

PLC Trainer Platform Single Unit Price	\$2,417.48
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The goal of this analysis is to find the price to produce one unit of the PLC Trainer Platform design concept. This design is made of 80/20 aluminum extruded parts and hardware, acrylic panels, wiring ducts, and various PLC field devices. This will help to investigate the cost effectiveness of this particular design where my team has created multiple concepts with similar components but different means of accomplishment.

1. All structural material (i.e 80/20 extrusion, acrylic, hardware) are used/built without error or extra material
2. All prices and calculations are without taxes and or shipping fees
3. Component prices are listed at the time of the analysis and have not been updated (unless stated otherwise) to current market value
4. Hardware components for assembly have been neglected due to their small relative price and unknown quantities at the time of the analysis
5. Wire has been neglected due to its small relative price and unknown power requirements with module interaction (Other parts of the design not included in this analysis)

The PLC Trainer Platform Single Unit Price was calculated with the formula: **PLC Trainer Platform Single Unit Price = Total Cost of Structural Components + Total Cost of External Devices + Total Cost of Auxiliary Components**

Structural Components							
Item	Purpose	Dimensions	Vendor	Web-Link	Quantity	Cost Per Unit	Total Cost of Component
80/20 Extruded Aluminium	X-axis frame	1.5" X 1.5" X 25"	80/20	<a href="https://8020.net/1515.html">https://8020.net/1515.html</a>	4	\$22.04	\$88.16
80/20 Extruded Aluminium	Z-axis frame	1.5" X 1.5" X 8"	80/20	<a href="https://8020.net/1515.html">https://8020.net/1515.html</a>	4	\$8.95	\$35.80
80/20 Extruded Aluminium	Y-axis frame	1.5" X 1.5" X 17"	80/20	<a href="https://8020.net/1515.html">https://8020.net/1515.html</a>	4	\$15.88	\$63.52
Acrylic Panel	Front control panel	0.25" X 24" X 18"	80/20	<a href="https://8020.net/2601.html">https://8020.net/2601.html</a>	1	\$43.00	\$43.00
Total Cost of Structural Components : \$230.48							

External Devices							
Item	Purpose	Dimensions	Vendor	Web-Link	Quantity	Cost Per Unit	Total Cost of Component
BX-DM1E-10ER3-D	PLC CPU	2.41" X 4.25" X 3.59"	Automation Direct	<a href="https://www.automationdirect.com/usa/products/PLC/BX-DM1E-10ER3-D">https://www.automationdirect.com/usa/products/PLC/BX-DM1E-10ER3-D</a>	1	\$307	\$307
DR16F0N-E3G	LED indicators	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/LED-Indicators/DR16F0N-E3G">https://www.automationdirect.com/usa/products/LED-Indicators/DR16F0N-E3G</a>	4	\$13	\$52
AR16F0N-G2E3G	Push button	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Buttons/AR16F0N-G2E3G">https://www.automationdirect.com/usa/products/Buttons/AR16F0N-G2E3G</a>	4	\$17.50	\$70
AF16PR-2C1B	Selector Switches	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Selector-Switches/AF16PR-2C1B">https://www.automationdirect.com/usa/products/Selector-Switches/AF16PR-2C1B</a>	2	\$18.50	\$37
ECX2300-10K	Potentiometer Dial	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Potentiometers/ECX2300-10K">https://www.automationdirect.com/usa/products/Potentiometers/ECX2300-10K</a>	2	\$41.50	\$83
GCX1131	Emergency Stop	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Emergency-Stops/GCX1131">https://www.automationdirect.com/usa/products/Emergency-Stops/GCX1131</a>	1	\$14.50	\$15
2787-2144	120VAC to 24VDC Converter	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Power-Supplies/2787-2144">https://www.automationdirect.com/usa/products/Power-Supplies/2787-2144</a>	1	\$179.00	\$179
BX-4AD4DA-3	Analog I/O module	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/I-O-Modules/BX-4AD4DA-3">https://www.automationdirect.com/usa/products/I-O-Modules/BX-4AD4DA-3</a>	1	\$330.00	\$330
BX-08CD3R	Digital I/O module	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/I-O-Modules/BX-08CD3R">https://www.automationdirect.com/usa/products/I-O-Modules/BX-08CD3R</a>	1	\$69.00	\$69
KN-T12GRY-100	Power Terminal Block	Pack of 100	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Terminal-Blocks/KN-T12GRY-100">https://www.automationdirect.com/usa/products/Terminal-Blocks/KN-T12GRY-100</a>	1	\$34.50	\$35
CM5-T10W	HMI	10" Screen	Automation Direct	<a href="https://www.automationdirect.com/usa/products/HMI/CM5-T10W">https://www.automationdirect.com/usa/products/HMI/CM5-T10W</a>	1	\$769.00	\$769
ZL-BX-CBL15	I/O Terminal Block Cable	0.5 meters	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Cables/ZL-BX-CBL15">https://www.automationdirect.com/usa/products/Cables/ZL-BX-CBL15</a>	3	\$30.50	\$92
ZL-RTB20	I/O Terminal Block	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Terminal-Blocks/ZL-RTB20">https://www.automationdirect.com/usa/products/Terminal-Blocks/ZL-RTB20</a>	3	\$31.50	\$95
FAZ-B1P5-1-NA-L-SP	1.5 amp circuit breaker	N/A	Automation Direct	<a href="https://www.automationdirect.com/usa/products/Circuit-Breakers/FAZ-B1P5-1-NA-L-SP">https://www.automationdirect.com/usa/products/Circuit-Breakers/FAZ-B1P5-1-NA-L-SP</a>	1	\$23.00	\$23
Total Cost of External Devices:						\$2,154	

Auxiliary Device Components							
Item	Purpose	Dimensions	Vendor	Web-Link	Quantity	Cost Per Unit	Total Cost of Component
DN-R35S1-2	Din Rail	35mm X 7.5 mm X 1 m (Pack of 2)	Automation Direct	<a href="https://www.automationdirect.com">https://www.automationdirect.com</a>	1	\$11.00	\$11.00
T1E-1015G-1	Wire Duct	1" X 1.5" X 2m (Narrow finger duct)	Automation Direct	<a href="https://www.automationdirect.com">https://www.automationdirect.com</a>	1	\$22.00	\$22.00
Total Cost of Auxiliary Components:			\$33				

