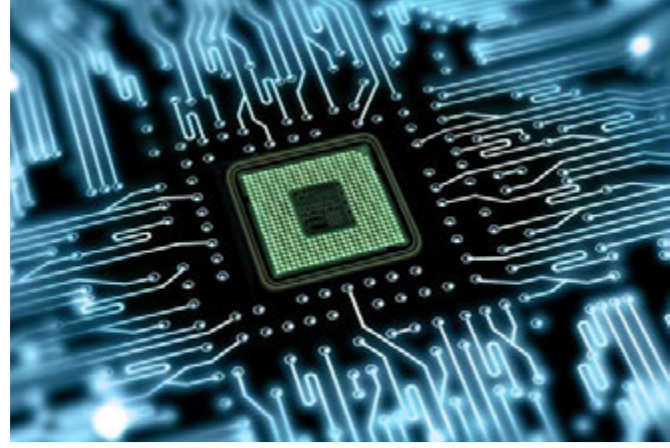




## INDUSTRIAL TRAINING Workstation

GP Strategies Electrical Troubleshooting Training Station



The GP Strategies® Electrical Troubleshooting Training Station is designed to introduce maintenance personnel to the fundamentals of relay-based motor control, programmable logic controller (PLC)-based motor control, and troubleshooting. Equipment is based on industry standard equipment that maintenance personnel operate and repair on a daily basis. The system is designed to allow for the construction of motor control circuits that are of the same design as found in facilities.

Starting with relay-based motor control, students are able to learn the fundamentals of motor control circuit design, operation, and troubleshooting through the training station. All components can be faulted to provide realistic scenarios to students in a lab environment.

Advancing to PLC-based controls allows for continuing expansion of practical knowledge in programming, maintenance, and troubleshooting of PLC-based control systems. Students design, build, test, and troubleshoot PLC-based control schemes using the same training station that utilizes the relay motor control.

The double-sided design of the training station allows multiple students to perform hands-on tasks at the same time while being powered from a single 110V source.





## Equipment Requirements

- 110V single-phase power

## Equipment Not Included

- Laptops with Windows 10 for installation of PLC controls software

## Standard Equipment Included

- Single, three-phase converter
- Two variable frequency drives
- Two PLCs
- Two motors
- Built-in fault switches

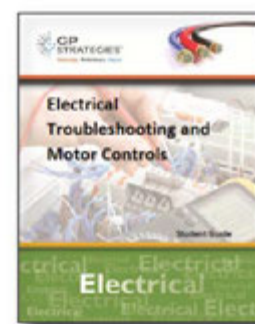
The standard equipment options on the Electrical Troubleshooting Training Station use current industry standard relay controls, pushbuttons, selector switches, timers, contactors, and more. The PLC uses an Allen-Bradley Studio 5000 (RS Logix 5000) programming and an Allen-Bradley Variable Frequency Drive.

Not every plant uses Allen-Bradley controllers or drives. We can customize the training station to include controllers and drives that are applicable to specific facilities. Please note that customization requests can affect costs or delivery times.

## Courseware Pairing

The GP Strategies Electrical Troubleshooting Training Station pairs with the following GP Strategies Precision Maintenance Courseware:

- EM-230: Motor Controls and Troubleshooting
- EM-306: Basic Programmable Logic Controllers (Studio 5000)
- EM-325: Variable Frequency Drives

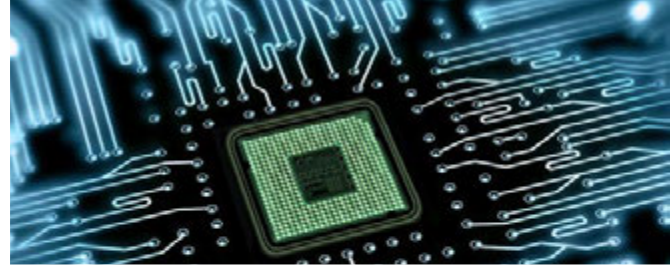


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# Industrial Training Workstation

## GP Strategies Electrical Troubleshooting Training Station

### DATA SHEET



GP Item Number	Item Description	Unit Quantity
AB 20AB2P2A3NYNNNC1	VFD-01 / VFD-02 - PF-70EC W/ HIM (LCD type)	2
1769-L30ER	PLC-01/02 CompactLogix PLC - 8 I/O Exp - 1MB mem - 1GB SD card	2
1585J-M8TBJM-1M9	RJ-45 Patchcord - Male to Male - 1.9m	2
1769-IA8I	Input Module - 120/240 VAC - 8 point	2
1769-OA8	Output Module - 120/240 VAC - 8 point	2
1769-OW8	Relay Output Module - VAC/VCD - 8 point	2
1769-PA2	CompactLogix PLC Power Supply	2
1769-ECR	PLC Right End Cap	2
AB 9324-RLD200ENE	RSLogix 5000 Software Package	2
AB 9509-USB-DONG2	Rockwell Software - US Dongle	2
M22-L-R-230R	Pilot Lights, Red	4
M22-L-G-230G	Pilot Lights, Green	4
M22-L-W-230W	Pilot Lights, White	4
M22-WKV-K22	Selector Switch - 2 POS - DPDT - 22.5 mm	6
HBLDS3	Lockable 3 Phase Disconnect Switch - 230V 4 Wire	2
AB 700-KR2Z2-D	Control Relays - 120V Coil - 230V Contacts - (2) N.O. & (2) N.C. Contacts	6
3SU1000-1HA20-0AA0	PB01/2 Panel "E" Stop Switch - 40mm Push/Pull Red	2
1489-M3C050	AC Circuit Breaker - 3 pole 5A	2
1489-M1C010	AC Circuit Breaker - 1 pole 1A	4
1489-M2C010	AC Circuit Breaker - 2 pole 1A	2
1492-PDME1141	Enclosed Power Distribution Terminal Blocks	8
3SU1500-0AA10-0AA0	Push Button Flush - Holder	4
3SU1400-1AA10-1BA0	Push Button Contact Section - 1 N.O.	4
3SU1400-1AA10-1CA0	Push Button Contact Section - 1 N.C.	4
RHS5000E	VR1/2 Rheostat - Ohmite - 5k Ohm	2
337	Rheostat Control Knob - 1/4" shaft	2
C22-D-R-K11	PB1/2R Pushbuttons - Red - 1 N.O. & 1N.C. Contact	4
C22-D-S-K11	PB1/2B Pushbuttons - Black - 1 N.O. & 1N.C. Contact	4
C22-D-G-K11	PB1/2G Pushbuttons - Green - 1 N.O. & 1N.C. Contact	4
3RT2018-1AK61-0UA0	300 NEMA Contactor - 120V w 230V Contacts 4 N.O. - Contacts - All Contacts Faultable	4
3RH2911-1HA12	300 NEMA AUX Contactor - 230V Contacts 2 N.C. - 1 N.O. Contacts	4

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GP Item Number	Item Description	Unit Quantity
AB 505-TOD	Reversing Motor Starter - 120V w 230V Contacts 4 N.O. FWD, 4 N.O. REV, 1 N.C. FWD, 1 N.C. REV	2
Baldor BM3568	M-1A / M-1B - 1/4 HP motors	2
ADX3 (SPECIAL w 120V Supply Input)	Power Converter - 1 ph in - 3 ph out - 3 hp	1
E10T106AP	AC Power Switch - 120V - SPST Toggle	1
ECA7-723624FSDA	NEMA 12 UL Panel Enclosure - 72H x 36W x 24D - Grey	1
SCE-72P36F1	Bent Subpanel - 60H X 30W X 0.88D - White	2
93505A013	Threaded Hex Standoff - ALU m/f - 1/4" x 3" - 6-32 thread	40
91875A110	Steel Cap Nut - zinc plated - 5/16" - 6-32 thread - 50/pk	1
MISC	Shipping Pallet Construction Materials	1
6.94E+12	Pallet Tie Down Straps - 27' - 10k lbs	2
8.87E+11	Pallet Tie Down Eye Bolts - 3/8" x 5 1/2"	4
132LC25	DC Speed Control, Chassis, 200VDC Shunt Wound Volts, 0 to 180VDC Voltage Output, 1.2 Max. Amps	2
056E17F1001	1/4 HP DC Permanent Magnet Motor Permanent Magnet DC, 1750 Nameplate RPM 90VDC Voltage 56C Frame	2
5052-H32 0.90"	Panel Shipping Covers - 0.090" ALU - 35 3/4" x 64 1/2"	2
93685A345	Zinc Plated 1/4 Turn Panel Screws	6
93450A130	Zinc Plated Rivet In Nuts	6
13195A51	Flush Mnt Tie Downs	8
UT 4 - MLT	Fault Switches - Mini-Toggle - SPST	300
AB 1497B-A3-M12-0-N	Control Transformer 100VA 120/240-120/240VAC	2
AB 193-EECB	E1 Plus Solid State Overload Relay, 1.0-5.0A, 3 PH	4
AB 193-EPB	Solid State Relay Adapter - Din Rail MT	2
AD-SSR610-AC-280A	Solid State Relay - Panel MT - 10A - SPST - 90-280V	4
AB 700-HRV52TA17	TDR1/2 - Multi-Function Timing Relay DPDT 100-240VAC	4
AB 199-DR1	DIN Rail - 35.5", 17 Holes	2
AB 199-DR1	DIN Rail - 9.5", 5 Holes	2
TY3X3NPG6	Thomas & Betts 3"X3"X6' Gray Duct Wireway	24
TY3CPG6	Thomas & Betts 3" X 6' Gray Wireway Cover	24
TY4X3NPG6	Thomas & Betts 4"X3"X6' Gray Duct Wireway	12
TY4CPG6	Thomas & Betts 4" X 6' Gray Wireway Cover	12
AB 1492-EAJ35	End Anchors	34
AB 1492-LG4	DIN Rail Ground Terminals	10
E/NS 35 N - 0800886	Patch Panel End Clamps	60
B33-125-2-342-2	Wire Label Sleeve - White	1
AB 1492-J3	Control Terminal Block - Gray	24
AB 1492-EBJ3	End Barriers	4
AB 1492-EBJ3	Ground Bar	2
ILSCO TA-2	Power Ground Terminal Lug	2
TBD	S/N Tag	1
94750A594	T-Slot Nut - 8 ST 1/4IN-20 SAE (100 PCS)	20

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GP Item Number	Item Description	Unit Quantity
McM 2702T81	Swivel Castor Wheel w Lock - 3.5" DIA (250 Lbs Capacity)	4
9600K89	Grommet 1.06"	1
9600K21	Grommet 0.75"	1
TBD	Misc Tags	80
AB 700-HN101	Screw Terminal Tube Base Socket - 11 Pin (PK OF 10)	1
AB 700-HN131	Timing Relay Retainer Clip	2
AB 800F-15YE112	E-Stop Tag	2
9284RED	Banana Jacks - Red	250
9284BLU	Banana Jacks - Blue	270
9284GRN	Banana Jacks - Green	10
9284BLK	Banana Jacks - Black	85
9284WHT	Banana Jacks - White	30
B-48-X	Connection Leads - Banana Plug - assorted - double ended - 48"	40
B-24-X	Connection Leads - Banana Plug - assorted - double ended - 24"	40
McM	Piano Hinge - 1" Open, 0.032" THK, 0.090" Pin, 3' Long	1
9600K45	Grommet - 3/16" ID - 7/16" Panel Hole	2
NR1-C	Rivet Push 0.370" Nylon	2
VET-SP-IEC-JACK	Panel Mount Snap-In IEC C14 Male Socket - 10A	1
FP-301 3/16" BLK	3M Heat Shrink Tubing - 3/16" Blk - 100 feet	1
SRPE-375	Spiral Cable Wrap - Clear POLY - 9.5mm	10
HBL4729C	L515R Twist Lock Female Connector 15A/125V	1
HBL4716C	L515P Twist Lock Male Inlet 15A/125V	1
NDB3100J425-2LSS1A0R	UL1077 AC Panel Mount Circuit Breaker - Duplex 25 AMP	1
5052-H32 0.90"	Panel Shipping Covers - 0.090" ALU - 35 3/4" x 64 1/2"	2
93685A345	Zinc Plated 1/4 Turn Panel Screws	6
93450A130	Zinc Plated Rivet In Nuts	6
13195A51	Flush Mnt Tie Downs	8
UT 4 - MLT	Fault Switches - Mini-Toggle - SPST	300
AB 1497B-A3-M12-0-N	Control Transformer 100VA 120/240-120/240VAC	2
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HBL4716C	L515P Twist Lock Male Inlet `15A/125V	1
NDB3100J425-2LSS1A0R	UL1077 AC Panel Mount Circuit Breaker - Duplex 25 AMP	1

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