Soontech Annals

CH01: Parallelized Encoded Chest Hall

By: Andrews54757
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Features

- 800 chests, 10 chests per slice with 24 blocks of width
- Fully parallelizable (19x hopperspeed for items, 1x hopperspeed for box insertion)
- 100% hopperlocked with sectional unlocking
- 10/8 gt streamed comparator outputs
- Self-repairable toggle states with Auto-Fix sequence
- Low active lag, +1 ms at 1x HS, +6 ms at 20x HS

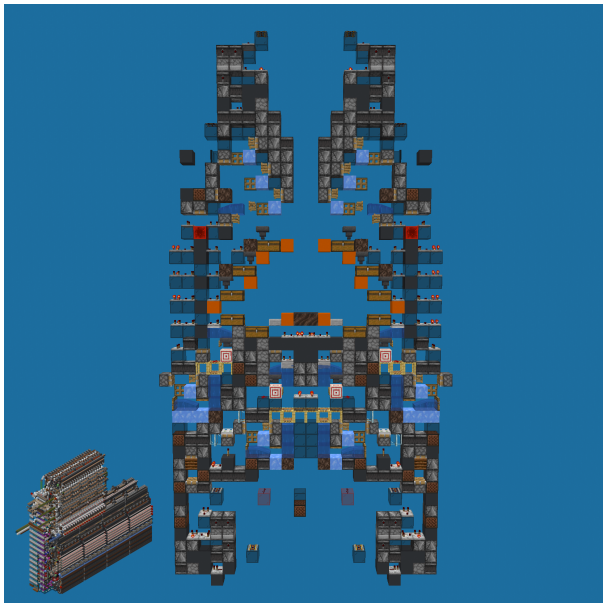

Figure 1: Chest Hall Slice

General Description

The CH01 is a fully hopperlocked 10 item per slice encoded chest hall with a backend sporting up to 20x HS parallelization. It is able to insert both loose items and boxes into chests allowing for item/box hybrid functionality.

The transport mechanism for this hall does not support overflow protection. Extra items may despawn. It is recommended that the comparator readouts are used to limit the insertion amounts as needed to prevent overflow.

Comparator readouts are streamed from the chests at 10 codes / 8 gt. This is initiated by a pulsed signal.

All toggle states are self-repairable. The repair process is initiated by a pulsed signal.

Device Specifications

Table 1: Inputs

Name	Range	Description
Item Code 1	1-10	First digit indicating chest location in slice.
Item Code 2	1-8	Second digit indicating horizontal section.
Item Code 3	1-10	Third digit indicating slice location in horizontal section.
Max Slot Count	1-14	Maximum number of slots to fill given by $value * 4$
Is Unstackable	0-1	Indicates item type is unstackable.
Is 16-Stackable	0-1	Indicates item type is 16-stackable.
Is 64-Stackable	0-1	Indicates item type is 64-stackable.
Box Mode	0-1	Indicates that box items should be inserted directly without unloading
Append Mode	0-1	When true, boxes will be added to slices already unloading the item type instead of rejecting the order. WARNING: Can break unloaders with certain timings when TRUE.
Execute Order	Pulse	Executes the order with the given settings.
Read Comparators	Pulse	Reads and streams comparator readings.
Auto-Fix	Pulse	Initiates auto-fix sequence
Item Input	Item	Box item to be inserted/unloaded.

Table 2: Outputs

Name	Range	Description
Item Code 1	1-10	First digit indicating chest location in slice.
Item Code 2	1-8	Second digit indicating horizontal section.
Item Code 3	1-10	Third digit indicating slice location in horizontal section.
Remaining Slot Count	1-14	Remaining number of slots to fill given by $value * 4$
Ready	0-1	Indicates that the system is ready to execute the next order.
Unfulfilled	Pulse	Indicates that desired slot count was greater than what could be inserted. Followed by item code and remaining slot count signals.
Item Output	Item	Output for empty boxes and rejected query boxes.

Device Specifications Contd.

Table 3: Device Specifications

Parameter	Min.	Typ.	Max.	Unit	Conditions
Input Throughput	-	-	1	HS	Normal Usage
Output Throughput	1	-	20	HS	
Order Execution Interval	88	106	-	gt	Dependant on unloader's used capacity
Passive Lag	1.5	2.8	3.5	ms	Ryzen 5 3600, 2GB RAM. MC 1.18.1 with Lithium.
Active Lag	+1	-	+6	ms	
Hopper Count		884		Hoppers	
MC Version	1.16	1.18.2	-	MCV	Latest version at time of writing: 1.19.2
Dimensions		24 x 91 x 108		Blocks	

Testing Data

Table 4: Executed Tests

Test	Result
Item Stackability and Max Slots	Unstackable, 16 stackable, and 64 stackable items were successfully input into the system with varying maxinum slot counts without overflowing.
All Chests	Two boxes of items were successfully unloaded and inserted into every chest with no loss.
Box Mode	Boxes were successfully inserted into multiple chests with no loss.
Unloader Component	Hundreds of thousands of items were passed through unloader modules without loss. All empty boxes were collected. Varying box fill levels and premature abort was tested successfully.
Auto-Fix Toggles	The storage was purposefully broken at various toggles and a repair was attempted with the auto-fix sequence. The system was always successfully repaired with multiple invokations of the auto-fix sequence.

Download Information

Table 5: Download Information

Identifier	MC	File	Description
CH01	1.18.2	CH01_encoded_chest_hall_p30.litematic	Litematic of chest hall with inventories.

Related Components

Table 6: Related Components

Identifier	Description
DC02	10BPS 2 Digit Decimal Decoder