

Quick Start Guide

CatWalk XT

version 10.6

Noldus
Information Technology

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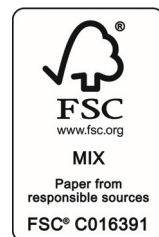
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This Quick start guide aims to take you step by step through the key stages of using CatWalk XT 10.6, so that you can get up and running as quick as possible. For more details, please see the CatWalk XT 10.6 Reference Manual.

We assume that you are familiar with the basic operations of Windows 7 or 8.1. If not, please see the reference manual for your operating system.

The key stages of carrying out an experiment with CatWalk XT are:

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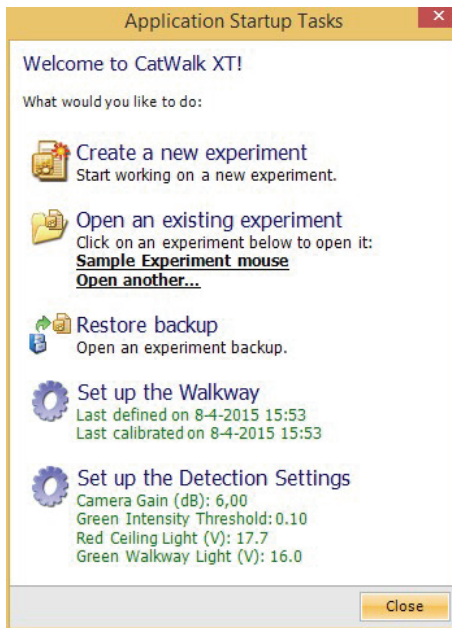
1 Setting up an experiment

Setting up an experiment involves the following steps:

- Setting up the walkway.
- Creating a new experiment.
- Specifying Experiment Settings.
- Defining the Trial List.

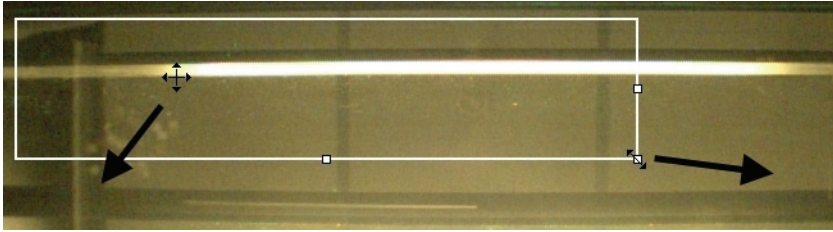
SETTING UP THE WALKWAY

1. When you first start CatWalk XT, the **Application Startup Tasks** window appears.



2. Click **Set up the Walkway**.
3. In the **Setup Walkway Tasks** window, click **Define the layout of the walkway**.

4. In the **Define walkway** window, move and resize the white rectangle to define the area of the glass plate in which you want to record the paw prints of the animal.



Make sure that all sides of the rectangle are visible, that is, there is some space between the defined walkway and the borders of the camera image.

When ready, click **OK**.

5. In the **Setup Walkway Tasks** window, click **Calibrate the walkway**.
6. Place the Calibration sheet that came with the CatWalk system centered on the walkway.
If you do not find this sheet, browse to the Documentation folder of the CatWalk XT installation disc, and print the document **Calibration sheet.pdf** that matches your printer's page size settings (A4 or Letter).
7. In the **Calibrate Walkway** window, a rectangle is displayed that represents the scale factors on the two axes. Move and resize the rectangle to make it overlapping with the rectangle printed on the Calibration sheet (width: 20 cm, height: 10 cm).
8. Click **OK** and then **Close**.

CREATING A NEW EXPERIMENT

1. To create a new experiment, in the **Application Startup Tasks** window, click **Create a new experiment** or choose **File > New Experiment**.
2. Select a **Setup Profile** from the list. See **EXPERIMENT SETUP PROFILE** on page 9.
3. Enter the name for your experiment, accept the default location or browse to a new location and click the **Create experiment** button.

SPECIFYING EXPERIMENT SETTINGS

You can save the current Experiment Settings, Time Points, Treatment Groups and Trial List to an Experiment Setup Profile. You can select an Experiment Setup Profile when you create a new experiment, so the experiment settings are copied to the new experiment. See “experiment setup profile” on page 12.

1. Choose **Setup > Experiment Settings**, or in the **New Experiment Tasks** window, click **Experiment Settings**.

2. *Define the time points*

Time points are categories that represent predefined points in time relative to the administration of the treatment or any other event important in your study. Each animal is tested at those time points. For example, *Pre-treatment, Day 1, Day 3, and Day 5*. Under **Time Points**, click the **Add Time Point** button to add one or more time points.

3. *Define the animal type*

Choose the **Animal Type (Rat or Mouse)**. The Automatic Footprint Classification module uses a different algorithm depending on whether you select Rat or Mouse. Also, the Sciatic Functional Index is calculated differently for rats and mice.

4. *Define the treatment groups*

Under **Treatment Groups**, click **Add Group** to add one or more treatment groups.

In the **Type** column, select the type of treatment group from the list (**Undefined, Experimental, Sham or Control**).

Optionally, in the **Name** column, change the name of treatment group.

Optionally, enter a **Description** for that group. This information is also shown in the export file of both the Run and Trial Statistics.

5. *Define the run criteria*

Under **Run Criteria** you ensure that all runs are executed at approximately the same speed. Specify the following Run Criteria:

- **Minimum run duration** – If it takes the animal less time than the set value, the run is labeled ‘non-compliant’.
- **Maximum run duration** – If the animal exceeds the set value, the run is labeled ‘non-compliant’.
- **Minimum number of compliant runs to acquire** – Data acquisition stops automatically when this criterion is met during a trial.
- **Use maximum allowed speed variation** – When selected, if the animal exceeds the set value, the run is labeled ‘non-compliant’.

6. Proceed to the Trial List by clicking >> **Trial List** at the bottom-right of the screen or, choose **Setup > Trial List**.

Experiment Settings

Animal Type

Rat
 Mouse

Time Points

Name	Description
Day-14	
Day0	
Day7	

Treatment Groups

Name	Type	Description
Experimental	Experimental	
Control	Control	

Run Criteria

Minimum run duration: seconds

Maximum run duration: seconds

Minimum number of compliant runs to acquire:

Use maximum allowed speed variation: percent

Figure 6.1 The Experiment Settings window. In this example, the Animal Type is set to **Mouse**, three Time Points and two Treatment Groups have been defined. In the Run Criteria, the Minimum and Maximum run duration are set to **0.50** and **5.00** seconds, respectively. The Minimum number of compliant runs to acquire is **3**.

DEFINING THE TRIAL LIST

In the Trial List you add trials/animals for which you want to acquire runs.

1. Click the **Add Trial(s)** button at the bottom-left of the **Trial List** screen.
2. In the **Add Trial(s)** window, enter the **Number of Trials** you want to add for each treatment group defined in the Experiment Settings and click **Add**.
3. Click in a cell of the **Trial** or **Animal** column to change a label. Click in a cell of the **Time Point** column to add a time point (day, week, etc.).
4. If necessary, re-assign a Treatment Group to a trial/animal by selecting a Treatment Group from the list.
5. To proceed to Detection Settings, choose **Setup > Detection Settings** (page 10).

Trial	Animal ID	Time Point	Treatment Group	Acquisition Status	Total Runs	Compliant Runs	Classification Status
Trial0001	Animal0001	Day 0	Control	Planned	0	0	Not classified
Trial0002	Animal0002	Day 0	Control	Planned	0	0	Not classified
Trial0003	Animal0003	Day 0	Experimental	Planned	0	0	Not classified
Trial0004	Animal0004	Day 0	Control	Planned	0	0	Not classified
Trial0005	Animal0005	Day 0	Experimental	Planned	0	0	Not classified
Trial0006	Animal0006	Day 0	Experimental	Planned	0	0	Not classified

Figure 6.2 The Trial List. In this example, six trials have been defined for six animals at Time Point Day 0.

To delete trials from the Trial List, click the row with the trial/animal you want to delete, and click the **Delete Trial(s)** button.

EXPERIMENT SETUP PROFILE

You can save the current Experiment Settings and the Trial List in an Experiment Setup profile, so you can re-use it when creating another experiment.

1. Choose **Profiles > Experiment Setup Profile > New**.
2. Select **'Create an Experiment Setup Profile...from the current experiment'**.
3. Enter a name and click **Add**.
4. If necessary, make adjustments and click **OK** to store the profile.
5. When creating a new experiment, select that Experiment Setup profile.

2 Preparing Data Acquisition

Preparing Data Acquisition involves specifying:

- *Detection Settings* – To distinguish between paw prints and background noise. See below.
- *Acquisition Settings* – To specify settings for acquired runs. See page 11.

DETECTION SETTINGS

The aim of the Detection Settings is to achieve an optimal intensity range for the paw prints and to filter out background noise. This is done by putting an animal of average weight on the walkway and then adjusting the Camera Gain and Green Intensity Threshold. Additionally, you can adjust the intensity of the Green Walkway Light and/or Red Ceiling Light. You can have multiple Detection Settings Profiles, for example, one for mice and one for rats.

Please make sure you turn the lights off before configuring the Detection Settings or turn on red ambient lighting.

To configure the Detection Settings:

1. First, put an animal on the walkway and make sure that it stays within the camera view. Also make sure the illuminated ceiling is lowered.
2. In the **Detection Settings** window, click the **Reset Prints** button to ‘clean’ the Prints view.
3. Click the **Start Auto Detect** button.

The program now automatically adjusts both Camera Gain and Green Intensity Threshold in consecutive steps to achieve the optimal range. Adjustment of the Camera Gain results in a value for Maximum Green Intensity between 197 and 203 based on the prints in the Print view. Adjustment of the Green Intensity Threshold ensures that prints that do not contain pixels with an intensity above the Minimum Green Intensity are removed from the Print view.

4. When Auto Detection is finished successfully, a message appears. If detection of the toes is important (if you want classify toes in the Interactive Footprints Measurement to calculate the Sciatic Functional Index), check whether manually adjusting the Camera Gain and Green Intensity Threshold might result in even better detection of the toes.
5. Optionally, increase the intensity of the Green Walkway Light and/or decrease the intensity of the Red Ceiling Light (with steps of 0.1) to further optimize detection of paws. Now re-do auto detection (step 1). As a rule of thumb, the Camera Gain value should be between 10 and 20 dB.

6. Click OK when you are done.

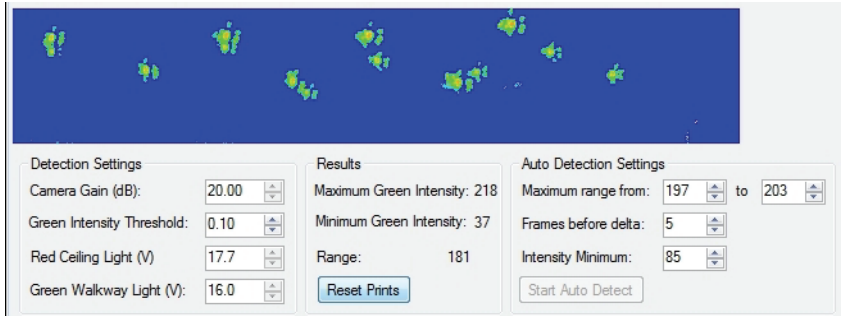


Figure 6.3 Part of the Detection Settings window.

ACQUISITION SETTINGS

Choose **Setup > Acquisition Settings**. In the Acquisition settings, you can set the following:

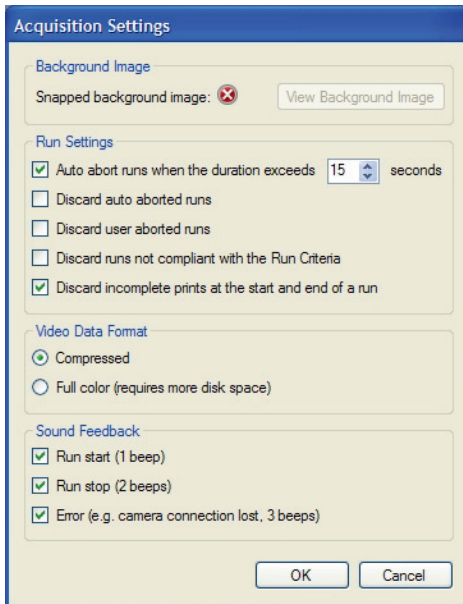


Figure 6.4 The Acquisition Settings window.

Background Image

Here you can view the Background Image that you snap in the Acquisition pane.

Run Settings

- **Auto abort runs when the duration exceeds ... seconds** – When you select this option, data acquisition is automatically stopped when a run exceeds the set number of seconds.
This option is different from the Maximum run duration in the Experiment Settings. When an animal exceeds the Maximum run duration, acquisition is not aborted but the run labeled 'non-compliant'.
- **Discard auto aborted runs** – When you select this option, runs that are automatically aborted are removed.
- **Discard user aborted runs** – When you select this option, runs for which acquisition was manually stopped are removed.
- **Discard runs not compliant with the Run Criteria** – When you select this option, runs that do not comply with the Run criteria are automatically removed.
- **Discard incomplete prints at the start and end of a run** – An incomplete print can result from a paw that is put on the edge of the defined walkway, either at the start or end of a run. This can result in incorrect data: for example, the calculated print area of such a paw underestimates the actual print area. When you select this option, incomplete prints are not included in the classification. See the section **Run Settings** in the CatWalk XT 10.6 Reference Manual for more details.

Sound Feedback

- **Run start (1 beep)** – When selected, you get one system beep when acquisition starts.
- **Run stop (2 beeps)** – When selected, you get two system beeps when acquisition stops.
- **Error (3 beeps)** – When selected, you get 3 system beeps when an error occurs (for example, if the camera connection gets lost).

When you are finished with the Acquisition Settings, click **OK**.

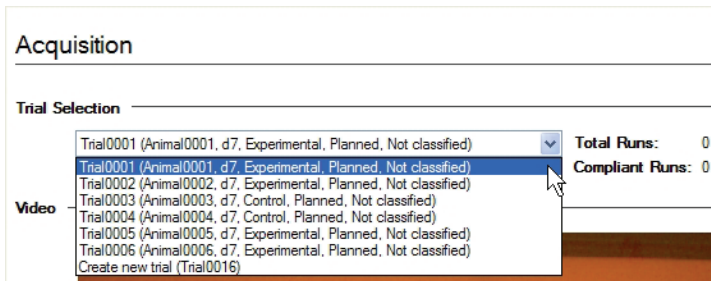
Proceed to Acquisition by clicking >> **Open Acquisition** at the bottom-right corner of the screen or choose **Acquire** menu, select **Open Acquisition**.

3 Carrying out data acquisition

Data Acquisition should be carried out with the lights turned off. Alternatively, you can carry out Data Acquisition under ambient red light conditions. Make sure that the red light is not situated straight above the camera. Also make sure the illuminated ceiling is lowered.

To carry out Data Acquisition, do the following:

1. Under **Trial Selection**, select an existing trial or create a new trial.



You can also select a specific trial in the Experiment Explorer; right-click a trial and select **Acquire Runs**.

2. In the Video section, click the **Snap Background** button to snap an image of the empty walkway.
3. Click the **Start Acquisition** button (or press **Page-Up**).
4. Put the animal on the walkway (ensure it is not in the camera view).

To do this, put the animal in from the side. Recording a run starts automatically as soon as the animal's body contour is detected in the camera image. Recording a run stops automatically when the animal has completely disappeared from the camera image.

5. Data Acquisition stops:
 - automatically, when the minimum number of compliant runs (as set in the Experiment Settings) has been acquired.
 - when you click the **Stop Acquisition** button (or **Page-Down**).
6. What do you want to do next?
 - *Acquire the next trial* – Select **Acquire Next Trial** in the **Acquisition Finished Tasks** window and go back to step 1 above.
 - *Create and acquire a new trial* – Select **Acquire New Trial** in the **Acquisition Finished Tasks** window or select create a new trial from the list under **Trial Selection**.

- *Classify Runs* – Select **Classify Runs** in the **Acquisition Finished Tasks** window or click >> **Classify Runs** at the bottom-right of the **Acquisition** screen.
- *Review Runs* – Select **Review Runs** in the **Acquisition Finished Tasks** window and in under **Video**, select a run from the **View** list.
- *Remove Runs* – Close the **Acquisition Finished Tasks** window, click a run in the list with **Acquired Runs** and click the **Remove Run(s)** button at the bottom. Alternatively, in the Experiment Explorer, right-click a run and select **Remove**.

4 Classifying runs

To open the **Classification** screen, do one of the following:

- From a Tasks window, select **Classify Runs**.
- Choose **Acquire > Classify Runs**.
- In the Experiment Explorer, right-click a trial or run and select **Classify**.

CLASSIFICATION SETTINGS

When your license of CatWalk XT 10.6 includes the Automatic Footprint Classification (AFC) module, you can specify Classification Settings:

1. Choose **Setup > Classification Settings**.
2. In the **Classification Settings** window, you can select:
 - **Reset all assigned labels when applying the AFC** - When selected, all labels that you already have assigned manually are reset when you click the Auto Classify button.
 - **Only assign a label when the max Intensity is higher than** - When selected, prints below the specified pixel intensity threshold are not labeled during automatic classification.

ADJUSTING THE GREEN INTENSITY THRESHOLD

The Green Intensity Threshold is set in the Detection Settings before acquisition. The Green Intensity Threshold is the minimum pixel intensity that is detected by CatWalk. All pixels below the minimum intensity are not processed by CatWalk XT.

You can increase or decrease the Green Intensity Threshold of a run before classification of the paws, so *after* you acquired the runs. This can be useful when the Green Intensity Threshold was set too high or too low in the Detection Settings.

To adjust the Green Intensity Threshold:

1. In the **Classification** screen, under **Video**, click the **Adjust the Green Intensity Threshold** button on the right.
2. To adjust the Green Intensity Threshold, move the slider to the desired value. Depending on whether you increase or decrease the Green Intensity Threshold, prints disappear or appear, respectively.



When you adjust the Green Intensity Threshold of a run recorded with a previous version of CatWalk XT, the lowest possible value for the Green Intensity Threshold is the value with which the run was acquired.

Clicking left or right of the slider on the slider bar moves the slider in steps of 5.

3. When the Current Green Intensity Threshold has the desired value, click **OK**.

The run is now processed with the new Green Intensity Threshold value. Depending on the length of the run and the set Green Intensity Threshold, this can take a few seconds.

CLASSIFICATION OF PRINTS

You can classify paw prints manually and/or automatically.

For automatic classification you need the Automatic Footprint Classification (AFC) module, which is available as an add-on to the base version of CatWalk XT.

If you use CatWalk XT with the AFC module, there are two main scenarios:

1. *You only want to classify paw prints* – You first run the AFC module (see “Automatic Classification” below) and next manually label prints that have not been classified (see “Manual Classification” on page 19).
2. *You want to label both paw and non-paw prints (such as, the knee, the hip or the nose)* – First, classify the non-paw prints manually (“Manual Classification” on page 19) and, next, let the AFC module label the paw prints (see “Automatic Classification” below).

If this second scenario applies to you, in the Classification Settings, the option **Reset all assigned labels when applying the AFC** must NOT be selected.

Automatic classification

1. Select a trial/run by doing one of the following:

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：<https://d.book118.com/366040204230010214>