

Company	Description	Part	Part Number	Quantity	Unit Price	Subtotal	Total
National Instruments	ProtoBoard Starter Kit	NI myRIO-1900 Enclosed ProtoBoard NI myRIO Starter Kit	376047A-01 783068-01	1 1	\$250 \$99	\$250 \$99	\$250 \$349
Anaheim Automation	Stepper Motor	34VDC IP65 Rated Sealed Stepper Motor -1200oz-in DPD72001 - Stepper Drivers with 110VAC or 220VAC Input ENC-A31 Single-Ended High Resolution w/ Index Channel	34Y65214S-CB8	1	\$324	\$324	\$324
Anaheim Automation	Stepper Driver	DPD72001 - Stepper Drivers with 110VAC or 220VAC Input ENC-A31 Single-Ended High Resolution w/ Index Channel	DPD72001	1	\$675	\$675	\$675
Anaheim Automation	Encoder	ENC-A31 Single-Ended High Resolution w/ Index Channel	ENC-A31-0400-984-H-T	1	\$96	\$96	\$96
Swagelok	Needle Valve	Needle Valve 10.000 PSI, 1"NPT, ANGLE	NV16N2RD10	1	890.2	890.2	890.2
McMaster Carr	1/4" Ball Valve	Extreme-Pressure Type 316 Stainless Steel Ball Valve, 1/4" NPT Female	3553K21	2	171.95	343.9	343.9
Fastenal	M3x16 Screw	Type 18-8 Stainless Steel Socket Head Cap Screw M3 Thread, 16mm Length, 0.5mm Pitch	M82510016A20000	4	0.11	0.44	0.44
Fastenal	M4x25 Screw	Type 316 Stainless Steel Socket Head Cap Screw M4 Thread, 25mm Length, 7mm Pitch	M82530025A20000	4	0.155	0.62	0.62
Fastenal	M5x20 Screw	Type 316 Stainless Steel Socket Head Cap Screw M5 Thread, 20mm Length, 7mm Pitch	M82540020A40000	4	0.44	1.76	1.77
Fastenal	M4 Washer	MW6340030A40000		4	0.03	0.11	0.11
Fastenal	M4 Locknut	11512094		4	0.18	0.71	0.71
Fastenal	10-32x1-1/8" Screw	Stainless Steel Socket Head Cap Screw 10-32 Thread, 1-1/8" Length	23244	4	0.67	2.66	2.66
Fastenal	#10 Washer	18-8 Stainless Steel General Purpose Flat Washer Number 10 Screw Size, 7/16" OD, .02"-.04" Thick	110237	1	0.11	0.105	0.42
Fastenal	10-32 Locknut	Type 316 Stainless Steel Nylon-Insert Hex Locknut 10-32 Thread Size, 3/8" Width, 15/64" Height	70858	4	0.14	0.57	0.57
McMaster Carr	1" Ball Valve	Extreme-Pressure Type 316 Stainless Steel Ball Valve, 1" NPT Female	3553K29	1	\$372.49	\$372.49	\$372.49
McMaster Carr	Flex Coupling	Clamp-on Helical Flexible Shaft Coupling, 303 Stainless Steel, 57mm Length, 38mm OD	2483K15 A-16 B-16	1	203.51	203.51	203.51
McMaster Carr	Latch	Wing-Handle Cam Latch, 3/8", 5/8", 7/8" Latch Distance, 3/4" Mount Hole Diameter	1820A21	1	4.45	4.45	4.45
McMaster Carr	Hinges	Surface-Mount Hinge, 430 Stainless Steel, Dull, Removable Pin, 3" H, 2-5/8" W	1488A11	1	5.6	5.6	5.6
McMaster Carr	Shims	Tapered Shim, Rigid Plastic, 1-15/16" Length	97203A200	1	13	13	13
Misumi	Linear Guide	Linear Guides for Medium and Heavy Load - Stainless Steel Type	SSV2W24-220	1	\$182.87	\$182.87	\$182.87
Home Depot	Concrete Screws	Tapcon 1/4" x 2-1/4" 10,000 psi		1	3.73	3.73	4.04
Omega	Transducer	10,000psi pressure transducer w/ 5' cable	PX309-10KGSV	1	\$225.00	\$225.00	\$225
Omega	Transducer	5,000psi pressure transducer w/ 5' cable	PX409-1.0KGSV	1	\$475.00	\$475.00	\$475
Omega	Transducer	1,000psi pressure transducer w/ 5' cable	PX409-5.0KGSV	1	\$475.00	\$475.00	\$475
Parker	1/4" Adapter	Adapter 1/4"MNPT	4-4 MHN-SSHP	2	91.51	\$183.02	\$183.02
Cooper	Pipe Clamp	Pipe Clamp	B3198R-1	5		0	0
Cooper	Wall Holder	Wall Holder for Pipe Clamp	B3199R-3/8	5		0	0
Cooper	Rod	Rod for clamps 3/8" -16	ATR 3/8" x L'	5		0	0
McMaster Carr	Pipe Clamp		3023T25	5	3.82	19.1	19.1
McMaster Carr	Wall Holder		11445T3	5	2.03	10.15	10.15
McMaster Carr	Rod		94435A314	5	7.61	38.05	38.05
McMaster Carr	2.5"x2.5"x12" Aluminum	88775K85		1	204.3	204.3	204.3
onlineMetals	3/8" Aluminum	3/8"x12x12 Aluminum		1	46.04	46.04	46.04
onlineMetals	.063" Aluminum	.063x36x48 6061 T6		1	65.44	65.44	65.44
Commercial Pipe & Supply Co.	Pipe	1" XXS Pipe		3	2.33	6.99	6.99
	Pipe			36	2.33	83.88	83.88
	Pipe			5	2.33	11.65	11.65
	Pipe			7	2.33	16.31	16.31
	Pipe			16	2.33	37.28	37.28
	Pipe			14	2.33	32.62	32.62
	Pipe modification	Pipe Cuts		10	4.25	42.5	42.5
	Pipe Elbow	1" NPT Threaded 90 deg Elbow		3	50	150	150
	Pipe Tee	1" NPT Threaded 90 deg Tee		3	50	150	150
National Instruments		NI CRIO-9075 Integrated Controller and Chassis, 4-Slot LX 25 FPGA	781715-01	1	\$1299	\$1299	
		NI 9401 8-Channel, 100 ns, TTL Digital Input/Output Module	779351-01	1	\$287	\$287	
		NI 9215 4 ch, 16-Bit, +/-10 V, 100 kS/s/ch, SS DDF AI	779011-01	1	\$535	\$535	
		NI 9472 8-Ch 24 V, 100 us, Sourcing DO Module	779004-01	1	\$99	\$99	
		NI 9924 Front-mount terminal block for 25-pin D-Sub Modules	781922-01	1	\$102	\$102	
		NI 9927 Strain Relief and Operator Protection	782715-01	2	\$30	\$60	
		NI Standard System Assurance Program for CompactRIO	960903-04	1	\$170	\$170	
							\$2581.08
Cooper supplies	Hardware	\$1202.32					
Key Components		\$4587.07					
Total		\$5993.69		-67.3	\$5926.39		
Total with DAQ		\$8574.77					
Alternate Coupling	1" Aluminum x 12"		90465K11	1	17.51		