

The `loggates` font contains symbols for drawing digital logic circuits. It includes AND, OR, NAND, NOR, XOR, and NXOR (comparator) gates, inverters and buffers, and special characters to make input lines. Eventually, I'd like to use this font in a package for drawing circuit diagrams, based on the `-pic` package by Kristoffer H. Rose.<sup>1</sup> The package as it stands now is nice, but not really impressive, but that will hopefully improve.

The font for drawing digital logic circuits was originally conceived by Rick Simpson, and published in UKTeX 1988, issue 30.<sup>2</sup> It was called `milstd` then (the font follows MIL-STD 806). The `milstd` font encouraged me to try to extend it; some gates (XOR, NXOR) were missing, and there were problems with connecting input lines (cf. the input line extenders below). I also made some changes to the metafont code, which make it easier to modify (imho), and made better bounding boxes. The result is `loggates.mf`.

The file `loggates.sty` is a L<sup>A</sup>T<sub>E</sub>X style file which facilitates using the font. It defines commands for all of the gates, in all four directions (right, down, left, up). These names of these commands consist of the name of the gate, followed by a letter for the direction (r, d, l, u). For instance, `\ANDr` and `\XORu` give:

The gates are set in a very tight bounding box:

The reference point is in the lower left corner. This facilitates the use of `-pic`, which makes a line disappear when it enters the bounding box. Note that `-pic` centers boxes vertically, so in a diagram the reference point seems to be in the middle-left:

In circuit diagrams, gates have inputs. Inputs for AND-like gates are easy: just draw a line to the gate symbol. The input side of an OR-like gate is not straight, so the input line should extend into the bounding box. The `loggates` font has characters for these 'input line extenders', which go from the bounding box just up to the front of the gate. There are input line extenders for gates with 2, 3, 4, and 5 inputs. These extenders are added by appending a single digit (2, 3, 4, or 5) to the gate command. Thus, `\ORr3`, `\NXORd4`, and `\ANDl5` give

3 4 5

Of course, AND gates don't need these extenders, but I added the optional digit for compatibility.

The font can already be used with `-pic`, but I'd like to do more things automatically, like the placement of connections. Here is a (nonsense) example of how to use `loggates` with `-pic`: If the lines in this diagram don't connect perfectly, this is probably caused by an imperfection in your dvi-driver.

I make no claims whatsoever about the usefulness of `loggates`. Consider this as an alpha-test version; I hope to release improved versions 'real soon'. If you have ideas of how to use `-pic` for drawing diagrams, or suggestions for features and improvements, please mail to `nico@cs.ruu.nl`.

<sup>1</sup> `-pic` can be obtained by FTP from `diku.dk`.

<sup>2</sup> `Milstd` can be obtained by FTP from `kth.se`.