



***TESS I***

***WIRELESS CONTROL SYSTEM***

***Installation and User Manual***

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TESS1 Wireless Installation and User Manual  
RPM Control Company April 2005 (Rev. 1.0)

# **1. Introduction:**

Thank you for purchasing the TESS1™ Wireless control system. This system will allow you to control the vehicles engine and the hydraulic system wirelessly.

## **1.1 Service and support**

If you need additional information on how to set up or operate your TESS1 Wireless Control, please contact us. We welcome and encourage your comments so we can continue to improve our products and better meet your needs.

### **Sales, Customer Service and Technical Support**

Tel: 1-866-519-9817 (USA and Canada) or 1-519-758-7901

Fax: 1-519-758-8900

E-mail: [rpmcontrol@rpmcontrol.com](mailto:rpmcontrol@rpmcontrol.com)

Web: [www.rpmcontrol.com](http://www.rpmcontrol.com)

## **1.2 Product returns**

All product returns require a return materials authorization (RMA) number. Please Contact RPM Control for Technical Support before attempting to return your product. Make sure you return all the items that shipped with your product.

## **1.3 Safety**

### ***Read the safety instructions before first use of this product.***

- Read and understand all instructions.
- Follow all warnings and instructions marked on the product.
- This product should never be placed near heat source.
- This product should be operated only from the type of power source 13.8 Volts DC protected by 15 Amps Fuse/Circuit Breaker. If you are not sure of the type of power supply in your Truck, consult your Truck dealer.
- Do not overload the relays circuits, as this can result in the risk of fire.
- Never push objects of any kind into this product through connectors/switches as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.
- To reduce the risk of electric shock, do not disassemble this product. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock during subsequent use.

- Unplug this product from the battery source and refer servicing to qualified service personnel under the following conditions:
  - a. If the product does not operate normally by following the operating instructions.
  - b. If the product has been dropped or damaged.
  - c. If the product exhibits a distinct change in performance.
- Avoid using a Remote Controller during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use this product near intensive care medical equipment or by persons with pacemakers.
- Due to the radio signals between base station and POD, wearers of hearing aids may experience interference in the form of a humming noise.
- This product can interfere with electrical equipment such as answering machines, TV sets, radios, computers and microwave ovens if placed too close.

To reduce the risk of fire or injury to persons, read and follow these instructions:

### ***TESS1 wiring information***

- Use caution when installing wires.
- Never install wires during an electrical storm.

### ***Batteries***

- Use only the battery pack type listed in this manual.
- Do not dispose of the battery pack in a fire, as they can explode. Check with local codes for battery disposal regulations.
- Do not open or mutilate the battery pack. Released electrolyte is corrosive and can cause damage to the eyes or skin. It can be toxic if swallowed.
- Avoid contact with rings, bracelets, keys or other metal objects when handling the battery pack. These objects could short out the batteries or cause the conductor to overheat, resulting in burns.
- Do not attempt to recharge the battery pack by heating it. Sudden release of battery electrolyte can cause burns or irritation to the eyes or skin.
- Observe the proper polarity, or direction, of any battery. Reverse insertion of the battery pack can result in leakage or explosion.
- Remove the battery pack if the product will not be in service for several months at a time. The batteries could leak over that time.
- Discard any “dead” battery pack as soon as possible because they are likely to leak into the product.
- Do not store this product or the battery pack in a high temperature area. Battery packs that are stored in a freezer or refrigerator should be protected from condensation during storage and defrosting. Battery packs should be stabilized at room temperature before using.
- Your battery pack is rechargeable and can be recycled once it outlives its usefulness.

Depending upon your local and Province/State law, it might be illegal to dispose of this battery into a municipal waste system. Check with your local solid waste company for more information on your recycling options for the battery pack.

***Save these instructions***

## 2. Getting Started:

Unpack your New TESS1 wireless system. In package you will have one receiver unit which is connected to the electrical system of your truck. TESS1 Wireless system can come with one or two remote transmitters (controllers), depending how it was ordered. System can be upgraded up to a total of seven transmitters (controller).

### 2.1 Installation

#### Basic Instructions

Installation is easy, just follow next steps:

- Pin# 1** Tee into the ground side of the PTO light wire allowing the engagement of the PTO to activate the TESS1 Control System or to chassis ground.
- Pin# 2** To ECM switched feed wire. (See **Note 1**)
- Pin# 3** Refer to the ECM Guide Sheet.
- Pin# 4** Connect to Emergency Hydraulic Pump Relay.
- Pin# 5** Tee into the starter wire from the key switch. (See **Note 2**)
- Pin# 6** Refer to the ECM Guide Sheet
- Pin# 7** To ECM switched feed wire. (See **Note 1**)
- Pin# 8** Refer to the ECM Guide Sheet.
- Pin# 9** Jumps to pin# 10 or an interlock. (See **Note 3**)
- Pin# 10** To the PTO On/Off switch. (12 V dc fused 15 amps)

**Note 1:** The ECM switched feed wire has to be cut. The one wire will be joined to **pin#2** and the other wire will be joined to **pin# 7**.

**Note 2:** If you are using Standard Transmission it is highly recommended use Neutral Safety Switch between Output #5 and Starter Solenoid.

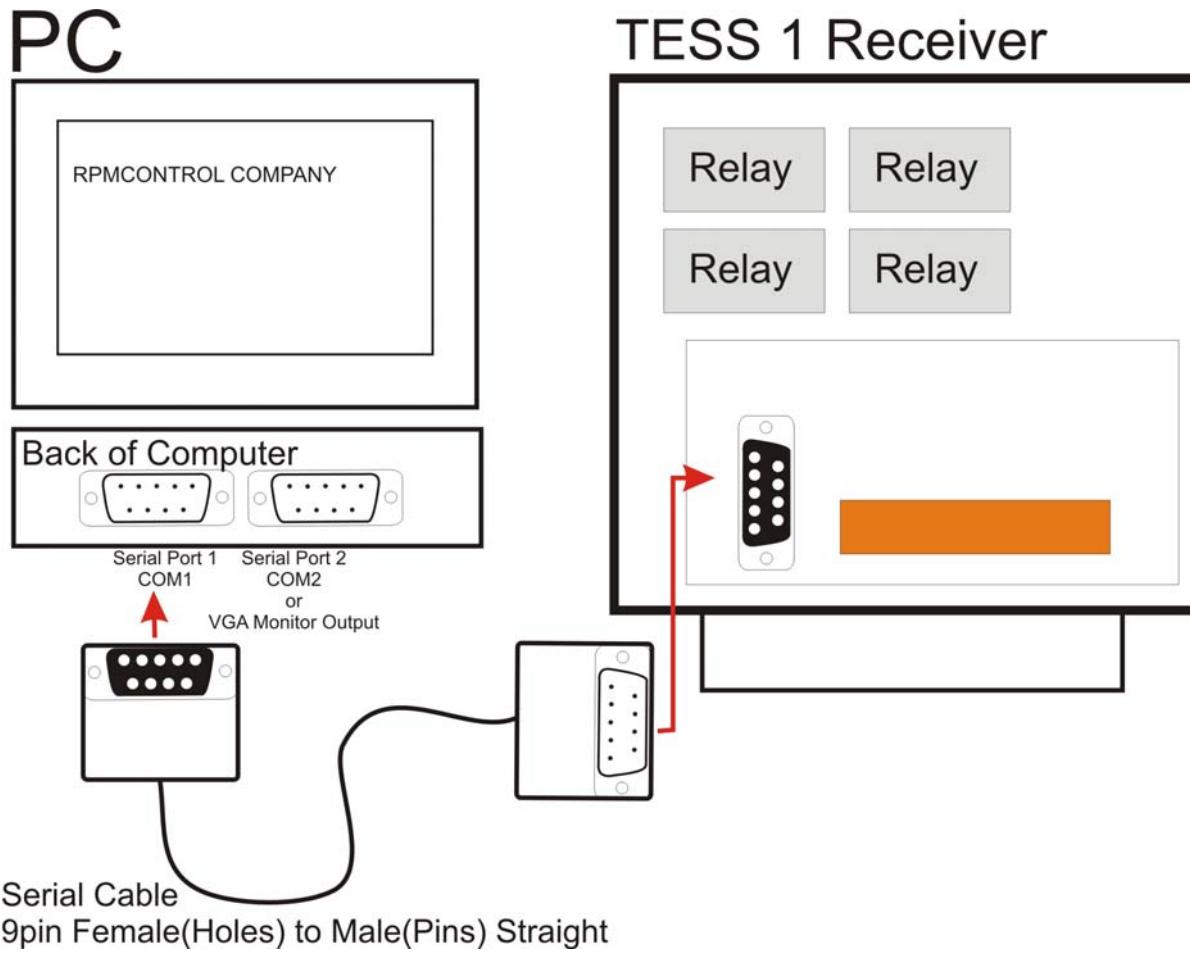
**Note 3:** Interlocks can be installed in **pin# 1** and/or **pin# 9** and/or **pin# 10**.

### 2.2 Programming

#### Requirements:

PC or Laptop with Windows® 98, ME, 2000, XP, XP PRO  
Serial Cable 9 pin Female to Male Straight  
Software HyperTerminal (included in Windows OS package)

### 2.2.1 Setup for Programming TESS1 Receiver:

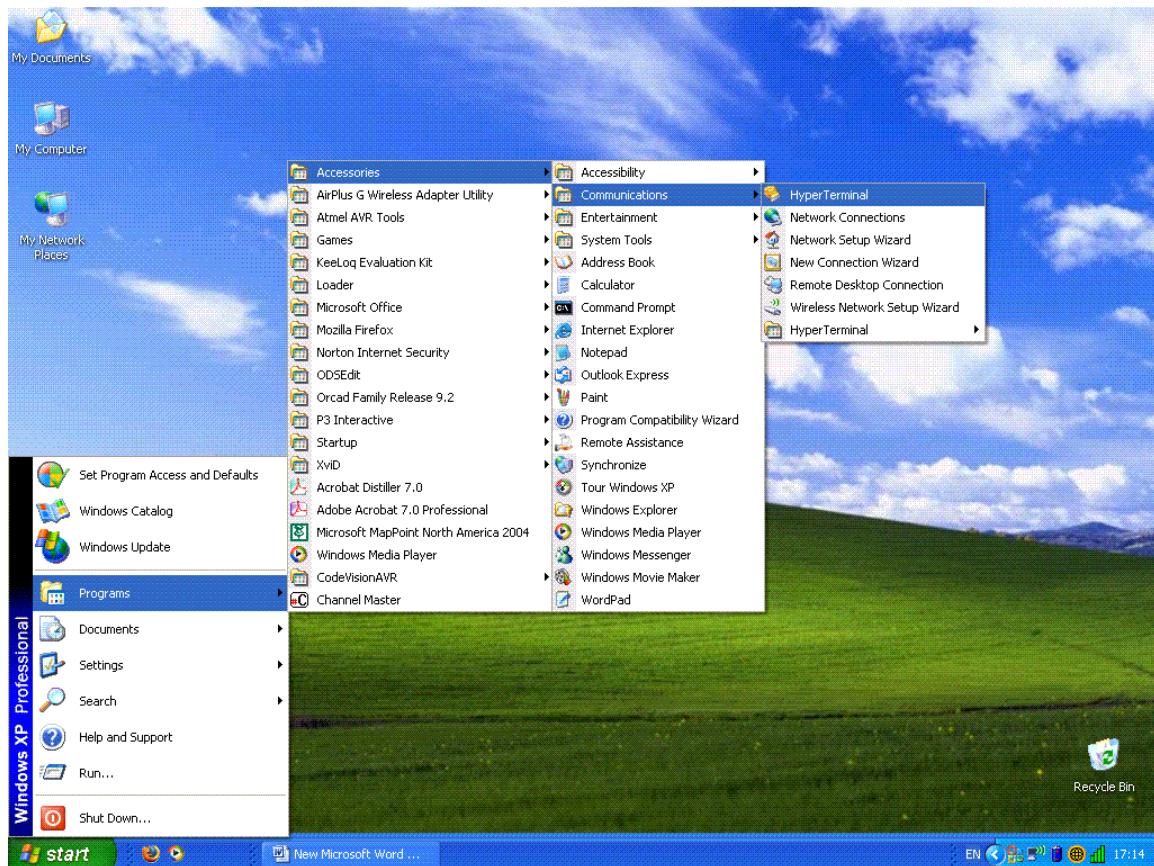


After connecting PC to TESS1 Receiver by Serial Cable, prepare 13.8V Power Supply and connect to the **Pin#1 for GND** and **Pin#9 to +13.8V**. Do not turn it ON yet!

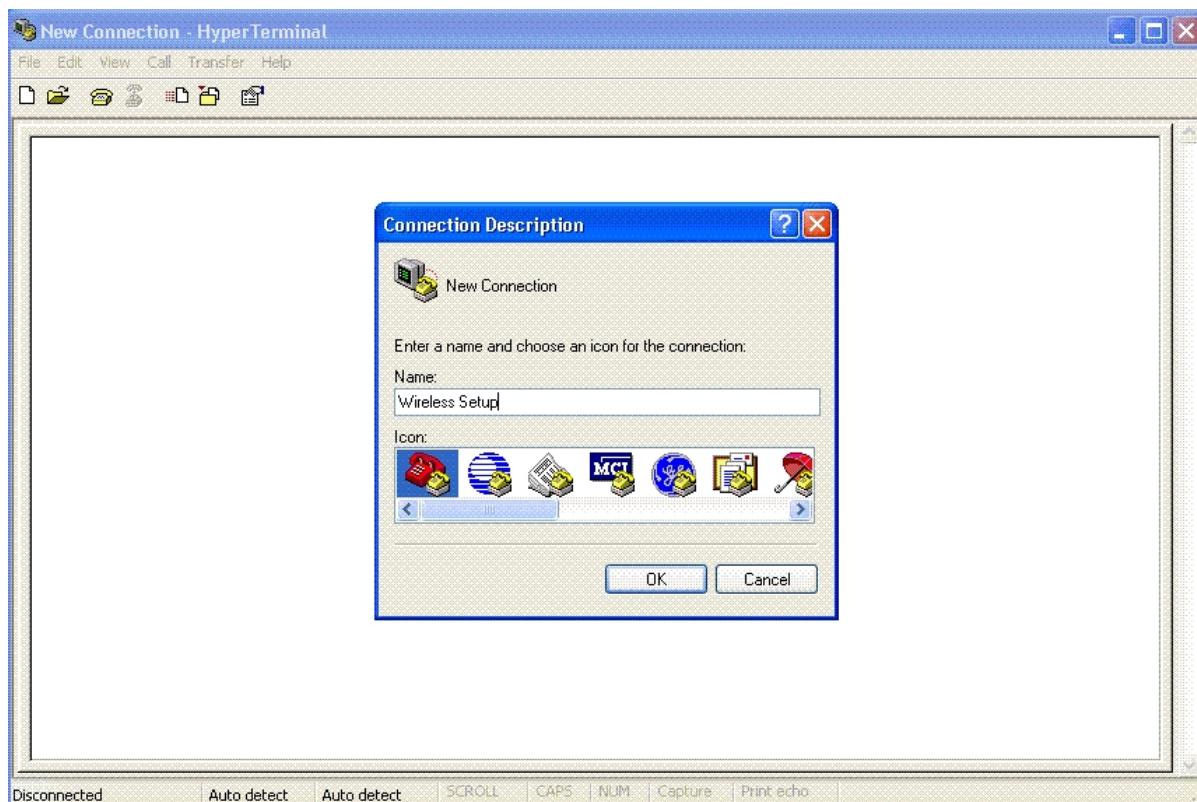
If you have already installed the TESS1 in the vehicle, turn Key OFF.

## 2.2.2 Setup For HyperTerminal:

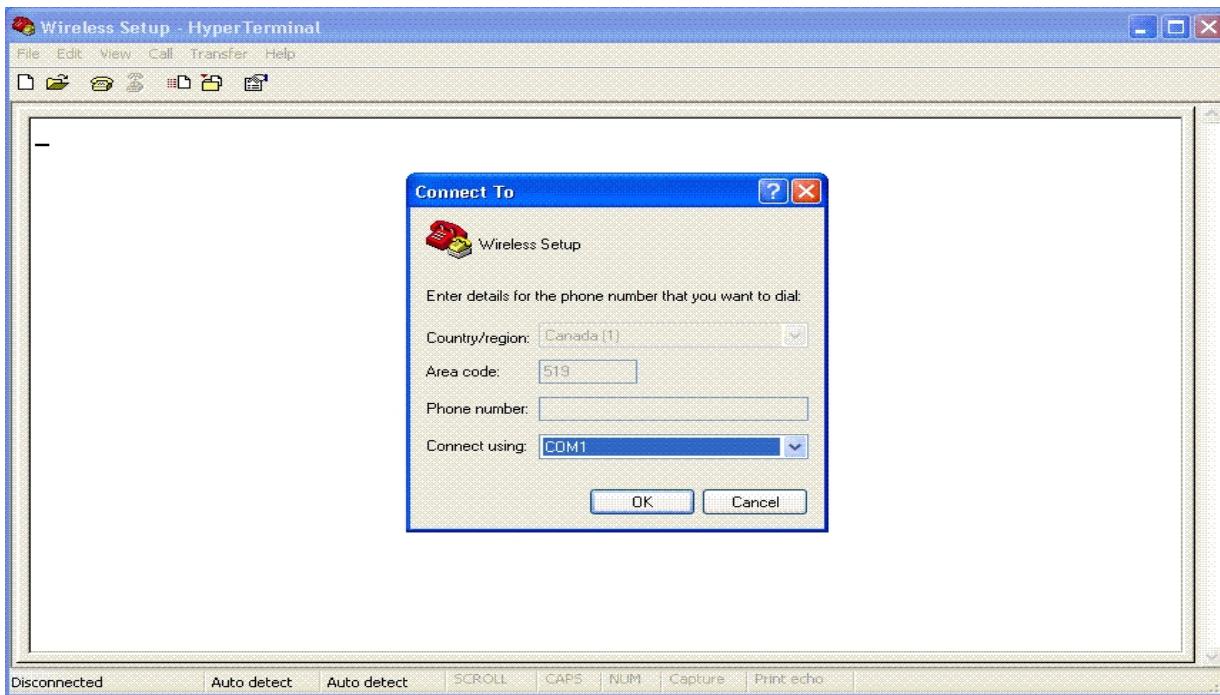
1: Start HyperTerminal which is located in Start -> Programs -> Accessories -> Communications folder. Check bottom Picture:



2: After Click on HyperTerminal in communications tools, a new window popup with name Connection Description. In this window type the name for your new connection, in our case use "Wireless Setup". You can select any of the icons for your setup.

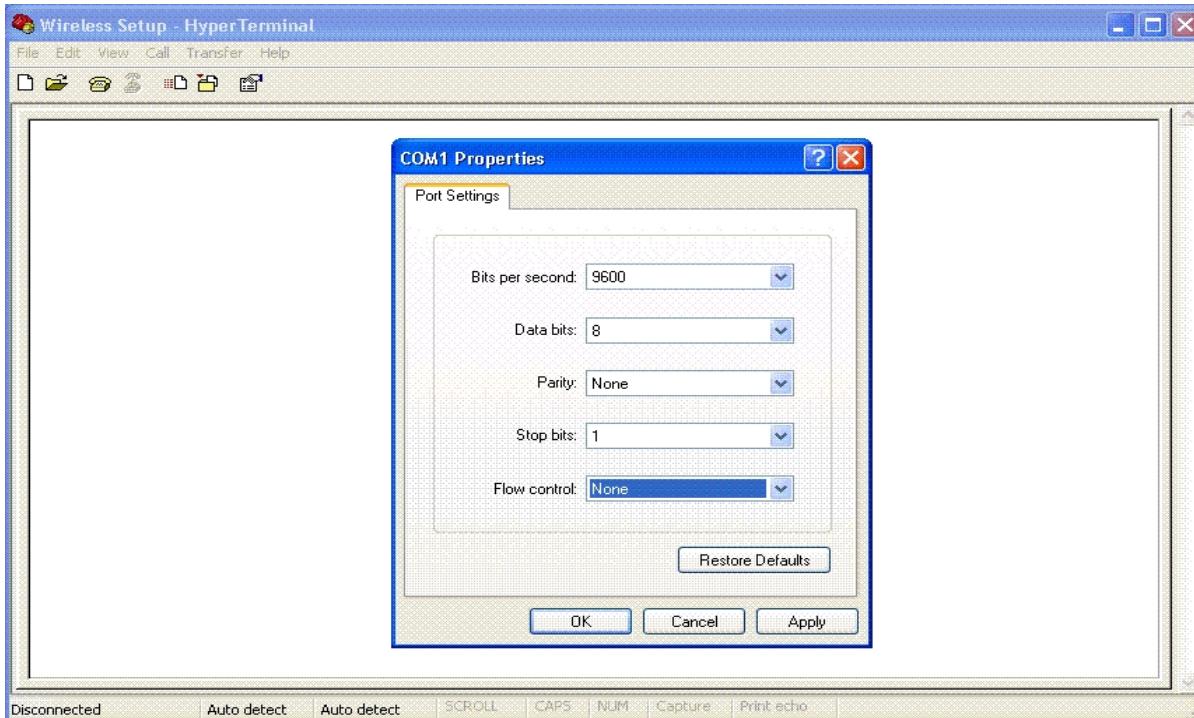


3: Next Window is named “Connect To”. In row “Connect using” pickup from drop down menu choose the COM port where you are connecting your serial Cable to. In our case it is “COM1”. Do not worry about other rows. Click OK.

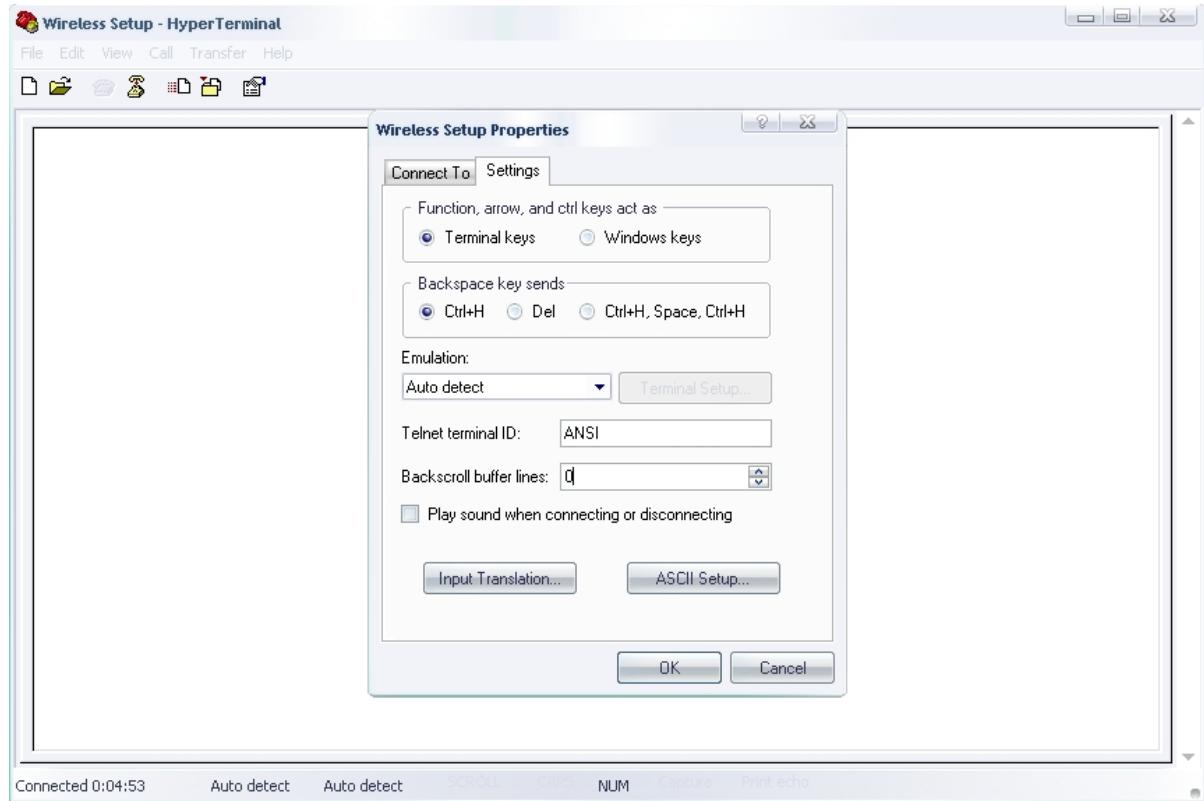


4: Next popup window has name “COM1 properties”. If you are using different Com Port you can see “COM2 Properties” etc. In this windows Select following:

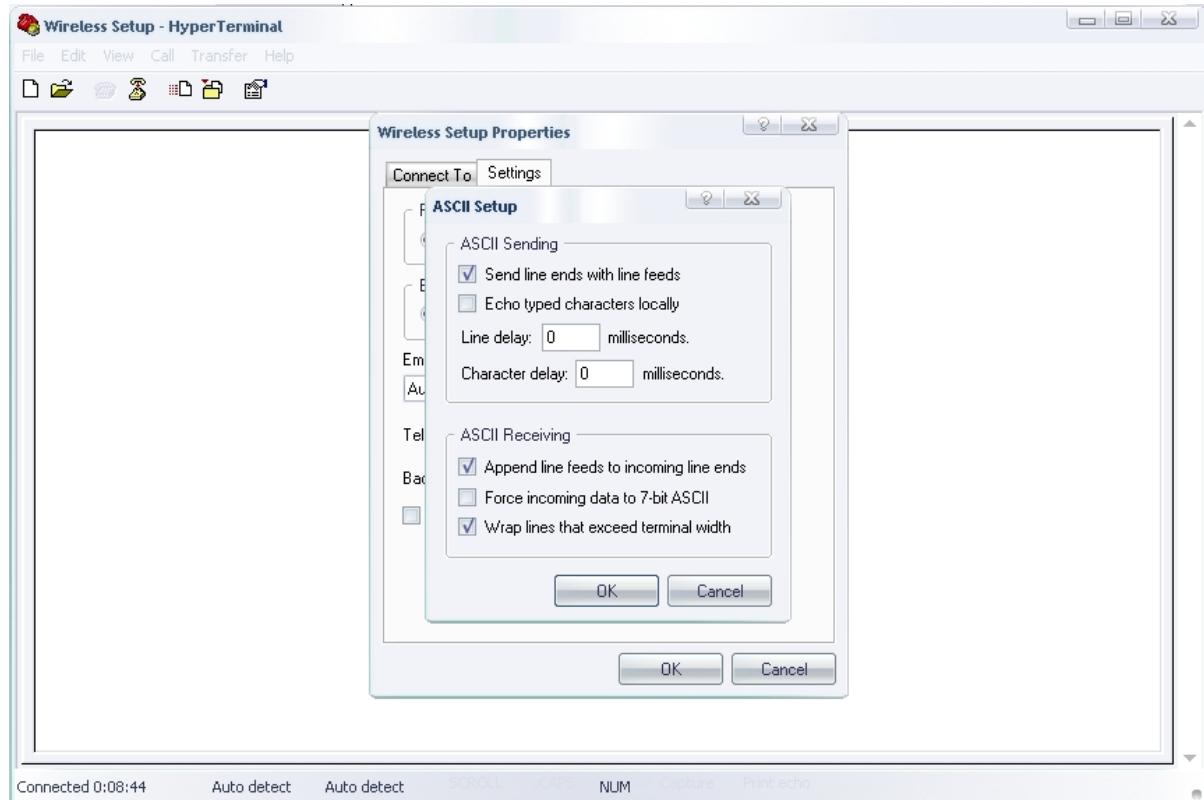
Bits per second 9600  
Data bits: 8  
Parity: None  
Stop bits: 1  
Flow Control: None  
Click Apply and then OK.



5: Now a new Window has opened with the name “Wireless Setup HyperTerminal”. Now go to “File” and click on “Properties” then click on “Settings” tab. Change the “Back scroll buffer Lines” to 0.



6: Now click on “ASCII Setup” Button and check following boxes and Click OK on the next two boxes.



7: Now save your settings for future use. Go to File -> Save and your new connection will be saved to your Hard Drive. The next time you start HyperTerminal and go to File -> Open and pick up your saved connection. Now you are set for programming.

### **2.2.3 Main Programming of TESS1 receiver:**

Before you start, check all your cable connections (Serial Cable and Power Cable). When you have everything connected, Power Up receiver. On screen of computer show up text:

“Firmware version “date” Controller has been restarted. Do again wished procedure, if any!”

Now push on Computer Keyboard keys “SHIFT” + “!”. Next text showed up.

```
Firmware Version April 02, 2006 Controller has been Restarted. Do again wished procedure, if any!
```

```
Welcome at SETUP Utility for Remote Control !
```

```
TryToo.ca and RPM Control Company !
```

```
What are you want to do ?
```

Programming OUTPUT Channels	0
Program NEW TRANSMITTER push	1
Erase ALL TRANSMITTERS push	2
Erase ALL TRANSMITTERS except FIRST push	3
For TRANSMITTERS Test	4
For Exit push	E

```
-
```

#### **2.2.3.1 Programming Channels/Outputs**

Now you can pick the operation that you want for setup. If you choose “0” it is Programming OUTPUT Channels. The following window will popup.

```
Erase ALL TRANSMITTERS push 2
Erase ALL TRANSMITTERS except FIRST push 3
For TRANSMITTERS Test 4
For Exit push E

Channel 1 value is 0
Channel 2 value is 0
Channel 3 value is 0
Channel 4 value is 0
Channel 5 value is 0
Channel 6 value is 0
Channel 7 value is 0
Channel 8 value is 0

Hint (000-Momentary, 255-Latched, 001 to 255 is Momentary with timeout
Channel 1 value is 0
For Latched enter '000'
For Latched enter '255'
For Momentary with timeout Enter time for timeout '000-254'

-
```

You will be able to see your present configuration. The word Channel corresponds to an Output. The TESS1 wireless uses channels 1, 2, 4 and 8 as outputs.  
Channel 1 is corresponding with "Start Button" on Transmitter (Controller)  
Channel 2 is corresponding with "Throttle Button" on Transmitter (Controller)  
Channel 4 is corresponding with "Stop Button" on Transmitter (Controller)  
Channel 8 is corresponding with "Emergency Pump" on the Transmitter (Controller)

Options:

- a) Using the value 000 for a channel will cause a Momentary output and will be active only when the button is pushed.
- b) Using the value 255 for a channel will cause the output become latched on and the Channel will stay Latched on until the same button is pressed again which will cause the output to become inactive.
- c) Using a value anywhere between 000-255 for a channel will cause a timed output, this means when button is pressed, the output will be latched on then when the value, that was chosen has expire it will unlatch the output.  
Example: If a value of 10 is used, when you press button and release it, the output will be active for 10 seconds, output become inactive.

If you want to change the value for one or more channels or outputs follow these steps:

- 1) Input the value that you require for first channel or check present value so you can reenter it back (See note). If you are going to set this channel/output to momentary pushes on PC keyboard "000".
- 2) You will see the following options, "Do you want to proceed to the next channel press Y, or you want to exit the routine press E". If you want to program the next channel/output press on the Y key or if you are done with changes, press on the E key which brings you to Base level in Setup Utility. After you Exit, it will you show the current configuration for all channels, make sure that it configured properly to prevent damage to whatever the system is controlling.

Note: You have to always have to setup value for first channel

### 2.2.3.2 Programming New Transmitter

- a) Prepare New Transmitter(s)/Controller(s)
- b) Choose from Base Setup Menu “Program New Transmitter” by pressing PC key #1
- c) Following Window with text show up

```
Channel 2 value is 0
Channel 3 value is 0
Channel 4 value is 0
Channel 5 value is 0
Channel 6 value is 0
Channel 7 value is 0
Channel 8 value is 0

Hint (000-Momentary, 255-Latched, 001 to 255 is Momentary with timeout

What are you want to do ?

Programming OUTPUT Channels          0
Program NEW TRANSMITTER push          1
Erase ALL TRANSMITTERS push           2
Erase ALL TRANSMITTERS except FIRST push 3
For TRANSMITTERS Test                 4
For Exit push                         E

Prepare New Transmitters and push Y key if you are Ready.
```

When you ready push key “Y” on your PC keyboard.

- d) Following Window with text show up

```
What are you want to do ?

Programming OUTPUT Channels          0
Program NEW TRANSMITTER push          1
Erase ALL TRANSMITTERS push           2
Erase ALL TRANSMITTERS except FIRST push 3
For TRANSMITTERS Test                 4
For Exit push                         E

Prepare New Transmitters and push Y key if you are Ready.

Learn procedure can Start !

Push Button on transmitter once !

-
```

Press button on your transmitter once. It doesn't matter which button you push.

e) Following Window with text show up

```
Learn procedure can Start !  
  
Push Button on transmitter once !  
  
Push Button on transmitter second !  
  
Learning has been Successfully !  
  
Number for Programmed Transmitter in Unit is 2  
  
Do you want Learn Next Transmitter ? Y for Yes and N for No.  
-
```

Press button on your transmitter/controller Second Time. Keep same button like you pushed first time.

If procedure has been successful you will be notified on the screen, like you see above. If you want program next Transmitter/Controller Push Key “Y”, if you want exit routine push Key “N”.

#### **2.2.3.3 Erase All Transmitters**

If you want reprogram all transmitters in receiver memory, push Key “2” from base Setup menu “Erase ALL TRANSMITTERS”. It will erase all transmitters that are in the memory. You will need program transmitters back to the receiver. So be carefully when using this option.

#### **2.2.3.4 Erase All Transmitters except first one**

If you want reprogram all transmitters in receiver memory except first one, push Key “3” from base Setup menu “Erase ALL TRANSMITTERS except FIRST”. It will erase all transmitters from memory except first one, so system will working with present first one transmitter. You will need program rest of transmitters/controllers back to the receiver. So be carefully when using this option.

#### **2.2.3.5 Test Transmitter/Controller**

If you want test transmitters if they are working push Key “4” from base Setup menu “For TRANSMITTERS test”. It will help you diagnostic if there is problem with buttons or battery etc.

#### **2.2.3.6 Exit**

If you want exit Setup utility push key “E”.

Note: If any procedure in above stuck, just turn power OFF and ON with 5 second delay.

## 2.3 Troubleshooting

On the receiver the TESS1 Wireless has three Diagnostic LED (Light Emitting Diode) Lights that can be used to diagnose some of the basic problems that may show up.

**Green** – This light will light up when ever the system is given a 12v dc signal and ground at the appropriate inputs on the connector.

**Blue** – This light will flash when you push any button on the transmitter. When the light is flashing, the receiver is receiving data from transmitter. If you are pressing the button on the Transmitter, and blue LED is not flashing, the following should be checked:

1: Battery in the transmitter could be weak or dead. Check Battery Voltage, when you pressing any button on Transmitter. The voltage should be between 2.8-3.6V.

2: Your Transmitter is not programmed in Receiver Memory. Follow procedure on the above in section “Programming”.

**RED** – When this light is flashing with beeping sound. The last Transmitter which sent a signal to the receiver has a battery with Low Power. You have to exchange battery.

If you are unable to find the solution to the problem, you will have to contact Technical Support at RPM Control Company.

Phone: 1-886-519-9817 – 1-519-758-7901

Email: [rpmcontrol@rpmcontrol.com](mailto:rpmcontrol@rpmcontrol.com)

### 3. Appendix:

#### 3.1 Specifications

##### 3.1.1 TESS1 receiver:

Dimensions:	4"x4"x2"	100mm x 100mm x 50mm
Power Supply (V):	13.8 V	
Consumptions Standby (A):	0.25 A	
Max Output Current (max 1 Output)	up to 15A continuously	
Receiver Sensitivity	-112 dBm	
Antenna Impedance	50 Ohms	

##### 3.1.2 TESS1 Transmitter/Controller:

Dimensions:	4"x4"x2"	100mm x 100mm x 50mm
Power Supply (V):	3.6 V - 1/2AA type Battery	
Consumptions Standby (uA):	100 uA	
Consumptions Transmitting (mA):	4 mA	
RF Power Output	0 dBm duty cycle 25%	
Encryption Method	KeeLoq® by Microchip	

#### 3.2 Compliance

##### FCC ID: TWOTESS1

##### IC: 6300A-TESS1

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Caution:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### *3.3 Warranty*

This system is covered by a Limited Life Time Manufacturers Warranty and a Basic 1 year warranty. The Limited Life Time Manufacturers warranty will cover any defects on the system which has occurred during the manufacturing of this product. The basic 1 year warranty covers the any component that has failed prematurely. The above warranties will not cover any labor cost that have incurred unless otherwise deemed warrantable by the manufacture.