

NAND Gate

Data

IDs:

- 233 [block, on]
- 234 [block, off]
- 485 [item]

Name:

- NAND Gate (On) [block, on]
- NAND Gate (Off) [block, off]
- NAND Gate [item]

Texture:

- MoareAI/Blocks/LGNANDOn.png [block, on] 
- MoareAI/Blocks/LGNANDOff.png [block, off] 

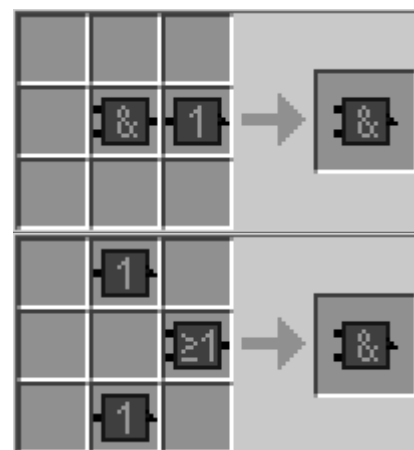
Icon:

- MoareAI/Items/LGAND.png [item] 

Recipe

AND Gate (Item)	NOT Gate (Item)	=>	NAND Gate (Item)
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NOT Gate (Item)		=>	NAND Gate (Item)
	OR Gate (Item)		
NOT Gate (Item)			



Interacting

After crafting the item “NAND Gate” you can place it on the ground as the block “NAND Gate (Off)”, which will automatically update to “NAND Gate (On)” 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 “NAND Gate”. 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.

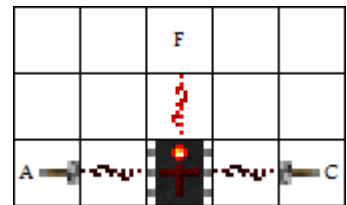
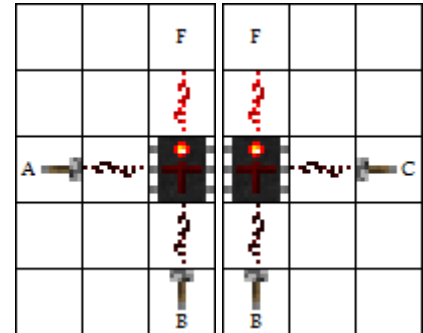
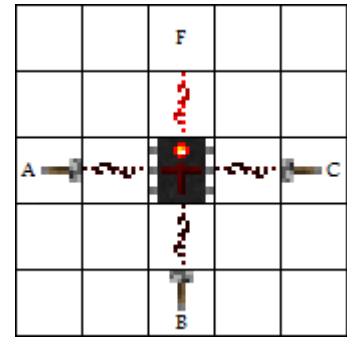
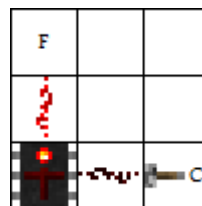
How to wire the gate

The method of wiring, depends on the function (see function) where the number of wired inputs decides which function the gate have.

Wire as seen on the images, where “A”, “B” and “C” are the inputs and “F” is the output.

The input connections may be in form of indirect signals only, through [Redstone Wires](#).

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



The function of the gate

The gate's function is based on how many of the inputs is wired*:

- 3 inputs: 3 input NAND gate
- 2 inputs: 2 input NAND gate
- 1 input: NOT gate

*Wired doesn't necessary mean a working input connection, but any input with a [Redstone Wire](#) next to it.

3 input NAND Gate

As description

The output gives a signal when not all inputs (“A”, “B” and “C”) gets a signal.

- If there isn't signal on all of the inputs, there is a signal on the output
- If there is a signal on all of the inputs, there is no signal on the output.

As Boolean algebra

$$F = \overline{A \cdot B \cdot C}$$

“Output F” equals NOT “input A” NAND “input B” NAND “input C”

As truth table

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

2 input AND Gate

As description

The output gives a signal when not all of the connected inputs (“A” and “B” or “A” and “C” or “B” and “C”) gets a signal.

- If there isn't signal on all of the connected inputs, there is a signal on the output
- If there is a signal on all of the connected inputs, there is no signal on the output.

As Boolean algebra

$$F = \overline{A \cdot B}$$

“Output F” equals NOT “input A” NAND “input B”

Or

$$F = \overline{A \cdot C}$$

“Output F” equals NOT “input A” NAND “input C”

Or

$$F = \overline{B \cdot C}$$

“Output F” equals NOT “input B” NAND “input C”

As truth table

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

NOT Gate

As description

The output is the inverse of the input.

- If there is a signal on the input, there is no signal on the output
- If there is no signal on the input, there is a signal on the output

As Boolean algebra

$$F = \bar{A}$$

“Output F” equals NOT “input A”

Or

$$F = \bar{B}$$

“Output F” equals NOT “input B”

Or

$$F = \bar{C}$$

“Output F” equals NOT “input C”

As truth table

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