T&S Equipment Connection Overview Diagram

Back Room IBM - TSManager Results (compare on-screen, or switch printer)

Results Printer

Back Room HP Orbits Remote – connects via wireless

Control Room Rmon – connects via wireless

Picture 11

Picture 10

Picture 7

Pictures 6, 8, 9

Pictures 4 & 5

Backup Orbits Front (Lenovo)

Pictures 1 & 2

TSManager Computer (Sony)

Chronomix Printing Timer

LightSplitter RA=Box, BFR=cable

Red Decoder

Orbits Front (Lenovo ThinkPad)

Orbits Printer

Picture 3

Photocell Cable

Ethernet Hub

Wireless hub

RA for KIC, Sprints: Announcer has rMonitor via wired connection (get details from Pete)

Picture 6

To Loop 1 (Track)

Blackhawk: To Loop 2 (Track 2nd Loop)

From Light

RA: To Pit / Pit Loop

Line up lights on opposite sides of the track about 12 – 15 inches from the track surface, and Chronomix gets hits.
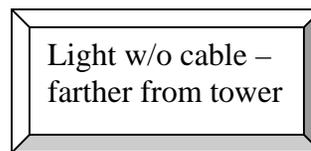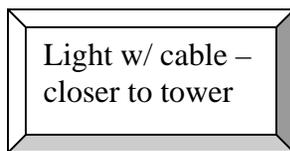
Blackhawk lights stay at Blackhawk, and are mounted on tripods that stay at BFR.
RA lights stay at RA – beam through cut-out in concrete barrier pit side at the finish line.
Milw Mile: too far to run lights cable to T&S.
Autobahn: no cable under pit lane to reach lights at edge of track, so lights are not used

Light w/ cable – closer to tower

Light w/o cable – farther from tower

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Start by setting up the Orbits Operating computer (Picture 1) To set up this computer, you need to first connect the computer to the blue Netgear hub. Connect the printer to the computer. Wait until the decoder is set up to turn on the Orbits computer. The primary computer, its printer and the Netgear hub can all use the same power strip that plug into the UPS. Leave an outlet **in** the UPS for the decoder.

LAN

USB Printer
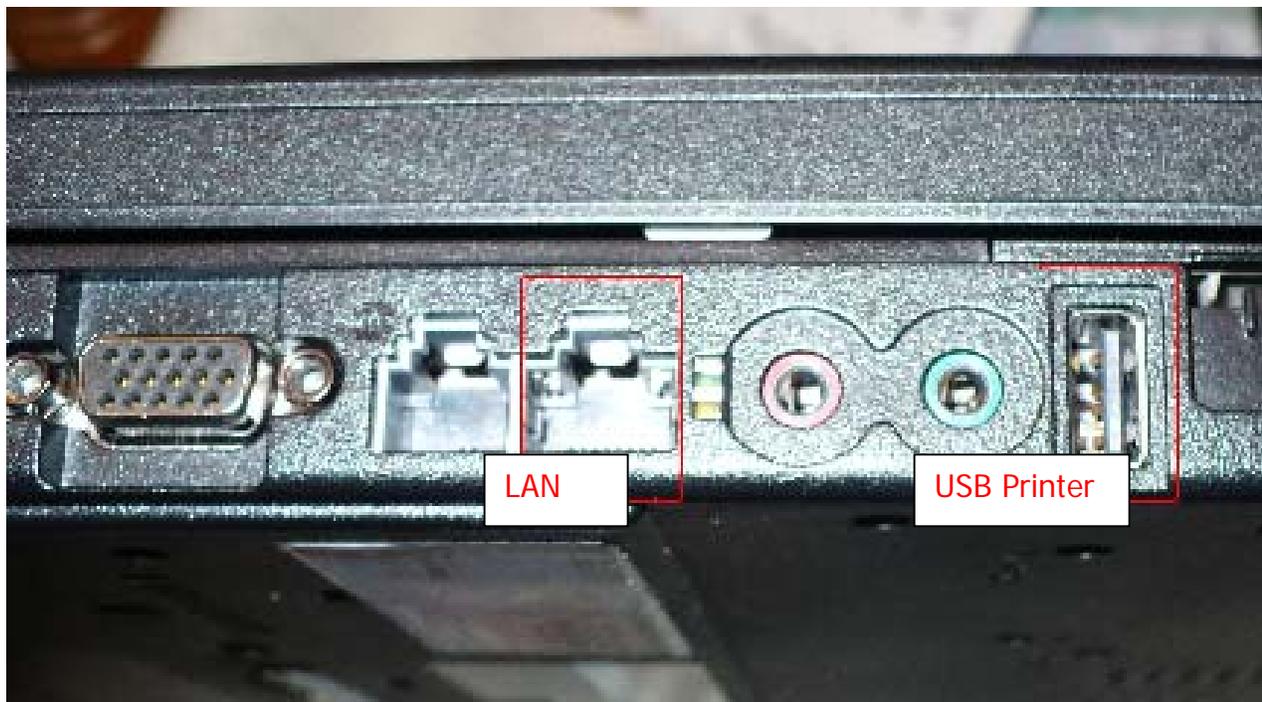
Picture 1 Lenovo ThinkPad Orbits Operator Left Side View

Picture 2 – Lenovo ThinkPad Orbits – Left Side LAN & Printer Plugged In

Picture 3 – Wireless hub (Belkin) and blue Netgear hub

Plug the wireless hub into the Netgear hub (blue patch cable). The back room computer and all rMonitor computers use the wireless router to access the data on the Orbits computer.

Next, set up the red decoder. The back of the decoder has room to plug in 3 loops. Loop 3 is ONLY used when there is a PIT loop at the timing line: Road America & maybe Autobahn. It is easiest to connect the loop cables to the decoder before lots of other things are plugged in.

Picture 4 Decoder – only Photocell Cable connected. Note Loop3 for Pit ONLY

It's a good idea to connect the cables to the decoder now (to the "outlets" on the top row at Blackhawk, and to the cables that come into the starter room at Road America). Pay attention to the cables so they are neat, and they do not go over and under the power cords.

Power cords could introduce additional interference (that would increase the Noise level). It would be bad for a person to trip on the cables and pull down equipment.

At Blackhawk, both loops are "track", so they plug into loop 1 & 2 in either order. The loops connect to an outlet box that is mounted on the top row counter top. Short YELLOW patch cables with BNC connectors (twist-on) are packed with the primary decoder that you run from these outlets into the decoder.

At Road America, the Track loop cable plugs into Loop 1 and the pit loop cable plugs into Loop 3 (pit). Make sure that the loop cables are plugged in to the outlet box near the ground at the side of the track at the finish line. The track installed cables from the outlet box to the Starters Room. Pull these loop cables out of the starters room to the outside of the building, across the gravel, and into a hole in the front of the building, at the former "international press booths" immediately next to the front row of Suite 1. Run the two cables into this space, then through the hole in the wall into Suite 1, to the decoder. If Pit and Track are reversed the cars in pit lane will show up in Orbits as "track" and track will show up as Pit. You can run the full session, and switch the cables immediately at the end of the session, preferably while cars are still passing in pit lane so you can confirm that the cables are reconnected properly.

Connect the external antenna to the decoder, and plug it in. This does not need battery backup. This is the "Blind Apex" silver transmitter for in-car display.

Use a gray Ethernet patch cable to plug the decoder into the blue hub. This is what the fully-loaded decoder looks like:
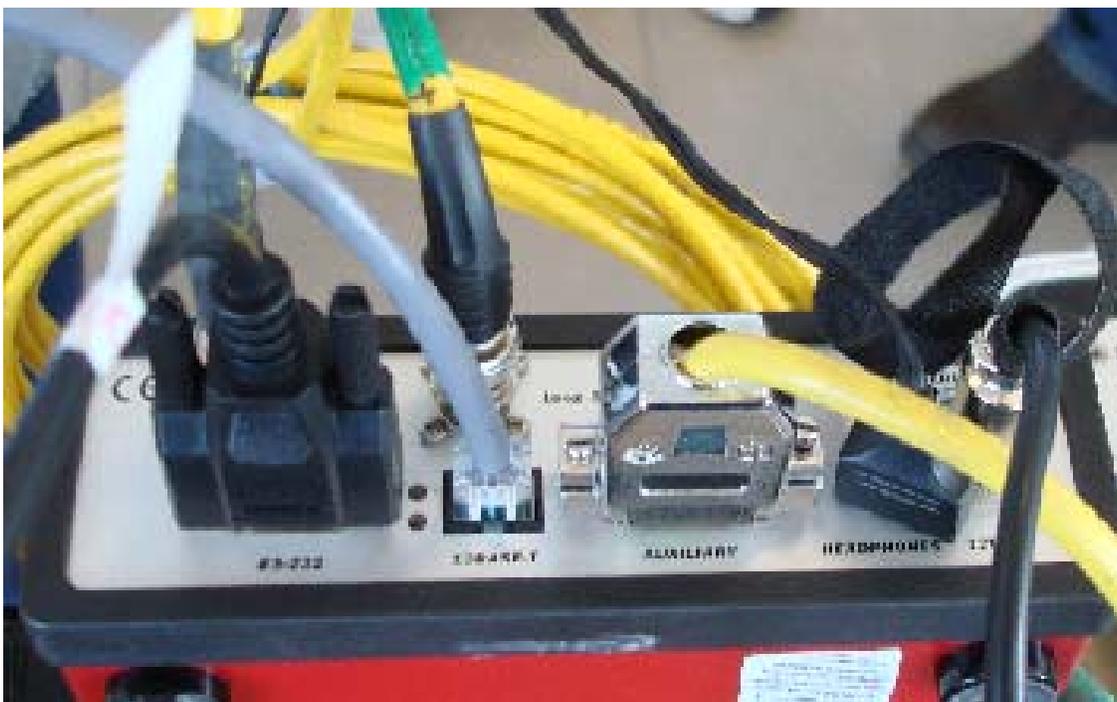
Picture 5 – decoder fully connected: Antenna, 2 track loops, hub, lights, speaker & power

Finally, you are ready to turn on the Orbits computer. Let it finish coming up, and <u>cancel any requests to create accounts or register finger prints</u>. Go to "Start" then "Settings" then Printers to display all the printers installed. Look at the Orbits Printer. Select that printer from the list of printers, left click and set this as the "default printer". The printer models are different at RA and Blackhawk.

Start Orbits. Select the event (or restore the event from a previously created backup). This computer is now ready to import the current track file, import driver information, check the schedule and runs, and populate the groups with the proper drivers. But first, there is more equipment to set up.

At Blackhawk, use a RCA Y cable to split the light cable; plug one of the split ends into the lights cable that plugs into the decoder.
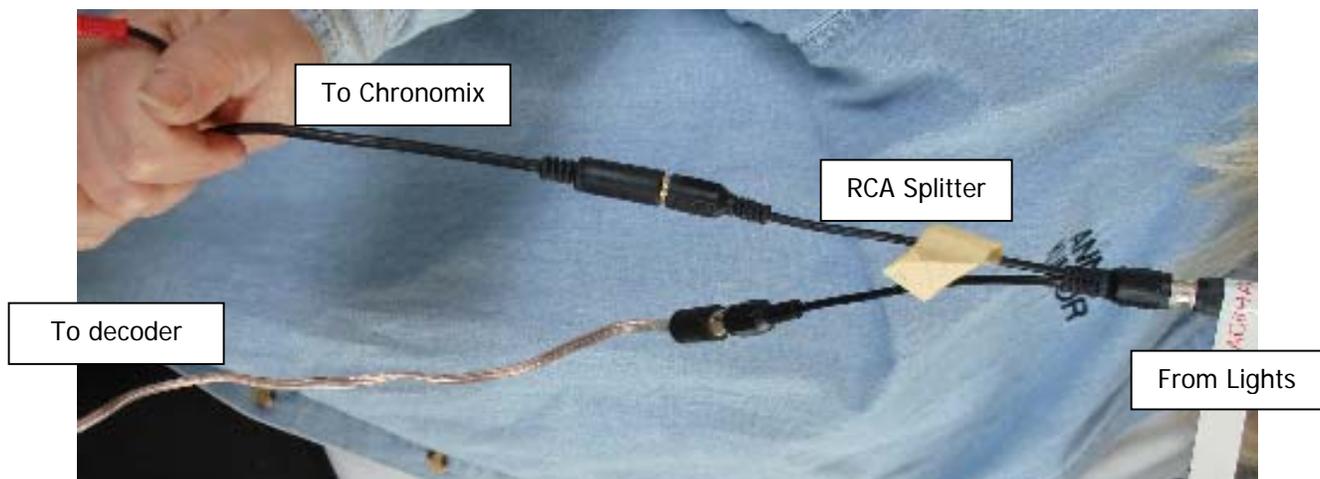
Picture 6 – Light Splitter (RCA Y Cable)

The decoder has a short yellow cable connected that has two ends called "banana plugs": black & green. If the ends are not connected properly, the Orbits Timing screen will not receive any "photocell" times. That's the only way to tell if the cable is connected properly [black-to-black and green-to-red]. For the decoder to get photocell hits the lights must be on and sending a "hit" as cars cross the line. This is typically done when lights are set up.

Unpack two Chronomix and set them up side-by-side. Place the "primary" Chronomix on the timing line so the Chronomix operator can accurately call brackets. The "primary" Chronomix (your choice) will be connected to the lights, will have the keypad plugged in, and will connect to the TSManager computer. Plug in the cable from the lights, into "Lane 1".

Always plug a manual hit button into LANE 2 of the primary Chronomix. Plug the Data Feed cable into DATA; the Keypad plugs into Ext Keypad and power into "charger". "Ext Output" and "Display" are not connected. When all components are connected, power-on the Chronomix.
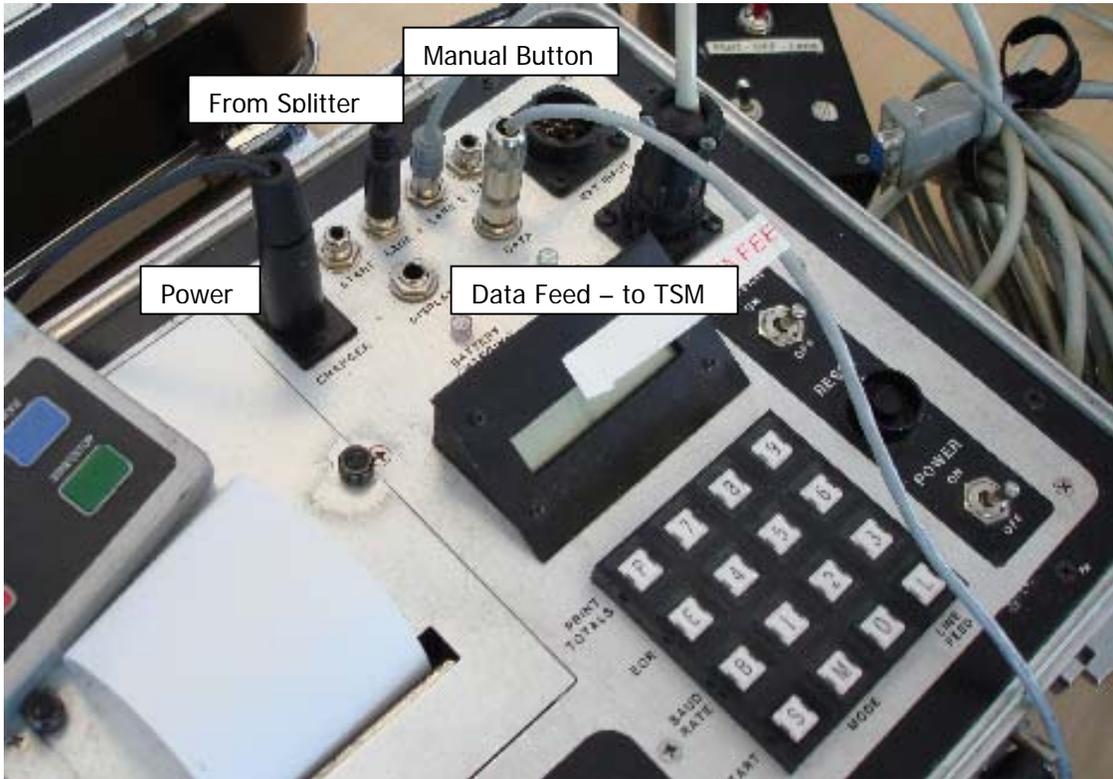
Picture 7 – Chronomx
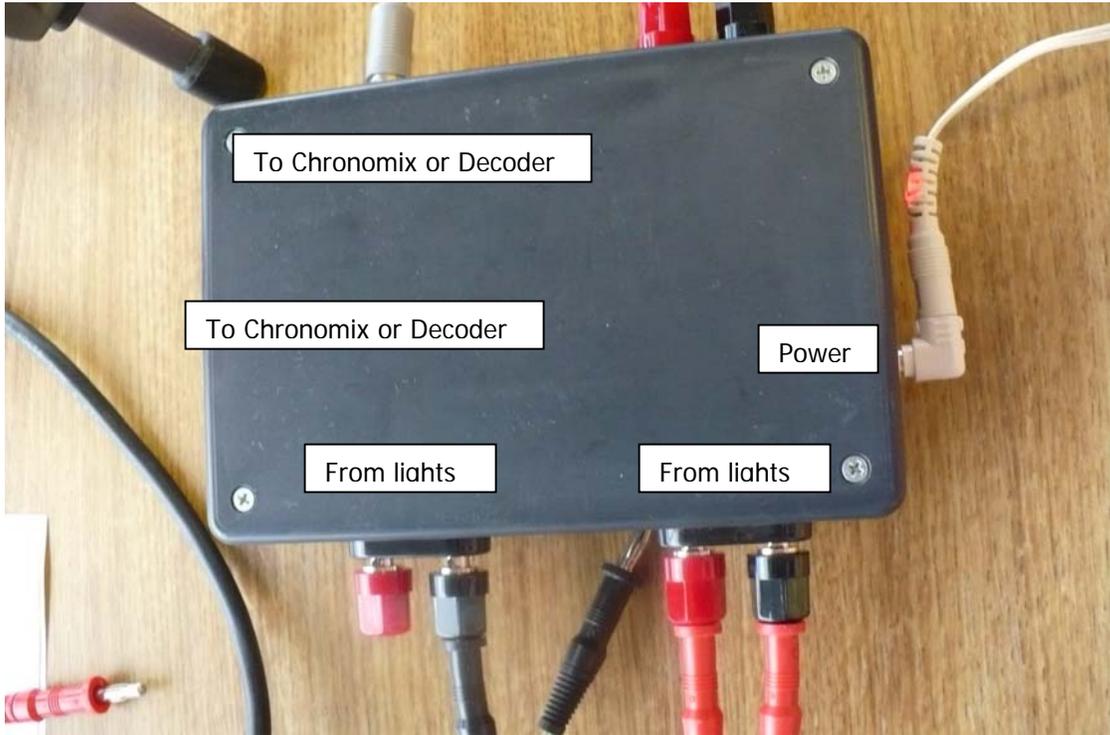
Picture 8 – RA Lights splitter box

Picture 9 – RA Lights-to-cable at track-side

Note for lights connection at Road America: both the ends of the cable and the connectors on the lights are VERY FRAGILE. Treat them as if they are thin glass. Ends have fallen off while winding up the cable on the spool. The ends match up by color of the thin wire connected to the end: white-white, green-green, black-black and the mis-matched pair pink-gray. All four must be connected, as they supply power, signal and ground between the lights and the splitter box. Battery is needed ONLY for the light at the far side.

At Blackhawk, a permanent cable connects from a track-side box into the T&S room on the second level, along with two permanent cables for the two transponder loops. Connect the light with the cable to the near side, and set up the other light to the far side. Both lights at Blackhawk must be connected to batteries. Use 2 6-volt batteries connected to each-other (+ to -) , then connect to the light.

Set up the TSManager computer close enough to the primary Chronomix so the "Data Feed" cable will reach. The cable is about 5 or 6 feet long. Connect the data feed into the TSManager computer before turning the computer on. Again, pay attention to keeping the cords and cables neat and out of the way so they are not accidentally disconnected during a session. There is no need for a mouse, since the TSManager software is "DOS based" – uses keystrokes. The PC's built-in touchpad is used to start up the program. After starting TSManager, use Alt-Enter to make the program "full-screen". If this key sequence does not result in full-screen display, press "Alt-G", then type in "exit" and enter. When the program continues it should display in full screen mode. Make sure to create at least a dummy Track & Event file, since the software requires each.

(Note: to run TSManager, create a folder with the event name, and copy into this folder the TSManager program and the configuration file. Next, select the program, right click and "Send To Desktop" which will create a shortcut on the desktop. Select the desktop icon and rename it the event. Right click on the desktop icon and select properties. On the Memory

tab set all options to their maximum value. Now, it is easy to launch TSManager by just double clocking the desktop icon. When you see ||| in the upper left corner of the screen, press Enter. If you get an error pop-up or two regarding the Comm port not accessible, press "I" to ignore. You should then see the TSManager main screen.)

Best practice is to ensure that TSManager is receiving splits from the Chronomix BEFORE the first session starts each day. Open a junk "practice" file by pressing "esc" when asked for the file name. Start Chronomix & you should see the 0.000 split come up. Press the manual button on Chronomix to send a few splits across, pressing ctrl-I on TSM to ignore them, then quit the TSM session saving to "junk".
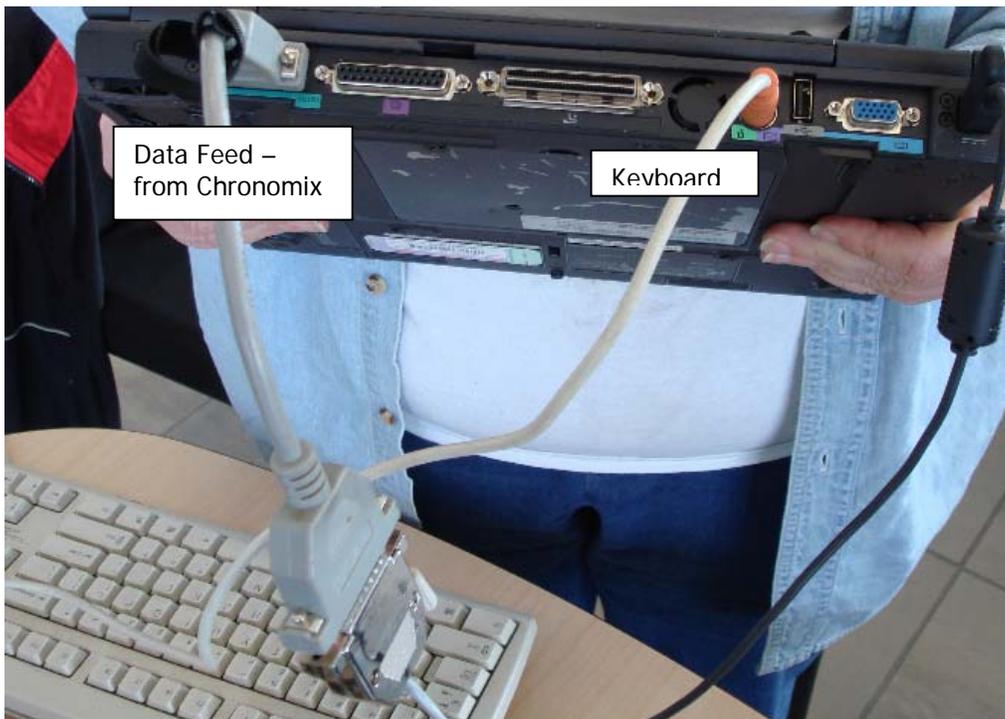
Picture 10 – TSM computer (Sony) connections

OK, we are now in the "home stretch". Now is a good time to set up the backup Orbits computer. If there is enough room, and staff, people can use this as a "training computer" during the sessions. Do this ONLY if the primary Orbits computer has both a dedicated operator and a dedicated taper that are comfortable running the system, and a separate trainer is available to answer questions. Plug the Orbits backup computer into the blue hub using an Ethernet patch cable (gray). It accesses the same decoder as the primary Orbits computer does, over the network created by plugging all the devices into the same blue hub.

Do Not compromise the primary Orbits computer's operation. It is critical that the operator pay attention and ensure that each car that passes the line is registered in the Orbits computer, either with a passing (transponder hit) or a photocell (light hit). The operator can use either the headphones, or the external speaker plugged into the speaker jack on the back of the decoder. The Operator must not walk away from the machine without having a

plan in place to confirm that no cars were missed while they were not visually confirming each passing car is properly recorded.

Finally, set up the back room computers and printer. The HP uses Orbits Remote and wireless network to access the front Orbits computer. Plug the back room printer into the HP, and set the HP's default printer to the connected printer. Plug the printer directly into a USB port. Plug the USB hub into another USB port and plug the mouse and full sized keyboard into the USB hub.

Picture 11 – Back Room HP (Orbits Remote)

Last, set up the back room computer to process the TSManager back room. This uses a 3 ½ inch diskette to exchange data with the front TSManager computer. Launch TSM, load the data and comparisons with the transponder data can be done using the TSManager main timing screen and overlapping the Orbits windows to see the data.

With Orbits 4, it is imperative that the front Orbits computer be booted AND RUNNING ORBITS 4 BEFORE BOOTING ANY COMPUTER THAT WILL USE ORBITS DATA! So, make sure to boot the operating Orbits computer, and ensure the hub and wireless hubs both are operating, and Orbits is running before booting ANY other computers.

Over night, unplug power strips from outlets if there is ANY chance of rain or lightening. **Always unplug the decoder from power AND its loops**, since the loop in the track is a connected antenna.

LAN stuff:
Assign IP addresses to add computers which use rMon: 192.168.0.200 and up, netmask is 255.255.255.0

The computers that plug into the hub all have permanently assigned IP addresses that are configured to work with the decoder: DO NOT CHANGE THEM!

rMon – Remote Monitor – Road America, for TV Feed
Remember to bring up different sessions for Practice/Qualifying and Race: there is a different view (fast lap and number of laps, respectively). Remember, the Operating Orbits computer MUST be up AND RUNNING ORBITS before any rMonitor computers are running. Imagine determining a race based on fastest individual lap, or qualifying based on the number of laps completed in the shortest time: it should make your head hurt!

Video Feed for Closed Circuit TV at Road America
A separate computer (Toshiba) is used to provide a video feed to closed-circuit TV at Toad America. This older laptop takes some time to boot, and is finicky about what is connected when. Whenever a cable is plugged into the external video port on the back of the computer, the built-in screen may stay blank during boot! Odd, but true. To maintain sanity, follow this setup:

1. Connect the Toshiba to power and to the wired blue Ethernet hub. This uses a SHORT, permanent cable connected to a PCMCIA card inserted in the Toshiba. Boot the Toshiba.

TV Feed Ethernet Cable – connected to Toshiba

Toshiba Power switch (left side)
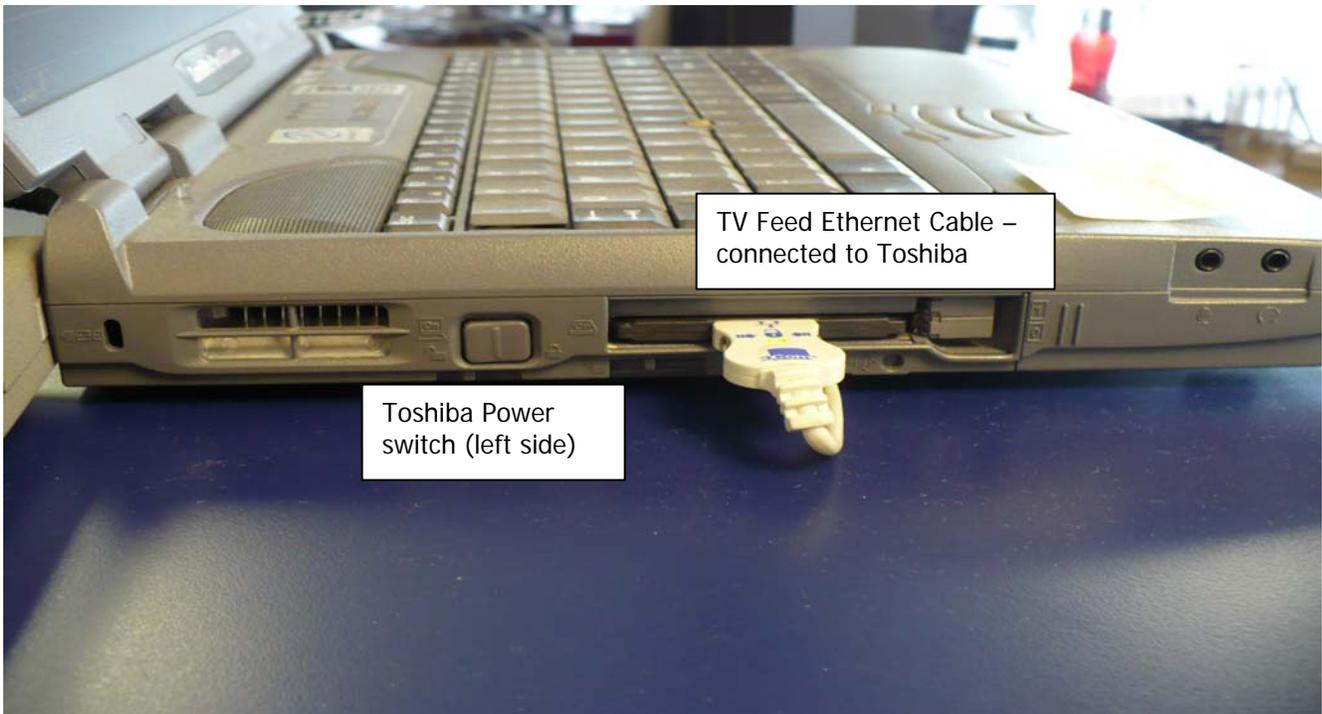
2. While the Toshiba is booting, connect the video converter gray box to power and to the video connector block mounted under the glass that separates T&S from the Control room. Do NOT yet connect the converter box to the Toshiba. Note the light indicating the converter box is powered but NOT yet on – a RED light indicates turned on.

Power – to outlet

VGA-IN
From PC

Video – to
wall

Video – from converter

Power

3. When the Toshiba finishes booting, start RMonitor, select the proper display (race or practice), position the two windows to fill the screen to show as much data as possible, and scroll the right window so the top row is position 13 or 14 or 15 – you will make the final adjustment when looking at the TV. More rows display on the PC's monitor than show on the TV feed. Turn on the TV to channel 8 to see the video.

4. NOW connect the "VGA IN" cable from the converter box to the back of the PC – there is only one place it can connect on the back, usually used for an external monitor:

VGA-out – to converter box
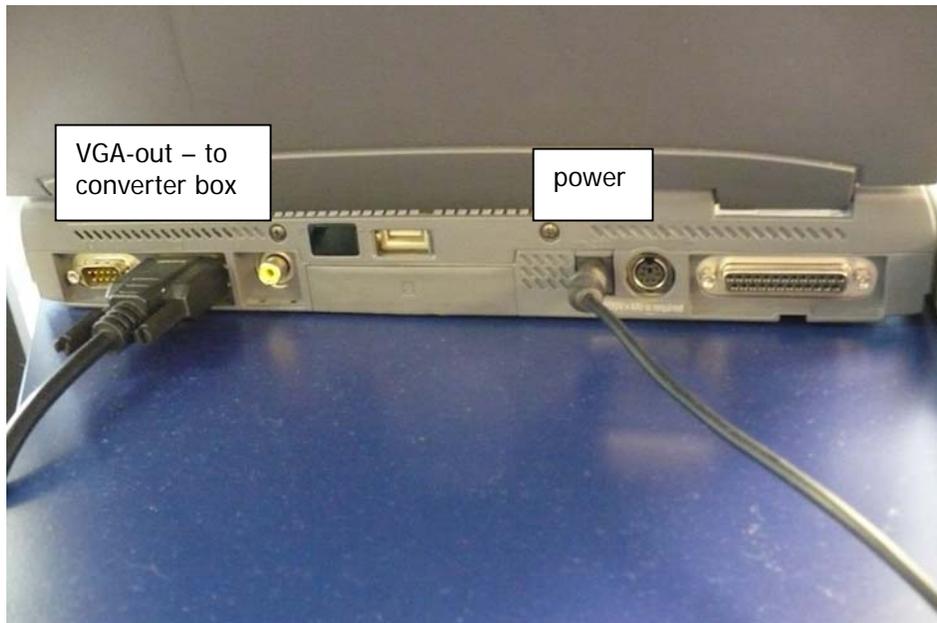
power

5. Your screen may go blank when you plug in the cable to the converter box – do not panic! Power on the converter box. The key sequence to change the PC's video mode is written on the laptop – hold down the Fn key and press then release F5. This should both bring your screen back AND feed the video converter. Turn on the TV to channel 8 to see the video and to make final adjustments to the display setup.

Power indicator

On/Off light

Power switch
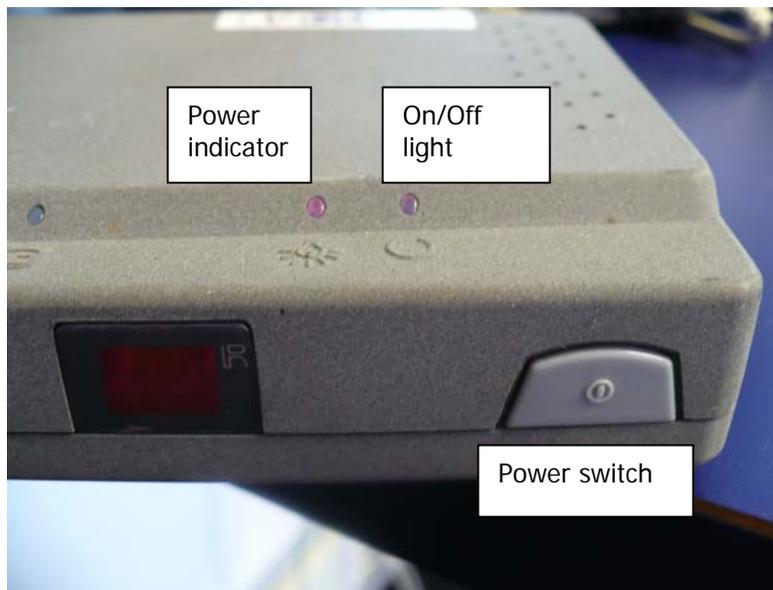
6. If you see nothing on the closed circuit channel 8, check all connections, power on and off the video converter box and you should see a change to what is displayed on the TV. If not, it is possible the connection box is not connected to track closed-circuit. Ask in the control room if someone from the track can confirm the TV system is ready to accept the T&S feed.

7. At the end of the day, disconnect the VGA OUT cable from the back of the PC before powering down the converter box and before shutting down the PC for the night. When the cable is connected, sometimes the PC fails to shutdown.

Last: there is a white Ethernet cable that hangs from the ceiling near the back TV, close to where Orbits normally operates. This Ethernet cable goes directly to the announcer's booth in the main press room. The announcer may use this to connect to the T&S Orbits and run their own RMonitor. For public events, plug this cable into the T&S Ethernet hub (or switch) so the announcer has their needed data.