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## 2U RACKMOUNT RJ45 MODEM SPLITTERS

March 2011

Part Numbers:

5001140	2U Rackmount Modem Splitter Chassis (no cards installed)
5000833-RK	4 Port RJ45 Modem Splitter Card
5000839-RK	5 Port RJ45 Modem Splitter Card
5001141-RK	6 Port RJ45 Modem Splitter Card
5001142-RK	7 Port RJ45 Modem Splitter Card
5000834	2U Modem Splitter Chassis with (16) 4 Port Modem Splitter Cards Installed
5000839	2U Modem Splitter Chassis with (16) 5 Port Modem Splitter Cards Installed

(For RoHS compliant product, change the "5" in the part number to a "6")



# 1. Specifications

## Power

Non-powered - no power supply required

## Size

19"W x 2.25"D x 3.47"H

## Weight

5.0 lbs. (chassis plus 16 modem splitter cards installed)

**MTBF** >100,000 hours

**Altitude Tolerance** Any

**Temperature Tolerance** Operating: 32° to 158° F (0° to 70° C);  
Storage: -4° to 185° F (-20° to 85° C)

**Humidity Tolerance** Up to 95% non-condensing

**Interface:** RS232

## Connectors

each RJ45 modem splitter card has five connectors on the front of the card:  
(1) single style RJ45 connector - (MASTER) (1) quad style RJ45 connector -  
(PORT 1 - 4) the 5, 6 and 7 port models have the additional "Port n"  
connectors on the rear of the card

## Leads Supported

Pins 3, 4, 5, 7, and 8 connected straight thru between the MASTER and PORT 1 - n.

Pins 1, 2, and 6 "diode ORed" from PORT 1 - n to the MASTER port.

# 2. Introduction/Operation

The 2U Rackmount RJ45 Modem Splitter consists of a 2U high, 19 inch rackmount chassis that can hold any mix of up to sixteen individual RJ45 modem splitter cards. Each independent modem splitter card is designed to allow from 4 to 7 terminals (depending on model) to share a single modem. The modem splitter cards are passive, non-powered devices and are transparent to data formats, rates & protocols. Data received from the line and output by the modem as RS232 voltage levels is simultaneously transmitted thru the modem splitter to all of the terminal devices attached to that modem splitter card. Likewise, RS232 control signals output by the modem are simultaneously transmitted to all of the attached terminal devices.

RS232 data output by the attached terminal devices is logically "OR'd" by the modem splitter and then transmitted to the modem. Because of this, only one terminal device may send data to the corresponding modem at a time. If more than one terminal device connected to that modem splitter card sends data at the same time, the electrical signals will be combined causing the data going to the modem to be corrupted. The RS232 control signals output by the terminal devices are likewise logically "OR'd" so that if a control signal is active on any of the terminal devices (RTS for example), the modem splitter will assert that signal to the modem. If that signal is not asserted by any of the attached terminal devices, then the modem splitter will pass thru this inactive state signal to the modem.

This design approach allows the RS232 messages output by the modem to be broadcast to all of the attached terminal devices, and for the appropriate terminal device to respond to each message. The message protocol typically includes an identifier so that the terminal devices are able to identify which messages are addressed to them. When the addressed terminal device is ready to reply, if it uses hardware handshaking it will assert the RTS signal which the modem splitter transmits via it's logical "OR" circuitry to the modem. The modem will respond by asserting the CTS signal which is then broadcast via the modem splitter back to all the terminal devices including the one that is asserting the RTS signal, thus allowing flow control regardless of which terminal device is active.

### **3. Installation**

The MASTER port is intended to be connected to a DCE device such as a modem using an RJ45 straight thru cable and the appropriate RJ/DB adapter. All other ports are intended to be connected to DTE terminal devices – again using straight thru cables .

There are no user configurable settings in the RJ45 Modem Splitter. Simply connect your modem or other DCE device to the MASTER port, and connect the associated terminals or other DTE devices to PORT 1 - n on that Modem Splitter Card. For the GND signal and any signals that flow from the DCE (modem) to DTE (terminal) direction, use pins 3, 4, 5, 7 & 8 on the RJ45 connectors. For signals that flow from the DTE to DCE direction use pins 1, 2 and 6. A typical configuration would be to connect the RTS, DTR and TD signals from the modem and the terminal devices to pins 1, 2 and 6 respectively on the modem splitter ports, and to connect the RD, GND, RI, DCD and CTS signals from the modem and the terminal devices to pins 3, 4, 5, 7 and 8 on the modem splitter ports. Once all of the connections have been made, power up your modems and terminals as normal. The system is now ready for operation.

### **4. Troubleshooting**

Verify that all adapters and cables used to connect the modem and the terminal devices to the modem splitter are pinned correctly. Replace a suspect cable with a known good cable.

Check to make sure that the modem is connected to the MASTER port and that the terminal devices are connected to PORTS 1 thru 7.

If problems persist, try connecting only one terminal device and the modem to the modem splitter. If correct operation occurs, then add a second terminal device and so on until the problem recurs. Note that if the modem and/or the terminal devices do not output RS232 signals levels that conform to specifications, you may still be able to achieve reliable operation either by using shorter cables or by changing to a slower data rate.

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