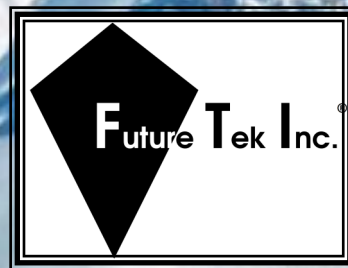




**Future Tek, Inc.**

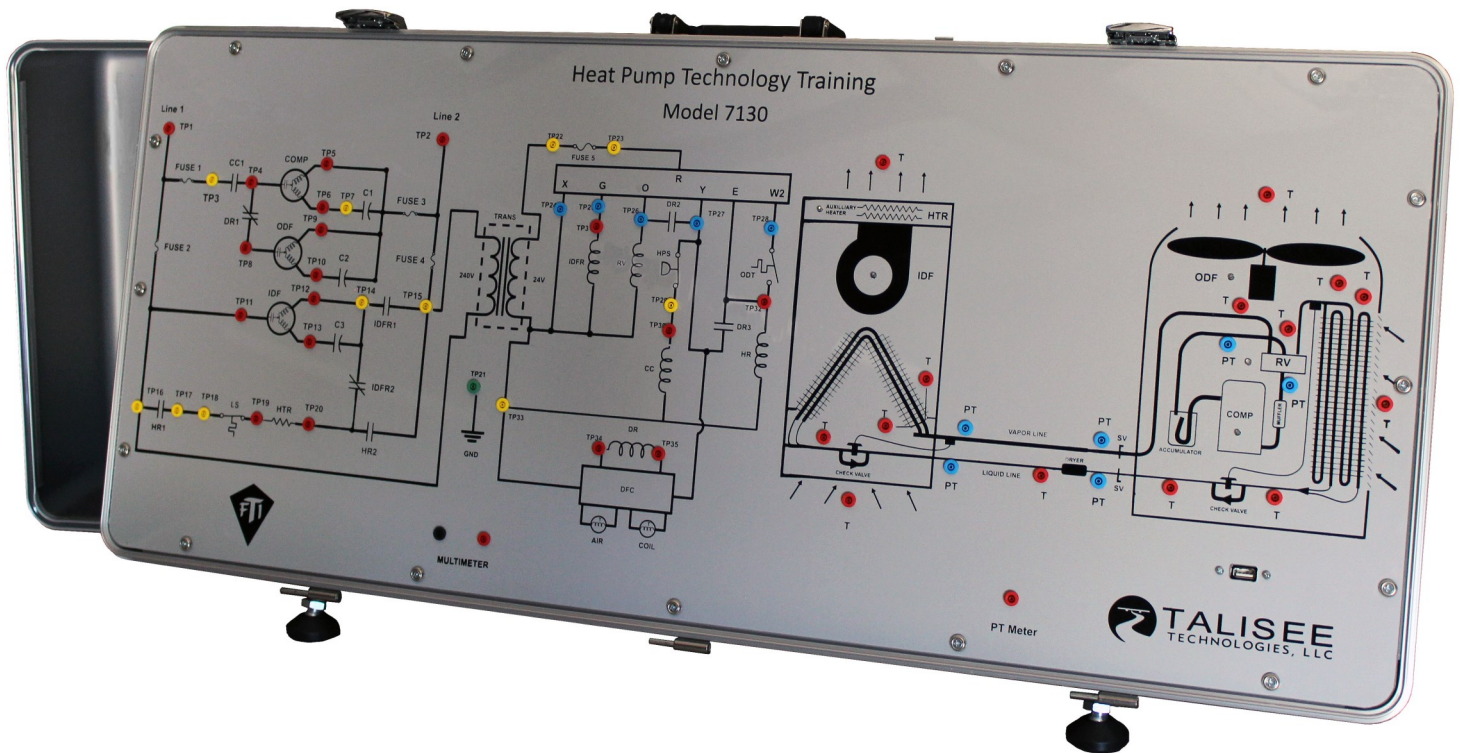


# **Heating, Ventilation, and Air Conditioning (HVAC)**



**“Real-World” Trainers for “Real-World” Jobs**

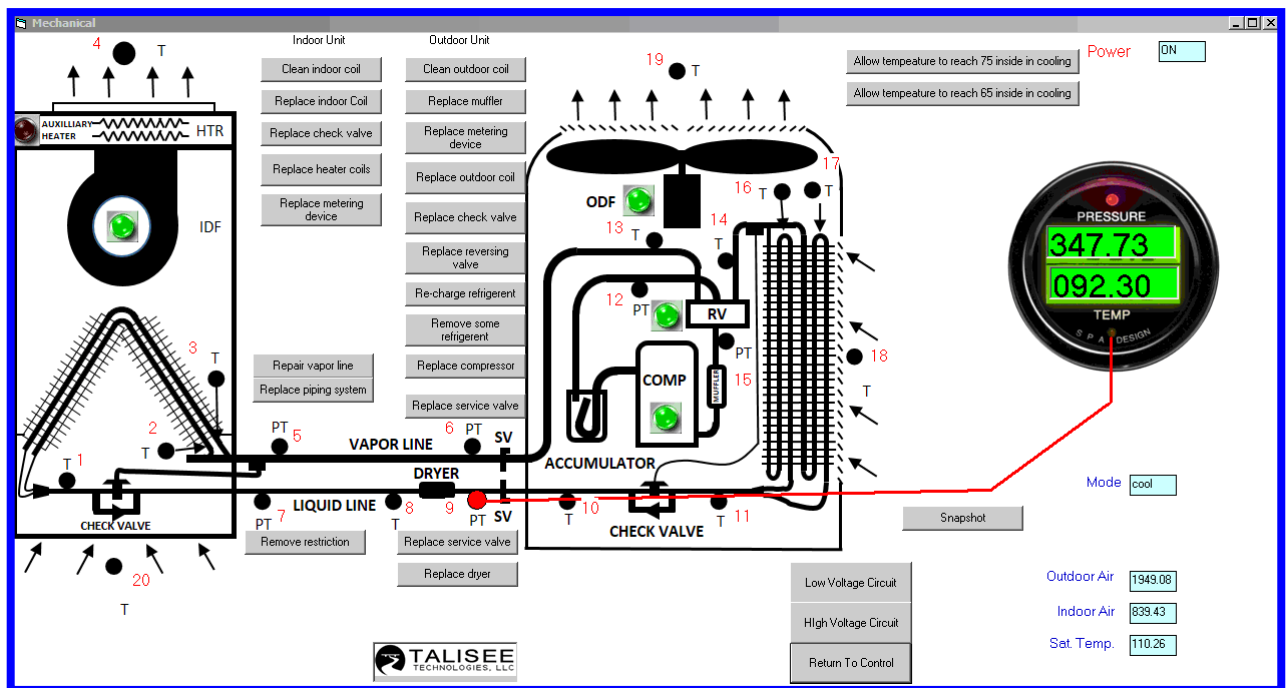
# Model 7130 Heat Pump Technology Training System



Dimensions when closed 16"H X 38"L X 13"D

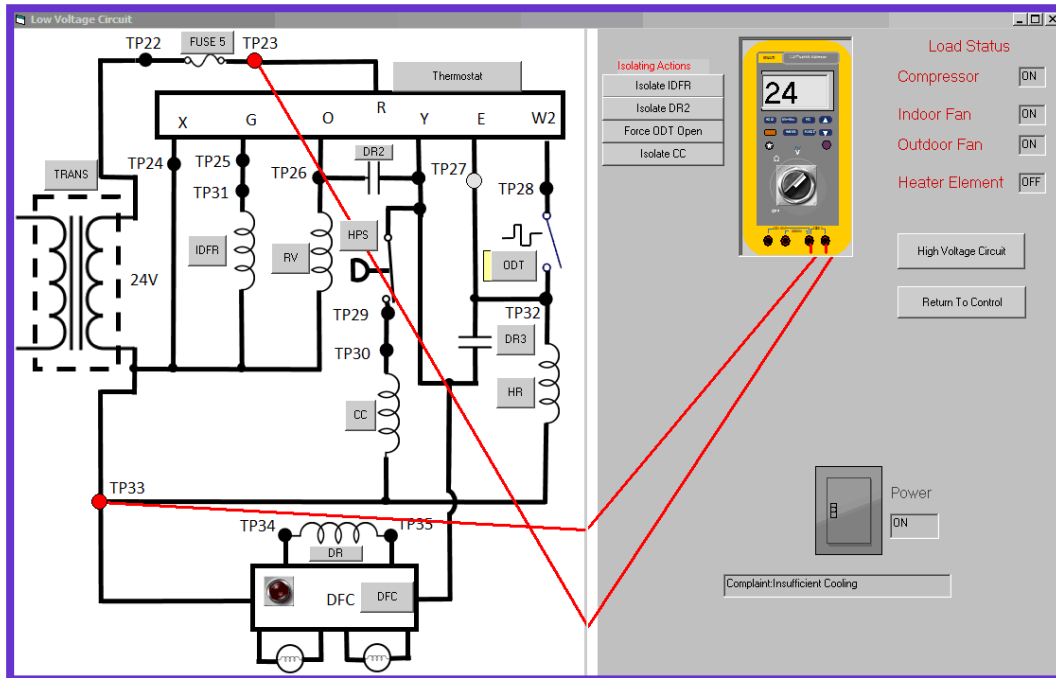
Future Tek's Heat Pump Technology Training System (Model 7130) includes a Mechanical Section and an Electrical Section. The included software provides a Tutorial Mode or a Troubleshooting Mode and fault insertion randomly, or specifically by the instructor (there are 148 fault options available). The unit session time limit and difficulty level (5 levels of complexity) are variable. Model 7130 allows voltage measurements, component testing, pressure measurements, temperature measurements, component replacement, and thermostat control. As the student attempts to correct the situation, all readings, component testing, and component replacement steps are recorded. At the end of the session, the instructor may print a Student-Specific Report reflecting all steps taken. Detailed Student-Specific Reports and Fault Tables may be saved as a permanent record of each student's achievement.

# Heat Pump Technology Training System (con't)

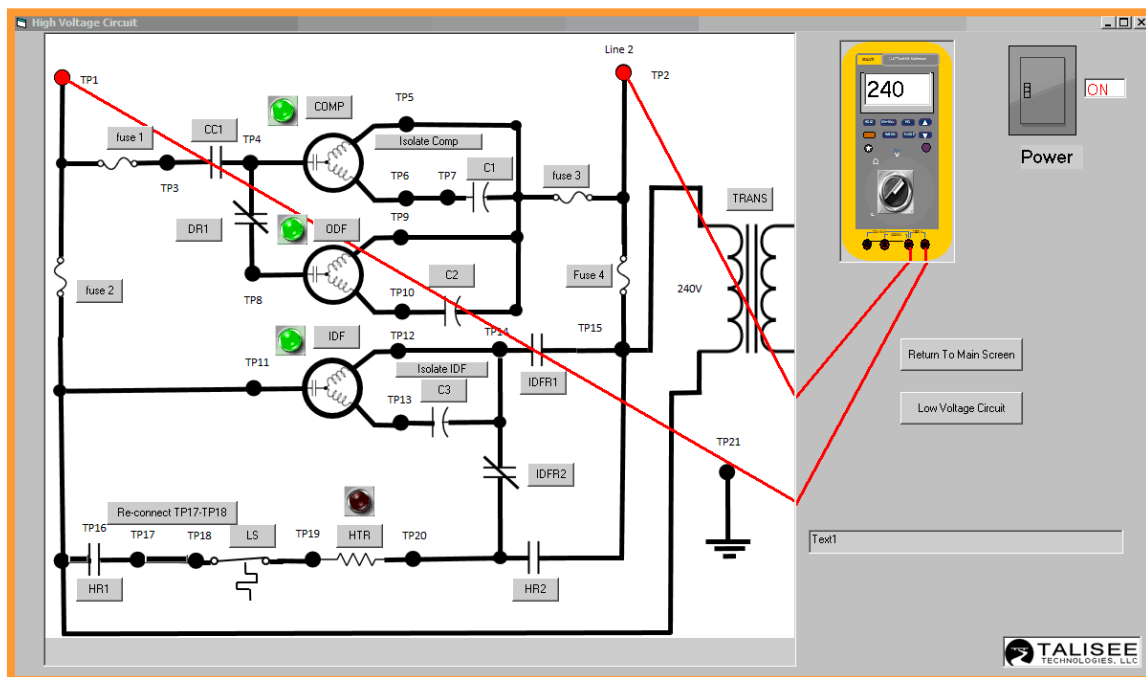


**Mechanical System**

# Heat Pump Technology Training System (con't)



**Low Voltage Electrical System**



**High Voltage Electrical System**

# Heat Pump Technology Training System (con't)

**Session Review**  
View Detailed Report Print Summary Close

**SESSION SUMMARY**

Student Name   
 Student ID   
 Session Type   
 Difficulty Level   
 Session Date   
 Problems Attempted   
 Solved Problems   
 Alloted Time   
 Actual Time   
 Average Time per Fault   
 % Correct

## Session Summary Screen

**Detail Report**  
Print Save to File Close

11/14/2018  
No Name Was Entered:

**Detailed Report**

Student ID   
 Session Type

Fault Description	Volt meas	P/T Meas.	time	comp. rep.	correct	comment
(32) -- Contact IDFR1 Open	1	1	1.3	2	yes	Excellent work
(32) -- Contact IDFR1 Open	0	0	1.1	4	yes	should review system operation
(1) -- Fuse 1 Blown	0	0	.7	2	yes	Excellent work
(27) -- None	0	0	.2	0	yes	Excellent work
(6) -- CC Coil Open	0	0	.3	0	yes	Excellent work
(97) -- Contact IDFR1 OPen	0	0	.5	0	yes	Excellent work
(2) -- Fuse 2 Blown	0	0	.2	0	yes	Excellent work
(90) -- Transformer Primary Open	0	0	.	0	no	

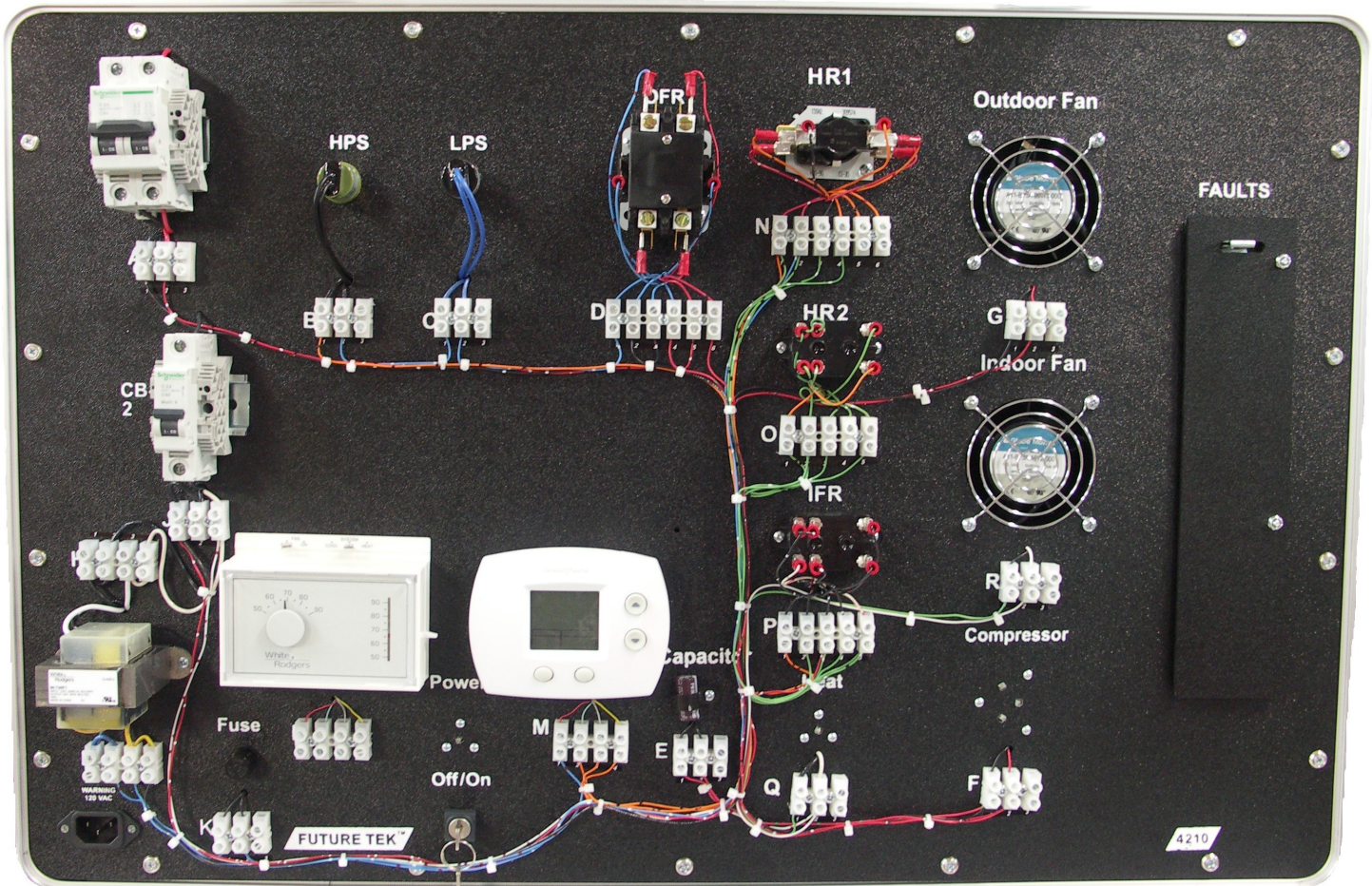
## Detailed Report



## Model 7130 Available Faults

- |   |   |  |
|---|---|--|
| 1. Fuse 1 Blown                                   | 55. Compressor Capacitor (C1) Shorted                               | 108. Compressor Overload Stuck Open                                      |
| 2. Fuse 2 Blown                                   | 56. Compressor Run Winding Shorted to Ground and Contact CC1 Welded | 109. Compressor Capacitor (C1) Shorted                                   |
| 3. Fuse 3 Blown                                   | 57. System Operating Properly                                       | 110. Compressor Run Winding Shorted, Transformer Blown, and Fuse 1 Blown |
| 4. Fuse 4 Blown                                   | 58. Open Connection (R-Circuit) In Thermostat                       | 111. System Operating Properly   |
| 5. IDFR Coil Open                                 | 59. Open Connection (G-Circuit) Inside Thermostat                   | 112. R Circuit Open Inside Thermostat                                    |
| 6. CC Coil Open                                   | 60. Open Connection (Y-Circuit) In Thermostat                       | 113. G Circuit Open Inside Thermostat                                    |
| 7. HR Coil Open                                   | 61. Open Connection (W2-Circuit) In Thermostat                      | 114. Y Circuit Open Inside Thermostat                                    |
| 8. CR Coil Open                                   | 62. Open in B Circuit In Thermostat                                 | 115. G Shorted to Y Inside Thermostat                                    |
| 9. DR Coil Open                                   | 63. R Shorted to X Inside Thermostat                                | 116. G Shorted to E Inside Thermostat                                    |
| 10. HTR Coil Open                                 | 64. G Shorted to Y  | 117. G Shorted to X Inside Thermostat and Transformer Blown              |
| 11. Compressor Run Winding Open                   | 65. G Shorted to E  | 118. Y Shorted to E Inside Thermostat                                    |
| 12. IDF Run Winding Open                          | 66. G Shorted to X and Transformer Blown                            | 119. Y Shorted to X Inside Thermostat and Transformer Blown              |
| 13. ODF Run Winding Open                          | 67. G Shorted to X  | 120. Open Between HR1 and Transformer                                    |
| 14. Compressor Start Winding Open                 | 68. Y Shorted to E  | 121. Open Between IDFR Coil and Thermostat                               |
| 15. IDF Start Winding Open                        | 69. Y Shorted to X and Transformer Blown                            | 122. Open Between IDF Run Winding and IDFR1 Contact                      |
| 16. ODF Run Winding Open                          | 70. Y Shorted to B  | 123. Open Between TP6 and TP7  |
| 17. HPS (High Pressure Switch) Open               | 71. E Shorted To W2   | 124. Open Between CC Coil and HPS  |
| 18. ODT (Outdoor Thermostat) Open                 | 72. W2 Shorted to B and Transformer Blown                           | 125. Check Valve Leaking Through   |
| 19. Transformer Secondary Fuse Open               | 73. X Shorted to X and Transformer Blown                            | 126. Check Valve Stuck Closed  |
| 20. Transformer Primary Open                      | 74. Open Between HR1 and Transformer                                | 127. Metering Device Starving (Restricted)                               |
| 21. R and G Circuit Shorted Inside Thermostat     | 75. Open Between IDFR and Thermostat                                | 128. Metering Device Flooded   |
| 22. R and Y Circuit Shorted Inside Thermostat     | 76. Open Between IDF Run Winding and IDFR1 Contact                  | 129. Check Valve Leaking Through   |
| 23. LS (Temperature Limit Switch) Open            | 77. Open Between TP6 and TP7  | 130. Reversing Valve Stuck Open (Heating)                                |
| 24. Contact CC1 Welded Closed From High Current   | 78. Open Between CC and HPS   | 131. Reversing Valve Stuck in Cooling                                    |
| 25. Contact CC1 Open                              | 79. Open Between LS and HR1   | 132. Reversing Valve Stuck Halfway                                       |
| 26. Open Between Compressor and TP15              | 80. IDFR Coil Open  | 133. Reversing Valve is Leaking from High to Low Side                    |
| 27. CR Contact Open                               | 81. CC Coil Open  | 134. Accumulator Restricted  |
| 28. CR Contact Welded Closed                      | 82. Compressor Run Winding Open                                     | 135. Compressor Not Pumping  |
| 29. Contact DR1 Open                              | 83. IDF Run Winding Open  | 136. Low Capacity Compressor   |
| 30. Contact DR1 Welded Closed                     | 84. ODF Run Winding Open  | 137. Muffler Restricted  |
| 31. Contact IDFR1 Welded Closed                   | 85. Compressor Start Winding Open                                   | 138. Desuperheater Restricted  |
| 32. Contact IDFR1 Open                            | 86. IDF Start Winding Open  | 139. Too Much Cold Water in Desuperheater                                |
| 33. Contact IDFR2 Open                            | 87. ODF Start Winding Open  | 140. Condenser Coil Restricted   |
| 34. Contact HR1 Open                              | 88. HPS (High Pressure Switch) Open                                 | 141. Evaporator Coil Restricted  |
| 35. Contact HR2 Open                              | 89. Transformer Secondary Open                                      | 142. Restricted Air Floe at Condenser                                    |
| 36. Contact HR2 Welded Closed                     | 90. Transformer Primary Open  | 143. Restricted Air Flow at Evaporator                                   |
| 37. R and E Short Inside Thermostat               | 91. R Shorted to G  | 144. Check Valve Closed  |
| 38. R to W2 Short Inside Thermostat               | 92. R Shorted to Y  | 145. Liquid Line Restricted  |
| 39. Contact DR2 Open                              | 93. Contact CC1 Welded  | 146. Drier Restricted  |
| 40. Contact DR2 Welded Closed                     | 94. Contact CC1 Open  | 147. Low Refrigerant   |
| 41. Compressor Run Winding Shorted to Ground      | 95. Open Connection Between TP15 and Compressor                     | 148. Too Much Refrigerant  |
| 42. Compressor Start Winding Shorted              | 96. Contact DRI Open  |  |
| 43. HTR Coil Shorted and Fuse 2 Blown             | 97. Contact IDFR1 Open  |  |
| 44. Reversing Valve (RV) Open                     | 98. Contact HR2 Welded  |  |
| 45. IDFR Coil Shorted and Fuse 5 Blown            | 99. R Shorted to E  |  |
| 46. CC Coil Shorted and Transformer 5 Blown       | 100. Contact DR2 Welded   |  |
| 47. HR Coil Short to Ground and Transformer Blown | 101. Compressor Run Winding Shorted                                 |  |
| 48. CR Coil Shorted and Transformer Blown         | 102. Compressor Start Winding Shorted                               |  |
| 49. DR Coil Shorted and Transformer Blown         | 103. IDFR Coil Shorted and Transformer Blown                        |  |
| 50. Compressor Start Capacitor Open               | 104. CC Coil Shorted and Transformer Blown                          |  |
| 51. Indoor Fan (IDF) Start Capacitor Open         | 105. Compressor Start Capacitor (C1) Open                           |  |
| 52. Outdoor Fan (ODF) Capacitor Open              | 106. IDF Capacitor (C3) Open  |  |
| 53. No Defrost Cycle                              | 107. ODF Capacitor (C2) Open  |  |
| 54. Compressor Overload Open                      |   |  |

# HVAC Electrical Troubleshooting Trainer

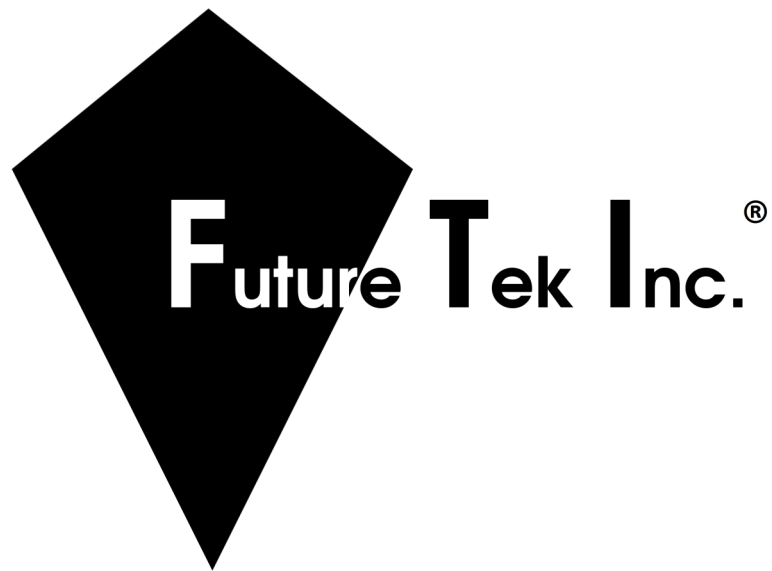


Dimensions when closed 31"L X 20"W X 15"D

Model 4210 HVAC Electrical Troubleshooting Trainer allows 16 concealed, insertable faults to challenge your students. Faults include: **No Outdoor Source Voltage, No Indoor Source Voltage, High Pressure Switch Open, Low Pressure Switch Open, Outdoor Fan Relay Coil Bad, Normally Open Outdoor Fan Contact Not Closing, Outdoor Fan Bad, No Secondary Voltage, Blown Secondary Fuse, Heating Relay-1 Coil Bad, Heating Relay-1 Normally Open Contact Not Closing, Heating Relay-2 Coil Bad, Heating Relay-2 Normally Open Contact Not Closing, Indoor Fan Relay Coil Bad, Normally Open Indoor Fan Contact Not Closing, Indoor Fan Bad.** As with all Future Tek, Inc. trainers, this model includes "Real-World" components and our comprehensive hands-on lab manual.

**"Real-World" Trainers For "Real-World" Jobs**

*Made in the U. S. A.*



**FUTURE TEK, INC.**

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