V.35/ EIA530/ RS232/ X.21 Interface Card for Loop-V 4200 28-Port Series User's Manual

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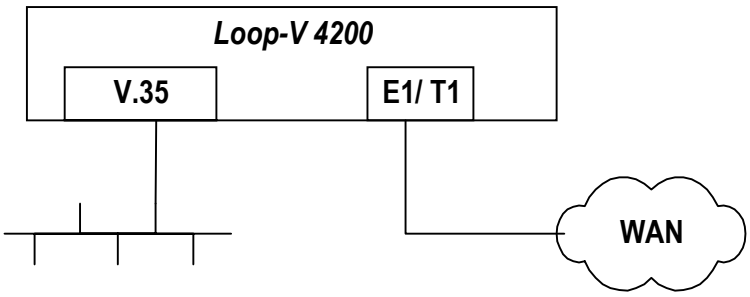
1 PRODUCT DESCRIPTION

1.1 Overview

Loop Telecom's V.35/EIA530/RS232/X.21 plug-in cards are a series of 4 different plug-in cards designed for the Loop-V 4200 series. They allow muliplexing of n x 64 Kbps data to multiples of DS0 time slots onto a digital network.

An LED on the front panel of the Loop-V 4200 provides status indication.

1.2 Applications



1.3 Specifications

Customer Equipment Interface (V.35)

Data Rate	56 or 64 Kbps *n (n=1 - 24/31)	Connector	DB25S for V.35
Mapping	Any sequential time slots	Remote Sending	ESF Mode, proprietary message

Customer Equipment Interface (EIA530)

Data Rate	56 or 64 Kbps *n (n=1 - 24/31)	Connector	DB25S for EIA530
Mapping	Any sequential time slots	Remote Sending	ESF Mode, proprietary message

Customer Equipment Interface (RS232)

Data Rate	56 or 64 Kbps *n (n=1 - 2)	Connector	DB25S for RS232
Mapping	Any sequential time slots	Remote Sending	ESF Mode, proprietary message

NOTE: Because RS232 is specified for 64 Kbps, operation at 128 Kbps or above is not recommended.

Customer Equipment Interface (X.21)

Data Rate	56 or 64 Kbps *n (n=1 - 24/31)	Connector	DB15S for X.21
Mapping	Any sequential time slots	Remote Sending	ESF Mode, proprietary message

2 INSTALLATION

2.1 Mechanical Installation

The V.35/ EIA530/ RS232/ X.21 interface module can be plugged into any of the available slots in the V 4200 chassis.

For increased stability and reliance, please use shielded cables.

2.2 Configuration Setting

Table 2- 1 V.35/DB25 DTE Port Pin Definition

Pin Number	Signal	Source
1	Cable Shield	
2	Transmit Data	DTE
3	Receive Data	DCE
4	Request To Send	DTE
5	Clear To Send	DCE
6	Data Set Ready	DCE
7	Signal Ground	
8	Data Carrier Detect	DCE
9	Receive Clock Return	DCE
10	Unassigned	
11	External Clock Return	DTE
12	Transmit Clock Return	DCE
13	Unassigned	
14	Transmit Data Return	DTE
15	Transmit Clock	DCE
16	Receive Data Return	DCE
17	Receive Clock	DCE
18	Local Loopback	DTE
19	Unassigned	
20	Data Terminal Ready	DTE
21	Remote Loopback	DTE
22	Unassigned	
23	Unassigned	
24	External Clock	DTE
25	Test Mode	DCE

Table 2- 2 T V.35/M34 DTE Port Pin Definition

Pin Number	Signal	Source
A	Cable Shield	
B	Signal Ground	
C	Request To Send	DTE
D	Clear To Send	DCE
E	Data Set Ready	DCE
F	Data Carrier Detect	DCE
H	Data Terminal Ready	DTE
J	Unassigned	
K	Unassigned	
L	Local Loopback	DTE
M	Unassigned	
N	Remote Loopback	DTE
P	Transmit Data	DTE
R	Receive Data	DCE
S	Transmit Data Return	DTE
T	Receive Data Return	DCE
U	External Clock	DTE
V	Receive Clock	DCE
W	External Clock Return	DTE
X	Receive Clock Return	DCE
Y	Transmit Clock	DCE
Z	Unassigned	
AA	Transmit Clock Return	DCE
BB	Unassigned	
CC	Unassigned	
DD	Unassigned	
EE	Unassigned	
FF	Unassigned	
HH	Unassigned	
JJ	Unassigned	
KK	Unassigned	
LL	Unassigned	
MM	Unassigned	
NN	Test Mode	DCE

Table 2- 3 EIA530/DB25 DTE Port Pin Definition

Pin Number	Signal	Source
1	Cable Shield	
2	Transmit Data	DTE
3	Receive Data	DCE
4	Request To Send	DTE
5	Clear To Send	DCE
6	Data Set Ready	DCE
7	Signal Ground	
8	Data Carrier Detect	DCE
9	Receive Clock Return	DCE
10	Data Carrier Detect Return	DCE
11	External Clock Return	DTE
12	Transmit Clock Return	DCE
13	Clear To Send Return	DCE
14	Transmit Data Return	DTE
15	Transmit Clock	DCE
16	Receive Data Return	DCE
17	Receive Clock	DCE
18	Local Loopback	DTE
19	Request To Send Return	DTE
20	Data Terminal Ready	DTE
21	Remote Loopback	DTE
22	Data Set Ready Return	DCE
23	Data Terminal Ready Return	DTE
24	External Clock	DTE
25	Test Mode	DCE

Table 2- 4 X.21/DB15 DTE Port Pin Definition

Pin Number	Signal	Source
1	Cable Shield	
2	Transmit Data	DTE
3	Control	DTE
4	Receive Data	DCE
5	Indication	DCE
6	Signal Timing	DCE
7	External Clock	DTE
8	Signal Ground	
9	Transmit Data Return	DTE
10	Control Return	DTE
11	Receive Data Return	DCE
12	Indication Return	DCE
13	Signal Timing Return	DCE
14	External Clock Return	DTE
15	Unassigned	

Table 2- 5 RS449/DB37 DTE Port Pin Definition

Pin Number	Signal	Source
1	Cable Shield	
2	Unassigned	
3	Unassigned	
4	Transmit Data	DTE
5	Transmit Clock	DCE
6	Receive Data	DCE
7	Request To Send	DTE
8	Receive Clock	DCE
9	Clear To Send	DCE
10	Local Loopback	DTE
11	Data Set Ready	DCE
12	Data Terminal Ready	DTE
13	Data Carrier Detect	DCE
14	Remote Loopback	DTE
15	Unassigned	
16	Unassigned	
17	External Clock	DTE
18	Test Mode	DCE
19	Signal Ground	
20	Unassigned	
21	Unassigned	
22	Transmit Data Return	DTE
23	Transmit Clock Return	DCE
24	Receive Data Return	DCE
25	Request To Send Return	DTE
26	Receive Clock Return	DCE
27	Clear To Send Return	DCE
28	Unassigned	
29	Data Set Ready Return	DCE
30	Data Terminal Ready Return	DTE
31	Data Carrier Detect Return	DCE
32	Unassigned	
33	Unassigned	
34	Unassigned	
35	External Clock Return	DTE
36	Unassigned	
37	Unassigned	

Table 2- 6 Default Software Configuration (Hardware Configuration Noted)

DTE Port Items	Default
Rate	64KxN
Clock	NORMAL
Data	NORMAL
RTS	ACTIVE
TTM	OFF
Time slot assignments	None
V54	ON
INTF	V.35 (Hardware)

3 OPERATION

3.1 DTE Configuration

A detailed option list of DTE configuration is in the following table. The following paragraphs will describe each item.

3.1.1 Rate

The DTE port can operate at 56KxN or 64KxN bps, (N is 1 to 31). Use the Rate command to select 56K or 64K. Use the DS0 MAP command to select number of DS0 time slots that the DTE port is going to occupy. This will determine the exact data rate for the port.

3.1.2 Clock Polarity

Clock polarity of the DTE port is either normal or inverted and is used to drive the transmit data and to sample the receive data.

3.1.3 Data Polarity

Data polarity of the DTE port is either normal or inverted which is used as positive logic or negative logic.

3.1.4 RTS

The DTE facility can use RTS (Request To Send) to control transmission. When RTS is "ACTIVE" and in an OFF state, all ones are sent to the T1 line side on the DTE port associated with the DS0 time slots. When RTS is "PERMANENT," the RTS signal is ignored and forced ON permanently.

3.1.5 TTM

In a normal operating mode, the CSU/DSU uses the transmit clock (from CSU/DSU) to sample the transmit data sent from the DTE. In the Terminal Timing Mode (TTM) the CSU/DSU uses the external clock from the DTE to sample the transmit data. This avoids data reception problems due to phase delay caused by long cables. If the DTE cable is too long, the transmit data, after traversing the cable, may not be in-phase with the transmit clock. By using this feature the transmit data will be in phase with the sampling clock, which in this case will be the external clock from the DTE.

Note that the "external clock" from the DTE can also be used as the CSU/DSU system clock. This choice is independent of the TTM option. See the section on Master Clock for the details.

3.1.6 Interface

The DTE port interface type can be either V.35, RS232, EIA530, and X.21. User must specify the proper interface type when ordering. The interface type can be read from the terminal.

Table 3- 1 DTE Card Default Setting

Item	Options	Default
Rate	56K, 64KxN (N=1 - 24/ 31)	64KxN
Clock	NORMAL, INVERTED	NORMAL
Data	NORMAL, INVERTED	NORMAL
RTS	ACTIVE, PERMANENT	ACTIVE
TTM	ON, OFF	OFF
V54	ON, OFF	ON
INTF	V.35	V.35

3.2 LED Operation

Each plug-in has a rear panel LED, which match the corresponding front panel LED, except as noted.

Table 3- 2 Front and Rear Panel LED Table

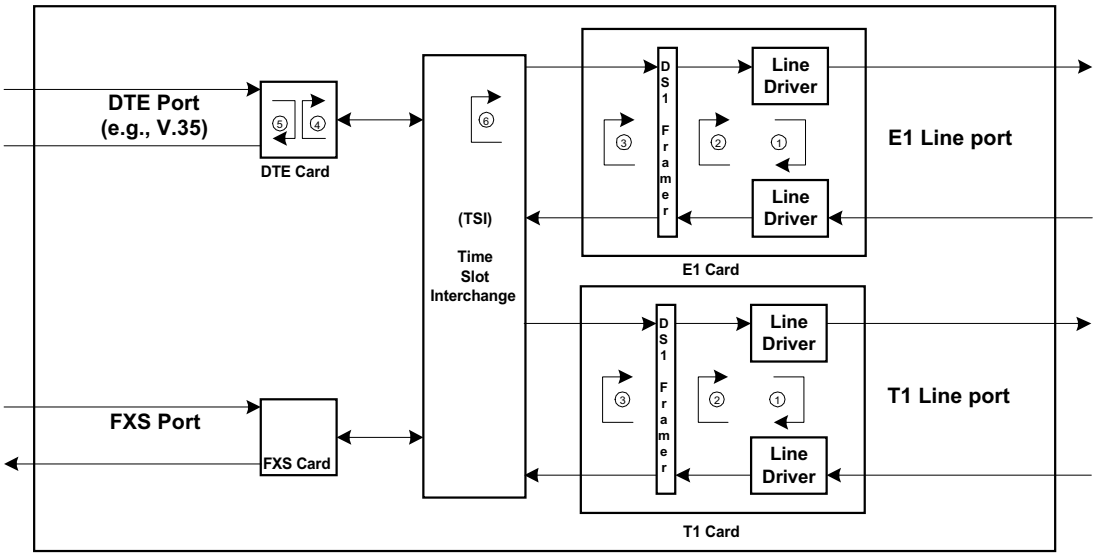
LED	Color	Indication
DTE Type Port (V.35 has no back LED)	Off	Port not alive
	Flashing Green	Loopback is active
	Green	RTS is asserted
	Red	Loss of RTS or loss of clock

3.3 DTE Port Loopbacks

There are two types of DTE loopback: TO-DTE and TO-LINE. These loopback tests are used to isolate DTE equipment connected to the DTE port from other ports. In TO-DTE loopback, an incoming data signal received at the DTE port is looped back to the same DTE port. All ones are sent to the Line port on the DTE-associated DS0 channels.

In TO-LINE loopback, an incoming framed DS0 signal received at the Line port is looped back to the Line port. The DTE port operations are not affected during this test.

NOTE: DTE loopbacks work only when one or more DS0 channels are mapped to the DTE port.



① Local Loopback
② Line Loopback (LLB)
③ Payload Loopback (PLB)
④ DTE port TO-LINE Loopback
⑤ DTE port TO-DTE Loopback
⑥ Time Slot Loopback

Figure 3- 1 Loopback Block Diagram

3.4 V.54 Loopback

Loop-V also supports V.54 loopback protocol. See ITU V.54 standards for details. Refer to ANSI T1.403-1995 Annex B.

4 FRONT PANEL OPERATION

There is no front panel on the Loop-V 4200 28-port IMAP. A hand-held LCD device, which will take the place of a front panel, is currently under development. This device will allow configuration of and access to the various features without the need of a VT100 terminal.

Please stay in contact with your Loop vendor for availability of this device.

5 TERMINAL OPERATIONS

The Loop-V 4200 series provides comprehensive report and enhanced configuration capability through the console port on the front of the main unit. A VT100 type terminal can be connected to the console port, which is a standard RS232 interface. Using single-character commands and arrow keys, The Loop-V 4200 can be configured and monitored. The single-character commands are not case sensitive. On each screen, the available commands and the configurable fields are highlighted. Alarm messages are also sent to the console port and are shown on the top of the screen in a blinking mode. Upon power up, the main menu is shown.

On the upper right corner of the screen, a time-of-day display indicates the time the current screen is shown. Any key, other than **ESC**, may be pressed to update the screen.

NOTE: Without storing the current configuration by using the V-command in the main menu, all new configuration changes will not remain active after the unit is reset.

```
V4200-28CC                  === Controller Menu ===          10:34:45 05/22/2000

Serial Number    : 1                        Connect Port: SUPV_PORT
Hardware Version: VER.A  03/2000            Start Time  : 10:34:19 05/22/2000
Firmware Version: V0.36  05/18/2000         Redundant Controller: Disabled



[DISPLAY]                                   [SETUP]
C -> System Configuration                   S -> System Setup
Q -> Alarm Queue Summary                    P -> Password Setup
I -> Information Summary                    M -> System Alarm Setup
                                            L -> File Transfer
                                            V -> Store/Retrieve Configuration
                                            B -> Port Configuration Copy

[LOG]                                       [MISC]
U -> Choose a Low Speed Unit                A -> Alarm Cut Off
H -> Choose a High Speed Unit               X -> Clear Alarm Queue
F -> Log Off [SETUP],[MISC] Menu            Y -> Controller Return to Default
O -> Log On  [SETUP],[MISC] Menu            Z -> Controller Reset
                                            K -> Load All Ports Default

>>SPACE bar to refresh or enter a command ===>
```

5.1 DTE Port Menu

Press “U” to choose a port for the DTE interface. The following screen appears.

```
PORT HB DTE                    === Port Menu ===          18:03:27 08/15/2000

Version      : SW V2.00  06/05/2000




[DISPLAY]                                 [SETUP]
C -> Unit System Setup Display            L -> Unit Loopback Setup
H -> Unit Alarm History                   M -> Unit Alarm Setup
I -> Unit Status                          S -> Unit System Setup
Q -> Unit Alarm Queue                     X -> Unit Clear Alarm Queue & History




[LOG]                                     [MISC]
U -> Choose a Port                        Y -> Unit Load Default Config
F -> Log Off [SETUP],[MISC] Menu          Z -> Unit Reset
O -> Log On  [SETUP],[MISC] Menu
E -> Return to Controller Main Menu

>>SPACE bar to refresh or enter a command ===>
```

5.2 System Setup Display Menu

Press “C” to view the system setup of the DTE interface. The following screen appears..

```
PORT HB DTE               === Port System Setup ===        18:03:46 08/15/2000


    RATE  = 64K    (BANDWIDTH:  256K)
    CLOCK = NORMAL
    DATA  = NORMAL
    RTS   = PERMANENT
    TTM   = OFF
    V.54  = ON
    INTERF= V.35














<< ESC key to return to previous menu, SPACE bar to refresh >>
```

5.3 Alarm History Menu

To view the alarm history, press “H”. The following screen appears.

```
PORT HB DTE               === Port Alarm History ===       18:03:54 08/15/2000
LOCAL
[ALARM-TYPE]                 [CURR-STATE]   [COUNT]   [ALARM]
DTE_ALARM                       OK             1        ENABLE

















<< ESC key to return to previous menu, SPACE bar to refresh >>
```

5.4 Port Status Menu

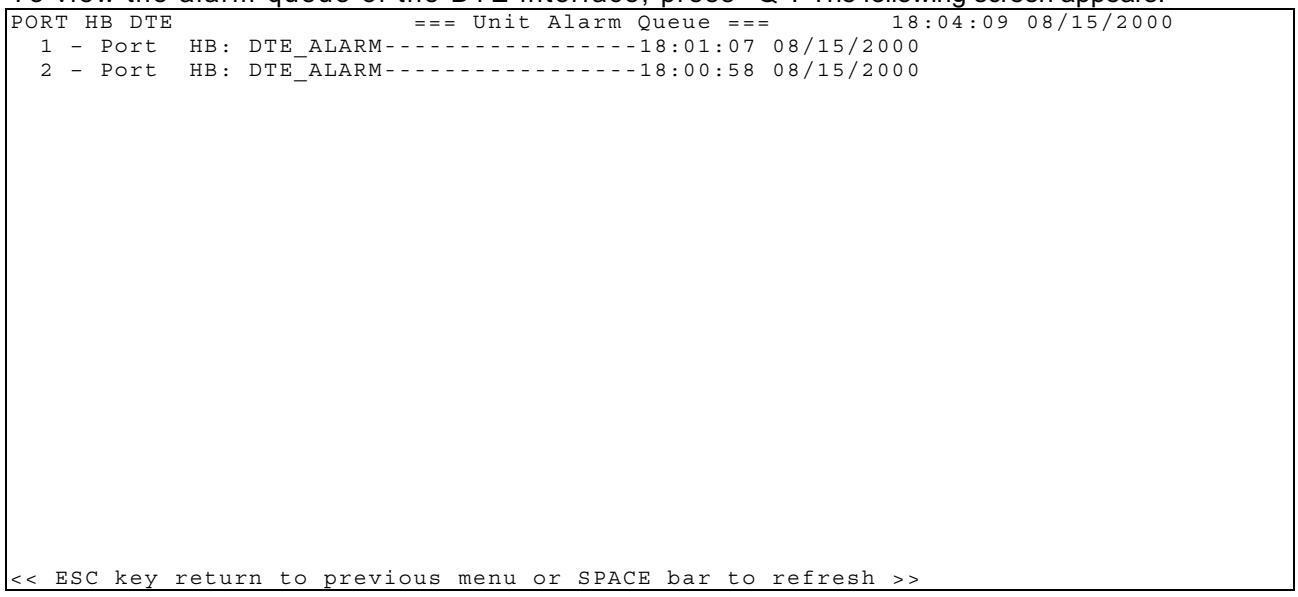
Press “I” to view the port status of the DTE interface. The following screen appears.

```
PORT HB DTE                  === Port Status ===          18:04:03 08/15/2000


-- DTE  --
   RCV RTS : ACTIVE
   XMT CTS : ACTIVE
   XMT DSR : ACTIVE
   XMT DCD : ACTIVE
   DTE RTS LOSS   : NO
   DTE CLOCK LOSS : NO



-- TEST --
   PATTERN TRANSMITTED : OFF
   DTE  LOOPBACK       : OFF









<< ESC key to return to previous menu, SPACE bar to refresh >>
```

5.5 Alarm Queue Menu

To view the alarm queue of the DTE interface, press “Q”. The following screen appears.

```
PORT HB DTE                 === Unit Alarm Queue ===        18:04:09 08/15/2000
  1 - Port  HB: DTE_ALARM-----------------18:01:07 08/15/2000
  2 - Port  HB: DTE_ALARM-----------------18:00:58 08/15/2000
```



```
<< ESC key return to previous menu or SPACE bar to refresh >>
```

5.6 Loopback Setup Menu

To setup the loopback test for the DTE interface, press "L". The following screen appears.

```
PORT HB DTE                 === Port Loopback Test ===        18:04:19 08/15/2000
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT

- DTE  LOOPBACK        : *OFF  TO-DTE  TO-LINE
- SEND V.54 ACTIVATE CODE TO FAR-END:
        *DTE
- SEND V.54 DEACTIVATE CODE TO FAR-END:
        *DTE
- SEND QRSS/PRBS:
        *OFF  DTE-QRSS  DTE-PRBS
- SEND TEST PATTERN:
        *OFF  1-IN-8









- STATUS:

<< Press ESC key to return to previous menu >>
```

5.7 Alarm Setup Menu

Press "M" to setup the DTE interface alarm. The following screen appears.

```
PORT HB DTE                  === Port Alarm Setup ===         18:04:23 08/15/2000
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS
LOCAL
[TYPE]                 [ALARM]
DTE_ALARM              ENABLE

<< Press ESC key to return to previous menu >>
```

5.8 System Setup Menu

To run the system setup for the DTE interface, press “S”. The following screen appears.

```
PORT HB DTE                 === Port System Setup ===        18:04:28 08/15/2000
ARROW KEYS: CURSOR MOVE, TAB: ROLL OPTIONS

    RATE  = 64K    (BANDWIDTH:  256K)
    CLOCK = NORMAL
    DATA  = NORMAL
    RTS   = PERMANENT
    TTM   = OFF
    V.54  = ON
    INTERF= V.35









<< Press ESC key to return to previous menu >>
```

5.9 Clear Alarm Queue and History Menu

Press “X” to clear the alarm queue and history, then enter “Y” or “N” to confirm it.

```
PORT HB DTE                    === Port Menu ===            18:03:27 08/15/2000

Version      : SW V2.00  06/05/2000




[DISPLAY]                                [SETUP]
C -> Unit System Setup Display           L -> Unit Loopback Setup
H -> Unit Alarm History                  M -> Unit Alarm Setup
I -> Unit Status                         S -> Unit System Setup
Q -> Unit Alarm Queue                    X -> Unit Clear Alarm Queue & History




[LOG]                                    [MISC]
U -> Choose a Port                       Y -> Unit Load Default Config
F -> Log Off [SETUP],[MISC] Menu         Z -> Unit Reset
O -> Log On  [SETUP],[MISC] Menu
E -> Return to Controller Main Menu

>> Clear alarm queue of PORT HB - are you sure? [Y/N]
```

5.10 Load Default Configuration Menu

Press “Y” to return the default, then enter “Y” or “N” to confirm it.

```
PORT HB DTE                    === Port Menu ===            18:03:27 08/15/2000

Version      : SW V2.00  06/05/2000




[DISPLAY]                                [SETUP]
C -> Unit System Setup Display           L -> Unit Loopback Setup
H -> Unit Alarm History                  M -> Unit Alarm Setup
I -> Unit Status                         S -> Unit System Setup
Q -> Unit Alarm Queue                    X -> Unit Clear Alarm Queue & History




[LOG]                                    [MISC]
U -> Choose a Port                       Y -> Unit Load Default Config
F -> Log Off [SETUP],[MISC] Menu         Z -> Unit Reset
O -> Log On  [SETUP],[MISC] Menu
E -> Return to Controller Main Menu

>> Return to default - are you sure ? [Y/N]
```

5.11 Reset Menu

To reset the unit system information, press “Z”, then enter “Y” or “N” to confirm it.

```
PORT HB DTE                    === Port Menu ===            18:03:27 08/15/2000

Version      : SW V2.00  06/05/2000




[DISPLAY]                                [SETUP]
C -> Unit System Setup Display           L -> Unit Loopback Setup
H -> Unit Alarm History                  M -> Unit Alarm Setup
I -> Unit Status                         S -> Unit System Setup
Q -> Unit Alarm Queue                    X -> Unit Clear Alarm Queue & History




[LOG]                                    [MISC]
U -> Choose a Port                       Y -> Unit Load Default Config
F -> Log Off [SETUP],[MISC] Menu         Z -> Unit Reset
O -> Log On  [SETUP],[MISC] Menu
E -> Return to Controller Main Menu

Reset - are you sure ? [Y/N]
```