

AHB Lite Decoder

Description

The decoder is a simple way to take data from the AHB-Lite data line and send the data to places it may be useful in other parts of the chip. The decoder allows us to use the AHB-Lite data line for multiple uses (i.e. `dest`, `key`, `nonce`, `plaintext`)

Inputs

Name	Type	Size	Function
<code>clk</code>	wire	1	Clock
<code>nRst</code>	wire	1	Asynchronous reset for all flip flops in block
<code>addr</code>	wire	4	Used to select functionality of decoder (<code>dest</code> , <code>key</code> , <code>nonce</code> , <code>plaintext</code>)
<code>data</code>	wire	128	Data being sent to serpent chip

Outputs

Name	Type	Size	Function
<code>dest</code>	reg	32	This will be the address that the chip will use to address external SRAM to store the output of encryption
<code>key</code>	reg	128	The key is a unique value that will be used in the encryption
<code>nonce</code>	reg	128	The nonce is another unique value that is used in the encryption
<code>plaintext</code>	reg	128	Plaintext is the original data that needs to be encoded.