

Full Project

- Formatted using Word
- Technical White-Paper
- Conference Paper Format
 - Brief Abstract
 - Nomenclature
 - Numbered Chapters
 - References
 - external sources
 - appendices
- Minimal Overhead
 - No TOC, LOF, etc.

Pendulum Control System

White-Paper Updated – Jan 31, 2021

Prof. L. Stocco, ECE, University of BC, Vancouver, BC, Canada

Abstract

A direct-drive pendulum motion control system is developed. The pendulum consists of a custom logo on the end of an arm that is rotated by an OTS mechanically commutated DC motor. The ...

In this paper, Section 1 describes motor selection. Section 2 describes the mechanical design of the pendulum. Section 3 describes the electronics interfacing the micro-controller and motor. Section 4 describes how it is simulated using Simulink / Simulation-X co-simulation. Section 5 describes ...

Nomenclature

OTS	Off-the-shelf
AL	Arm length (mm)
LR	Logo radius (mm)
SR	Shaft radius (mm)
COM	Centre of Mass (mm)
ϕ	Diameter

1. Motor Selection

The motor is customer-specified and is not a free design parameter. The specified motor is found on p. 86 of the Maxon™ Motor catalog [1].

The motor is a Maxon 32mm DC motor which may be mated with a GPX32 planetary gear-head. The motor is 72mm long x 32mm ϕ and has a 6mm ϕ output shaft. The 18V program has a maximum speed of 8630 RPM and a stall torque of 2.12 Nm.

The motor and gear-head are shown in Fig. 1.

White-Paper

- Spelling & Grammar **MATTERS**
 - If it's unclear, it's nonsense.
- Less is More
 - As brief as possible
 - Efficient writing is rewarded
 - Say it with pictures
- Introduce ALL figures in the text
 - Otherwise treated as decoration
- Include
 - Design work
 - Technical details
- Do not include
 - Unsubstantiated claims
 - If you can't prove it, it didn't happen
 - Discarded ideas
 - What you wanted to do but didn't
 - What you learned
 - Report is about your work, not about you