GOLDI Warehouse V2

Document version: 2
Release date: 25.05.2023

Overview:

The GOLDI Warehouse V2 is an FPGA-driven unit used to control the GOLDI Warehouse V1 model. The FPGA system provides a standard interface for a microcontroller to control the model by writing data to the FPGA registers.

Calibration procedure:

The GOLDI Warehouse V2 requires an initial reset of the encoders to power up to operate correctly. The protection system that prevents collisions when the model's crane is inside one of the warehouse's shelves is based on fixed encoder values. Therefore, the encoders must be zeroed when the crane is in the utmost left and down position. This is done automatically whenever both the limit switches left and bottom are triggered. The system also provides an independent reset for each axis in the control register in case the encoders drift.

Operation:

The GOLDI Warehouse V2 is operated by writing the corresponding values into the FPGA registers (See Register Table). To access one of the shelves a valid position of the crane must be reached. This is the case when both a horizontal and vertical virtual sensor are valid. Once the crane is inserted into the shelf, horizontal movement is blocked, and limited vertical movement is allowed (box support ± 10mm). This is done to prevent collisions with the sides of the shelves and other boxes above and below.