|  |  |  |
| --- | --- | --- |
| No. | module name or electrical part | Communication Protocol |
| 1 | character LCD (CLCD) – 16x2 | 8bit (parallel) |
| 2 | character LCD (CLCD) – 20x4 | 8bit (parallel) |
| 3 | CLCD 16x2 controlled by shift-register IC | 3bit (parallel) |
| 4 | CLCD 20x4 controlled by shift-register IC | 3bit (parallel |
| 5 | CLCD 16x2 controlled by port expander PCF8574 | I2C |
| 6 | CLCD 20x4 controlled by port expander PCF8574 | I2C |
| 7 | Graphical LCD single color (GLCD) 128x64 | 8bit (parallel) |
| 8 | GLCD 128x64 controlled by MCP23017 | I2C |
| 9 | GLCD 128x64 controlled by MCP23S17 | SPI |
| 10 | TFT LCD Uno-pinout 2.4 inch + touch | 8bit (parallel)+SPI |
| 11 | TFT LCD Uno-pinout 3.95 inch + touch | 8bit (parallel)+SPI |
| 12 | TFT LCD Mega-pinout 4 inch | 8bit (parallel)+SPI |
| 13 | OLED display 0.96 inch – 128x64 | I2C |
| 14 | OLED display 1.54 inch – 128x64 | SPI |
| 15 | NEXTION HMI display – 2.4 inch | UART |
| 16 | NEXTION HMI display – 4.3 inch | UART |
| 17 | MPU6050- 6DoF IMU (GY-521) | I2C |
| 18 | MPU9150- 10DoF IMU (GY-9150) | I2C |
| 19 | GY-80 IMU – 11DoF | I2C |
| 20 | ADXL 345 (accelerometer sensor) | I2C |
| 21 | Keypad 5x4 | 9bit |
| 22 | Keypad 4x4 | 8bit |
| 23 | Keypad 4x4 controlled by PCF8574 | I2C |
| 24 | Keypad 3x4 | 7bit |
| 25 | Keypad 3x4 controlled by PCF8574 | I2C |
| 26 | Keypad 1x4 | 4bit |
| 27 | Keypad 1x4 controlled by PCF8574 | I2C |
| 28 | Keypad 4x4 - touch | ??? |
| 29 | Temperature Sensor – LM35 | analog |
| 30 | Temperature Sensor – DS18B20 | 1bit – single wire |
| 31 | Temperature Sensor – NTC family | analog |
| 32 | Temperature Sensor – PT100 | analog |
| 33 | Bluetooth module – HC-05 | UART |
| 34 | Bluetooth module – HC-08 | UART |
| 35 | Bluetooth module – HM-10 (CC2540) | UART |
| 36 | ZigBee module – CC2530 | UART |
| 37 | NRF24L01 – 2.4GHz | SPI |
| 38 | ESP8266- Wi-Fi module | UART |
| 39 | GSM module – SIM800A | UART |
| 40 | GPS module – basics | UART |
| 41 | Sonar Ultrasound – HC-04 | 2bit |
| 42 | Sonar Ultrasound – HC-05 | 2bit |
| 43 | Sharp GP2Y0A21YK0F distance sensor | analog |
| 44 | PIR module (HC-SR501) | 1bit - analog |
| 45 | control of DC Motor – by transistor | digital IO-PWM |
| 46 | L293 DC motor driver | digital IO-PWM |
| 47 | L298 DC motor driver | digital IO-PWM |
| 48 | MONSTER MOTO SHIELD VNH2SP30 DC motor driver | digital IO-PWM |
| 49 | Basics of optical encoder | digital IO |
| 50 | DC motor + encoder (RPM control) | digital IO-PWM |
| 51 | DC motor + encoder (Position control) | digital IO-PWM |
| 52 | A4988 stepper motor driver | digital IO-PWM |
| 53 | DRV8825 stepper motor driver | digital IO-PWM |
| 54 | servo motor family | PWM |
| 55 | Brushless motor family basics | PWM |
| 56 | TB6600 stepper motor driver + High RPM motor | digital IO-PWM |
| 57 | simple programs by LEDs status | digital IO |
| 58 | simple programs by push button | digital IO |
| 59 | seven segment controlled by shift register IC | digital IO |
| 60 | dot-matrix 8x8 controlled by shift-register IC | digital IO |
| 61 | RTC module DS1307 | I2C |
| 62 | RTC module DS3231 | I2C |
| 63 | control of Relay module | digital IO |
| 64 | Rotary encoder for Control inputs | digital IO |
| 65 | Buzzer control with transistor | digital IO |
| 66 | Color sensor TCS3200 | digital IO |
| 67 | SD card module (SD and uSD) | SPI |
| 68 | Ethernet module ENC28J60 | SPI |
| 69 | Ethernet Arduino Shield W5100 | SPI |
| 70 | Sound Amplifire PAM8403 | digital IO |
| 71 | mp3 player TF | UART |
| 72 | DHT family sensor for Humidity | 1bit |
| 73 | BMP 180 (pressure sensor) | I2C |
| 74 | BMP 280 (pressure sensor) | I2C |
| 75 | RFID module (RC522) | SPI |
| 76 | NFC module (5321) | SPI-I2C-UART |
| 77 | Soil humidity sensor | 1bit - analog |