

MODEL STUDIO / FIELD IDENTIFICATION

A working model from less data.

A practical workspace for identifying a physical system's response, seeing where the evidence ends, and choosing the next observation.

WHAT IT DOES

Fits a simple dynamic response to measured inputs and outputs. Displays parameters, fit error, evidence status, and a suggested next observation.

WHAT IT TESTS

Whether one identification workflow can be reused across physical families without treating each customer project as new software.

Start with an input. Observe the response.

Open Model Studio and select a system. Vessel turning maps rudder angle to yaw rate. Thermal response maps heater command to temperature rise. Both run through the same identification engine.

01 Choose a physical system

Select Vessel turning or Thermal response. The workspace updates variable names, units, evidence checks, and the suggested next observation.

02 Supply measurements

Edit the six generated readings, add rows, or import a three-column CSV. The first value is time in seconds; the second is the commanded input; the third is the measured response. The input in a row acts until the next reading.

03 Identify the model

The browser estimates response time T and gain K . The chart compares each observed value with a one-step fit. No data is sent to a server.

04 Inspect evidence and export

Read the evidence status and next-observation suggestion. Export a JSON report containing the data, parameters, error, and limitations.

CSV HEADERS

```
time_s,rudder_deg,yaw_rate_deg_s  
0,0,0  
5,6,0.01
```

```
time_s,heater_percent,temperature_rise_c  
0,0,0  
10,40,0.08
```

What carries over to the next system?

The present product supports a first-order response family. It is a test of reusable modeling infrastructure, not a claim that every physical system has the same dynamics.

$$T \times d(\text{response})/dt + \text{response} = K \times \text{input}$$

STANDARDIZATION DESIGN

LAYER	REUSED OR SPECIFIED	CURRENT ROLE
Identification engine	REUSED	Checks time series; estimates T and K; reports in-sample error.
Evidence workflow	REUSED	Flags weak input variation, model mismatch, and missing validation.
Domain adapter	SPECIFIED PER FAMILY	Names the inputs and outputs, units, minimum signal, and permitted tests.
Deployment decision	HUMAN REVIEW	Qualified engineers review the model and any physical action.

The transfer test

Hold out a new asset within the same physical family. Compare the measurements, engineer time, and prediction quality needed to reach the customer's decision against their current workflow. Only then claim repeatability.

Scope and limits

Generated readings are for exploration. The fitted line is assessed on the same readings used to identify it; it is not independent validation or a statistical confidence interval. The current model omits many real effects and must not be used for navigation, equipment control, or safety decisions. CSV parsing supports simple numeric, comma-separated data up to 80 readings.