The Leader in Event Critical Timing Electronics

Demo Tree Controller Owner's Manual

Models 3204T, 3204TW & 3204TX

Rev D

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RACE AMERICA

Timing Systems

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THEORY OF OPERATION

The 3204 Demo Tree Controller is a completely self-contained system controller to simulate drag race starting light sequences. The lights can be controlled locally via a push-button or remotely by a PC and wireless network links. A random demo light sequence mode is available as well as controlled starts.

The controller is made with the latest technology CMOS circuit components to provide a highly accurate result. The system contains an internal quartz crystal clock to maintain time accuracy to one thousandth of a second.

Power is supplied to the controller by the Tree via the interconnect cable.

Once the system is properly set up, the Tree and Controller are powered up. The Controller will run through a power-up sequence during which time the manual operation mode and Tree starting sequence can be selected. If no selection is made, the power-up sequence will complete and the Tree will begin to display random starting light sequences.

Optional track sensing electronics can be added for true red light detection (without times) for starting races.

PACKAGE COMPONENTS

This manual covers setup and operation of the Demo Tree Controller with one of the RaceAmerica drag trees. This manual covers operation of the following wired and wireless Demo Controllers:

3204T - Wired controller
3204TW - Wireless controller domestic US
3204TX - Wireless controller international

Demo Controllers operate with one of the following RaceAmerica trees**:

02-2503 - 12 VDC with staging
02-2502 - 110VAC stage/pre-stage/ rear facing lights (RFL)
02-2505 - 230VAC stage/pre-stage/ rear facing lights (RFL)

** Call RaceAmerica for compatibility with other Trees.

The following packages are offered with a Demo Controller and Tree:

Hard wired:
3204T2 -Controller/Tree (110/Stg/-Stg/RFL)
3204T3 -Controller/Tree (12VDC/Staging)
3204T5 -Controller/Tree (230VAC/Stg/P-Stg)

Wireless Domestic USA:
3204TW2 -Controller/Tree (110/Stg/-Stg/RFL)
3204TW3 -Controller/Tree (12VDC/Staging)
3204TW5 -Controller/Tree (230VAC/Stg/P-Stg)

Wireless International:
3204TX2 -Controller/Tree (110/Stg/-Stg/RFL)
3204TX3 -Controller/Tree (12VDC/Staging)
3204TX5 -Controller/Tree (230VAC/Stg/P-Stg)

All packages include:
1 - Controller Module
1 - Tree
1 - 05-3250 Cable Controller to Tree
1 - 06-23SB Push-button cable - 25'
1 - Owners Manual

Additionally, each wireless package includes:
1 - Wireless Data Comm Link
2 - Antennas for Wireless Links
1 - 6033A PC to wireless cable - 5ft
1 - 6512A AC Adapter (for PC wireless)
1 - CD with PC Control Software

LOCAL REQUIREMENTS

Additional items required to operate the 3204:

110VAC systems - 20A circuit
230VAC systems - 10A circuit
12VDC systems - 14A source

AVAILABLE OPTIONS

05-3251 - Staging Cable
6022A - Single Beam Staging Electronics
6027A - Dual Beam Pstg/Stage Electronics
6026A - Dual Beam Stg/Guard Electronics
6023A - Tri-Beam Pstg/Stg/Guard Electronics

PRODUCT SPECIFICATIONS

Time Accuracy	0.001 seconds
Tree height AC/DC	82”/75”
Tree Width	20.25”
Base Dimensions	20” X 20”
Tree Weight (w/lamps)	66 lbs
Tree Finish	Powder Coat CRS

TREE ASSEMBLY

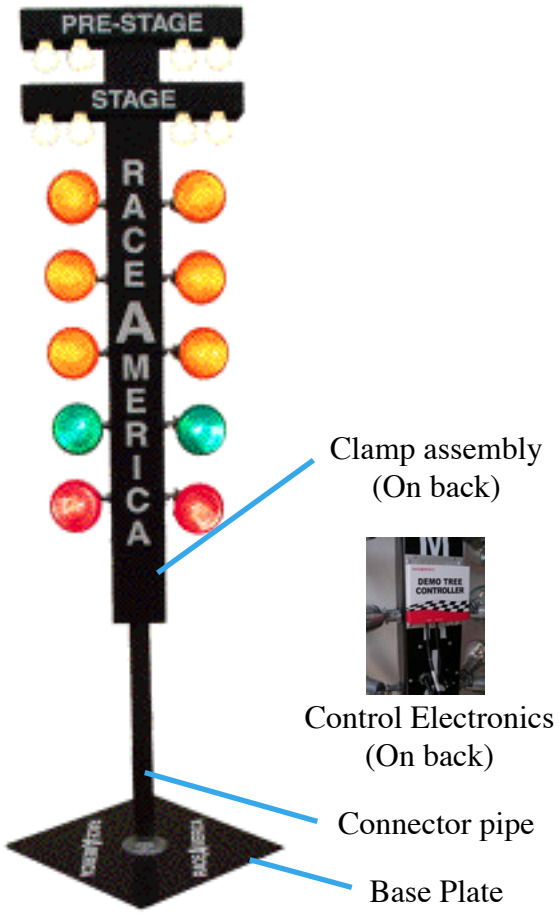
STEP 1 - Familiarization

Familiarize yourself with the components pictured and how they interconnect.

The Tree contains a module referred to as the Tree Electronics. The enclosure containing the timing and control electronics (labeled Demo Tree Controller or TREE-LiNK) is mounted on the back of the Tree Electronics.

The system ships with two cables; the cable with a round four conductor connector on one end is the Tree Cable and the Push-button Cable.

Connectors are labeled and keyed for proper connections at the Tree and Controller. A serial data connection is used for wireless operation.



Assembled Tree and Controller

The assembled Tree - note the base orientation is at a 45 degree angle to the tree for increased stability.

The iron pipe is held in place by two clamps at the base of the tree. Assembly is easy if the pipe is inserted into the base of the tree with the tree sitting face up horizontally. Push up the clamp from the bottom to allow the pipe to go through each of the two clamps; a Stop bolt is in place to limit the pipe travel.

The iron pipe clamps from the back side - the nuts should be tightened to a little more than finger tight to hold the tree adequately in the vertical orientation.

Light Pod Adjustment

Loosen the screw on the light pod to adjust the angle of the pod for desired placement of the light. Tighten the screw when the desired position is attained.

Mount Control Electronics with these screws (wireless model labeled TREE-LiNK)

Tree to Controller Cable

AC or DC Power

The Tree as seen from the back; do not connect the power until all cables have been connected and the system is ready for power up.

Mount Control Electronics by removing and replacing the top four Tree Electronics panel screws.

STEP 2 - Tree Assembly

The Tree is assembled as shown with the pipe clamp and then screwed into the threaded flange on the Base Plate. Bulbs can be screwed into the sockets once the Tree is assembled and standing upright.

The light pods can be adjusted for desired angular view by loosening the screws on each pod.

SYSTEM ASSEMBLY - 3204T

STEP 1 - Attach Controller Module

Attach the Demo Tree Controller module to the back of the Tree Electronics as shown in the captioned photo by removing and replacing the top four screws.

STEP 2 - Connect Tree Cable

Connect the Tree Cable between the Tree and Controller. (See Fig.1)

STEP 3 - Connect Push-button

Connect the Starter's Push-button cable to the controller.

Fig. 1 - Cable Connections - 3204T

STEP 4 - Connect the Power

Connect the power cord to the correct power source. A switched surge suppression power strip (AC systems) is recommended to compensate for line voltage fluctuations. Use the On/Off switch on the surge strip to turn the system on.

SYSTEM ASSEMBLY 3204TW & 3204TX

STEP 1 - Attach Controller Module

Attach the Demo Tree Controller module to the back of the Tree Electronics as shown in the captioned photo.

STEP 2 - Connect Tree Cable

Connect the Tree Cable between the Tree and Controller. (See picture page 6)

STEP 3 - Connect Push-button

Connect the Starter's Push-button cable to the controller.

STEP 4 - Connect Wireless Link

Connect the PC wireless link unit according to Fig. 2.

STEP 5 - Install Antennas

Attach the antennas to the nuts on the controller and PC Link unit. (DO NOT OPERATE THE SYSTEM WITHOUT ANTENNAS AS DAMAGE TO THE WIRELESS UNITS MAY RESULT)

STEP 6 - Install the PC Control software

The CD contains two files:

dtree.exe

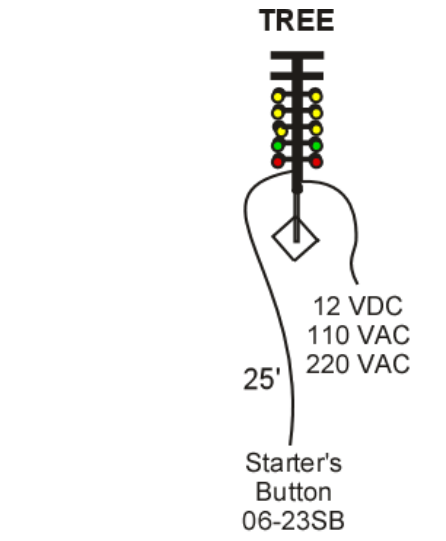
comport.dll

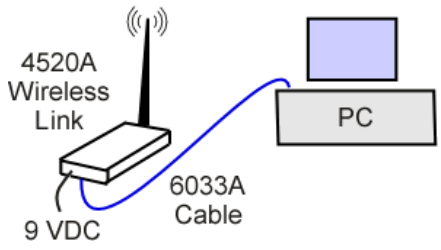
Copy these files to a separate directory on the PC hard drive.

STEP 7 - Connect the Power

Connect the AC power cord to the correct power source. A switched surge suppression power strip (AC systems) is recommended to compensate for line voltage fluctuations. Use the On/Off switch on the surge strip to turn the system on.

Fig. 2 - Cable Connections - 3204TW & 3204TX





SYSTEM OPERATION - 3204T

STEP 1- Power On

The Demo Controller has two operational modes - **DEMO** and **MANUAL**. When the power is switched on, the Controller will automatically go into **DEMO** mode after the power up sequence. See Step 3 for starting up in Manual Mode.

Switch on the power to the Tree; the Tree sequences through a lamp test and circuitry test by illuminating the left red lamp and stepping up through the green and yellows, Stage and Pre-stage (AC Tree only) on the left side, then on the right

side to Stage and Pre-stage (AC Tree). The Tree then illuminates all top Stage (Pre-stage) lamps and steps down through each set of lamps for both lanes. Next, the lamps are all sequenced on starting with the red up the left side, then the red up the right side. Finally, all lamps are flashed once to conclude the self-test. When the Tree has completed the self-test, the system is fully functional and enters DEMO Mode. If the lights do not follow this sequence or some lights were not illuminated, check for insufficient power or defective bulbs. Each time power is applied to the timing system, a self-test sequence is initiated by the microprocessor to insure proper operation of the display and electronics.

STEP 2 - DEMO MODE

The Demo Controller default power-up sequence puts the system into **DEMO** mode. Once powered up, Demo Mode pre-stages each lane, then stages both lanes, then Demo Mode selects a starting light sequence and dial-in for each lane before starting the tree. The tree clears after a short pause and a new race start begins.

STEP 3 - MANUAL MODE

MANUAL mode allows the starter's button to be used to start the Tree in either FULL or PRO starting sequences.

To start in **MANUAL** mode, hold the Push-button in when power is switched on. This will put the Tree into a cycle where the RED lights are on; release the button and the YELLOW/GREEN lights cycle between the FULL Tree (Yellow, Yellow, Yellow, Green spaced by 0.5 sec) and the PRO Tree (All Yellows, Green spaced by 0.4 sec) starting sequences. Press the Push-button when the desired Tree starting sequence has displayed (Green light ON). The Tree will then complete the power on sequence. The selected starting sequence will begin when the Push-button is pressed. To change to another sequence, cycle the power OFF/ON and make the appropriate choice.

SYSTEM OPERATION - 3204TW & 3204TX

STEP 1- Power On Tree/Controller

The Demo Controller has two operational modes - **PC CONTROLLED** and **MANUAL**. When the power is switched on, the Controller will automatically go into **MANUAL** mode after the power up sequence.

Switch on the power to the Tree; the Tree sequences through a lamp test and circuitry test by illuminating the left red lamp and stepping up through the green and yellows, Stage and Pre-stage (AC Tree only) on the left side, then on the right side to Stage and Pre-stage (AC Tree). The Tree then illuminates all top Stage (Pre-stage) lamps and steps down through each set of lamps for both lanes. Next, the lamps are all sequenced on starting with the red up the left side, then the red up the right side. Finally, all lamps are flashed once to conclude the self-test. When the Tree has completed the self-test, the system is fully functional and enters DEMO Mode. If the lights do not follow this sequence or some lights were not illuminated, check for insufficient power or defective bulbs. Each time power is applied to the timing system, a self-test sequence is initiated by the microprocessor to insure proper operation of

Fig. 3 - Com Port Selection

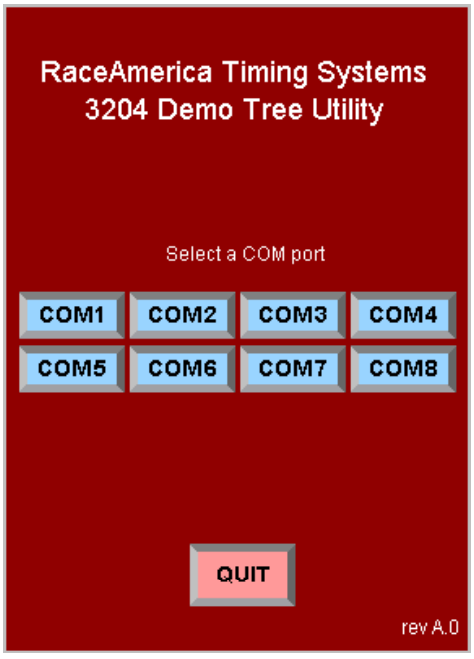


Fig. 4 - Com Port Error

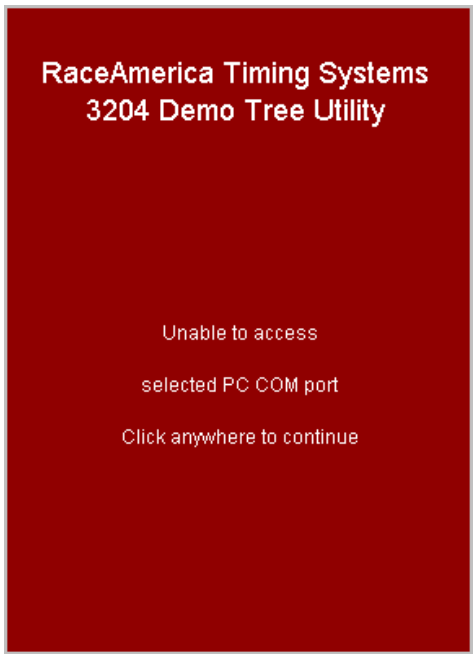
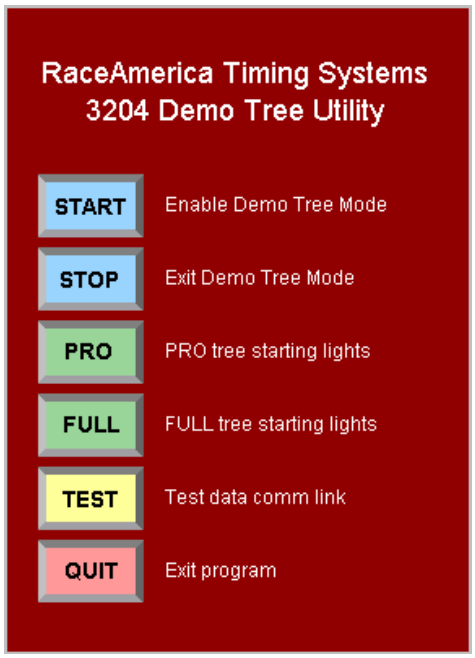


Fig. 5 - Main Menu



the display and electronics.

STEP 2 - POWER ON PC/WIRELESS

Power on the PC and wireless link unit at the PC side of the wireless network.

STEP 3 - RUN SOFTWARE

Run the PC Control software file ***dtree.exe***.

STEP 4 - SELECT COM PORT

Select the Com Port the wireless link is connected to (Fig.3). An error message will display (Fig. 4) if the selected port is not available.

STEP 5 - START TREE

When an available port is selected, the Main Menu screen (Fig. 5) will appear showing six choices:

START - Starts Demo Mode. Demo Mode pre-stages each lane, then stages both lanes, then Demo Mode selects a starting light sequence and dial-in for each lane before starting the tree. Redlights occur on some starts and green lights are illuminated for the winning lane. After displaying the race results on the tree, the tree clears and after a short pause, a new race start begins.

STOP - Exits Demo Mode after the current cycle completes and enables PRO, FULL and TEST modes.

PRO - Initiates a single cycle PRO light start (all Yellow, Green spaced by 0.4 sec).

FULL - Initiates a single cycle FULL light start (Yellow, Yellow, Yellow, Green spaced by 0.5 sec).

TEST - Illuminates the red lights for both lanes as a test of the wireless link units.

QUIT - Exits the PC control program.

The controller will operate without a wireless PC as a 3204T; however, after the PC control has activated the controller, the push-button will only activate PRO starts; cycle power to reset if required.

STAGING OPTION

Connect the staging option as shown in Figure 6. Connect any start beam set which is compatible with a RaceAmerica system.

SYSTEM OPERATION - STAGING

STEP 1 - Power on Emitters

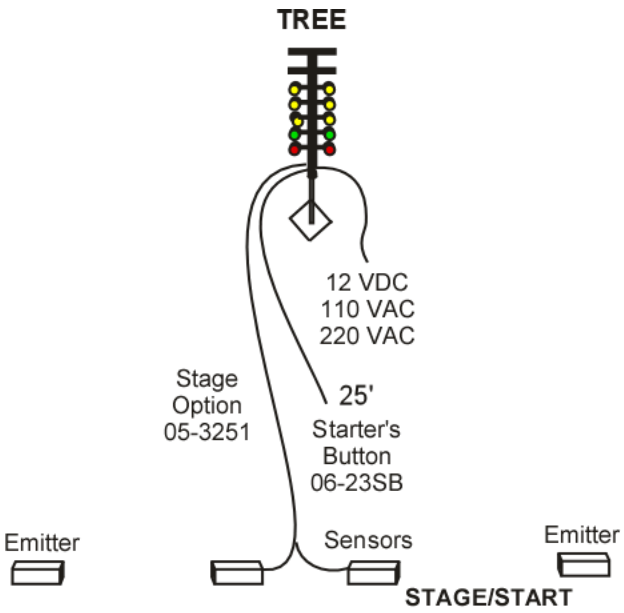
Power ON the beam emitters. Face the emitters at the sensors for alignment.

STEP 2 - Power on the Tree

Hold in the push-button while power is applied to the Tree. This will put the Tree into a cycle where the RED lights are on; release the button and the YELLOW/GREEN lights cycle between the FULL Tree (Yellow, Yellow, Yellow, Green spaced by 0.5 sec) and the PRO Tree (All Yellows, Green spaced by 0.4 sec) starting sequences. While the tree oscillates between these two modes, the Stage (Pre-Stage) lights are in alignment mode; adjust so all lights go out (Single beams only use the Stage bulbs). Press the Push-button when the desired Tree starting sequence has displayed (Green light ON). The Tree will then complete the power on sequence. The selected starting sequence will begin when the Push-button is pressed. To change to another sequence, cycle the power OFF/ON and make the appropriate choice.

STEP 3 - Stage the Racers

Move the racers into Pre-Stage and/or Stage position; press the push-button to bring down the selected Tree sequence. The Tree will 'freeze' if either lane leaves early, illuminating the Green light for the other lane. If no racer stages in one lane, the controller will immediately display the red light and illuminate the Green light in the other lane. The red light always goes to the first infraction.



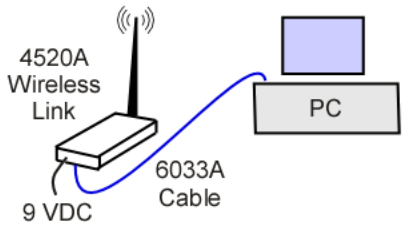


Fig. 6 - Staging Option with Wireless Tree control

MAINTENANCE

The 3204 Demo Controller and trees require minimal maintenance. Keep them clean and dry and they will provide years of continuous service.

SPARE PARTS

If the Demo Controller is to be used as a starting device for a racing program, a spare push-button cable should be considered. Spare bulbs and floodlamps for the tree should also be available. Contact RaceAmerica for availability and pricing of spares items.

SUPPORT AGREEMENTS

Support agreements are available from RaceAmerica providing telephone aassistance on technical issues and operational questions, repair and/or replacement of hardware failures, software and firmware updates and bug reporting. Contact RaceAmerica for more information and pricing of Support Agreements.