

A ing Sys because , signals. T, Con, n. CURRICULUM IS ruth rg Topics: Fault Insertion t Control Amatrol's 890-FTS-1 Motor Control Troubleshooting Module adds to the model 85-MT5 Motor Control Learning System to provide troubleshooting training via computer-based fault insertion. The 890-FTS-1 is unique because it can insert faults into electrical lines that carry full power to electric motors as well as control-level signals. This gives it the ability to create a more realistic troubleshooting environment for students. The Motor Control Troublehshooting Module also avoids damage to the equipment that is normally associated with manual fault insertion because it inserts the faults electronically. Training equipment last longer and troubleshooting is safer for both the student and the teacher.

Troubleshooting is one of the most important skills a student can learn. To do so requires intensive practice in a realistic setting and teacher analysis of each student's methods. The 890-FTS-1 module gives teachers the ability to accomplish this in an effective manner because it can automatically insert a wide array of faults throughout the training system and record student responses in a computer database. With this system, the teacher can work freely in the classroom, analyzing each student's results and coaching them while other students are performing their troubleshooting exercises.

> The 890-FTS-1 Motor Control Troubleshooting Module consists of FaultPro software, PC-based fault control card, fault module with a wide array of faults and individual plug-in connection cables, power supplies, and operation manual. FaultPro software is a Windows-based software package that provides an on-line interface for student troubleshooting and a database for record keeping of student responses.

> > www.amatrol.com

# **DESIGNED FOR LEARNING**

**Real World Faults -** The 890-FTS-1 can insert faults into electrical lines that carry full power to electric motors as well as control level signals, providing students with a more realistic troubleshooting experience. It contains heavy-duty industrial relays that are optically-isolated from the PC running the Fault-Pro software. The 890-FTS-1 easily mounts to the rear frame of the 85-MT5 Motor Control Module and connects to the 85-MT5 components through plug-in cables. A PCI-style Fault Control Card inserts in the PC to provide communications between the PC and the Fault Control Module.



**Realistic troubleshooting experience** 

E 1 8495.48 PLC 5	Controllers - AB PLD/5	F	sults F	or I/O Mod	ules:		
🖲 🦁 LAP 6			Fault		Name	Type	Activ
8-10 LAP 7				Input Module, I			No
B-4 SKIL 3				Input Module, It			Yes
Power Su				Input Module, I			Ye:
	Station - Left			Input Module, I			No
	esmatic Station - Right			Input Module, I			No
E 😴 LAP B				Input Module, 1 Output Entire M			No.
⊕-10 LAP 9 ⊕-10 LAP 10				Output Entre M Output Module			No
⊕ - ♥ LAP 11     Masteing Programmable C     ⊕ Ø B482 Modeon 984	Controllers - Modicon 984 Controllers - 48 SLD 500		11				Þ
H C B490 48 SLC 500 B C B490 48 SLC 500 B C B470 48 PLC 5 B C B470 48 PLC 5			60	d Statian	Delete Station	]	
R C 8490 A8 SLC 500			مر Edit D		Delete Station	J	
Betol Ad SLC500     M R540500 HC5     M R540500 HC5     Betol Ad PLC5     rrent Selection Details     Template: Ad PLC5 Programme	able Logic Controllers			ata	Delete Station	J	_
Betol Ad SLC500     M R540500 HC5     M R540500 HC5     Betol Ad PLC5     rrent Selection Details     Template: Ad PLC5 Programme			Edit D	ata		]	-
Betol Ad SLC500     M R540500 HC5     M R540500 HC5     Betol Ad PLC5     rrent Selection Details     Template: Ad PLC5 Programme	able Logic Controllers		Edit D	ata		- -	-
Below Apple State Street State Street Selection Details     Template: All PLCS VICS     Template: All PLCS Programme Unit: Mattering Programme	able Logic Controllers		Edit D	ata	Description	4	_

Immediate student troubleshooting feedback

#### On-Line Student Control - Fault-

Pro software features on-line student control of troubleshooting activities through menu-driven screens, making it easy for students to perform their own troubleshooting exercises. Students get immediate feedback about their responses so they know if they are learning. An on-line help screen provides step-by-step instructions during the troubleshooting process.

### **TECHNICAL DATA**

#### Fault Control Moduel

- -Steel enclosure -Dimensions 40 in. L X 3.25 in. W X
  - 4.875 in. H
- -Fault Relays (35)
- -Fault interconnect cables (35) -10Amps, 115/230 VAC
- -Internal power supply, 120/230 VAC, 50/60 Hz

#### Fault Control Card

-PCI-Style -Ribbon Cables to connect the PC installed control card to the Fault Controller (2)

#### FaultPro Software

-CDROM-based media -Windows 2000 or above, XP preferred

#### Additional Required Items

-85-MT5 Electric Motor Control Module -Personal computer with Windows 2000 or higher (XP preferred) and PCI slot -Power requirements: 1 AMP, 115/230VAC

**Data Tracking and Grading** -Each student's responses are automatically recorded in the student's database and scored according to a rubric, which can be edited by the teacher. The data recorded includes: which faults are mastered, total time spent on each fault, and number of tries to master each fault. Class statistics can also be generated so teachers can analyze exercises and students.

Edit Template						
• • • • • • • • • • • • • • • • • • • •						
Femplate Structure						
(i) 👩 B482 Modicon 984	-					
B Mastering Programmable Controllers - AB SLC 500	Lane:	Laps:				
😨 🌔 8490.48 SLC-500						
E M RS-LOGOV PLC-5	Name Description LAP 7 Systems Toobleinostrop					
B Ø 8478.48 PLC8						
E Mastering Programmable Controllers - Quantum	LAP 8 R	eversing Motor Control				
🛞 🌔 B474 Modicon Quantum		utomatic Input Devices 1				
Electric Motor Control - 890 FTS-1     ESINTS		asic Timer Control: On delay and Olf-delay				
B C BOMIS B C LAP 7	LAP 11 8	taking Methods				
E C LAPE		educed Voltage Stating				
0 00 LAP 9		lectronic Senzors				
E 0 LAP 10		mers and Counters				
10 10 LAP 11		ariable Frequency AC Drives - Fault Diagnostics and Trouble				
H-10 LAP 12	LAP 20 5	CR Mater Control				
(8) 🛷 LAP 14		2				
i) Ø LAP 15						
8 🧭 LAP 19						
🗄 🛷 LAP 20	- Add New Lop	Laturit Delete llat				
	<ul> <li>Edd New Lap</li> </ul>	Lottunt Detectunt				
Current Selection Details	Add New Lap 1	o Selected Unit				
Template: 85-N15 Electric Motor Control System	Name	Description				
Template. Som To Electic recta Consta System	Isame	Description				
Unit: Electric Motor Control System		1				
		Ok Cancel				
Lap:		UN Cancel				
99						
SUL						
Station:	Export Template	Close Halp				
		Close Help				

## Student tracking enables teacher coaching

mplate Structure	
Martering Programmable Controllers - AB PLD 5	Templates:
Hastering Programmable Controllers - Modicon 384	Name Description
	Nattering Pognammable Controller AB PLC 5 Prognammable Logic Controllers Nattering Pognammable Controller Modicon 394 Prognammable Logic Controll
E 10 8490.48 SLC-500	Mastering Programmable Controller A8 SLC 500 Programmable Logic Controller
E M RS-LOSEX PLC-5	PSLOGK/PLC5 AB PLC5 with RS-Logie
B # # # # # # # # # # # # # # # # #	Mastering Programmable Controller Modicon 984 Programmable Logic Control
🛞 🎁 B474 Modicon Quantum	Motor Control 1 Template - 890-FT: Template for the 85-MT5 Electric Motor Co
Motor Control 1 Template - 890-FTS-1	
10 🗊 85NT5	
	X D
	Add New Template Edit Delete
	Edit Date
and the first Data Te	
	Name Description
Template:	Nome Description
Template: Unit:	Neme Description 0: Centrel
Template: Unit: Lage	
rrent Selection Details Tenglate: Unit: Lag: Skit:	

Teachers can easily customize exercises

ww.amatrol.com

**Custom Templates** - FaultPro software gives the teacher the ability to create custom templates for each troubleshooting exercise so students are presented with an appropriate troubleshooting experience for each lab activity. Faults can be added or deleted to each exercise as needed. Templates can be created for entire classes so setup for new classes is only a few clicks away.