



# Tracker Device Simulator Reference

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# Chapter 1. Overview

## Document Status

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*This document is the first draft of a Device Simulator Reference for the installation and configuration of the Tracker Device Simulator.*

## What is the Tracker Device Simulator?

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The Tracker *Information Router*, **iRouter** is a *Just-In-Time* generic integration solution for acquiring, transforming and exchanging information between network connected sensors and actuators.

iRouter administrators need a way to simulate the behavior of real sensors and actuators when the actual use of real devices, may not be practical. This is typically the case when administrators are bench testing or validating iRouter use case solutions.

The Tracker **Device Simulator** is a web server that also simulates network connected [1](#)<sup>[1]</sup> external sensors and actuators. The Device Simulator is a server application supporting:

- Applications connecting to simulated sensors and actuators [2](#)<sup>[1]</sup>
- Web browser user interface for controlling simulated device.

By simply changing connection parameters on iRouter configurations, the iRouter can be made to connect to these simulated devices instead of real networked devices. Administrators can then experiment with the interaction between the devices and the business logic they have modeled in their iRouter configurations.

## Installation and Starting

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1. Download the Simulator archive appropriate for your platform.
2. Bring up a console and run the executable. [3](#)<sup>[1]</sup>
  - The simulators internal webserver will startup
  - All simulated devices will initialize internal logic and I/O to accept TCP connections

## Notes

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<sup>1</sup> Sensors and actuators typically have RS232 interfaces. A common scenario is to attach these devices to a RS232 to Ethernet *device server*. This provides uniform and distance insensitive network based connections to one or several sensor or actuator devices. Connections to these devices are made via TCP socket connections. It is this type of connection that is simulated.

<sup>2</sup> The iRouter is an example of this kind of application.

<sup>3</sup> Running the simulator with a click on the executable can also work, but if you want to see logging output and have access to the internal command line interface run the simulator in a console.

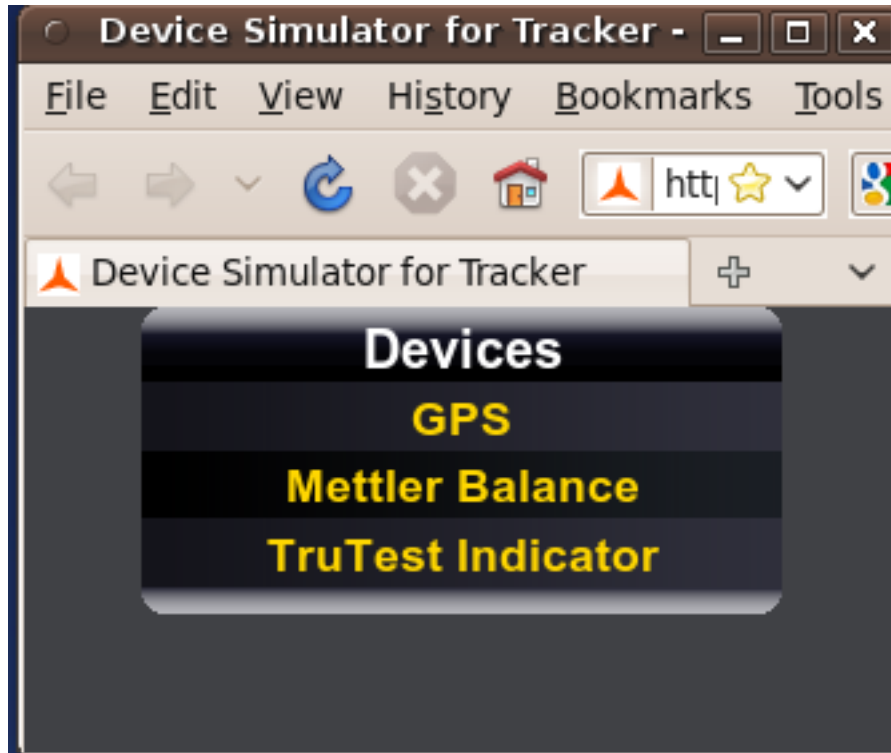
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# Chapter 2. Simulated Devices

Navigate a browser to the internal [home page](#) of the simulator <sup>4</sup>[2].

## Simulation Home Page

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The home page will show links to all the supported simulated devices.

## Notes

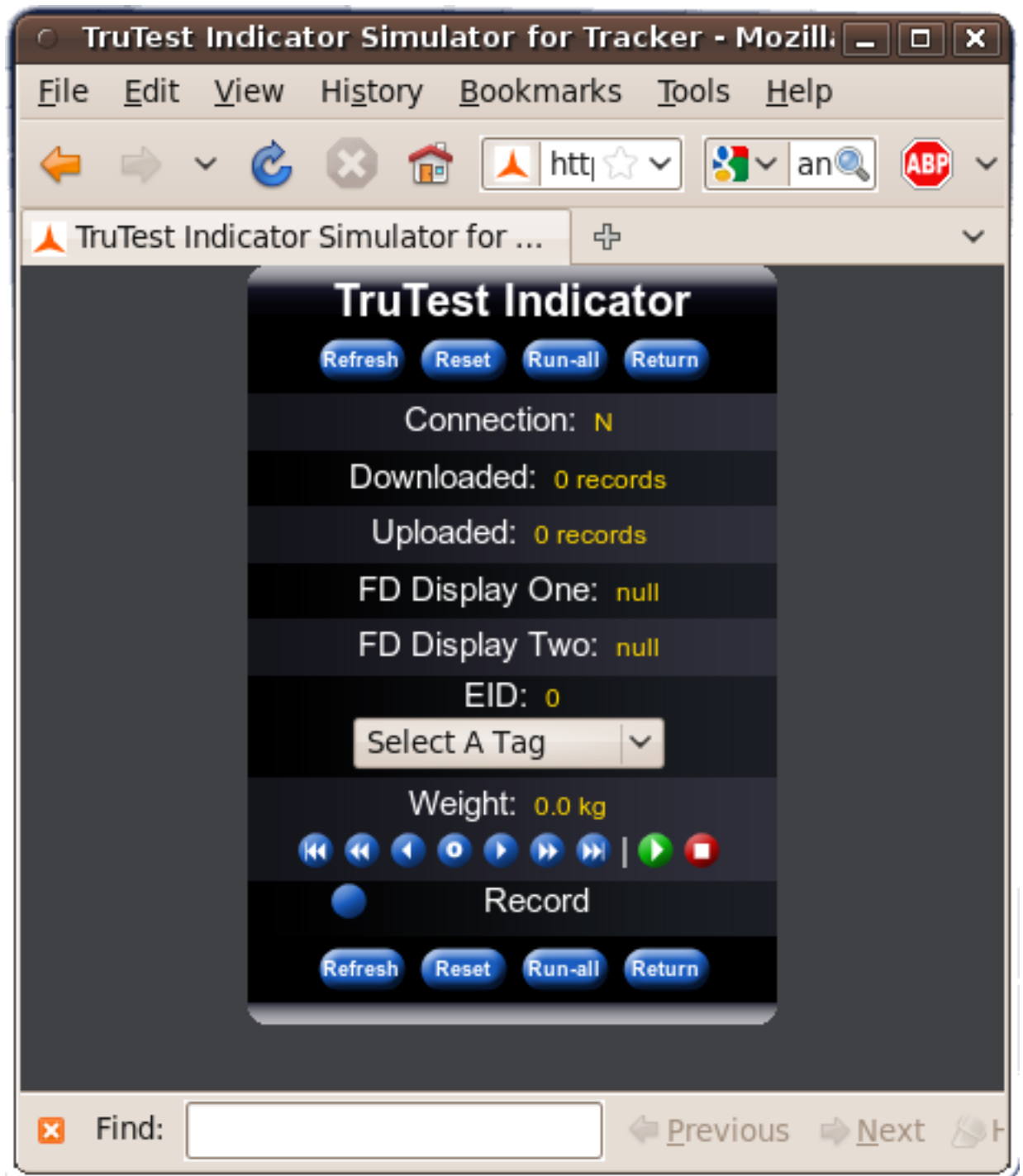
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<sup>4</sup> To change defaults for the web server or any of the simulated devices edit the simulator.ini file.

# Chapter 3. TruTest Livestock Scale Head

Simulator for a TruTest XR3000 Indicator with display fields and controls for actuating behavior of the indicator. Simulates an Indicator attached as a Server connection [5](#)<sup>[4]</sup>.

## TruTest Simulator Page



## Display and Controls

Connection state from the iRouter client components to the Server is shown as a display with a Y/N value.

On connection the iRouter components will download current Indicator records, and upload new indicator records. The number of records up/downloaded are shown on the simulator as Download and Upload fields.

Two Display fields simulate the two TruTest custom File Data Fields. <sup>6</sup>[4]

An EID selector presents a drop down list of EID values created from the list of EID numbers uploaded to the server. <sup>7</sup>[4]

The last controls simulate the weighing of animals. These can be incremented by manual button press for each increment or weights can be automatically incremented by a single button press.

Lastly a record control is used to record the transaction.

## Notes

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<sup>5</sup> The type of Server connection is determined by the property `trutest.sim.type`, with the default as `SERVER_SOCKET` to change to a com port set `trutest.sim.type=SERVER_COMM_PORT`. The server connection can be either a socket connection or com port and for Server socket it is specified by the property `trutest.sim.socket` with the default 2344. Server Comm Port is determined by the property `trutest.sim.port` and there is no default.

<sup>6</sup> The labels and units assigned to these display fields are specified by the properties: `trutest.sim.field8.label` `trutest.sim.field8.units` `trutest.sim.field9.label` `trutest.sim.field9.units`

<sup>7</sup> There is a set of default numbers if no data was uploaded.

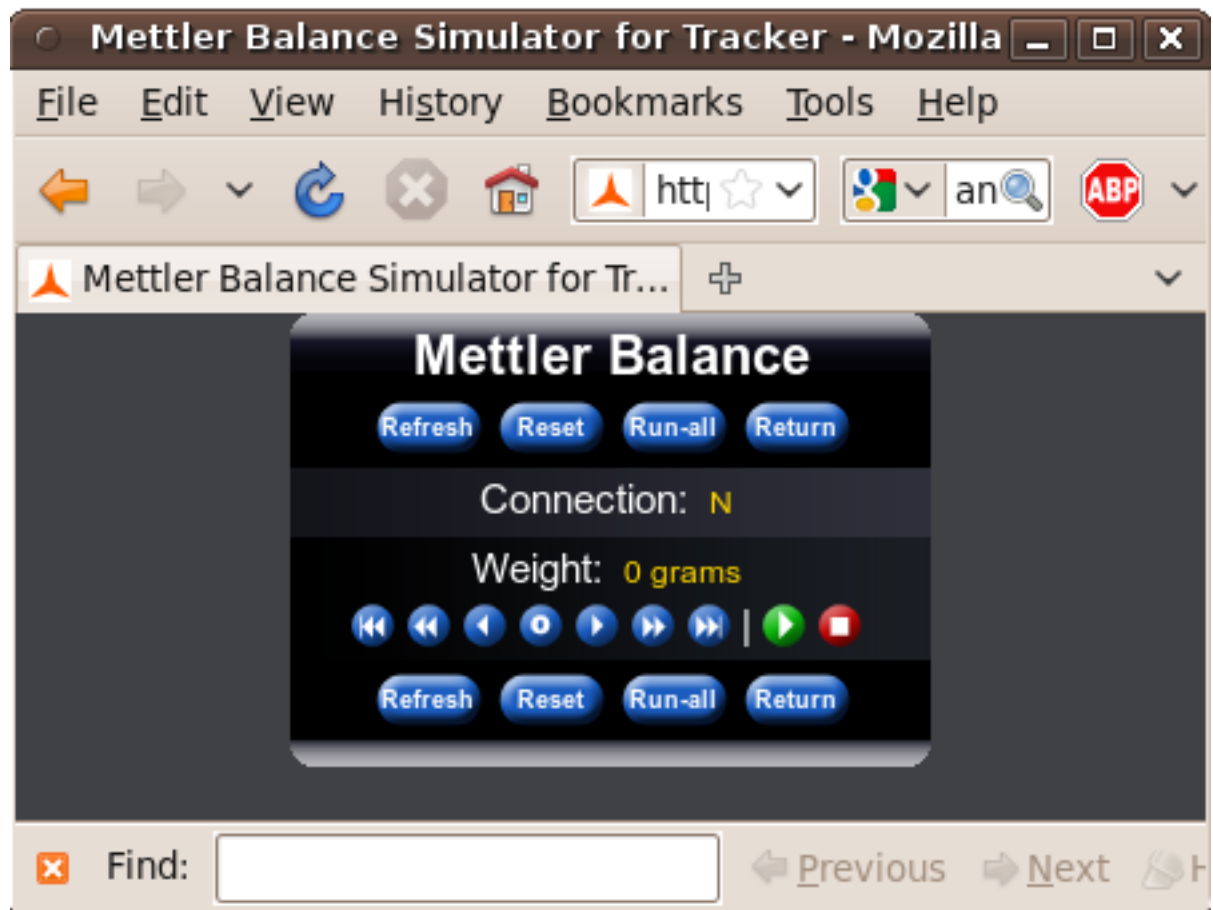
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# Chapter 4. Mettler Laboratory Weight Balance

Simulator for a Mettler Balance with display fields and controls for actuating behavior of the balance. Simulates a balance attached as a Server connection <sup>8</sup> [5] that continuously sends <sup>9</sup> [5] weight entered in the control to connected clients.

## Mettler Simulator Page

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### Display and Controls

Connection state from the iRouter client components to the Server is shown as a display with a Y/N value. The control simulates the weighing of items on the balance. These can be incremented by manual button press for each increment or weights can be automatically incremented by a single button press.

### Notes

<sup>8</sup> The type of Server connection is determined by the property `mettler.sim.type`, with the default as `SERVER_SOCKET` to change to a com port set `mettler.sim.type=SERVER_COMM_PORT`. The server connection can be either a socket connection or com port and for Server socket it is specified by the property `mettler.sim.socket` with the default 2345. Server Comm Port is determined by the property `mettler.sim.port` and there is no default.

<sup>9</sup> Output timing is determined by the property `mettler.sim.timer.secs` and there is a default of 2 seconds.

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# Chapter 5. Global Position System (GPS)

Simulator for a GPS device with display fields and controls for actuating behavior of the GPS. Simulates a GPS attached as a Server connection [10](#) [7] that continuously sends [11](#) [7] positioning information to connected clients based on values entered in the simulator web based user interface.

## GPS Simulator Page

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### Display and Controls

Connection state from the client components to the Server is shown as a display with a Y/N value.



The control simulates the position of the gps device in latitude, longitude, heading, speed and altitude. These values can be changed via the web based user interface.

## **NEMA Sentences sent by the Simulator**

- GGA – essential fix data which provide 3D location and accuracy data.
- RMC – NMEA version of essential gps pvt (position, velocity, time) data.

## **Notes**

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<sup>10</sup> The type of Server connection is determined by the property `gps.sim.type`, with the default as `SERVER_SOCKET` to change to a com port set `gps.sim.type=SERVER_COMM_PORT`. The server connection can be either a socket connection or com port and for Server socket it is specified by the property `mettler.sim.socket` with the default 2343. Server Comm Port is determined by the property `gps.sim.port` and there is no default.

<sup>11</sup> Output timing is determined by the property `gps.sim.timer.secs` and there is a default of 2 seconds.