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| Control Signals | | | | Xi | Yi | Zi | Function | In Word |  |
| S2 | S1 | S0 | Cin |  |
| 0 | 0 | 0 | 0 | Ai | Bi | Ci | A+B | Addition |  |
| 0 | 0 | 0 | 1 | Ai | Bi | Ci | A+B+1 | Addition Plus One |  |
| 0 | 0 | 1 | 0 | Ai | ~Bi | Ci | A+~B | A Plus 1s Complement of B |  |
| 0 | 0 | 1 | 1 | Ai | ~Bi | Ci | A-B | Subtraction |  |
| 0 | 1 | 0 | 0 | Ai | 0 | Ci | A | Transfer |  |
| 0 | 1 | 0 | 1 | Ai | 0 | Ci | A+1 | Increment |  |
| 0 | 1 | 1 | 0 | Ai | 1 | Ci | A-1 | Decrement |  |
| 0 | 1 | 1 | 1 | Ai | 1 | Ci | A | Transfer |  |
| 1 | 0 | 0 | X | Ai | Bi | 0 | A xor B | XOR |  |
| 1 | 0 | 1 | X | Ai+~Bi | ~Bi | 0 | A ^ B | AND |  |
| 1 | 1 | 0 | X | Ai+Bi | 0 | 0 | A v B | OR |  |
| 1 | 1 | 1 | X | Ai+Bi | 1 | 0 | ~(A v B) | NOR |  |
|  |  |  |  |  |  |  |  |  |  |
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