Milestone™

RS232C-Line Driver

MODEL: LD-22A & LD-24A

INTRODUCTION

Milestone Line Drivers are designed for high speed data transmission between computer system and or peripherals over long distance under high noise conditions. They provide dual line interface per signal.

There are two models of Line Drivers available.

1. Model LD-22A- Two-Wire Asynchronous with Opto-isolation
2. Model LD-24A - Four-Wire Synchronous with Opto-isolation

ASYNCHRONOUS TRANSMISSION - LD-22A

In asynchronous transmission, only TxD and RxD signals are used. Each signal is converted to two wire signal. Transmit signal is converted to + Tx and –Tx and received signal is converted to +Rx and –Rx signal. Line Driver output will have correspondingly 2 pairs of wires +Tx output from one line driver is connected to +Rx of remote line driver, while –Tx is connected to –Rx.

SYNCHRONOUS TRANSMISSION - LD-24 A

Synchronous transmission uses additionally handshaking signals. Normally, DTR and DSR signal are used. Each signal is converted to 2-wire signal. Hence, Line Driver output will require 4 pair twisted wires. Typical RS 232 cable connections are shown in TABLE IV. In some systems, RTS and CTS signals are used for handshaking. Cable connections for such system are given in TABLE V.

APPLICATIONS

Application for Line Driver can be for factory automation, programmable logic controllers, attendance recording systems, Bar Code Readers, remote data transmission, remote terminals, EPABX etc.

Specifications:	
Input	RS232 D25 Female connector
Output	Two-wire differential output for each signal-D25 Male Connector/Terminal Strip with Opto-Isolation, Surge and Fuse protection
Signals	➢ Asynchronous Model LD-22 A (Supports Tx & Rx) ➢ Synchronous Model LD-24 A (Supports Tx, Rx, DTR & DSR)
Max. Distance	2.5Kms @ 19,200 bps 6.0Kms @ 9,600 bps
Output Cable	Shielded twisted pair cable –90 ohms/km
Transient Protection	2500 V Peak
Front Panel LED	TX, RX, LS, PWR (TC, RC)
Test Facility	Switch on the rear panel for local loop-back test
Power Supply	Mains input –230V AC, 50 Hz
Power	Max. 20 VA Built-In Power Supply

INSTALLATION

Generally, when it is required to communicate between two remotely located systems; a pair of Line Driver is to be installed near each system.

The Front Panel consists of LED indicators showing the status of various transmitted and received signals. The LED blinks when the particular signal is received or transmitted. 'TD' and 'RD' indicate transmit and Receive signals respectively. TC and RC indicate DTR & DSR signals. 'LS' indicates line status when remote Line Driver is connected with Power On condition.

The back panel consists of RS232 port and Line Driver (LD port) port. The Tables I and II give the details of each pin of respective ports. A 2-way slide switch is also provided on the rear panel. "NOR" position is kept for normal working. "LOOP" position is kept while testing in loop-back as explained in Test Procedure.

Typical RS232 cable and Line Driver cable connections are shown in Table, IV, V & VI.

TEST PROCEDURE

1 Connect one Line Driver to a terminal using proper compatible cable on Input RS232 port.

2 Local Loop-Back Test: Put the rear panel slide switch to "LooP" Position. Switch on the line driver and terminal and transmit characters from Terminal. If every thing is normal, ECO-Back characters is receive on the terminal. Otherwise the unit is faulty.

TABLE I: RS 232 Port – D25 Female Connector

Pin No.	Signal Name	In / Out
2	Rx	Input
3	Tx	Output
6*	DTR	Output
7	Signal Ground	-
20*	DSR	Input

* Use for synchronous Model LD24-A

TABLE II: Line driver output port - LD 22A
4 way terminal block

Line Driver Port	Signal Name
1	+TX
2	-TX
3	+RX
4	-RX

TABLE III: Line driver output port - LD 24A
D25 male connector

Line Driver Port	Signal Name
3	-RX
4	+RX
5	+TX
6	-TX
9	-DTR
10	+DTR
11	-DSR
12	+DSR
20	Frame Ground

TABLE IV: RS 232 Cable – LD-22A, LD-24A
Using **DTR** and **DSR** handshaking

Computer End			Line Driver RS232 Port	
Pin No(D-25)	Pin No(D-9)	Signal	Pin no D-25 Male	Signal
2	3	TX	2	RX
3	2	RX	3	TX
6*	6	DSR	6	DTR
7	5	GND	7	Sig Gnd.
20*	4	DTR	20	DSR
4	7	RTS		
5	8	CTS		

* Use these signal for LD-24A

TABLE V: RS 232 cable –LD-22A, LD-24A
Using **RTS** and **CTS** handshaking

Computer End				Line Driver RS232 Port	
Pin No(D-25)	Pin No(D-9)	Signal		Pin no D-25 Male	Signal
2	3	TX		2	RX
3	2	RX		3	TX
4	7	RTS	*	20	DSR
7	5	GND		7	Sig Gnd.
5	8	CTS	*	6	DTR
6	6	DSR			
20	4	DTR			

- Use these signal for LD-24A
- Above connection are for standard PC COM port Pls. Verify these connections for any other system or terminal before making the cable.

LONG DISTANCE CABLE LAYING

Long distance cable between two line drivers must be 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.

TABLE VI: LINE DRIVER CABLE

Line Driver 1	Line Driver 2
-RX	-TX
+RX	+TX
+TX	+RX
-TX	-RX
-DTR*	-DSR
+DTR*	+DSR
-DSR*	-DTR
+DSR*	+DTR

*= use for LD24 A line driver connection