C++ Code Snippets
PART III: Serial Communications via LCD for Arduino IDE/Teensy 3.2

John R. Wright, Jr., PhD, CSTM
ITEC 467, Mobile Robotics
PowerTip PC1602Q B
16 x 2 LCD Display

BPI-216 LCD Driver Board

NOTE: It’s not necessary to connect both +5 or both GND pins; they are duplicated for convenience (and to allow a reversible connector).

Baud Rate
Up= 9600bps
Down= 2400bps

Contrast
= Darker

Backlight
Up= ON
Down= OFF

Pads for external BL switch

Serial In
GND
+4.8-5.3V

https://seetron.com/bpi216/bpi216hdw.html
7404 IC

http://tayloredge.com/reference/Packages/pinouts/index.html
Sample Code

/*
This code was adapted from
J. Wright, 2017
Note: To use this with an Arduino or Teensy, one must invert the TX Serial Output with an inverter chip

Inverter used: 7404 IC
Pin 14 = +5
Pin 7 = GND
Pin 1 = Input from Microcontroller TX
Pin 2 = Inverted Output to SER input of LCD Module (Seetron BPI-216 driving a PowerTip PC1602Q B)
*/
#include <SoftwareSerial.h> //Library already in your IDE

#define rxPin 255 // Not used, so set to invalid pin #
#define txPin 5 // Connect BPI/BPK's SER input to this pin.
#define inverted 1 // In setup, 1=inverted, 0=noninverted

const char clearScreen[ ] = {
    254,1,254,128,0};
const char message[ ] = "Hello 467 World";
const char message2[ ] = "Code Hard";
const char message3[ ] = "Flowchart?";

/*
Set up a new serial output using the pin definitions above. Note the argument "inverted," which instructs SoftwareSerial to output BPI/BPK-compatible inverted-TTL serial (like RS-232, but without the +/-voltage swing).*/
SoftwareSerial mySerial = SoftwareSerial(rxPin, txPin, inverted);

void setup()
{
    pinMode(txPin, OUTPUT);  // define pin mode for tx:
digitalWrite(txPin, LOW);  // Stop bit state for inverted serial
mySerial.begin(9600);  // Set the data rate
delay(1000);  // wait for 1000ms to establish communications
mySerial.print(clearScreen);
mySerial.print(message);
}

void loop()
{
    delay(1000);
    mySerial.print(clearScreen);
delay(1000);
    mySerial.print(message2);
delay(2000);
    mySerial.print(clearScreen);
    mySerial.print(message3);
}
Video of Teensy to LCD

https://youtu.be/rBc9dd79qe4
“The Knack”

https://www.youtube.com/watch?v=g8vHhgh6oM0