

# DC02: 2 Digit Decimal Decoder

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## Features

- Constant time decoding. 30gt latency.
- Slim profile. 4 blocks wide.
- Hopperspeed throughput.
- QC based logic with state auto-fix line.

## Applications

- Decoding decimal signals for use in external bulk systems

## General Description

The DC02 decoder takes two decimal digits and outputs a pulse at one of 100 slices corresponding to the code.

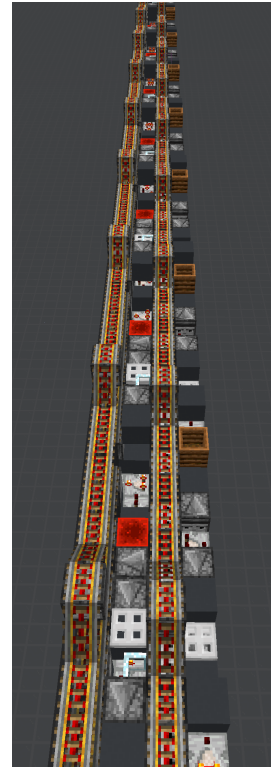


Figure 1: 2 Digit Decimal Decoder

## Device Specifications

**Table 1: Inputs**

Name	Range	Description
Digit 1	1-10	First digit indicating horizontal section.
Digit 2	1-10	Second digit indicating slice position in section.
Execute	Pulse	Clock signal of device.
Auto-fix	Pulse	Automatically fixes incorrect dropper states.

**Table 2: Outputs**

Name	Range	Description
Mapped signal	Pulse	Outputs to one of 100 slices corresponding to input code.

**Table 3: Device Specifications**

Parameter	Min.	Typ.	Max.	Unit	Conditions
Throughput	8	-	-	gt	Normal Usage
Latency	30	-	-	gt	Input to Output
Active Lag	+2.0	-	+4.1	ms	At Hopperspeed. Ryzen 5 3600, 2GB RAM. MC 1.18.1 with Lithium.
MC Version	1.16	1.17.1	-	MCV	Latest version at time of writing: 1.19.2
Dimensions	105 x 11 x 4			Blocks	

## Testing Data

**Table 4: Executed Tests**

Test	Result
Code test	Device was able to decode all possible codes successfully.
Auto-fix test	Device was able to reset faulty dropper states successfully.
Throughput test	Device was able to decode at 8gt throughput.

## Download Information

**Table 5: Download Information**

Identifier	MC	File	Description
DC02	1.17.1	DC02_2Digit_Decimal_Decoder.litematic	Litematic of decoder. Includes subregions for testing.