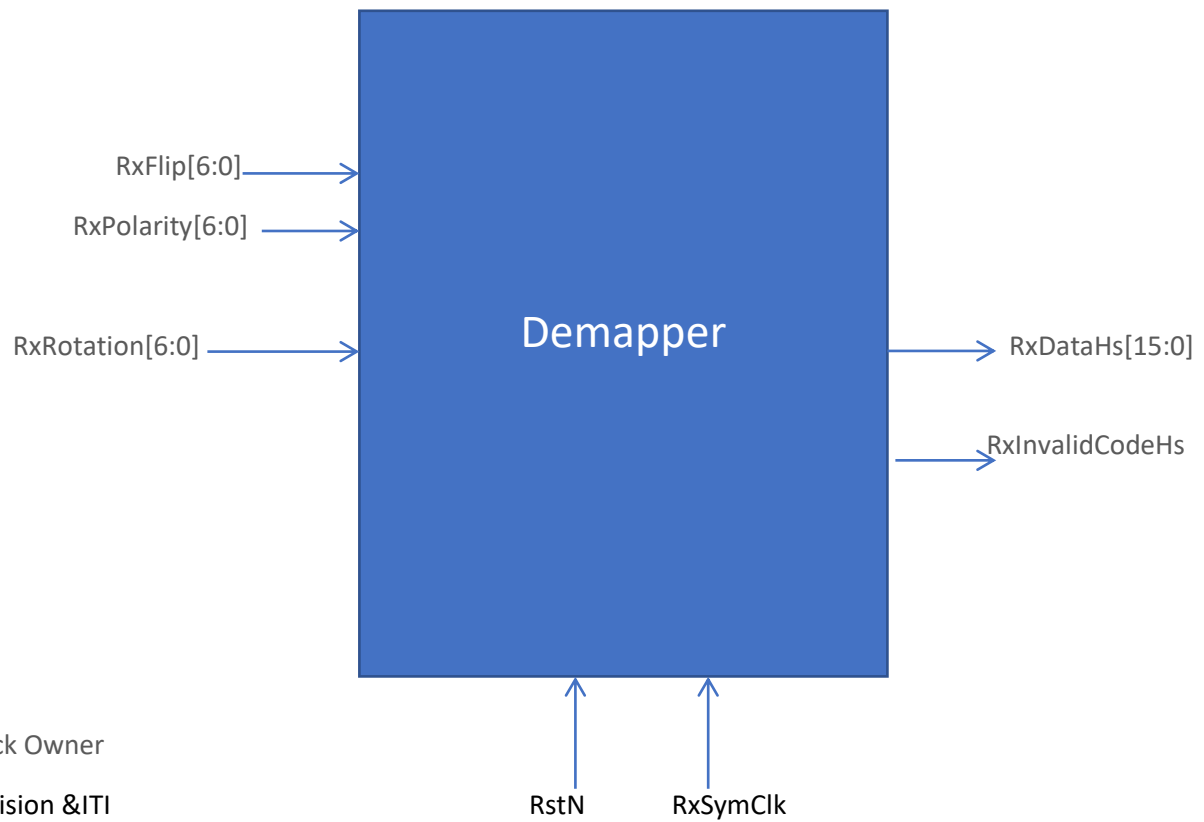


# Demapper

Induction Training

Version 1.0



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## 2 Overview

## 3 Operation and Description

### 3.1 Digital Interface

#### 3.1.1 Parameters Names

Parameter Name	Default	Description
None		

#### 3.1.2 Ports Names

Port Name	Port Width	Port Type	Description
RxRotation	7	input	Rotation vector
RxPolarity	7	input	7-bit polarity signal
RxFlip	7	input	7-bit flip pattern of the received C-PHY symbol to decode.
RxDataHS	16	Output	Parallel high-speed data output assembled from the decoded symbols.
RxInvalidCodeHS	1	Output	Flag indicating whether the RxFlip pattern was invalid (1 = invalid).

### 3.2 Functional Description

The demapper module implements the demapping logic for a C-PHY receiver. It takes in a 7-bit RxFlip input, along with corresponding polarity (RxPolarity) and rotation (RxRotation) values. The module then decodes the 7-bit pattern to select specific bit combinations (using muxing) to produce a 16-bit parallel high-speed data word (RxDataHS). It also flags any invalid RxFlip patterns through RxInvalidCodeHS.

This demapping is pipelined into two stages:

Stage 1: Decodes the 3 MSBs of RxFlip (bits 6:4) to identify which mapping group to use.

Stage 2: Decodes the 4 LSBs of RxFlip (bits 3:0) within that group to select the final mux configuration and data path.

### 4.1 Timing diagram

