

MODE dependency (M-dependency)

1 MODE dependency is used to indicate that the effects of particular inputs and outputs of an element depend on the mode in which the element is operating.

For comparison of C-, EN-, and M-effects on inputs, see A00286.

The use of the bit-grouping symbol and the solidus is explained in A00288 and A00289, respectively.

- M-dependency affecting inputs:

For illustrations, see A00285_Illustration_a.pdf below.

Mode 0 ($b = 0, c = 0$): the outputs remain at their existing states as none of the inputs has an effect.

Mode 1 ($b = 1, c = 0$): parallel loading takes place through inputs e and f.

Mode 2 ($b = 0, c = 1$): shifting down and serial loading through input d take place.

Mode 3 ($b = 1, c = 1$): counting up by increment of 1 per clock pulse takes place (input a).

- Determining the function of an output:

For illustrations, see A00285_Illustration_b.pdf below.

If input a stands at its internal 1-state establishing mode 1 output b will stand at its internal 1-state if the content of the register equals 15. If input a stands at its internal 0-state, output b will stand at its internal 1-state if the content of the register equals 0.

For explanation, see also A00289.

- Modifying dependent relationships of outputs:

For illustrations, see A00285_Illustration_c.pdf below.

At output e the label set causing negation (if $c = 1$) is effective in modes 2 and 3 only. In modes 0 and 1, this output stands at its normally defined state as if it had no labels.

At output f the label set has effect if the mode is not 0, so output f is negated (if $c = 1$) in modes 1, 2 and 3. In mode 0 the label set has no effect so the output stands at its normally defined state. In this example 0,4 is equivalent to (1/2/3) 4.

At output g there are two label sets. The first set, causing negation (if $c = 1$), is effective only in mode 2. The second set, subjecting g to AND dependency on d, has effect only in mode 3.

Note that in mode 0 none of the dependency relationships has any effect on the outputs, so e, f and g will all stand at the same state.

2 In complex elements with a large number of different modes, application of the convention for MODE dependency may lead to a very extended labelling. In such cases, the inputs and outputs affected by any affecting Mm-input are simply labelled with the letter M, but then the diagram containing the symbol must also contain either a table in which the effects of these inputs in the different modes are clearly explained or a statement as to where such a table is to be found. If no confusion is likely, these letters M may be omitted.