



Tournament Manager on Raspberry Pi

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Outline

Why Pi?

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Quiz Time

What functionality within Tournament Manager requires the most processing power?

Why are TM displays on a Pi so great?

Cheap

\$70 (Pi + case + power supply + SD card)

Less cabling to each field

Legacy - 1x VGA/DVI/HDMI for monitor & 2x Cat5 for alliance splitter

Pi - 1x Cat5 Ethernet with ability to daisy chain from field to field

Simple setup

Plug in & power on Pi, configure from main Tournament Manager PC

Can pre-assemble monitor, Pi, and field controller

History

- February 2015 - Raspberry Pi 2 released
 - Finally, a low cost computer with 1080p output & enough power for TM displays
- April 2015 - VEX Worlds
 - Used Raspberry Pi for all field monitors (48+) and pit displays (30+)
- December 2015 - Wildstang VEX Competition
 - Added ability to control VEXnet Field Controller (2 fields + 2 pit)
- April 2016 - VEX Worlds
 - Used Raspberry Pi for all fields (62) and pit displays (55)
- December 2016 - Wildstang VEX Competition
 - New interface within TM to greatly simplify Pi configuration (2 fields + 2 pit)
- April 2017 - VEX Worlds
 - Used Raspberry Pi for all fields (80), pit displays (60+) and main arena displays (6)
- July 2017 - Public release



The following steps are explained in detail in
the Tournament Manager User Guide



Requirements

- Raspberry Pi 2 or 3 model B with case and 2.5A power supply
- 2GB or larger microSD card
- 1080p (1920x1080) display (TV, monitor, projector) with HDMI input
 - Anything else will lead to poor performance
- HDMI cable
- Computer with software to copy disk image to SD card
- Ethernet network that includes a DHCP server
- Ethernet cables

Installation, Setup & Boot

- Download Raspberry Pi image from <https://vextm.dwabtech.com/>
- Copy image onto SD card using Win32 Disk Imager or Etcher
 - Cannot use normal file copy operations
- Insert SD card into Raspberry Pi
- Connect all cables - HDMI, Ethernet, USB to VEXnet Field Control (optional)
- Connect power

Unconfigured TM Pi



192.168.137.108

Configuring in TM

- Select *“Displays → Configure Remote Displays”*
- All Raspberry Pis on network will be detected and appear in the list
- Click *“Refresh List”* if Pi was not detected
- Click *“Add Display”* to manually add

The screenshot shows the 'Remote Displays' configuration window. At the top, there is a title bar with the text 'Remote Displays' and a close button. Below the title bar, a message states: '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.'

The main area is titled 'Remote Displays' and contains a table with the following data:

Address	Server	Type	Version	Name
192.168.1.226	192.168.1.21	Field Queue	2.2.792	Engineering Field 1

Below the table are three buttons: 'Add Display', 'Refresh List', and 'Export List'.

The bottom section is titled 'Selected Display' and contains the following settings:

- Display Type: Field Queue (dropdown)
- Display Name: Engineering Field 1 (text input)
- Field Set: Field Control (dropdown)
- Field: Field 1 (dropdown)
- Pit Display: (dropdown)
- Overlay Mode: Off On

A 'Save Display Settings' button is located at the bottom right of the 'Selected Display' section.

Configuring in TM

- **Display Type** - Audience Display, Pit Display, Field Queue
- **Field Set & Field** - Select field set and field if display type is Field Queue
- **Pit Display** - Select pit display instance if type is Pit Display
- **Overlay Mode** - Enable / disable 'green screen' mode
- **Display Name** - Optional name for display, helps to keep track of them
- **Save Display Settings** - Saves settings and restarts the display

The screenshot shows a window titled "Remote Displays" with a close button in the top right corner. Below the title bar, there is a descriptive text: "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." Below this text is a table with the following data:

Address	Server	Type	Version	Name
192.168.1.226	192.168.1.21	Field Queue	2.2.792	Engineering Field 1

Below the table are three buttons: "Add Display", "Refresh List", and "Export List". Below these buttons is a section titled "Selected Display" with the following settings:

- Display Type: Field Queue (dropdown)
- Display Name: Engineering Field 1 (text input)
- Field Set: Field Control (dropdown)
- Field: Field 1 (dropdown)
- Pit Display: (dropdown)
- Overlay Mode: Off On

At the bottom right of the "Selected Display" section is a "Save Display Settings" button.

Help!

There is nothing inherently difficult about using TM on a Raspberry Pi, but it's a slightly different from what Mac & PC users are used to. It requires assembly, imaging an SD card, and some networking knowledge. It's not difficult, just different. If you need help:

TM User Guide Section 6 - *"Tournament Manager on the Raspberry Pi"*

Tutorial video: <https://dwab.us/tm-pi>

VEX Forum → Event Partners → Tournament Manager

REC Foundation Regional Support Manager