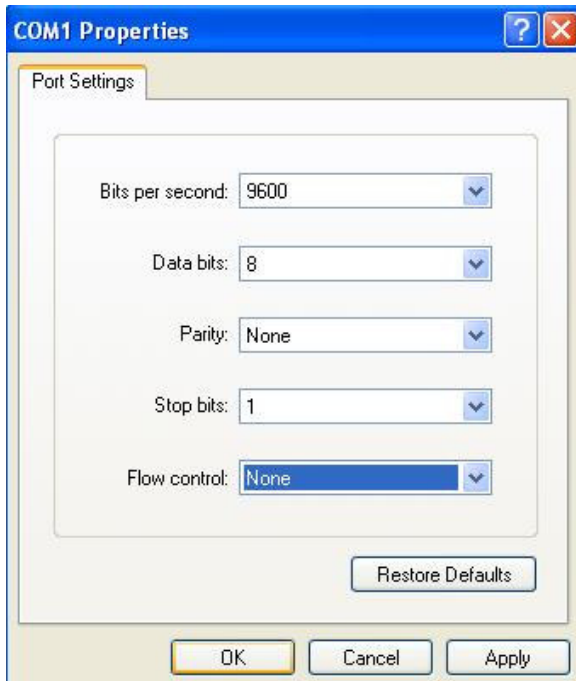
(Image 1.01)

7. Provide proper COM Port when asked to. (See image 1.02)



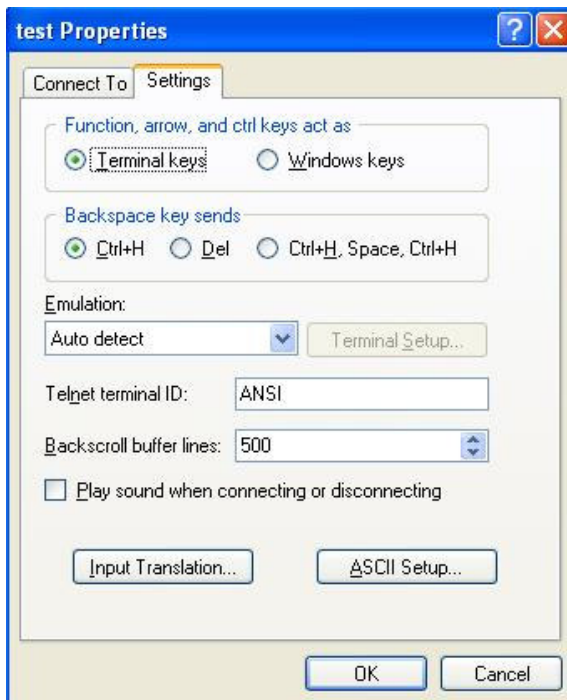
(Image 1.02)

8. Set the properties of the COM Port as shown in the image 1.03



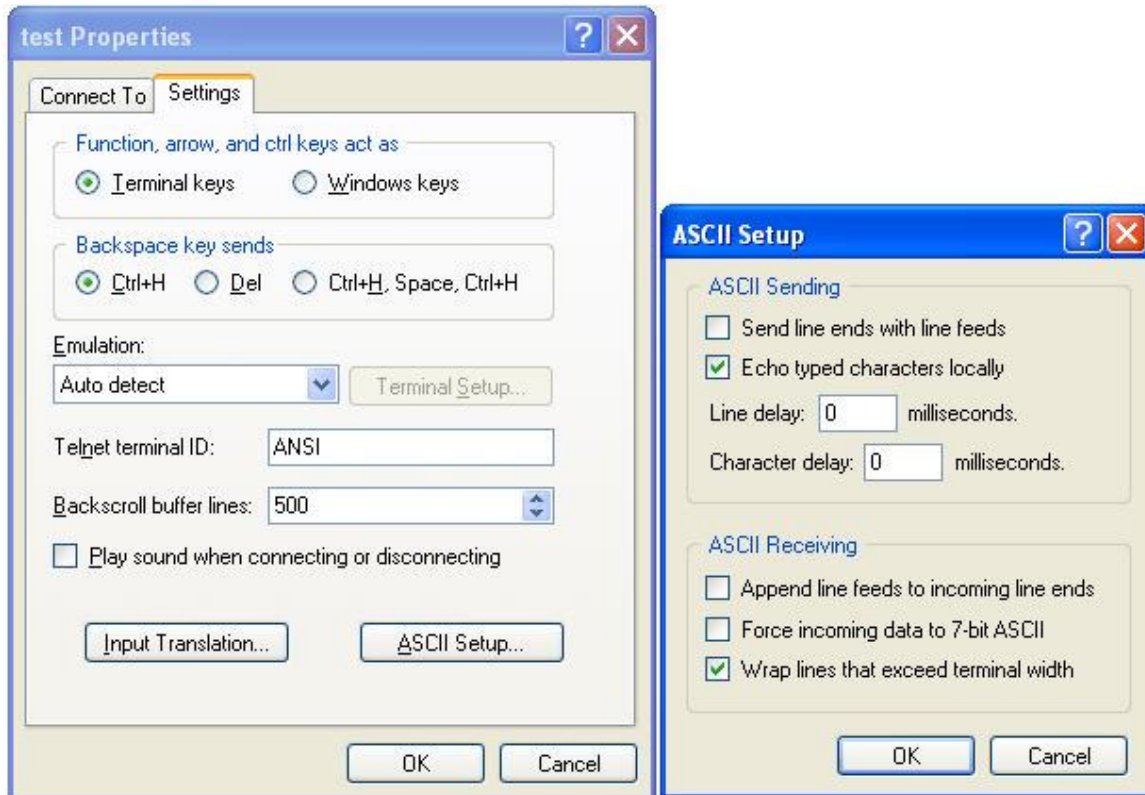
(Image 1.03)

9. Go to File Menu + Properties. Go to Setting Tab in the Properties window. (See image 1.04)



(Image 1.04)

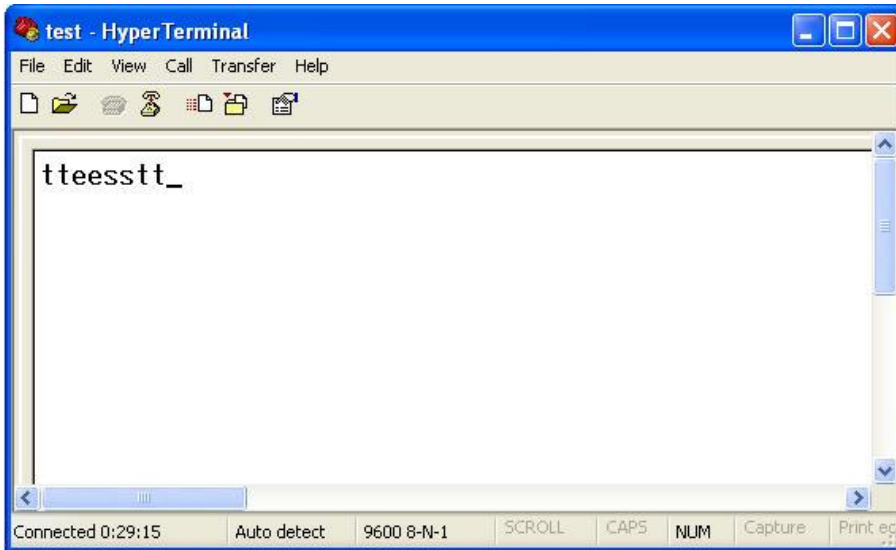
10. In the Settings Tab Click on “**ASCII Setup...**”. In the ‘ASCII Sending’ part, check the box of the line “**Echo typed characters locally**”. Then Click OK. Again click OK for Properties window. (See image 1.05)



(Image 1.05)



11. Set the converter to '4 wire' by a slide switch, situated on the rear panel of the converter. Now, if you type anything it will give display typed twice. (See image 1.06)



(Image 1.06)

If you can see the terminal window as per image 1.06 successfully, it means that the converter is working properly.