

# STRATA



## **RX REMOTE CONTROL PANEL**

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No. 400497  
Rev. 02  
5/7/04

**OPERATOR'S GUIDE**

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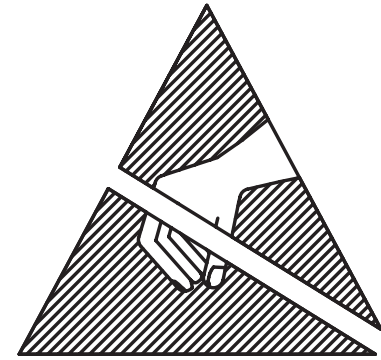
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Printed in the U.S.A

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Revision	Date
01	April 2004



# ***Warning***

## ***Electro Static Discharge***

*Failure to properly ground the equipment and work area may result in damage to the equipment. Before attempting to install or make adjustments, take the following precautions:*

- 1. Perform all work on a static free work surface.*
- 2. Use a wrist grounding strap at all times grounded to the bench or chassis of the equipment where the Color Bar Generator is installed.*

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# Safety Precautions




## Cautions, Warnings, and Notes

Use the following table to interpret how distinguish between Cautions, Warnings, and Notes.





<b>Caution</b>	Gives information which, if strictly observed, will prevent personal injury or death, or damage to personal property or the environment.
<b>Warning</b>	Give information which if strictly followed, will prevent damage to equipment or other goods.
<b>Note</b>	Provides supplementary information.

## Safety Symbols

The following safety symbols are used in this manual:

	<b>CAUTION:</b> <i>Risk of Electric Shock</i>
	<b>WARNING:</b> <i>General Warning</i> <i>Risk of Danger</i>
	<b>WARNING:</b> <i>Electrostatic Discharge.</i> <i>Possible Damage to Equipment</i>

## Nomenclature and Markings

	<b>Fuse</b> – Identifies fuse boxes or their location.
	<b>Frame or Chassis Ground</b> – Identifies the frame chassis terminal.
	<b>Earth Ground</b> – Identifies the earth ground terminal.
	<b>Protective Earth Ground</b> – Identifies any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal on a protective earth ground electrode.

# Important Safeguards

## **Caution:**

1. *Read all of these instructions.*
2. *Save these instructions for later use.*
3. *Follow all warnings and instructions marked on the units.*

- 1 Read Instructions** - All safety and operating instructions should be carefully read before operating the equipment.
- 2 Retain Instructions** - The safety and operating instructions should be retained and stored in a convenient place for future reference.
- 3 Heed Warnings** - All warnings on this equipment, and in the operating instructions should be strictly adhered to.
- 4 Follow Instructions** - All operating and user instructions should be properly implemented for optimum and safe performance.
- 5 Cleaning** - Do not use liquid cleaners or aerosol cleaners. Instead, use only a damp cloth for cleaning.
- 6 Attachments** - Do not use attachments not authorized by MRC. Using unauthorized attachments may create safety hazards or damage the equipment.
- 7 Water and Moisture** - Indoor equipment is not designed to withstand water or moisture beyond the limits noted in the product specifications.
- 8 Accessories** - Do not place equipment on an unstable cart, stand, tripod, bracket, or table. The product could fall, causing serious personnel injury or damage the equipment. Use only equipment recommended by MRC. When mounting or installing the equipment, follow the manufacturer's instructions.
- 9 Power Sources** - The equipment should be operated only from the type of power source indicated on the unit, or in the operating instructions. For 220 VAC operation, the proper power cord must be used.

**10 Grounding or Polarization** - AC powered versions of this product are equipped with a 3-wire plug with an integral grounding pin. This plug fits into a standard, grounded power outlet. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounded plug.

**11 Power Cord Protection** - Power supply cords should be routed so that they are not likely to be walked on or pinched by other equipment items. Pay particular attention to cords at plugs, convenience receptacles, and at the point where they enter and exit the equipment.

**12 Object or Liquid Entry** - Never spill liquids or insert objects of any kind through openings in the equipment. Such actions can result in fire or electric shock.

**13 Damage Requiring Service** - Unplug the radio product from the power outlet and contact service personnel when the following conditions occur:

1. If the power supply cord or plug has been damaged.
2. If liquid has been spilled in the equipment, or objects have fallen into the equipment.
3. If the equipment does not operate normally by following the operating instructions and adjusting only those controls that are covered by the operating instructions. Improperly adjusting or tampering with controls not covered in the operating instructions may result in damage to the equipment or require extensive work by a qualified technician to restore the radio to its normal operation.

When the equipment exhibits a distinct change in performance indicating the need for service.

**14 Replacement Parts** - When replacing parts is required, use only parts authorized by MRC. Unauthorized substitutions could result in fire, electric shock, or damage to the equipment.

**15 Safety Check** - Upon completing any service or repairs to the equipment, ensure that safety checks are performed to determine that the equipment is in proper operating condition.

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# STRATA Rx Remote Control Panel

## 1.1 System Overview

The instrument panel mounted STRATA Remote Control Panel provides for operation of the STRATA Receive system from up to 100 feet away using commercial off the shelf cabling.

The main features are:

- Compact Size: 5" x 2" x 2"
- Standard Airborne Instrument panel mounts w/Zeus type fasteners
- Standard RS-232 serial connection to STRATA Receiver (null modem cable).
- Well spaced controls for ease of use
- Simplified, easily read display, viewable in all lighting conditions
- Automatic, and two fixed intensity levels for indicator brightness
- Color distinguished, critical indicators to differentiate between states.
- Wide operating voltage range: +10Vdc to +50Vdc
- Receiver sensitivity readings for both analog (RCL) and digital (Link Quality)

**Figure 1-1 RX Remote Controls**



## 1.2 Presets

The remote panel is designed to select between two programmable presets, typically an analog and digital configuration. Presets are created, modified, and stored in the STRATA Receiver using the STRATA RX Configurator Software.

## 1.3 Operating Controls and Displays

Commonly used commands are:

- Select Mode (Analog Preset/ Digital Preset)
- Select Channel
- Select Channel Offset
- Adjust display brightness

Active displays include:

- Channel
- Channel Offset (+, -, or No offset)
- Link Quality (LQ) - used in digital mode
- Receive Carrier Level (RCL) - used in analog and digital mode

*Table 1-1 on page 1-3* describes the panel controls, LED Indicators, and displays for the front panel of the controller. See *Figure 1-2 on page 1-2* for the location of controls & Indicators.

## 1.4 Control Panel Interface

Using a 3 wire serial inter-connection and a power source, the STRATA RX Remote Control Panel allows greater installation location flexibility for the receiver. The error detecting protocol that communicates between the remote control panel and the receiver eliminates erroneous commands due to electrical noise.

The remote control panel can connect to either an individual Receiver Unit (RXU) or Receiver Control Unit (RCU), or either the RXU or RCU when both are connected together as an integrated system. For more information on connecting the remote control panel to the receiver, see *Section 1.8, "Control Panel to Receiver Connections," on page 1-6*.

Figure 1-2 Controls &amp; Displays

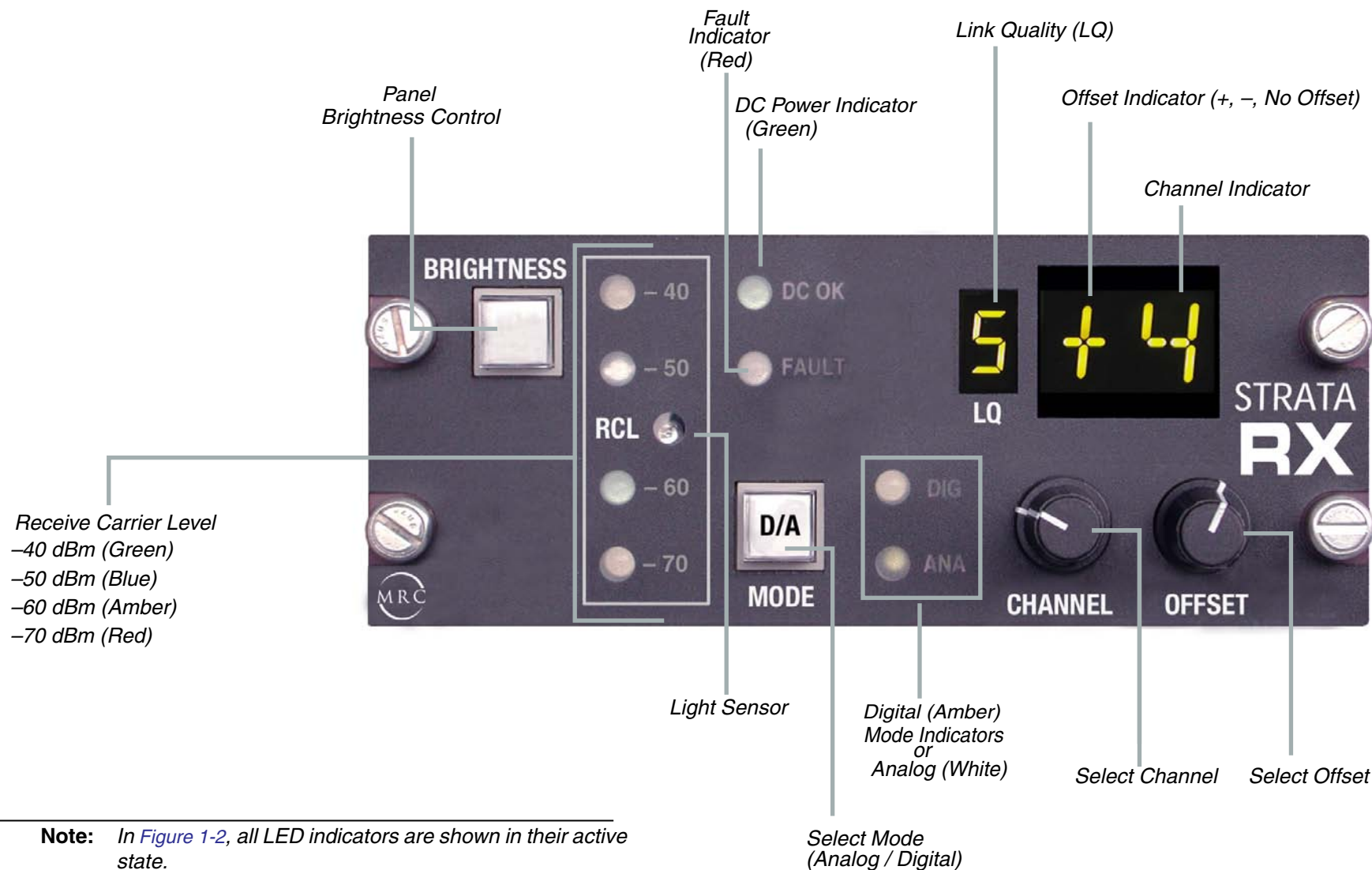






Table 1-1 Controls, LED Indicators, and Displays

Control /Display	Name	Description & Use
Push Button Switches	MODE	Switches the receiver between analog and digital mode
	BRIGHTNESS	Sets the display brightness. For additional information, see <a href="#">Section 1.7, "Controlling the Display Brightness,"</a> on page 1-5.
Rotary Switches	CHANNEL (continuous rotation)	Select channel. Note that the operating channel plans are selected from presets created by the STRATA RX Configurator Software.
	OFFSET	Select channel offset (+, –, or no offset).
LED Displays	DIG / ANA (Amber/White)	Displays operating mode as analog (ANA) or digital (DIG). These LEDs display analog or digital mode depending on which preset is currently selected.
	DC OK (Green)	Indicates DC Power is applied to the Remote Control Panel.
	FAULT (Red)	Indicates an error condition in the RXU or RCU
	Receive Carrier Level (RCL)	Displays Receive Carrier Level in analog mode: – 40 dBm (Green) – 50 dBm (Blue) – 60 dBm (Amber) – 70 dBm (Red)
LCD Displays	Link Quality (LQ)	Displays the Link Quality value, 1 to 9. For more information, see <a href="#">Section 1.6, "Displaying Signal Strength,"</a> on page 1-4
	Offset	Displays the current channel offset of +, –, or "no offset." If "no offset" is selected, no symbol appears in the display.
	Channel	Displays the current channel

## 1.5 Commonly Used Commands

[Table 1-2](#) describes commonly used commands for STRATA Remote Control.

Table 1-2 Commonly Used Commands

Task	Action	Display
Select Mode	Press the MODE Button labeled "D/A"	Analog or digital preset values display
Select Channel	Rotate <b>CHANNEL</b> Switch to select the channel 	Current Channel is displayed in the front panel display.
Select Offset	Rotate <b>OFFSET</b> Switch 	Current Offset is displayed in the front panel display.
Adjust Display Brightness	Press " <b>BRIGHTNESS</b> " button	For additional information, see <a href="#">Section 1.7, "Controlling the Display Brightness,"</a> on page 1-5

## 1.6 Displaying Signal Strength

The RX Remote Control Panel provides indicators for measuring signal strength in both analog and digital modes.

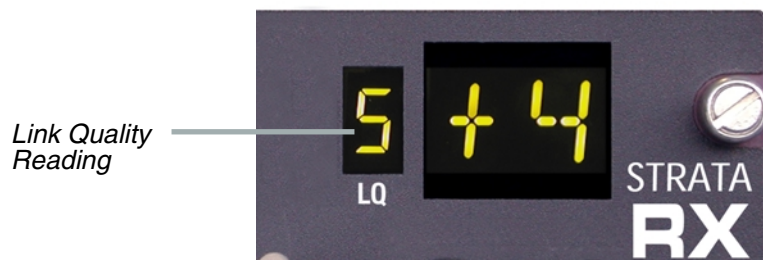
### 1.6.1 Link Quality in Digital Mode

Link Quality (LQ) uses a numeric value to display signal integrity for the digital signal. [Table 1-3](#) describes how to interpret Link Quality readings

**Table 1-3 Link Quality Values**

Reading	Descriptions
9	Excellent Link Quality - COFDM link is very robust with extra headroom
8	Very Good Link Quality - COFDM link is robust for the given environment
7	Standard Link Quality - COFDM link is acceptable for current environment
6	Average Link Quality - COFDM link is average and could swing in either direction
5	Below Average Quality - COFDM link is marginal, not dependable. Link should be optimized
4	Poor Link Quality - COFDM link is unstable - quality poor and unpredictable
3	Unsatisfactory Link Quality - COFDM microwave link is not locked

**Figure 1-3 Link Quality Display**

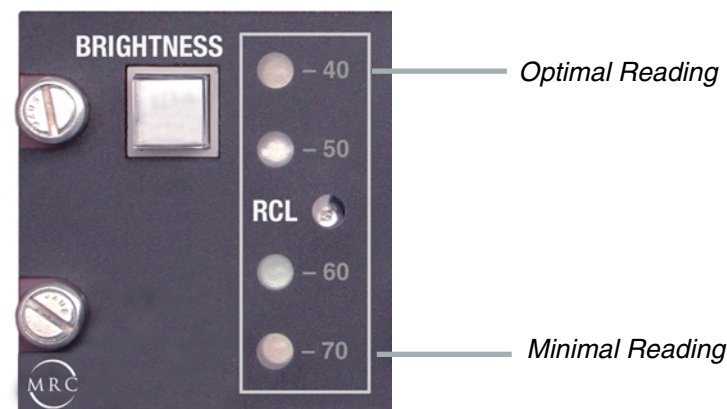


### 1.6.2 Receive Carrier Level in Analog and Digital Mode

When in analog or digital mode, Receive Carrier Level is measured using four display LEDs ([Figure 1-4](#)):

- -40 dBm indicates the optimal signal level.
- -50 dBm indicates an acceptable signal level.
- -60 dBm indicates an marginal signal level.
- -70 dBm indicates the lowest signal level possible before it drops below the receiver threshold.

**Figure 1-4 Receive Carrier Level LEDs**



## 1.7 Controlling the Display Brightness

The brightness of the indicators and illumination of the functional text is controllable in three separate settings:

- **Automatic** – The factory default is automatic mode. In this mode, a photo-sensor on the panel measures the ambient light coming in to the front of the panel (Figure 1-1 on page 1-1). If there is little or no light present, the panel assumes it is in a dark environment and dims the displays and illumination accordingly. If the photo-detector detects a bright environment, it increases the intensity of the displays making them easily seen in bright light conditions. This setting should be used when the aircraft is traveling between bright sunlight and shade.
- **HI** – For situations that require a fixed intensity, a high intensity setting can be set by the operator. Usually this setting would be used for day time operation.
- **LO** – For situations that require a fixed intensity, a low intensity setting can be set by the operator. Usually this setting would be used for night time operation.

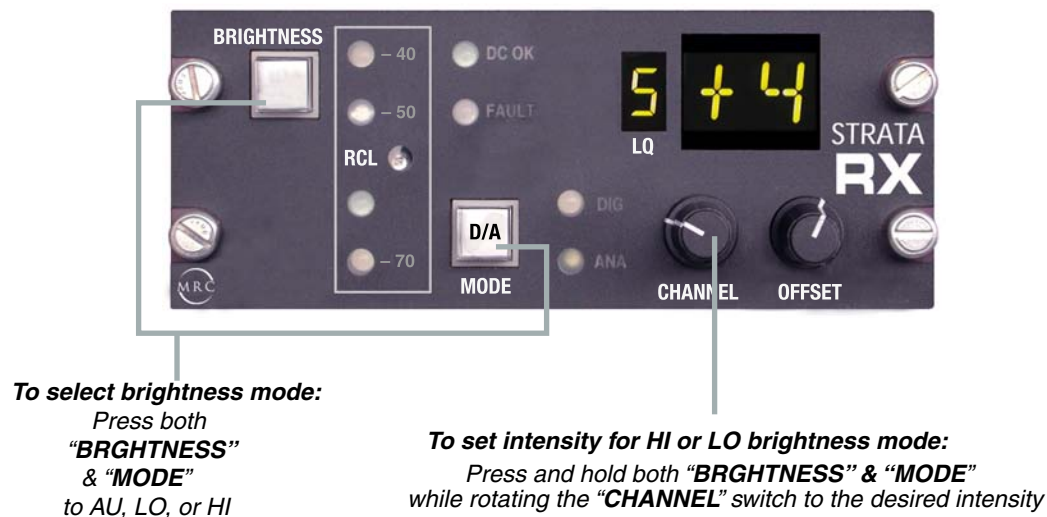
The remote control panel displays the “Automatic” setting when the unit is initially powered up. The panel remembers the brightness control mode last set when it is powered on and off.

Display brightness is controlled by pressing two buttons simultaneously. This does not interfere with the normal control functions. To control brightness, use Table 1-4 and Figure 1-5.

Table 1-4 Backlight Intensity Controls

Brightness Mode	Control	Displays	Alternate Controls
Automatic	Press “ <b>BRIGHTNESS</b> ” and “ <b>MODE</b> ” to display “ <b>A</b> ”	A	Display brightness controlled automatically from sensor.
Hi	Press “ <b>BRIGHTNESS</b> ” and “ <b>MODE</b> ” to display “ <b>H</b> ”	H	Display backlight set to highest intensity. To further adjust brightness, rotate the “ <b>CHANNEL</b> ” Switch clockwise to increase the intensity and counter clockwise to decrease.
Lo	Press “ <b>BRIGHTNESS</b> ” and “ <b>MODE</b> ” to display “ <b>L</b> ”	L	Display backlight set to lowest intensity. To further adjust brightness, rotate the “ <b>CHANNEL</b> ” Switch clockwise to increase the intensity and counter clockwise to decrease.

Figure 1-5 Controlling Display Brightness



### 1.8 Control Panel to Receiver Connections

Standard 9 pin RS-232 D-type male connectors are mounted on the remote panel and the receiver. A standard 9 pin RS-232 null-modem cable is all that is required to connect the communication path between the two devices. Power is supplied separately to the unit connector J3 (See [Section 1.9, "Power Connections,"](#) on page 1-6).

Figure 1-6 Serial Connector

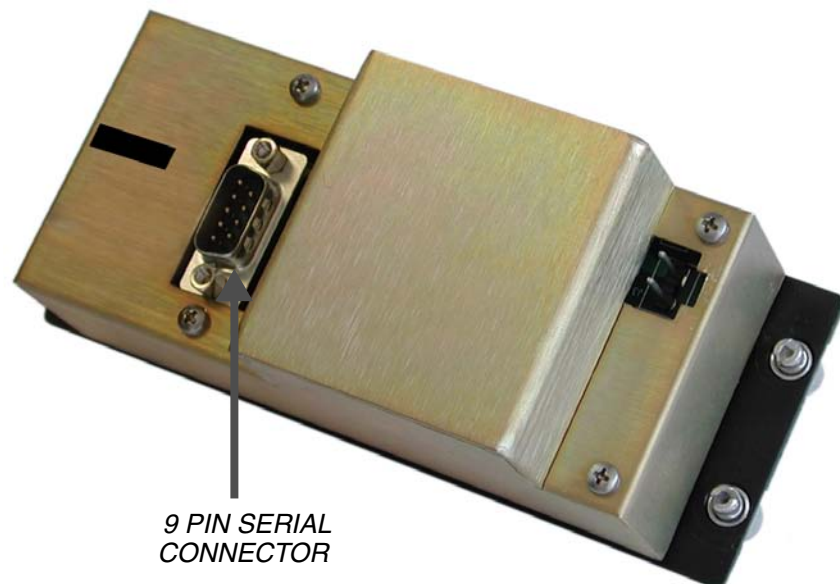
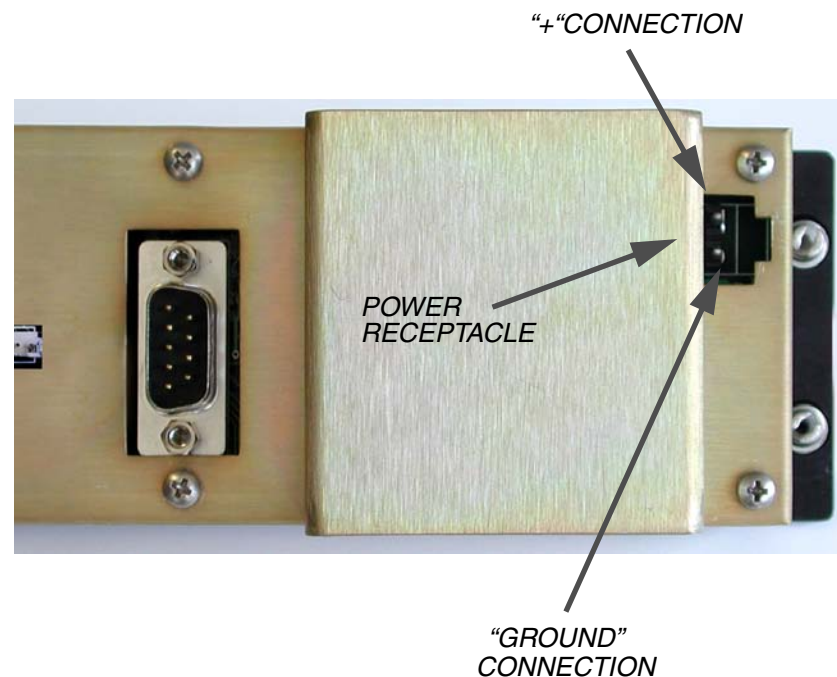


Figure 1-7 Power Connections

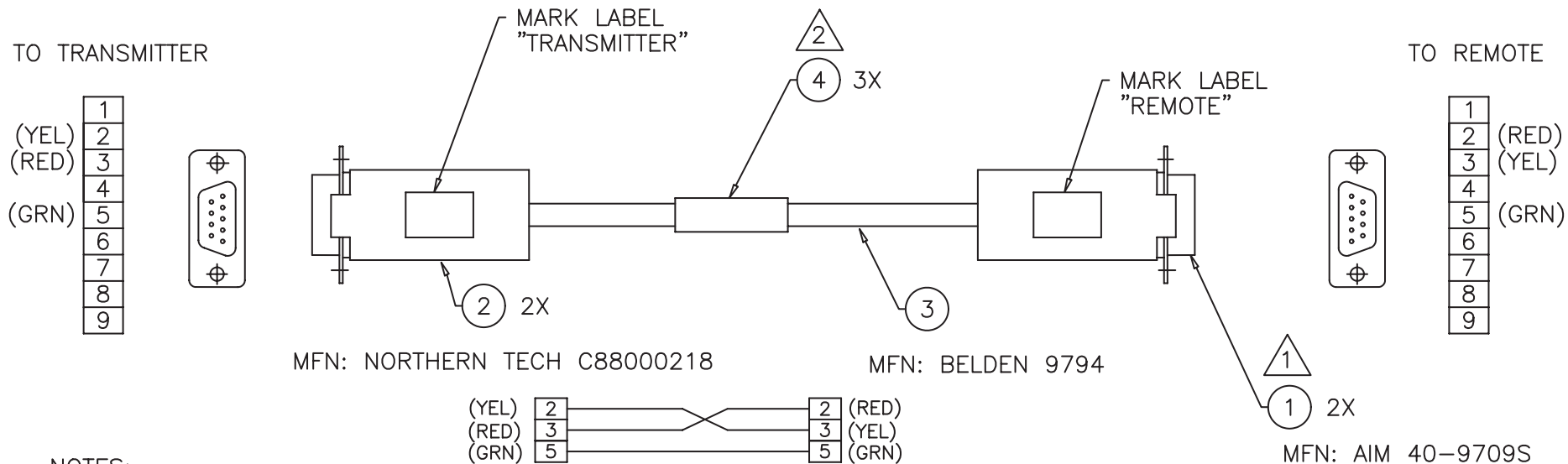


If a wiring harness is being fabricated, two female 9 pin D connectors will need to be wired as shown in [Figure 1-8](#).

### 1.9 Power Connections

D.C. power needs to be supplied to the remote panel using the receptacle at the rear of the controller ([Figure 1-7](#)). Required power range is from +10 Volts DC to +50 Volts DC (negative ground only).

### Figure 1-8 Remote Control Panel to Receiver Diagram



NOTES:

1. STRIP AND TIN LEADS .25 LONG.
2. MARKINGS TO BE CLEAR CONTRASTING, PERMANENT AND LEGIBLE.

907238-X  
(LENGTH IS DETERMINED BY CUSTOMER)

	3	52500-231	LABEL	4
	1	9794	CABLE	3
	2	52150-20	COVER CONN SHELL	2
	2	52150-12	CONN 9 PIN "D" (F)	1
	GX	PART OR	NOMENCLATURE	ITEM
QTY REQD		IDENTIFYING NO.	OF DESCRIPTION	NO.
PARTS LIST				

# WIRE HARNESS ASSEMBLY STRATA TO REMOTE PANEL 907238



### 1.10 Power Cable Assembly

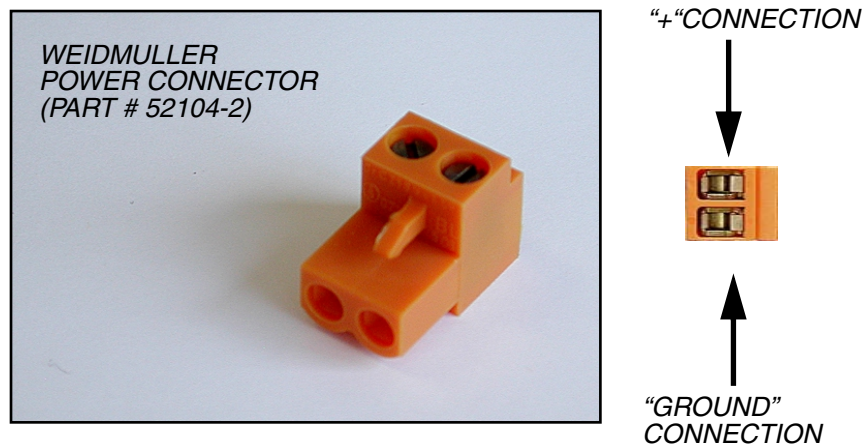
A power cable will need to be assembled dependent on the needs of the application. MRC provides the 2-PIN Weidmuller connector (Part # 52104-2), to connect to the power receptacle at the rear of the controller.

Use the following procedure:

- Step 1** Loosen the screws on the connector.
- Step 2** Insert the “+” voltage wire into the connector as shown in [Figure 1-9](#).
- Step 3** Insert the “GND” voltage wire into the connector as shown in [Figure 1-9](#)
- Step 4** Tighten the screws on the connectors. Check that the wires are securely fastened.

**Note:** When inserting the power connector into the power receptacle, note that the connector is keyed to prevent from being inserted incorrectly.

Figure 1-9 Weidmuller 2-Pin Power Connector



### 1.11 Communication Failures

Should communication between the control panel and the receiver fail, the “C”

displays in the Channel Display Window. ([Figure 1-10](#)). [Table 1-5](#) describes possible causes and remedies.

Table 1-5 Communication Failures

Possible Cause	Remedy
The STRATA Receiver has lost power	Check the power connections to the STRATA Receiver and power supply.
A communication error has occurred between the Control Panel and the STRATA Receiver.	Check serial cable connections between the control panel and the STRATA Receiver. For information on serial connections from the control panel to the receiver, see <a href="#">Section 1.8, "Control Panel to Receiver Connections,"</a> on <a href="#">page 1-6</a> .

Figure 1-10 Remote Control Panel Fault Condition Display

