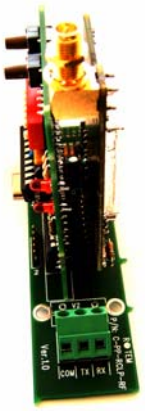
ROTEM
COMPUTERIZED CONTROLLERS

RFCenter / RFRemote

P-RFCC-V1/2

P-RFRC-V1/2

C-PP- RCLP-RF



User/Installation Manual

WARRANTY & LIMITATION OF LIABILITY

1. ROTEM warrants that the product shall be free of defects in materials or workmanship and will conform to the technical specification for a period of 1 (one) year from the date of initial installation on sight (the "warranty period").
2. Load cells are not covered by ROTEM's warranty.
3. ROTEM warrants that during said warranty period, any item/items or part/parts of equipment found defective with respect to materials or workmanship or which do not conform to the technical specification shall be repaired or replaced (at ROTEM's sole discretion) , free of charge.
4. During the warranty period, in the event of an alleged defect, authorized reseller in relevant region should be reported as soon as possible from the date of noticing the said defect, but no longer than thirty (30) days from such a discovery. The report shall include (1) a short description of the defects noticed (2) type of card / component and its' matching serial number.
5. ROTEM's sole liability under this warranty is the repair or replacement of the defective item of product.

Conditions and Limitations

1. ROTEM will not be responsible for any labor costs or expenses associated with replacement of defective items or other part of the product or repair.
2. This warranty shall not cover: (i) product or part therein which has been modified (without prior written approval of ROTEM), or (ii) product or part therein which has not handled or installed by ROTEM's authorized reseller or (iii) product or part therein which has either handled or installed not in strict accordance with ROTEM's instructions, (iv) products which where used for function other then agriculture industry.
3. This warranty will not apply in the following cases: (i) if all components of the product are not originally supplied by ROTEM (ii) the defect is the result of act of nature, lighting strikes, electrical power surge or interruption of electricity (iii) the defect is the result of accident, misuse, abuse, alteration, neglect, improper or unauthorized maintenance or repair.

ROTEM worn and alert all users that the Product is inherently complex and may not be completely free of errors. ROTEM's products are designed and manufactured to provide reliable operation. Strict tests and quality control procedures are applied to every product. However, the possibility that something may fail beyond our control exists. Since these products are designed to operate climate control and other systems in confined livestock environments, where failure may cause severe damage, the user should provide adequate back up and alarm systems. These are to operate critical systems even in case of a ROTEM system failure. Neglecting to provide such a backup will be regarded as the user's willingness to accept the risk of loss, injury and financial damage.
In no event will ROTEM be liable to user or any third party for any direct, indirect, special, consequential or incidental damages, including but not limited to any damage or injury to business earnings, lost profits or goodwill, personal injury, costs of delay, any failure of delivery, costs of lost or damaged data or documentation, lost or damaged products or goods, lost sales, lost orders, lost income.
Except of the above express warranty, ROTEM makes no other warranties, express or implied, relating to the products. ROTEM disclaims and excludes the implied warranties of merchantability and fitness for a particular purpose. No person is authorized to make any other warranty or representation concerning the performance of the products other than as provided by ROTEM.

Document Version: 4.0

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Features

- Easy installation.
- Plug & Play.
- Frequency Hopping Spread Spectrum for security and interference rejection.
- Ability to operate more then one system at the same area (requires configuration).
- Transfer rate of 9600b/sec.
- Up to 15,000 feet distance for connection between two units (for direct line of sight)
- Optional increase in communication distance.
- Easy to use communication program.
- Optional remote connection via modem.

General description

The RF Center is a wireless communication unit, operating in one of two frequency bands (with no license requirements) - 900 MHz, in the US, Canada and Australia, and 2.4 GHz at the rest of the world.
This wireless communication network can replace ROTEM's wired RS-232 and RS-485.
The RF Center can be connected to a PC and a modem allowing the user to connect his farm using a remote PC from any where in the world.

Installation

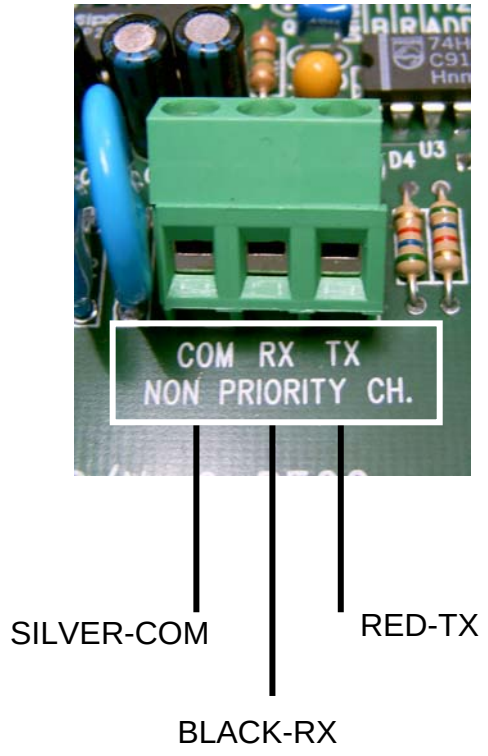
Before installation at field

It is recommended to test the RF-Center (connected to PC) using one RF-Remote (connected to controller) in the office, to make sure the system is working.

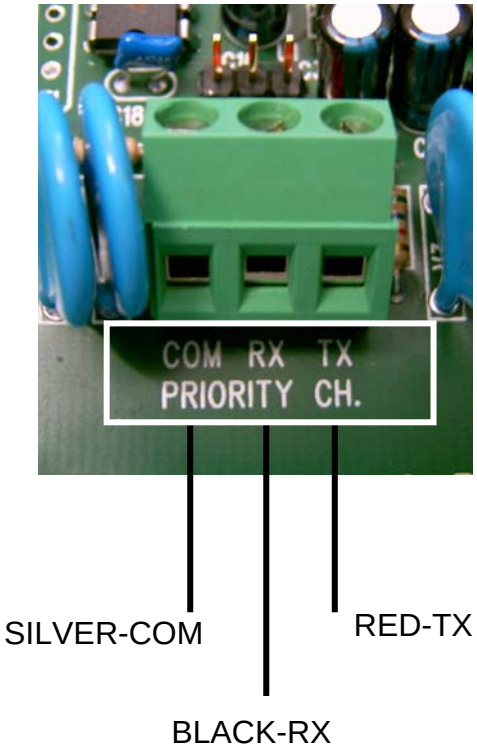
RF Center Wiring Options

The RF Center unit comes with a factory installed DB9 PC cable and DB25 Modem cable. There are two options to connect the RF Center. One is directly to a local PC using the non priority connection. Another option is a priority connection via modem that enables communication to your farm from any anywhere in the world, using a remote PC a modem and a phone line.
The DB9 PC cable and DB25 Modem cable should be connected as shown next:

NON PRIORITY- PC Connection



PRIORITY- Modem Connection



Antenna

The antenna can be connected directly to the RF Center/Remote or be placed on a high surface by using an extension cable (sold separately).

To achieve maximum range, there are some rules to follow:

- The antenna must be installed at least 1.2 meter/4 feet above the installation surface.
- A "line of site" must be kept according to **Figure 1**

If necessary, install a high flagpole to mount the antenna on.

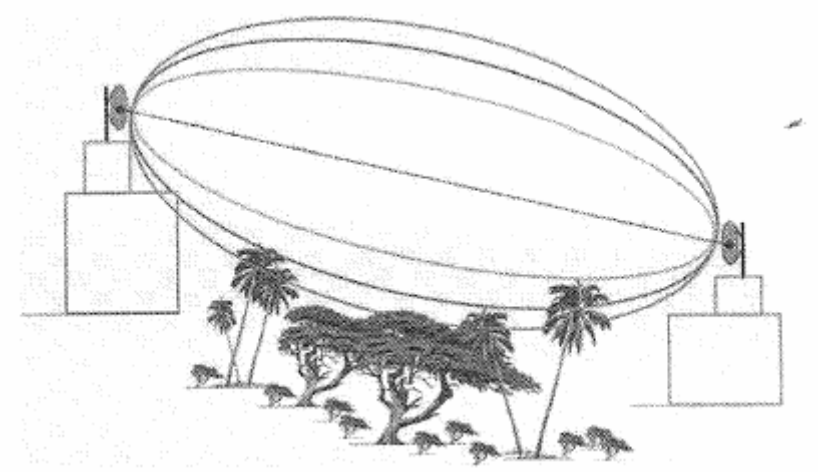


Figure 1: Antenna connection

Range Distance	Required Fresnel Zone Diameter (900 MHz Radios)	Required Fresnel Zone Diameter (2.4 GHz Radios)
1000 ft. (300 m)	16 ft. (7 m)	11 ft. (5.4 m)
1 Mile (1.6 km)	32 ft. (12 m)	21 ft. (8.4 m)
5 Miles (8 km)	68 ft. (23 m)	43 ft. (15.2 m)
10 Miles (16 km)	95 ft. (31 m)	59 ft. (20.2 m)

DIP SWITCH

Each RF unit includes a DIP switch. The DIP switch is used to configure up to 6 different channels, baud rate and other functions for future use.
Caution: The DIP switch is pre configured, so there is no need to change the configuration.
DIP switch configuration should be performed in the following cases:

1. You have more than one RF network in your farm or other RF networks in neighboring farms. In this case only channel configuration is required.

2. You encounter RF interference. In this case only channel configuration is required.

3. You have more than one controller connected to the RF remote unit (RFR); in this case reduce the baud rate until you establish a good connection. Make sure the controller's baud rate and the RFR baud rate match.

4. If you just received a Rotem controller and you want to connect it to your existing network, make sure DIP switch configuration matches.

DIP SWITCH CONFIGURATION PROCEDURE

Rearrange DIP switches 2-8 according to following procedure:

1. Move DIP switch 1 (config.) to on position.
2. Make any necessary changes in the DIP switch position.
3. Press Reset.
4. RX LED should be lit for 4-12 seconds.
5. Return DIP switch 1 to off position.

The following will explain each DIP switch function (see **Figure 2**):
For every switch, upright mode is ON and down mode is OFF.

1. **Configuration (DIP 1)**: In order to configure new parameters: move DIP switch to on, arrange all parameters according to the following section, press reset, wait until LED RX is off. Move Config to OFF.

2. **Baud rate (DIP 2, 3)**: Baud rate is the communication bit rate beetween PC/controller and the RFC/RFR – the UART default baud rate is 9600bps.
   - ✓ 2off,3off- baud-0 - 9600bps
   - ✓ 2off,3on- baud -1 - 2400bps
   - ✓ 2on,3off- baud -2 - 4800bps
   - ✓ 2on,3on- baud -3 - 19200bps

   If you are using RFR and connect several controllers in different distance you should reduce baud rate until you establish connection with no errors.
   The 19200bps is not recommended for use.

3. **Address (DIP 4,5)**: for future use must be at OFF posision .

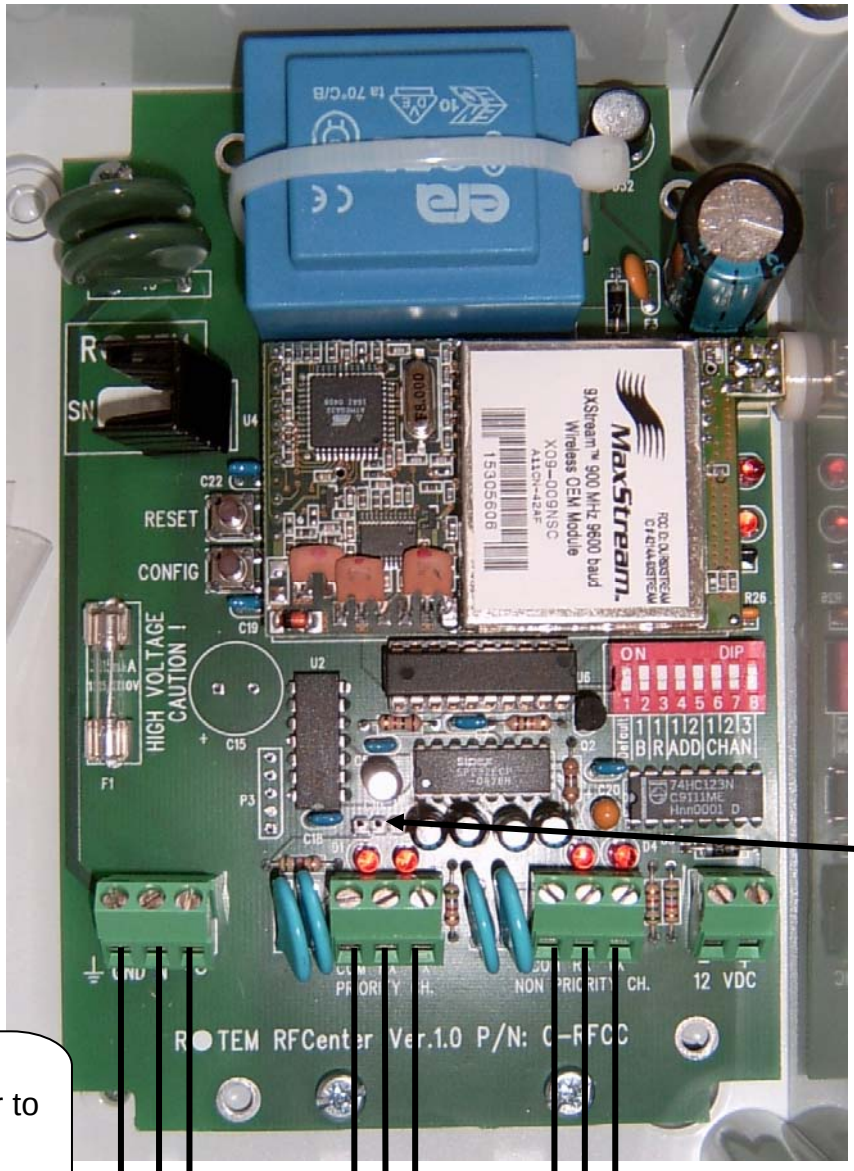
4. **Channel (DIP 6,7,8)**: use these 3 switches to configure up to 7 different communication channels. If for example ON is 1 and OFF is 0 and the switches order is 6,7 and 8, the 7 channels will be-
   - → 000- CHAN-0
   - → 001- CHAN-1
   - → 010- CHAN-2
   - → 011- CHAN-3
   - → 100- CHAN-4
   - → 101- CHAN-5
   - → 110- CHAN-6
   - → 111- CHAN-0

CONFIG	1	2	1	2	1	2	3
	BAUD		ADDR		CHANNEL		

Figure 2: Dip Switch explanation

Wiring Diagram

RF Center Wiring Diagram



Must JMP

The GND must be connected in order to have lightning protection

GND

Neutral

~

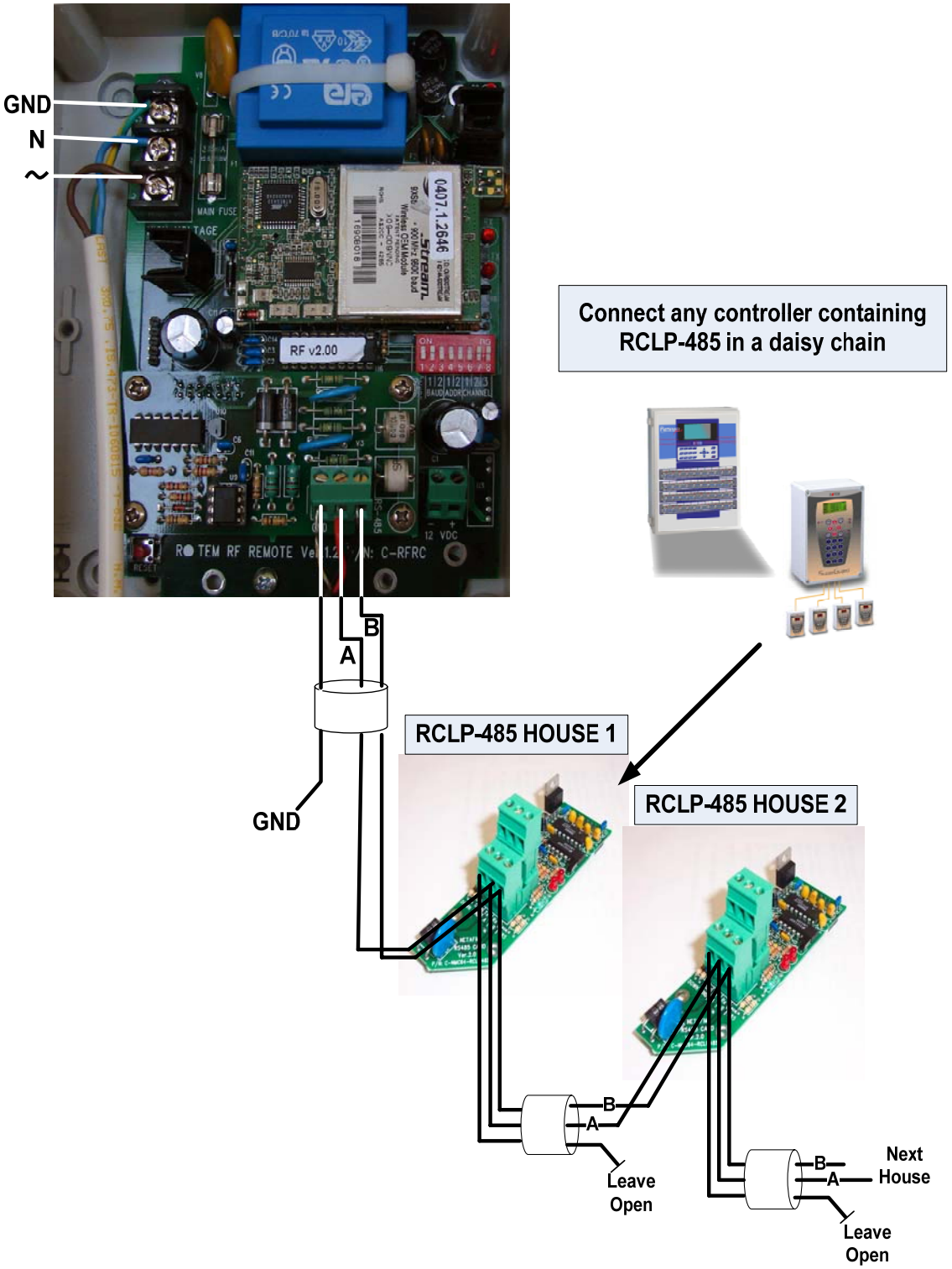
COM RX TX

COM RX TX

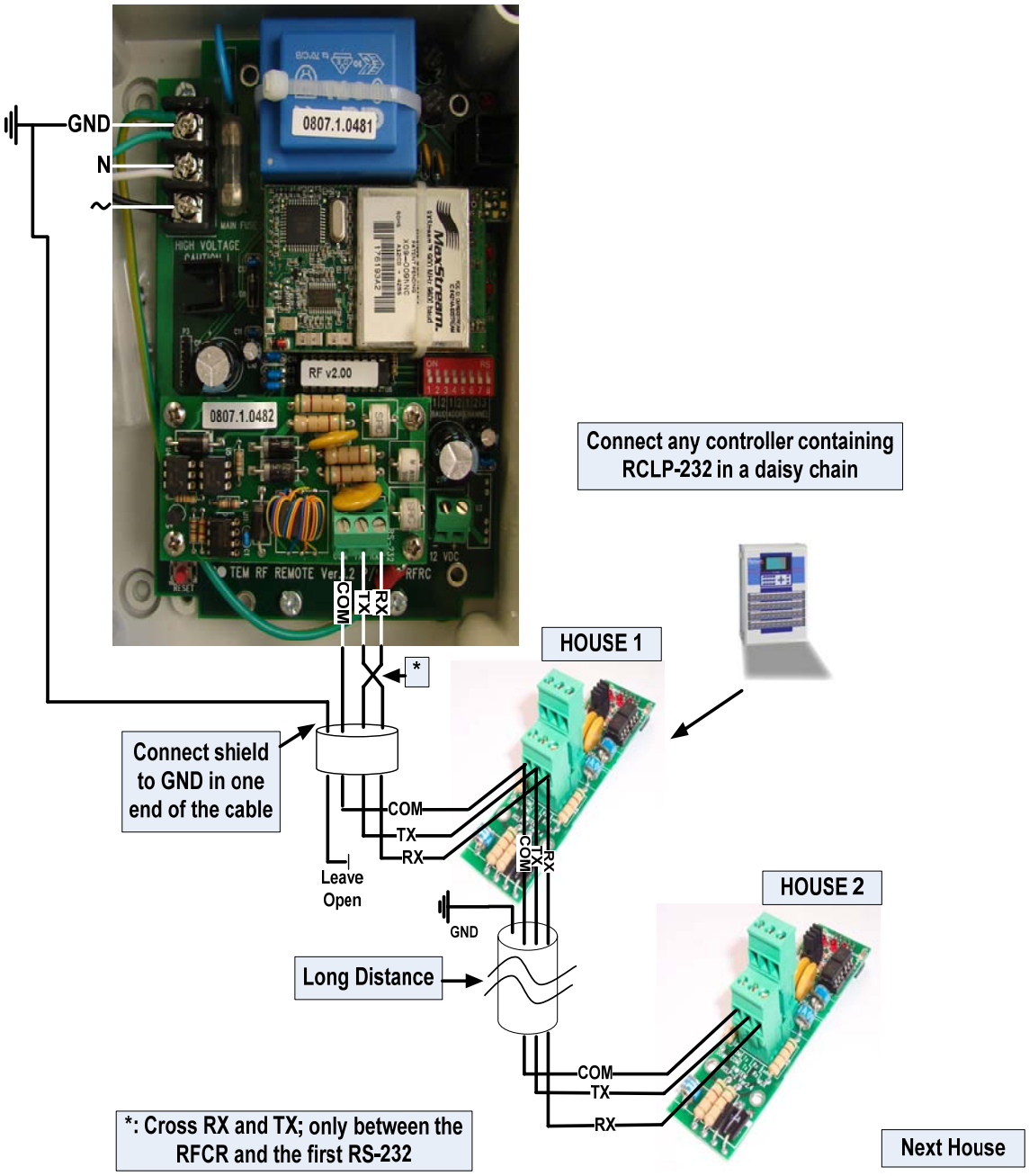
This is the priority channel. Connect the DB25 to a USR Modem.

This is the Non priority channel. Connect the DB9 to a PC COMM port.

RF Remote to RCLP-485 wiring diagram



RF Remote to RS-232 wiring diagram

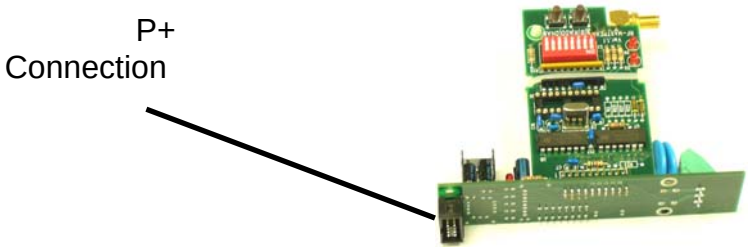


C-PP- RCLP-RF wiring diagram

Follow this step by step guide in order to install your new Rotem RF Card.

Disconnect the Platinum plus from any power supply while replacing a card. Not doing so may result in personal injury or death!

1. Connect card to its socket in the Platinum plus. The second slot from the right hand side of the controller (slot P7 written on the PCB). Written on the RF card are the RX/TX/COM connections. Connect them like a regular RCLP card.



2. Drill a hole on the right hand side of the controller; make sure the hole fits the size of the supplied nut.

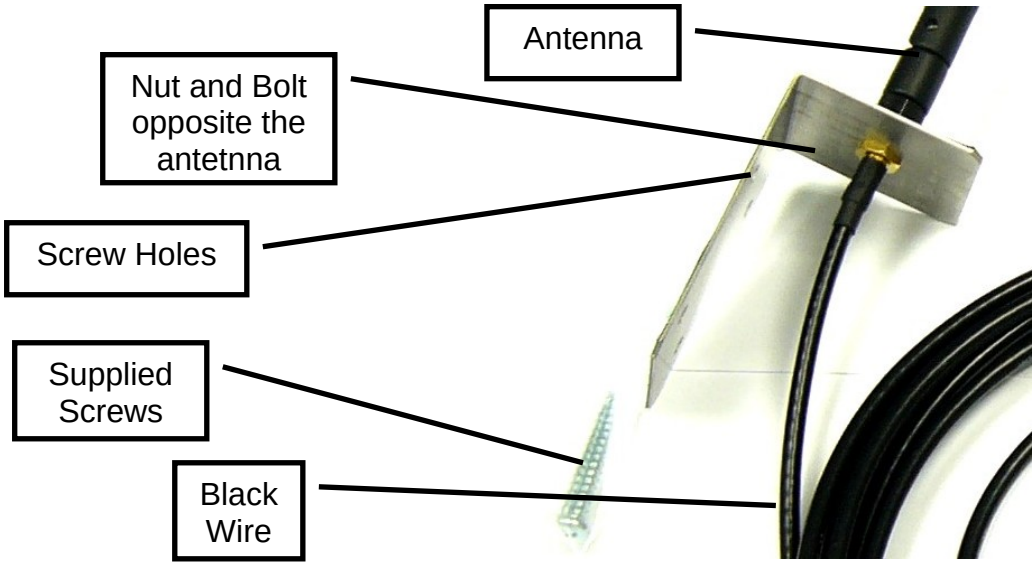
3. Fit the black wire through the hole, connect to RF card and tighten nut to the Platinum Plus. Secure nut connected to the RF card (make sure you leave enough slack).

Approvals

- ✓ **The 230 VAC has a CE approval : EN61000-3-3; EN61000-6-2;CISPR 11 GROUP 1 CLASS A**
- ✓ **FCC Part 15 Subpart B**

4. Take the antenna and its stand and place on high place where nothing is blocking the LOS (line of sight).

5. Secure the stand using two screws (supplied), release the nut and bolt on the end of the antenna. Place the antenna through the hole on top of the stand and secure the nut and bolt on the opposite side.



6. Connect the end of the black wire to the antenna,

Technical Specifications

Power supply

Mains voltage	single phase 230VAC
Main fuse	315mA
Maximum power consumption	5VA

Housing

Dimensions(LxWxH)	171x137x87

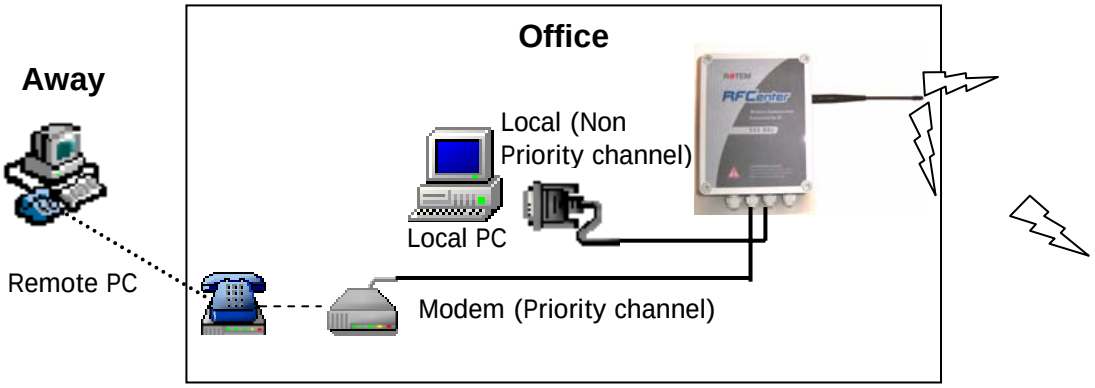
RF – Radio Frequency

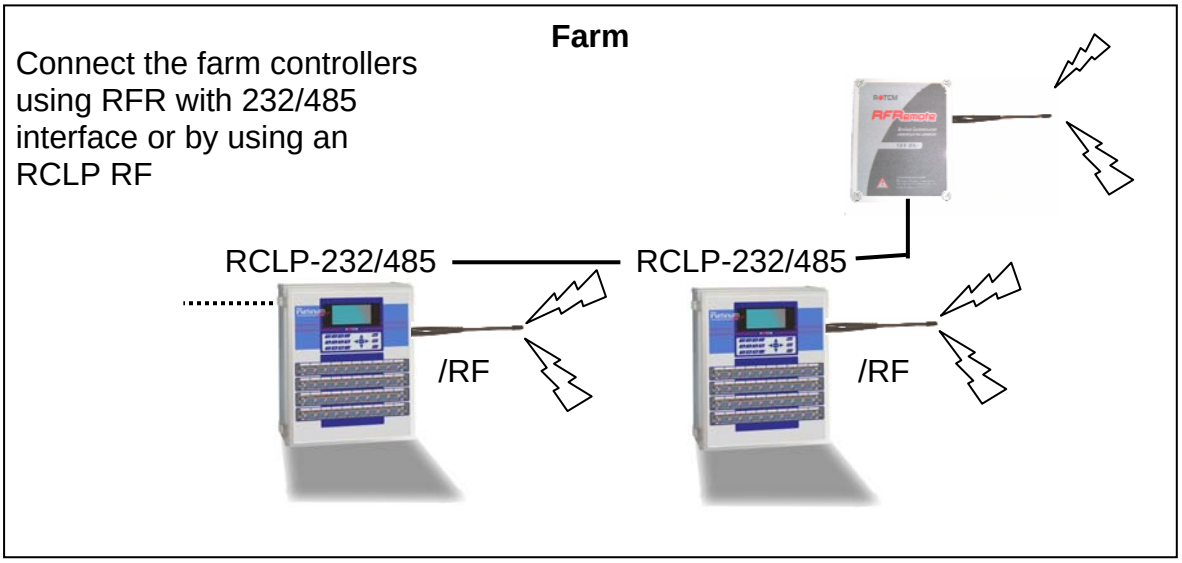
902-928MHz	according to country
2.4000-2.4835GHz	according to country

Environmental Protection

Recycle raw materials instead of disposing as waste. The controller, accessories and packaging should be sorted for environmental-friendly recycling. The plastic components are labeled for categorized recycling.

Schematic Farm Communication Example

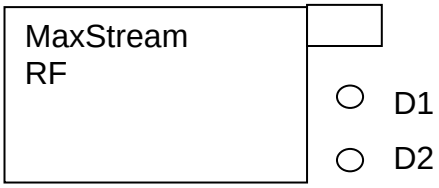




Troubleshooting

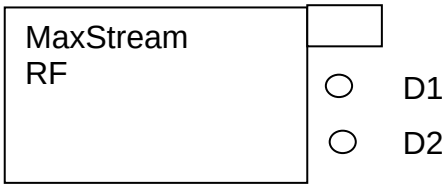
If no communication established:
Look at page 9.
Move jumper to left – JMP connect to left and middle legs – see that you have got red LED – if the LED does not lit, check **main power**. **Do not forget to move the JMP back to the right for proper operation.**

1. Open communication program, activate network setup, mark one controller and press send. Check if D3 is blinking – if not you got a COM port PC problem. Test a different PC output if available. Make sure you match the COM numbers between the PC and the software. If D3 (above PC connector) is blinking, go to 2.
2. See that LED 2 blinks



It means that RFC RF module is transmitting, if D1 is blinking its means the RFC is receiving communication from controller.
If D1 is not blinking go to 3.

3. Now look at RFR (connect to controller) or RCLP_RF



While the communication program is working in "send" mode look at D1 at RFR. If the LED is not blinking the RF communication is not working – see that the DIP switch of RFR and RFC or RCLP_RF are in the same position, and perform the procedure in p.7, DIP switch section 1-5, again