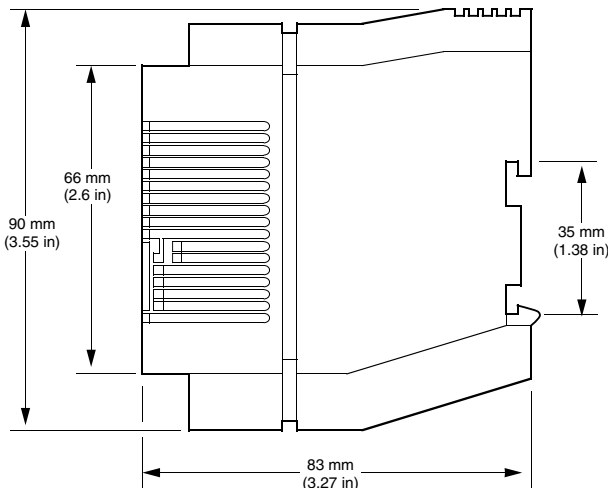
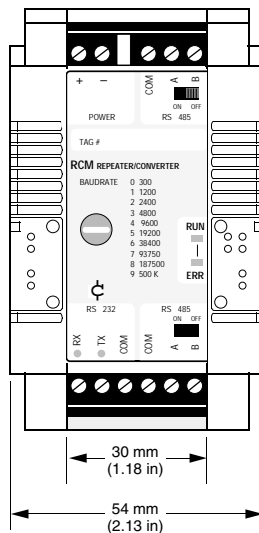
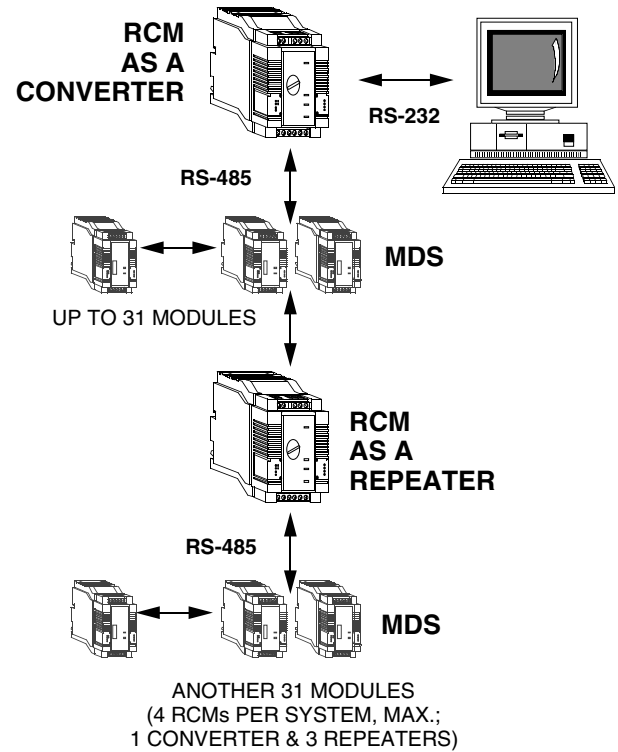


## Introduction

Expand your use of distributed intelligence and control. Avoid crowding your PC with port-taxing communications boards. Use Moore Industries' DIN-mounted Repeater/Converter Module to solve communication interface problems in your large I/O systems.

### Two Functions in One Module

The RCM is both an RS-232/RS-485 converter and a repeater, providing isolated, boosted signals for your remote field devices. It allows your system to expand to the full address capabilities of MODBUS at the extended link lengths afforded by the RS-485 communications protocol.



## Features

### Selectable Baud Rate

A selector switch on the front panel allows quick baud rate selection to match system requirements. Choose from speeds of 300 to 500k baud. No other settings are required.

### Snap-on Installation Convenience

The RCM is a compact module (it takes up only 54mm—about 2.13 in—of space), mounting on standard, 35mm Top Hat DIN rail (EN50022). It can be easily installed in protective enclosures, right alongside modules our *I/O EQUATION STATION*, *I/O EXPRESS*, or *CCS® Cable Concentrator* distributed data communications systems.

### Certifications

**CE** - conforms to EMC Directive 89/336/EWG, EN 50081-2:1993; EN 50082-2:1995

### Specifications

|   |  |   |
|---|--|---|
| <p><b>Performance</b> <b>Isolation:</b> 500Vdc between Com ports, and 500Vdc between power supply and Comm ports<br/> <b>Power Input Effect:</b> 1.5W, typical; 0.5A inrush current for 4 msec @ 24 Vdc power; thermal reset fuse and reverse polarity protection</p> | <p><b>Performance (continued)</b> <b>Allowable Bus Length:</b> Typically 1.6km (1 mile) at 9600 baud over 20AWG twisted pair; 0.8km (0.5 miles) at 19.2k baud, etc.<br/> <b>Maximum RCMs per System:</b> 3 as Repeaters<br/> <b>Ambient Temperature Range:</b> -20°C to +60°C (-4°F to +140°F)</p> | <p><b>Connections</b> Twisted wire pair<br/> <b>Adjustments</b> <b>Baud Rate:</b> Front panel selector sets baud to: 300, 1200, 2400, 4800, 9600, 19.2k, 38.4k, 93.75k, 187.5k, or 500k<br/> <b>Indicators</b> Front panel LEDs alert to broken selector switch or data collision<br/> <b>Weight</b> 198 grams (7 ounces)</p> |
|---|--|---|

### Ordering Information

| Unit   | Input   | Output  | Power                                      | Options        | Housing  |
|--|---|---|--|----------------|--|
| <b>RCM</b><br>Repeater/<br>Converter<br>Module | <b>PRG</b><br>RS-232 from Host as a converter or RS-485 as a repeater | <b>PRG</b><br>RS-232 back to Host as a converter or RS-485 down the bus as a repeater | <b>10-30DC</b> , ±10%<br>1.5Watts, typical | None available | <b>DIN</b><br>Thermoplastic, economy DIN-style housing mounts on 35mm Top Hat (EN50022) rail |

### Installation Notes

A maximum of 31 line drivers are permissible on any branch of an RS-485 bus. An RCM is required for every group of 31 modules.

A maximum of 4 RCMs may be used in any one system; 1 converter and up to 3 repeaters.

Order Moore Industries' DCL Data Communications Link (P/N 800-174-27) for use in connecting RCMs to MDS modules. See Figure 1.

#### Bus Length Decoupling

The maximum communications bus length that can be used in an application before a repeater is required depends upon several environmental and physical factors. Among these factors are the gauge of wiring to be used, the baud rate, and the ambient electronic noise or interference that may be occurring near the modules during operation.

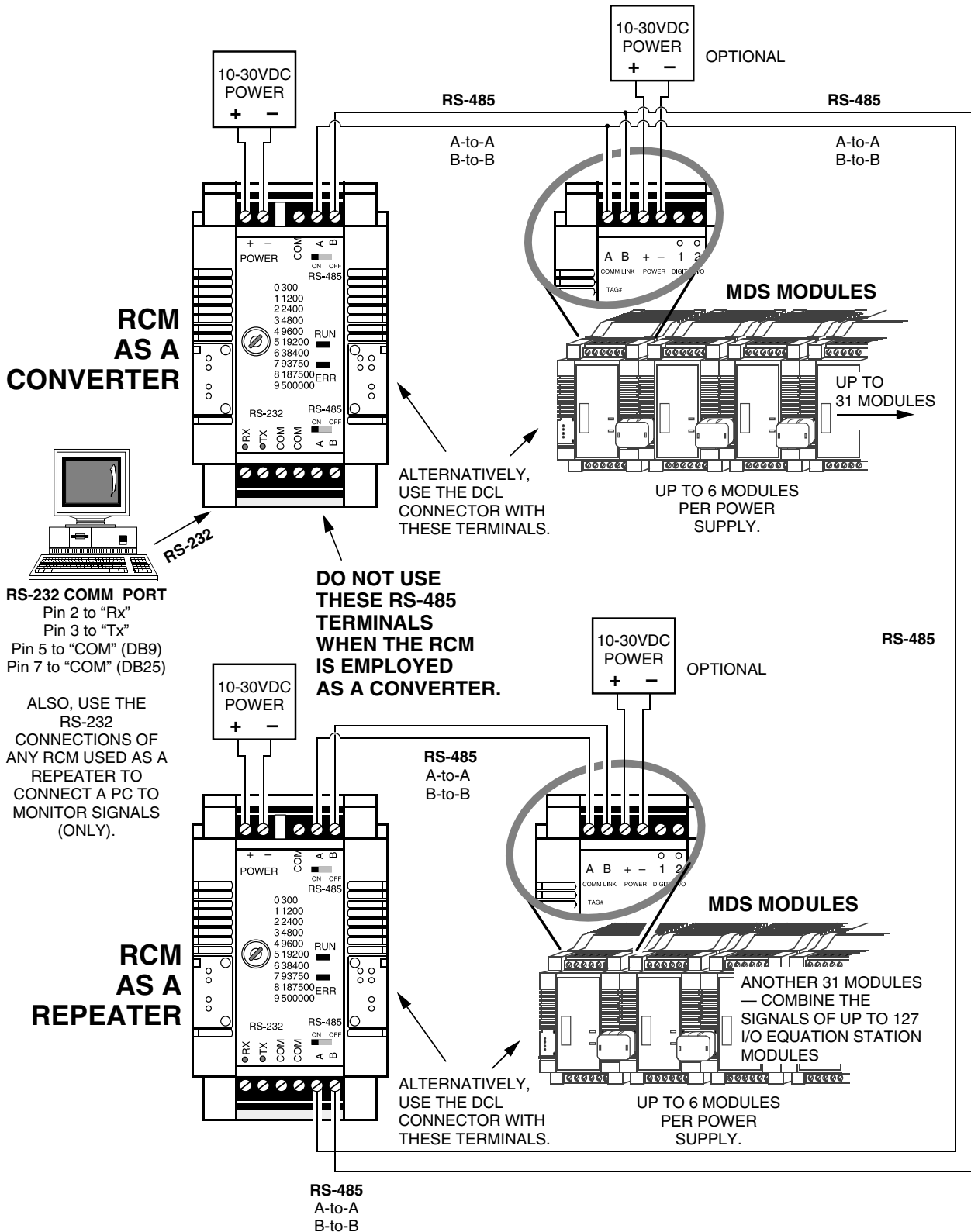
#### Bus Termination

RS-485 terminations may be applied at the ends of the communications bus by setting the front panel switch of the associated RCM to "ON". Turning the bus termination switch ON incorporates a 390Ω internal resistor between the B terminal and the unit's internal positive (+) rail, and between the A terminal and the internal negative (-) rail; and a 150Ω resistor between A and B.

#### RS-485 Ports

In most applications, only the "A" and "B" terminals of the RS-485 ports are used. The 0V (zero volts) reference for each RS-485 port is made available as the "Com" terminal, and may be required for biasing when the RCM is used with devices that have no power supply isolation. Note that Moore Industries' MDS, DDS, and CCS all have power supply isolation at their Com ports.

Figure 1. Installing the RCM as a Converter or as a Repeater



# RETURN PROCEDURES

**To return equipment to Moore Industries for repair, follow these four steps:**

1. Call Moore Industries and request a Returned Material Authorization (RMA) number.

**Warranty Repair –**

If you are unsure if your unit is still under warranty, we can use the unit's serial number to verify the warranty status for you over the phone. Be sure to include the RMA number on all documentation.

**Non-Warranty Repair –**

If your unit is out of warranty, be prepared to give us a Purchase Order number when you call. In most cases, we will be able to quote you the repair costs at that time. The repair price you are quoted will be a "Not To Exceed" price, which means that the actual repair costs may be less than the quote. Be sure to include the RMA number on all documentation.

2. Provide us with the following documentation:
  - a) A note listing the symptoms that indicate the unit needs repair
  - b) Complete shipping information for return of the equipment after repair
  - c) The name and phone number of the person to contact if questions arise at the factory
3. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.
4. Ship the equipment to the Moore Industries location nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries representative will contact the person designated on your documentation if more information is needed. The repaired equipment, or its replacement, will be returned to you in accordance with the shipping instructions furnished in your documentation.

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ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY AGREES WITH THE COMPANY THAT THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY WARRANTY CONCERNING THE GOODS OR SERVICES SHALL BE FOR THE COMPANY, AT ITS OPTION, TO REPAIR OR REPLACE THE GOODS OR SERVICES OR REFUND THE PURCHASE PRICE. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES EVEN IF THE COMPANY FAILS IN ANY ATTEMPT TO REMEDY DEFECTS IN THE GOODS OR SERVICES. BUT IN SUCH CASE THE BUYER SHALL BE ENTITLED TO NO MORE THAN A REFUND OF ALL MONIES PAID TO THE COMPANY BY THE BUYER FOR PURCHASE OF THE GOODS OR SERVICES.

ANY CAUSE OF ACTION FOR BREACH OF ANY WARRANTY BY THE COMPANY SHALL BE BARRED UNLESS THE COMPANY RECEIVES FROM THE BUYER A WRITTEN NOTICE OF THE ALLEGED DEFECT OR BREACH WITHIN TEN DAYS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH, AND NO ACTION FOR THE BREACH OF ANY WARRANTY SHALL BE COMMENCED BY THE BUYER ANY LATER THAN TWELVE MONTHS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH.

## RETURN POLICY

For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.



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