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Multi-Function LED Display

REQUIREMENTS:

To use the Multi-Function LED Display, the Network Com Port (NCP) plugin must be installed in the FinishLynx software. NCP is an optional plugin that enables the use of TCP/IP ports. If this option is not enabled on your software, please contact Lynx System Developers to upgrade to this feature. For more information please go to:
https://www.finishlynx.com/product/finishlynx-plugins/network-com-port/

To use the Multi-Function LED Display with FieldLynx, the FieldLynx Scoreboard plugin must be installed. For more information please visit:
https://www.finishlynx.com/product/software/fieldlynx-event-software/

INTRODUCTION

Finished Results Multi-Function LED Display is a plug and play solution for timers who want to show event data in real time. Easy to setup, ultra-bright LED screen, with automatic data sending.

NOTE: Before starting this setup, please ensure to have the following inventory:

- *Multi-Function LED Display*
- *Long Ethernet data cable*
- *Display Power cable*
- *WiFi antenna (Optional)*
- *Tripod*

*An extension cord may be needed if an outlet is not close to the working area

STEP #1:   Install the Scoreboard Scripts

Before Start: **Please do not run FinishLynx software**
 - Contact Finished Results customer service [**support@finishedresults.com**] and ask for the *Finished Results Multi-Function LED Display Script*

1.) Download the Finished Results Multi-Function LED Display Script [**FR-Multi-Function-FinishLynx.lss and FR-Multi-Function-FieldLynx.lss**] from the link provided by Finished Results

2.) Copy the script file **FR-Multi-Function-FinishLynx.lss** from the download folder to **C:\Lynx** folder

3.) Copy the script file F**R-Multi-Function-FieldLynx.lss** from the download folder to
C:\Program Files (x86)\Lynx\FieldLynx Windows folder

STEP #2: Setup Scoreboard in FinishLynx

1.) Open **FinishLynx**
a. Go to File and select **Options**
b. At the Options Window select the **Score board** Tab
c. Click New
d. Script; Scroll and select:
- **FR-Multi-Function-FinishLynx.lss**
e. Name: Type **FR-Multi-Function**
f. Serial Port: select **Network (connect)**
g. Port: **2001** / IP Address: **192.168.0.51**
h. Running Time: select **Normal**
Options: select **Send results if armed**
i. Results: select **Auto**
Options: select **Always send place**
j. Paging **[checked]** / Size **1**
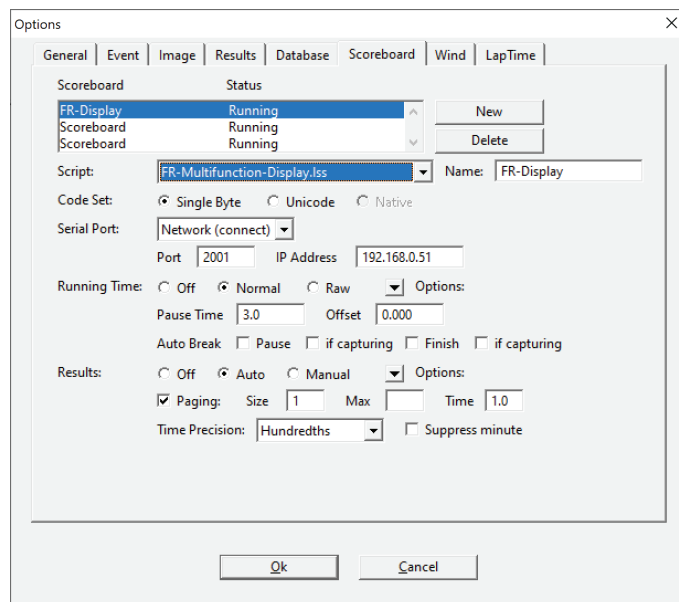Max **[blank]** / Time **1**
k. Time Precision **Hundredths**

Figure 1: FinishLynx Scorbaord Options Menu

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3.) Close and re-open *FinishLynx*

    a. Go to File and select *Options*

    b. At the Options Window select the *Score board* Tab
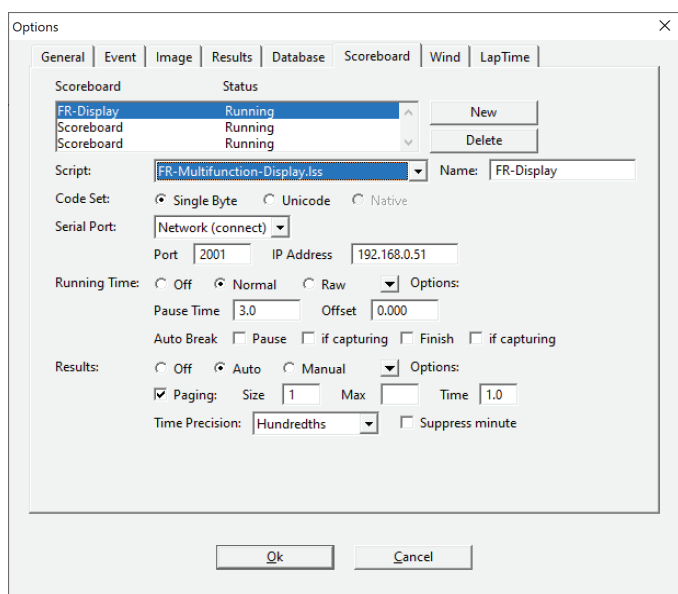
    c. The status is now shown as *Running*

Figure 2: FinishLynx Scorboard Options Menu, Completed Setup

STEP #3: Setup Scoreboard in FieldLynx

1.) Open *FieldLynx*

    a. Go to *Options* and select *Preferences*

    b. At the *Options Window* select the Score board Tab

    c. Click *New*

    d. Name: *Type FR-Multi-Function*

    e. Click *Configure* and set the options below
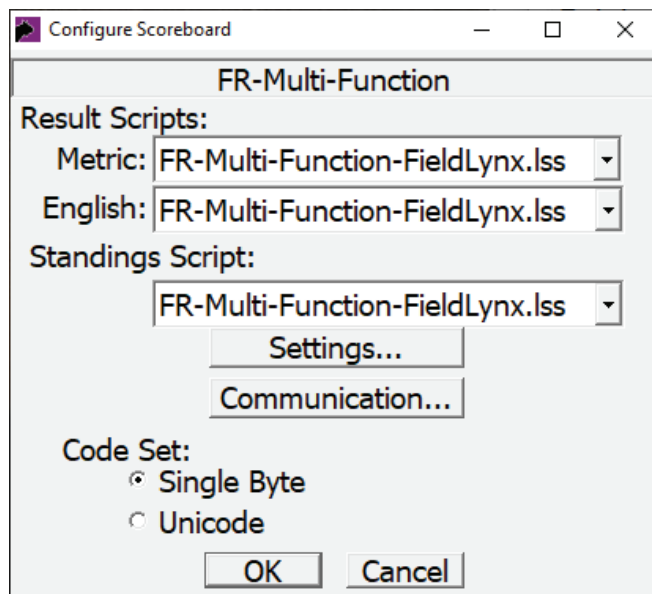

Figure 3: FieldLynx Scoreboard Configuration

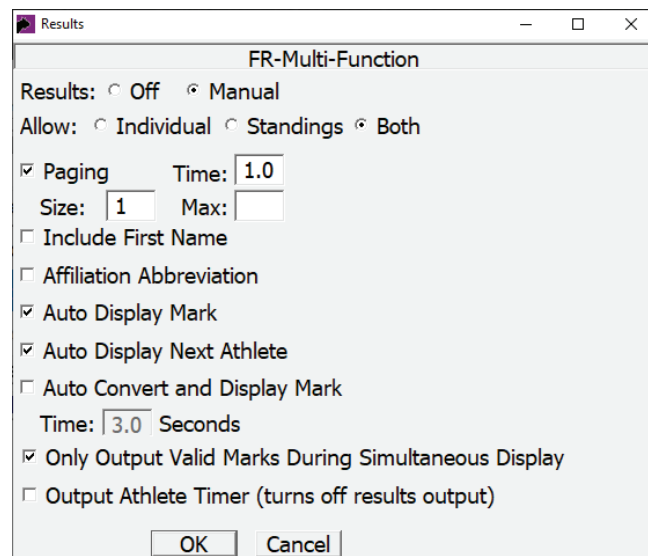   f. Click *Settings* and set the settings below

Figure 4: FieldLynx Scoreboard Settings

    g. Click *OK*

    h. Click *Communication* and set the settings below

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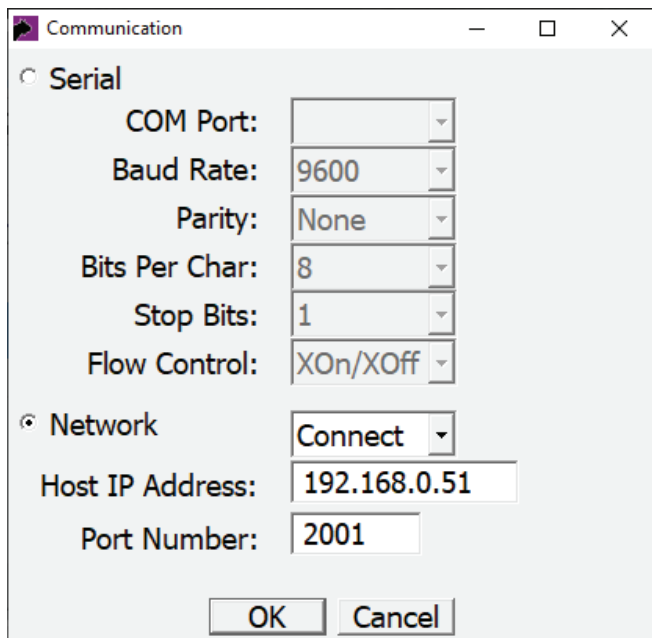

Figure 5: FieldLynx Communication Settings

  i. Click **OK**
2.) Close and Re-Open **FieldLynx**

STEP #4: Setup FR Multi-Function Display

1.) Open tripod to preferred height and stabilty level for your event. Then, place the LED Display on the tripod

Figure 6: FR Multi-Function Display placed on Tripod

2.) **Insert** and **twist** to lock the power connector to the display power socket

Figure 7: FR Multi-Function Display power socket

3.) **Connect** the **Ethernet (communication) cable** at the display Ethernet Jack

Figure 8: FR Multi-Function Display Ethernet port

4.) Be sure both cables are safely locked in place

Figure 9: FR Multi-Function Display side/front views

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5.) Connect the other end of the Ethernet communication cable at the timing *network switch or router*

Figure 10: Example Network router

6.) Connect the display power cable to a surge protected power source. It takes about a minute for the display to boot and show the default screen

STEP #5: Multi-Function Display Features for Track

1.) In FinishLynx, go to Scoreboard, select *'Show time of day'*. The FinishLynx Computer's time of day will show up on the display. Go back and deselect this option

2.) Choose an event from the schedule icon

Display screen will show *0.0* and *event's name*

3.) Use the *start sensor* to start the time. Display screen shows the *running time*

4.) Capture and evaluate the race image
> *Use the following keystroke combination to show results:*
> > a. *ALT + S* to stop the running time at the LED display
> > b. *ALT + E* to show results

5.) Open a new event, LED display automatically shows *new race name* and *0.0*

6.) Repeat for all events in schedule

STEP #6: Multi-Function Display Features for Track

1.) Set up an event in FieldLynx
2.) Select an athlete
3.) The athlete's name will show on the display
4.) Enter a mark
5.) The athlete's place, name, and mark will show on the display
6.) To show Standings, click

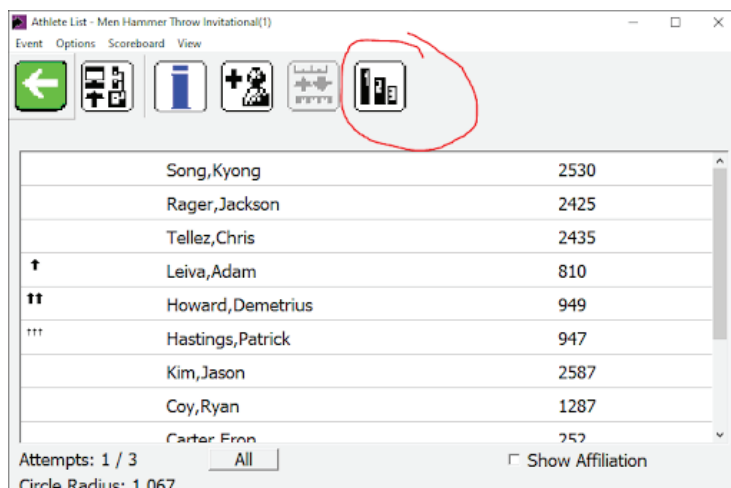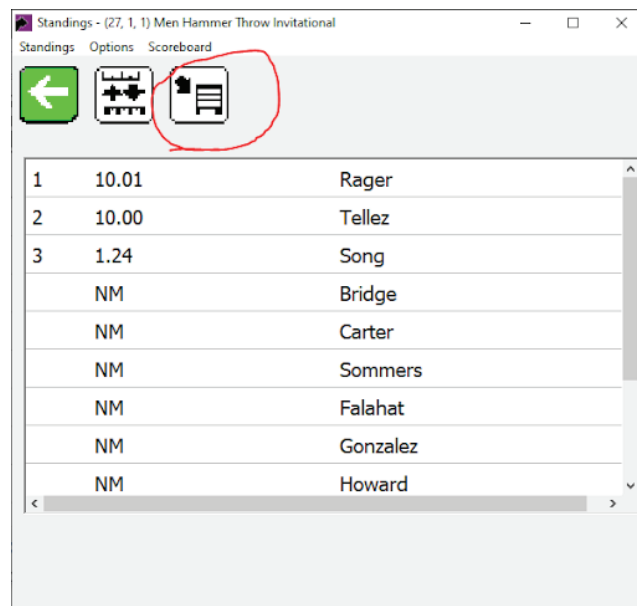*Figure 11: FieldLynx , Show standings*

Figure 12: FieldLynx , Show standings

7.) The display will rotate through each athlete and display their *best mark*

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STEP #7: Manual Program mode and NumPad

1.) Using the included number pad, you can control the other modes for the display

Figure 13: Example NumPad

2.) The NumPad is wireless and powered by a AA battery

3.) Press the Esc key on the NumPad to exit the current mode

4.) Use the + and - keys to rotate through the different modes

5.) Press the Enter key to select a mode

6.) *Lynx Mode*
  a. Will display the IP address of the display to connect to
  b. Send data using FinishLynx or FieldLynx
  c. The template will automatically adjust to Track Mode or Field Mode

7.) *Lap Counter Mode*
  a. Type in the number of laps for the current race
  b. Press the - or Enter key to count down a lap
  c. Press the + key to count up a lap

8.) *Clock Up Mode*
  a. Enter the start time in HH:MM:SS format
  b. Press enter
  c. The time will start counting up
  d. While the time is counting, press the enter key to reset the clock to the initial time you entered again

9.) *Clock Down Mode*
  a. Enter the start time in HH:MM:SS
  b. Press enter
  c. The time will start counting down
  d. While the time is counting, press the enter key to reset the clock to the initial time you entered
  e. When the time reaches 0, the time will remain paused on the display until the enter key is pressed

10.) *Clock Down Auto Mode*
  a. Enter the start time in HH:MM:SS
  b. Press enter
  c. The time will start counting down
  d. While the time is counting, press the enter key to reset the clock to the initial time you entered
  e. When the time reaches 0, the time will automatically reset to the initial time you entered and start counting down

STEP #8:   Storage and Transportation

1.) Place the Finished Results Multi-Function LED Display in the *protective bag*. Power and communication cable should be placed at the bag's front pocket

Figure 14: Carry bag may come in different color or shape

2.) Close tripod legs

3.) During transportation and storage, *do not place any kind of equipment* or sharp tools over the display bag

4.) Store in a cool dry place

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STEP #9:   IP Address Configuration

1.) Note: If needed, contact support@finishedre-sults.com and we can remote desktop in to assist you with this process

2.) Download PuTTY: https://www.putty.org

3.) Connect your laptop to the display via Ethernet

4.) The default ethernet IP address is *192.168.0.51*

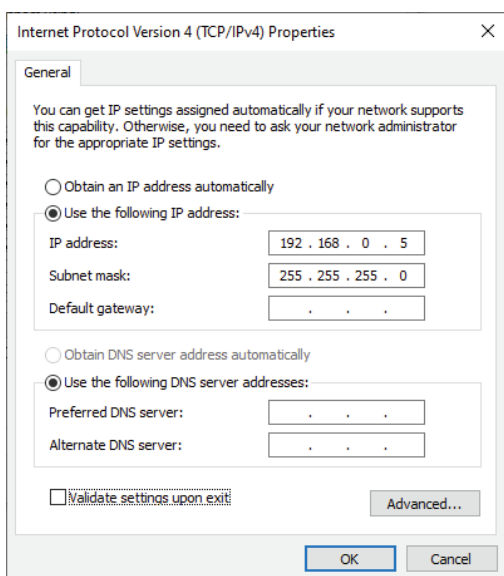5.) Make sure your laptop's ethernet port is on the same IP range. Common settings for a Lynx laptop are below

Figure 15: IP Properties on Lynx Laptop
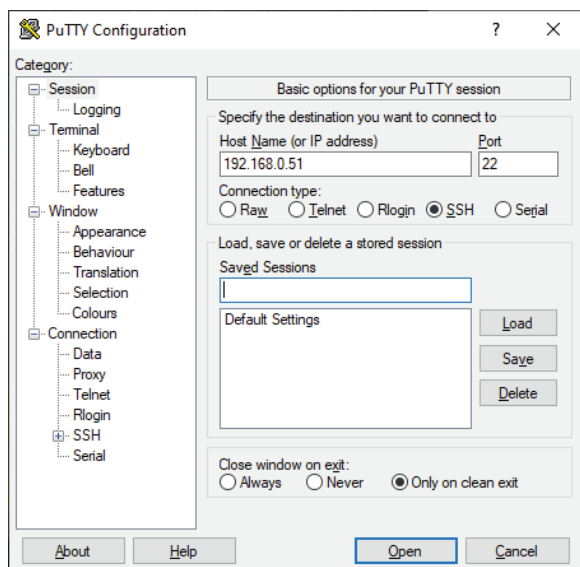
6.) Open PuTTY and enter *192.168.0.51*

Figure 16: PuTTy Configuration

7.) Click Open

8.)   *Login Name: pi*
        Password: frDisplay

9.) Type in:
        sudo nano /etc/dhcpcd.conf

10.) Press Enter

11.) Using the arrow keys on your keyboard, go to the end of the file

12.) Change the static ip_address for your Ethernet or WiFI networks, keep */24* at the end of the IP address

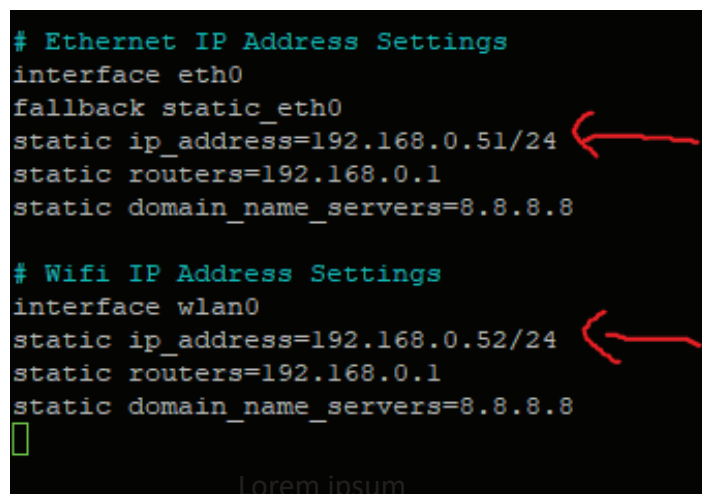*Figure 17: Ethernet/WiFi Address Settings*

13.) To save, *press ctrl+x, then press Y*, then press Enter

14.)   Type:
        sudo reboot

15.) Press Enter, the display will restart and the new IP addresses will become active

16.) Note: If you would like to use DHCP to obtain an ip address, comment out each line in the image above by placing a # at the start of each line, then save the file and reboot.

STEP #10: WiFi Configuration

1.) Note: If needed, contact *support@finishedresults.com* and we can remote desktop in to assist you with this process

2.) Turn on the WiFi access point you plan to connect to

3.) Download PuTTY: *https://www.putty.org*

4.) Connect your laptop to the display via Ethernet

5.) The default ethernet IP address is *192.168.0.51*

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6.) Type: *sudo raspi-config*

7.) Press *Enter*

8.) Select *Network Options*

9.) Select *Wi-Fi*

10.) Type in your WiFi SSID and press Enter

11.) Type in your WiFi Password and press Enter

12.) It will take a few seconds to try connecting to your WiFi, please make sure the Access Point is turned on

13.) Press tab and select Finish

14.) Type: *sudo reboot*

15.) Press Enter, the display will restart and the display will connect to your WiFI
ADVANCED CONFIGURATION BELOW.

16.) Note: if the previous steps worked for you, then you do not need to follow these steps

17.) If your access point is not turned on or you want more advanced control over multiple WiFi networks follow the steps below

18.) Type:

sudo nano /etc/wpa_supplicant/wpa_supplicant.conf

19.) Press *Enter*

20.) Create or edit a network using the image below as an example

21.) A higher priority number means that the display will attempt to connect to that WiFI network first

22.) Please double check that your settings match the same format as the image

23.) To save, *press ctrl+x, then press Y*, then press Enter

24.) Type: *sudo reboot*

25.) Press Enter, the display will restart and will be ready to connect to one of the WiFI networks you configured

This completes the Finished Results Multi-Function LED Display Quick Start Guide for FinishLynx.

Figure 18: Example Image Advanced WiFi Control