



Tournament Manager for Raspberry Pi

Installation Instructions

Overview

Tournament Manager (TM) supports many of the Raspberry Pi series of low-cost single-board computers. TM can use the Raspberry Pi devices as audience and pit displays as well as field displays. When used as a field display, the Raspberry Pi can also connect to either the VEXnet Field Control hardware or the newer V5 field control hardware via USB.

TM on Raspberry Pi consists of 2 parts. The first part is the operating system (OS). The TM Raspberry Pi OS is a customized operating system designed specifically to run Tournament Manager. The TM OS needs to be installed on an SD card which is then inserted into the Raspberry Pi device. Unfortunately, the OS cannot be just copied to the SD card using normal file copy commands. Instead, a special piece of software is required to install the OS onto the SD card. This document describes that process.

Typically, a new TM Raspberry Pi OS version is released once per season.

The second part of TM on Raspberry Pi is the Tournament Manager application software. Since Tournament Manager is updated more frequently, it is not included as part of the OS. Instead, the TM Raspberry Pi application can be installed on the Raspberry Pi over the network from TM running on Windows or Mac. Each time a new version of TM is released for Windows or Mac, it will also include a new version of the TM Raspberry Pi application. See the end of this document for more details on the installation process for the TM Raspberry Pi application.

TM OS Installation

Step 1: Install Raspberry Pi Imager

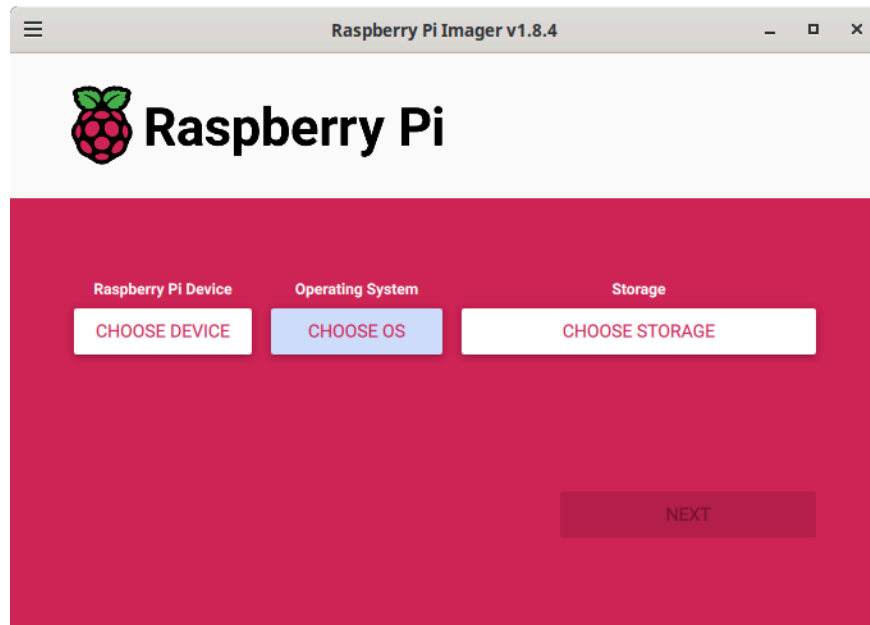
Visit <https://www.raspberrypi.com/software/> and download the Raspberry Pi Imager program for your computer. Versions of the Imager are available for Windows, Mac, and Linux. After downloading, install the Imager as you would any other program on your computer.

Step 2: Install TM OS to the SD card

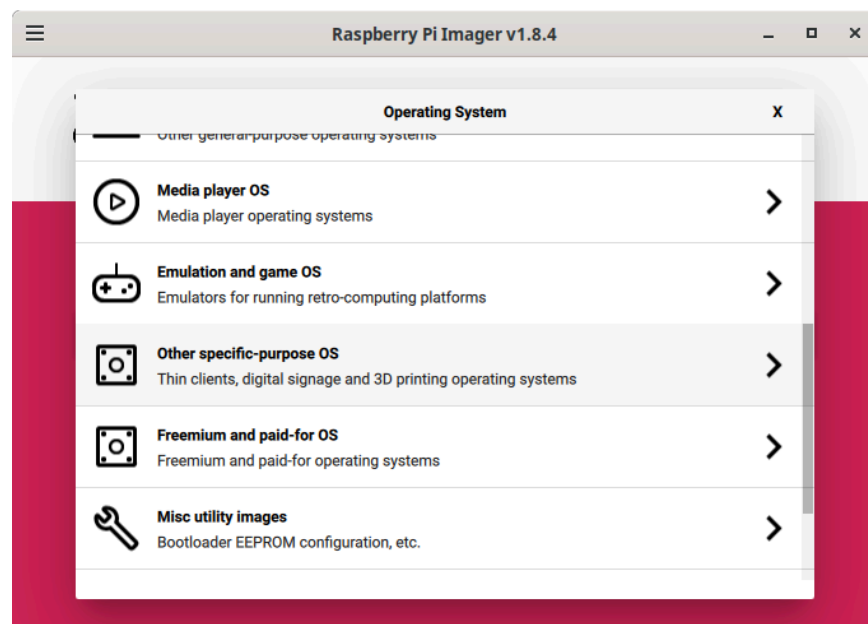
First, insert an appropriate SD card into your computer. If your computer does not have an SD card slot, you can purchase a USB SD card reader to use. The SD card should be at least 4GB in size (larger is fine).

Caution: *the SD card will be completely erased. Make sure there are no important files on the SD card before you proceed.*

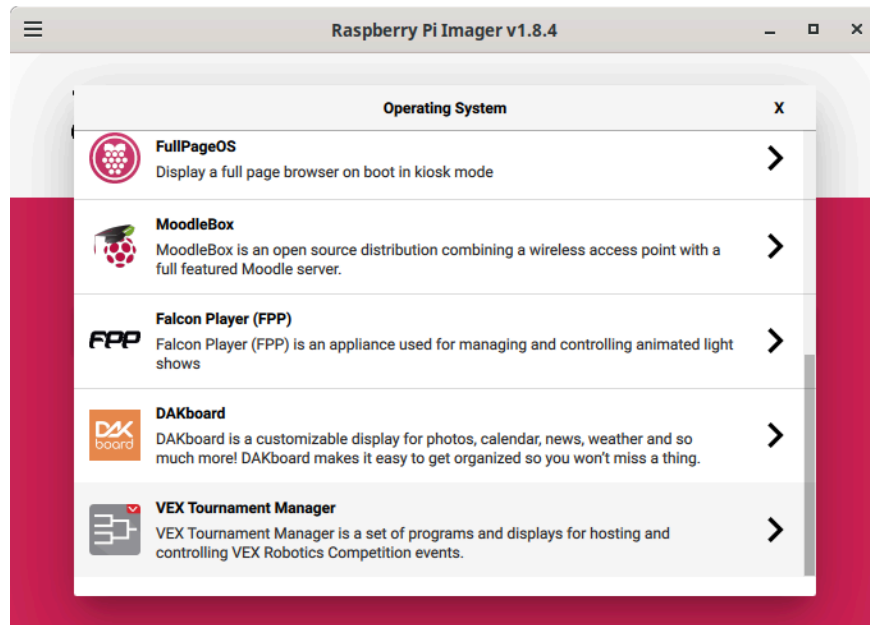
Open the Raspberry Pi Imager program that you installed in Step 1. Click on the “Choose OS” button. You do not need to select “Choose Device”.



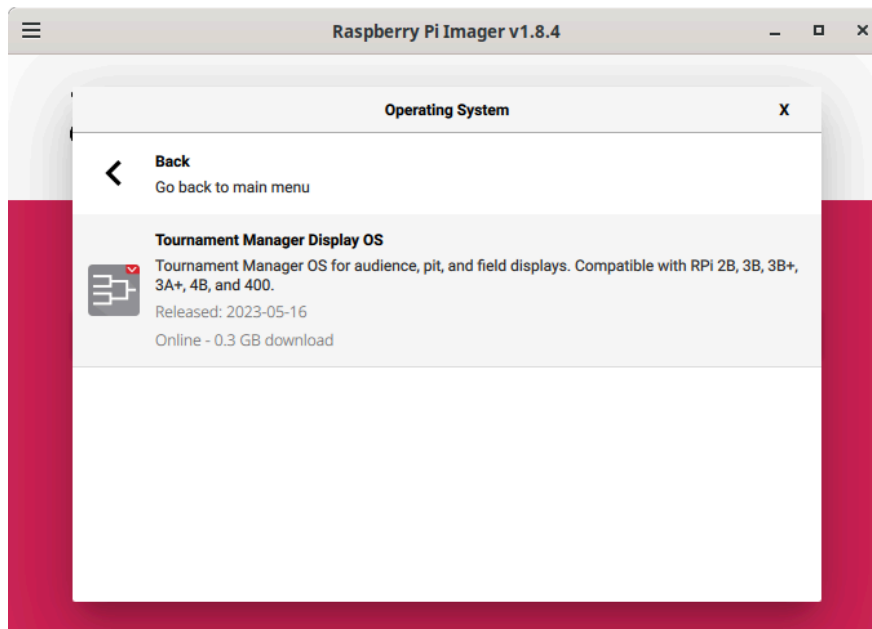
In the operating system list that appears, scroll down to “Other specific-purpose OS” and click it.



In the list of specific-purpose OSes, scroll down until you find VEX Tournament Manager and click it.



Choose the Tournament Manager Display OS option. At the time of writing this document, it is the only option available, however other options may be listed in the future.



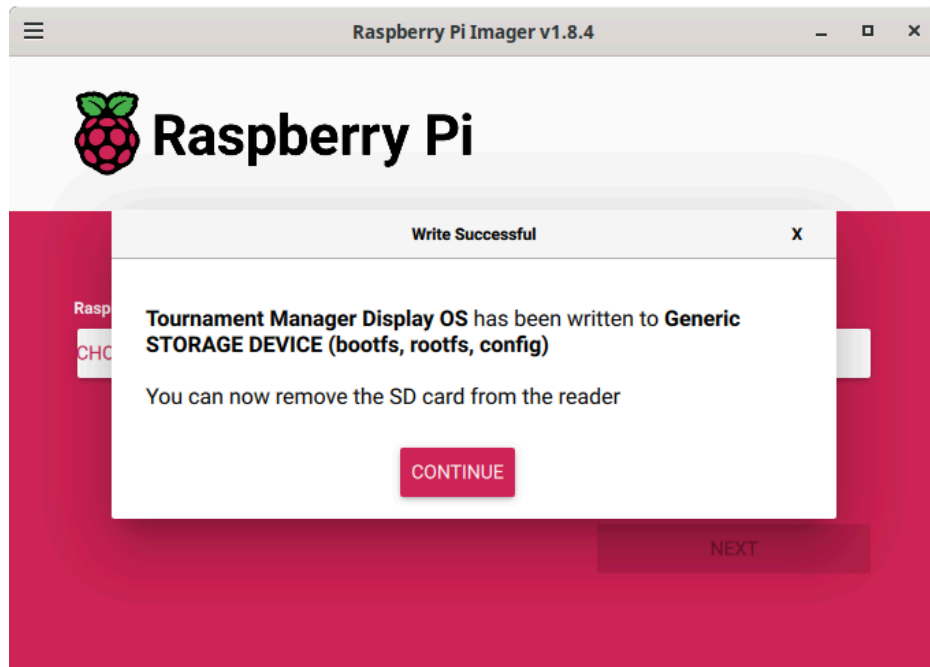
After selecting the TM Display OS, you will be returned to the main screen of the Imager. Now select "Choose Storage" and pick your SD card from the list.



Once you have selected the operating system and selected your SD card, the Next button will be enabled. Click it and follow the prompts. If you are asked about customizing the image, you can just select No. The Imager will start writing the OS to the SD card. After writing, it will verify that the image was written correctly.



When the writing is complete, the Imager will tell you that it is done and that you can remove the SD card.



Step 3: Insert SD card into the Raspberry Pi and power on

Remove the SD card from your computer and insert it into the Raspberry Pi. Connect your Raspberry Pi to a TV or computer monitor with an HDMI cable, and to your network with an ethernet cable. Finally, connect power to the Raspberry Pi.

When you first turn on the Raspberry Pi with the TM OS, you will need to wait a minute or two while it is set up for the first time. You should see the TM logo on the screen as it starts up. You may also briefly see a rainbow-colored square. The first time you start up the TM OS, the logo screen will disappear for a moment while the device restarts and then it should come back.

Once the TM OS has completed the initial setup, you will see a screen that shows the Raspberry Pi's IP address.



There are a few features of this screen that may be useful to you. An IP address prefixed by “e:” is the ethernet IP address. If your Raspberry Pi has built-in Wi-Fi support and you configure it (see later on for Wi-Fi configuration), it will show the Wi-Fi IP address with a “w:” prefix. If the Pi is connected to both ethernet and Wi-Fi it will show both addresses. You may also see “No Network Found” if the Pi does not detect a valid network connection.

The QR code displayed can be scanned to go directly to the Pi’s configuration page. If you are setting up a large event, it can be useful to visit this configuration page from your phone or tablet in order to enter a Display Name. This will make each Pi easier to identify later on in Tournament Manager.

Finally, at the bottom left corner is the TM OS version number. This is generally not important, however if you are having difficulty and communicating with support, they may ask for this version.

TM Application Installation & Configuration

Now that the TM OS is installed and running on the Raspberry Pi, you can configure it in Tournament Manager on Windows or Mac. As part of this configuration process, the TM Raspberry Pi Application program will be installed on the Raspberry Pi.

Begin by starting Tournament Manager on your PC or Mac. Click on the “Displays” menu at the top and select “Configure Remote Displays”.

Remote Displays

This window is used to configure Tournament Manager display software running on specialized hardware such as a Raspberry Pi. Displays running on standard PCs are not configured here.

Remote Displays

Address	Server	Type	Version	Name
10.56.2.186				

Latest version: v2023_24.2.5-fd1 (* indicates an update is needed)

Add Display Refresh List Export List

Selected Display

Display Type: [Dropdown] Display Name: [Text Box]

Field Set: [Dropdown] Field: [Dropdown]

Pit Display: [Dropdown]

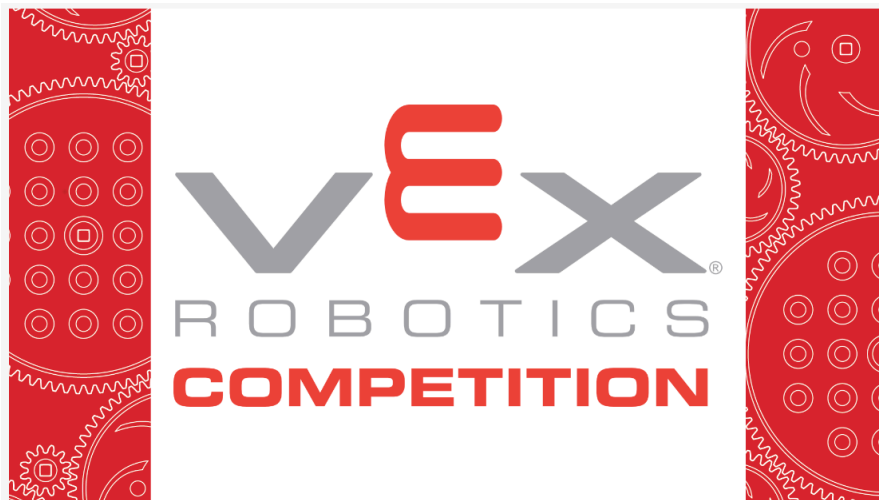
Overlay Mode: ☒ Off ☐ On Overlay Key Color: [Color Picker]

Save Display Settings Update Display Software

Tournament Manager attempts to automatically detect any Raspberry Pi displays attached to your network. If you do not see any in the list, click the “Refresh List” button to attempt detection. If your display still isn’t automatically detected, you can click “Add Display” and type in the IP address shown on the Raspberry Pi’s screen to add it to the list.

Select the display that you want to set up from the list at the top of the window. Then, in the bottom half, select the type of display you want the Raspberry Pi to show and the relevant settings (field set, field, etc.). See the Tournament Manager User Guide for more details on the display options if needed.

Once you have made your selections, click “Save Display Settings”. This will configure the Raspberry Pi device with the settings you chose. Additionally, at this time the Raspberry Pi device will automatically download the TM application software from the version of TM running on your PC or Mac. This will take a few moments. Once complete, you should see the display on the Raspberry Pi change to something other than the IP address screen. This indicates that the TM application is running on the Raspberry Pi, and you should now be able to control it from within TM as you would any other Tournament Manager display.



If, after several minutes, your Raspberry Pi does not start the TM application, then the most likely issue is that you have a problem with your network or a firewall on your computer blocking the Raspberry Pi from communicating with TM on your PC or Mac. See the Tournament Manager User Guide and other sources for more information on TM network setup and firewall issues.

Note regarding “Update Display Software”

Earlier versions of Tournament Manager required users to manually update the TM application on the Raspberry Pi devices each time a new version of TM was installed on your PC or Mac. This was done by selecting the device in the Remote Displays window and clicking the “Update Display Software” button. This button copies the TM application software to the SD card on the

Raspberry Pi. Once this is done, the Raspberry Pi will always use that version of TM until it is manually updated again with a newer version using the same process (i.e. clicking the “Update Display Software” button).

Newer versions of the TM OS on the Raspberry Pi will automatically download the latest version of TM from your PC or Mac each time the Raspberry Pi starts up. This is meant to be more convenient, since you no longer need to worry about manually installing each update to Tournament Manager on your Raspberry Pi devices.

NOTE: *in either case, the TM application software running on the Raspberry Pi device is exactly the same.*

NOTE: *If you manually install the TM application on the Pi using the “Update Display Software” button, you will then have to manually update the TM application on the Pi each time there is a new version of Tournament Manager released. At the time of writing this document, the only way to revert this (and let TM manage the application software on the Pi) is by reinstalling the TM OS on the SD card from step 1.*