

## Embedded System Design Parts Kit Contents F2018

Part Description	Quantity	Unit Price	Amount	Suggested Use	Location
Printed Circuit Board	1	\$20.00	\$20.00	Base Board (standard)	Big bag
16x4 LCD with HD44780 Compatible Controller	1	\$8.00	\$8.00	User Display	Big bag
40-Pin Wire Wrap DIP Socket (0.6" wide)	1	\$3.00	\$3.00	Microcontroller	Small bag 1
28-Pin Wire Wrap DIP Socket (0.6" wide)	2	\$2.00	\$4.00	NVRAM or EPROM and SRAM	Small bag 1
20-Pin Wire Wrap DIP Socket (0.3" wide)	4	\$2.00	\$8.00	74245, 74373, 74374, SPLD, Pull-ups	Small bag 1
16-Pin Wire Wrap DIP Socket (0.3" wide)	3	\$1.50	\$4.50	MAX232, I2C Expander, Decoding Logic	Small bag 1
14-Pin Wire Wrap DIP Socket (0.3" wide)	2	\$1.00	\$2.00	Discrete logic and components	Small bag 1
8-Pin Wire Wrap DIP Socket (0.3" wide)	1	\$1.00	\$1.00	Serial EEPROM	Small bag 1
Pin Strip Socket, Single Row, 14 Contacts	1	\$2.00	\$2.00	Solder into LCD to mate with pin strip header	Small bag 1
Pin Strip Header, Single Row, 36 Contacts	2	\$2.00	\$4.00	14 for LCD, 8/9 for RS-232, others for jumpers	Small bag 1
Aluminum Standoff, Female/Female, 6-32	4	\$0.50	\$2.00	Board Support (top)	Small bag 1
Aluminum Standoff, Male/Female, 6-32	4	\$0.50	\$2.00	Board Support (bottom)	Small bag 1
DE-9 Serial Connector	1	\$1.00	\$1.00	RS-232	Small bag 1
TO-220 Heat Sink	1	\$0.50	\$0.50	7805T +5V Regulator (optional)	Small bag 1
2.1mm Male Power Connector	1	\$1.50	\$1.50	Power Jack	Small bag 1
Toggle Switch, SPST or SPDT	1	\$1.50	\$1.50	Master Power On/Off Switch	Small bag 1
T44 Wire Wrap Pins	20	\$0.10	\$2.00	Discrete Component Mounting	Small bag 2
Pushbutton Switch, Momentary	4	\$0.25	\$1.00	Reset Circuit, Digital Input, FLIP Programming	Small bag 2
Jumper/Shorting Block	5	\$0.10	\$0.50	Atmel processor Flash programming, etc.	Small bag 2
7805T +5V Regulator, TO-220 Package	1	\$0.25	\$0.25	Power Supply	Small bag 2
11.0592 MHz Crystal	1	\$1.00	\$1.00	Microcontroller Clock Source	Small bag 2
27 pF Capacitor	3	\$0.05	\$0.15	Oscillator Circuit	Small bag 2
47 uF Electrolytic Capacitor	2	\$0.10	\$0.20	Power Supply Decoupling	Small bag 2
10 uF Electrolytic Capacitor	2	\$0.10	\$0.20	Reset Circuit, Power Supply Decoupling	Small bag 2
0.1 uF Monolithic Ceramic Capacitor (>=10V)	10	\$0.10	\$1.00	Board Decoupling	Small bag 2
1.0 uF Monolithic Ceramic Capacitor (>=16V)	5	\$0.10	\$0.50	MAX232 Charge Pump (5x1.0uF)	Small bag 2
4.7 uF Monolithic Ceramic Capacitor (>=10V)	2	\$0.40	\$0.80	8051 Processor Decoupling (SMT is an option)	Small bag 2
Diode, 1N4003 (1 Amp)	5	\$0.10	\$0.50	Voltage Regulator Protection	Small bag 2
Diode, 1N914 or 1N4148	1	\$0.10	\$0.10	Reset Circuit	Small bag 2
10K 1/4W Resistor	1	\$0.10	\$0.10	Reset Circuit	Small bag 2
4.7K (or 2.7K) Pull-up Resistors, 10-pin SIP	2	\$0.25	\$0.50	80C51 Port 0 Pullups, 74156 Pull-ups	Small bag 2
330 Ohm 1/4W Resistor	5	\$0.10	\$0.50	Current Limiting (LEDs, reset switch)	Small bag 2
5.1K Ohm 1/4W Resistor	2	\$0.10	\$0.20	EEPROM Control Line Pull-ups	Small bag 2
Potentiometer	1	\$1.00	\$1.00	LCD Contrast Control	Small bag 2
LED, Red	2	\$0.10	\$0.20	General Status Indicator	Small bag 2
LED, Green	2	\$0.10	\$0.20	General Status Indicator, Power On	Small bag 2
2N2222 NPN Transistor, TO-92	2	\$0.25	\$0.50	LED Driver, General Purpose	Small bag 2
2N2907 PNP Transistor, TO-92	2	\$0.25	\$0.50	LED Driver, General Purpose	Small bag 2
74LS373, Transparent Latch, Tri-state, DIP-20	1	\$1.00	\$1.00	Address Latch	Narrow tube
74LS374, Octal D Flip-Flop, Tri-state, DIP-20	1	\$1.00	\$1.00	General Purpose, LED Driver, Debug Status	Narrow tube
MAX 232, RS-232 Line Driver/Receiver, DIP-16	1	\$1.00	\$1.00	RS-232	Narrow tube
24C16 Serial EEPROM, DIP-8	1	\$1.00	\$1.00	User Data Storage (non-volatile)	Narrow tube
PCF8574 I2C Expander, DIP-16	1	\$2.00	\$2.00	GPIO Expansion via I2C bus	Narrow tube
Microchip (Atmel) ATF16V8C SPLD, DIP-20	1	\$2.00	\$2.00	Programmable Logic	Narrow tube
80C31/80C51/80C32/C501, DIP-40	1	\$1.00	\$1.00	Microcontroller	Wide tube
Microchip (Atmel) AT89C51RC2, DIP-40	1	\$8.00	\$8.00	Microcontroller	Wide tube
ARM Dev Kit (TI MSP432)	1	\$20.00	\$20.00	ARM lab assignments	Big bag
32KB NVRAM, DIP-28	0	\$25.00	\$0.00	Variable/Data Storage	Tool kit (sign out)
28-Pin ZIF (Zero Insertion Force) Socket	0	\$15.00	\$0.00	NVRAM/EPROM	Tool kit (sign out)
Wire Wrap Wire (30AWG Kynar, 1 foot unit)	100	\$0.06	\$6.00	Signal and Power Connections	1B28 Lab
74LS00, Quad 2-input NAND, DIP-14	0	\$0.50	\$0.00	General Purpose, Decoding	1B28 Lab
74LS02, Quad 2-input NOR, DIP-14	0	\$0.50	\$0.00	General Purpose, Decoding	1B28 Lab
74LS08, Quad 2-input AND, DIP-14	0	\$0.50	\$0.00	Generation of READ* Signal	1B28 Lab
74LS21, Dual 4-input AND, DIP-14	0	\$0.50	\$0.00	General Purpose, Decoding	1B28 Lab
74LS138, 3-8 Decoder, DIP-16	0	\$0.50	\$0.00	Peripheral Decoding	1B28 Lab
74LS156, Dual 2-4 Decoder, O.C., DIP-16	0	\$0.50	\$0.00	Peripheral Decoding	1B28 Lab
74LS245, Octal Transceiver, Tri-state, DIP-20	0	\$0.50	\$0.00	Peripheral Buffer or Data Bus	1B28 Lab

**Total Item Value**

**\$119.90** **Note: Student Cost for Parts Kit is \$80.00**

Students may sign out an accessory/tool kit containing the following items:

NVRAM, 28-pin ZIF socket (for NVRAM/EPROM), wire wrap tool, power supply, cutters, pliers, serial cable

Portable logic analyzers are also available to sign out for the semester. Items must be returned by the end of the semester.

Other items available to sign out or use may include: digital logic probe, higher frequency oscilloscope probes, hot air rework station

Students are financially responsible for any items they sign out.

Resistors, caps, wire wrap wire, and some small parts are available in the laboratory.

Note: There may be a few part substitutions or omissions, depending on availability.

Students should plan on obtaining parts for the final project from other sources, such as the ECEE Store, Digi-Key, Mouser, etc.