Data Sheet

# SRM-5SC, 6SC

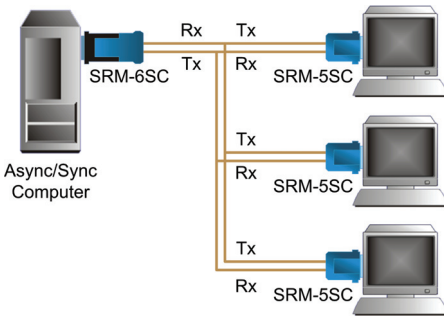
## Multipoint Short-Range Sync Modems



RAD
data communications
The Access Company

## Features

- Transmission data rates of up to 19.2 kbps, synchronous
- Full- or half-duplex, point-to-point or multipoint
- Internal or external clock
- Transmission range of up to 14.5 km (9.1 miles)
- Transformer isolated
- No AC power required



SRM-5SC and SRM-6SC are short-range synchronous modems used for local data distribution and connecting full- or half-duplex synchronous DTEs or controllers to computers. A pair of modems ensures integrity of data transmission over unconditioned 4-wire dedicated lines, for distances of up to 14.5 km (9.1 miles), depending on the wire gauge and data rate (see *Table 1* and *Table 2*).

SRM-5SC and SRM-6SC are fully compatible and offer the same features. SRM-5SC is the smaller version, only 61 mm (2.4 in) by 18 mm (0.7 in); SRM-6SC is 110 mm (4.3 in) by 22 mm (0.9 in).

Transmit timing can be provided by three alternative sources:

- Internal oscillator
- External clock from the DTE, via pin 24
- Loopback clock derived from the receive signal

The carrier can be set for either continuous operation (point-to-point applications) or for switched operation, controlled by the RTS signal (multipoint applications). The LED indicator lights upon Carrier Detect (SRM-5SC only).

SRM-5SC and SRM-6SC operate without connection to the mains supply, by using ultra-low power from the data and control signals.

The low transmit level minimizes crosstalk to adjacent circuits within the same cable. Data is transmitted and received using a balanced interface, ensuring high immunity to circuit noise.

Isolation transformers couple to the dedicated line, together with other circuitry, to protect against AC or DC overvoltages.

The transformers are rated at over 1,500 VRMS, enabling connection of the modems to the local circuits provided by most national telephone administrations (P.T.T.s).

The line interface of SRM-6SC is a 5-screw terminal block. Optionally, the modem can be ordered with an RJ-11 or RJ-45 jacket or RJ-45 plug on 2m (6 ft) cable (via the terminal block). With SRM-5SC, the line interface is a 5-screw terminal block and choice of an RJ-11 or RJ-45 connector (see *Ordering*).

SRM-5SC and SRM-6SC are also available in a card version for mounting in the CMN-16 modem rack. For further information, refer to the CMN-16 and CMN-C6SC Data Sheets.

Table 1. Approximate Range, Point-to-Point

| Data Rate | 19 AWG (0.9 mm) | | 24 AWG (0.5 mm) | | 26 AWG (0.4 mm) | |
|---|---|---|---|---|---|---|
| kbps | km | miles | km | miles | km | miles |
| 19.2 | 10.0 | 6.2 | 4.5 | 2.8 | 3.4 | 2.0 |
| 9.6 | 11.2 | 7.0 | 5.0 | 3.1 | 3.8 | 2.4 |
| 4.8 | 13.5 | 8.5 | 6.0 | 3.8 | 4.5 | 2.8 |
| 2.4 | 14.5 | 9.1 | 6.5 | 4.0 | 4.8 | 3.0 |
| 1.2 | 14.5 | 9.1 | 6.5 | 4.0 | 4.8 | 3.0 |

Table 2. Approximate Range, Multipoint (24 Gauge Line)

| Data Rate | Number of Slaves | | | | | |
|---|---|---|---|---|---|---|
| | 3 | | 5 | | 7 | |
| kbps | km | miles | km | miles | km | miles |
| 19.2 | 2.3 | 1.4 | 1.5 | 0.9 | 1.3 | 0.8 |
| 9.6 | 3.9 | 2.4 | 2.9 | 1.8 | 2.3 | 1.4 |
| 4.8 | 4.7 | 2.9 | 3.2 | 2.0 | 2.9 | 1.8 |
| 2.4 | 5.7 | 3.5 | 3.9 | 2.4 | 3.4 | 2.1 |
| 1.2 | 5.8 | 3.6 | 4.2 | 2.6 | 3.4 | 2.1 |

# SPECIFICATIONS

**Data Rates**
Up to 19.2 kbps
Selectable by rotary switch

**Transmission Line**
4-wire, unconditioned dedicated line
(two twisted pairs)

**Transmission Mode**
Synchronous, full- or half-duplex,
4-wire operation

**Transmission Range**
Up to 14.5 km (9.1 miles)
(see *Table 1* and *Table 2*)

**Transmission Level**
0 dBm

**Transmission Controls**
**DCD** (Circuit 109) turns on after
recognizing the receive signal from the line
**CTS** (Circuit 106) turns on 7 or 53 msec (selectable)
after the DTE raises RTS (Circuit 105)

***Note:*** *For SRM-5SC, RTS to CTS delay is fixed at 7 msec.*

**Indicator**
LED indicator for Carrier Detect (SRM-5SC only)

**Digital Interface**
EIA ITU V.24/RS-232, integral 25-pin connector,
male or female

**Line Interface**
**SRM-5SC:**
5-screw (4-wire and ground) terminal block, and RJ-11 or RJ-45 jack

**SRM-6SC:**
5-screw (4-wire and ground) terminal block, or RJ-11, or RJ-45 jack, or RJ-45 plug

**Power**
For proper operation, at least two of the following digital interface connector (DB-25) pins must be connected: 2, 4, 20 and 24. The typical power consumption drawn from the DTE (at +6V signal level) is:
**SRM-5C:** 55 mW
**SRM-6C:** 30 mW

**Physical**
**SRM-5SC:**
Length: 61 mm (2.4 in)
Width: 53 mm (2.1 in)
Height: 18 mm (0.7 in)
Weight: 48 g (1.7 oz)

**SRM-6SC:**
Length: 110 mm (4.3 in)
Width: 53 mm (2.1 in)
Height: 22 mm (0.9 in)
Weight: 72 g (2.6 oz)

**Environment**
Temperature: 0° to 50°C (32° to 122°F)
Humidity: up to 90%, non-condensing

# Safety

 The exclamation point within an equilateral triangle alerts the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

All connections should only be performed by a skilled technician who is aware of the hazards involved. The digital interface of the SRM-5SC, 6SCmust be connected to equipment that is connected to protective earth at all times, or to equipment that has double or reinforced insulation between the mains and the protective earth.

## DECLARATION OF CONFORMITY

**Mfr. Name:** RAD Data Communications Ltd.

**Mfr. Address:** 24 Raoul Wallenberg St.
Tel Aviv 69719, Israel

declares that the product:

**Product Name: SRM-5SC, 6SC**

Conforms to the following standard(s) or other normative document(s):

**EMC:** EN 55022:1998 + A1:2000 + A2:2003

EN 55024:1998 + A1:2001 + A2:2003

EN61000-3-2:2000 + A2:2005

EN61000-3-3:1995 + A1:2001

**Safety:** EN 60950-1:2001

**Supplementary information:**

The products herewith comply with the requirements of the Low Voltage Directive 2006/96EC and R&TTE Directive 99/5/EC for wired equipment. The products were tested in a typical configuration.

Tel Aviv, 12 November 2007

Haim Karshen

Quality Manager

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# Installation

***Caution.*** *When setting the jumpers or performing any actions inside the open product, be careful not to bend or break any components.*

1. To access the jumpers:
   **SRM-5SC**: Snap out the nameplate.
   **SRM-6SC**: Separate the two parts of the plastic cover by pressing on the places marked on the sides, starting at the cable end.

2. Connect the 4-wire dedicated line to the modem line connector.

   - If connecting to a terminal block:
     Connect each lead of the 4-wire dedicated line to the appropriate screw connector on the terminal block.
   - If using an RJ-11 or RJ-45 connector:
     Plug the cable into the RJ jack.
     Verify the following:
     - Connect the local XMT to the remote RCV
     - Connect the local RCV to the remote XMT.

## *Caution*

***To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cords.***

## *Attention*

***Pour réduire les risques s'incendie, utiliser seulement des conducteurs de télécommunications 26 AWG ou de section supérieure.***

## *Caution*

***Do not touch the transformer while connecting the terminal; it may break under pressure.***

***Note***: When operating in a noisy environment, it is recommended to use shielded cables, and to connect the cable shield to "Ground". Ground is provided on the line connector (terminal block or RJ-11/45 connectors) for this purpose. (If connecting to the RJ-11 and RJ-45 jack, refer to *Figures 1* and *2* for the connector pinout.)

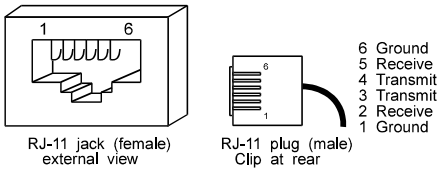


Figure 1. RJ-11 Pin Assignment

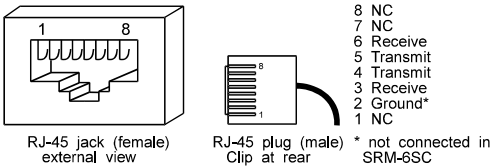


Figure 2. RJ-45 Pin Assignment

3. Jumper the modem according to the Jumper Diagram (*Figure 3 or 4*) and the Jumper/Switch Selection Table (*Table 3 or 4*).

4. To close the unit:
   **SRM-5SC**: Snap the nameplate back into place.
   **SRM-6SC**: Press the two parts of the cover together.

5. Plug the modem directly into the 25-pin connector of the terminal or computer port, and fasten with the screws on each side of the modem connector.

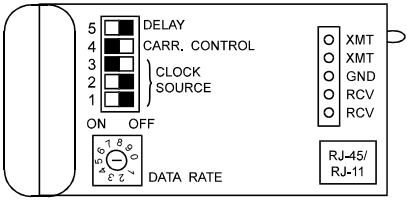


Figure 3. SRM-5SC Jumper Diagram

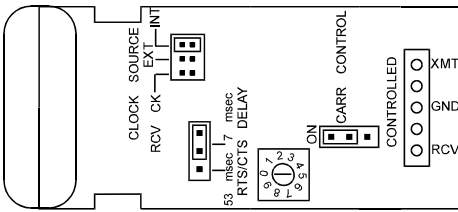


Figure 4. SRM-6SC Jumper Diagram

Table 3. SRM-5SC Jumper/Switch Selection

| Switch Identity | Function | Position (factory setting in bold) |
|---|---|---|
| Data Rate | Selects Data Transmit Rate (kbps) | 0 -19.2<br>1 -14.4<br>**2 - 9.6**<br>3 - 7.2<br>4 - 4.8<br>5 - 3.6<br>6 - 2.4<br>7 - 1.8<br>8 - 1.2 |
| Clock (SW1, 2, and 3) | Selects source: | SW1 SW2 SW3 |
| | External | On Off Off |
| | **Internal** | **Off Off On** |
| | or Receive | Off On Off |
| Carrier Control (SW4) | Selects Carrier Constantly ON or Controlled by RTS | SW4<br>**ON = ON**<br>OFF = Controlled |
| RTS/CTS Delay (SW5) | Selects RTS/CTS Delay | **6-8 msec (OFF)**<br>50-70 msec (ON) |

Table 4. SRM-6SC Jumper/Switch Selection

| **Switch Identity** | **Function** | **Position (factory setting in bold)** |
|---|---|---|
| Data Rate | Selects Data Transmit Rate (kbps) | 0 - 19.2<br>1 - 14.4<br>**2 - 9.6**<br>3 - 7.2<br>4 - 4.8<br>5 - 3.6<br>6 - 2.4<br>7 - 1.8<br>8 - 1.2 |
| Clock | Selects Timing Source | External<br>*Internal*<br>Receive |
| Carrier Control | Selects Carrier Constantly ON or Controlled by RTS | **ON**<br>Controlled |
| RTS/CTS Delay | Selects RTS/CTS Delay | **7 msec**<br>53 msec |

# Ordering

**SRM-5SC/*/+**

**SRM-6SC/*/#**

*Legend*

***** Connector type:
- **F** female 25-pin
- **M** male 25-pin

**+** Line interface type for SRM-5SC:
- **RJ-11** RJ-11 jack
- **RJ-45** RJ-45 jack
- (Leave blank for terminal block)

**#** Line interface type for SRM-6SC:
- **RJ-11** RJ-11 jack
- **RJ-45** RJ-45 plug on a 2m (6 ft) cable
- **RJ-45S** RJ-45 jack
- (Leave blank for terminal block)

For ordering information on the card version for the CMN-16 rack, see the CMN-C6SC Data Sheet.

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