Half-Precision Floating Point

IEEE 754 half-precision binary floating-point format: binary16

- Sign bit: 1 bit
- Exponent Width: 5 bits
- Significant Precision: 11 bits (10 explicitly stored)

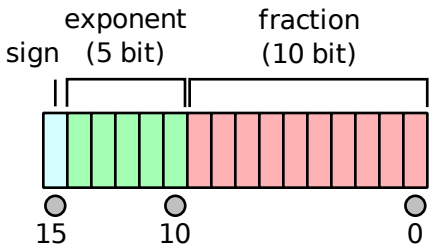

Figure 1: Half-Precision Format

The format is assumed to have an implicit lead bit with value 1 until the exponent field is stores with all zeros.

Exponent Encoding

The half-precision binary floating-point exponent is encoding using an offset-binary representation with the zero offset being 15.

Offset-Binary

Offset binary is a coding scheme where all-zero corresponds to the minimal negative value and all-one to the maximal positive value. There is no standard for offset binary, but most often the offset K for an n-bit binary word is $K = 2^{n-1}$.