M Signal for LCD

The LCD panel requires an M signal, which is a clock signal that alternates LC driving.

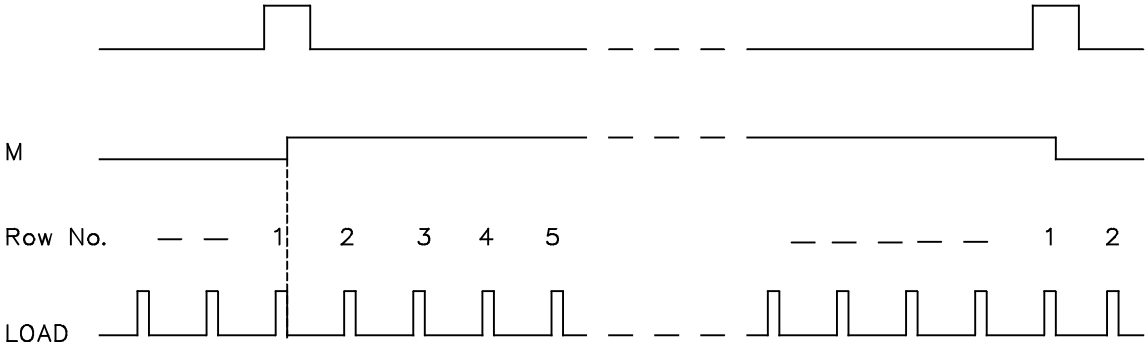
In order to prevent a build up of charge and hence a polarization of the liquid crystal, the M signal applies a positive and then an equal and opposite negative signal to the LC cell every other frame. This ensures that the liquid crystal changes twist direction every other frame and the resultant DC charge applied to the LC cell is zero.

In many LCD modules the M signal is generated internally by the row and column drivers. The M signal is applied directly from the row and column drivers to the pixel element.

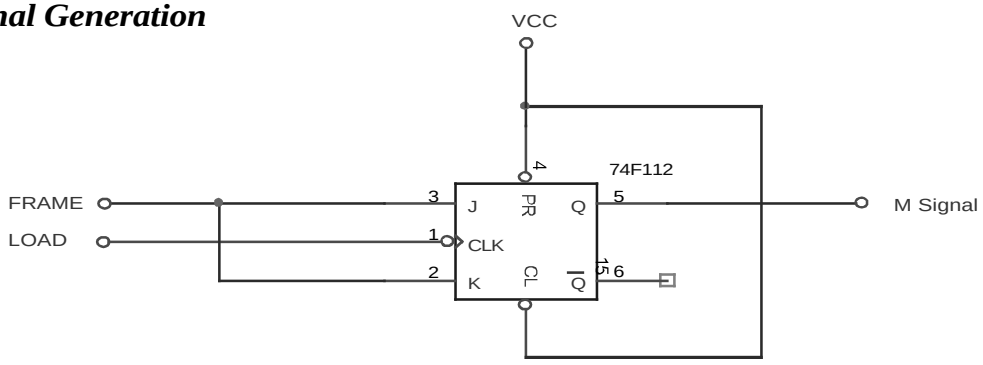
The M signal is the signal to control the AC frequency of the driver IC output. So, the AC (M) frequency change will cause the display performance change. Inaccurate M signal may be the cause of ***crosstalk*** or ***ghost image*** specially in high resolution graphic module.

The M signal should be a square wave with 50% duty rate. And the standard frequency of M signal is 1/2 frequency of frame signal ('FRAME').
But the best frequency of M signal may vary according to the target system.

"M" Signal Timing



“M" Signal Generation



M Signal for LCD

Most LCD controllers generate an M signal. Thus character modules and graphic modules with built-in controller do not require external M signal. In Graphic modules without built-in controller, M signal is to be provided externally or by built-in circuitry.

The built-in ‘M’ signal generator of Hantronix graphic modules have a 8 position jumper (J1-J8) to select frequency from freq(LOAD) to freq(LOAD/256), where LOAD = LP = CL1.

If the graphic module has a serious ghost image, to change M signal may be one of solutions. To find out the best frequency of M signal is depend on the target system.
Do not recommend jumpler change without the target system..

An Example for "M" Signal Generation