

Half Adder

Data

IDs:

- 201, 4 [block, metadata]
- 457, 4 [item, damage]

Name:

- Half Adder

Texture:

- MoareAI/Blocks/DigitalFunctions.png, Index 20

Icon:

- MoareAI/Blocks/DigitalFunctions.png, Index 36

Recipes

XOR Gate	=>	Half Adder
AND Gate		



Interacting

After crafting the item “Half Adder” you can place it on the ground as the block “Half Adder”, which will automatically power the output if the requirements are met (see function).

To pick it up again, destroy it by hitting it (one hit is enough) or by destroying the block underneath. This will yield the item “Half Adder”. This will also happen if the gate comes in contact with water.

In contact with lava, both the item and the block is completely destroyed.

If you right click a Half Adder, a GUI opens.
The GUI lets you set if the Half Adder should be mirrored or not.

GUI controls		
Key	Key type	Description
Forward	Minecraft control	Toggle between “false” and “true”
Right	Minecraft control	
+	Numpad	
Left Mouse Button	Mouse	
Back	Minecraft control	
Left	Minecraft control	
-	Numpad	
Right Mouse Button	Mouse	
R	Normal	Set the state to false.
Shift + R	Normal (Combinaton)	Set the state to the current state.
All other keys	Undefined	Exit GUI and save state.

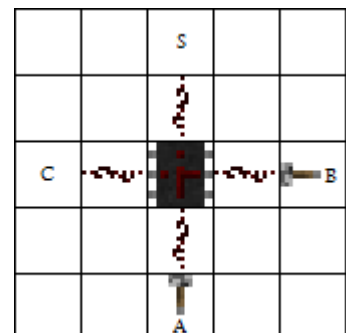
The value is saved to a TileEntity connected to the Half Adder.

How to wire the gate

Wire as seen on the image, where “A” and “B” are the inputs and “S” and “C” are the outputs.

Through the GUI you may mirror the Half Adder, this way “C” becomes “B” and “B” becomes “C”

The connection for the output and the inputs may be in form of a direct signal or indirect signal through [Redstone Wires](#).



The function of the gate

As description

The output S and C give the sum of the input A and B as a 1 bit signal (“S”) and a carry bit (“C”).

As Boolean algebra

$$S = A \oplus B$$

“Output S” equals “input A” XOR “input B”

$$C = A \cdot B$$

“Output C” equals “input A” AND “input B”

As truth table

B	A	S
0	0	0
0	1	1
1	0	1
1	1	0

B	A	C
0	0	0
0	1	0
1	0	0
1	1	1