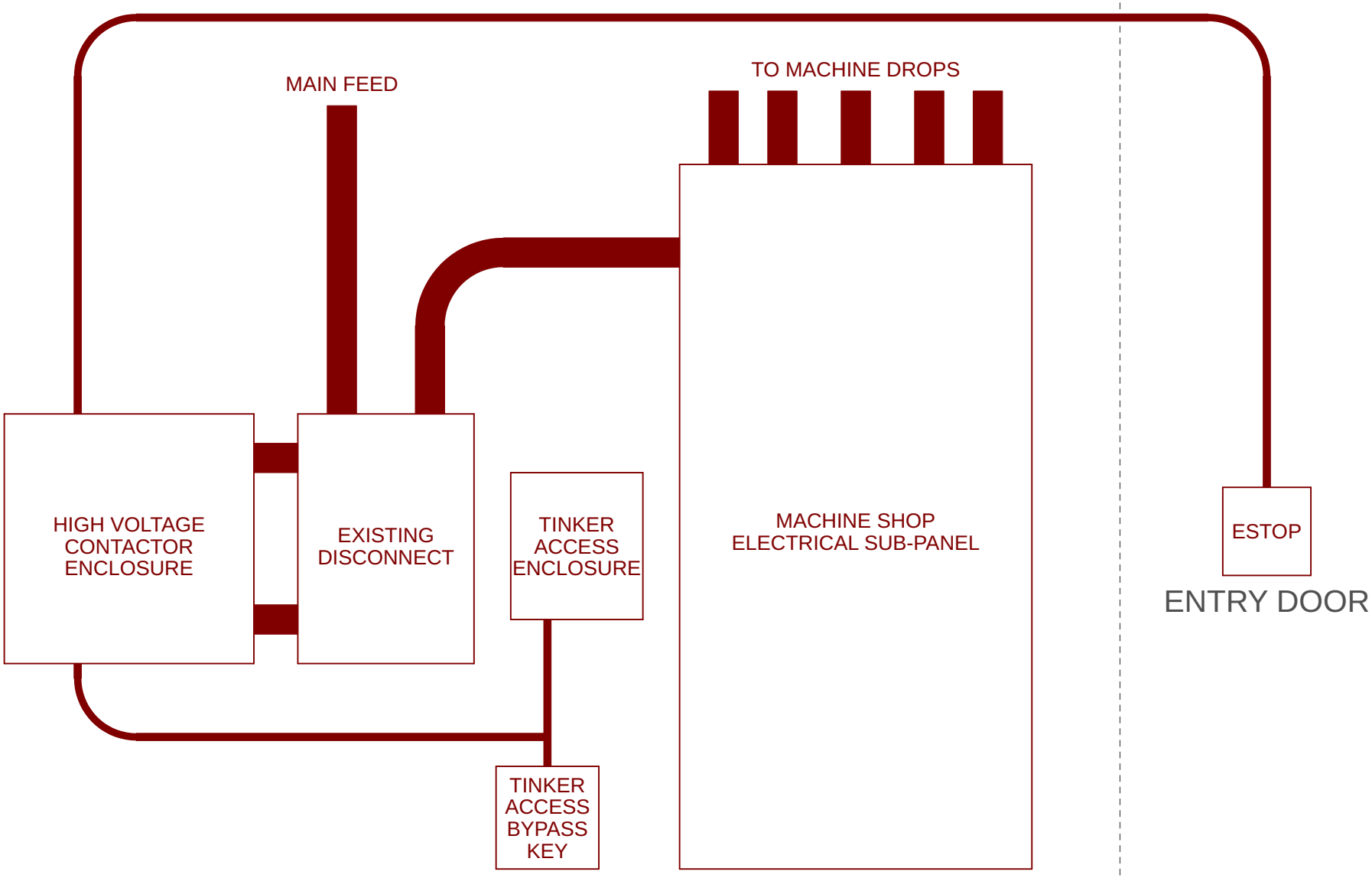

TITLE: Machine Shop TinkerAccess		
Design by: TinkerMill Longmont, CO		REV: 0.7
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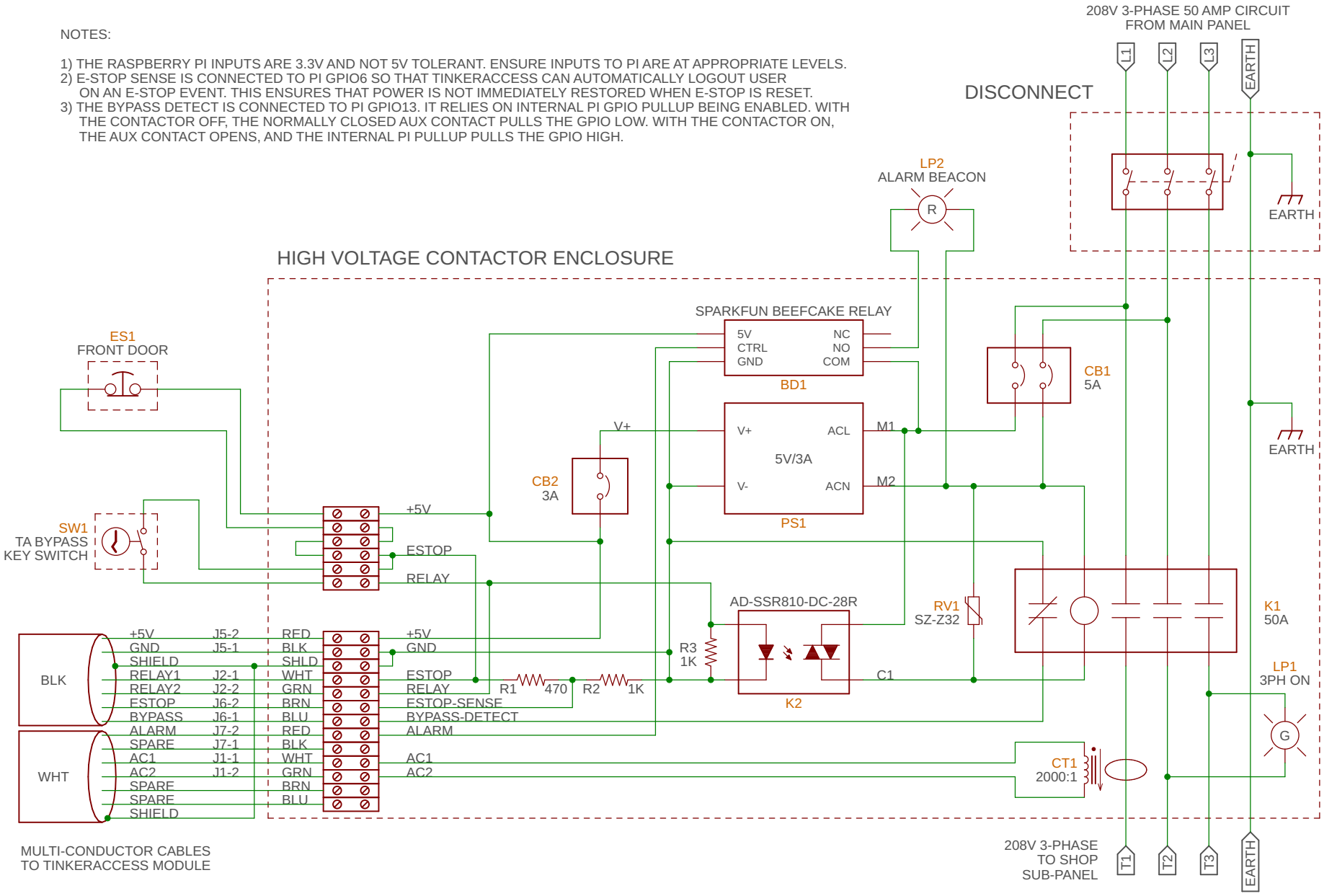
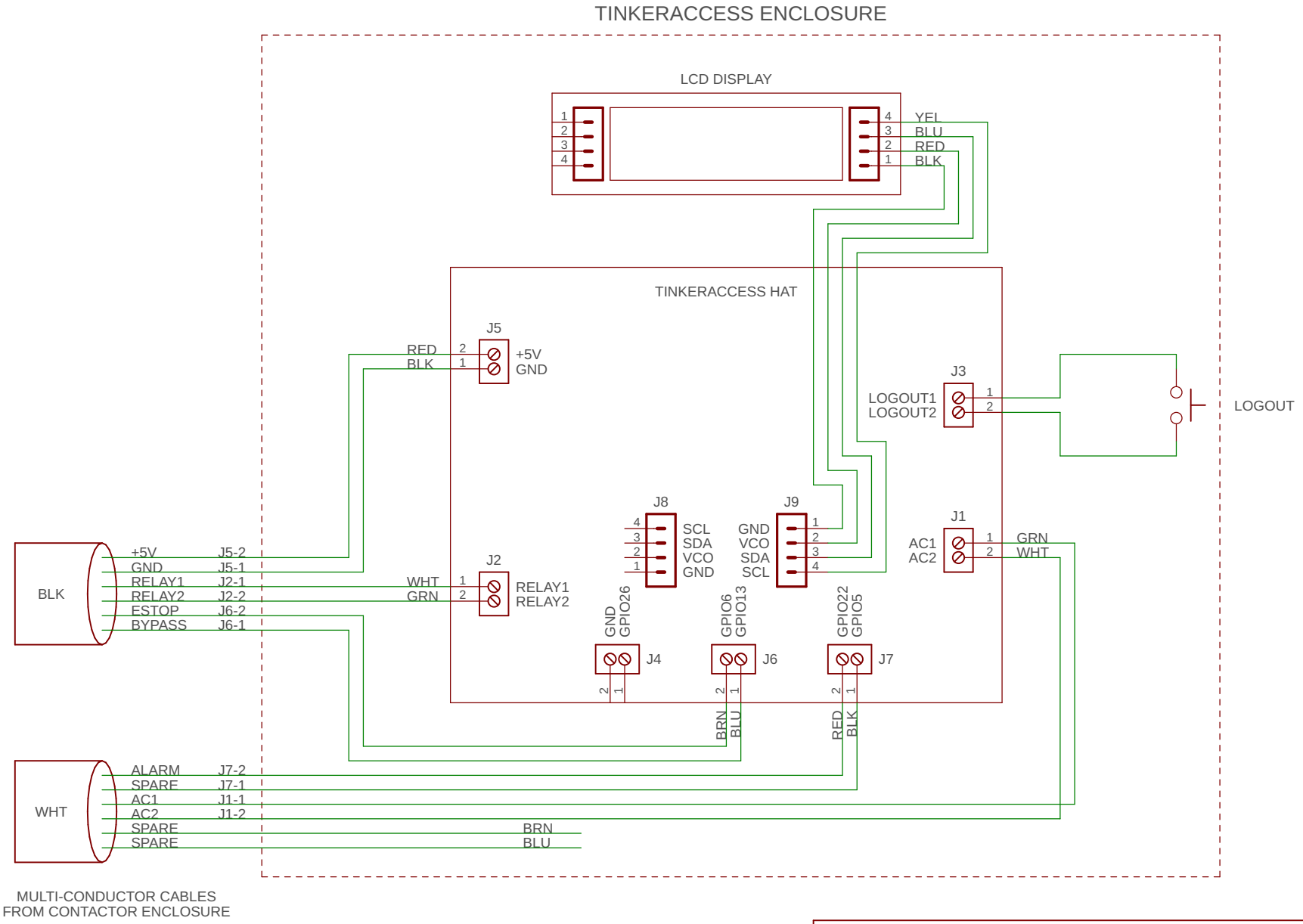
NOTES:

1) THE RASPBERRY PI INPUTS ARE 3.3V AND NOT 5V TOLERANT. ENSURE INPUTS TO PI ARE AT APPROPRIATE LEVELS.
2) E-STOP SENSE IS CONNECTED TO PI GPIO6 SO THAT TINKERACCESS CAN AUTOMATICALLY LOGOUT USER ON AN E-STOP EVENT. THIS ENSURES THAT POWER IS NOT IMMEDIATELY RESTORED WHEN E-STOP IS RESET.
3) THE BYPASS DETECT IS CONNECTED TO PI GPIO13. IT RELIES ON INTERNAL PI GPIO PULLUP BEING ENABLED. WITH THE CONTACTOR OFF, THE NORMALLY CLOSED AUX CONTACT PULLS THE GPIO LOW. WITH THE CONTACTOR ON, THE AUX CONTACT OPENS, AND THE INTERNAL PI PULLUP PULLS THE GPIO HIGH.



TITLE: Machine Shop TinkerAccess		
Design by: TinkerMill Longmont, CO		REV: 0.7
Date: 8/14/20 8:59 AM	Sheet: 2/3	



TITLE: Machine Shop TinkerAccess		
Design by: TinkerMill Longmont, CO		REV: 0.7
Date: 8/14/20 8:59 AM	Sheet: 3/3	

HV Enclosure

RefDes	Qty	Description	Package	Manufacturer	Manufacturer PN	Vendor	Vendor PN	Cost
BD1	1	SparkFun Beefcake Relay Control Kit (Ver. 2.0)		SparkFun	KIT-13815	SparkFun	KIT-13815	$8.95
CB1	1	Circuit Breaker, FAZ Series, 480Y/277VAC, 96VDC, 2 Pole, 5A, D Trip Curve	DIN Rail Mount	Eaton	FAZ-D5-2	Automation Direct	FAZ-D5-2	$20.00
CB2	1	Circuit Breaker, FAZ Series, 277VAC, 48VDC, 1 Pole, 3A, C Trip Curve	DIN Rail Mount	Eaton	FAZ-C3-1-SP	Automation Direct	FAZ-C3-1-SP	$10.00
K1	1	Contactor, Duo Series, 3 Pole, 220VAC Coil, 50A Inductive Load, 65A Resistive Load	DIN Rail Mount	Fuji Electric	SC-E2S-220VAC	Automation Direct	SC-E2S-220VAC	$70.00
	1	Auxiliary Contact, front mount, (1) N.O./(1) N.C. contact(s), 10A @ 600 VAC. For use with contactor SC-E2S(G)	DIN Rail Mount	Fuji Electric	SZ-A11T	Automation Direct	SZ-A11T	$8.75
K2	1	Solid State Relay, SPST-NO, Random Turn-on, 3-32 VDC Input, 10A / 24-280 VAC Load	DIN Rail Mount	Automation Direct	AD-SSR810-DC-28R	Automation Direct	AD-SSR810-DC-28R	$21.50
RV1	1	Varistor, Coil Surge Suppressor, 100-250V AC/DC, For SC-E1-xxx to SC-E4xxx Contactor	Terminals	Fuji Electric	SZ-Z32	Automation Direct	SZ-Z32	$15.00
	1	DIN Rail, Slotted, 35mm, 7.5mm height, 1m length, Plated Steel. Pkg of 2	Chassis Mount	Konnect-It	DN-R35S1-2	Automation Direct	DN-R35S1-2	$10.00
	1	Terminal Block, single-level, size 26 - 12 AWG, gray, 20A, 600V rated, 35mm DIN rail mount, pkg of 25	DIN Rail Mount	Konnect-It	KN-T12GRY-25	Automation Direct	KN-T12GRY-25	$6.50
	1	Terminal Block End Cover, gray, for use with KN-T12 to KN-T6 series terminal blocks, pkg of 25	DIN Rail Mount	Konnect-It	KN-ECT6GRY-25	Automation Direct	KN-ECT6GRY-25	$4.00
	1	Terminal Block Separator, gray, for use with KN-T12 to KN-T6 series block, pkg of 25	DIN Rail Mount	Konnect-It	KN-ST1GRY	Automation Direct	KN-ST1GRY	$8.00
	1	Terminal Block End Bracket, screw-down type, 10mm wide, for use with 35mm DIN rail, pkg of 10	DIN Rail Mount	Konnect-It	KN-EB7-10	Automation Direct	KN-EB7-10	$6.50
	1	Terminal Block Jumper, screw-down type, 2-pole, for use with KN-T12 or KN-D12 series block, pkg of 25	DIN Rail Mount	Konnect-It	KN-2J12	Automation Direct	KN-2J12	$8.00
	1	Enclosure, NEMA 12/13, 12 x 12 x 6in (HxWxD), wall mount, carbon steel, gray powder finish, hinged screw cover		Hubbell-Wiegmann	WA121206GIE	Automation Direct	WA121206GIE	$96.00
	1	Subpanel, carbon steel, white, polyester powder coat finish. For use with 12x12 WA121206GIE enclosure		Hubbell-Wiegmann	N1P1212	Automation Direct	N1P1212	$9.50
LP1	1	Indicator Lamp. Green, LED, Panel Mount, 125-250V	Panel Mount	Bulgin	LE2951WL5G	DigiKey	1091-1118-ND	$7.05
LP2	1	Flashing Beacon, Red, LED, 85-265VAC, 1/2" NPT mount		ESafety Lights, LLC	B45L4PACT	Amazon	B45L4PACT	$59.99
PS1	1	Power Supply, 85-264VAC Input, 5V/3A/15W Output	DIN Rail Mount	Mean Well	HDR-30-5	DigiKey	1866-2246-ND	$19.12
	1	Ground Bus Bar, 7 Terminal		Square D	he	Home Depot	578-169	$5.70
CT1	1	Current Transformer, 2000:1 turn ratio, 30A	Wire Leads	Echun	ECS1030-L72	SparkFun	SEN-11005	$9.95
R1	1	Resistor, 470, 5%, 1/4W, Axial	Axial					
R2,R3	2	Resistor, 1K, 5%, 1/4W, Axial	Axial					
ES1	1	Pushbutton, 22mm, Twist-to-release, Emergency Stop, (1) N.C. contact, Red mushroom Operator, 40mm		Automation Direct	GCX1131	Automation Direct	GCX1131	$13.50
	1	Pushbutton Enclosure, 1 hole, 22mm, 70 x 70 x 74mm (HxWxD), Wall mount, Thermoplastic ABS, Gray, Screw cover		Automation Direct	SA103SL	Automation Direct	SA103SL	$8.00
	1	Legend Plate, Oversized, Round, Yellow field, Yellow background, Black engraved text, Marking "EMERGENCY STOP"		Automation Direct	ECX1651	Automation Direct	ECX1651	$2.75
SW1	1	Keyed Switch						

$428.76

TinkerAccess Enclosure

Qty	Description	Package	Manufacturer	Manufacturer PN	Vendor	Vendor PN	Cost	Notes
1	Raspberry Pi 3 B+		Raspberry Pi Foundation	Pi 3 B+	SparkFun	DEV-14643	$39.95	
1	TinkerAccess Hat, v1.2		TinkerMill					
1	LCD, 16x2 SerLCD, Black on RGB, 3.3V		SparkFun	LCD-14072	SparkFun	LCD-14072	$19.95	
1	Switch, Pushbutton, Red, SPDT, Momentary		C&K	PNP8S3D2C03QE	Mouser	611-PNP8S3D2C03QE	$8.00	
1	Adapter, Qwiic		SparkFun	DEV-14495	SparkFun	DEV-14495	$1.50	
1	Cable, Qwiic, 100mm		SparkFun	PRT-14427	SparkFun	PRT-14427	$1.50	
1	Enclosure, NEMA 4X, 6.732" L x 4.764" W x 2.165" D, Plastic, Gray Body, Clear Cover		Bud Industries	PN-1324-CMB	DigiKey	377-1892-ND	$20.70	
1	Faceplate, Acrylic, Custom		TinkerMill					
4	Hex Nut, Nylon, #2-56		Essentra Components	0400256HN	DigiKey	RPC7088-ND	$0.06	LCD mounting to faceplate
4	Machine Screw, Nylon, Pan Head, Phillips, #2-56 x 1/2”		B&F Fastener Supply	NY PMS 256 0050 PH	DigiKey	H534-ND	$0.09	LCD mounting to faceplate
4	Machine Screw, Nylon, Pan Head, Phillips, #4-40 x 1/4”		B&F Fastener Supply	NY PMS 440 0025 PH	DigiKey	H542-ND	$0.09	RPi mounting to standoff
4	Machine Screw, Nylon, Pan Head, Phillips, #4-40 x 3/8”		B&F Fastener Supply	NY PMS 440 0038 PH	DigiKey	H544-ND	$0.09	Faceplate mounting to enclosure standoff
4	Machine Screw, Nylon, Pan Head, Phillips, #4-40 x 5/8”		B&F Fastener Supply	NY PMS 440 0063 PH	DigiKey	H548-ND	$0.09	RPI mounting to faceplate
4	Round Spacer, Nylon, 3/16” Dia, #2, 3/16”		Bivar Inc	9913-187	DigiKey	492-1043-ND	$0.04	Between LCD and faceplate
4	Round Spacer, Nylon, 3/16” Dia, #4, 1/4”		Bivar Inc	9908-250	DigiKey	492-1074-ND	$0.04	Between TinkerAccess Hat and faceplate
4	Hex Standoff, Nylon, 3/16” Hex, Female-Female #4-40, 5/8”		RAF Electronic Hardware	2059-440-N	DigiKey	1772-1853-ND	$1.89	Between TinkerAccess Hat and RPi
4	Hex Standoff, Aluminum, 1/4” Hex, Male-Female #4-40, 1-1/4” Length		Keystone	8407	DigiKey	36-8407-ND	$1.01	Between faceplate and enclosure
							$105.20	