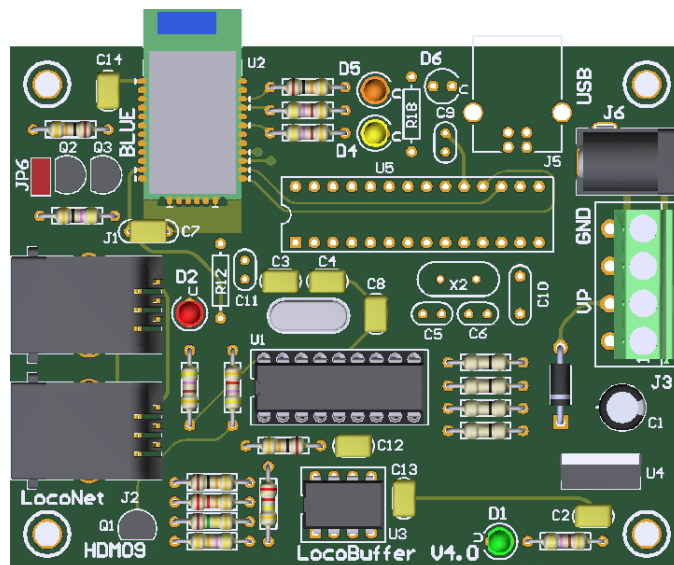# LocoBuffer Bluetooth Manuel

HDM09

Liability disclaimer:

Use all items that can be bought and installation instructions that can be found on this site at your own risk. They have been developed for personal use, and I find them very useful. That is why I wish to share them with other model railroad hobbyists. All items and procedures have been tested and used on my own model railroad systems without causing any damage, but this does not necessarily imply that all modifications and procedures will work in any and all environments or systems. I cannot take any responsibility when items or procedures are used under different circumstances. Always use your own judgement and common sense!

LocoBuffer 4.0

LocoBuffer is a hardware device that provides a hardware interface between a LocoNet wireless Bluetooth virtual serial port. Takes LocoNet commands in and buffers it and sends it out the serial port at 57600 baud. Takes serial port commands in at 57600 baud, buffers it and sends it out on the LocoNet.
It also does them both at the same time. It provides all the timing necessary to interface both.
You can connect different LocoBuffers with Bluetooth on one PC
You may connect multiple PC's with a LocoBuffer on LocoNet.

LocoNet connection:
The connection to LocoNet is with a 6-wire cable with RJ12 connectors. Important is that on the connector on both ends of the cable the pin1 to pin1 is connected.

Correct   **Wrong**
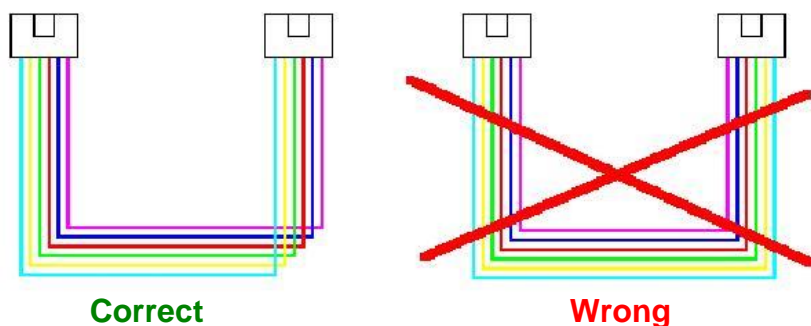
Green LED's:
On	Power supply voltage OK
Off	No power supply present

Red LED:
On	No central station connected or current source on LocoBuffer with JP6 selected.
Off	LocoNet OK, no activity
Blinking	LocoNet command transfer

Orange LED - Yellow LED
Off	- Off	No power supply present
Blinking	- Off	Bluetooth ready to connect
Off	- On	Bluetooth connection OK

Jumper settings:
JP6:	Open	LocoNet current source disabled
	Closed	LocoNet current source enabled

This is current source for LocoNet to install if you do not have a master LocoNet control station as a LocoCentral, Intellibox, Digitrax… There is only one current source needed for a LocoNet line. If you install the components, you can enable-disable it with JP6. However, for this option you need to put power on the Power connector.

Power connector possibilities:
Via J3:	Pin 2: 12VDC	Pin 1 and 3: not used
	Pin 4: GND	

Via J6:	Center pin: 12VDC input
	Casing: GND input

Bill of materials:

UT_DEVICE	Refdes		BLUETOOTH
PCB		1	HDM09V40
Bluetooth interface	U2		RN41 has already been soldered
Resistor	R1, R8, R15, R17	4	470Ω (Yellow,Violet,Brown,Gold)
Resistor	R2	1	220kΩ (Red,Red,Yellow,Gold)
Resistor	R3	1	22kΩ (Red,Red,Orange,Gold)
Resistor	R4, R10, R11, R16	4	10kΩ (Brown,Black,Orange,Gold)
Resistor	R5	1	47kΩ (Yellow,Violet,Orange,Gold)
Resistor	R6	1	150kΩ (Brown,Green,Yellow,Gold)
Resistor	R7	1	4k7Ω (Yellow,Violet,Red,Gold)
Resistor	R9	1	47Ω (Yellow,Violet,Black,Gold)
Resistor	R13, R14, R19, R20	4	0Ω or a wire
Elco	C1	1	100µF/25V
Capacitor	C2, C8, C12, C13, C14	5	100nF (104)
Capacitor	C3, C4	2	15pF (15)
Capacitor	C7	1	470nF (474)
Diode	D3	1	1N4001 or 1N4002
LED 3mm	D1	1	Green
LED 3mm	D2	1	Red
LED 3mm	D4	1	Yellow
LED 3mm	D5	1	Orange
Transistor	Q1	1	BC337-40
Transistor	Q1, Q2	2	BC547B
Power IC	U4	1	7833
Comparator IC	U3	1	LM311N
XTAL	X1	1	Quartz 20MHz
Jumper	JP6	1	2-pins
Connector	J1, J2	2	RJ12
Connector	J3	1	4 pins print connector
Connector	J6	1	DC power connector
PIC-processor	U1	1	LB165
Spacer		4	Nylon 6.6, 5x5mm

C5,C6,C9,C10,C11,D6,J5,R12,R18,U5,X2 are not installed
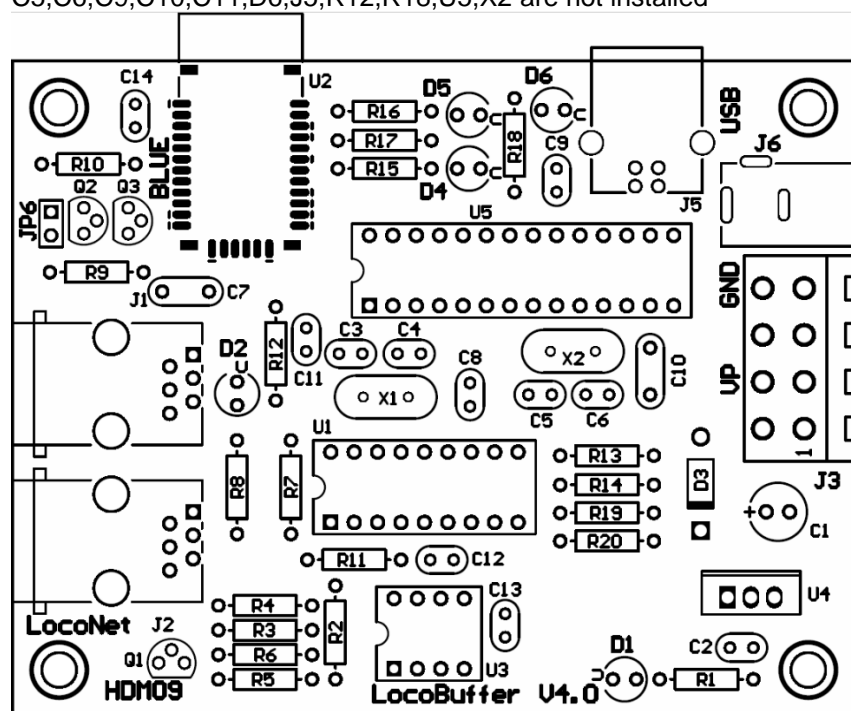

Power connector

Remark:
- Put the PIC on an IC socket, then you can later install an update PIC.
- If your XTAL component is in metal, look that there is no contact between the metal surface of the XTAL and the solder holes.
- With a DC power supply is the GND the same as an Intellibox or LocoBooster.

- The Bluetooth antenna is located outside the print to guarantee an optimal reception, be warned that it will not be damaged.
- To use the Bluetooth LocoBuffer, you need LocoHDL configuration 4.01 or higher.

Bluetooth Interface
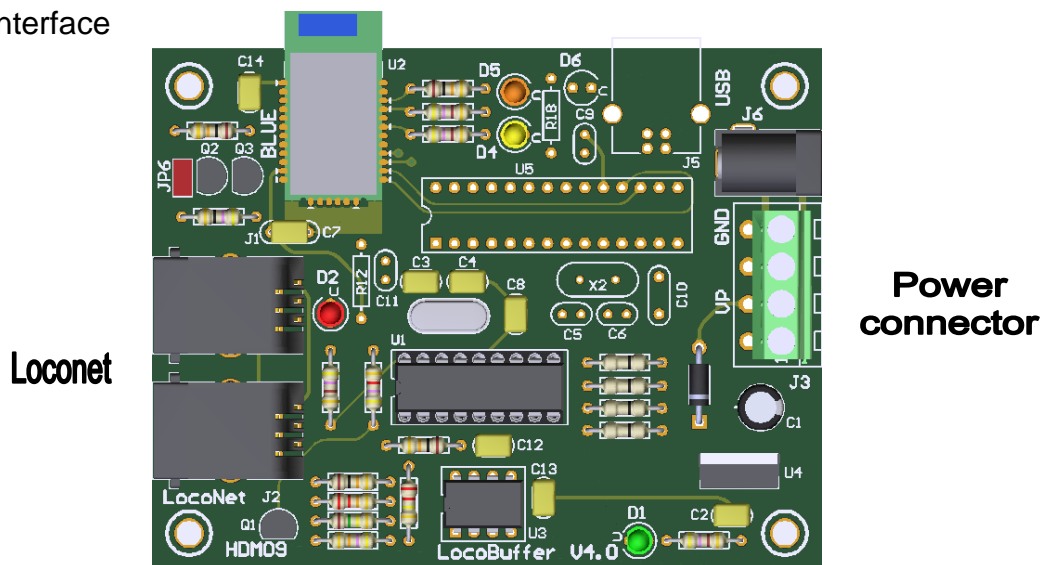
iTrain setup for LocoBuffer Bluetooth:
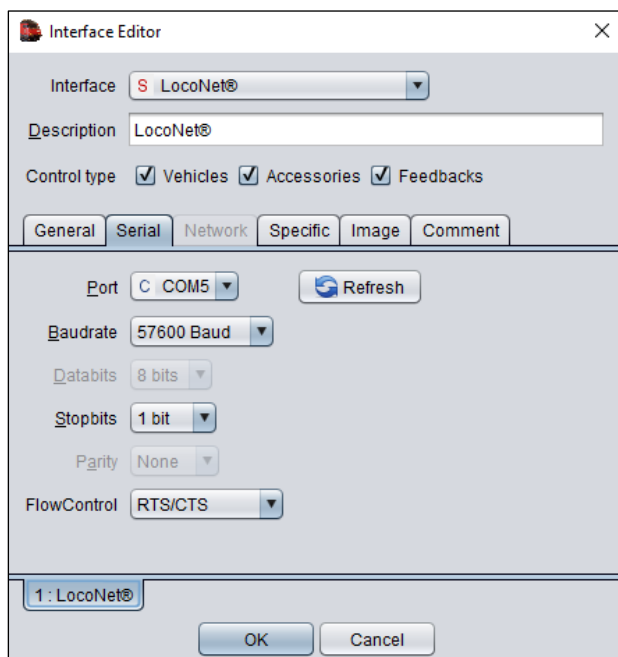
Computer settings with BLUETOOTH on Windows 10:
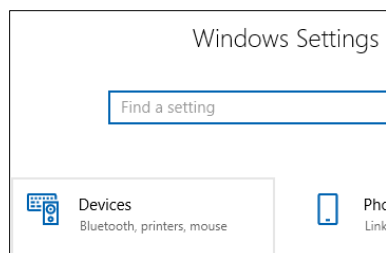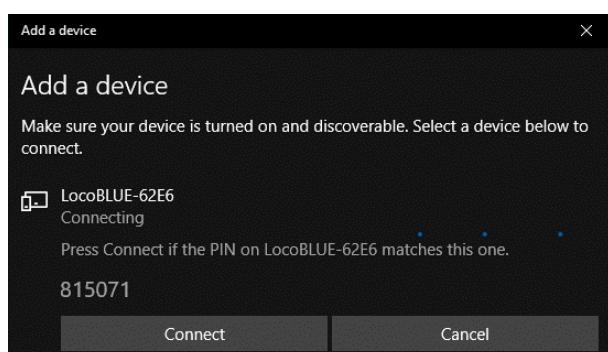
Go to settings and click on "Devices"
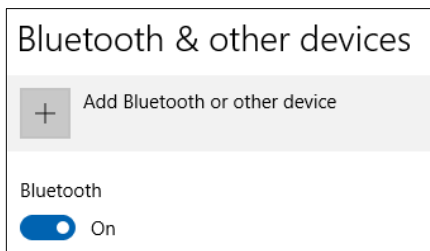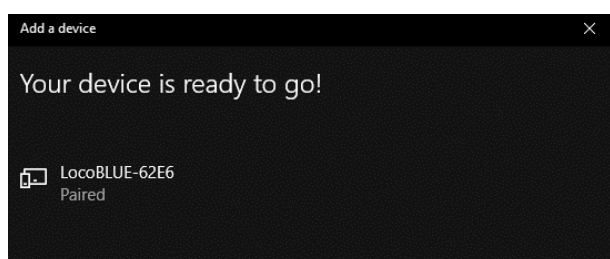
Add a Bluetooth device
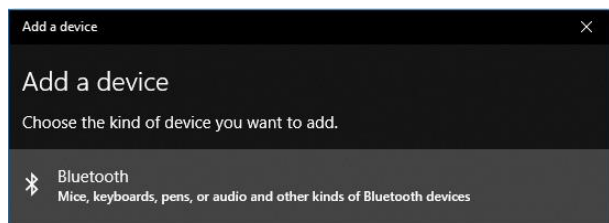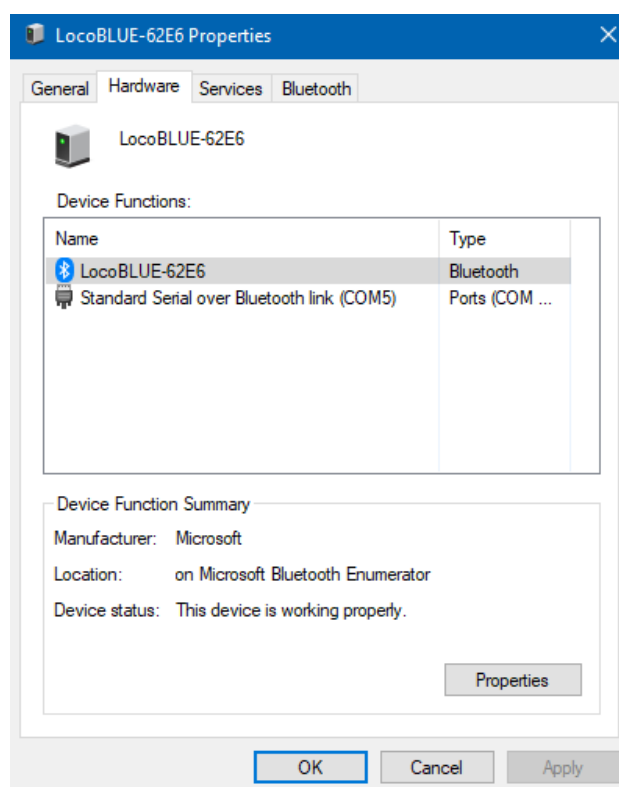
select Bluetooth devices
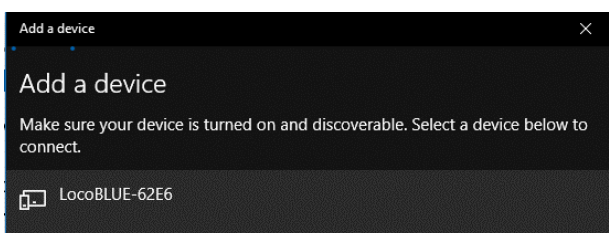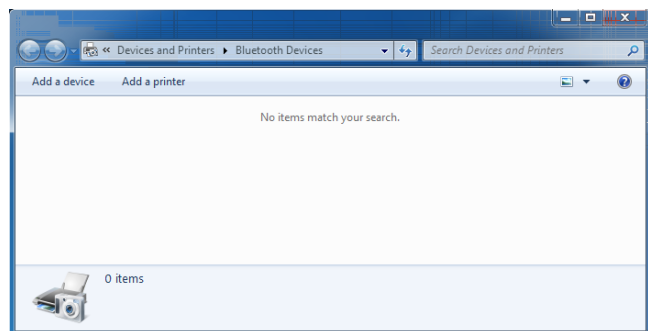
Select LocoBLUE device

Select "Connect"

Ready to use the LocoBuffer

Two COM ports are created.
Look in the properties of the LocoBlue which COM port is used for the connection.
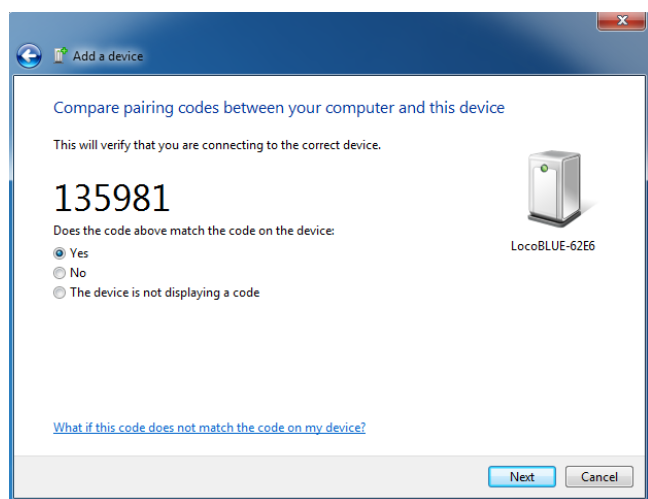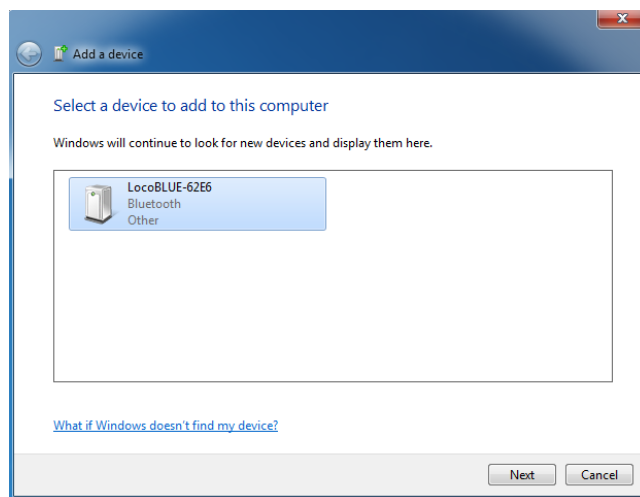
Computer settings with BLUETOOTH on Windows 7:

Click "Add a device"

Select LocoBLUE device
Select "Next"

Select "Next"

Ready to use the LocoBuffer

Two COM ports are created.
Look in the properties of the LocoBlue which COM port is used for the connection.