

- Display control signals LINECL, DATACL, M, FRAME

These signals are used to control the LCD. The LCD picture is constructed from these display control signals and the data signals and sent to the LCD via the LCD outputs.

DATACL is the clock signal, used to clock the data D0...D3 into the driver buffer.

LINECL is a clock signal, used to clock one complete line (column) into the LCD.

The M signal is described further on (see M-randomize section).

LCD supply section

The pulse modulated signal, CONTRAST, comes from the D-ASIC. CONTRAST is filtered by R1401 and C1401 to get a DC voltage. The value of this DC voltage depends on the duty cycle of the CONTRAST signal. Opamps N1401 convert the DC signal into stabilized DC voltages V1...V6. If the signal, LCDPWR, coming from the D-ASIC, is "high" (+5V), the -20V voltage is generated and the system is active. The -20V supply voltage is temperature corrected to compensate for the temperature dependency of the LCD (-80 mV/C). The LCD supply voltages have to be corrected by the same amount to get a constant (over a temperature range) brightness and contrast of the LCD. This temperature compensation is made by Positive Temperature Coefficient (PTC) R1418. The -20V voltage is made out of the -30V voltage, coming from the analog A2 PCB. Transistors V1404 and V1402 form a protection circuit, that limits the current in case the -20V voltage is short circuited.

M-randomize section

The signal M ("LCD backplane modulation") has a time relation with the display control signals LINECL and DATACL. The M-randomize section converts M into M1, which is no longer time related to the other display control signals. The M1 signal is used by the LCD drivers to convert all DC voltages into AC voltages, able to drive the LCD.

Depending on the type (brand) of LCD mounted, integrated circuits D1408, D1409 and D1410 or D1411 are used.

Backlight circuitry

The backlight circuitry is based on the Hartley oscillator principle. Components V1307, T1301, and C1302 form the oscillator. Transistor V1304 supplies current to the circuit. This transistor is switched on/off by the ON OFF signal, coming from the microprocessor. When the output voltage across the backlight becomes higher than 100V, transistor V1305 will be driven open via V1308, V1309, and V1311. This will draw away current (energy) supplied to the oscillating circuit (feedback regulation).