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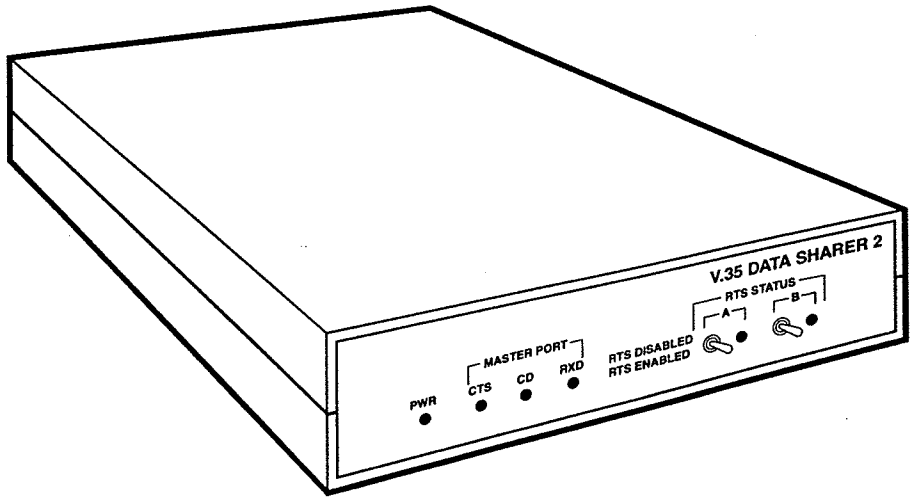
JULY 1999
TL555A
TL555AE

V.35 Data Sharer 2 Port



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1.0 Specifications

Interface.....CCITT V.35

Protocols.....Asynchronous or synchronous data transmission

Operation.....Full- or half-duplex

Contention Type.....RTS/CTS

Clock.....External (passed through from DCE source)

Configurations.....Master Port: DTE; Slave Ports: DCE

Connectors.....(3) Rear-mounted 34-pin female M-block-type

Data Rates.....Transparent to all data speeds up to 2.5 Mbps

Indicators.....(6) Front-mounted LEDs: Power, RTS A, RTS B, and Master Port: CD, CTS, and RXD

Controls.....(2) External (front-mounted toggle switches): RTS A Enabled/Disabled, RTS B Enabled/Disabled; (3) Internal (jumpers): RTS Delay (0 or 25 ms), RXD Broadcast or Gated Mode, Normal (Contention) or Port B Override

Power.....From attached wallmount power supply:
TL555A: 115 VAC, 60 Hz @ 120 mA;
TL555AE: 230 VAC, 50 Hz @ 60 mA

Dimensions.....2.5"H x 8.1"W x 11.3"D (6.4 x 20.6 x 28.7 cm)

Weight.....6 lb. (2.7 kg)

Enclosure.....Steel

Operating Temperature.....32° to 131°F (0° to 55°C)

Storage Temperature.....–4° to 158°F (–20° to 70°C)

Humidity.....0 to 95% relative humidity, noncondensing

Mean Time Between Failures (ground-benign environment).....140,000 hrs.

2.0 Introduction

The V.35 Data Sharer 2 Port allows multiple devices, such as mainframe controllers, terminals, etc., to share a single V.35 line connected to one modem or multiplexor port. This means you spend less money leasing telephone lines and buying modems.

Some of the Sharer's features:

- Transparent to data
- Transparent to data rates up to 2.5 Mbps
- Synchronous and asynchronous data transmissions
- Front-panel switches for enabling and disabling RTS (Request to Send) signal on each input port
- Jumper-selectable options:
  a) RTS delay (0 or 25 milliseconds [ms])
  b) RXD operation (gated or broadcast mode)
  c) Port selection (Equal contention or Port B overrides Port A)

In all applications, the V.35 Data Sharer 2 Port shares a single V.35 line among multiple devices. Beyond that, applications will vary depending on the function of the device connected to the Sharer's master port. Typical synchronous and asynchronous applications are described on the following pages.

2.1 Typical Synchronous Application

- In this kind of application, the devices sharing the line (the "slave devices") are usually controllers at a remote site. The shared line runs from the V.35 Data Sharer 2 Port to a modem (the "master device") that is ultimately linked to a host computer. The controllers must be configured for use with multipoint modems, with the Request to Send (RTS) signal switched. RTS has to be switched because if one controller were to keep RTS high, it could monopolize ("hang" or "tie up") the Sharer indefinitely.
- Suggested jumper settings for a Sharer in this type of application:
  - √ Jumper W2 in A–B position (0 ms RTS delay)
  - √ Jumper W3 in A–B position (RXD Broadcast Mode)
  - √ Jumper W4 in A–B position (equal contention)
- The V.35 Data Sharer 2 Port is transparent to communications protocol (SDLC, BSC, etc.), data-encoding technique (NRZ, NRZI, etc.), and addressing.

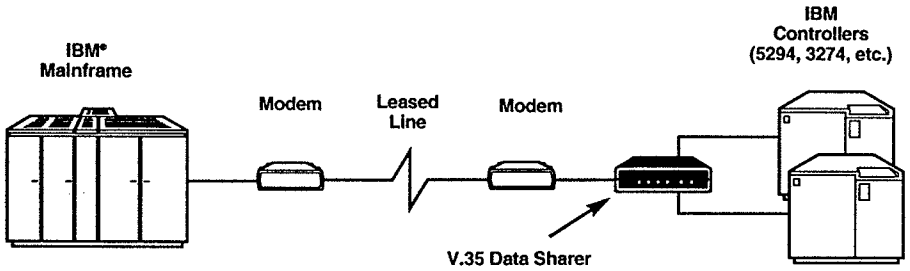

Figure 2-1. Synchronous application—V.35 Data Sharer in an IBM® multipoint environment.

2.2 Typical Asynchronous Application

- In this kind of application, the devices sharing the line (the "slave devices") are usually local terminals. The shared line runs from the V.35 Data Sharer 2 Port directly to a controller, processor, or host (the "master" device). The terminals must be able to switch the Request to Send (RTS) signal and wait for the Clear to Send (CTS) signal before sending data. This is because if one terminal were to keep RTS high, it could monopolize ("hang" or "tie up") the Sharer indefinitely.
- Suggested jumper settings for a Sharer in this type of application:
  - √ Jumper W2 in B–C position (25 ms RTS delay)
  - √ Jumper W3 in B–C position (RXD Gated Mode)
  - √ Jumper W4 in A–B position (equal contention)

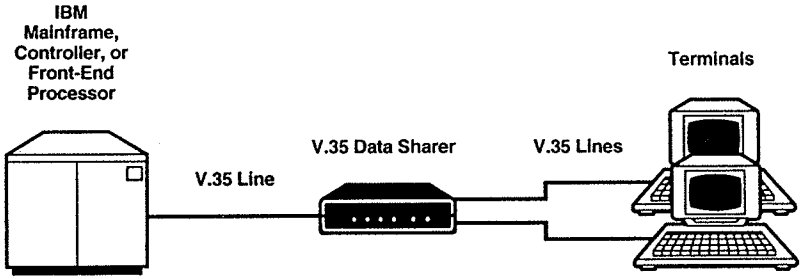

Figure 2-2. Asynchronous application—V.35 Data Sharer providing 2 dumb terminals with access to an async computer.

3.0 Front-Panel Indicators and Controls

Here is a description of each of the V.35 Data Sharer 2 Port's front-panel indicators and switches.

The LEDs

PWR
If this LED is lit, the Sharer is ON. If not, either the Sharer is OFF or it's not getting any power.

RTS A, RTS B
Each of these LEDs indicates the status of the RTS signal for the corresponding slave port. When the Request to Send signal is raised on either of the slave ports, the corresponding LED will light up.

Master Port CD, CTS, and RXD
The Sharer lights these LEDs when a device attached to the master port has asserted CD (Carrier Detect), CTS (Clear to Send), or RXD (Received Data) signals.

The Switches

RTS Toggle Switches
You can use these switches to enable or disable the Sharer from detecting an RTS signal on either or both of the slave ports. Disabling a port's RTS detection will cut off that port's device from the modem or CPU. This feature is useful if you want to isolate a slave device, especially if the device is malfunctioning.

- RTS Enabled — A slave port's RTS detection is enabled when the port's switch is in the *down* position (the factory-default setting). The port's RTS LED will light when the port's device raises RTS.
- RTS Disabled — A slave port's RTS detection is disabled when the port's switch is in the *up* position. The port's RTS LED will always be off whether the port's device raises RTS or not.

4.0 Jumper-Selectable Options

Figure 4-1, below, shows an overhead view of the V.35 Data Sharer 2 Port's internal circuit board.

1. JUMPER W1 — TYING SIGNAL GROUND TO FRAME GROUND

Using jumper W1, you can tie signal ground to frame ground. The position is left open at the factory. If signal ground is to be connected to frame ground, we recommend that you solder a 100Ω , 0.5 W resistor in location W1. You can use a wire jumper instead of a resistor, but be careful that ground circulating currents are limited to acceptable levels.

2. JUMPER W2 — RTS DELAY

You can set jumper W2 for the amount of time you want the RTS signal to

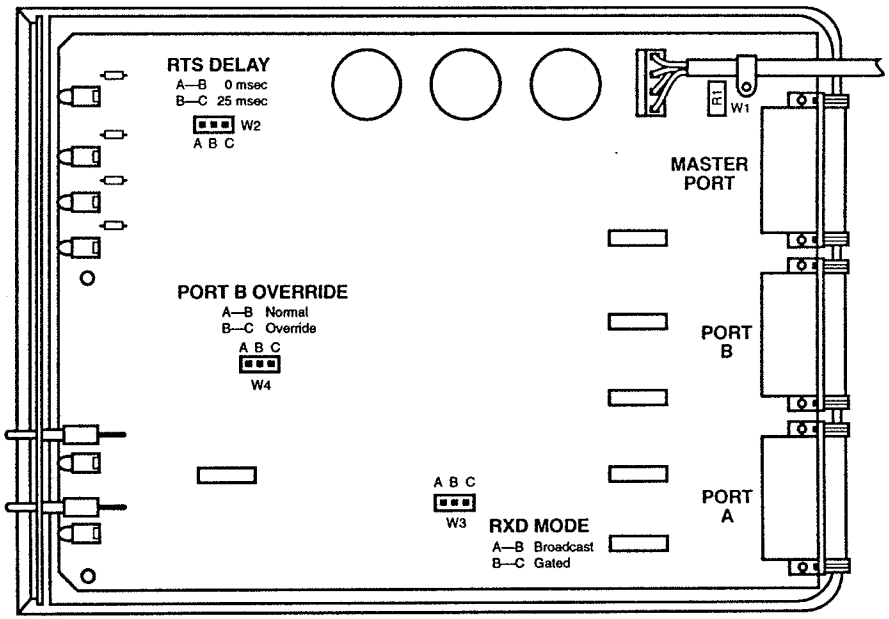

Figure 4-1. Jumper locations on the PC board of the V.35 Data Sharer 2 Port.

delay as it passes through the V.35 Data Sharer 2 Port from a slave port to the master port.

Settings

W2 in A–B position = 0 ms delay (no delay, default factory setting).

W2 in B–C position = 25 ms delay as RTS goes from OFF to ON, and no delay as RTS goes from ON to OFF.

3. Jumper W3 — RXD Broadcast or Gated Mode

Depending on which way jumper W3 is set, the Sharer will broadcast data out of both slave ports or from only the active port.

Settings

W3 in A–B position = RXD Broadcast Mode (default factory setting). Any data received on the RXD pin of the master port is broadcast out of the RXD pin of each slave port.

W3 in B–C position = RXD Gated Mode. Only the slave port that is currently enabled (the port that has RTS asserted) will output data on its RXD pin. The other slave port will be forced to a marking state.

NOTE

You must be operating in full duplex to use Gated Mode. In half-duplex operation a slave must drop its RTS signal before the master device can respond. In Gated Mode, a slave must have RTS asserted or data from the master port won't be gated through to the slave port. Since a slave port can't assert RTS and simultaneously receive data in half-duplex operation, Gated Mode is possible only in full-duplex applications.

4. Jumper W4 — Normal (Contention) or Port B Override

Depending on which way jumper W4 is set, collisions will be handled either normally (the first slave port to request access gets it) or on a priority basis, with Slave Port B always overriding Slave Port A.

Settings

W4 in A–B position = Normal operation (default factory setting). The slave device that asserts RTS first will be connected to the master device. The other device will be queued until the first device releases RTS.

W4 in B–C position = Port B Overrides Port A. Regardless of Port A's RTS status, the device on Port B will take precedence. Whenever the device on Port B asserts RTS, it will be immediately connected to the master device, and the device on Port A will be disconnected until Port B's device releases RTS.

5.0 Installation

1. Set Jumpers W2 through W4 to suit your application:

   Jumper W2 in A–B position = 0 ms RTS delay (default factory setting)
   Jumper W2 in B–C position = 25 ms RTS delay

   Jumper W3 in A–B position = RXD Broadcast Mode (default factory setting)
   Jumper W3 in B–C position = RXD Gated Mode

   Jumper W4 in A–B position = Normal operation (equal contention; default factory setting)
   Jumper W4 in B–C position = Port B overrides Port A

2. Connect the devices that you want to share the line to the slave ports ("Port A" and "Port B") on the rear of the V.35 Data Sharer 2 Port. The slave ports are configured as DCE, normally requiring straight-through cabling to your DTE devices.

NOTE

When matching terminals to slave ports, keep in mind that:
- **with jumper W4 in the A-B position, higher priority is given to Port A, but**
- **with jumper W4 in the B-C position, absolute (override at any time) priority is given to Port B.**

3. Connect the modem, CPU, or other shared V.35 device to the Sharer's "Master Port." The master port is configured as DTE, normally requiring straight-through cabling to your DCE device.

4. Plug in and turn on the Sharer.

5. If you need to set the RTS Enabled/Disabled switches on the unit's front panel differently from the default settings, do so now.

Your V.35 Data Sharer 2 Port system is now ready for continuous operation.

6.0 Operation (Port Selection)

Port selection is initiated by the presence of a Request to Send (RTS) signal on either slave port:

1: Either slave device can raise its RTS signal, and the corresponding LED on the front panel of the V.35 Data Sharer 2 Port will light. The Sharer will activate only *one* slave port at a time.

2A: If jumper W4 is in the A-B position: The device that raises RTS will be connected only if the other port isn't active. In the event that both ports raise RTS simultaneously, the active port is selected according to hardware priority: Port A is given the higher priority and Port B the lower priority. Until the active port drops its RTS signal, the other slave port is locked out.

2B: If jumper W4 is in the B-C position: The device on Port B is immediately connected as soon as it raises RTS, regardless of whether Port A is active or has simultaneously raised RTS. From the time Port B raises RTS until it releases RTS, Port A will be locked out. The device on Port A will only be connected when—and only *stay* connected as long as—Port B is not active.

See Chapter 4 for more information on jumper W4.

3: The Sharer transmits the RTS signal out of its master port. The Clear to Send (CTS) and Receive Data (RXD) signals are gated back to the active port, and the Sharer is receptive to the Transmit Data (TXD) signal.

NOTE

If Broadcast Mode is enabled, the RXD signal will be forwarded to both slave ports.

CTS will remain high until the active slave drops RTS or the Sharer drops CTS.

4: Once the active slave device drops RTS, the Sharer grants access to the other slave if it has raised RTS. If it hasn't, the Sharer waits, keeping the clocks, DTR, CD, and DSR active, until one slave or the other raises RTS again.

Appendix A: Pin Descriptions

PIN	NAME	DIRECTION MAST. PT. (DCE)	SLAVE PT. (DTE)	BEHAVIOR
A	Frame Gnd	——	——	Hardwired; connected to all ports.
B	Signal Gnd	——	——	Hardwired; connected to all ports.
C	Request to Send (RTS)	Output	Input	When either slave raises, master port output also raises.
D	Clear to Send (CTS)	Input	Output	Gated from master device to active slave device. When active slave drops RTS, CTS is gated to the other slave (if it has raised RTS).
E	Data Set Ready (DSR)	Input	Output	Master broadcasts to both slaves simultaneously.
F	Carrier Detect (CD)	Input	Output	Master broadcasts to both slaves simultaneously.
H	Data Terminal Ready (DTR)	Output	Input	When either slave raises, master-port output also raises.
P	Transmit Data A (TXD A)	Output	Input	Only the active slave device transmits to the master (signal is gated by RTS).
R	Receive Data A (RXD A)	Input	Output	In Gated Mode, master sends to active slave. In Broadcast Mode, master broadcasts to both slaves.
S	Transmit Data B (TXD A)	Output	Input	Only the active slave device transmits to the master (signal is gated by RTS).
T	Receive Data B (RXD A)	Input	Output	In Gated Mode, master sends to active slave. In Broadcast Mode, master broadcasts to both slaves.
V	Transmit Clock A (TXC A)	Input	Output	Master broadcasts to both slaves simultaneously.
X	Transmit Clock B (TXC B)	Input	Output	Master broadcasts to both slaves simultaneously.
Y	Receive Clock A (RXC A)	Input	Output	Master broadcasts to both slaves simultaneously.
AA	Receive Clock B (RXC B)	Input	Output	Master broadcasts to both slaves simultaneously.