

# Experimental Report

## RTA™-AR800 Drift Characterization

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## RTA drift characterization

Newson NV has developed a new experimental setup for the characterization of drift values of their laser beam deflection systems. The scope of this report is limited to beam drift characterization of our RTA-AR800 motors. A schematic representation of the experimental setup is shown in Figure 1.

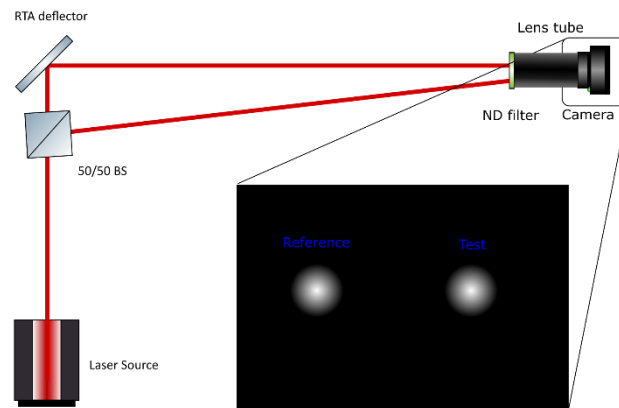


Figure 1. Experimental setup for characterizing RTA deflector drift. Camera inset for illustrative purposes only.

We split an incoming laser beam into a reference beam and the test beam. The relative displacement changes are tracked over time and correspond to the raw measured drift.

## Drift results

We have measured the drift of a RTA-AR800 motor over a course of 228 hours. The results of this drift measurement are shown in Figure 2.

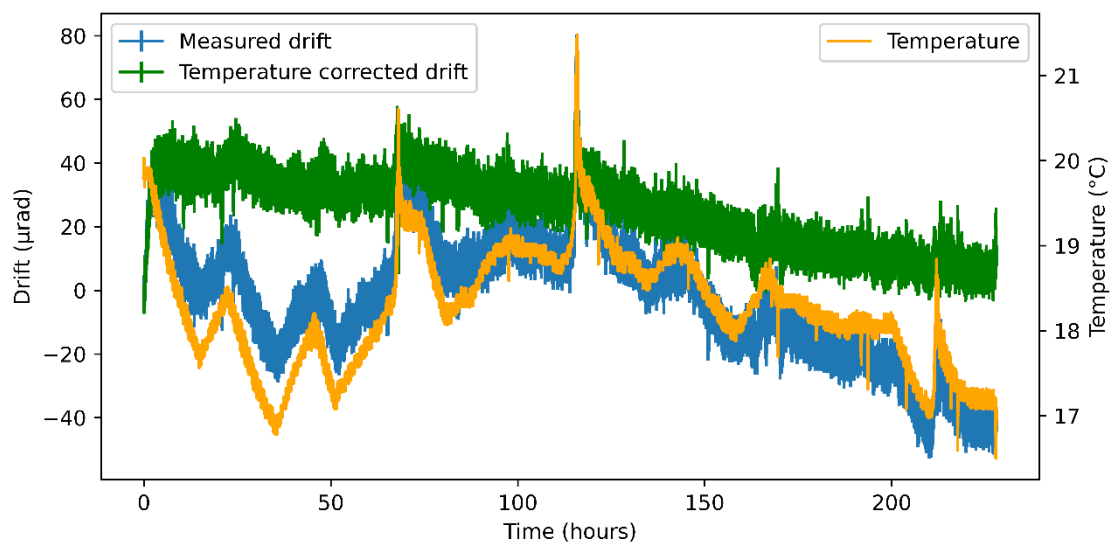


Figure 2 Beam drift measurement taken with RTA motor. Blue curve shows raw drift data over a time span of 228 hours. Orange curve shows ambient temperature. The green curve shows the temperature corrected drift.

From the displayed data, we can conclude that the raw measured drift data is strongly correlated with ambient temperature. Therefore, we have compensated our raw data for a linear thermal drift coefficient, resulting in the green curve. From this, we can extract a long term drift smaller than **1.5 µrad/8hours**.