

# BINARY TO DECIMAL REFERENCE

## Powers of 2 and Common 8-bit Conversions

| Power ( $2^n$ ) | Decimal Value |
|-----------------|---------------|
| $2^0$           | 1             |
| $2^1$           | 2             |
| $2^2$           | 4             |
| $2^3$           | 8             |
| $2^4$           | 16            |
| $2^5$           | 32            |
| $2^6$           | 64            |
| $2^7$           | 128           |

| Binary (8-bit) | Decimal |
|----------------|---------|
| 0000 1010      | 10      |
| 0001 0000      | 16      |
| 0010 0000      | 32      |
| 0011 1111      | 63      |
| 0100 0000      | 64      |
| 1000 0000      | 128     |
| 1111 1111      | 255     |

...

...

**Calculation Logic:**  $\text{Decimal} = (d_n \times 2^n) + \dots + (d_1 \times 2^1) + (d_0 \times 2^0)$

*Example:*  $1011 = (1 \times 8) + (0 \times 4) + (1 \times 2) + (1 \times 1) = 11$