

This is part of the Remote Train Control Manual.  
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This version of this document covers using the RTC program with a wired serial connection between the PC and TIU. There is another document that covers the radio connection between the PC and TIU.

### Serial Port

The wired interface to the TIU requires 3.3v voltage levels. You cannot use a PC serial port directly. I recommend a USB to 3.3v Serial adapter similar to the Pololu USB-to-Serial Adapter found at <https://www.pololu.com/product/391> .

Other adapters will probably work as long as they are 3.3v.

I use the RX, TX, DTR, VDD and GND signals.

Connect the adapter to the USB port with a “[USB Cable A to Mini-B, 6 ft](#)” .

I use a CMOS Hex Buffer, Non-inverting 3-State similar to the TI CD4503B to disable this interface when the program is not transmitting.

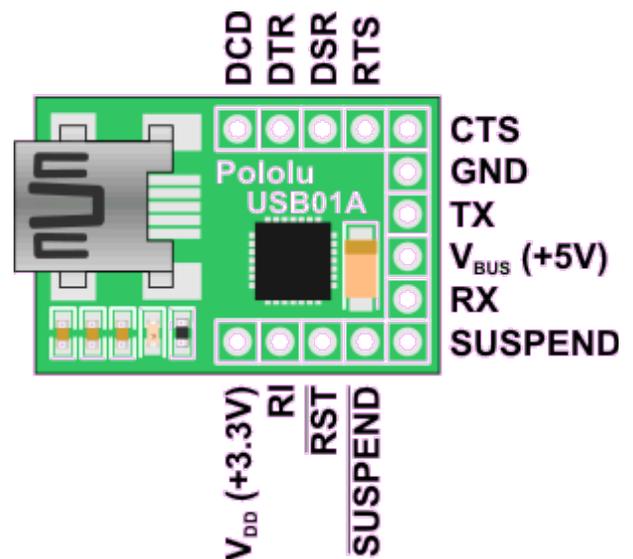
See the simplified schematic on the next page.

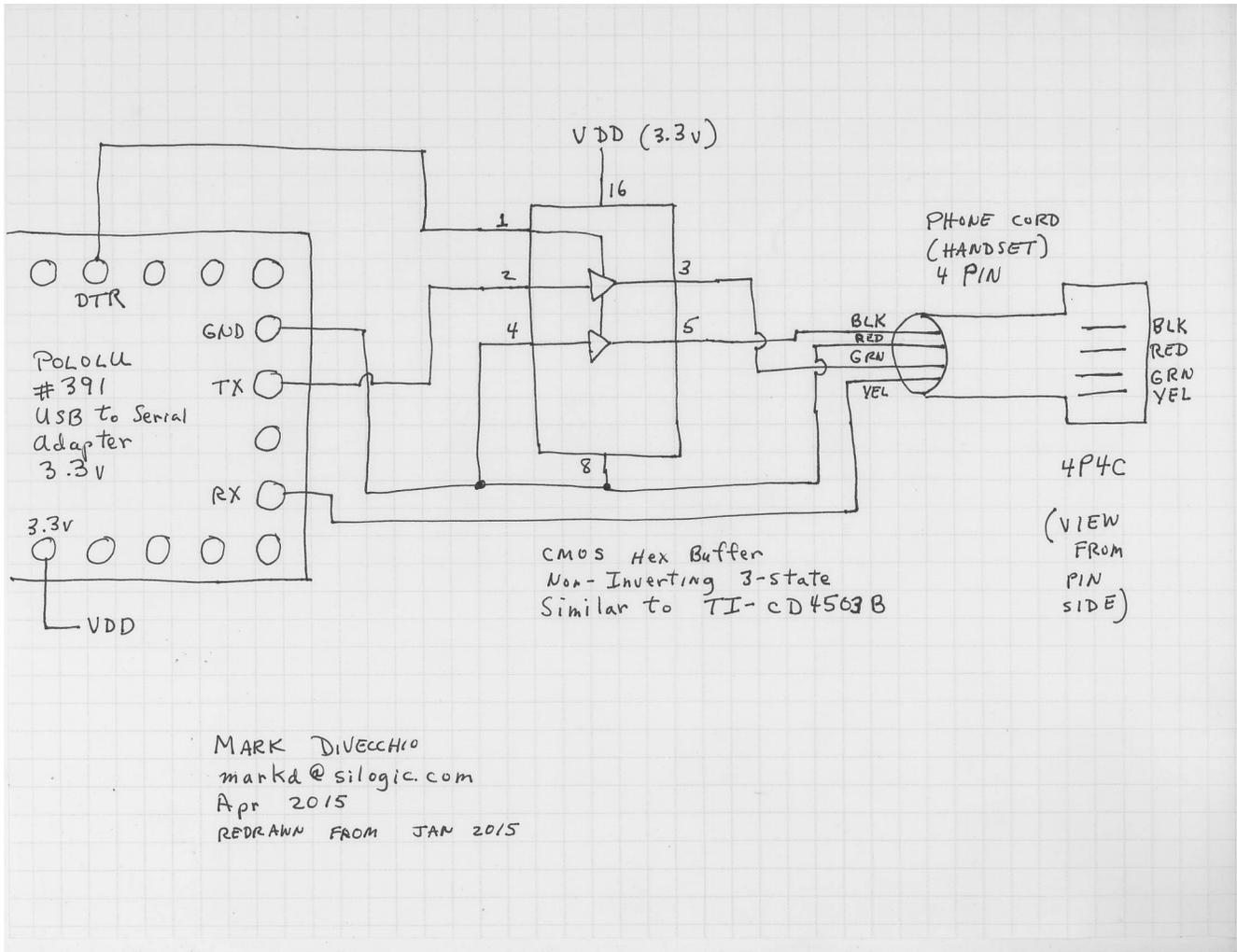
I use a 4P4C telephone handset cable to connect to the TIU ([http://en.wikipedia.org/wiki/Modular\\_connector#4P4C](http://en.wikipedia.org/wiki/Modular_connector#4P4C)).

Many other variations of this interface will probably work. It may be possible to connect directly from the Pololu adapter to the TIU but I've not tried this.

The program requires two way communications with the TIU. Both RX and TX lines must be connected.

The interface design is based on work done by Mike Hewett and Jeffery Lefstin in 2011.





As an alternative to the wired interface, RTC supports a radio interface. Look at the document titled "Remote Control (wired)". The RTC program operates the same in either Wired or Radio mode.

## Installing the program

I've run this program on XP and WIN7. Let me know if you have success running it on other versions of Windows.

Install the necessary USB-to-Serial Adapter drivers per the manufacturer's instructions. Connect the adapter to the PC and let the drivers install. Note the COM port number that is assigned to the adapter. Connect the TIU to the adapter.

Make a folder anywhere with any name. Copy the REMOTE\_CONTROL.EXE program into that folder. The program will construct other files automatically in that folder.

## Running the program

Double click on the program to run it.

Press [SETUP] and select the COM port that was assigned to the adapter or the radio. In the Mode Select box, press [☀ Wired] or [☀ Radio]. Press [HIDE & SAVE].

Make sure that the TIU number shown matches the connected TIU, if not, click the spin arrows to select the correct TIU. The Remote number should be set to a remote number that you do not use. "15" is good and is the default.

Power on the TIU and the layout. At the main window, press [CONNECT]. The Red LED next to the COM port number should turn GREEN. This indicates good communications with the USB serial prot. If it does not turn GREEN, the adapter or drivers were not installed correctly.

Then make sure the box containing the TIU number turns GREEN. This indicates good communication with the TIU. If it does not turn GREEN, there is some problem with the Wired or Radio connection to the TIU (or maybe, the TIU is not powered on?).

Press [READ]. This will read up all of the powered engines on the track associated with the connected TIU. This information will be saved by the program for the next time.

Pick one of the engines by clicking on it. Press [STARTUP]. An operation window will open. You can select any number of engines and start them. A separate operation window will open for each engine (up to 99). Use the buttons, switches and knobs to operate your engine.

From the main window, you can press [SOUND CTRLS] to open a volume control window. You can select any number of engines and open their volume control windows. You must start up the engine first.

From the main window, you can press [ACCESSORIES/SWITCHES] to open an AIU window. You can right click on the name of each accessory or switch and type in a familiar name. You can have up to 5 AIU windows open for each of 5 TIU, for a total of 25 windows. The names you type in are saved. To operate an accessory or switch, double click on the name, then use the buttons at the bottom of the window.

When you are done, you should shutdown each engine by pressing the [SHUTDOWN] button on the operation window. Press [DISCONNECT] and then press [EXIT].

### RTC Shortcut Keys:

Global keys available from the Main RTC Window the Engine/Lashup Operation Window, the Quick Controls Window, the Accessories/Switches Window and the LashUp Create/Edit Window:

F1-10	Fx = Startup Engine x or Restore Engine x Operation Window
F11	Setup
F12	Quick Controls
Ctrl-F1-10	Ctrl-Fx = Startup LashUp x or Restore LashUp x Operation Window
Ctrl-F11	Conventional Control Window for Variable Channel 1
Ctrl-F12	Conventional Control Window for Variable Channel 2

### Main RTC Window:

s	Setup
c	Connect
i	Disconnect
x	Exit
q	Quick Controls
u	Startup
d	Shutdown
o	Operations
u	Sound Controls
p	Stop All
a	Accessories/Switches
l	Lashup
r	Read

### Engine and LashUp Operation Window:

up arrow	Increase speed by 1 Smph
down arrow	Decrease speed by 1 Smph
PgUp	Increase speed by 10 Smph
PgDn	Decrease speed by 10 Smph
Home	Set speed to 0 Smph
d	Shutdown
h	Hide
p	STOP

### Setup Screen

h	Hide & Save
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### Accessories/Switches (AIU) Window

n	Accessory On
f	Accessory Off
a	Accessory Activate
s	Switch Straight

d Switch Diverge  
h Hide  
m Make It So

#### Conventional Control Window

h Hide

#### DCS Setup

h Hide

#### LashUp Select/Create/Edit Window

h Hide  
u Startup  
d Shutdown  
o Operations  
u Sound Controls  
n Create New LashUp  
e Edit LashUp  
b Break Up LashUp  
s Save as New  
b Build LashUp

#### Quick Controls

h Hide

#### Sound Controls

F1 Set focus to Master Volume Slider  
F2 Set focus to Engine Sounds Volume Slider  
F3 Set focus to Accent Sounds Volume Slider  
F4 Set focus to Horn Volume Slider  
F5 Set focus to Bell Volume Slider  
F6 Set focus to Engine Sound Knob  
F7 Set focus to Idle Sound Knob  
F11 Setup  
F12 Quick Controls  
Ctrl-F11 Conventional Control Window for Variable Channel 1  
Ctrl-F12 Conventional Control Window for Variable Channel 2  
h Hide

#### Hot Buttons Window

F1-F10 Execute hot button 1-10  
Shift F1-F10 Execute hot button 11-20  
F11 Setup  
F12 Quick Controls

#### TMCC Operations (not available yet)

d Shutdown  
h Hide  
p STOP

Notes:

You can press the [DISCONNECT] button at any time and then press [CONNECT] to re-establish communications.

In wired mode, if you don't press a button within about 10 seconds, the RTC program drops DTR which allows the use of the Remote. The RTC program will raise DTR when it needs to communicate again with the TIU. Of course, this only works if your interface includes the 3-State buffer. In radio mode, this is not needed.

From the [SETUP] window, you can record a session for playback. Press the [START RECORDING] button. Press [STOP RECORDING] and you can save the session in a disk file. Press [START PLAYBACK] to playback a session from a disk file.

This program is still a work in progress. It may crash. Some features may not work.

Feedback appreciated.

Look at my web page for updates or changes

[http://www.silogic.com/trains/RTC\\_Running.html](http://www.silogic.com/trains/RTC_Running.html)