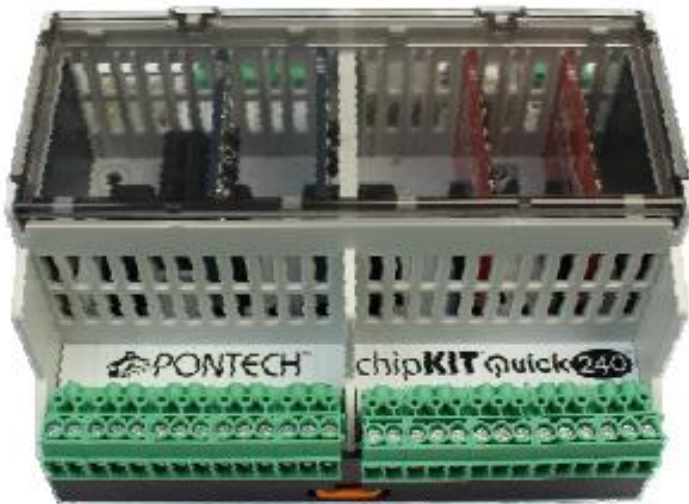


An Introduction to Embedded Systems

Laboratory Manual

By: Jacob Christ



Lab 0 - Introduction

The lab manual was developed over many years while teaching at the ELEC74 class at Mt. San Antonio College in Walnut, California. The basis for the lab manual was originally created by Jacob Christ and Brian Dobrovodsky in an afternoon and given to John Tsai to develop into a lab manual. Jacob then took what John created and heavily revised it while teaching the class for the first time with the material. The manual was further refined by various students and PONTECH employees over the next several classes. Some of the contributors include: Angel Ramos, Derrick Ramos, Michael Skoczen and David Dunlop

Bill of Materials

All of the labs, with the exception of lab1, can be completed with parts listed below. Lab 1 is a survey of several chipKIT boards as well as the Arduino Uno.

Qty	Reference	PLP#	Description	Manufacture	OEM P/N	DIGIKEY
8	R1-8	PLP-250	RES 120 OHM 1/6W 5% CARBON FILM	Yageo	120EBK-ND	120EBK-ND
1	R9	PLP-24	POT 5.0K OHM SQ CERMET TOP	Nidec Copal Electronics	CT94EW502-ND	CT94EW502-ND
6	R10-15	PLP-179	RES 10K OHM 1/6W 5% CARBON FILM	Yageo	CFR-12JB-52-10K	10KEBK-ND
1	R16	PLP-438	PHOTOCELL 16-33KOHM	Advanced Photonix	PDV-P8103	PDV-P8103-ND
1	BZ1	PLP-437	BUZZER PIEZO 4KHZ 12.2MM PC MNT	TDK Corporation	PS1240P02BT	445-2525-1-ND
1	LCD1	PLP-429	LCD 3 DIGIT .31" REFLECTIVE TN	Lumex Opto/Components Inc.	LCD-S301C31TR	67-1788-ND
4	D1-4	PLP-647	LED IND 5MM RED/GRN WHT DIFF	Kingbright	WP59EGW	754-1232-ND
1	U1	PLP-648	DAC 8BIT DUAL W/SPI 14PDIP	Microchip Technology	MCP4902-E/P	MCP4902-E/P-ND
1	R17	PLP-649	THERMISTOR NTC 10K OHM 5%	Cantherm	MF52A2103J3470	317-1258-ND
1	Q1	PLP-651	MOSFET N-CH 60V 600MA TO92-3	Diodes Incorporated	ZVN4206AV	ZVN4206AV-ND
3	U3-5	PLP-1061	IC SHIFT REGISTER 8BIT 16DIP	NXP USA Inc.	74HC595N,112	568-1484-5-ND
1	PCBA1	PLP-1095	Fubarino Mini board	Microchip Technology	TCHIP011	TCHIP011-ND

8	PLP-250	120EBK-ND
1	PLP-24	CT94EW502-ND
6	PLP-179	10KEBK-ND
1	PLP-438	PDV-P8103-ND
1	PLP-437	445-2525-1-ND
1	PLP-429	67-1788-ND
4	PLP-647	754-1232-ND
1	PLP-648	MCP4902-E/P-ND
1	PLP-649	317-1258-ND
1	PLP-651	ZVN4206AV-ND
3	PLP-1061	568-1484-5-ND
1	PLP-1095	TCHIP011-ND