

RACEAMERICA™

T i m i n g S y s t e m s

Scoreboard Displays for Tag Heuer CP520 & CP705 Owner's Manual

Rev C



RaceAmerica Corporation
P.O. Box 3469
Santa Clara, CA 95055-3469
(408) 988-6188
<http://www.raceamerica.com>
info@raceamerica.com

Copyright 2008 RaceAmerica Corporation

Table of Contents

LIMITED WARRANTY	3
PRODUCT OVERVIEW.....	4
PACKAGE COMPONENTS.....	4
AVAILABLE OPTIONS.....	4
LOCAL REQUIREMENTS	4
PRODUCT SPECIFICATIONS	4
POWER REQUIREMENTS.....	5
SCOREBOARD SET-UP.....	5
STEP 1 - Configure the Display	5
STEP 2 - Connect the Interface Cable	5
STEP 3 - Connect the Power	7
POWER-ON SELFTEST	7
DIP SWITCH SETTINGS	7
DISPLAY MAINTENANCE.....	7
DIP SWITCH SETTINGS TABLE	8

RACEAMERICATM

T i m i n g S y s t e m s

LIMITED WARRANTY

To the original purchaser of this RaceAmerica product, RaceAmerica warrants it to be in good working order for a period of ninety (90) days from the date of purchase from RaceAmerica or an authorized RaceAmerica distributor. Should this product malfunction during the warranty period, RaceAmerica will, at its option, repair or replace it at no charge, provided the product has not been subjected to misuse, abuse, or alterations, modifications, and/or repairs not authorized by RaceAmerica .

Any product requiring Limited Warranty service during the warranty period should be returned to RaceAmerica with proof of purchase. If return of merchandise is by mail, the customer agrees to insure the product, prepay shipping charges , and ship the product to RaceAmerica, Inc., 280 Martin Avenue, Unit #1, Santa Clara, CA 95050.

ALL EXPRESSED AND IMPLIED WARRANTIES FOR THIS PRODUCT ARE LIMITED IN DURATION TO THE ABOVE NINETY DAY PERIOD.

UNDER NO CIRCUMSTANCES WILL RACEAMERICA BE LIABLE TO THE USER FOR DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, SUCH PRODUCT.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

PRODUCT OVERVIEW

The Models 4509, 4809, 6509, 6809, 9509, & 9809 Scoreboard Displays (hereafter referred to as XX09) are microprocessor controlled system based upon the 7-segment format display digit using the latest technology Ultra-Bright LEDs. The display uses an RS232 serial link to receive data to be displayed from Tag Heuer CP520 and CP705 Race Timing Systems. The serial link is configured for 9600 baud. The XX09 is capable of displaying Competitor number, Elapsed Time (ET) and Rank on 5” and 8” displays. Timer selection and data format is selected through the DIP switch settings located on the rear of the display. All models have an equivalent version with internal rechargeable battery.

NOTE: THIS PRODUCT USES ULTRA-BRIGHT LED TECHNOLOGY. DUE TO THE BRIGHTNESS LEVEL OF THIS DISPLAY, CARE SHOULD BE TAKEN, AS WITH ANY BRIGHT LIGHTING SOURCE, TO AVOID PROLONGED VIEWING AT CLOSE RANGE AND SHORT DISTANCES. AS WITH ANY BRIGHT LIGHTING SOURCE, VISION MAY BE AFFECTED SHORT TERM SIMILAR TO FLASHBULBS ON CAMERAS.

PACKAGE COMPONENTS

- 1 - Scoreboard Display Unit
- 1 - Power Patch Cord
- 1 - Owner’s Manual
- 2 - Table Stands (5” Models only)
- 1 - Battery charger (battery models only)

Model XX09 Available Options:

- 06-T725 Cable 25’ Tag CP705 to LDD (RJ45 to D-sub 9-pin)
- 06-T725 Cable 100’ Tag CP705 to LDD (RJ45 to D-sub 9-pin)
- 06-T525 Cable 25’ Tag CP520 to LDD (RJ45 to RJ11)
- 06-T510 Cable 100’ Tag CP520 to LDD (RJ45 to RJ11)

- 4500B Data Communication POD (for displays greater than 100ft from console) - 2 required
- 07-3434 RS422 Cable (for use with PODs)
- 6501A AC Power Adapter (12VDC/1A)
- 6076A Carry Case (Model 6809 only)
- 6075A Carry Case (Model 6509 only)
- 7606B Display Stand (40” tall)

LOCAL REQUIREMENTS

Additional items required to operate the XX09 Series Scoreboard displays and options:

1 - 12VDC automotive battery (except internal battery models)

Other options:

AC power source for AC adapters (6501A) or battery charger.

PRODUCT SPECIFICATIONS 9509

Display Type:	7-Segment
Digit Height:	Five Inch Tall
Number of digits:	Nine
Dimensions:	11.5” x 46.4” x 3”
Mounting:	Top 3/16” Eyelets -
Housing:	Powder Coated aluminum
View Filter:	Red Transparent acrylic
View Range:	200’ in full sun
Operating Range	-20°F to 120°F

PRODUCT SPECIFICATIONS 6509

Display Type:	7-Segment
Digit Height:	Five Inch Tall
Number of digits:	Six
Dimensions: (no Bat)	8.6” x 27.6” x 3”
Dimensions: (battery)	11.5” x 29.6” x 3”
Mounting:	Top 3/16” Eyelets - 22”c
Housing:	Powder Coated steel
View Filter:	Red Transparent acrylic
View Range:	200’ in full sun
Operating Range	-20°F to 120°F

PRODUCT SPECIFICATIONS 4509

Display Type:	7-Segment
Digit Height:	Five Inch Tall
Number of digits:	Four
Dimensions:(no bat)	8.6" x 20.3" x 3"
Dimensions: (battery)	11.5" x 20.3" x 3"
Mounting:	Top 3/16" Eyelets -
Housing:	Powder Coated steel
View Filter:	Red Transparent acrylic
View Range:	200' in full sun
Operating Range	-20°F to 120°F

PRODUCT SPECIFICATIONS 9809

Display Type:	7-Segment
Digit Height:	Eight Inch Tall
Number of digits:	Nine
Dimensions:	14-1/4" x 72" x 3"
Mounting:	Top 1/4" Eyelets -
Housing:	Powder Coated aluminum
View Filter:	Red Transparent acrylic
View Range:	320' in full sun
Operating Range	-20°F to 120°F

PRODUCT SPECIFICATIONS 6809

Display Type:	7-Segment
Digit Height:	Eight Inch Tall
Number of digits:	Six
Dimensions:	14-1/4" x 46-3/4" x 3"
Mounting:	Top 1/4" Eyelets - 30" c
Housing:	Powder Coated steel
View Filter:	Red Transparent acrylic
View Range:	320' in full sun
Operating Range	-20°F to 120°F

PRODUCT SPECIFICATIONS 4809

Display Type:	7-Segment
Digit Height:	Eight Inch Tall
Number of digits:	Four
Dimensions:	14-1/4" x 32.3" x 3"
Mounting:	Top 1/4" Eyelets -
Housing:	Powder Coated aluminum
View Filter:	Red Transparent acrylic
View Range:	320' in full sun
Operating Range	-20°F to 120°F

POWER REQUIREMENTS

The Scoreboard Display can be powered by a 12VDC automotive battery or any 12VDC power source capable of 0.85 ampere current load maximum. Average power consumption is approximately 0.4 ampere. Maximum voltage should never exceed 13.2VDC at Power Input Connector (NO chargers or operating cars).

SCOREBOARD SET-UP

Model XX09 Scoreboard Displays are designed to hang free using the top eyelets supplied with the display or be mounted from below with the PEM nuts. A display stand is also available from RaceAmerica to hang the 6809 display at a good viewing level 40" above ground level.

Model X509 Scoreboard Displays are designed to be placed on a table with the table stands for stability.

All units have mounting holes and screw eyes for hanging.

STEP 1 - Configure the Display

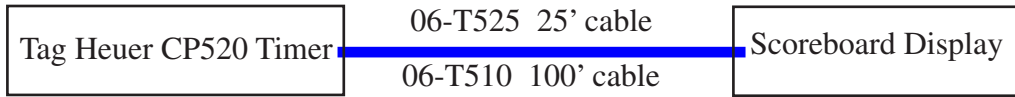
The DIP Switches are located on the backside of the display near the power and data connectors. They are used to match the timer and the data to be displayed. To determine the correct switch settings, read the **DIP SWITCH SETTINGS** section of this manual. Switch settings have two positions, ON and OFF. The ON position is indicated on the DIP switch and is active when the switch button is moved to the right side when viewed from the back of the display.

STEP 2 - Connect the Interface Cable

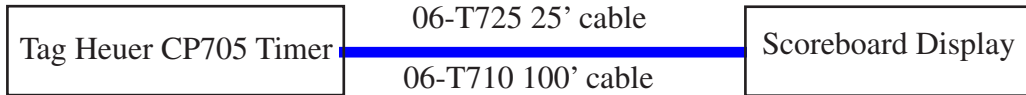
The interface cable contains an RJ45 modular connector on one end of the cable and is connected to the display using the SERIAL PORT connector on the back of the display. When inserting this connector, press inward until a click is heard to lock the cable in place. If the cable remains loose and no click is heard, carefully bend outward the locking tab on the RJ45 connector approximately 45 degrees from the connector body. Re-insert the

Cabling Diagrams

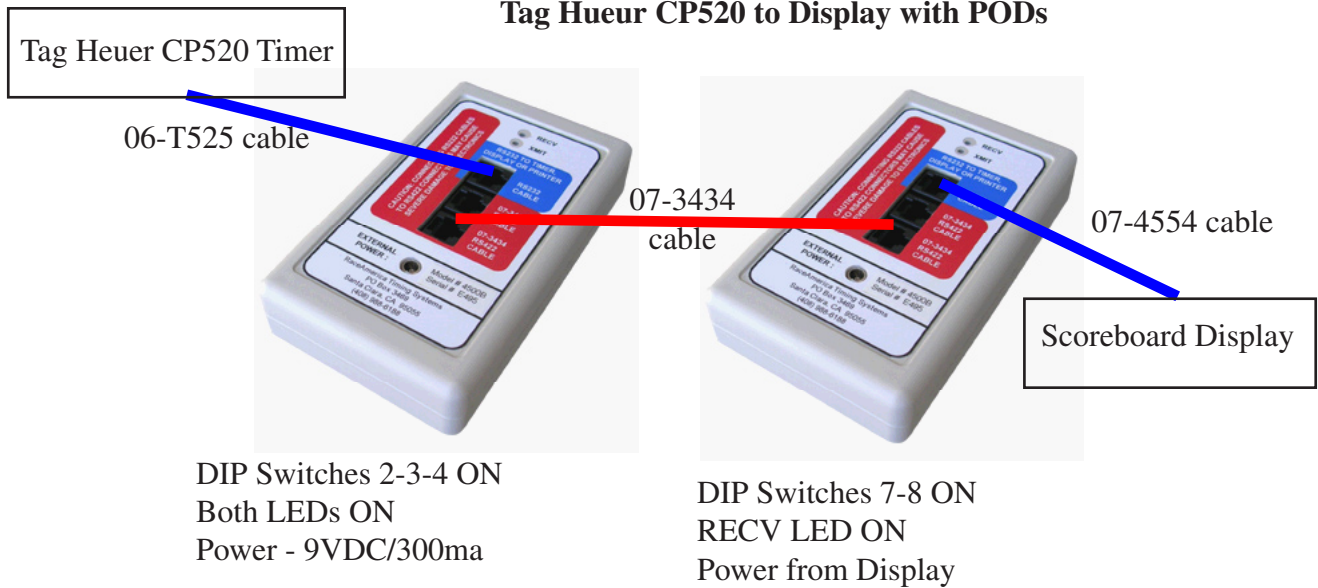
Tag Heuer CP520 to Display



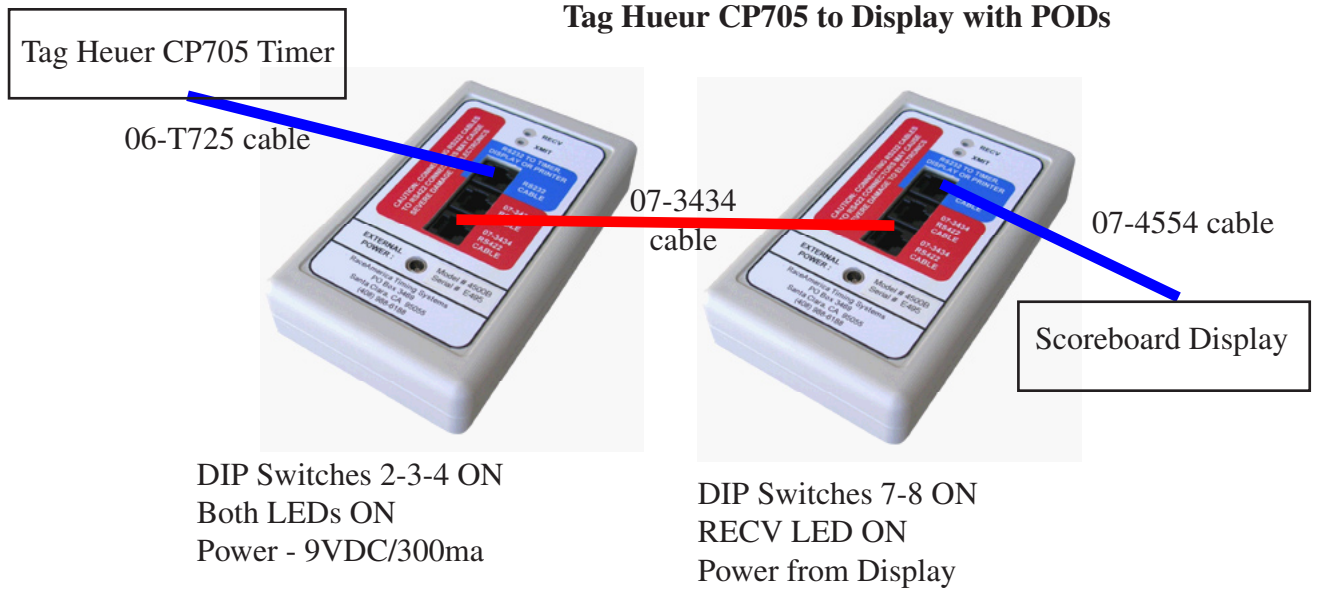
Tag Heuer CP705 to Display



Tag Heuer CP520 to Display with PODs



Tag Heuer CP705 to Display with PODs



cable into the serial port until the click is heard and the cable remains locked in place. To remove this cable, pinch the locking tab against the body of the RJ45 connector and pull the connector out.

Depending upon the timer model (CP520 or CP705) connected to the display, the other end of the cable may contain an RJ11 connector for the CP520 and a D-sub 9-pin connector for the CP705 timing system. If the display is located more than 100' from the console, the RaceAmerica model 4500A RS422 communication PODs and an 07-3434 cable (variable lengths available) can be inserted between the devices; connect per the diagrams on the following page.

STEP 3 - Connect the Power

Power is supplied to the display through the 12VDC POWER INPUT connector located on the rear of the display or from the internal battery. Connecting power to the display will set the display into a power-on self-test mode. Once the self-test has successfully completed, the display is ready for use.

POWER-ON SELF-TEST

When the power source is connected, the display begins an internal self-test and an external visual check of the display elements.

The self-test begins by stepping through each segment of all digits, one segment at a time including the colon or decimal point which exist to the right of each digit except the rightmost digit. The self-test continues by sequentially illuminating each segment until all segments, colons, and decimal points are on, then each segment is turned off until blank. The revision level of the code running in the microprocessor is displayed, and finally the screen blanks out. The display is now ready for use.

DIP SWITCH SETTINGS

The XX09 family of Scoreboard Displays can display Elapsed Time (ET), Competitor Number, Rank and Speed as output from the particular

Tag Heuer CP520 and CP705 Timing Systems. Several different timing modes are available with each timer..

The eight DIP switches located on the back of the Scoreboard Display are numbered from 1 to 8 and can be switched ON or OFF. The ON position is indicated on the switch itself. Settings for data display output are summarized in Settings Table.

Display Hold Time

With the CP520 Timing System, the display is only updated by the console when new data is output. The time data is displayed on the Display can be selected using DIP switches 7/8 as follows:

Display Hold Time	7	8
30 seconds	ON	ON
120 seconds	ON	OFF
Next Data	OFF	OFF

Next data means holding a display until new data (next data) is sent to the display. If either 30 or 120 seconds is selected, they will be superceded if new data is received prior to the time limit and the new data will be displayed immediately.

Diagnostic mode

The Scoreboard Display has a diagnostic mode which is enabled when all DIP switches are set to the OFF position.

DISPLAY MAINTENANCE

The model XX09 Scoreboard Displays do not require any maintenance to maintain proper operation. If the display is to be used in rainy or wet conditions, it is suggested to protect the back panel from direct moisture by shielding the connection to power and the serial port.

To clean the red lens, use a non-abrasive cleaner on a soft cloth. This will keep the protective lens clean and maximize visibility and clarity of the digits. If the red lens is soiled with mud or dirt, gently remove the grit using a soft cloth being careful not to press when wiping to avoid scratching the red lens material

DIP SWITCH SETTINGS TABLE

Model	Mode	Display	Digits	Format	1	2	3	4	5	6
705	Alpine & Cross Country Modes	Competitor & ET	9	CCC HH:MM:SS	on	on	on	on	on	on
705	Alpine & Cross Country Modes	Competitor & ET	9	CCC H:MM:SS.F	on	on	on	on	on	off
705	Alpine & Cross Country Modes	Competitor & ET	9	CCC MM:SS.FF	on	on	on	on	off	on
705	Alpine & Cross Country Modes	ET	6	HH:MM:SS	on	on	on	on	on	on
705	Alpine & Cross Country Modes	ET	6	H:MM:SS.F	on	on	on	on	on	off
705	Alpine & Cross Country Modes	ET	6	MM:SS.FF	on	on	on	on	off	on
705	Alpine & Cross Country Modes	Rank	9	CCC xRRRxx	on	on	on	off	on	on
705	Alpine & Cross Country Modes	Rank	6	xRRRxx	on	on	on	off	on	on
705	Alpine & Cross Country Modes	Rank	4	xRRR	on	on	on	off	on	on
705	Alpine & Cross Country Modes	Speed	9	CCC xKKK.FF	on	on	off	on	on	on
705	Alpine & Cross Country Modes	Speed	6	xKKK.FF	on	on	off	on	on	on
705	Alpine & Cross Country Modes	Speed	4	KKK.F	on	on	off	on	on	off
705	Alpine & Cross Country Modes	Speed	4	KK.FF	on	on	off	on	off	on
705	Alpine & Cross Country Modes	Speed	4	Auto Ranging	on	on	off	on	off	off
705	Dual Mode Blue Course	Competitor & ET	9	CCC M:SS.FFF	on	on	off	off	on	on
705	Dual Mode Blue Course	Competitor & ET	9	CCC MM:SS.FF	on	on	off	off	on	off
705	Dual Mode Blue Course	ET	6	M:SS.FFF	on	on	off	off	on	on
705	Dual Mode Blue Course	ET	6	MM:SS.FF	on	on	off	off	on	off
705	Dual Mode Red Course	Competitor & ET	9	CCC M:SS.FFF	on	on	off	off	off	on
705	Dual Mode Red Course	Competitor & ET	9	CCC MM:SS.FF	on	on	off	off	off	off
705	Dual Mode Red Course	ET	6	M:SS.FFF	on	on	off	off	off	on
705	Dual Mode Red Course	ET	6	MM:SS.FF	on	on	off	off	off	off
705	Dual Mode Differential	ET	9	xxx xxS.FFF	on	on	on	off	off	off
705	Dual Mode Differential	ET	6	xxS.FFF	on	on	on	off	off	off
705	Infomatic Mode	Display 1 (line 0)	9	CCC HH:MM:SS	on	off	on	on	on	on
705	Infomatic Mode	Display 2 (line 1)	9	CCC HH:MM:SS	on	off	on	on	on	off
705	Infomatic Mode	Display 3 (line 2)	9	CCC HH:MM:SS	on	off	on	on	off	on
705	Infomatic Mode	Display 4 (line 3)	9	CCC HH:MM:SS	on	off	on	on	off	off
705	Infomatic Mode	Display 5 (line 4)	9	CCC HH:MM:SS	on	off	on	off	on	on
705	Infomatic Mode	Display 6 (line 5)	9	CCC HH:MM:SS	on	off	on	off	on	off
705	Infomatic Mode	Display 7 (line 6)	9	CCC HH:MM:SS	on	off	on	off	off	on
705	Infomatic Mode	Display 8 (line 7)	9	CCC HH:MM:SS	on	off	on	off	off	off
705	Infomatic Mode	Display 1 (line 0)	6	HH:MM:SS	on	off	on	on	on	on
705	Infomatic Mode	Display 2 (line 1)	6	HH:MM:SS	on	off	on	on	on	off
705	Infomatic Mode	Display 3 (line 2)	6	HH:MM:SS	on	off	on	on	off	on
705	Infomatic Mode	Display 4 (line 3)	6	HH:MM:SS	on	off	on	on	off	off
705	Infomatic Mode	Display 5 (line 4)	6	HH:MM:SS	on	off	on	off	on	on
705	Infomatic Mode	Display 6 (line 5)	6	HH:MM:SS	on	off	on	off	on	off
705	Infomatic Mode	Display 7 (line 6)	6	HH:MM:SS	on	off	on	off	off	on
705	Infomatic Mode	Display 8 (line 7)	6	HH:MM:SS	on	off	on	off	off	off
705	Infomatic Mode	Display 1 (line 0)	4	HH:MM	on	off	on	on	on	on

RaceAmerica Scoreboard Displays for Tag Heuer

Model	Mode	Display	Digits	Format	1	2	3	4	5	6
705	Infomatic Mode	Display 2 (line 1)	4	HH:MM	on	off	on	on	on	off
705	Infomatic Mode	Display 3 (line 2)	4	HH:MM	on	off	on	on	off	on
705	Infomatic Mode	Display 4 (line 3)	4	HH:MM	on	off	on	on	off	off
705	Infomatic Mode	Display 5 (line 4)	4	HH:MM	on	off	on	off	on	on
705	Infomatic Mode	Display 6 (line 5)	4	HH:MM	on	off	on	off	on	off
705	Infomatic Mode	Display 7 (line 6)	4	HH:MM	on	off	on	off	off	on
705	Infomatic Mode	Display 8 (line 7)	4	HH:MM	on	off	on	off	off	off
705	Infomatic Mode	Display 1 (line 0)	4	MM:SS	on	off	off	on	on	on
705	Infomatic Mode	Display 2 (line 1)	4	MM:SS	on	off	off	on	on	off
705	Infomatic Mode	Display 3 (line 2)	4	MM:SS	on	off	off	on	off	on
705	Infomatic Mode	Display 4 (line 3)	4	MM:SS	on	off	off	on	off	off
705	Infomatic Mode	Display 5 (line 4)	4	MM:SS	on	off	off	off	on	on
705	Infomatic Mode	Display 6 (line 5)	4	MM:SS	on	off	off	off	on	off
705	Infomatic Mode	Display 7 (line 6)	4	MM:SS	on	off	off	off	off	on
705	Infomatic Mode	Display 8 (line 7)	4	MM:SS	on	off	off	off	off	off
520	Net Time (code R)	Competitor & ET	9	CCC M:SS.FFF	off	on	on	on	on	on
520	Net Time (code R)	Competitor & ET	9	CCC MM:SS.FF	off	on	on	on	on	off
520	Net Time (code R)	ET	6	M:SS.FFF	off	on	on	on	on	on
520	Net Time (code R)	ET	6	MM:SS.FF	off	on	on	on	on	off
520	Lap Time (code L)	Competitor & ET	9	CCC M:SS.FFF	off	on	on	off	on	on
520	Lap Time (code L)	Competitor & ET	9	CCC MM:SS.FF	off	on	on	off	on	off
520	Lap Time (code L)	ET	6	M:SS.FFF	off	on	on	off	on	on
520	Lap Time (code L)	ET	6	MM:SS.FF	off	on	on	off	on	off
520	Total Time (code T)	ET	9	M:SS.FFF	off	on	off	on	on	on
520	Total Time (code T)	ET	9	MM:SS.FF	off	on	off	on	on	off
520	Total Time (code T)	ET	6	M:SS.FFF	off	on	off	on	on	on
520	Total Time (code T)	ET	6	MM:SS.FF	off	on	off	on	on	off
520	Net Time (code R)	Rank	9	CCC xRRRxx	off	on	off	off	on	on
520	Net Time (code R)	Rank	6	xRRRxx	off	on	off	off	on	on
520	Net Time (code R)	Rank	4	xRRR	off	on	off	off	on	on