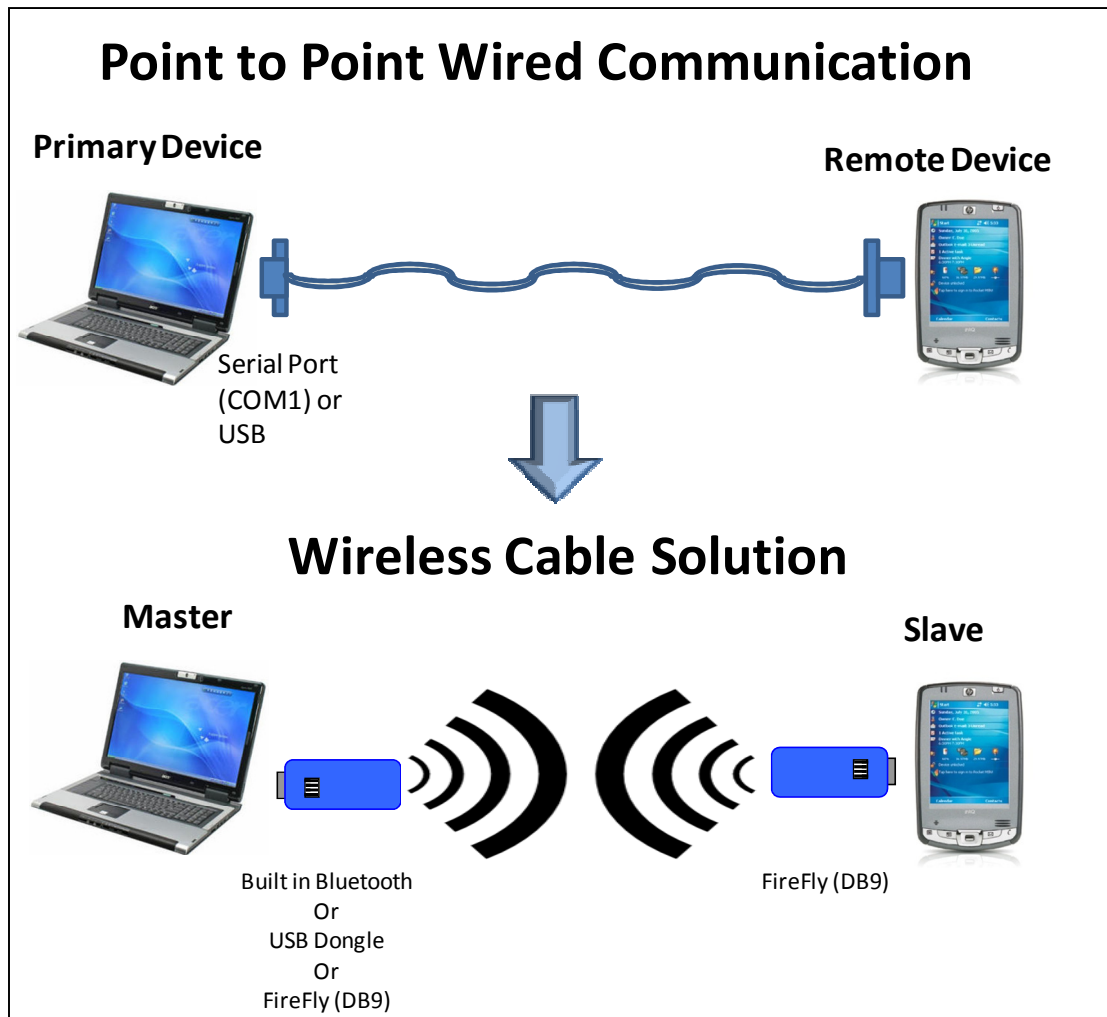# Roving Networks Cable replacement solution

Cable Replacement is a powerful feature offered by Roving Networks that offers a quick and simple solution for point to point communications. This feature works with all Roving networks Bluetooth modules and serial adapters.

Cable replacement replaces wired communication between a Host device and remote device with a Bluetooth link. The Host device uses a Roving Networks device to act as a master (FireFly, FirePlug or RN-41/42). The remote device uses a Roving Networks product at the slave end to complete the Bluetooth link. Now, the serial cable communication is replaced by a wireless Bluetooth link using Roving Networks products to establish a virtual COM port on the master and slave providing a cable replacement solution.

Roving Networks devices can be paired using external switches or via Software using the Roving Networks ASCII command set.

This guide demonstrates cable replacement using a FirePlug and FireFly. We describe both, the Hardware and Software methods for pairing.
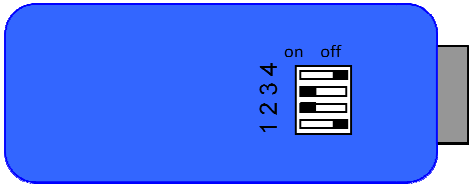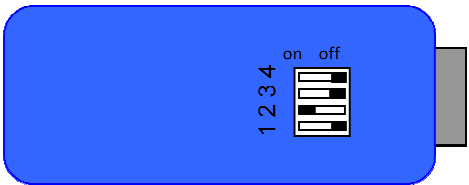
You will need the following components:
1. FirePlug (USB Bluetooth Dongle)
2. FireFly (Serial Bluetooth Adapter)

To pair FirePlug and FireFly, we need to set one device in Master mode and the other device in Slave mode. In this guide, we will set the FirePlug in Master mode and FireFly in Slave mode.
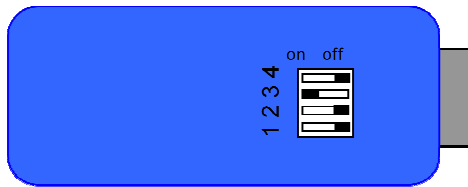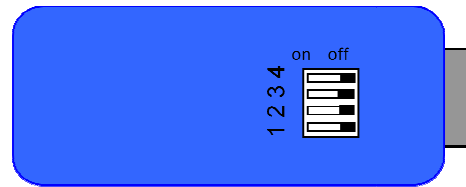
Hardware Pairing Using Switches:

This section describes the process to pair the FirePlug and FireFly using external hardware switches.

Setting FirePlug in Master Mode	Setting the FireFly in Slave Mode
1. Place the FirePlug into Master mode by turning jumper switches "2" and "3" to the ON position as shown in the figure below: 2. Connect the FirePlug to the USB port of your computer. You will see the BLUE LED Flash. 3. Now set FireFly in Slave mode as described in the adjacent column.	1. Place the FireFly into Slave mode by turning jumper switch "2" to the ON position as shown in the figure below: 2. Power On by connecting power cord or by applying power to pin 9 or DB9 connector. You should see the green light flash for a few seconds and then it should turn solid green. 3. At this time the FirePlug LED will also turn solid BLUE.

At this point, the FirePlug LED will be solid BLUE and the FireFly LED will be solid GREEN indicating that the two devices are paired. The Master device stores the Slave's Bluetooth address and will auto connect each time both devices are powered ON.

After pairing, set switch 2 on both devices to OFF so Master will only attempt to connect with the pre-paired Slave.

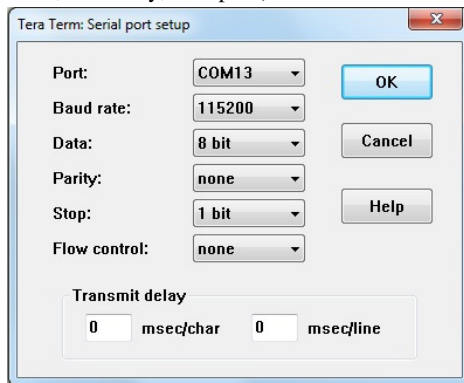**Master**   **Slave**

Once paired, every time the devices get in range of one another, they will connect and the master will not attempt to connect to any other Bluetooth device. (if switch 2 is set to OFF on the Master and Slave)

Software Pairing using Terminal Emulator TeraTerm:

This Pairing can also be done using a Terminal Emulator Software (TeraTerm) as described below: Connect the FirePlug to the Host PC and connect the FireFly to the Remote PC (using a USB to Serial connector and NULL Modem) and Power ON the FireFly.

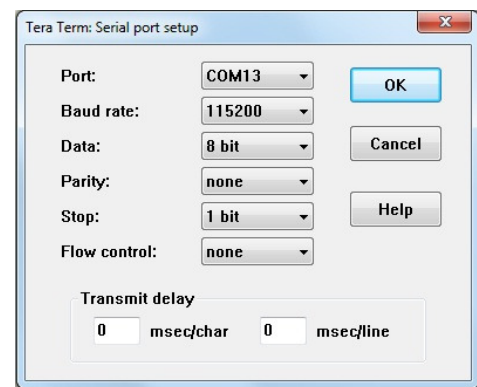| Setting FirePlug in Master Mode	Setting the FireFly in Slave Mode
1. Connect the FirePlug to the USB port of your computer. You will see the BLUE LED Flash. Make a note of the COM port on which FirePlug was installed. 2. Launch TeraTerm with the default settings (115,200Kbps, 8 bits, No Parity, 1 stop bit). 3. Set the FirePlug in Command mode by typing $$$ (three dollar signs). TeraTerm will return CMD. 4. Set FirePlug in Master Mode by SM,1\<cr> 5. The FirePlug is now set in Master Mode. Verify this with the display command D\<cr>. You will get response from TeraTerm showing that FirePlug is in Master mode. 6. Power up the Slave on the Remote device.	1. Connect the FireFly to the remote computer using the USB to Serial cable and NULL Modem. You will see the GREEN LED Flash. 2. Launch TeraTerm with the default settings (115,200Kbps, 8 bits, No Parity, 1 stop bit). 3. By default, all Roving Network Devices are configured with Auto discovery, slave mode. Verify this using the display command D\<cr> 4. The GREEN LED on the FireFly will now turn solid GREEN. At the same time, the BLUE LED on the FirePlug will turn solid

```
CMD
AOK
***Settings***
BTA=00066601FB71
BTName=FirePlug-FB71
Baudrt=115K
Parity=None
Mode  =Mstr
Authen=0
Encryp=0
PinCod=1234
Bonded=0
Rem=NONE SET
```

BLUE.

7. Now we need to search for the slave device. Type I<cr> to perform a search for a list of available devices. TeraTerm returns a list of available Bluetooth Devices that you can connect to.

```
Inquiry, COD=0
Found 8
00066603238F,,1F00
000666032647,BluePortXP-2647,1F00
000666037083,FireFlyBP-7083,1F00
Inquiry Done
```

8. We now need to store the address of the remote FireFly into FirePlug to enable pairing. This is done using the "store remote address" command SR,<address> (SR,000666037083 in our example).
9. Reboot the device using R,1<cr>. The device should restart and connect to the slave

Now, the Master and the Slave are paired and we have an Instant Cable Replacement solution.

Cable Replacement using RN-41/RN-42 Bluetooth Modules

The Bluetooth modules can be paired in the exact same manner as the serial adapters. The table below shows the mapping between the external switches on the modules and the PIO lines on the module.

Definition	Bluetooth Serial Adapter (FireFly)	Bluetooth Module (RN41/RN42)
Baud rate	Switch 4 (ON = force 9600, LOW = 115K or firmware setting)	PIO7 (HIGH = force 9600, LOW = 115K or firmware setting)
Auto master	Switch 3 (ON=auto-master mode)	PIO6 (HIGH=auto-master mode)
Auto discovery	Switch 2	PIO3
Restore Factory Defaults	Switch 1	PIO4
Connection Status	Green LED	PIO5
	Yellow LED	Combination of Tx and Rx
	Red LED	PIO8

Common Problems:

1. By default, Flow control is disabled on the FireFly. The jumper settings to enable flow control are as follows:

   The Firefly serial adapter can be configured to enable flow control and null modem signaling. This may requires removing the plastic enclosure to access the jumpers.
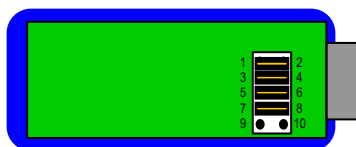
Male DB9 (Default Config)
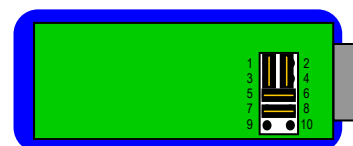DTE 3 Wire - Flow control DISABLED
Jumpers 1<>2, 3<>4, 9<>10
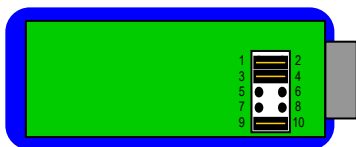
Female DB9 (Default Config)
DTE 3 Wire - Flow control DISABLED
Jumpers 1<>3, 2<>4, 9<>10
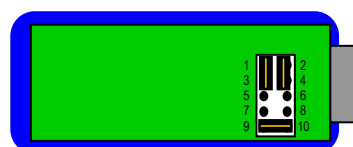
Male DB9
DTE - Flow control ENABLED
Jumpers 1<>2, 3<>4, 5<>6, 7<>8

Female DB9
DTE - Flow control ENABLED
Jumpers 1<>3, 2<>4, 5<>6, 7<>8

2. The FireFly cannot handle Optical interfaces. This is because it simply does not have the power to drive the optical signals.

3. DTR signaling is supported only by BLuePort XP. To enable DTR signaling, you need to remove and replace one resistor on the kit. (Contact Roving Networks for further details). You then need to place the device in Modem mode using S~,3<cr>.