MSU-6

TABLE OF CONTENTS

1.   DESCRIPTION

The MSU-6 is designed for sharing one RS-232 communications link with multiple terminal devices. The devices can be synchronous or asynchronous. The interface is RS-232, up to 256 Kbps. All data from the network, or common channel, is broadcast to all 6 ports. Data from the ports to the network is sent only from the port that has asserted RTS and has received CTS back from the network port. Transmit Data and External Transmit Clock are both controlled by RTS/CTS. Ports are scanned at a rate of 6 microseconds per port. In addition to the RTS/CTS control mode, the MSU-6 can be set to combiner mode where data from any of the 6 ports are sent out the network port without RTS control.

If more than 6 ports are needed, MSU-6s can be concatenated. Each additional MSU-6 adds 5 more ports. Concatenating units adds virtually no delay to the system, as switching is done in less than a millisecond, even when concatenated several units deep.

The MSU-6 has active drivers and receivers on all ports. This insures that the unit exceeds the RS232 minimum cable distances. With active drivers and receivers, users often run cables in excess of 100 feet at 19,200 bps data rates.

FEATURES

- Synchronous or asynchronous data
- 6 ports, RS232 up to 256 Kbps
- Data is broadcast from network to all ports
- Port to network is RTS/CTS controlled
- RTS/CTS port selection takes less than 1 ms
- Logical "OR" to network setting for systems without RTS control
- Active drivers and receivers for extended cable lengths
- Units can be concatenated for 11, 16, 21 or more ports
- Anti-streaming option setting

APPLICATIONS

- Connecting a host computer to remote terminals that are polled using asynchronous polling protocols
- Connecting SCADA host computers to RTU's
- Connecting host computers to terminals using synchronous financial industry protocols (HDLC, SDLC, etc)
- Broadcasting data from a single host port to multiple remote locations, such as multiple signs displaying identical data
- Collecting data from multiple data sources into a single port

Terminals, RTUs, etc
Up to 6 per MSU-6

MSU-6

Modem or DSU

Modem or DSU

Host Computer
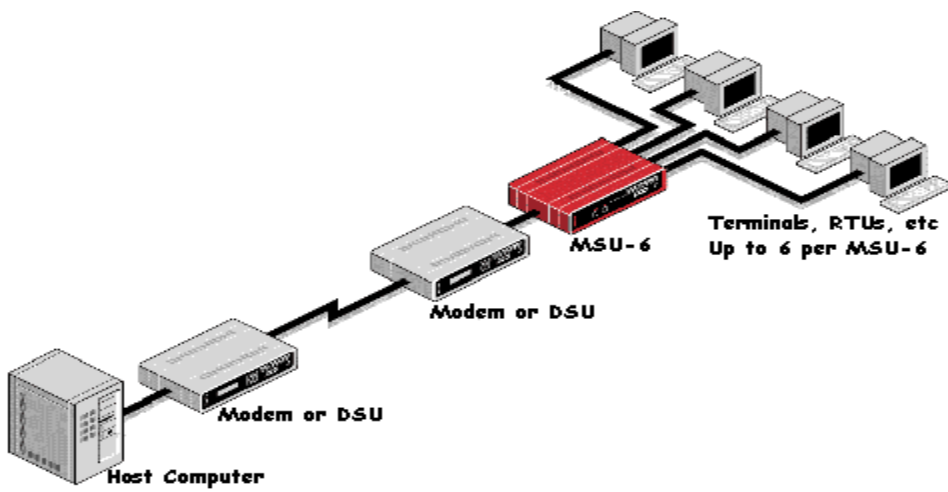
2.   SPECIFICATIONS

2.1   Ports

Terminal Ports
    RS-232
    DB-25S connector
    Configured as DCE

Network Port
    RS-232
    DB-25P connector
    Configured as DTE

Speeds from 0 to 256,000 bps

Port Selection
    RTS control or Logical OR (Combiner mode) selected by DIP switch

2.2   Environmental

Operation: -40 to +70° C

2.3   Physical / Electrical

10¼" W x 9¾" D x 2½" H
2.75 pounds including power supply
120 VAC external wall transformer power supply
70 ma

3.   INSTALLATION

3.1   Unpacking

The following is included with each unit:

- Unit and external power supply
- Cable for connecting network channel to modem device
- Manual
- Information regarding warranty, maintenance contracts and repair

3.2   Location

Place the unit in a clear area where you can reach the rear panel to connect the cables. The unit has an external power supply that requires a 120 VAC outlet.

3.3   Setup

There are two DIP switches located behind a removable panel on the right side of the unit. These switches are used to set the operational mode of the unit to RTS or Combiner and to enable/disable Anti-Streaming if RTS mode is selected.

In RTS mode, terminal port RTS is used to make a connection between the terminal device and the shared modem. Only one device at a time is connected to the modem. There is also an anti-streaming option that can be enabled. When enabled, the anti-streaming timer lowers CTS to any terminal port that asserts RTS for more than 6 seconds. This is used to keep any single device from hanging the system if RTS is stuck high. If devices typically respond to a poll with more than 6 seconds of data, anti-streaming should be turned off.

In Combiner mode, transmit data from all attached terminal devices is sent to the shared modem. This mode is used in polled systems where RTS control is not implemented. In Combiner mode, anti-streaming is disabled.

3.4   Connections

Connect the communications device (modem or DSU/CSU) to the network port using the cable provided. Terminal devices may be connected to any of the six terminal ports using appropriate cables. See Section 5 for interface and cabling information.

5

4. CONTROLS AND INDICATORS

4.1 Controls

There are two DIP switches located behind a removable panel on the right side of the unit. Their function is as follows:

Switch	Down	Up
1	RTS Mode	Combiner Mode
2	Anti-Streaming OFF	Anti-Streaming ON

4.2 Indicators

Indicator	Condition	Meaning
PWR (Power)	ON	Power is applied to the unit.
Network Tx	ON	Data is being sent out the network port
Network Rx	ON	Data is being received on the network port
Network CTS	ON	CTS from the attached modem
Port CTS (1-6)	ON	CTS is asserted to the associated terminal port(s). In RTS mode this is the port that has RTS asserted. In Combiner mode, CTS is asserted to all ports whenever Network CTS is ON.
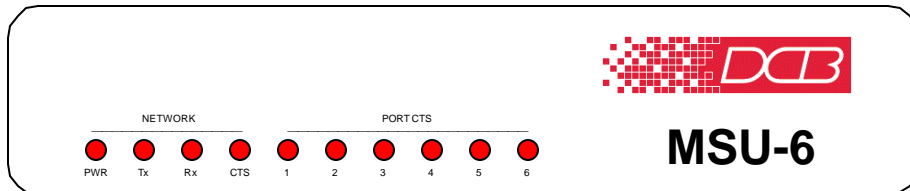
MSU-6 Front Panel
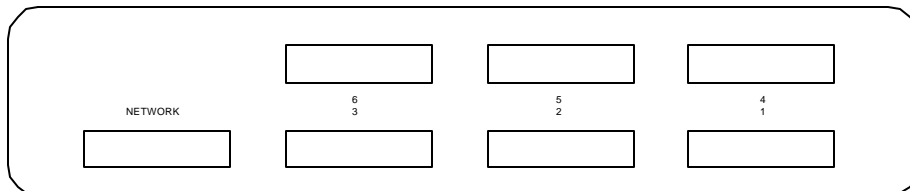
MSU-6 Rear Panel

5. INTERFACE SIGNALS AND CABLING

6.1   Port Interface RS-232

6.1.1   Network Port DB-25P (DTE)

Pin	Signal	In/Out
1	Frame Ground	---
2	Transmit Data	OUT
3	Receive Data	IN
4	Request to Send	OUT
5	Clear to Send	IN
6	Data Set Ready	IN
7	Signal Ground	---
8	Data Carrier Detect	IN
15	Transmit Clock	IN
17	Receive Clock	IN
20	Data Terminal Ready	OUT
24	External Clock	OUT

6.1.2   Terminal Ports DB-25S (DCE)

Pin	Signal	In/Out
1	Frame Ground	---
2	Transmit Data	IN
3	Receive Data	OUT
4	Request to Send	IN
5	Clear to Send	OUT
6	Data Set Ready	OUT
7	Signal Ground	---
8	Data Carrier Detect	OUT
15	Transmit Clock	OUT
17	Receive Clock	OUT
20	Data Terminal Ready	IN
24	External Clock	IN

6.2   Cables

6.2.1   Network Port to Modem

This cable is supplied with the unit. If a longer cable is required, use a 25 pin straight through cable.

6.2.2   Terminal Ports

Equipment attached to the terminal ports (1 thru 6) should use the same cable that would be used to attach the equipment to a modem device.

6.   TROUBLESHOOTING

7.1   General Approach

When troubleshooting problems, a rational plan can save you many hours of frustration. The following is a brief outline of standard troubleshooting procedures.

1.   Gather the facts to determine the exact nature of the problem.

2.   Draw a picture of the system showing the equipment at both the host and remote ends and the phone lines or in-house wiring. Use this as a reference to note your observations, test steps and test results. A picture keeps you focused and often saves duplicate effort.

3.   Record the front panel indications before changing anything. This is an important part of fact gathering

4.   If you change anything, change only one thing at a time.

7.2   Assistance

If you need assistance troubleshooting your system, contact DCB customer support at (217) 897-6600 between 8:00 am and 5:00 pm central time Monday through Friday.

7.   WARRANTY

This DCB product is warranted to be free of defects in materials and workmanship for two years. Data Comm for Business, Inc. will repair or replace any equipment proven to be defective within the warranty period. All warranty work is F.O.B. Champaign, IL. This warranty is exclusive of abuse, misuse, accidental damage, acts of God or consequential damages, etc. DCB liability shall not exceed the original purchase price.

All equipment returned for repair must be accompanied by a Returned Material Authorization (RMA) number. To receive an RMA number, call (217) 897-6600 between the hours of 8 AM and 5 PM central time. Equipment must be shipped prepaid to DCB and will be returned at DCB's expense.

Ship returned items to:

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2949 CR 1000E
Dewey, IL 61840

Data Comm for Business, Inc.
PO Box 6329
Champaign, IL 61826-6329

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