Lab Week 9 - LCD Lab

Hitachi Liquid Crystal Display Protocol

Most LCDs use the Hitachi interface, which uses parallel communication.

The protocol uses a minimum of 14 pins.

GND	Vcc	Vr	RS	RW	E	D0	D1	D2	D3	D4	D5	D6	D7

V_R is the contrast voltage

You write stuff to it in parallel using a write cycle. The information you write is either a command or data – a character you wish to place on the screen.

It is a very straightforward protocol.

It provides standard 128-bit ASCII but also provides some Japanese characters.

On our robots, the eight data pins are connected to the processor's data bus.

If RS is 0, the LCD expects a command.
If RS is 1, data is being sent to the panel at the next location.

The chipset is designed to be used with panels of various sizes. The driver does not automatically wrap to the next line until it gets to the maximum width that it supports.

The robot is wired to allow 8-bit writes to the LCD panel. If 4-bit mode is used, only one nibble of a command or character can be sent at a time.

The LCD is memory mapped on the robot. This means that it will

Bend the V_R pin so it doesn't plug into the female header. Solder a wire from it to the middle hole of the 20k potentiometer.

The clock pin should also be bent up.

Pin 4 is RS and pin 5 is RW.