ANALOG DEVICES

AHEAD OF WHAT'S POSSIBLE™

ADXL317 G-units Calculations

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14 bits from sensor

- B13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 14 bit data from the sensor

- 01 1111 1111 1111 Max Positive in 2's Comp binary
- 10 0000 0000 0000 Max Negative in 2's comp binary

- 0000 0000 1111 1111 1111 1000 0000 0000 14bit Max Positive in the core
- 1111 1111 0000 0000 0000 0000 0000 0000 14bitMax Negative in the core

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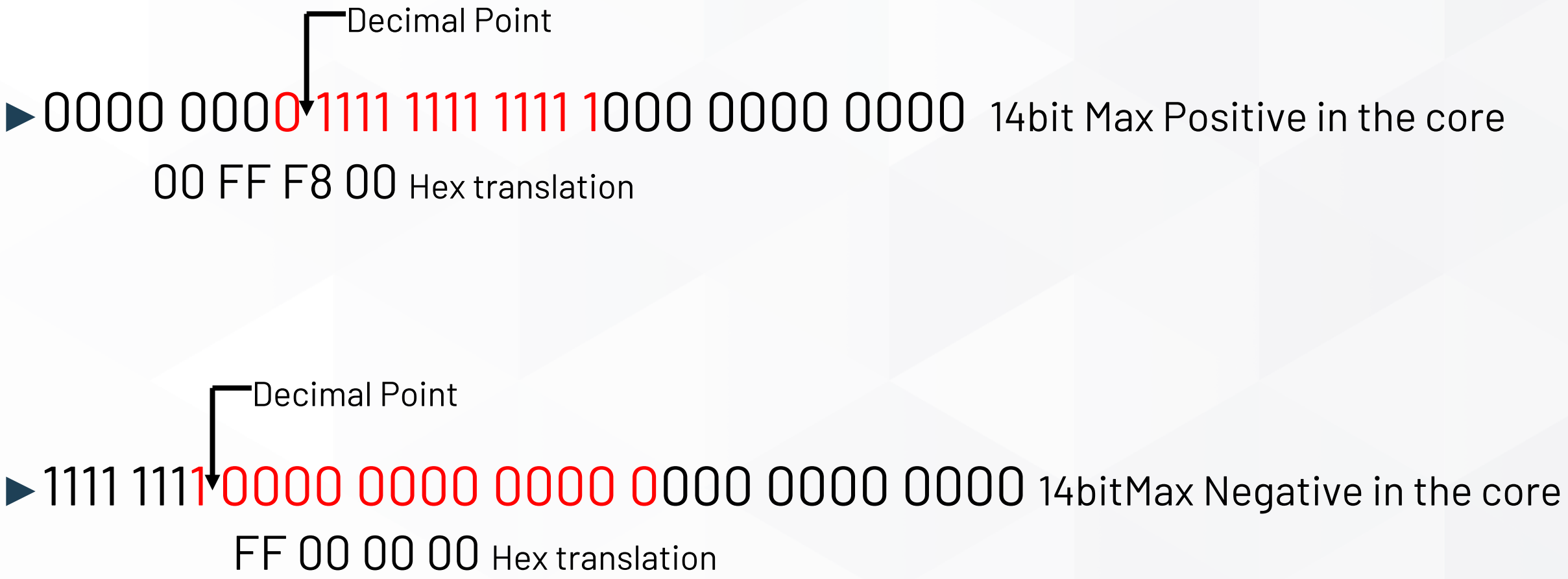
14 bit data in the core as an 8.24 number



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Gravity Units Calculation

- Upon my study. The formula is for calculating using a signed integer. Since the 14bit data's decimal point is aligned with the 8.24 of the DSP core we can simply multiply by 0.002 to get the translation.
- The expected results for full-scale positive and negative is +/-16.
- However, the results will be in 8.24 so the data needs to be looked at as an integer.
- This is where some bit shifting could be used or simply extracting (ANDing) the data. It will depend on how the results need to be used.
- On the next slides we will test to see if we obtain the expected results.

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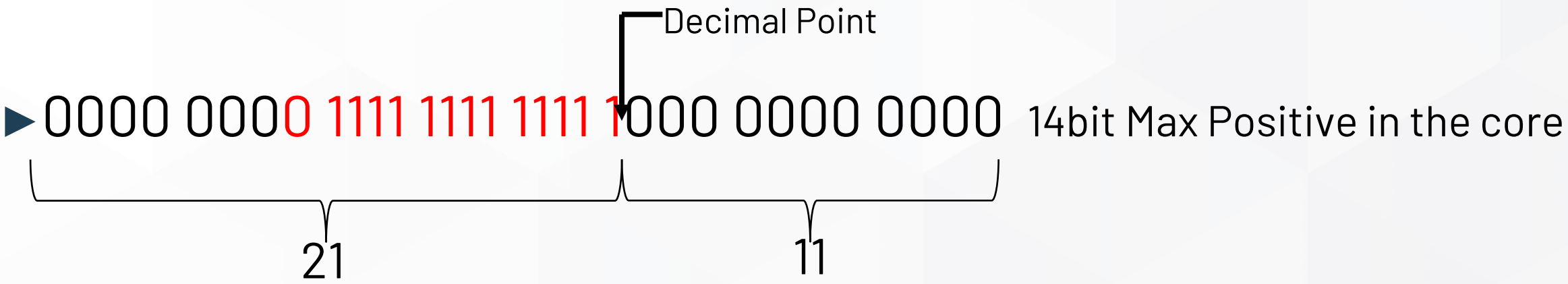
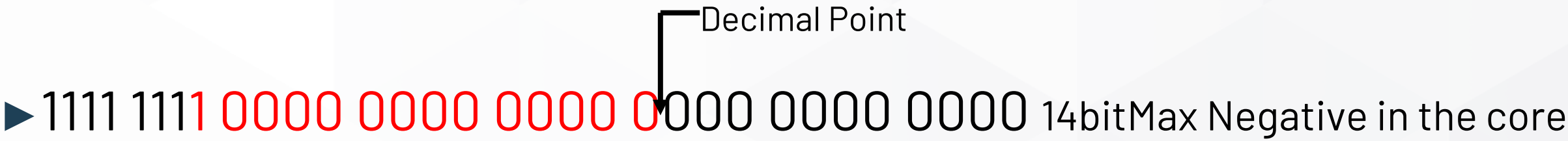
14 bit data in the core as a signed integer number, 21.11





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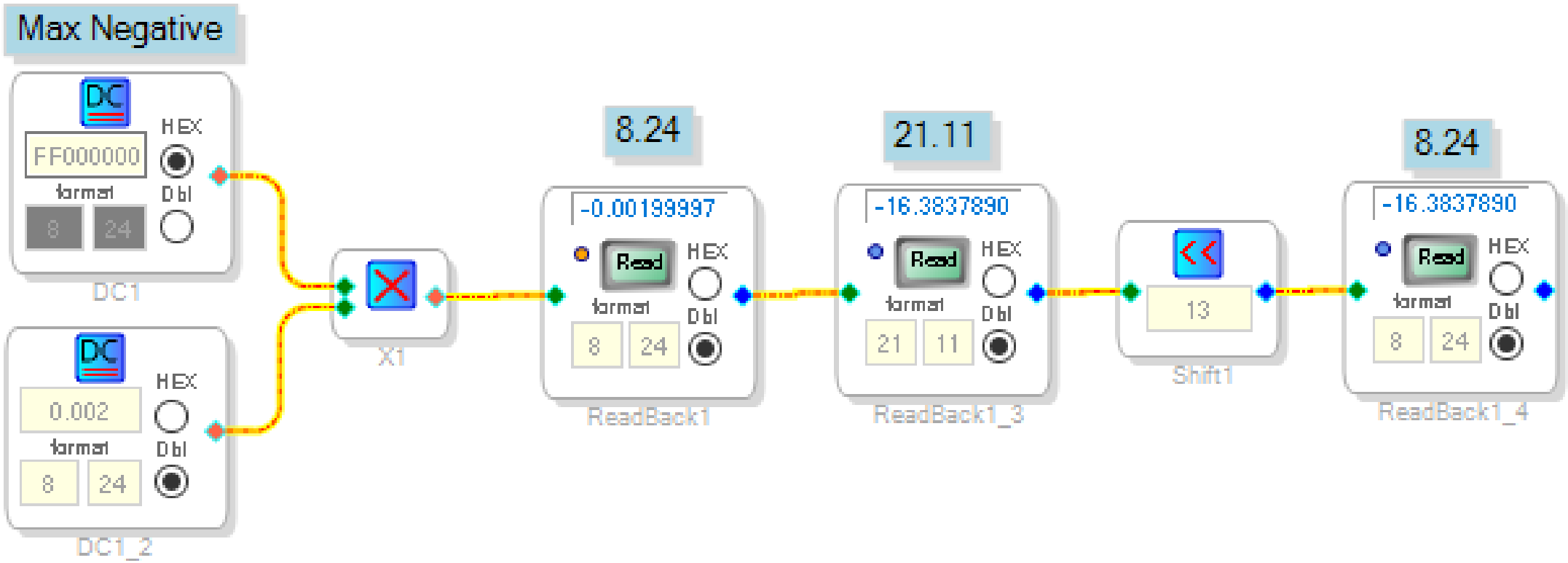
Max Negative Translated to 8.24



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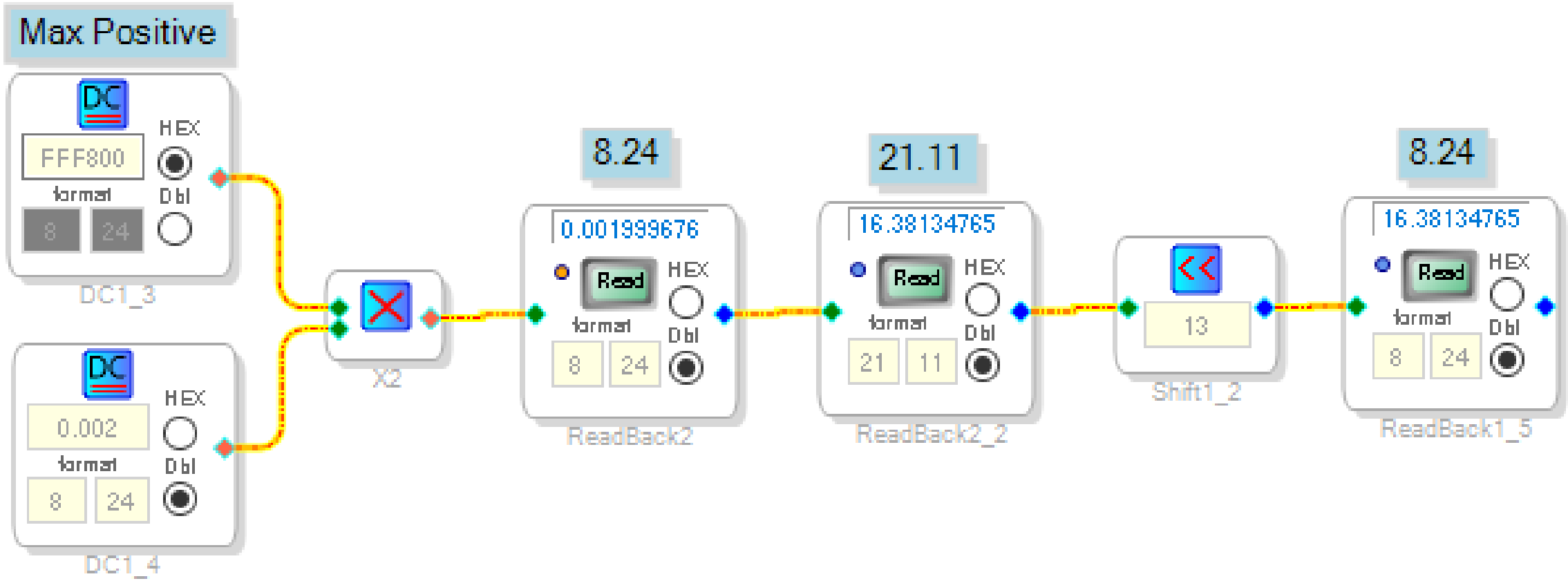
Max Positive Translated to 8.24



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Thank You!
I hope this clears things up.

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